RADIO TEST REPORT

Test Report No. : 11353342S-A-R2

Applicant	:	**Canon Inc.**
Type of Equipment	:	**Communication Module**
Model No.	:	**ES202**
FCC ID	:	**AZD239**
Test regulation	:	**FCC Part 15 Subpart C: 2016**
Test Result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the 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 11353342S-A-R1. 11353342S-A-R1 is replaced with this report.

Date of test: July 19 to September 8, 2016

Representative test engineer:
Kazutaka Takeyama
Engineer
Consumer Technology Division

Approved by:
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

REVISION HISTORY

Original Test Report No.: 11353342S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11353342S-A	September 30, 2016	-	-
1	11353342S-A-R1	December 27, 2016	8	Update of 4.2
2	11353342S-A-R2	January 5, 2017	11-12, 61-64, 66-67	Update of SECTION 6,7,APPENDIX 1

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SECTION 1: Customer information

Company Name	:	Canon Inc.
Address	:	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501, Japan
Telephone Number	:	+81-3-5482-8070
Facsimile Number	:	+81-3-3757-8431
Contact Person	:	Takato Matsuura

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

2.1 Identification of E.U.T.

Type of Equipment	:	Communication Module
Model No.	:	ES202
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V, DC 1.8 V
Receipt Date of Sample	:	July 14, 2016
Country of Mass-production	:	Japan
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: ES202 (referred to as the EUT in this report) is a Communication Module.

Clock frequency(ies) in the system	:	38.4 MHz

Radio Specification

Radio Type	:	Transceiver
Antenna type	:	Inverted L pattern Antenna
Antenna Gain	:	-2.52 dBi

	IEEE802.11b	**IEEE802.11g**	**IEEE802.11n (20 MHz band)**
Frequency of operation	2412-2462 MHz		
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)
Channel spacing	5 MHz		

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C FCC part 15 final revised on April 6, 2016.
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz

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	3.9 dB, 23.88980 MHz, N AV Tx 2412 MHz, 11g (Normal power mode)	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	3.3 dB 2390.00 MHz, AV, Vertical Tx 2412 MHz, 11n-20 (Normal power mode, Low power mode)	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 DTS Meas Guidance v03r05 12.2.7.

* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

FCC Part 15.31 (e)
The EUT has the power supply regulator. However one of the input voltages to RF part doesn't go through the regulator. The stable voltage will be supplied by the end product, which will be required to have a power supply regulator. Therefore, the EUT complies with the requirement.

FCC Part 15.203/212
The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement.

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

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 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)

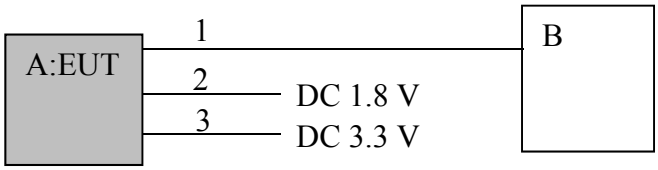
Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - " of TCB Council Workshop October 2009

Mode	Remarks*
IEEE 802.11b (11b)	1 Mbps, PN9
IEEE 802.11g (11g)	6 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 0, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
Power settings: Normal Power mode: 11b = 12 dBm, 11g = 12 dBm, 11n-20 = 11 dBm Low Power mode: 11b = 10 dBm, 11g = 8 dBm, 11n-20 = 7 dBm Software: rftest Version 2	

*The details of Operating mode(s)

Test Item	Operating Mode	Tested frequency
Conducted Emission Spurious Emission (below 1GHz)	11g Tx	2412 MHz
Spurious Emission (above 1GHz) 6dB Bandwidth Maximum Peak Output Power Power Density 99% Occupied Bandwidth	11b Tx 11g Tx 11n-20 Tx	2412 MHz 2437 MHz 2462 MHz

4.2 Configuration and peripherals



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Communication Module	ES202	3 *1) 0514823 *2)	Canon Inc.	EUT
B	Digital Camera	DS126601	530	Canon Inc.	-

*1) Used for Antenna Terminal conducted test
*2) Used for Conducted Emission test and Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	FLAT	0.11	Unshielded	Unshielded	-
2	DC	1.0	Unshielded	Unshielded	-
3	DC	1.0	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The rear of tabletop was located 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.

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 platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
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: RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces If duty cycle was less than 98%, a duty factor was added to the results.	RBW: 100 kHz VBW: 300 kHz
Test Distance	3 m	3.99 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)		3.99 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)

*1) Distance Factor: 20 x log (3.99 m / 3.0 m) = 2.48 dB
*2) Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*3) Average Power Measurement was performed based on 6. 0 & 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.

Antenna polarization	Carrier (Band edge)	Spurious				
		Below 1 GHz	Above 1 GHz			
			1 GHz -2.8 GHz	2.8 GHz -13 GHz	13 GHz -18 GHz	18 GHz - 26.5 GHz
Horizontal	Y	X	Y	Y	X	X
Vertical	X	X	X	X	X	X

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 *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak/ Average *2)	-	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 *3)
Conducted Spurious Emission *4)	9kHz to 150kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	10 kHz	30 kHz				
Band Edge confirmation	100 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *2)

*1) Peak hold was applied as Worst-case measurement.
*2) Reference data
*3) Section 10.2 Method PKPSD (peak PSD) of "KDB 558074 D01 DTS Meas Guidance v03r05".
*4) 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

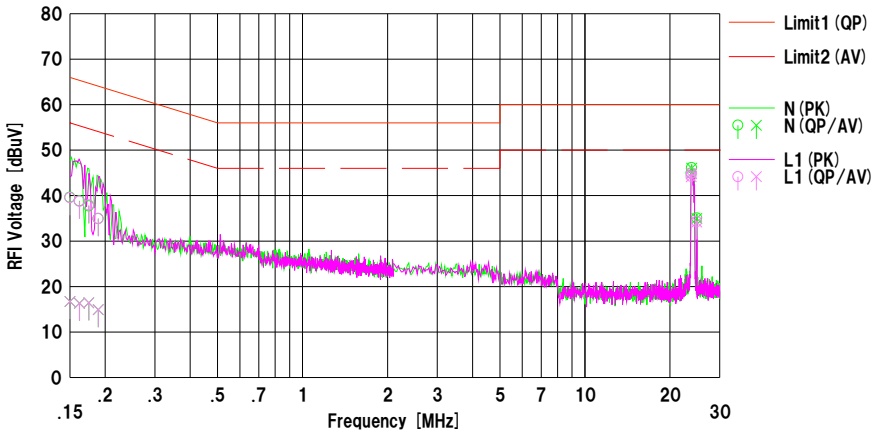
UL Japan,Inc. Shonan EMC Lab. No.1 Semi-Anechoic Chamber
Date : 2016/09/07

Mode : Tx_11g_2412MHz, Power:12dBm
Order No. : 11353342S
Power : AC 120 V / 60 Hz
Temp./Humi. : 24 deg.C / 66 %RH

Serial No. : 0514823
Remarks : -

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

Engineer : Yosuke Ishikawa



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	0.15000	27.20	4.30	12.43	39.63	16.73	66.00	56.00	26.3	39.2	N	
2	0.16204	26.40	3.90	12.44	38.84	16.34	65.36	55.36	26.5	39.0	N	
3	0.17486	25.30	4.00	12.44	37.74	16.44	64.73	54.73	26.9	38.2	N	
4	0.18887	22.50	2.50	12.43	34.93	14.93	64.09	54.09	29.1	39.1	N	
5	23.79850	31.40	31.30	13.53	44.93	44.83	60.00	50.00	15.0	5.1	N	
6	23.88980	32.60	32.50	13.54	46.14	46.04	60.00	50.00	13.8	3.9	N	
7	24.90806	21.50	21.40	13.57	35.07	34.97	60.00	50.00	24.9	15.0	N	
8	0.15000	27.10	4.30	12.43	39.53	16.73	66.00	56.00	26.4	39.2	L1	
9	0.16234	26.30	3.90	12.44	38.74	16.34	65.34	55.34	26.6	39.0	L1	
10	0.17491	25.50	4.00	12.44	37.94	16.44	64.72	54.72	26.7	38.2	L1	
11	0.18902	22.50	2.50	12.43	34.93	14.93	64.08	54.08	29.1	39.1	L1	
12	23.79790	30.70	30.60	13.53	44.23	44.13	60.00	50.00	15.7	5.8	L1	
13	23.88950	31.40	31.30	13.54	44.94	44.84	60.00	50.00	15.0	5.1	L1	
14	24.90798	20.70	20.60	13.57	34.27	34.17	60.00	50.00	25.7	15.8	L1	

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

6dB Bandwidth

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

Normal Power mode

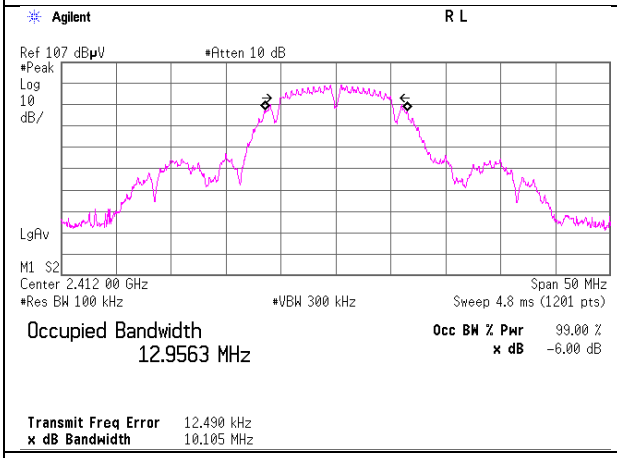
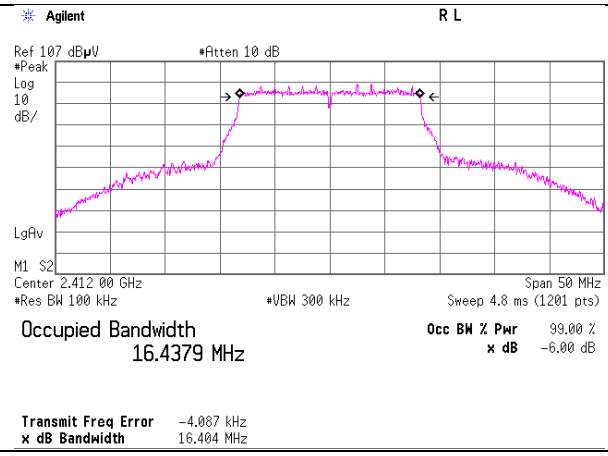
Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
11b	2412	10.105	> 500
	2437	10.093	> 500
	2462	10.113	> 500
11g	2412	16.404	> 500
	2437	16.416	> 500
	2462	16.370	> 500
11n-20	2412	17.611	> 500
	2437	17.636	> 500
	2462	17.640	> 500

Low Power mode

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
11b	2412	10.109	> 500
	2437	10.111	> 500
	2462	10.108	> 500
11g	2412	16.404	> 500
	2437	16.416	> 500
	2462	16.417	> 500
11n-20	2412	17.658	> 500
	2437	17.655	> 500
	2462	17.647	> 500

6dB Bandwidth

[Normal Power mode]

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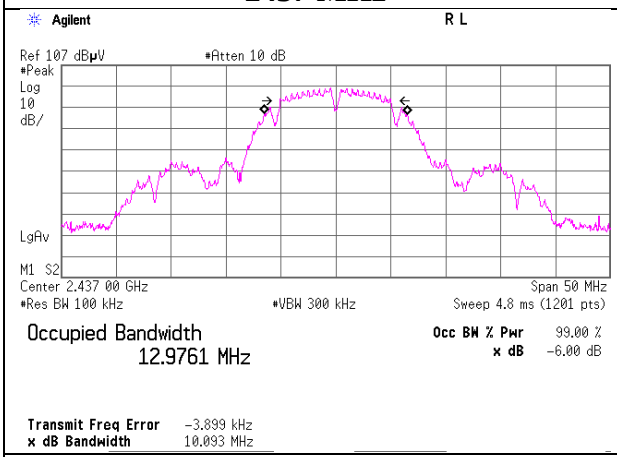
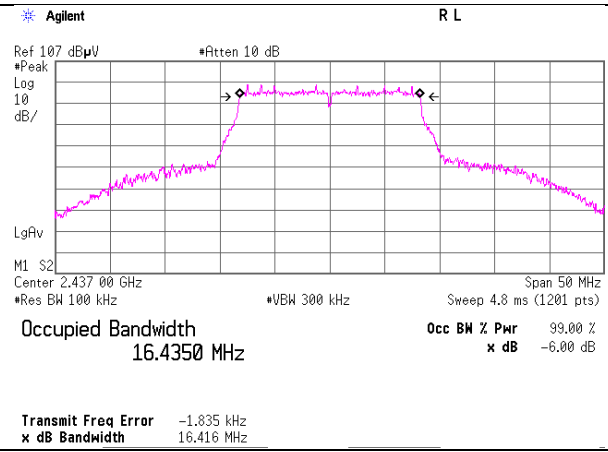
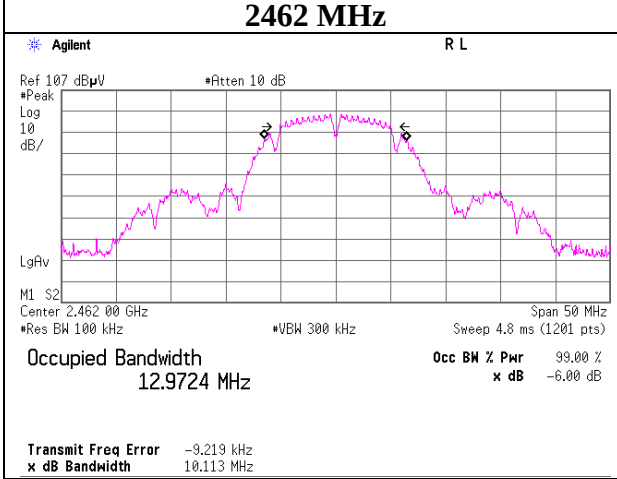
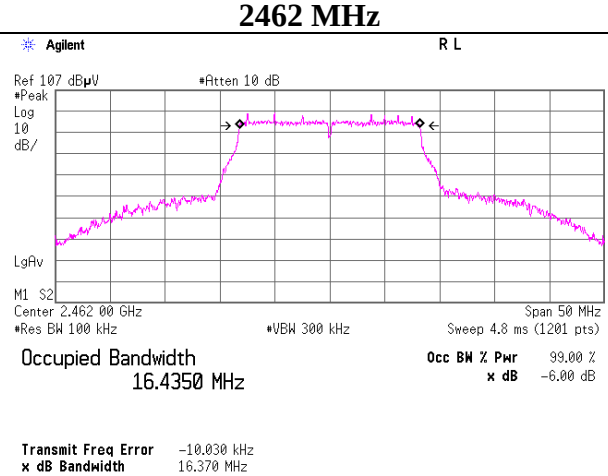
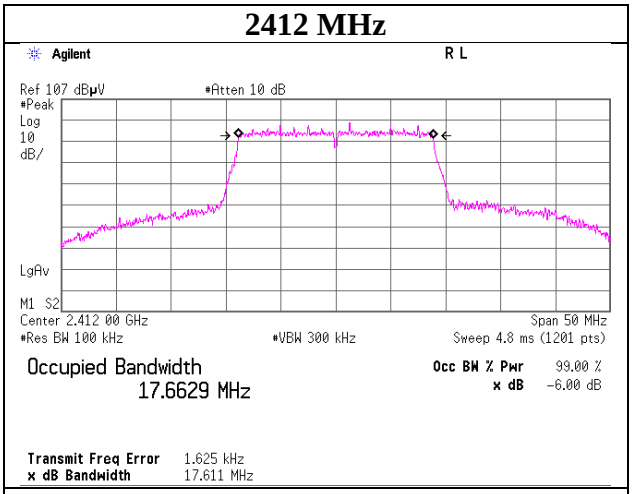
	
2462 MHz	**2462 MHz**
	

6dB Bandwidth

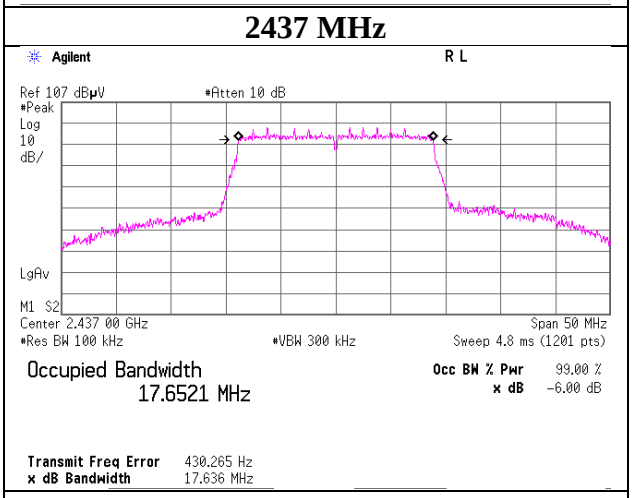
[Normal Power mode]

11n-20

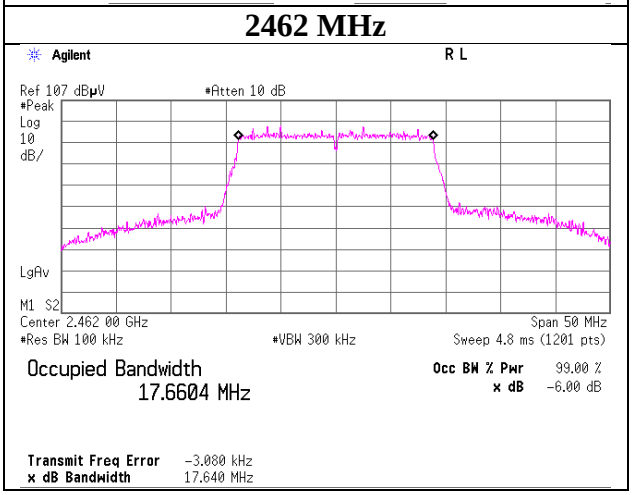
2412 MHz



2437 MHz

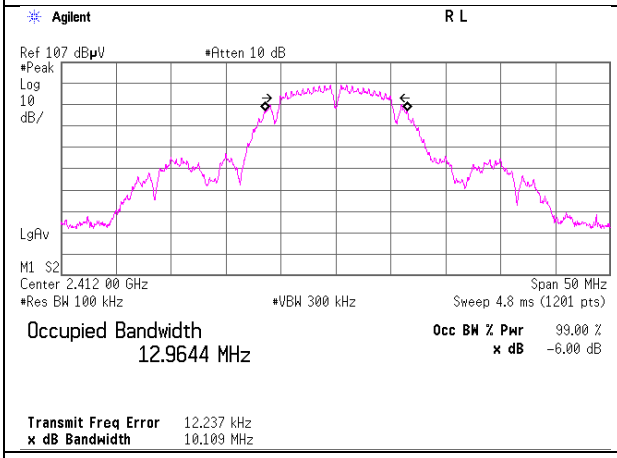
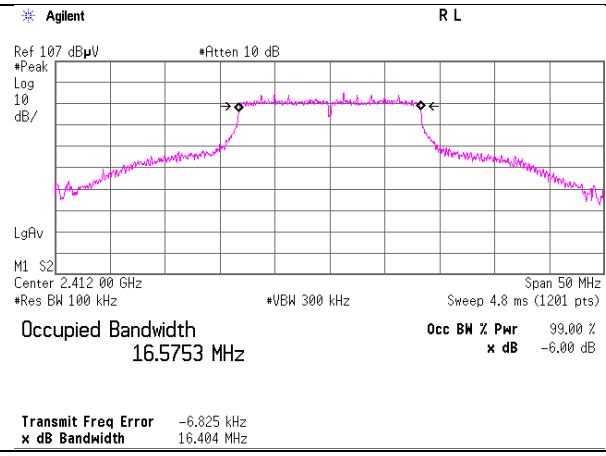
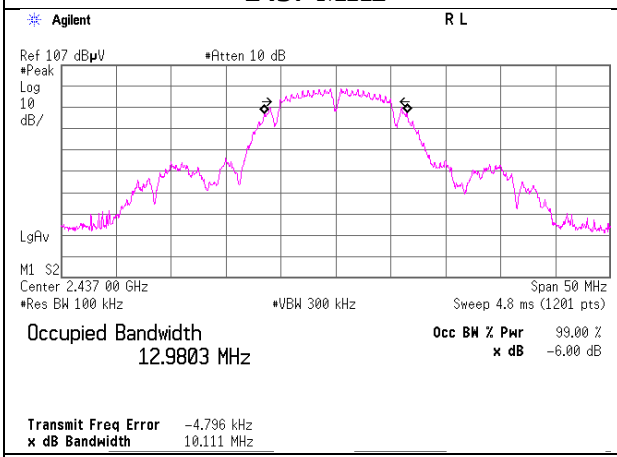
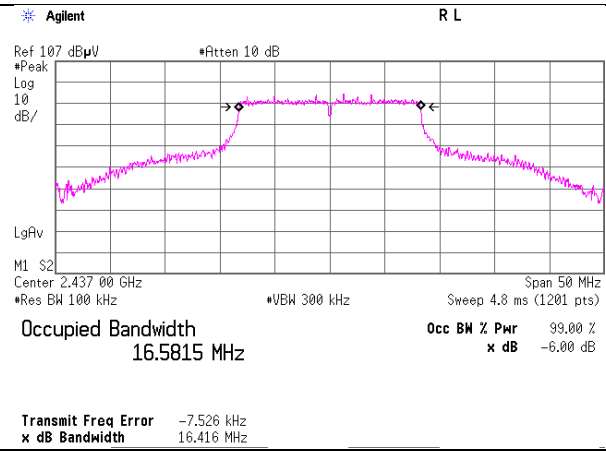
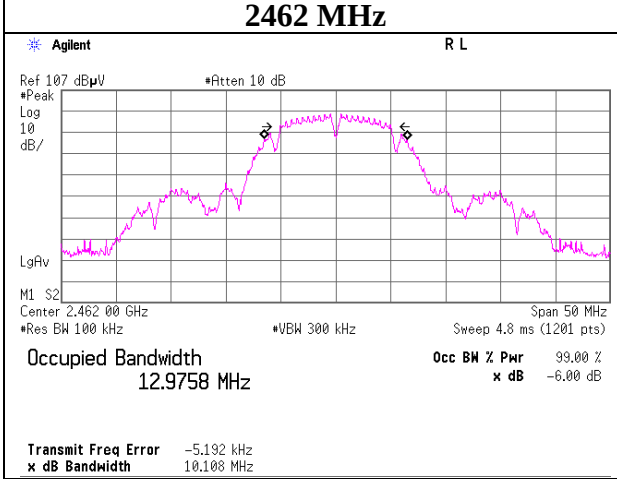
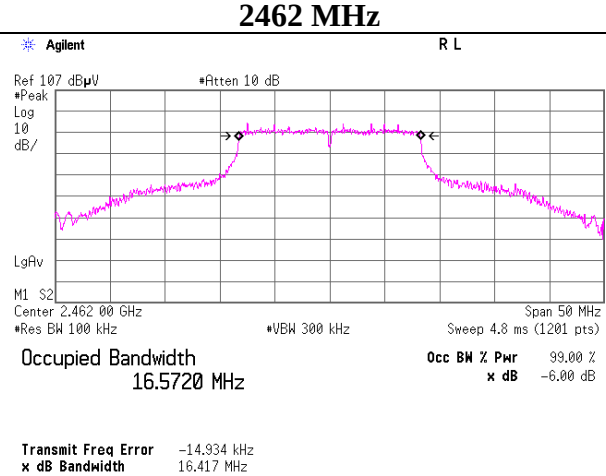


2462 MHz



6dB Bandwidth

[Low Power mode]

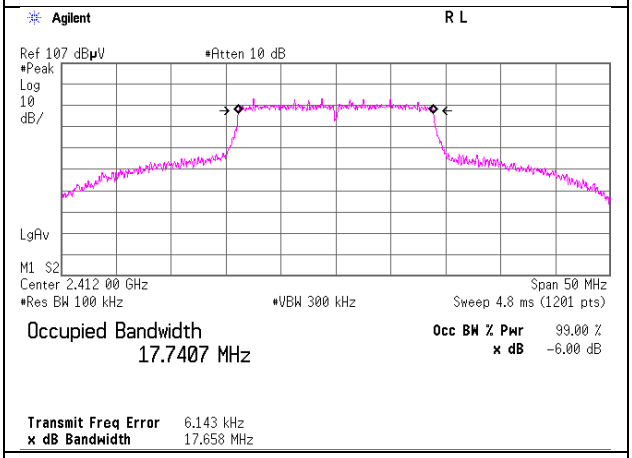
11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

6dB Bandwidth

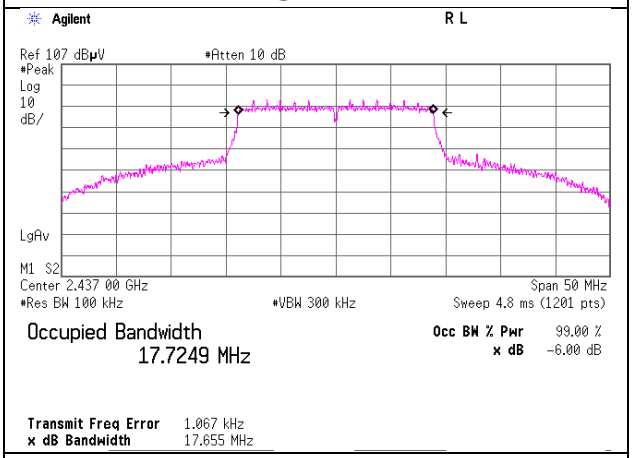
[Low Power mode]

11n-20

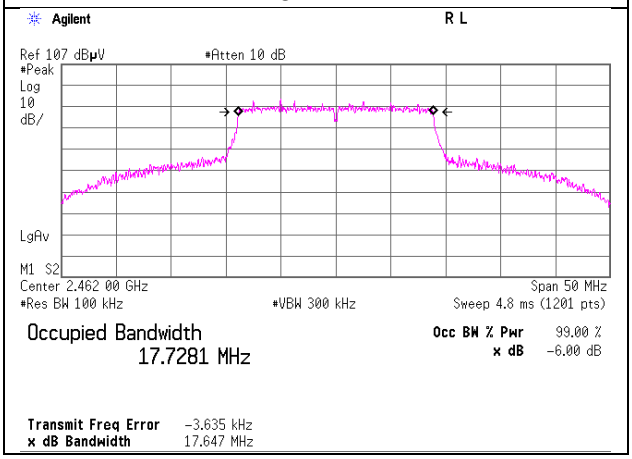
2412 MHz



2437 MHz



2462 MHz



Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11b

Normal Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	4.07	1.18	9.92	15.17	32.89	30.00	1000	14.83
2437	3.99	1.19	9.92	15.10	32.36	30.00	1000	14.90
2462	3.48	1.19	9.92	14.59	28.77	30.00	1000	15.41

Low Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	2.56	1.18	9.92	13.66	23.23	30.00	1000	16.34
2437	2.53	1.19	9.92	13.64	23.12	30.00	1000	16.36
2462	2.37	1.19	9.92	13.48	22.28	30.00	1000	16.52

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.

Normal Power mode, 2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	3.99	*
2	3.73	
5.5	3.67	
11	3.60	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11g

Normal Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.17	1.18	9.92	22.27	168.66	30.00	1000	7.73
2437	11.14	1.19	9.92	22.25	167.88	30.00	1000	7.75
2462	10.85	1.19	9.92	21.96	157.04	30.00	1000	8.04

Low Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	9.77	1.18	9.92	20.87	122.18	30.00	1000	9.13
2437	9.86	1.19	9.92	20.97	125.03	30.00	1000	9.03
2462	9.72	1.19	9.92	20.83	121.06	30.00	1000	9.17

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.

Normal Power mode, 2437 MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	11.14	*
9	10.66	
12	10.27	
18	10.52	
24	10.73	
36	10.44	
48	10.81	
54	10.82	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11n-20

Normal Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	9.96	1.18	9.92	21.06	127.64	30.00	1000	8.94
2437	9.82	1.19	9.92	20.93	123.88	30.00	1000	9.07
2462	9.64	1.19	9.92	20.75	118.85	30.00	1000	9.25

Low Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	8.49	1.18	9.92	19.59	90.99	30.00	1000	10.41
2437	8.43	1.19	9.92	19.54	89.95	30.00	1000	10.46
2462	8.20	1.19	9.92	19.31	85.31	30.00	1000	10.69

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.

Normal Power mode, 2437 MHz

Rate	Reading	Remark
[MCS]	[dBm]	
0	9.82	*
1	9.64	
2	9.68	
3	9.22	
4	9.38	
5	9.42	
6	9.53	
7	9.50	

*: 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 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11b

Normal Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	0.89	1.18	9.92	11.99	15.81	0.00	11.99	15.81
2437	0.71	1.19	9.92	11.82	15.21	0.00	11.82	15.21
2462	0.40	1.19	9.92	11.51	14.16	0.00	11.51	14.16

Low Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-1.12	1.18	9.92	9.98	9.95	0.00	9.98	9.95
2437	-1.23	1.19	9.92	9.88	9.73	0.00	9.88	9.73
2462	-1.35	1.19	9.92	9.76	9.46	0.00	9.76	9.46

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.

Normal Power mode, 2437 MHz

Mode	Rate	Reading	Duty factor	Burst power	Remarks
	Mbps	[dBm]	[dB]	[dBm]	
11b	1	0.71	0.00	0.71	*
	2	0.59	0.01	0.60	
	5.5	0.49	0.02	0.51	
	11	0.44	0.04	0.48	

* 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 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11g

Normal Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	0.71	1.18	9.92	11.81	15.17	0.02	11.83	15.24
2437	0.70	1.19	9.92	11.81	15.17	0.02	11.83	15.24
2462	0.42	1.19	9.92	11.53	14.22	0.02	11.55	14.29

Low Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-3.57	1.18	9.92	7.53	5.66	0.02	7.55	5.69
2437	-3.43	1.19	9.92	7.68	5.86	0.02	7.70	5.89
2462	-3.60	1.19	9.92	7.51	5.64	0.02	7.53	5.66

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.

Normal Power mode, 24327MHz

Mode	Rate	Reading	Duty factor	Burst power	Remarks
	Mbps	[dBm]	[dB]	[dBm]	
11g	6	0.70	0.02	0.72	*
	9	0.56	0.03	0.59	
	12	0.60	0.05	0.65	
	18	0.63	0.06	0.69	
	24	0.37	0.09	0.46	
	36	0.55	0.14	0.69	
	48	0.47	0.18	0.65	
	54	0.50	0.21	0.71	

* 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 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11n-20

Normal Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-0.20	1.18	9.92	10.90	12.30	0.02	10.92	12.36
2437	-0.37	1.19	9.92	10.74	11.86	0.02	10.76	11.91
2462	-0.58	1.19	9.92	10.53	11.30	0.02	10.55	11.35

Low Power mode

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-4.36	1.18	9.92	6.74	4.72	0.02	6.76	4.74
2437	-4.40	1.19	9.92	6.71	4.69	0.02	6.73	4.71
2462	-4.56	1.19	9.92	6.55	4.52	0.02	6.57	4.54

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.

Normal Power mode, 2437 MHz

Mode	Rate	Reading	Duty factor	Burst power	Remarks
	MCS	[dBm]	[dB]	[dBm]	
11n-20	0	-0.37	0.02	-0.35	*
	1	-0.47	0.04	-0.43	
	2	-0.52	0.07	-0.45	
	3	-0.76	0.10	-0.66	
	4	-0.61	0.13	-0.48	
	5	-0.55	0.18	-0.37	
	6	-0.60	0.20	-0.40	
	7	-0.60	0.22	-0.38	

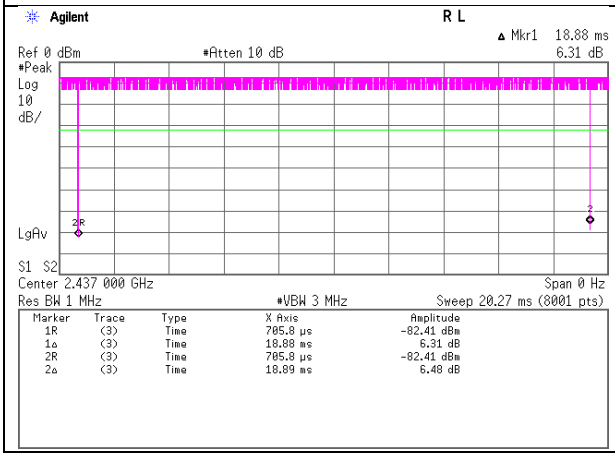
* Worst rate
Sample Calculation:
Burst power = Reading (timed average) + Duty factor
All comparison were carried out on same frequency and measurement factors.

Burst rate confirmation

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 19, 2016
Temperature / Humidity	23 deg. C / 55 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

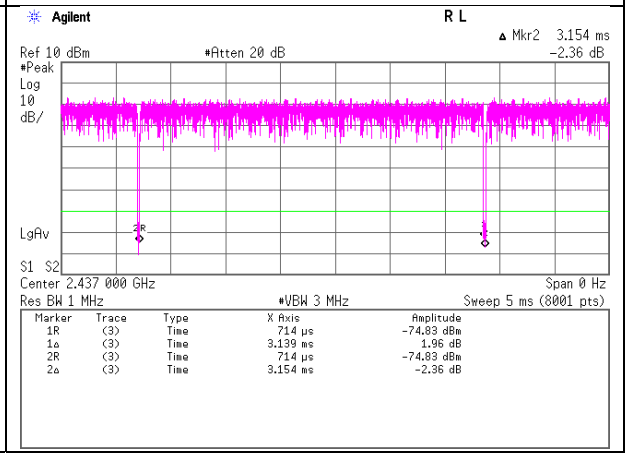
11b 1 Mbps

Tx on / (Tx on + Tx off) = 0.999
Tx on / (Tx on + Tx off) * 100 = 99.9 %
Duty factor = 10 * log (18.8911 / 18.8767) = 0.00 dB



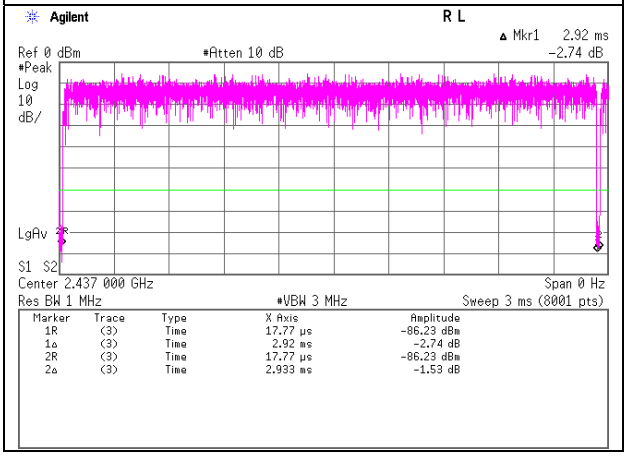
11g 6 Mbps

Tx on / (Tx on + Tx off) = 0.995
Tx on / (Tx on + Tx off) * 100 = 99.5 %
Duty factor = 10 * log (3.154 / 3.139) = 0.02 dB



11n-20 MCS 0

Tx on / (Tx on + Tx off) = 0.996
Tx on / (Tx on + Tx off) * 100 = 99.6 %
Duty factor = 10 * log (2.933 / 2.9199) = 0.02 dB



Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11b 2412 MHz (Normal Power Mode)		

(* 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	45.76	27.17	13.70	37.06	2.48	52.05	73.90	21.9	154	244	
Hori.	4824.000	PK	46.54	31.17	5.93	37.13	2.48	48.99	73.90	24.9	169	320	
Hori.	7236.000	PK	44.32	36.49	7.26	37.86	2.48	52.69	73.90	21.2	162	207	
Hori.	9648.000	PK	45.26	38.34	7.89	39.15	2.48	54.82	73.90	19.0	155	0	
Hori.	2390.000	AV	37.29	27.17	13.70	37.06	2.48	43.58	53.90	10.3	154	244	
Hori.	4824.000	AV	40.92	31.17	5.93	37.13	2.48	43.37	53.90	10.5	169	320	
Hori.	7236.000	AV	34.88	36.49	7.26	37.86	2.48	43.25	53.90	10.6	162	207	
Hori.	9648.000	AV	36.26	38.34	7.89	39.15	2.48	45.82	53.90	**8.0**	155	0	
Vert.	2390.000	PK	41.68	27.17	13.70	37.06	2.48	47.97	73.90	25.9	183	167	
Vert.	4824.000	PK	46.72	31.17	5.93	37.13	2.48	49.17	73.90	24.7	157	303	
Vert.	7236.000	PK	44.17	36.49	7.26	37.86	2.48	52.54	73.90	21.3	166	210	
Vert.	9648.000	PK	45.42	38.34	7.89	39.15	2.48	54.98	73.90	18.9	155	0	
Vert.	2390.000	AV	35.63	27.17	13.70	37.06	2.48	41.92	53.90	12.0	183	167	
Vert.	4824.000	AV	40.19	31.17	5.93	37.13	2.48	42.64	53.90	11.2	157	303	
Vert.	7236.000	AV	34.75	36.49	7.26	37.86	2.48	43.12	53.90	10.7	166	210	
Vert.	9648.000	AV	36.28	38.34	7.89	39.15	2.48	45.84	53.90	**8.0**	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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

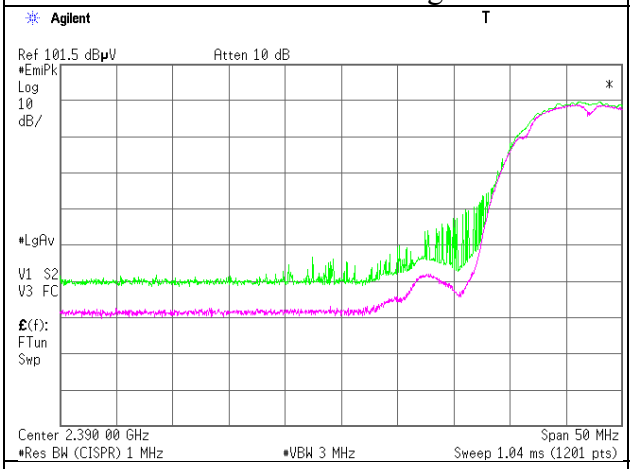
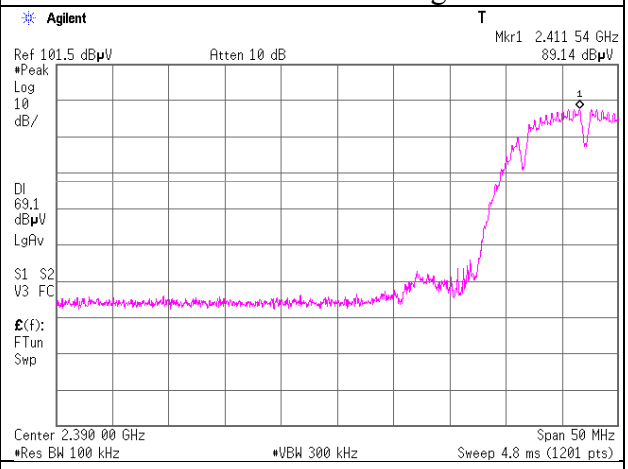
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	90.91	27.24	13.72	37.04	2.48	97.31	-	-	Carrier
Hori.	2400.000	PK	43.51	27.20	13.71	37.05	2.48	49.85	77.31	27.5	
Vert.	2412.000	PK	89.82	27.24	13.72	37.04	2.48	96.22	-	-	Carrier
Vert.	2400.000	PK	45.14	27.20	13.71	37.05	2.48	51.48	76.22	24.7	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

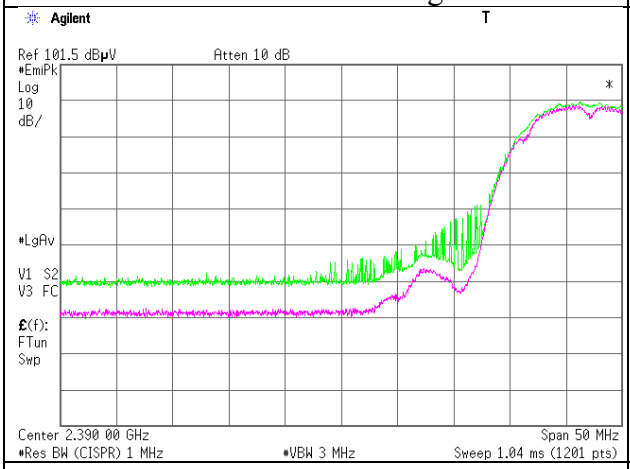
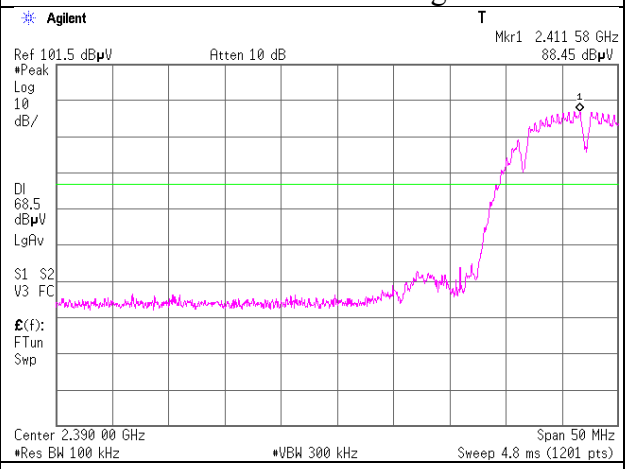
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11b 2412 MHz (Normal Power Mode)

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, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11b 2437 MHz (Normal Power Mode)		

(* 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	45.77	31.28	5.96	37.15	2.48	48.34	73.90	25.5	143	304	
Hori.	7311.000	PK	42.83	36.62	7.31	37.91	2.48	51.33	73.90	22.5	144	271	
Hori.	9748.000	PK	45.37	38.50	7.97	39.19	2.48	55.13	73.90	18.7	155	0	
Hori.	4874.000	AV	39.72	31.28	5.96	37.15	2.48	42.29	53.90	11.6	143	304	
Hori.	7311.000	AV	34.31	36.62	7.31	37.91	2.48	42.81	53.90	11.0	144	271	
Hori.	9748.000	AV	35.76	38.50	7.97	39.19	2.48	45.52	53.90	**8.3**	155	0	
Vert.	4874.000	PK	46.76	31.28	5.96	37.15	2.48	49.33	73.90	24.5	147	302	
Vert.	7311.000	PK	43.16	36.62	7.31	37.91	2.48	51.66	73.90	22.2	141	198	
Vert.	9748.000	PK	45.25	38.50	7.97	39.19	2.48	55.01	73.90	18.8	155	0	
Vert.	4874.000	AV	41.50	31.28	5.96	37.15	2.48	44.07	53.90	9.8	147	302	
Vert.	7311.000	AV	34.27	36.62	7.31	37.91	2.48	42.77	53.90	11.1	141	198	
Vert.	9748.000	AV	35.68	38.50	7.97	39.19	2.48	45.44	53.90	8.4	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11b 2462 MHz (Normal Power Mode)		

(* 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	46.44	27.49	13.79	37.01	2.48	53.19	73.90	20.7	176	227	
Hori.	4924.000	PK	45.61	31.38	5.99	37.18	2.48	48.28	73.90	25.6	153	130	
Hori.	7386.000	PK	43.47	36.75	7.37	37.96	2.48	52.11	73.90	21.7	169	239	
Hori.	9848.000	PK	45.86	38.65	8.06	39.23	2.48	55.82	73.90	18.0	155	0	
Hori.	2483.500	AV	33.43	27.49	13.79	37.01	2.48	40.18	53.90	13.7	176	227	
Hori.	4924.000	AV	40.12	31.38	5.99	37.18	2.48	42.79	53.90	11.1	153	130	
Hori.	7386.000	AV	34.38	36.75	7.37	37.96	2.48	43.02	53.90	10.8	169	239	
Hori.	9848.000	AV	35.48	38.65	8.06	39.23	2.48	45.44	53.90	**8.4**	155	0	
Vert.	2483.500	PK	45.53	27.49	13.79	37.01	2.48	52.28	73.90	21.6	188	145	
Vert.	4924.000	PK	46.33	31.38	5.99	37.18	2.48	49.00	73.90	24.9	140	304	
Vert.	7386.000	PK	43.16	36.75	7.37	37.96	2.48	51.80	73.90	22.1	141	185	
Vert.	9848.000	PK	46.22	38.65	8.06	39.23	2.48	56.18	73.90	17.7	155	0	
Vert.	2483.500	AV	33.23	27.49	13.79	37.01	2.48	39.98	53.90	13.9	188	145	
Vert.	4924.000	AV	40.12	31.38	5.99	37.18	2.48	42.79	53.90	11.1	140	304	
Vert.	7386.000	AV	34.04	36.75	7.37	37.96	2.48	42.68	53.90	11.2	141	185	
Vert.	9848.000	AV	35.32	38.65	8.06	39.23	2.48	45.28	53.90	8.6	155	0	

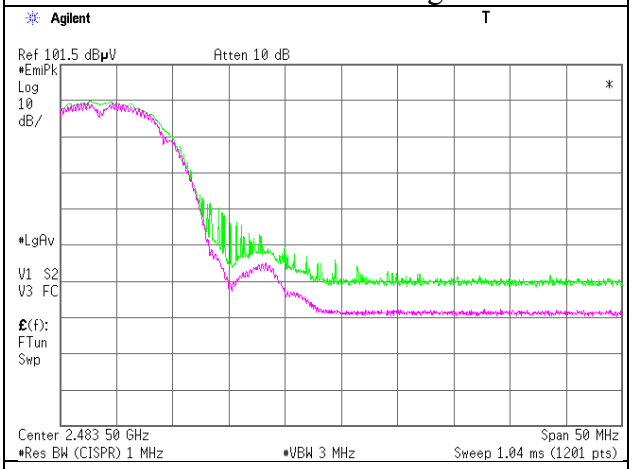
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11b 2462 MHz (Normal Power Mode)

Horizontal

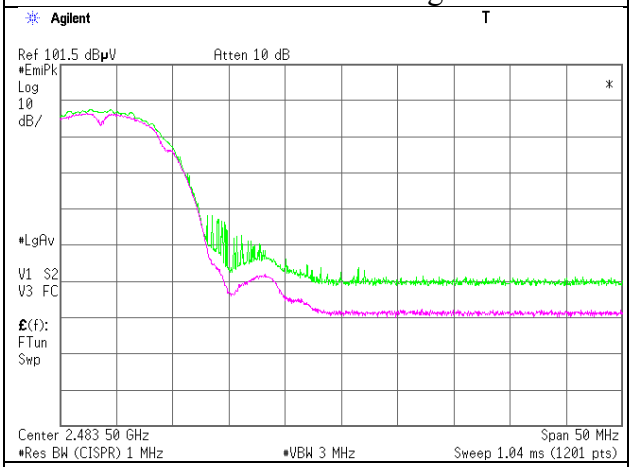
Restricted-band band-edge Plot



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. 2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11b 2412 MHz (Low Power Mode)	

(* 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	45.38	27.17	13.70	37.06	2.48	51.67	73.90	22.2	164	232	
Hori.	4824.000	PK	49.29	31.17	5.93	37.13	2.48	51.74	73.90	22.1	212	320	
Hori.	7236.000	PK	43.92	36.49	7.26	37.86	2.48	52.29	73.90	21.6	150	0	
Hori.	9648.000	PK	44.59	38.34	7.89	39.15	2.48	54.15	73.90	19.7	150	0	
Hori.	2390.000	AV	33.14	27.17	13.70	37.06	2.48	39.43	53.90	14.4	164	232	
Hori.	4824.000	AV	44.85	31.17	5.93	37.13	2.48	47.30	53.90	**6.6**	212	320	
Hori.	7236.000	AV	33.19	36.49	7.26	37.86	2.48	41.56	53.90	12.3	150	0	
Hori.	9648.000	AV	34.86	38.34	7.89	39.15	2.48	44.42	53.90	9.4	150	0	
Vert.	2390.000	PK	46.45	27.17	13.70	37.06	2.48	52.74	73.90	21.1	144	180	
Vert.	4824.000	PK	46.26	31.17	5.93	37.13	2.48	48.71	73.90	25.1	149	222	
Vert.	7236.000	PK	43.44	36.49	7.26	37.86	2.48	51.81	73.90	22.0	150	0	
Vert.	9648.000	PK	44.24	38.34	7.89	39.15	2.48	53.80	73.90	20.1	150	0	
Vert.	2390.000	AV	33.32	27.17	13.70	37.06	2.48	39.61	53.90	14.2	144	180	
Vert.	4824.000	AV	38.85	31.17	5.93	37.13	2.48	41.30	53.90	12.6	149	222	
Vert.	7236.000	AV	33.44	36.49	7.26	37.86	2.48	41.81	53.90	12.0	150	0	
Vert.	9648.000	AV	34.21	38.34	7.89	39.15	2.48	43.77	53.90	10.1	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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

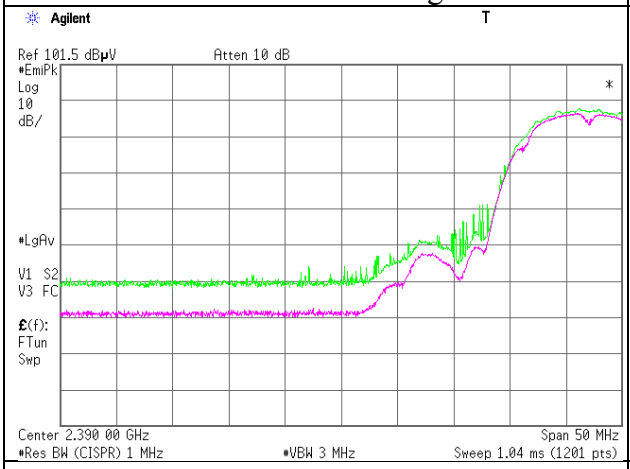
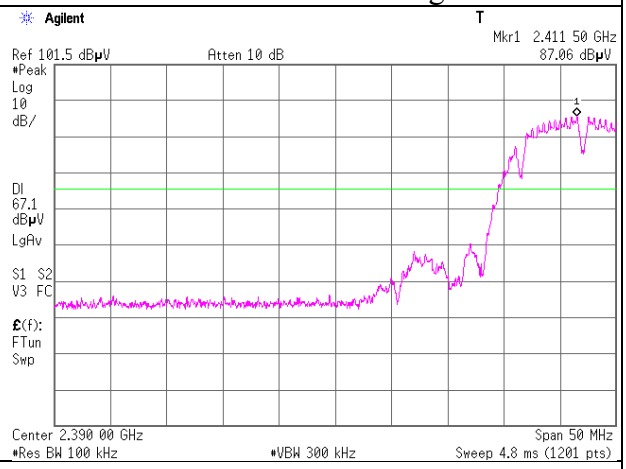
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	87.57	27.24	13.72	37.04	2.48	93.97	-	-	Carrier
Hori.	2400.000	PK	52.11	27.20	13.71	37.05	2.48	58.45	73.97	15.5	
Vert.	2412.000	PK	88.14	27.24	13.72	37.04	2.48	94.54	-	-	Carrier
Vert.	2400.000	PK	52.82	27.20	13.71	37.05	2.48	59.16	74.54	15.4	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

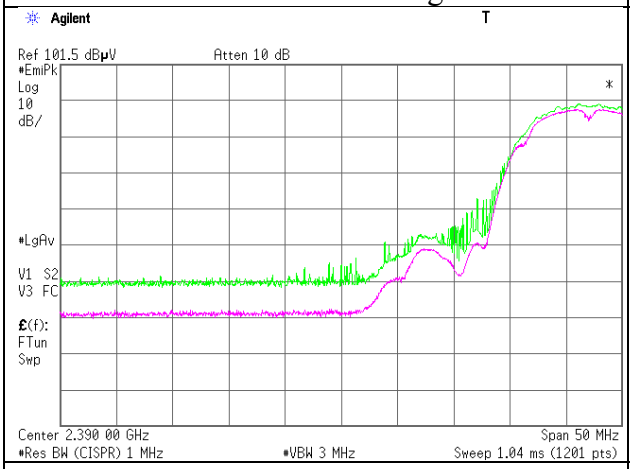
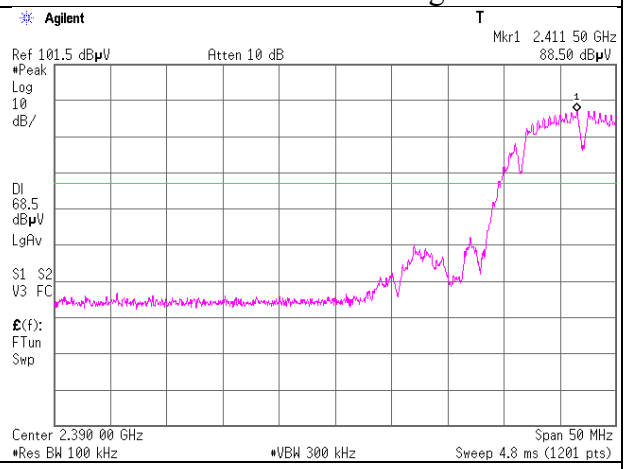
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11b 2412 MHz (Low Power Mode)

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. 2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11b 2437 MHz (Low Power Mode)	

(* 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	49.65	31.28	5.96	37.15	2.48	52.22	73.90	21.6	200	322	
Hori.	7311.000	PK	44.16	36.62	7.31	37.91	2.48	52.66	73.90	21.2	150	0	
Hori.	9748.000	PK	44.35	38.50	7.97	39.19	2.48	54.11	73.90	19.7	150	0	
Hori.	4874.000	AV	45.21	31.28	5.96	37.15	2.48	47.78	53.90	**6.1**	200	322	
Hori.	7311.000	AV	33.01	36.62	7.31	37.91	2.48	41.51	53.90	12.3	150	0	
Hori.	9748.000	AV	34.16	38.50	7.97	39.19	2.48	43.92	53.90	9.9	150	0	
Vert.	4874.000	PK	46.62	31.28	5.96	37.15	2.48	49.19	73.90	24.7	159	225	
Vert.	7311.000	PK	43.86	36.62	7.31	37.91	2.48	52.36	73.90	21.5	150	0	
Vert.	9748.000	PK	45.07	38.50	7.97	39.19	2.48	54.83	73.90	19.0	150	0	
Vert.	4874.000	AV	40.49	31.28	5.96	37.15	2.48	43.06	53.90	10.8	159	225	
Vert.	7311.000	AV	33.79	36.62	7.31	37.91	2.48	42.29	53.90	11.6	150	0	
Vert.	9748.000	AV	34.38	38.50	7.97	39.19	2.48	44.14	53.90	9.7	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11b 2462 MHz (Low Power Mode)	

(* 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	43.53	27.49	13.79	37.01	2.48	50.28	73.90	23.6	176	225	
Hori.	4924.000	PK	49.87	31.38	5.99	37.18	2.48	52.54	73.90	21.3	200	320	
Hori.	7386.000	PK	42.97	36.75	7.37	37.96	2.48	51.61	73.90	22.2	150	0	
Hori.	9848.000	PK	44.68	38.65	8.06	39.23	2.48	54.64	73.90	19.2	150	0	
Hori.	2483.500	AV	33.26	27.49	13.79	37.01	2.48	40.01	53.90	13.8	176	225	
Hori.	4924.000	AV	45.75	31.38	5.99	37.18	2.48	48.42	53.90	**5.4**	200	320	
Hori.	7386.000	AV	33.21	36.75	7.37	37.96	2.48	41.85	53.90	12.0	150	0	
Hori.	9848.000	AV	34.37	38.65	8.06	39.23	2.48	44.33	53.90	9.5	150	0	
Vert.	2483.500	PK	44.30	27.49	13.79	37.01	2.48	51.05	73.90	22.8	130	183	
Vert.	4924.000	PK	47.18	31.38	5.99	37.18	2.48	49.85	73.90	24.0	153	226	
Vert.	7386.000	PK	43.35	36.75	7.37	37.96	2.48	51.99	73.90	21.9	150	0	
Vert.	9848.000	PK	44.40	38.65	8.06	39.23	2.48	54.36	73.90	19.5	150	0	
Vert.	2483.500	AV	33.72	27.49	13.79	37.01	2.48	40.47	53.90	13.4	130	183	
Vert.	4924.000	AV	40.14	31.38	5.99	37.18	2.48	42.81	53.90	11.0	153	226	
Vert.	7386.000	AV	32.95	36.75	7.37	37.96	2.48	41.59	53.90	12.3	150	0	
Vert.	9848.000	AV	33.99	38.65	8.06	39.23	2.48	43.95	53.90	9.9	150	0	

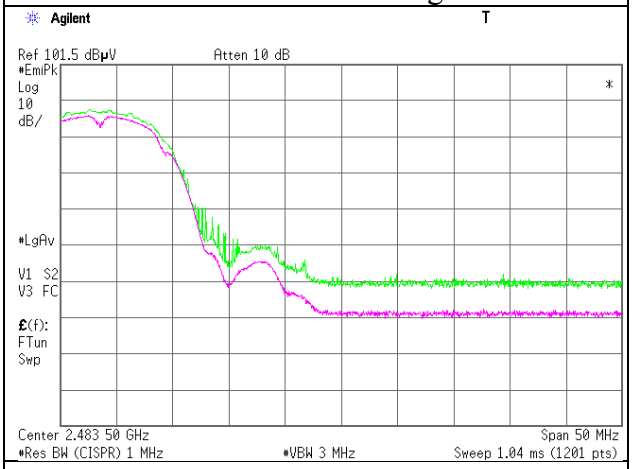
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11b 2462 MHz (Low Power Mode)

Horizontal

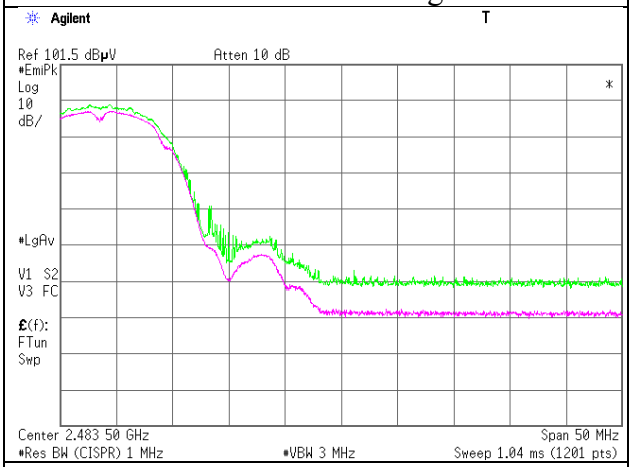
Restricted-band band-edge Plot



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.1,2 Semi Anechoic Chamber			
Report No.	11353342S-A-R2			
Test Place(AC No)	1	2	2	1
Date	September 8, 2016	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	23 deg. C / 75 % RH	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Hiroyuki Morikawa (30-1000 MHz)	Yosuke Ishikawa (1-2.8 GHz)	Takahiro Suzuki (2.8-13 GHz)	Yosuke Ishikawa (13-26 GHz)
Mode	Tx 11g 2412 MHz (Normal Power Mode)			

(* 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.	118.796	QP	48.00	12.49	8.15	31.79	0.00	36.85	43.50	6.6	261	209	
Hori.	166.291	QP	45.70	15.52	8.91	31.77	0.00	38.36	43.50	**5.1**	192	187	
Hori.	213.770	QP	43.80	16.41	9.27	31.75	0.00	37.73	43.50	5.7	155	11	
Hori.	220.050	QP	44.80	16.53	9.32	31.75	0.00	38.90	46.00	7.1	160	20	
Hori.	513.632	QP	45.30	17.60	7.87	31.92	0.00	38.85	46.00	7.1	206	245	
Hori.	546.081	QP	41.80	18.11	8.05	32.00	0.00	35.96	46.00	10.0	100	88	
Hori.	2390.000	PK	51.86	27.17	13.70	37.06	2.48	58.15	73.90	15.8	166	233	
Hori.	4824.000	PK	44.36	31.17	5.93	37.13	2.48	46.81	73.90	27.0	164	32	
Hori.	7236.000	PK	44.55	36.49	7.26	37.86	2.48	52.92	73.90	20.9	157	304	
Hori.	9648.000	PK	45.33	38.34	7.89	39.15	2.48	54.89	73.90	19.0	155	0	
Hori.	2390.000	AV	40.24	27.17	13.70	37.06	2.48	46.53	53.90	7.4	166	233	
Hori.	4824.000	AV	34.25	31.17	5.93	37.13	2.48	36.70	53.90	17.2	164	32	
Hori.	7236.000	AV	35.12	36.49	7.26	37.86	2.48	43.49	53.90	10.4	157	304	
Hori.	9648.000	AV	36.22	38.34	7.89	39.15	2.48	45.78	53.90	8.1	155	0	
Vert.	73.297	QP	48.30	5.92	7.80	31.81	0.00	30.21	40.00	9.7	100	289	
Vert.	118.804	QP	46.70	12.49	8.15	31.79	0.00	35.55	43.50	7.9	100	279	
Vert.	220.050	QP	38.60	16.53	9.32	31.75	0.00	32.70	46.00	13.3	100	270	
Vert.	513.619	QP	41.00	17.60	7.87	31.92	0.00	34.55	46.00	11.4	111	277	
Vert.	546.081	QP	39.70	18.11	8.05	32.00	0.00	33.86	46.00	12.1	110	256	
Vert.	2390.000	PK	53.53	27.17	13.70	37.06	2.48	59.82	73.90	14.1	144	186	
Vert.	4824.000	PK	43.71	31.17	5.93	37.13	2.48	46.16	73.90	27.7	179	85	
Vert.	7236.000	PK	44.30	36.49	7.26	37.86	2.48	52.67	73.90	21.2	165	274	
Vert.	9648.000	PK	45.11	38.34	7.89	39.15	2.48	54.67	73.90	19.2	155	0	
Vert.	2390.000	AV	40.15	27.17	13.70	37.06	2.48	46.44	53.90	7.5	144	186	
Vert.	4824.000	AV	34.13	31.17	5.93	37.13	2.48	36.58	53.90	17.3	179	85	
Vert.	7236.000	AV	35.02	36.49	7.26	37.86	2.48	43.39	53.90	10.5	165	274	
Vert.	9648.000	AV	36.21	38.34	7.89	39.15	2.48	45.77	53.90	8.1	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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

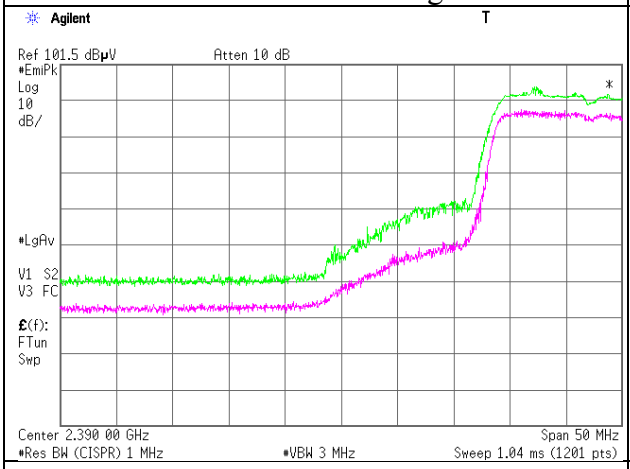
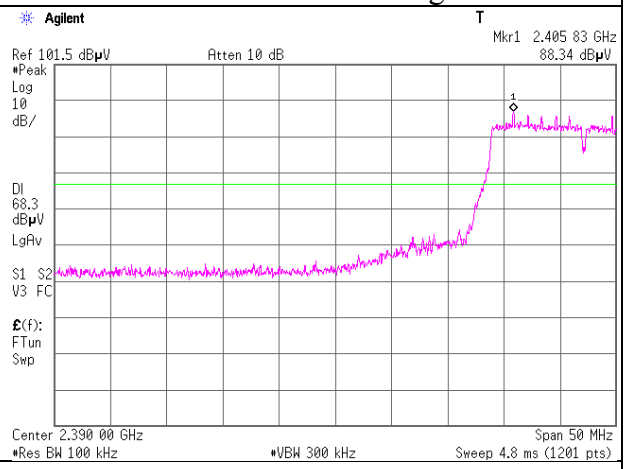
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	88.30	27.24	13.72	37.04	2.48	94.70	-	-	Carrier
Hori.	2400.000	PK	54.17	27.20	13.71	37.05	2.48	60.51	74.70	14.2	
Vert.	2412.000	PK	88.38	27.24	13.72	37.04	2.48	94.78	-	-	Carrier
Vert.	2400.000	PK	54.18	27.20	13.71	37.05	2.48	60.52	74.78	14.3	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

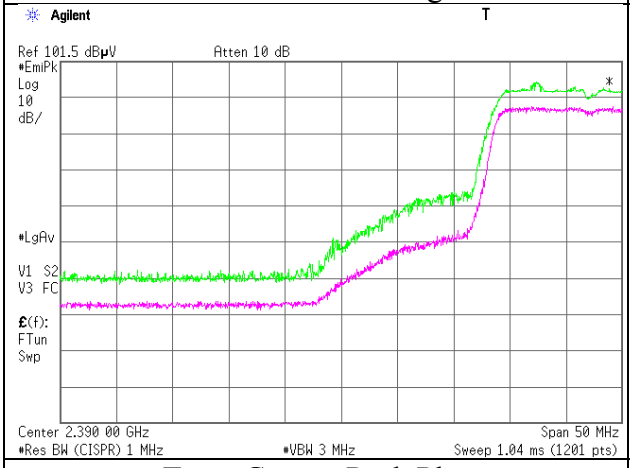
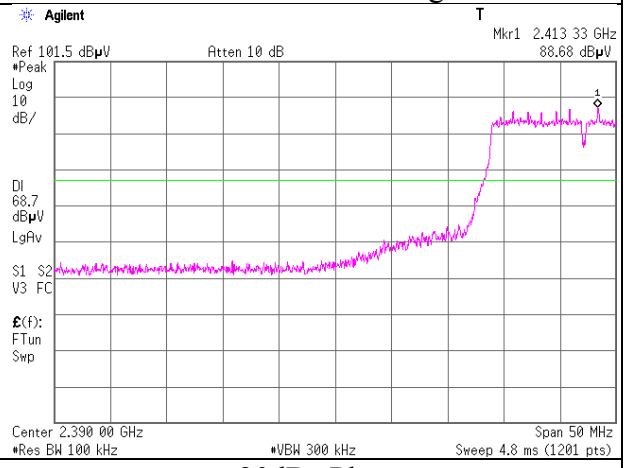
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11g 2412 MHz (Normal Power Mode)

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, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11g 2437 MHz (Normal Power Mode)		

(* 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	43.38	31.28	5.96	37.15	2.48	45.95	73.90	27.9	153	144	
Hori.	7311.000	PK	43.76	36.62	7.31	37.91	2.48	52.26	73.90	21.6	156	289	
Hori.	9748.000	PK	45.56	38.50	7.97	39.19	2.48	55.32	73.90	18.5	155	0	
Hori.	4874.000	AV	34.32	31.28	5.96	37.15	2.48	36.89	53.90	17.0	153	144	
Hori.	7311.000	AV	34.48	36.62	7.31	37.91	2.48	42.98	53.90	10.9	156	289	
Hori.	9748.000	AV	35.86	38.50	7.97	39.19	2.48	45.62	53.90	**8.2**	155	0	
Vert.	4874.000	PK	43.58	31.28	5.96	37.15	2.48	46.15	73.90	27.7	167	59	
Vert.	7311.000	PK	44.15	36.62	7.31	37.91	2.48	52.65	73.90	21.2	145	330	
Vert.	9748.000	PK	45.04	38.50	7.97	39.19	2.48	54.80	73.90	19.1	155	0	
Vert.	4874.000	AV	34.46	31.28	5.96	37.15	2.48	37.03	53.90	16.8	167	59	
Vert.	7311.000	AV	34.46	36.62	7.31	37.91	2.48	42.96	53.90	10.9	145	330	
Vert.	9748.000	AV	35.78	38.50	7.97	39.19	2.48	45.54	53.90	8.3	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor

Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB

13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11g 2462 MHz (Normal Power Mode)		

(* 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	53.68	27.49	13.79	37.01	2.48	60.43	73.90	13.4	147	240	
Hori.	4924.000	PK	43.82	31.38	5.99	37.18	2.48	46.49	73.90	27.4	167	313	
Hori.	7386.000	PK	43.65	36.75	7.37	37.96	2.48	52.29	73.90	21.6	152	104	
Hori.	9848.000	PK	45.31	38.65	8.06	39.23	2.48	55.27	73.90	18.6	155	0	
Hori.	2483.500	AV	40.97	27.49	13.79	37.01	2.48	47.72	53.90	**6.1**	147	240	
Hori.	4924.000	AV	34.68	31.38	5.99	37.18	2.48	37.35	53.90	16.5	167	313	
Hori.	7386.000	AV	34.37	36.75	7.37	37.96	2.48	43.01	53.90	10.8	152	104	
Hori.	9848.000	AV	35.43	38.65	8.06	39.23	2.48	45.39	53.90	8.5	155	0	
Vert.	2483.500	PK	51.48	27.49	13.79	37.01	2.48	58.23	73.90	15.6	137	187	
Vert.	4924.000	PK	44.22	31.38	5.99	37.18	2.48	46.89	73.90	27.0	176	316	
Vert.	7386.000	PK	43.30	36.75	7.37	37.96	2.48	51.94	73.90	21.9	167	283	
Vert.	9848.000	PK	45.81	38.65	8.06	39.23	2.48	55.77	73.90	18.1	155	0	
Vert.	2483.500	AV	38.58	27.49	13.79	37.01	2.48	45.33	53.90	8.5	137	187	
Vert.	4924.000	AV	34.58	31.38	5.99	37.18	2.48	37.25	53.90	16.6	176	316	
Vert.	7386.000	AV	34.38	36.75	7.37	37.96	2.48	43.02	53.90	10.8	167	283	
Vert.	9848.000	AV	35.43	38.65	8.06	39.23	2.48	45.39	53.90	8.5	155	0	

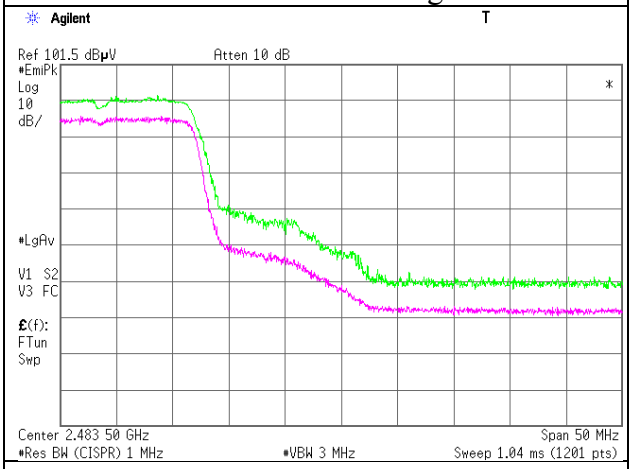
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11g 2462 MHz (Normal Power Mode)

Horizontal

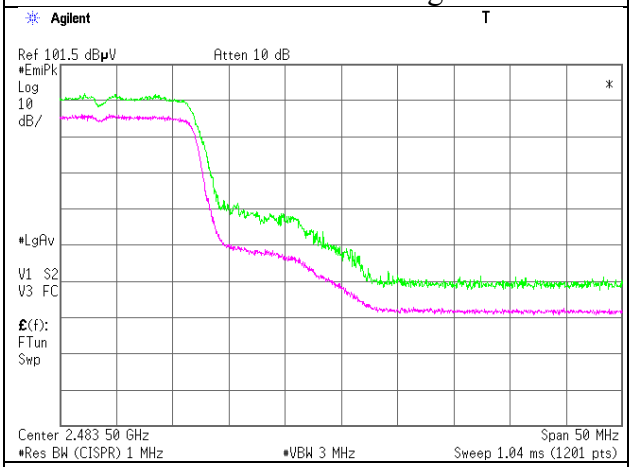
Restricted-band band-edge Plot



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.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11g 2412 MHz (Low Power Mode)	

(* 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	52.36	27.17	13.70	37.06	2.48	58.65	73.90	15.2	171	228	
Hori.	4824.000	PK	44.99	31.17	5.93	37.13	2.48	47.44	73.90	26.4	200	323	
Hori.	7236.000	PK	43.84	36.49	7.26	37.86	2.48	52.21	73.90	21.6	150	0	
Hori.	9648.000	PK	44.97	38.34	7.89	39.15	2.48	54.53	73.90	19.3	150	0	
Hori.	2390.000	AV	40.12	27.17	13.70	37.06	2.48	46.41	53.90	**7.4**	171	228	
Hori.	4824.000	AV	35.12	31.17	5.93	37.13	2.48	37.57	53.90	16.3	200	323	
Hori.	7236.000	AV	33.36	36.49	7.26	37.86	2.48	41.73	53.90	12.1	150	0	
Hori.	9648.000	AV	34.32	38.34	7.89	39.15	2.48	43.88	53.90	10.0	150	0	
Vert.	2390.000	PK	53.26	27.17	13.70	37.06	2.48	59.55	73.90	14.3	126	185	
Vert.	4824.000	PK	43.84	31.17	5.93	37.13	2.48	46.29	73.90	27.6	147	290	
Vert.	7236.000	PK	43.88	36.49	7.26	37.86	2.48	52.25	73.90	21.6	150	0	
Vert.	9648.000	PK	45.33	38.34	7.89	39.15	2.48	54.89	73.90	19.0	150	0	
Vert.	2390.000	AV	40.16	27.17	13.70	37.06	2.48	46.45	53.90	**7.4**	126	185	
Vert.	4824.000	AV	33.51	31.17	5.93	37.13	2.48	35.96	53.90	17.9	147	290	
Vert.	7236.000	AV	33.39	36.49	7.26	37.86	2.48	41.76	53.90	12.1	150	0	
Vert.	9648.000	AV	34.70	38.34	7.89	39.15	2.48	44.26	53.90	9.6	150	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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

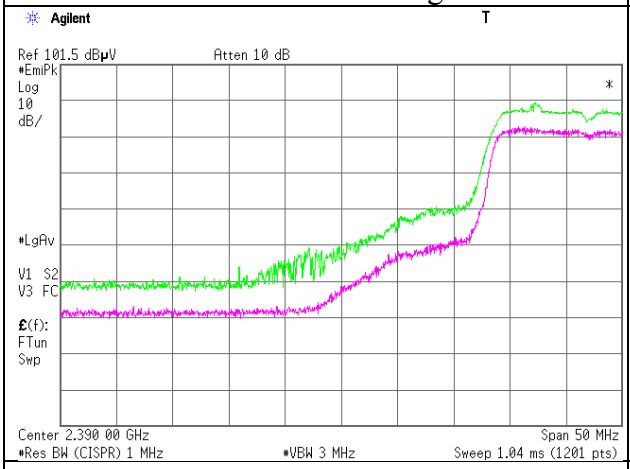
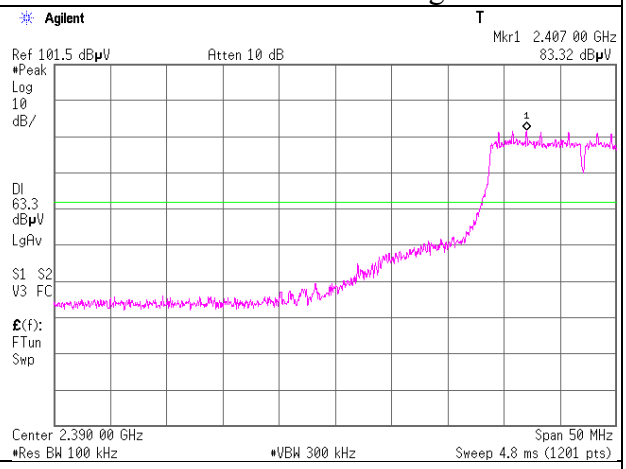
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	83.24	27.24	13.72	37.04	2.48	89.64	-	-	Carrier
Hori.	2400.000	PK	52.18	27.20	13.71	37.05	2.48	58.52	69.64	11.1	
Vert.	2412.000	PK	83.11	27.24	13.72	37.04	2.48	89.51	-	-	Carrier
Vert.	2400.000	PK	53.53	27.20	13.71	37.05	2.48	59.87	69.51	9.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

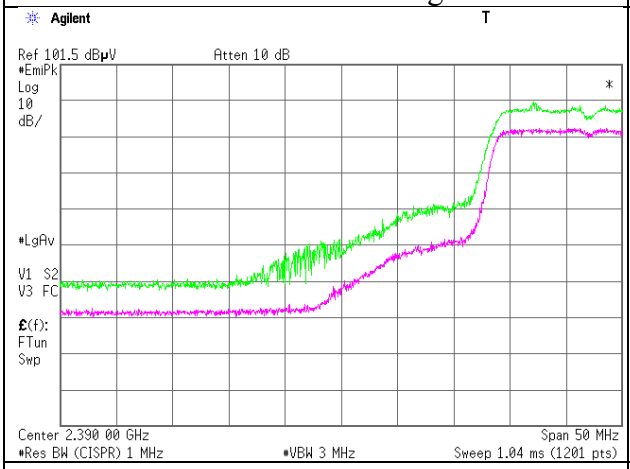
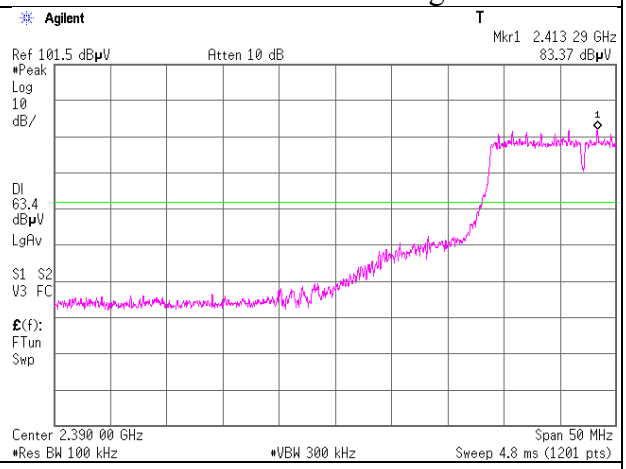
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11g 2412 MHz (Low Power Mode)

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.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11g 2437 MHz (Low Power Mode)	

(* 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	43.38	31.28	5.96	37.15	2.48	45.95	73.90	27.9	153	144	
Hori.	7311.000	PK	43.76	36.62	7.31	37.91	2.48	52.26	73.90	21.6	156	289	
Hori.	9748.000	PK	45.56	38.50	7.97	39.19	2.48	55.32	73.90	18.5	155	0	
Hori.	4874.000	AV	34.32	31.28	5.96	37.15	2.48	36.89	53.90	17.0	153	144	
Hori.	7311.000	AV	34.48	36.62	7.31	37.91	2.48	42.98	53.90	10.9	156	289	
Hori.	9748.000	AV	35.86	38.50	7.97	39.19	2.48	45.62	53.90	**8.2**	155	0	
Vert.	4874.000	PK	43.58	31.28	5.96	37.15	2.48	46.15	73.90	27.7	167	59	
Vert.	7311.000	PK	44.15	36.62	7.31	37.91	2.48	52.65	73.90	21.2	145	330	
Vert.	9748.000	PK	45.04	38.50	7.97	39.19	2.48	54.80	73.90	19.1	155	0	
Vert.	4874.000	AV	34.46	31.28	5.96	37.15	2.48	37.03	53.90	16.8	167	59	
Vert.	7311.000	AV	34.46	36.62	7.31	37.91	2.48	42.96	53.90	10.9	145	330	
Vert.	9748.000	AV	35.78	38.50	7.97	39.19	2.48	45.54	53.90	8.3	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11g 2462 MHz (Low Power Mode)	

(* 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	53.68	27.49	13.79	37.01	2.48	60.43	73.90	13.4	147	240	
Hori.	4924.000	PK	43.82	31.38	5.99	37.18	2.48	46.49	73.90	27.4	167	313	
Hori.	7386.000	PK	43.65	36.75	7.37	37.96	2.48	52.29	73.90	21.6	152	104	
Hori.	9848.000	PK	45.31	38.65	8.06	39.23	2.48	55.27	73.90	18.6	155	0	
Hori.	2483.500	AV	40.97	27.49	13.79	37.01	2.48	47.72	53.90	**6.1**	147	240	
Hori.	4924.000	AV	34.68	31.38	5.99	37.18	2.48	37.35	53.90	16.5	167	313	
Hori.	7386.000	AV	34.37	36.75	7.37	37.96	2.48	43.01	53.90	10.8	152	104	
Hori.	9848.000	AV	35.43	38.65	8.06	39.23	2.48	45.39	53.90	8.5	155	0	
Vert.	2483.500	PK	51.48	27.49	13.79	37.01	2.48	58.23	73.90	15.6	137	187	
Vert.	4924.000	PK	44.22	31.38	5.99	37.18	2.48	46.89	73.90	27.0	176	316	
Vert.	7386.000	PK	43.30	36.75	7.37	37.96	2.48	51.94	73.90	21.9	167	283	
Vert.	9848.000	PK	45.81	38.65	8.06	39.23	2.48	55.77	73.90	18.1	155	0	
Vert.	2483.500	AV	38.58	27.49	13.79	37.01	2.48	45.33	53.90	8.5	137	187	
Vert.	4924.000	AV	34.58	31.38	5.99	37.18	2.48	37.25	53.90	16.6	176	316	
Vert.	7386.000	AV	34.38	36.75	7.37	37.96	2.48	43.02	53.90	10.8	167	283	
Vert.	9848.000	AV	35.43	38.65	8.06	39.23	2.48	45.39	53.90	8.5	155	0	

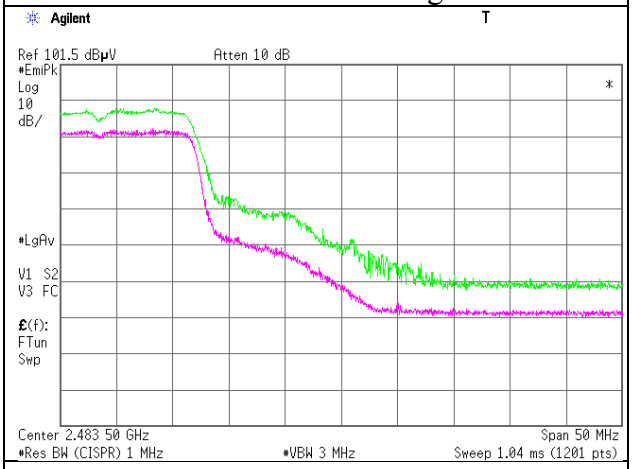
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11g 2462 MHz (Low Power Mode)

Horizontal

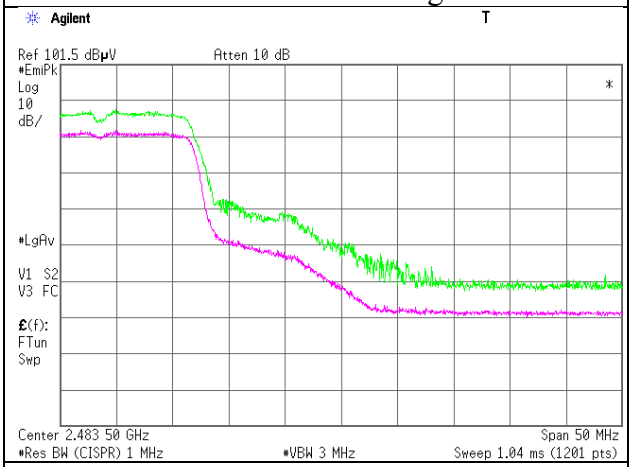
Restricted-band band-edge Plot



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.1,2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa	Takahiro Suzuki	Yosuke Ishikawa
	(1-2.8 GHz)	(2.8-13 GHz)	(13-26 GHz)
Mode	Tx 11n-20 2412 MHz (Normal Power Mode)		

(* 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	54.57	27.17	13.70	37.06	2.48	60.86	73.90	13.0	165	233	
Hori.	4824.000	PK	45.74	31.17	5.93	37.13	2.48	48.19	73.90	25.7	167	319	
Hori.	7236.000	PK	44.93	36.49	7.26	37.86	2.48	53.30	73.90	20.6	167	97	
Hori.	9648.000	PK	45.45	38.34	7.89	39.15	2.48	55.01	73.90	18.8	155	0	
Hori.	2390.000	AV	42.21	27.17	13.70	37.06	2.48	48.50	53.90	5.4	165	233	
Hori.	4824.000	AV	35.63	31.17	5.93	37.13	2.48	38.08	53.90	15.8	167	319	
Hori.	7236.000	AV	35.11	36.49	7.26	37.86	2.48	43.48	53.90	10.4	167	97	
Hori.	9648.000	AV	36.00	38.34	7.89	39.15	2.48	45.56	53.90	8.3	155	0	
Vert.	2390.000	PK	57.55	27.17	13.70	37.06	2.48	63.84	73.90	10.0	159	182	
Vert.	4824.000	PK	45.33	31.17	5.93	37.13	2.48	47.78	73.90	26.1	164	299	
Vert.	7236.000	PK	44.26	36.49	7.26	37.86	2.48	52.63	73.90	21.2	153	83	
Vert.	9648.000	PK	45.56	38.34	7.89	39.15	2.48	55.12	73.90	18.7	155	0	
Vert.	2390.000	AV	44.31	27.17	13.70	37.06	2.48	50.60	53.90	**3.3**	159	182	
Vert.	4824.000	AV	34.76	31.17	5.93	37.13	2.48	37.21	53.90	16.6	164	299	
Vert.	7236.000	AV	35.15	36.49	7.26	37.86	2.48	43.52	53.90	10.3	153	83	
Vert.	9648.000	AV	36.25	38.34	7.89	39.15	2.48	45.81	53.90	8.0	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

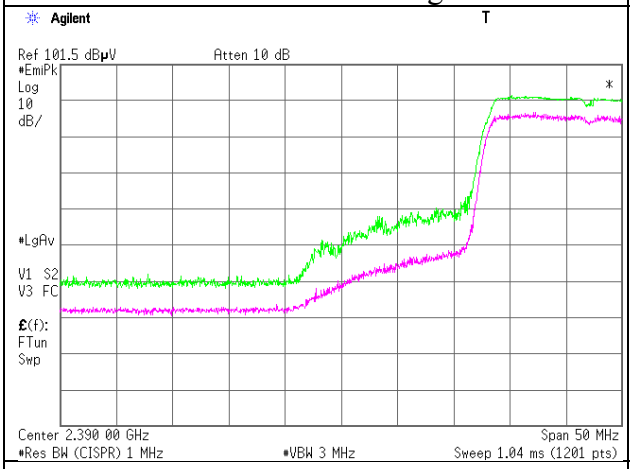
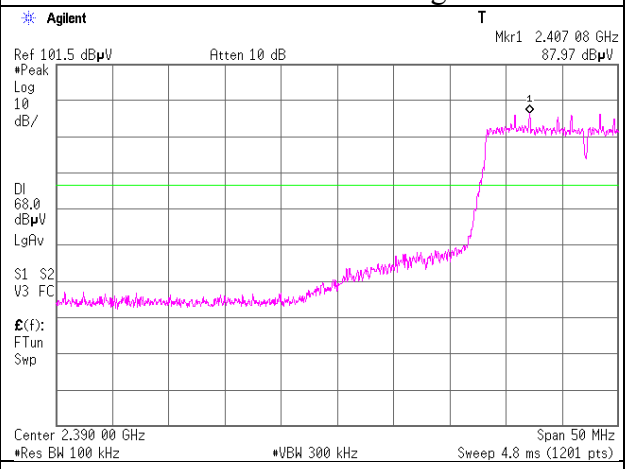
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

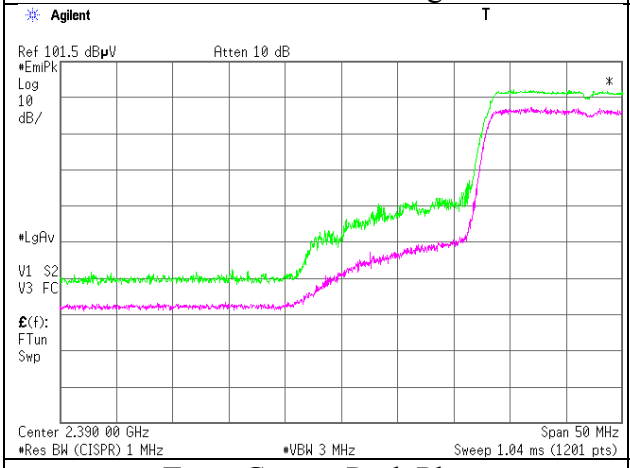
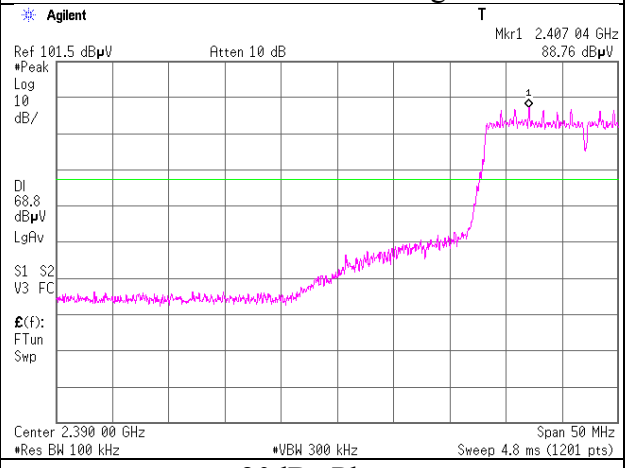
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	87.84	27.24	13.72	37.04	2.48	94.24	-	-	Carrier
Hori.	2400.000	PK	51.47	27.20	13.71	37.05	2.48	57.81	74.24	16.4	
Vert.	2412.000	PK	88.12	27.24	13.72	37.04	2.48	94.52	-	-	Carrier
Vert.	2400.000	PK	52.33	27.20	13.71	37.05	2.48	58.67	74.52	15.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11n-20 2412 MHz (Normal Power Mode)

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, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11n-20 2437 MHz (Normal Power Mode)		

(* 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	44.36	31.28	5.96	37.15	2.48	46.93	73.90	26.9	155	141	
Hori.	7311.000	PK	44.11	36.62	7.31	37.91	2.48	52.61	73.90	21.2	167	218	
Hori.	9748.000	PK	45.43	38.50	7.97	39.19	2.48	55.19	73.90	18.7	155	0	
Hori.	4874.000	AV	34.53	31.28	5.96	37.15	2.48	37.10	53.90	16.8	155	141	
Hori.	7311.000	AV	34.23	36.62	7.31	37.91	2.48	42.73	53.90	11.1	167	218	
Hori.	9748.000	AV	36.00	38.50	7.97	39.19	2.48	45.76	53.90	**8.1**	155	0	
Vert.	4874.000	PK	44.31	31.28	5.96	37.15	2.48	46.88	73.90	27.0	165	86	
Vert.	7311.000	PK	43.62	36.62	7.31	37.91	2.48	52.12	73.90	21.7	165	222	
Vert.	9748.000	PK	45.43	38.50	7.97	39.19	2.48	55.19	73.90	18.7	155	0	
Vert.	4874.000	AV	34.11	31.28	5.96	37.15	2.48	36.68	53.90	17.2	165	86	
Vert.	7311.000	AV	34.45	36.62	7.31	37.91	2.48	42.95	53.90	10.9	165	222	
Vert.	9748.000	AV	35.63	38.50	7.97	39.19	2.48	45.39	53.90	8.5	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2 Semi Anechoic Chamber		
Report No.	11353342S-A-R2		
Test Place(AC No)	2	2	1
Date	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Takahiro Suzuki (2.8-13GHz)	Yosuke Ishikawa (13-26GHz)
Mode	Tx 11n-20 2462 MHz (Normal Power Mode)		

(* 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	58.32	27.49	13.79	37.01	2.48	65.07	73.90	8.8	189	226	
Hori.	4924.000	PK	43.63	31.38	5.99	37.18	2.48	46.30	73.90	27.6	137	22	
Hori.	7386.000	PK	43.52	36.75	7.37	37.96	2.48	52.16	73.90	21.7	146	198	
Hori.	9848.000	PK	45.54	38.65	8.06	39.23	2.48	55.50	73.90	18.4	155	0	
Hori.	2483.500	AV	42.63	27.49	13.79	37.01	2.48	49.38	53.90	4.5	189	226	
Hori.	4924.000	AV	34.68	31.38	5.99	37.18	2.48	37.35	53.90	16.5	137	22	
Hori.	7386.000	AV	34.26	36.75	7.37	37.96	2.48	42.90	53.90	11.0	146	198	
Hori.	9848.000	AV	35.44	38.65	8.06	39.23	2.48	45.40	53.90	8.5	155	0	
Vert.	2483.500	PK	60.68	27.49	13.79	37.01	2.48	67.43	73.90	6.4	131	179	
Vert.	4924.000	PK	43.48	31.38	5.99	37.18	2.48	46.15	73.90	27.7	167	280	
Vert.	7386.000	PK	44.30	36.75	7.37	37.96	2.48	52.94	73.90	20.9	152	316	
Vert.	9848.000	PK	45.24	38.65	8.06	39.23	2.48	55.20	73.90	18.7	155	0	
Vert.	2483.500	AV	43.31	27.49	13.79	37.01	2.48	50.06	53.90	**3.8**	131	179	
Vert.	4924.000	AV	34.12	31.38	5.99	37.18	2.48	36.79	53.90	17.1	167	280	
Vert.	7386.000	AV	34.13	36.75	7.37	37.96	2.48	42.77	53.90	11.1	152	316	
Vert.	9848.000	AV	35.56	38.65	8.06	39.23	2.48	45.52	53.90	8.3	155	0	

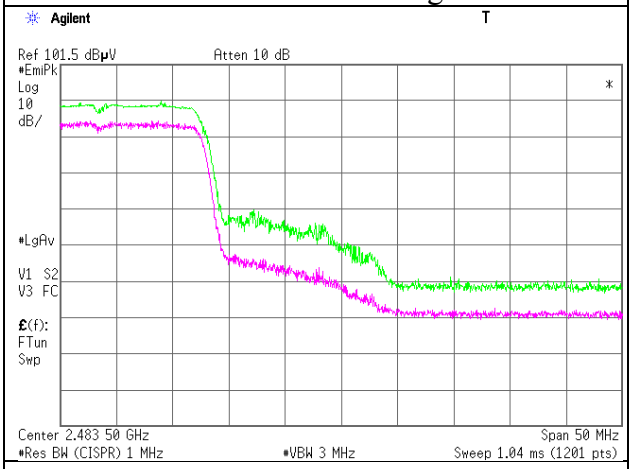
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11n-20 2462 MHz (Normal Power Mode)

Horizontal

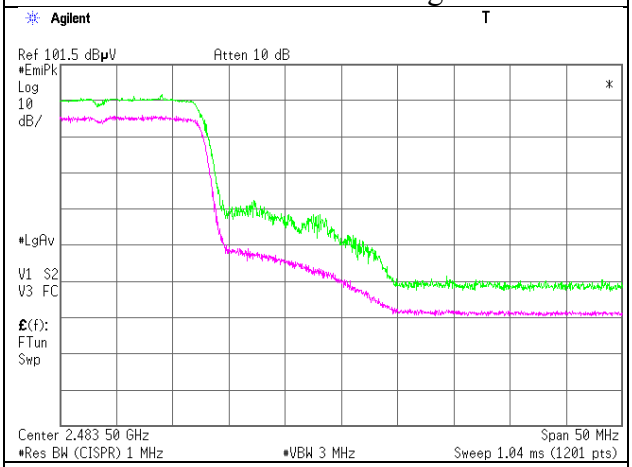
Restricted-band band-edge Plot



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.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11n-20 2412 MHz (Low Power Mode)	

(* 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	54.57	27.17	13.70	37.06	2.48	60.86	73.90	13.0	165	233	
Hori.	4824.000	PK	45.74	31.17	5.93	37.13	2.48	48.19	73.90	25.7	167	319	
Hori.	7236.000	PK	44.93	36.49	7.26	37.86	2.48	53.30	73.90	20.6	167	97	
Hori.	9648.000	PK	45.45	38.34	7.89	39.15	2.48	55.01	73.90	18.8	155	0	
Hori.	2390.000	AV	42.21	27.17	13.70	37.06	2.48	48.50	53.90	5.4	165	233	
Hori.	4824.000	AV	35.63	31.17	5.93	37.13	2.48	38.08	53.90	15.8	167	319	
Hori.	7236.000	AV	35.11	36.49	7.26	37.86	2.48	43.48	53.90	10.4	167	97	
Hori.	9648.000	AV	36.00	38.34	7.89	39.15	2.48	45.56	53.90	8.3	155	0	
Vert.	2390.000	PK	57.55	27.17	13.70	37.06	2.48	63.84	73.90	10.0	159	182	
Vert.	4824.000	PK	45.33	31.17	5.93	37.13	2.48	47.78	73.90	26.1	164	299	
Vert.	7236.000	PK	44.26	36.49	7.26	37.86	2.48	52.63	73.90	21.2	153	83	
Vert.	9648.000	PK	45.56	38.34	7.89	39.15	2.48	55.12	73.90	18.7	155	0	
Vert.	2390.000	AV	44.31	27.17	13.70	37.06	2.48	50.60	53.90	**3.3**	159	182	
Vert.	4824.000	AV	34.76	31.17	5.93	37.13	2.48	37.21	53.90	16.6	164	299	
Vert.	7236.000	AV	35.15	36.49	7.26	37.86	2.48	43.52	53.90	10.3	153	83	
Vert.	9648.000	AV	36.25	38.34	7.89	39.15	2.48	45.81	53.90	8.0	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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

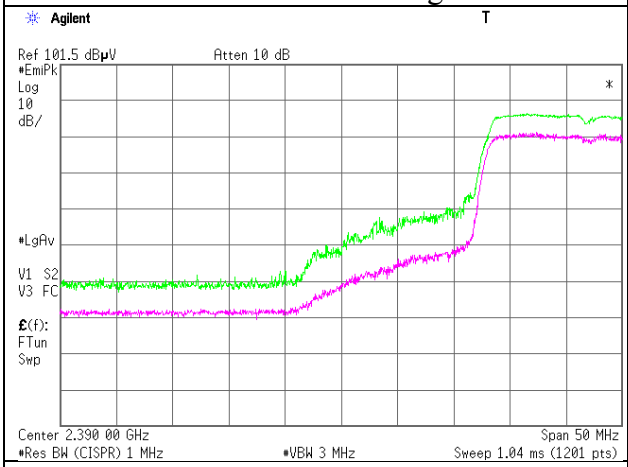
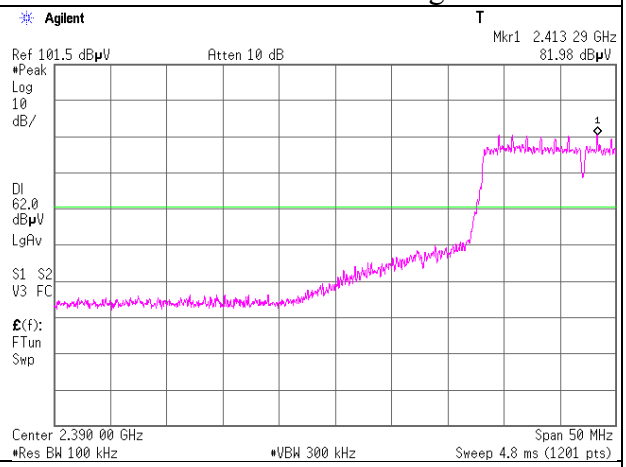
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	87.84	27.24	13.72	37.04	2.48	94.24	-	-	Carrier
Hori.	2400.000	PK	51.47	27.20	13.71	37.05	2.48	57.81	74.24	16.4	
Vert.	2412.000	PK	88.12	27.24	13.72	37.04	2.48	94.52	-	-	Carrier
Vert.	2400.000	PK	52.33	27.20	13.71	37.05	2.48	58.67	74.52	15.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

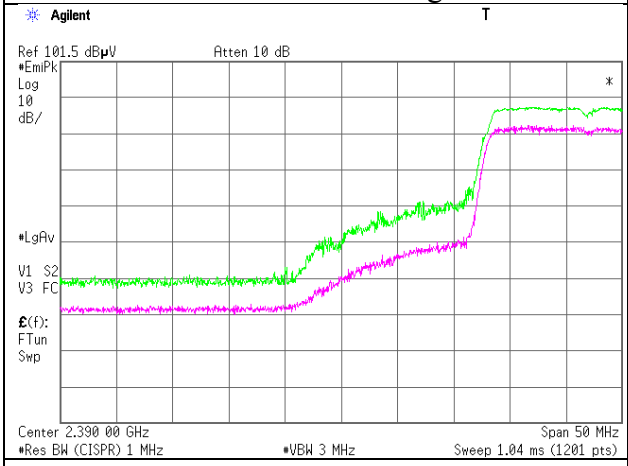
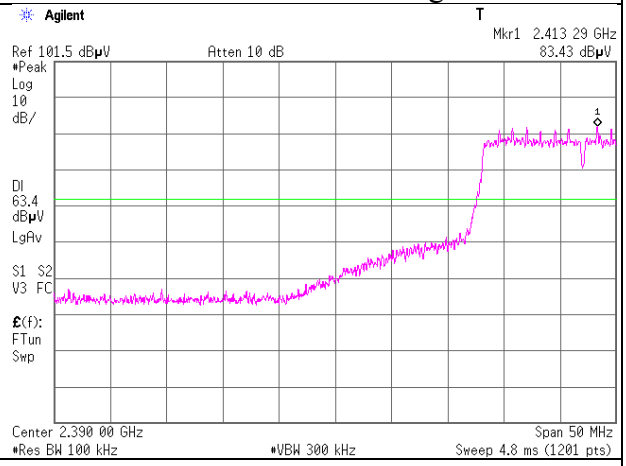
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11n-20 2412 MHz (Low Power Mode)

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.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11n-20 2437 MHz (Low Power Mode)	

(* 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	44.36	31.28	5.96	37.15	2.48	46.93	73.90	26.9	155	141	
Hori.	7311.000	PK	44.11	36.62	7.31	37.91	2.48	52.61	73.90	21.2	167	218	
Hori.	9748.000	PK	45.43	38.50	7.97	39.19	2.48	55.19	73.90	18.7	155	0	
Hori.	4874.000	AV	34.53	31.28	5.96	37.15	2.48	37.10	53.90	16.8	155	141	
Hori.	7311.000	AV	34.23	36.62	7.31	37.91	2.48	42.73	53.90	11.1	167	218	
Hori.	9748.000	AV	36.00	38.50	7.97	39.19	2.48	45.76	53.90	**8.1**	155	0	
Vert.	4874.000	PK	44.31	31.28	5.96	37.15	2.48	46.88	73.90	27.0	165	86	
Vert.	7311.000	PK	43.62	36.62	7.31	37.91	2.48	52.12	73.90	21.7	165	222	
Vert.	9748.000	PK	45.43	38.50	7.97	39.19	2.48	55.19	73.90	18.7	155	0	
Vert.	4874.000	AV	34.11	31.28	5.96	37.15	2.48	36.68	53.90	17.2	165	86	
Vert.	7311.000	AV	34.45	36.62	7.31	37.91	2.48	42.95	53.90	10.9	165	222	
Vert.	9748.000	AV	35.63	38.50	7.97	39.19	2.48	45.39	53.90	8.5	155	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	11353342S-A-R2	
Date	September 3, 2016	September 6, 2016
Temperature / Humidity	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)	Yasumasa Ohwaki (2.8-13GHz)
Mode	Tx 11n-20 2462 MHz (Low Power Mode)	

(* 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	58.32	27.49	13.79	37.01	2.48	65.07	73.90	8.8	189	226	
Hori.	4924.000	PK	43.63	31.38	5.99	37.18	2.48	46.30	73.90	27.6	137	22	
Hori.	7386.000	PK	43.52	36.75	7.37	37.96	2.48	52.16	73.90	21.7	146	198	
Hori.	9848.000	PK	45.54	38.65	8.06	39.23	2.48	55.50	73.90	18.4	155	0	
Hori.	2483.500	AV	42.63	27.49	13.79	37.01	2.48	49.38	53.90	4.5	189	226	
Hori.	4924.000	AV	34.68	31.38	5.99	37.18	2.48	37.35	53.90	16.5	137	22	
Hori.	7386.000	AV	34.26	36.75	7.37	37.96	2.48	42.90	53.90	11.0	146	198	
Hori.	9848.000	AV	35.44	38.65	8.06	39.23	2.48	45.40	53.90	8.5	155	0	
Vert.	2483.500	PK	60.68	27.49	13.79	37.01	2.48	67.43	73.90	6.4	131	179	
Vert.	4924.000	PK	43.48	31.38	5.99	37.18	2.48	46.15	73.90	27.7	167	280	
Vert.	7386.000	PK	44.30	36.75	7.37	37.96	2.48	52.94	73.90	20.9	152	316	
Vert.	9848.000	PK	45.24	38.65	8.06	39.23	2.48	55.20	73.90	18.7	155	0	
Vert.	2483.500	AV	43.31	27.49	13.79	37.01	2.48	50.06	53.90	**3.8**	131	179	
Vert.	4924.000	AV	34.12	31.38	5.99	37.18	2.48	36.79	53.90	17.1	167	280	
Vert.	7386.000	AV	34.13	36.75	7.37	37.96	2.48	42.77	53.90	11.1	152	316	
Vert.	9848.000	AV	35.56	38.65	8.06	39.23	2.48	45.52	53.90	8.3	155	0	

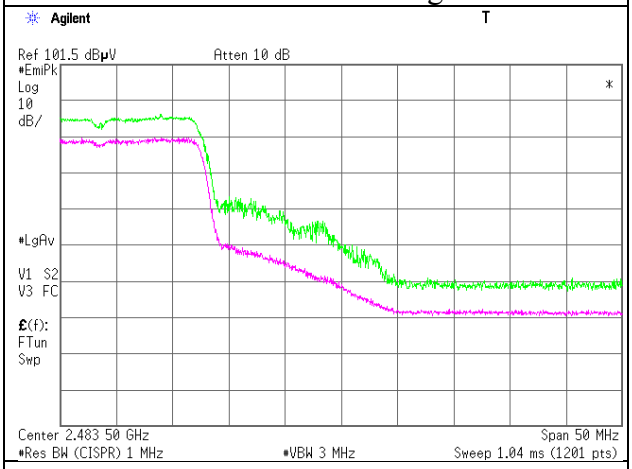
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11353342S-A-R2
Date	September 3, 2016
Temperature / Humidity	22 deg. C / 62 % RH
Engineer	Yosuke Ishikawa (1-2.8GHz)
Mode	Tx 11n-20 2462 MHz (Low Power Mode)

Horizontal

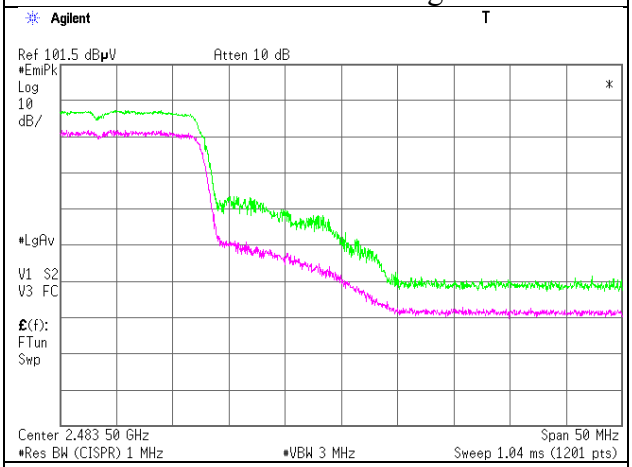
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

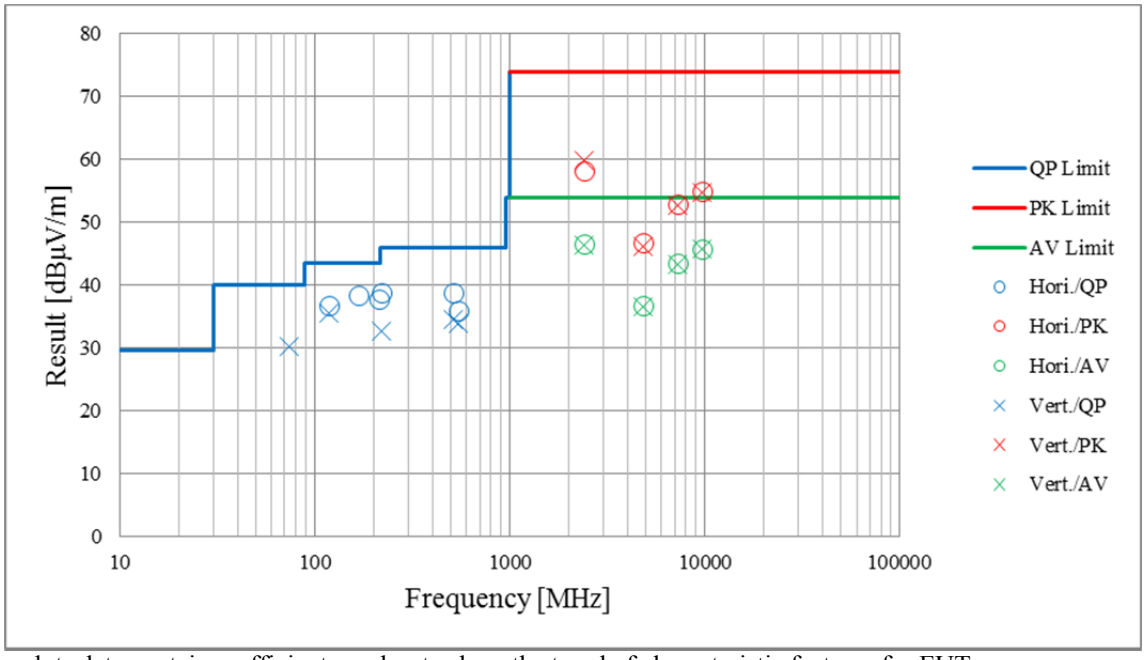


Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.1,2 Semi Anechoic Chamber			
Report No.	11353342S-A-R2			
Test Place(AC No)	1	2	2	1
Date	September 8, 2016	September 3, 2016	September 4, 2016	September 7, 2016
Temperature / Humidity	23 deg. C / 75 % RH	22 deg. C / 62 % RH	22 deg. C / 62 % RH	23 deg. C / 61 % RH
Engineer	Hiroyuki Morikawa (30-1000 MHz)	Yosuke Ishikawa (1-2.8 GHz)	Takahiro Suzuki (2.8-13 GHz)	Yosuke Ishikawa (13-26 GHz)
Mode	Tx 11g 2412 MHz (Normal Power Mode)			



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

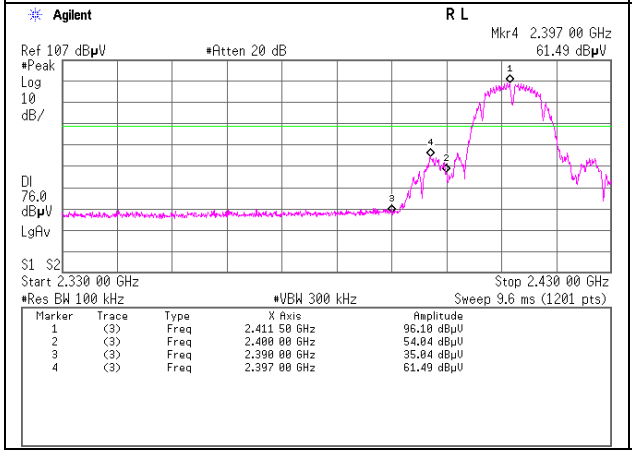
Band Edge confirmation

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

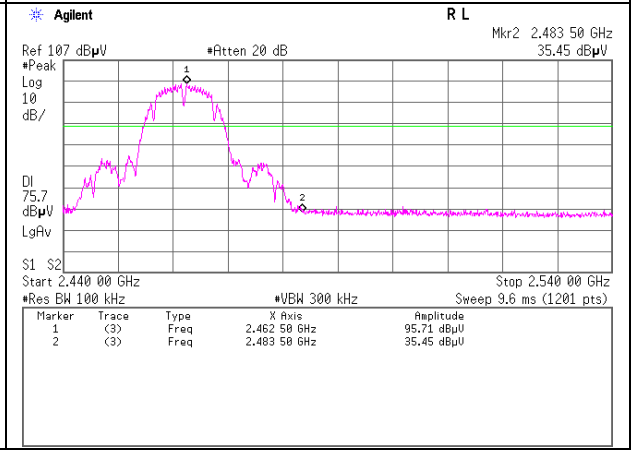
[Normal Power mode]

11b

2412 MHz

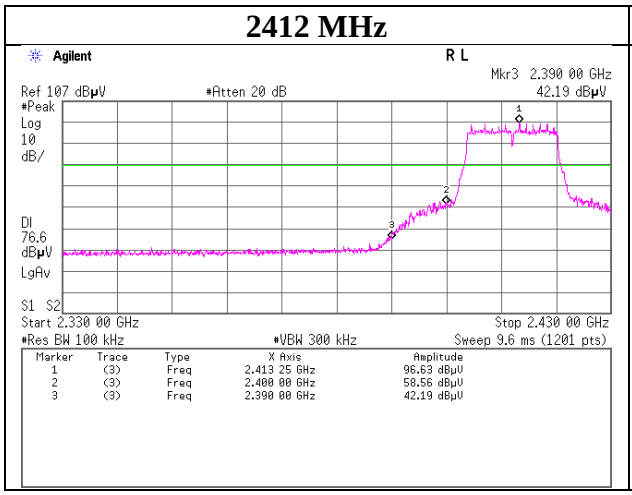


2462 MHz

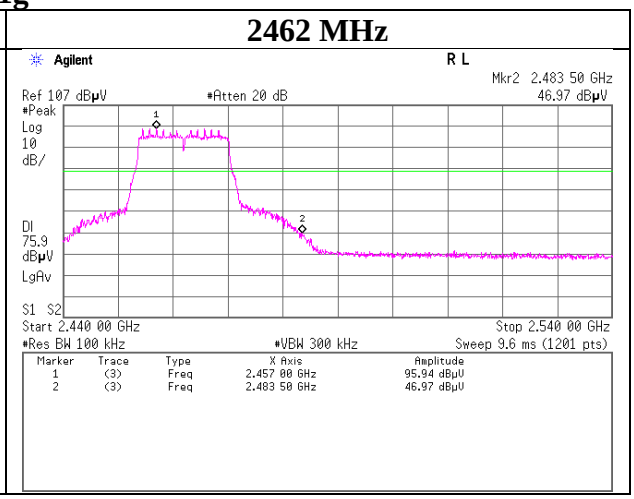


11g

2412 MHz



2462 MHz



* Final result of band edge was measured as radiated spurious emission. Refer to Radiated Spurious Emission's pages.

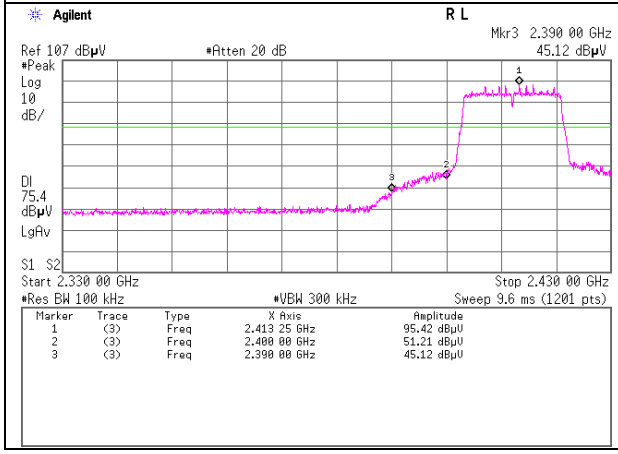
Band Edge confirmation

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

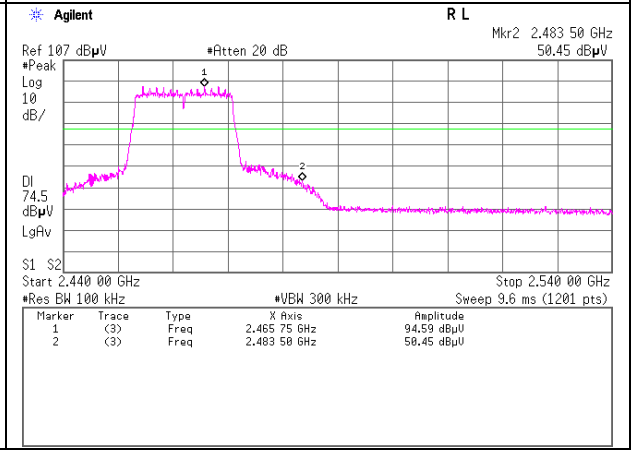
[Normal Power mode]

11n-20

2412 MHz



2462 MHz



* Final result of band edge was measured as radiated spurious emission. Refer to Radiated Spurious Emission's pages.

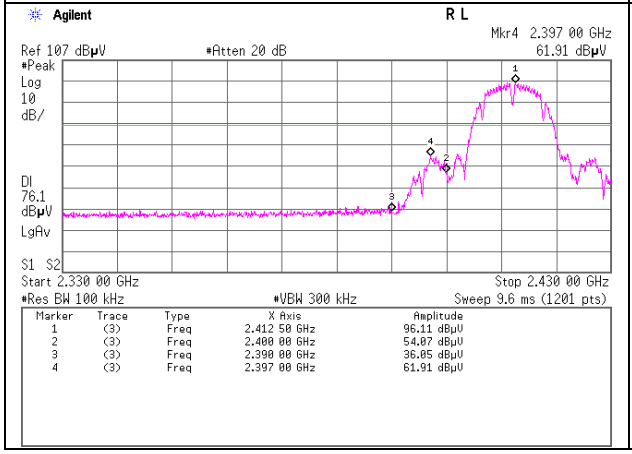
Band Edge confirmation

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

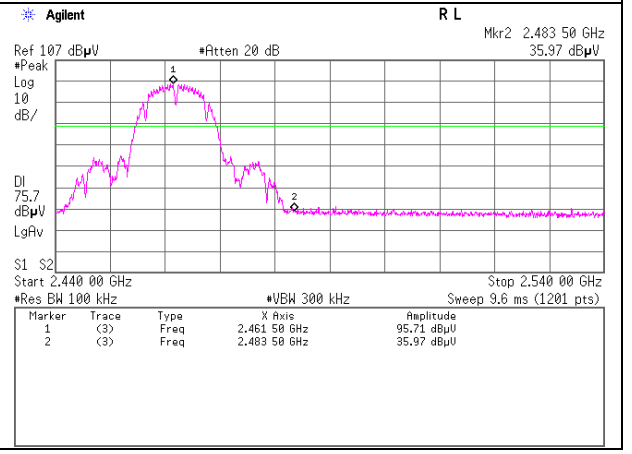
[Low Power mode]

11b

2412 MHz

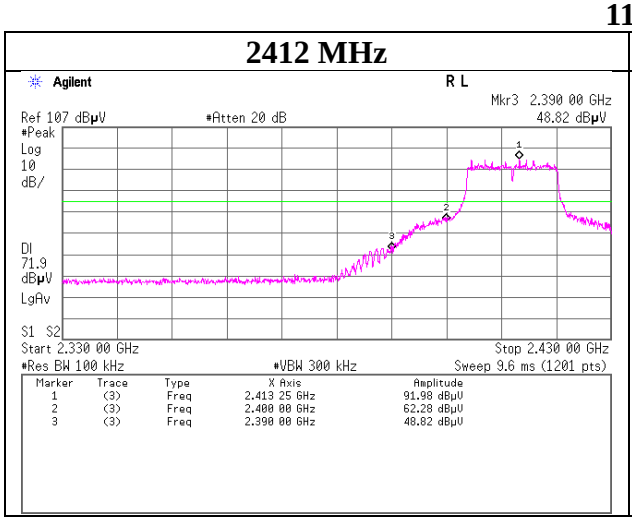


2462 MHz

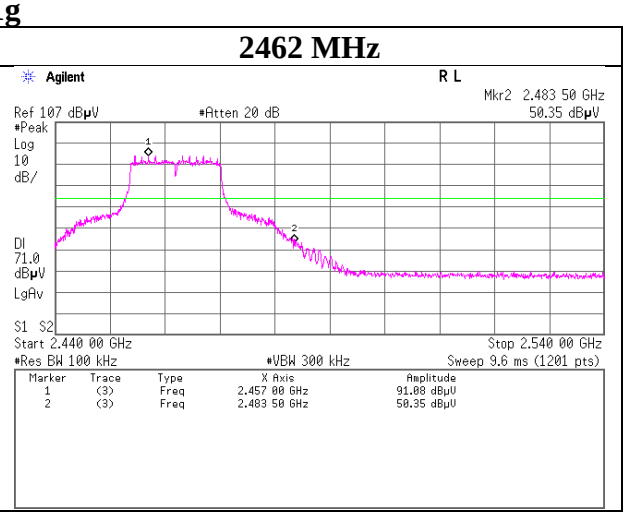


11g

2412 MHz



2462 MHz



* Final result of band edge was measured as radiated spurious emission. Refer to Radiated Spurious Emission's pages.

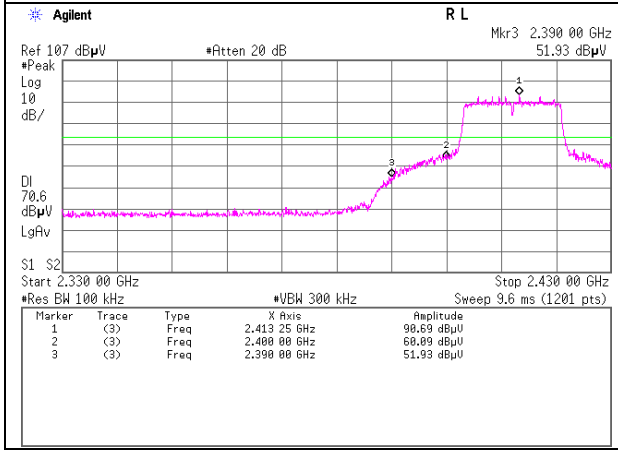
Band Edge confirmation

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

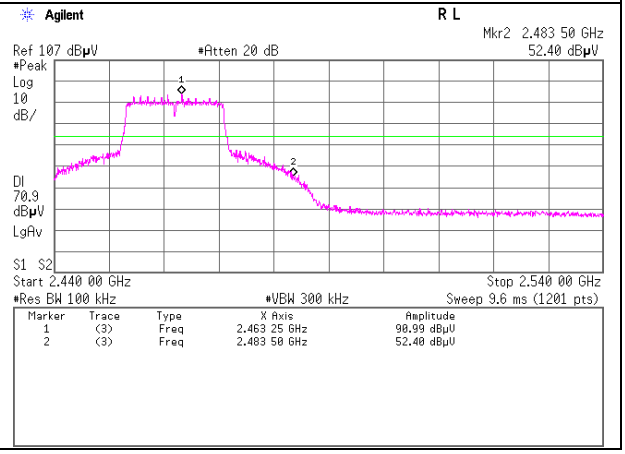
[Low Power mode]

11n-20

2412 MHz



2462 MHz



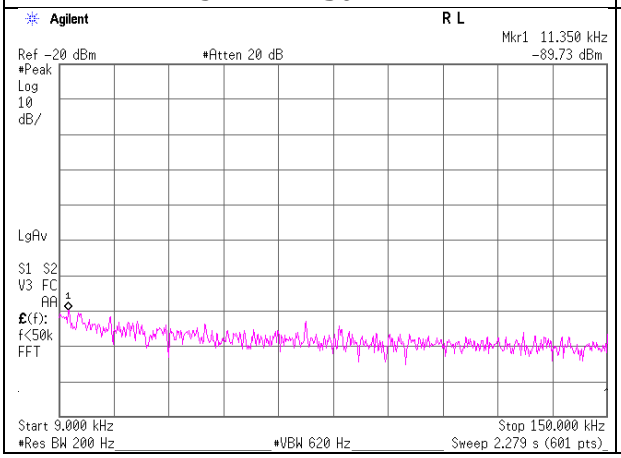
* Final result of band edge was measured as radiated spurious emission. Refer to Radiated Spurious Emission's pages.

Conducted Spurious Emission

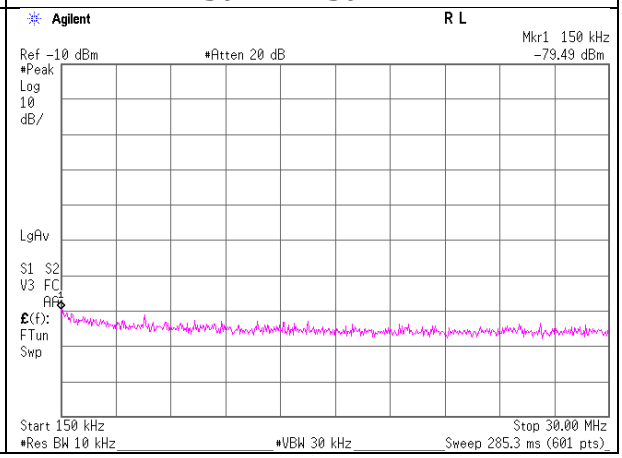
Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11g 2412 MHz

[Normal Power mode]

9 kHz - 150 kHz



150 kHz - 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator Loss [dB]	Antenna Gain [dBi]	N (Number of Output	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.35	-89.7	0.41	9.8	2.0	1	-77.5	300	6.0	-16.3	46.5	62.8	
150.00	-79.5	0.41	9.8	2.0	1	-67.2	300	6.0	-6.0	24.0	30.0	

E = EIRP - 20 log (D) + Ground bounce + 104.8 [dBuV/m]

EIRP = Reading + Cable Loss + Attenator Loss + Antenna Gain + 10 * log (N)

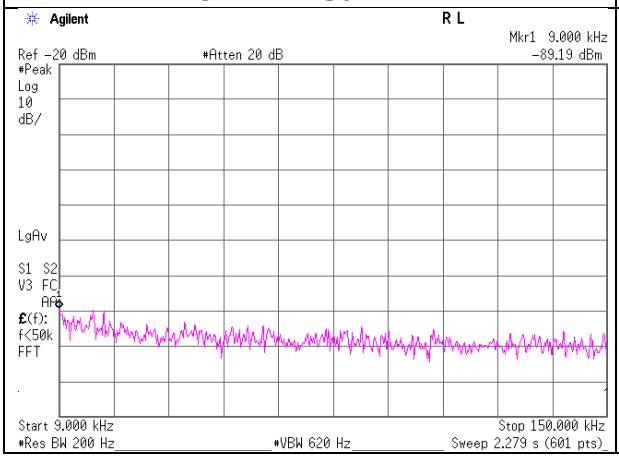
*If antenna gain is less than 2.0 dBi, 2.0 dBi is applied to the test result based on KDB 558074.

Conducted Spurious Emission

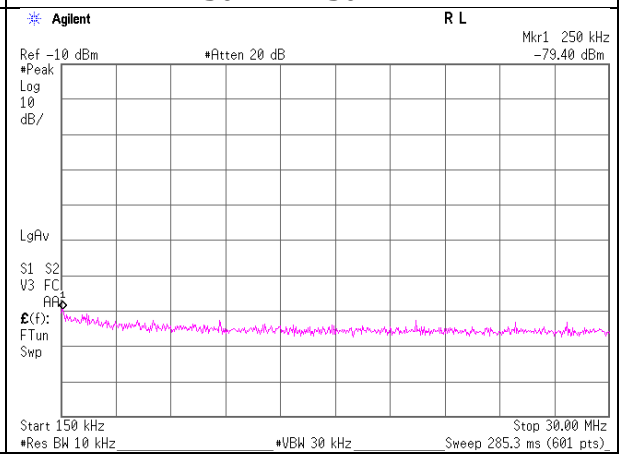
Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11g 2437 MHz

[Low Power mode]

9 kHz - 150 kHz



150 kHz - 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator Loss [dB]	Antenna Gain [dBi]	N (Number of Output	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.00	-89.2	0.41	9.8	2.0	1	-77.0	300	6.0	-15.7	48.5	64.2	
250.00	-79.4	0.41	9.8	2.0	1	-67.2	300	6.0	-5.9	19.6	25.5	

E = EIRP - 20 log (D) + Ground bounce + 104.8 [dBuV/m]

EIRP = Reading + Cable Loss + Attenator Loss + Antenna Gain + 10 * log (N)

*If antenna gain is less than 2.0 dBi, 2.0 dBi is applied to the test result based on KDB 558074.

Power Density

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

[Normal Power mode]

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-25.10	1.18	9.92	-14.00	8.00	22.00
2437	-24.69	1.19	9.92	-13.58	8.00	21.58
2462	-25.51	1.19	9.92	-14.40	8.00	22.40

11g

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-25.97	1.18	9.92	-14.87	8.00	22.87
2437	-26.73	1.19	9.92	-15.62	8.00	23.62
2462	-25.70	1.19	9.92	-14.59	8.00	22.59

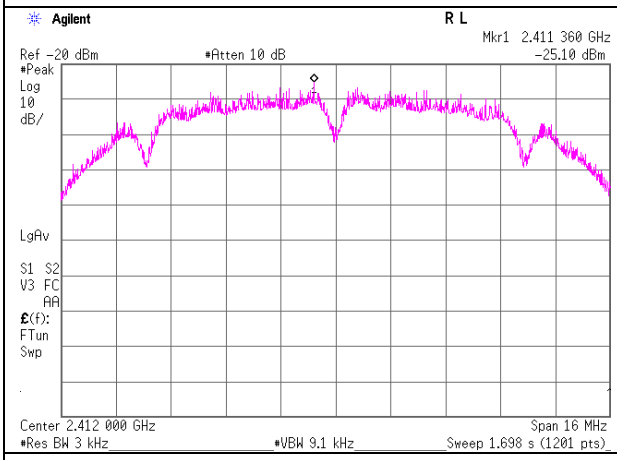
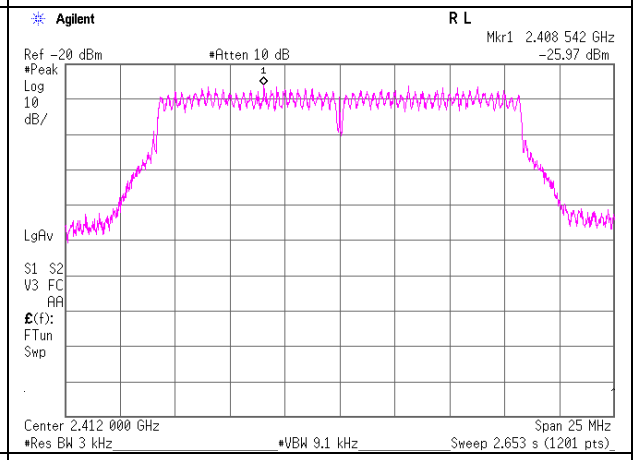
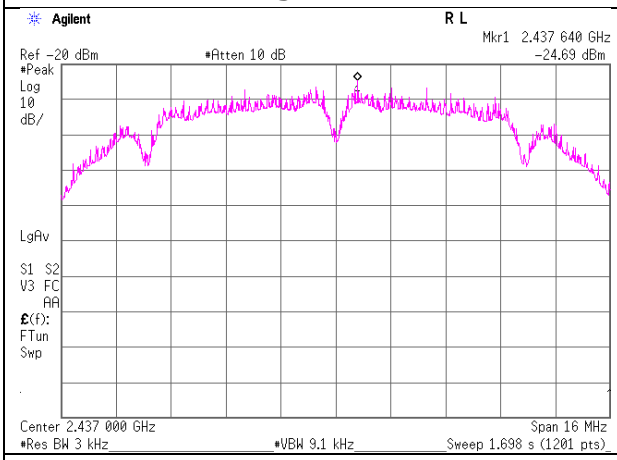
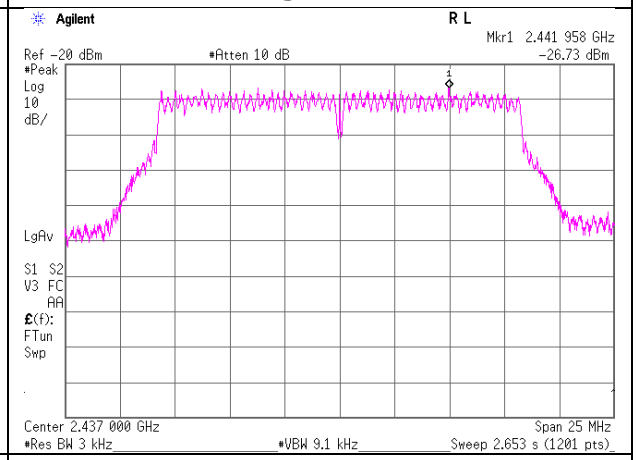
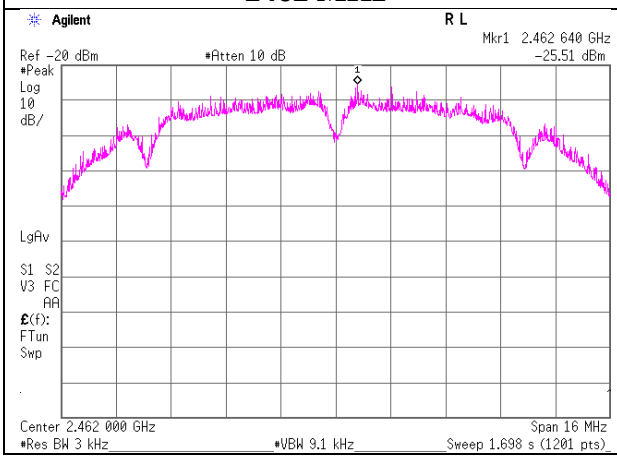
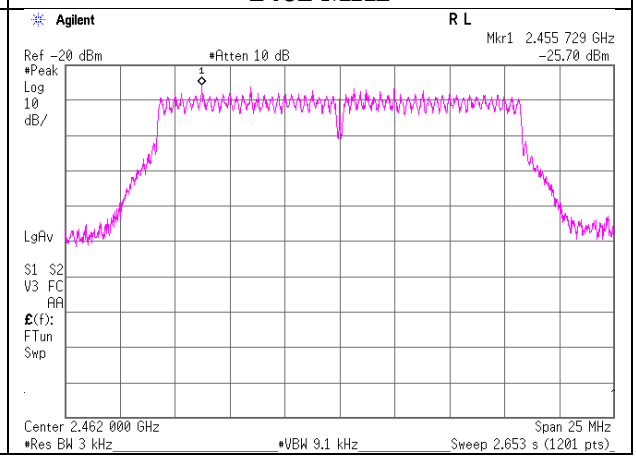
11n-20

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-26.27	1.18	9.92	-15.17	8.00	23.17
2437	-25.93	1.19	9.92	-14.82	8.00	22.82
2462	-26.32	1.19	9.92	-15.21	8.00	23.21

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

Power Density

[Normal Power mode]

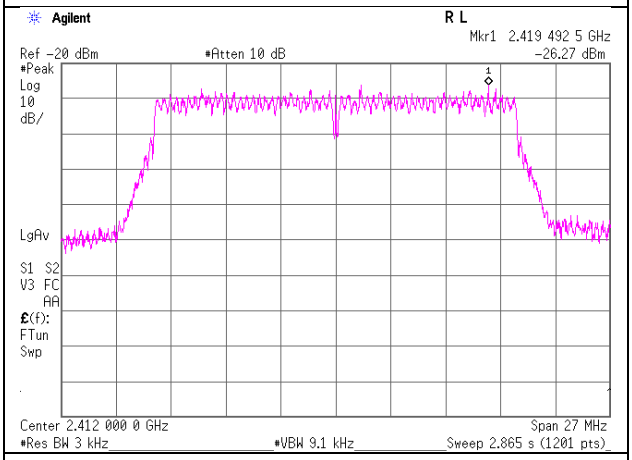
11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

Power Density

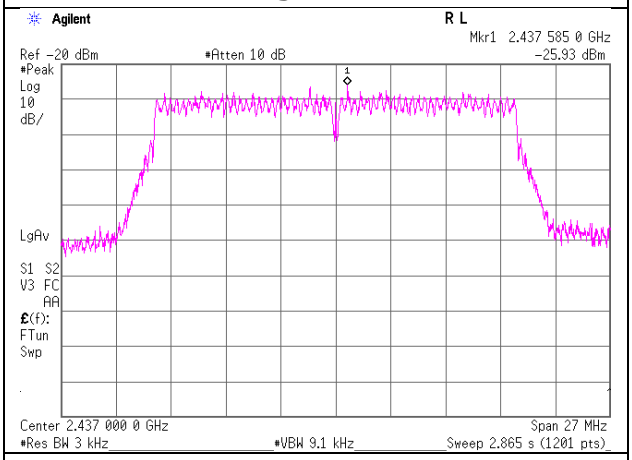
[Normal Power mode]

11n-20

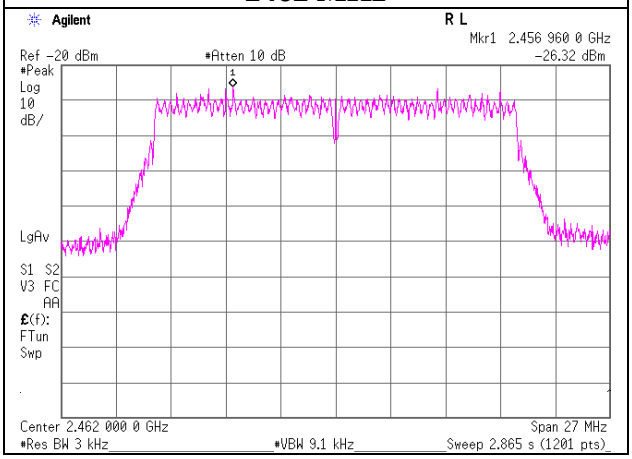
2412 MHz



2437 MHz



2462 MHz



Power Density

[Low Power mode]

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-26.84	1.18	9.92	-15.74	8.00	23.74
2437	-26.02	1.19	9.92	-14.91	8.00	22.91
2462	-25.67	1.19	9.92	-14.56	8.00	22.56

11g

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-30.98	1.18	9.92	-19.88	8.00	27.88
2437	-30.56	1.19	9.92	-19.45	8.00	27.45
2462	-30.68	1.19	9.92	-19.57	8.00	27.57

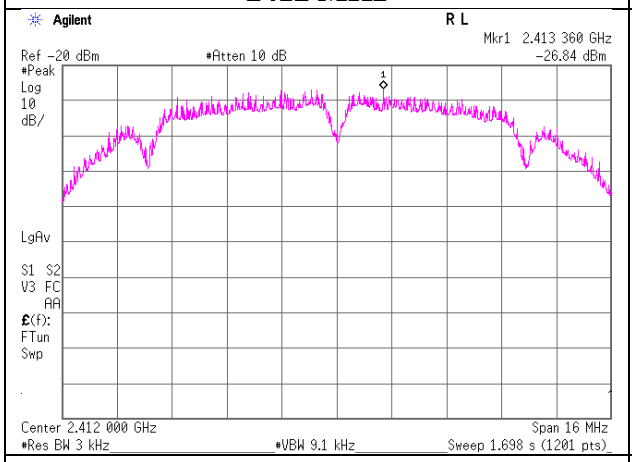
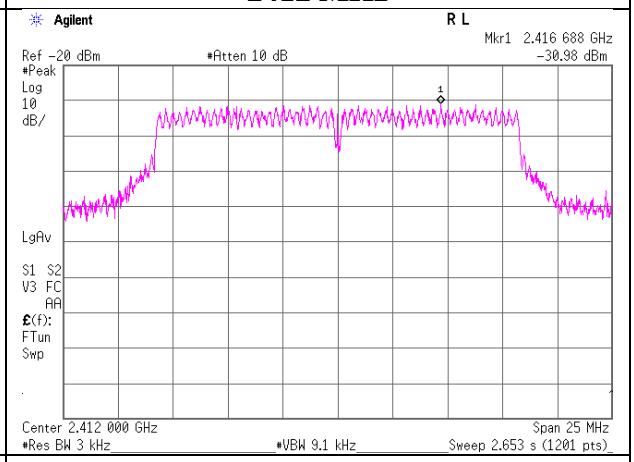
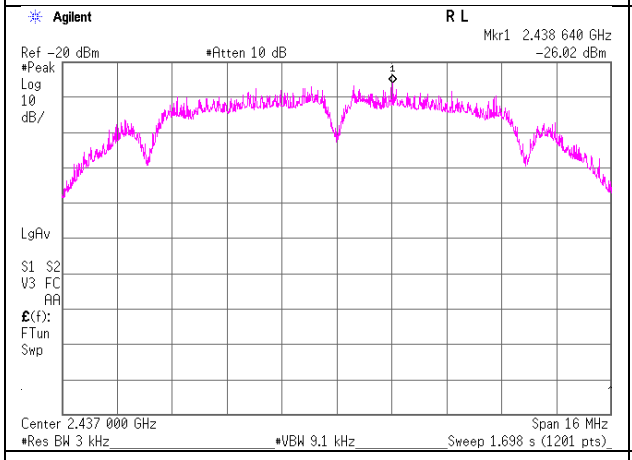
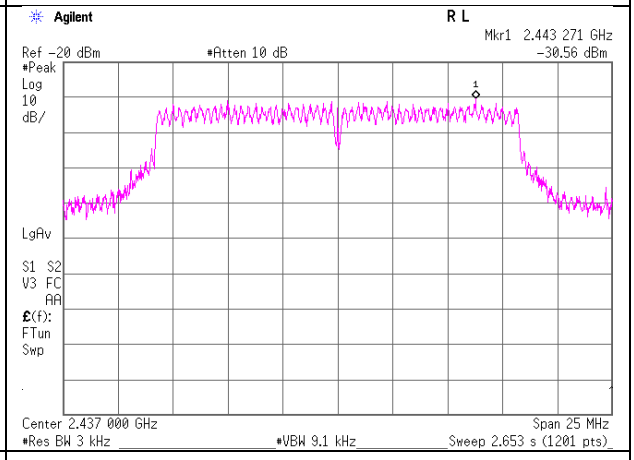
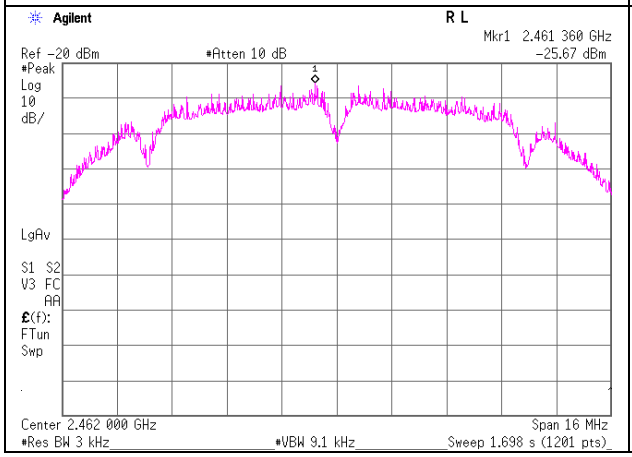
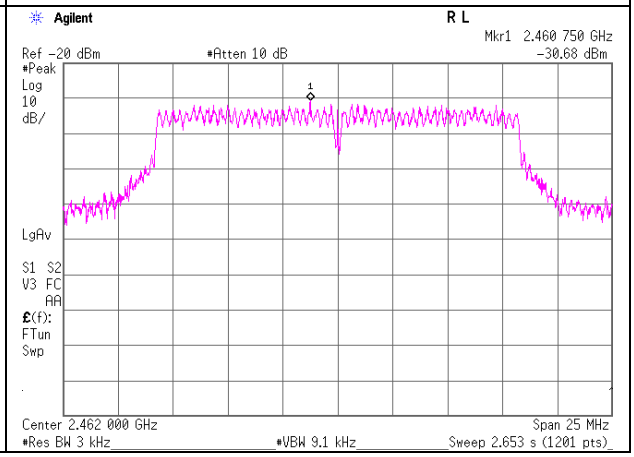
11n-20

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-30.51	1.18	9.92	-19.41	8.00	27.41
2437	-31.83	1.19	9.92	-20.72	8.00	28.72
2462	-31.95	1.19	9.92	-20.84	8.00	28.84

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

Power Density

[Low Power mode]

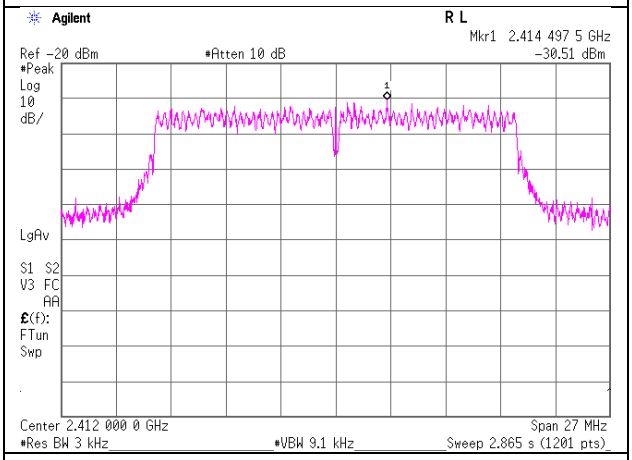
11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

Power Density

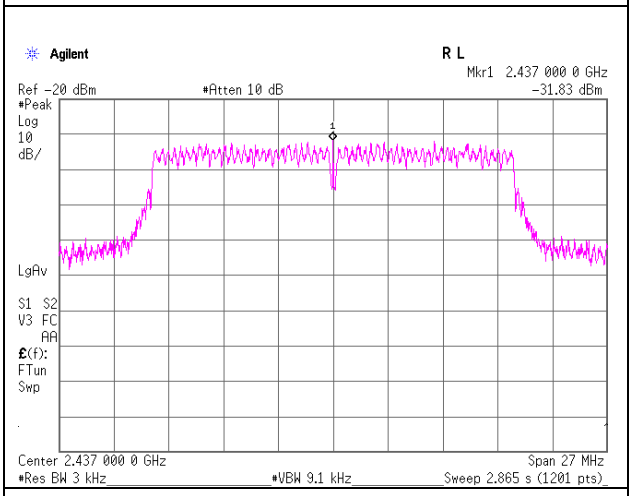
[Low Power mode]

11n-20

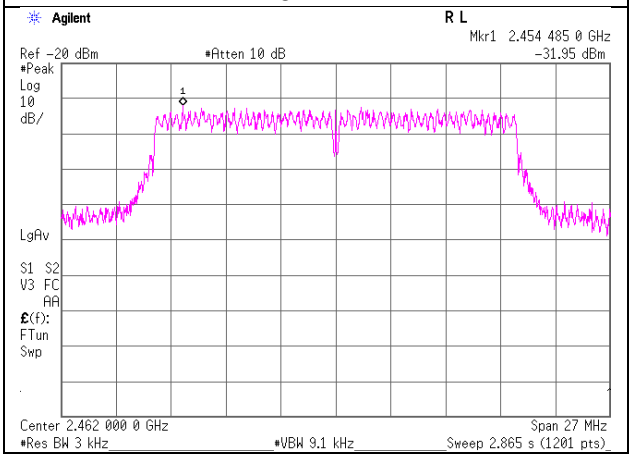
2412 MHz



2437 MHz



2462 MHz



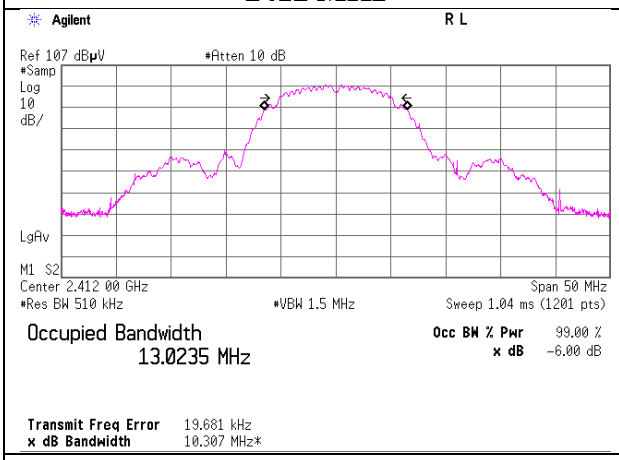
99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

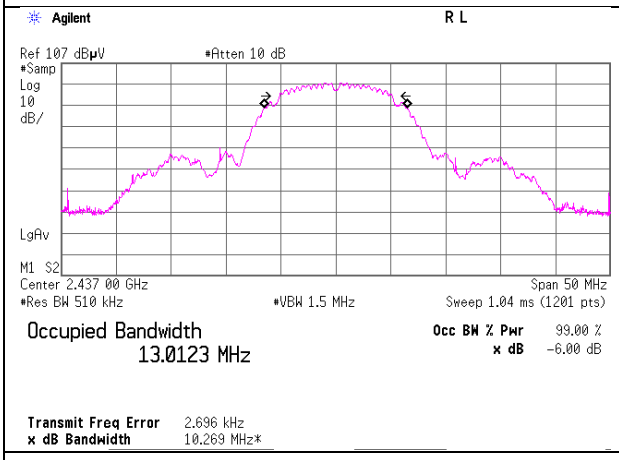
[Normal Power mode]

11b

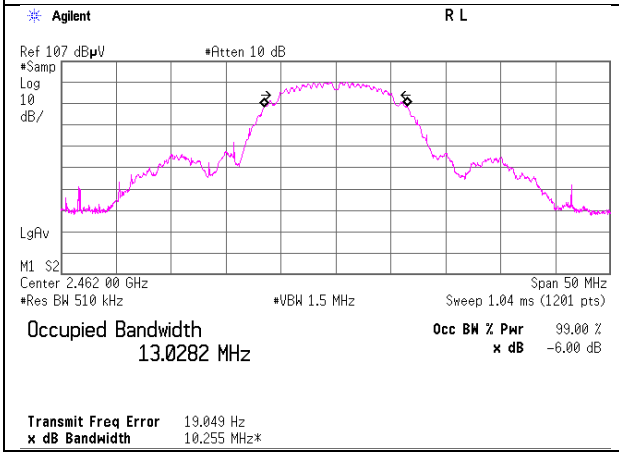
2412 MHz



2437 MHz

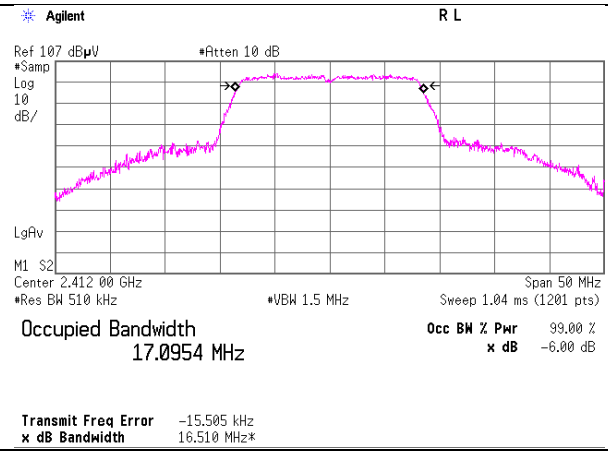


2462 MHz

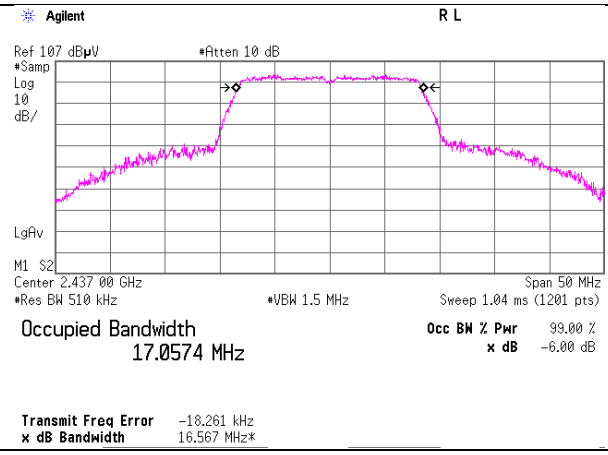


11g

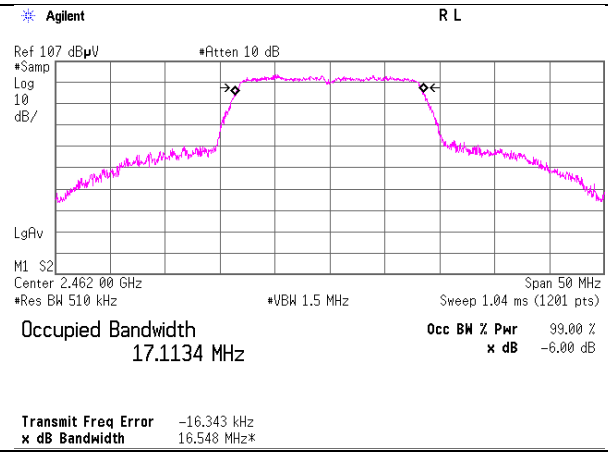
2412 MHz



2437 MHz



2462 MHz



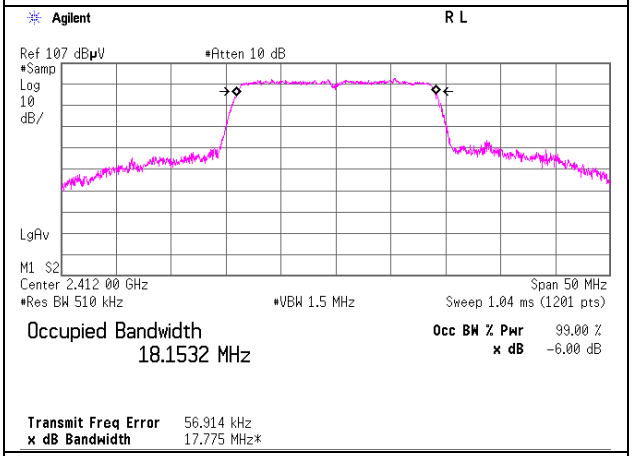
99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

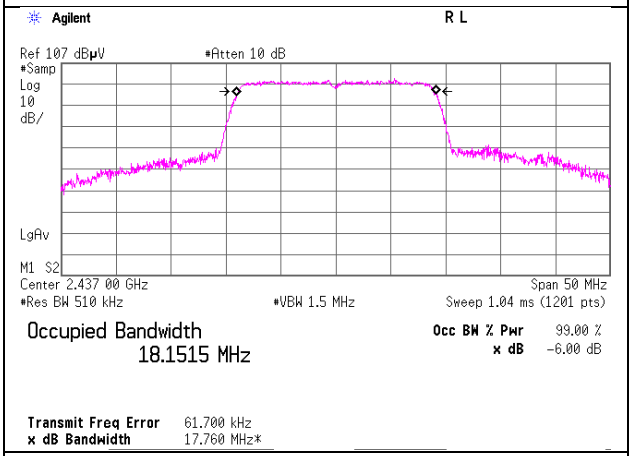
[Normal Power mode]

11n-20

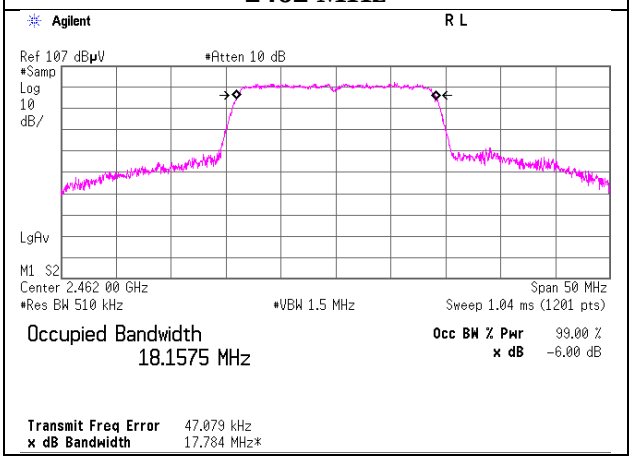
2412 MHz



2437 MHz



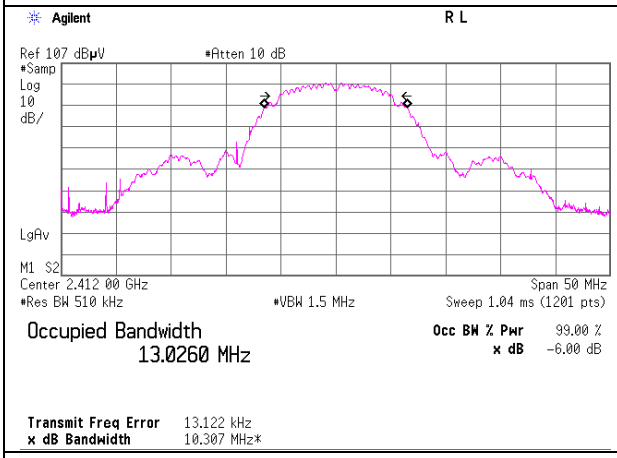
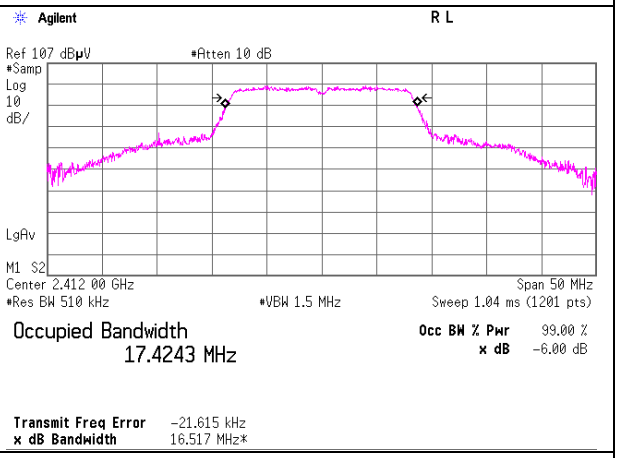
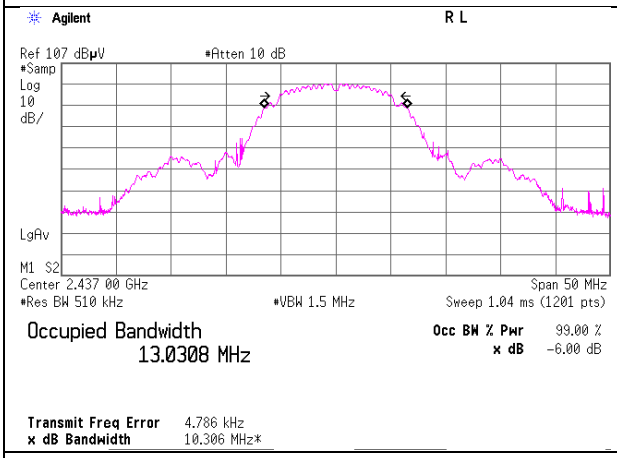
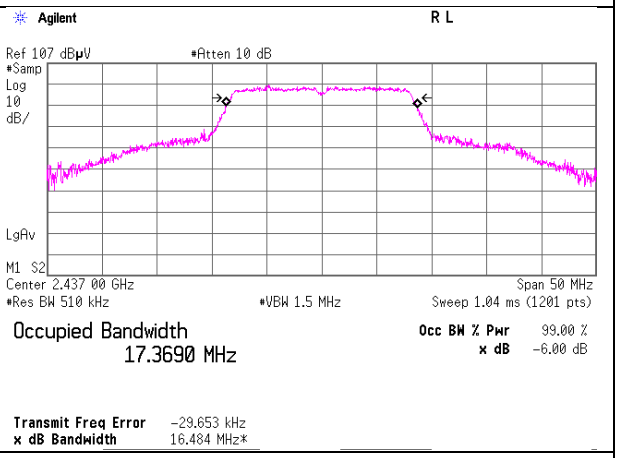
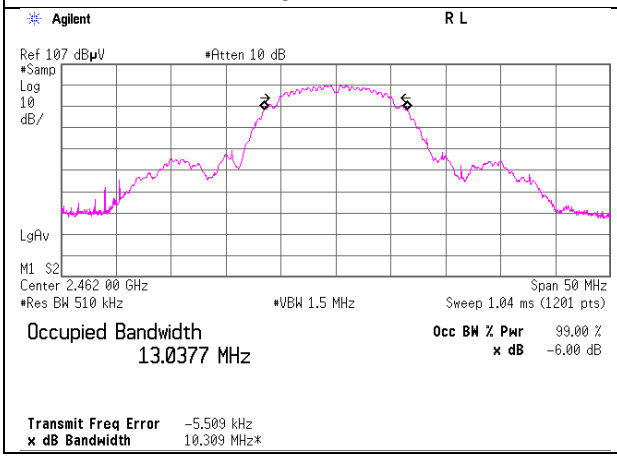
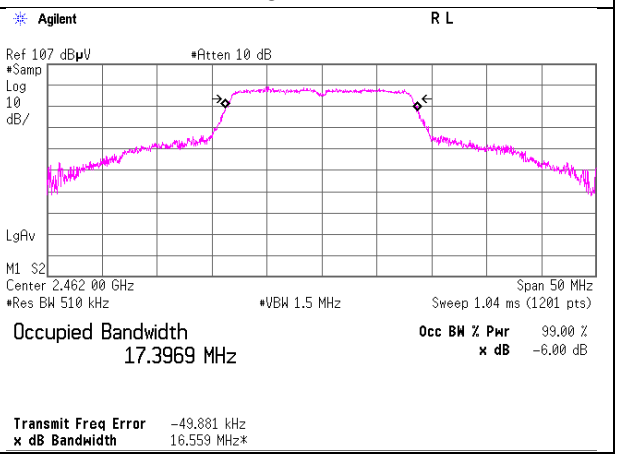
2462 MHz



99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

[Low Power mode]

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

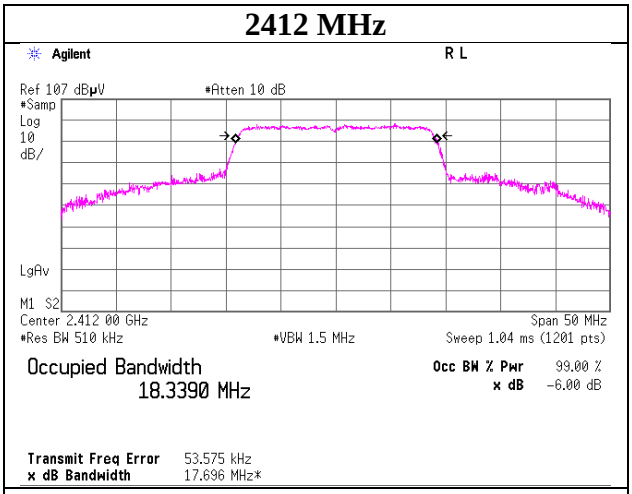
99% Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 hielded Room
Report No.	11353342S-A-R2
Date	July 20, 2016
Temperature / Humidity	24 deg. C / 59 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

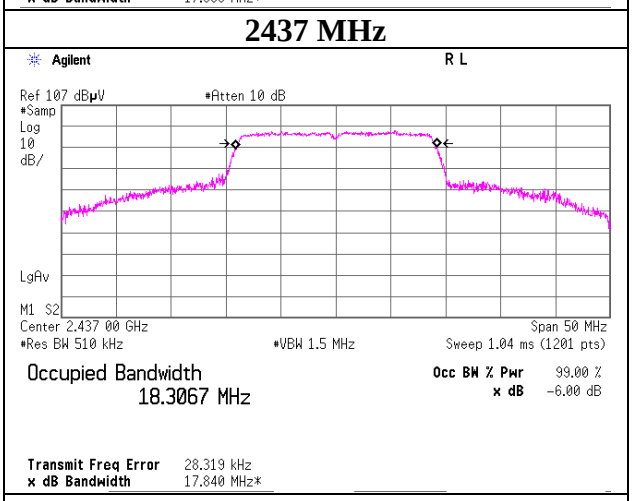
[Low Power mode]

11n-20

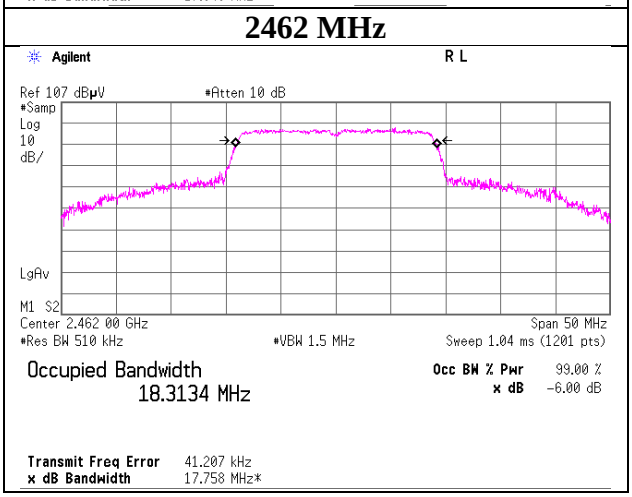
2412 MHz



2437 MHz



2462 MHz



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SPM-07	Power Meter	Agilent	8990B	MY5100272	AT	2016/04/04 * 12
SPSS-04	Power sensor	Agilent	N1923A	MY5326009	AT	2016/04/04 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2016/03/23 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2016/04/18 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2015/12/07 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2015/09/16 * 12
MOTS-SATM	Antenna Terminal Measurement Software	UL Japan	-	-	AT	-
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2016/02/10 * 12
SCC-G05	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	RE	2016/05/24 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2016/05/11 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2016/08/09 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2015/10/22 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2016/03/23 * 12
SJM-09	Measure	PROMART	SEN1935	-	RE	-
SAEC-02(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	RE	2016/07/22 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE, CE	-
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE	2016/03/22 * 12
SAJ-02	Antenna Tilt Jig	Intelligent System Engineering Co., Ltd	Antenna Tilt Jig	T-S002	RE	Pre Check
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2015/11/04 * 12
SFL-18	Highpass Filter	MICRO-TRONICS	HPM50111	119	RE	2016/04/18 * 12
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2016/03/22 * 12
SCC-G06	Coaxial Cable	Junkosha	J12J102207-00	MAY-23-16-091	RE	2016/06/14 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2016/05/11 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2016/08/09 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2015/10/22 * 12
STR-01	Test Receiver	Rohde & Schwarz	ESU40	100093	RE, CE	2015/11/06 * 12
KJM-09	Measure	KOMELON	KMC-36	-	RE, CE	-
SAEC-01(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	RE	2016/07/24 * 12
STS-01	Digital Hitester	Hioki	3805-50	080997812	RE, CE	2015/11/18 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2016/03/08 * 12
SCC-G33	Coaxial Cable	Junkosha	MWX241-01000KMSKMS	-	RE	2016/04/18 * 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-A12/A13/SRSE-01	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-269(RF Selector)	CE	2016/04/22 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2016/02/08 * 12
SAT3-10	Attenuator	JFW	50HF-003N	-	CE	2016/08/04 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2015/12/07 * 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	2016/08/04 * 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	2016/04/22 * 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	2016/04/22 * 12
SLA-01	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0888	RE	2015/10/11 * 12
SAEC-01(NSA)	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	RE	2016/07/14 * 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