RADIO TEST REPORT

Test Report No. : 11212760S-A

Applicant	:	**Panasonic Corporation**
Type of Equipment	:	**BD Player**
Model No.	:	**AT1605**
FCC ID	:	**ACJ932AT1605**
Test regulation	:	**FCC Part 15 Subpart C: 2015**
Test Result	:	**Complied**

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

Date of test: April 12 to 15, 2016

Representative test engineer:
Makoto Hosaka
Engineer
Consumer Technology Division

Approved by:
Tatsuya Arai
Engineer
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

UL Japan, Inc.
Shonan EMC Lab.
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REVISION HISTORY

Original Test Report No.: 11212760S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11212760S-A	May 24, 2016	-	-

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SECTION 1: Customer information

Company Name	:	Panasonic Corporation
Address	:	4261, Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken, 224-8520, Japan
Telephone Number	:	+81-50-3689-6569
Facsimile Number	:	+81-45-931-0806
Contact Person	:	Yuichi Kanbe

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

2.1 Identification of E.U.T.

Type of Equipment	:	BD Player
Model No.	:	AT1605
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 13.2 V
Receipt Date of Sample	:	April 5, 2016
Country of Mass-production	:	Japan
Condition of EUT	:	Production 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: AT1605 (referred to as the EUT in this report) is a BD Player.

General Specification

Clock frequency(ies) in the system	:	4.718 MHz, 48 MHz, 74.25 MHz, 100 MHz, 666.67 MHz

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2412 MHz - 2462 MHz
Modulation	:	DSSS, OFDM
Power Supply (radio part input)	:	DC 3.3 V
Antenna type	:	Dipole Antenna
Antenna Gain	:	4.65 dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

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

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013 6. Standard test methods **IC:** RSS-Gen 8.8	**FCC:** Section 15.207 **IC:** RSS-Gen 8.8	N/A	N/A	N/A *1)
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	4.8 dB 2390.000 MHz, AV, Hori. Tx 11g 2412 MHz 2390.000 MHz, AV, Hori. Tx 11n-20 2412 MHz	Complied	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *2)

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) The test is not applicable since the EUT does not have AC port.
*2) 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 equipment provides the wireless transmitter with stable power supply (DC 3.3 V).
Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

3.3 Addition to standard

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

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

3.4 Uncertainty

EMI

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

Shonan EMC Lab.

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

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

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

Radiated emission test

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

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)

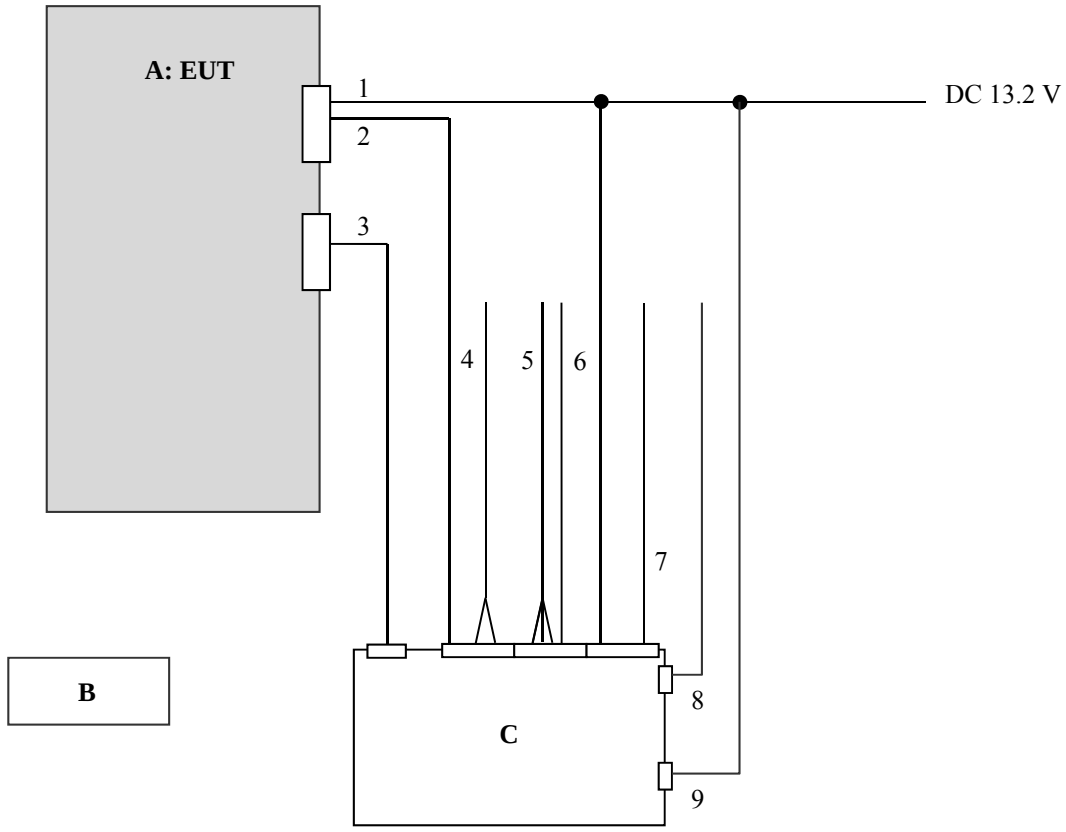
Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - " of TCB Council Workshop October 2009 and also was judged the necessity of 802.11ac mode by the pre-test.

Mode	**Remarks***
IEEE 802.11b (11b)	11 Mbps, PN9
IEEE 802.11g (11g) *	36 Mbps, PN9
IEEE 802.11n (11n-20)	MCS 4, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows; Power settings: 11b: 15 dBm, 11g: 13 dBm, 11n: 12 dBm Software: WIFI Diag ver. 3.36 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

*The details of Operating mode(s)

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

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	BD Player	AT1605	2A-023 (Radiated spurious emission) 2A-023 (other tests)	Panasonic	EUT
B	Remote controller	-	8010022A	Panasonic	-
C	ECU	SB-ECU	17-ECU-2S-052	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC mains	0.1+2.0	Unshielded	Unshielded	-
2	AVC-LAN & Analog Audio	2.0	Unshielded	Unshielded	-
3	HDMI	2.0	Shielded	Shielded	-
4	Headphone	2.0	Shielded	Shielded	-
5	RCA Cable	2.0	Shielded	Shielded	-
6	AVC-LAN & Analog Audio for Left Display	2.0	Unshielded	Unshielded	-
7	AVC-LAN & Analog Audio for Right Display	2.0	Unshielded	Unshielded	-
8	Digital Video (GVIF)	2.0	Shielded	Shielded	-
9	WAKEUP	2.0	Unshielded	Unshielded	-

SECTION 5: 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	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	Average Power Method: 12.2.5. RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (Linear voltage) Trace: 100 traces Duty factor was added to the results.(Duty cycle < 98 %)	RBW: 100 kHz VBW: 300 kHz
Test Distance	3 m	3 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26 GHz)		3 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26 GHz)

*1) Distance Factor: 20 x log (3.9 m / 3.0 m) = 2.28 dB
*2) Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.5 dB

The carrier level and noise levels were confirmed at angle of 0 deg. to 10 deg. based on the product specification to see the position of maximum noise, and the test was made at the position (0 deg.) that has the maximum noise.

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

Measurement range : 30 MHz - 26 GHz
Test data : APPENDIX
Test result : Pass

SECTION 6: 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	20 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 6 dB Bandwidth	3 kHz	9.1 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *4)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	9.1 kHz	27 kHz				

*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 30 MHz, 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.

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

Test data : APPENDIX
Test result : Pass

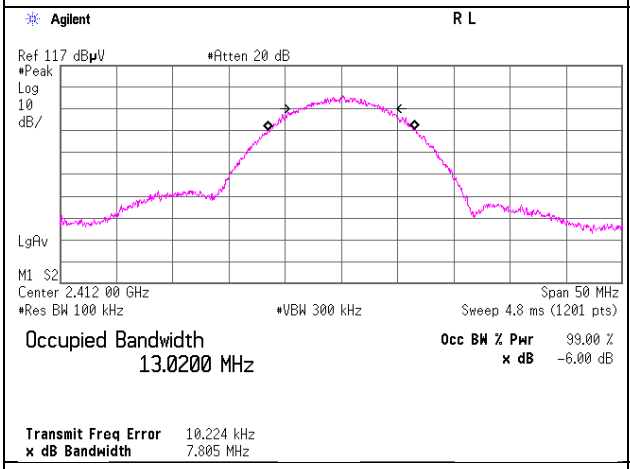
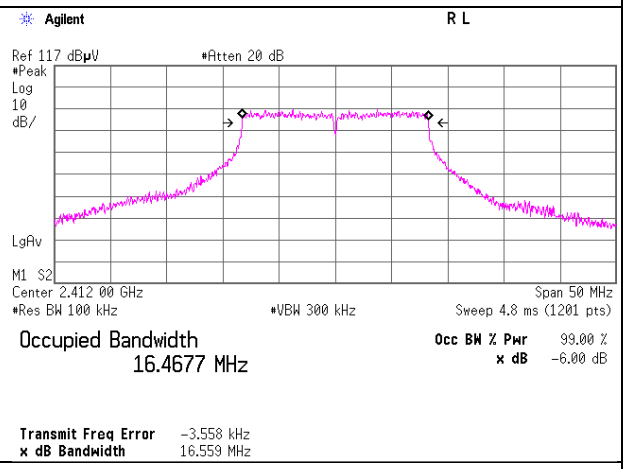
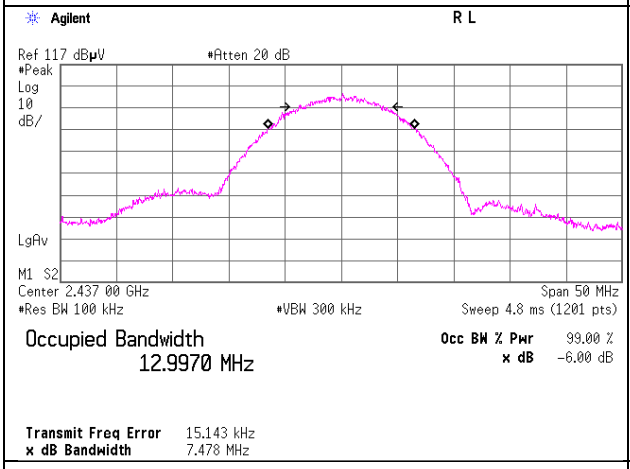
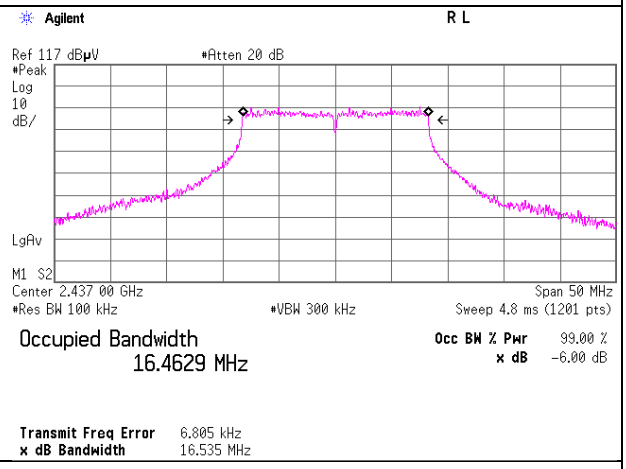
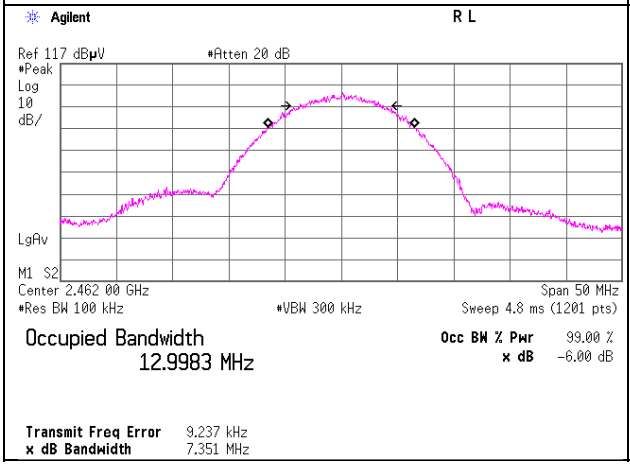
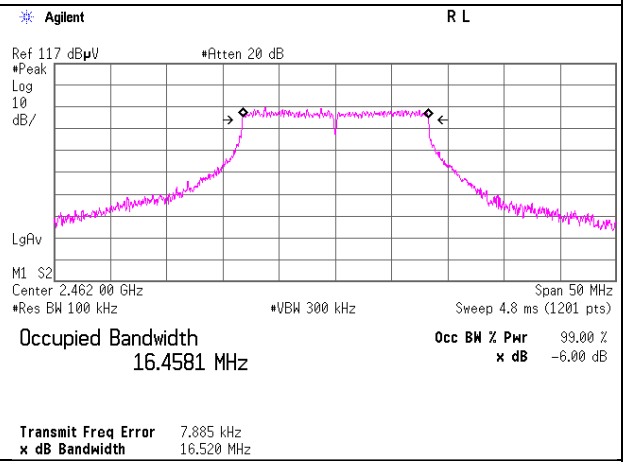
APPENDIX 1: Test data

6dB Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
11b	2412	7.805	> 500
	2437	7.478	> 500
	2462	7.351	> 500
11g	2412	16.559	> 500
	2437	16.535	> 500
	2462	16.520	> 500
11n-20	2412	17.718	> 500
	2437	17.725	> 500
	2462	17.748	> 500

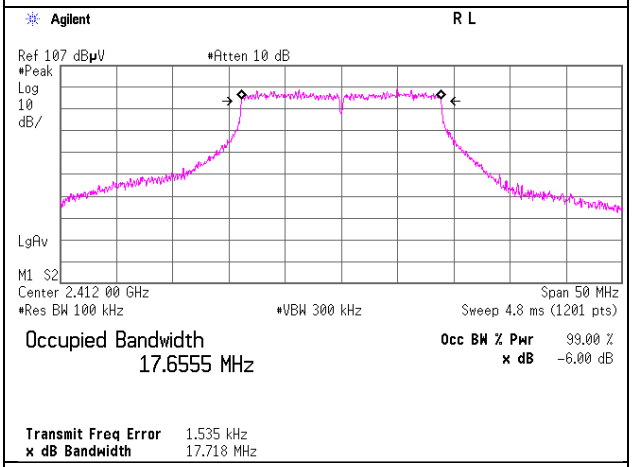
6dB Bandwidth

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

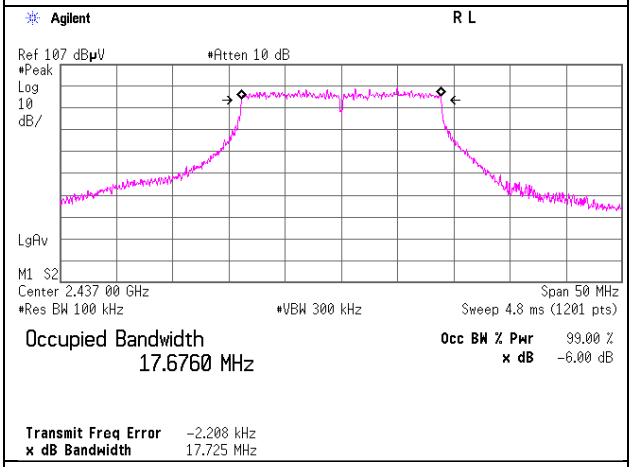
6dB Bandwidth

11n-20

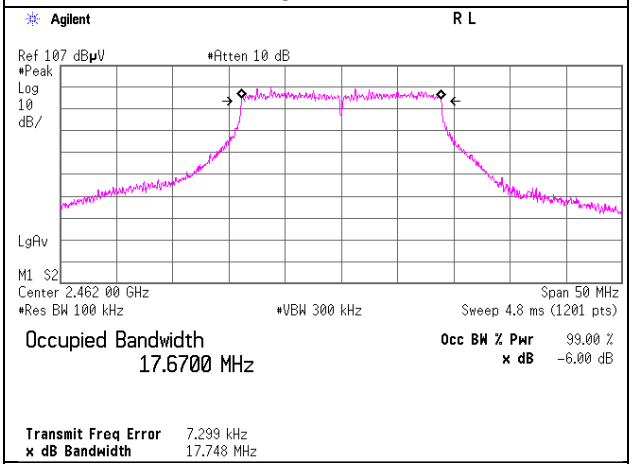
2412 MHz



2437 MHz



2462 MHz



Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx 11b

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	6.51	1.17	9.67	17.35	54.33	30.00	1000	12.65
2437	6.61	1.18	9.67	17.46	55.72	30.00	1000	12.54
2462	6.55	1.18	9.67	17.40	54.95	30.00	1000	12.60

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

2437MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	6.14	
2	6.44	
5.5	6.54	
11	6.61	*

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx 11g

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.56	1.17	9.67	22.40	173.78	30.00	1000	7.60
2437	11.60	1.18	9.67	22.45	175.79	30.00	1000	7.55
2462	11.25	1.18	9.67	22.10	162.18	30.00	1000	7.90

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

2437 MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	7.79	
9	7.88	
12	7.91	
18	8.07	
24	11.46	
36	11.60	*
48	10.87	
54	11.54	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx 11n-20

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.25	1.17	9.67	22.09	161.81	30.00	1000	7.91
2437	11.16	1.18	9.67	22.01	158.85	30.00	1000	7.99
2462	11.02	1.18	9.67	21.87	153.82	30.00	1000	8.13

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

2437 MHz

Rate	Reading	Remark
[MCS]	[dBm]	
0	6.95	
1	6.80	
2	6.96	
3	11.10	
4	11.16	*
5	10.56	
6	11.00	
7	11.07	

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

11b **11 Mbps**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	3.97	1.17	9.67	14.81	30.27	0.03	14.84	30.48
2437	4.09	1.18	9.67	14.94	31.19	0.03	14.97	31.41
2462	3.95	1.18	9.67	14.80	30.20	0.03	14.83	30.41

11g **36 Mbps**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	1.59	1.17	9.67	12.43	17.50	0.11	12.54	17.95
2437	1.61	1.18	9.67	12.46	17.62	0.11	12.57	18.07
2462	1.60	1.18	9.67	12.45	17.58	0.11	12.56	18.03

11n-20 **MCS 4**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	0.64	1.17	9.67	11.48	14.06	0.11	11.59	14.42
2437	0.62	1.18	9.67	11.47	14.03	0.11	11.58	14.39
2462	0.58	1.18	9.67	11.43	13.90	0.11	11.54	14.26

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

Average Output Power
(Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

2437 MHz

Mode	Rate Mbps	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11b	1	3.58	0.00	3.58	
	2	3.89	0.00	3.89	
	5.5	4.10	0.01	4.11	
	11	4.09	0.03	4.12	*
11g	6	1.18	0.02	1.20	
	9	1.16	0.03	1.19	
	12	1.18	0.03	1.21	
	18	1.17	0.05	1.22	
	24	1.61	0.07	1.68	
	36	1.61	0.11	1.72	*
	48	1.53	0.14	1.67	
	54	1.55	0.16	1.71	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

2437 MHz

Mode	Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
11n-20	0	0.05	0.02	0.07	
	1	0.03	0.04	0.07	
	2	-0.01	0.06	0.05	
	3	0.58	0.08	0.66	
	4	0.62	0.11	0.73	*
	5	0.56	0.15	0.71	
	6	0.54	0.17	0.71	
	7	0.49	0.19	0.68	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

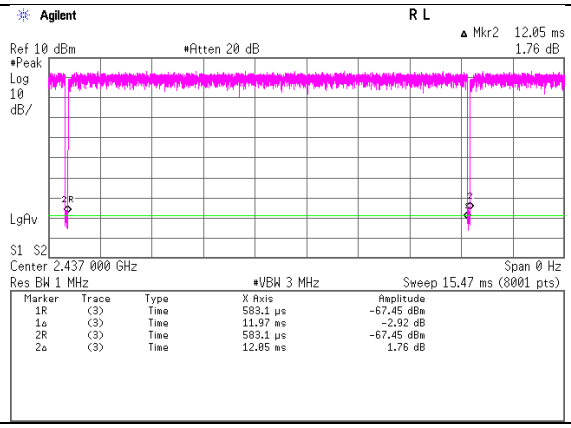
All comparison were carried out on same frequency and measurement factors.

Burst rate confirmation

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

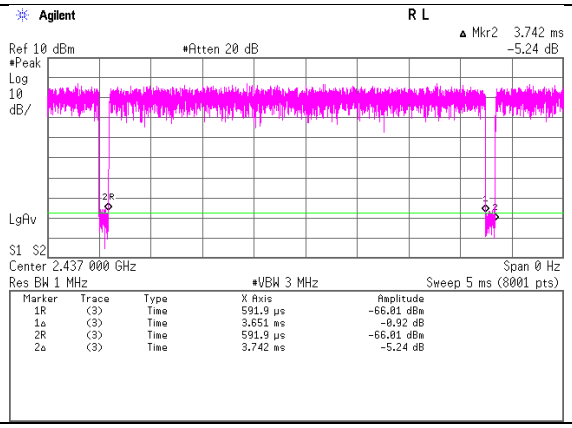
11b 11 Mbps

Tx on / (Tx on + Tx off) =	**0.993**
Tx on / (Tx on + Tx off) * 100 =	**99.3 %**
Duty factor = 20 * log (12.05 / 11.97) =	**0.06 dB**



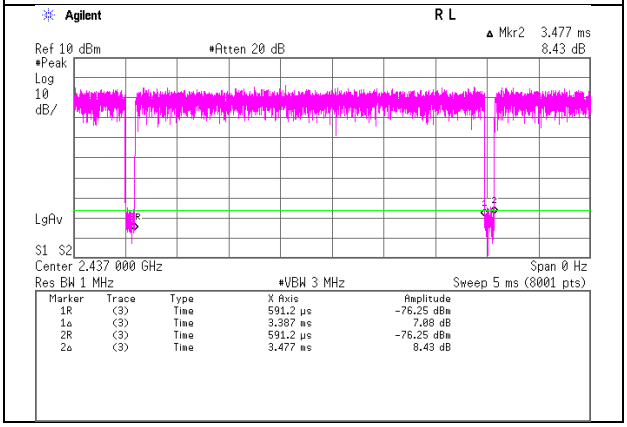
11g 36 Mbps

Tx on / (Tx on + Tx off) =	**0.976**
Tx on / (Tx on + Tx off) * 100 =	**97.6 %**
Duty factor = 20 * log (3.742 / 3.651) =	**0.21 dB**



11n-20 MCS 4

Tx on / (Tx on + Tx off) =	**0.974**
Tx on / (Tx on + Tx off) * 100 =	**97.4 %**
Duty factor = 20 * log (3.477 / 3.387) =	**0.23 dB**



Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11b 2412 MHz		

(* 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	48.8	27.7	14.8	40.7	2.3	52.9	73.9	21.0	160	11	
Hori.	3111.137	PK	50.7	28.2	6.7	41.0	2.3	46.9	73.9	27.0	139	157	
Hori.	4824.000	PK	47.6	31.4	7.3	41.5	2.3	47.1	73.9	26.8	161	203	
Hori.	7236.000	PK	46.8	36.6	8.7	41.2	2.3	53.2	73.9	20.7	100	0	
Hori.	9648.000	PK	46.4	38.0	9.8	40.5	2.3	56.0	73.9	17.9	100	0	
Hori.	2390.000	AV	40.2	27.7	14.8	40.7	2.3	44.3	53.9	9.6	160	11	
Hori.	3111.137	AV	40.1	28.2	6.7	41.0	2.3	36.3	53.9	17.6	139	157	
Hori.	4824.000	AV	37.5	31.4	7.3	41.5	2.3	37.0	53.9	16.9	161	203	
Hori.	7236.000	AV	37.4	36.6	8.7	41.2	2.3	43.8	53.9	10.1	100	0	
Hori.	9648.000	AV	36.8	38.0	9.8	40.5	2.3	46.4	53.9	7.5	100	0	
Vert.	2390.000	PK	45.7	27.7	14.8	40.7	2.3	49.8	73.9	24.1	143	83	
Vert.	3111.070	PK	52.9	28.2	6.7	41.0	2.3	49.1	73.9	24.8	142	165	
Vert.	4824.000	PK	47.6	31.4	7.3	41.5	2.3	47.1	73.9	26.8	100	0	
Vert.	7236.000	PK	46.8	36.6	8.7	41.2	2.3	53.2	73.9	20.7	100	0	
Vert.	9648.000	PK	46.7	38.0	9.8	40.5	2.3	56.3	73.9	17.6	100	0	
Vert.	2390.000	AV	36.8	27.7	14.8	40.7	2.3	40.9	53.9	13.0	143	83	
Vert.	3111.070	AV	39.8	28.2	6.7	41.0	2.3	36.0	53.9	17.9	142	165	
Vert.	4824.000	AV	38.0	31.4	7.3	41.5	2.3	37.5	53.9	16.4	100	0	
Vert.	7236.000	AV	37.5	36.6	8.7	41.2	2.3	43.9	53.9	10.0	100	0	
Vert.	9648.000	AV	37.1	38.0	9.8	40.5	2.3	46.7	53.9	**7.2**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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

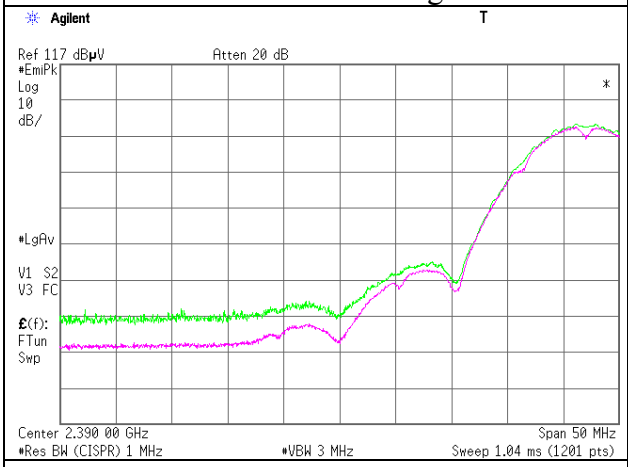
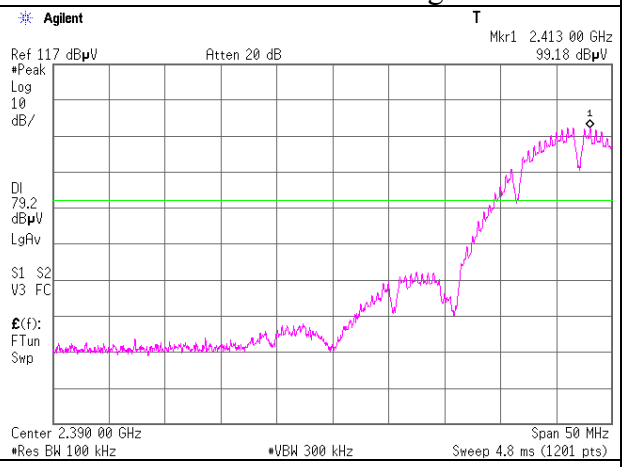
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	97.6	27.7	14.9	40.7	2.3	101.8	-	-	Carrier
Hori.	2400.000	PK	55.5	27.7	14.9	40.7	2.3	59.7	81.8	22.1	
Vert.	2412.000	PK	88.3	27.7	14.9	40.7	2.3	92.5	-	-	Carrier
Vert.	2400.000	PK	48.3	27.7	14.9	40.7	2.3	52.5	72.5	20.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

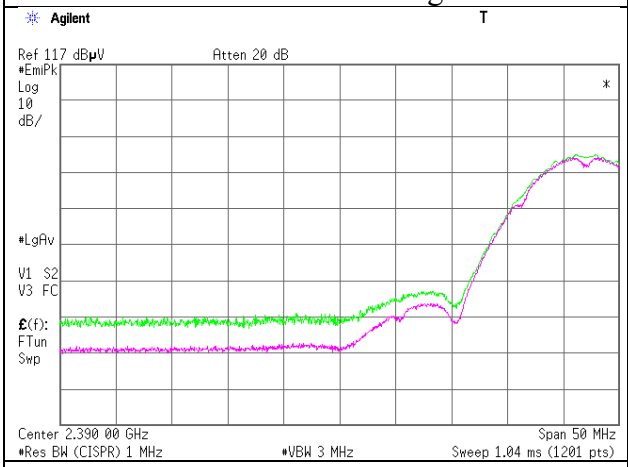
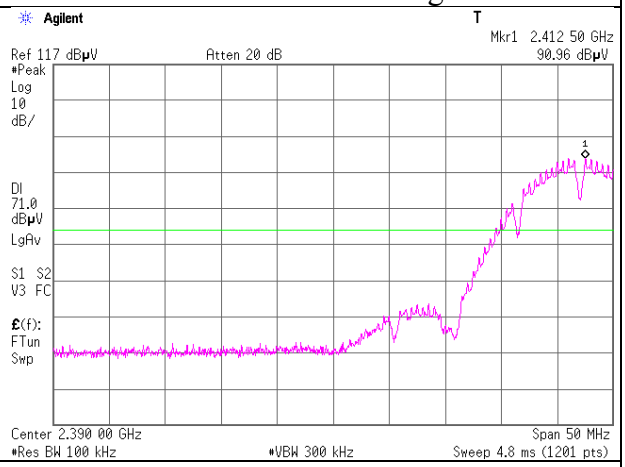
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11212760S-A
Date	April 14, 2016
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shinichi Takano
	(1-13GHz)
Mode	Tx 11b 2412 MHz

Horizontal

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

Vertical

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

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11b 2437 MHz		

(* 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.	3111.118	PK	49.5	28.2	6.7	41.0	2.3	45.7	73.9	28.2	163	162	
Hori.	4874.000	PK	47.3	31.6	7.3	41.4	2.3	47.1	73.9	26.8	152	33	
Hori.	7311.000	PK	47.0	36.7	8.7	41.2	2.3	53.5	73.9	20.4	100	0	
Hori.	9748.000	PK	46.1	38.0	9.8	40.4	2.3	55.8	73.9	18.1	100	0	
Hori.	3111.118	AV	38.7	28.2	6.7	41.0	2.3	34.9	53.9	19.0	163	162	
Hori.	4874.000	AV	37.2	31.6	7.3	41.4	2.3	37.0	53.9	16.9	152	33	
Hori.	7311.000	AV	37.6	36.7	8.7	41.2	2.3	44.1	53.9	9.8	100	0	
Hori.	9748.000	AV	36.8	38.0	9.8	40.4	2.3	46.5	53.9	7.4	100	0	
Vert.	3110.914	PK	52.1	28.2	6.7	41.0	2.3	48.3	73.9	25.6	147	171	
Vert.	4874.000	PK	47.2	31.6	7.3	41.4	2.3	47.0	73.9	26.9	148	37	
Vert.	7311.000	PK	46.8	36.7	8.7	41.2	2.3	53.3	73.9	20.6	100	0	
Vert.	9748.000	PK	46.1	38.0	9.8	40.4	2.3	55.8	73.9	18.1	100	0	
Vert.	3110.914	AV	38.9	28.2	6.7	41.0	2.3	35.1	53.9	18.8	147	171	
Vert.	4874.000	AV	37.6	31.6	7.3	41.4	2.3	37.4	53.9	16.5	148	37	
Vert.	7311.000	AV	37.5	36.7	8.7	41.2	2.3	44.0	53.9	9.9	100	0	
Vert.	9748.000	AV	37.1	38.0	9.8	40.4	2.3	46.8	53.9	**7.1**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11b 2462 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	47.2	27.8	15.0	40.7	2.3	51.6	73.9	22.3	146	338	
Hori.	3555.766	PK	48.2	28.4	7.1	41.4	2.3	44.6	73.9	29.3	167	138	
Hori.	4924.000	PK	47.2	31.7	7.4	41.3	2.3	47.3	73.9	26.6	157	96	
Hori.	7386.000	PK	47.3	36.7	8.8	41.3	2.3	53.8	73.9	20.1	100	0	
Hori.	9848.000	PK	45.6	38.1	9.9	40.4	2.3	55.5	73.9	18.4	100	0	
Hori.	2483.500	AV	38.1	27.8	15.0	40.7	2.3	42.5	53.9	11.4	146	338	
Hori.	3555.766	AV	37.4	28.4	7.1	41.4	2.3	33.8	53.9	20.1	167	138	
Hori.	4924.000	AV	36.8	31.7	7.4	41.3	2.3	36.9	53.9	17.0	157	96	
Hori.	7386.000	AV	37.6	36.7	8.8	41.3	2.3	44.1	53.9	9.8	100	0	
Hori.	9848.000	AV	36.9	38.1	9.9	40.4	2.3	46.8	53.9	7.1	100	0	
Vert.	2483.500	PK	45.2	27.8	15.0	40.7	2.3	49.6	73.9	24.3	143	90	
Vert.	3555.436	PK	49.5	28.4	7.1	41.4	2.3	45.9	73.9	28.0	145	185	
Vert.	4924.000	PK	47.1	31.7	7.4	41.3	2.3	47.2	73.9	26.7	151	66	
Vert.	7386.000	PK	46.7	36.7	8.8	41.3	2.3	53.2	73.9	20.7	100	0	
Vert.	9848.000	PK	45.4	38.1	9.9	40.4	2.3	55.3	73.9	18.6	100	0	
Vert.	2483.500	AV	36.5	27.8	15.0	40.7	2.3	40.9	53.9	13.0	143	90	
Vert.	3555.436	AV	38.1	28.4	7.1	41.4	2.3	34.5	53.9	19.4	145	185	
Vert.	4924.000	AV	37.6	31.7	7.4	41.3	2.3	37.7	53.9	16.2	151	66	
Vert.	7386.000	AV	37.7	36.7	8.8	41.3	2.3	44.2	53.9	9.7	100	0	
Vert.	9848.000	AV	37.0	38.1	9.9	40.4	2.3	46.9	53.9	**7.0**	100	0	

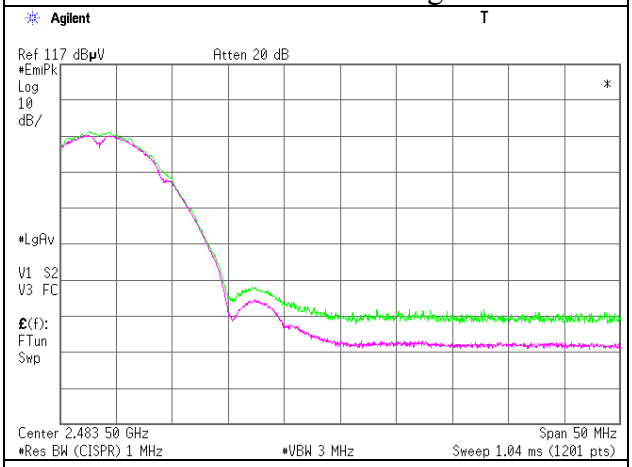
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11212760S-A
Date	April 14, 2016
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shinichi Takano
	(1-13GHz)
Mode	Tx 11b 2462 MHz

Horizontal

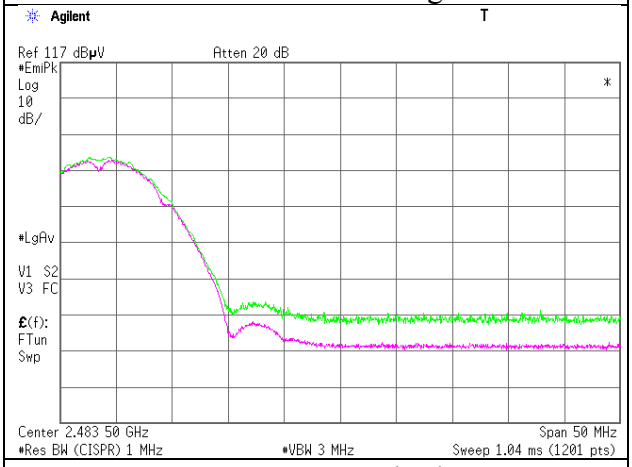
Restricted-band band-edge Plot



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 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11g 2412 MHz		

(* 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	59.2	27.7	14.8	40.7	2.3	63.3	73.9	**10.6**	168	11	
Hori.	3514.380	PK	47.7	28.3	7.1	41.3	2.3	44.1	73.9	29.8	144	352	
Hori.	4824.000	PK	47.3	31.4	7.3	41.5	2.3	46.8	73.9	27.1	166	76	
Hori.	7236.000	PK	46.0	36.6	8.7	41.2	2.3	52.4	73.9	21.5	100	0	
Hori.	9648.000	PK	45.6	38.0	9.8	40.5	2.3	55.2	73.9	18.7	100	0	
Hori.	3514.380	AV	37.3	28.3	7.1	41.3	2.3	33.7	53.9	20.2	144	352	
Vert.	2390.000	PK	47.9	27.7	14.8	40.7	2.3	52.0	73.9	21.9	155	84	
Vert.	3555.715	PK	51.9	28.4	7.1	41.4	2.3	48.3	73.9	25.6	155	193	
Vert.	4824.000	PK	47.7	31.4	7.3	41.5	2.3	47.2	73.9	26.7	146	218	
Vert.	7236.000	PK	46.9	36.6	8.7	41.2	2.3	53.3	73.9	20.6	100	0	
Vert.	9648.000	PK	46.6	38.0	9.8	40.5	2.3	56.2	73.9	17.7	100	0	
Vert.	3555.715	AV	39.8	28.4	7.1	41.4	2.3	36.2	53.9	17.7	155	193	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	44.8	27.7	14.8	40.7	0.2	2.3	49.1	53.9	**4.8**	*1)
Hori.	4824.000	AV	37.6	31.4	7.3	41.5	0.2	2.3	37.3	53.9	16.6	
Hori.	7236.000	AV	37.4	36.6	8.7	41.2	0.2	2.3	44.0	53.9	9.9	
Hori.	9648.000	AV	36.9	38.0	9.8	40.5	0.2	2.3	46.7	53.9	7.2	
Vert.	2390.000	AV	39.3	27.7	14.8	40.7	0.2	2.3	43.6	53.9	10.3	*1)
Vert.	4824.000	AV	37.8	31.4	7.3	41.5	0.2	2.3	37.5	53.9	16.4	
Vert.	7236.000	AV	37.5	36.6	8.7	41.2	0.2	2.3	44.1	53.9	9.8	
Vert.	9648.000	AV	37.1	38.0	9.8	40.5	0.2	2.3	46.9	53.9	7.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.
*1) Not out of band emission (Leakage Power)

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

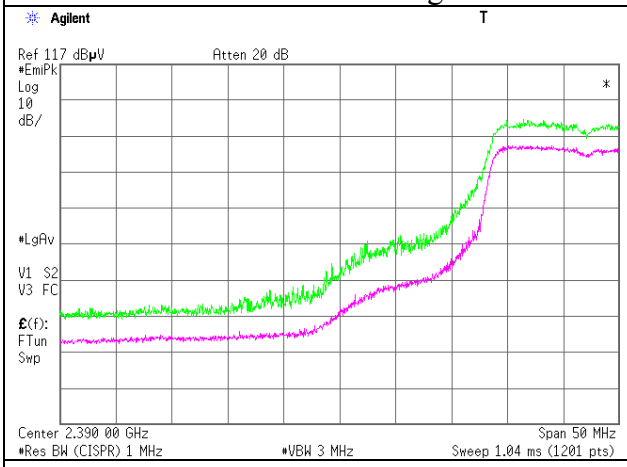
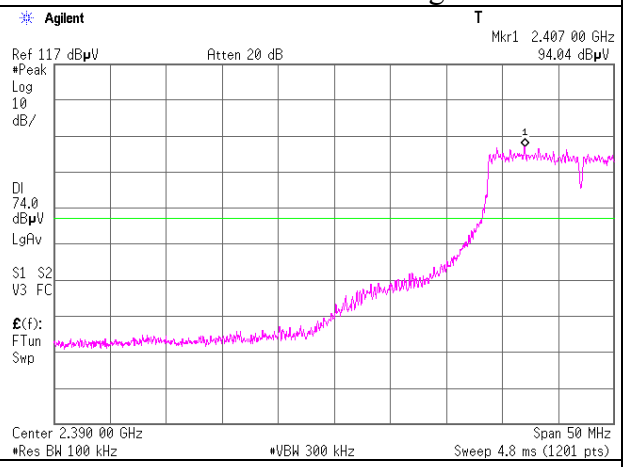
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	92.1	27.7	14.9	40.7	2.3	96.3	-	-	Carrier
Hori.	2400.000	PK	58.1	27.7	14.9	40.7	2.3	62.3	76.3	14.0	
Vert.	2412.000	PK	83.5	27.7	14.9	40.7	2.3	87.7	-	-	Carrier
Vert.	2400.000	PK	48.8	27.7	14.9	40.7	2.3	53.0	67.6	14.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

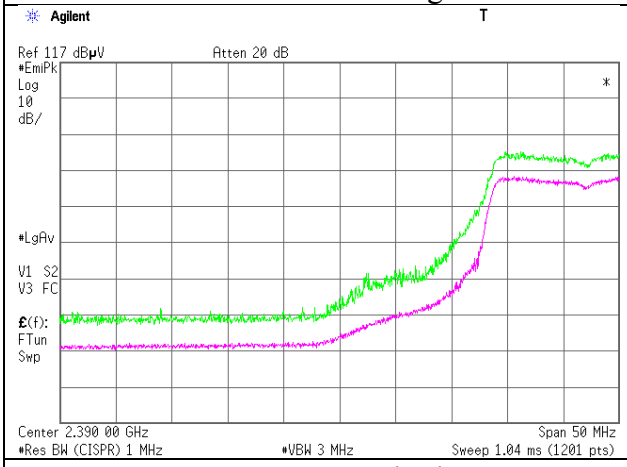
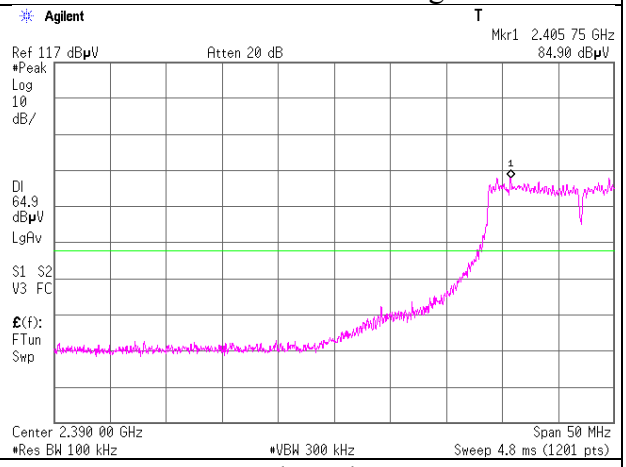
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11212760S-A
Date	April 14, 2016
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)
Mode	Tx 11g 2412 MHz

Horizontal

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

Vertical

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

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 40 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (30M-1GHz, 18-26GHz)
Mode	Tx 11g 2437 MHz		

(* 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.	371.720	QP	36.8	15.5	7.1	31.6	0.0	27.8	46.0	18.2	100	110	
Hori.	463.882	QP	38.8	17.1	7.6	31.6	0.0	31.9	46.0	14.1	100	240	
Hori.	665.988	QP	42.4	19.8	8.7	31.6	0.0	39.3	46.0	**6.7**	100	265	
Hori.	4874.000	PK	47.3	31.6	7.3	41.4	2.3	47.1	73.9	26.8	159	159	
Hori.	7311.000	PK	47.0	36.7	8.7	41.2	2.3	53.5	73.9	20.4	100	0	
Hori.	9748.000	PK	46.3	38.0	9.8	40.4	2.3	56.0	73.9	17.9	100	0	
Vert.	33.797	QP	30.4	16.4	6.9	31.9	0.0	21.8	40.0	18.2	100	237	
Vert.	76.802	QP	43.0	6.2	7.9	31.9	0.0	25.2	40.0	14.8	100	230	
Vert.	101.380	QP	42.8	10.3	8.0	31.9	0.0	29.2	43.5	14.3	100	99	
Vert.	175.112	QP	36.8	15.7	8.7	31.8	0.0	29.4	43.5	14.1	100	173	
Vert.	181.253	QP	37.3	16.0	8.7	31.8	0.0	30.2	43.5	13.3	100	160	
Vert.	187.398	QP	38.0	16.1	8.7	31.8	0.0	31.0	43.5	12.5	100	174	
Vert.	665.985	QP	42.1	19.8	8.7	31.6	0.0	39.0	46.0	7.0	100	230	
Vert.	4874.000	PK	46.7	31.6	7.3	41.4	2.3	46.5	73.9	27.4	145	254	
Vert.	7311.000	PK	46.5	36.7	8.7	41.2	2.3	53.0	73.9	20.9	100	0	
Vert.	9748.000	PK	46.1	38.0	9.8	40.4	2.3	55.8	73.9	18.1	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	37.2	31.6	7.3	41.4	0.2	2.3	37.2	53.9	16.7	
Hori.	7311.000	AV	37.5	36.7	8.7	41.2	0.2	2.3	44.2	53.9	9.7	
Hori.	9748.000	AV	36.7	38.0	9.8	40.4	0.2	2.3	46.6	53.9	7.3	
Vert.	4874.000	AV	37.2	31.6	7.3	41.4	0.2	2.3	37.2	53.9	16.7	
Vert.	7311.000	AV	37.6	36.7	8.7	41.2	0.2	2.3	44.3	53.9	9.6	
Vert.	9748.000	AV	37.2	38.0	9.8	40.4	0.2	2.3	47.1	53.9	**6.8**	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41% RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11g 2462 MHz		

(* 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	57.4	27.8	15.0	40.7	2.3	61.8	73.9	**12.1**	160	332	
Hori.	4924.000	PK	47.2	31.7	7.4	41.3	2.3	47.3	73.9	26.6	155	36	
Hori.	7386.000	PK	47.8	36.7	8.8	41.3	2.3	54.3	73.9	19.6	100	0	
Hori.	9848.000	PK	46.4	38.1	9.9	40.4	2.3	56.3	73.9	17.6	100	0	
Vert.	2483.500	PK	49.3	27.8	15.0	40.7	2.3	53.7	73.9	20.2	146	79	
Vert.	4924.000	PK	48.2	31.7	7.4	41.3	2.3	48.3	73.9	25.6	153	214	
Vert.	7386.000	PK	47.0	36.7	8.8	41.3	2.3	53.5	73.9	20.4	100	0	
Vert.	9848.000	PK	46.2	38.1	9.9	40.4	2.3	56.1	73.9	17.8	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	43.2	27.8	15.0	40.7	0.2	2.3	47.8	53.9	**6.1**	*1)
Hori.	4924.000	AV	37.4	31.7	7.4	41.3	0.2	2.3	37.7	53.9	16.2	
Hori.	7386.000	AV	37.3	36.7	8.8	41.3	0.2	2.3	44.0	53.9	9.9	
Hori.	9848.000	AV	37.0	38.1	9.9	40.4	0.2	2.3	47.1	53.9	6.8	
Vert.	2483.500	AV	37.5	27.8	15.0	40.7	0.2	2.3	42.1	53.9	11.8	*1)
Vert.	4924.000	AV	38.1	31.7	7.4	41.3	0.2	2.3	38.4	53.9	15.5	
Vert.	7386.000	AV	37.5	36.7	8.8	41.3	0.2	2.3	44.2	53.9	9.7	
Vert.	9848.000	AV	36.9	38.1	9.9	40.4	0.2	2.3	47.0	53.9	6.9	

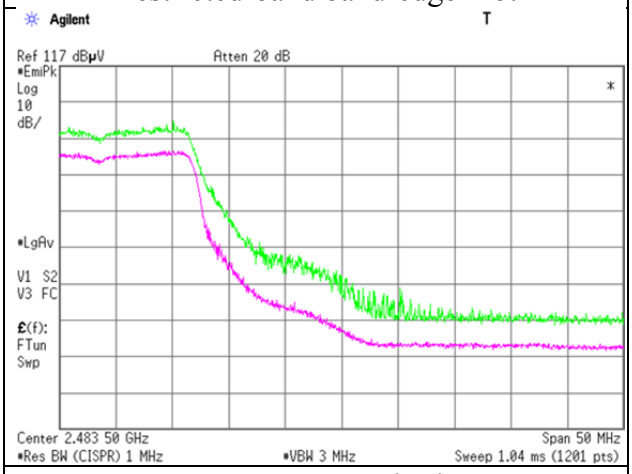
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11212760S-A
Date	April 14, 2016
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shinichi Takano
	(1-13GHz)
Mode	Tx 11g 2462 MHz

Horizontal

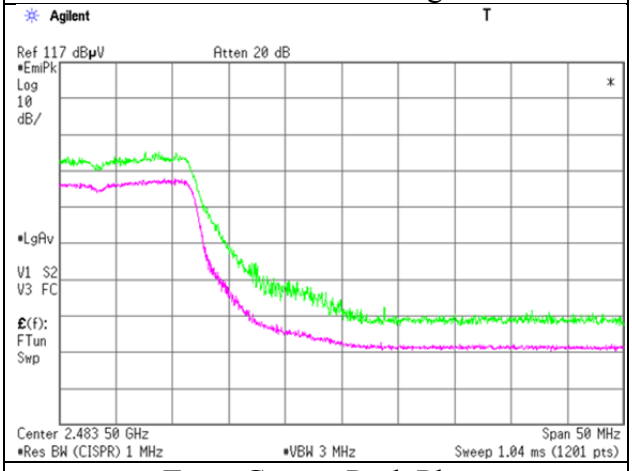
Restricted-band band-edge Plot



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 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11n-20 2412 MHz		

(* 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	57.7	27.7	14.8	40.7	2.3	61.8	73.9	**12.1**	154	14	
Hori.	4824.000	PK	47.3	31.4	7.3	41.5	2.3	46.8	73.9	27.1	153	195	
Hori.	7236.000	PK	46.7	36.6	8.7	41.2	2.3	53.1	73.9	20.8	100	0	
Hori.	9648.000	PK	46.3	38.0	9.8	40.5	2.3	55.9	73.9	18.0	100	0	
Vert.	2390.000	PK	51.0	27.7	14.8	40.7	2.3	55.1	73.9	18.8	142	330	
Vert.	4824.000	PK	47.7	31.4	7.3	41.5	2.3	47.2	73.9	26.7	143	156	
Vert.	7236.000	PK	47.0	36.6	8.7	41.2	2.3	53.4	73.9	20.5	100	0	
Vert.	9648.000	PK	47.2	38.0	9.8	40.5	2.3	56.8	73.9	17.1	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	44.8	27.7	14.8	40.7	0.2	2.3	49.1	53.9	**4.8**	*1)
Hori.	4824.000	AV	37.6	31.4	7.3	41.5	0.2	2.3	37.3	53.9	16.6	
Hori.	7236.000	AV	37.3	36.6	8.7	41.2	0.2	2.3	43.9	53.9	10.0	
Hori.	9648.000	AV	36.8	38.0	9.8	40.5	0.2	2.3	46.6	53.9	7.3	
Vert.	2390.000	AV	39.3	27.7	14.8	40.7	0.2	2.3	43.6	53.9	10.3	*1)
Vert.	4824.000	AV	37.5	31.4	7.3	41.5	0.2	2.3	37.2	53.9	16.7	
Vert.	7236.000	AV	37.3	36.6	8.7	41.2	0.2	2.3	43.9	53.9	10.0	
Vert.	9648.000	AV	37.0	38.0	9.8	40.5	0.2	2.3	46.8	53.9	7.1	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.
*1) Not out of band emission (Leakage Power)

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

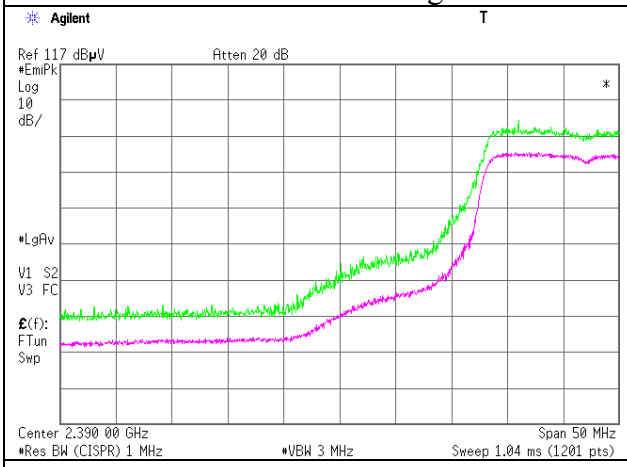
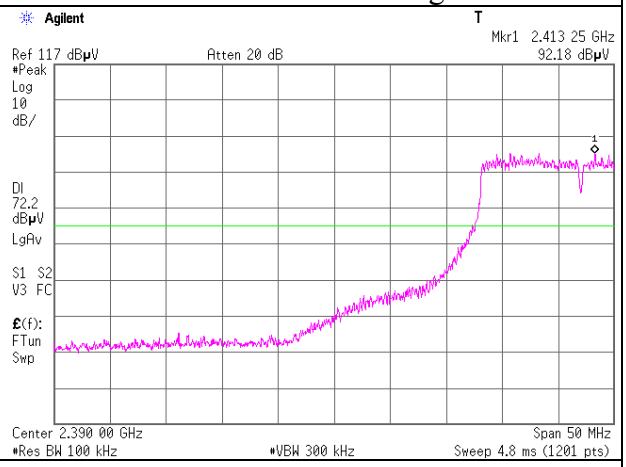
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	91.4	27.7	14.9	40.7	2.3	95.6	-	-	Carrier
Hori.	2400.000	PK	55.9	27.7	14.9	40.7	2.3	60.1	75.6	15.5	
Vert.	2412.000	PK	82.6	27.7	14.9	40.7	2.3	86.8	-	-	Carrier
Vert.	2400.000	PK	49.5	27.7	14.9	40.7	2.3	53.7	66.8	13.1	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

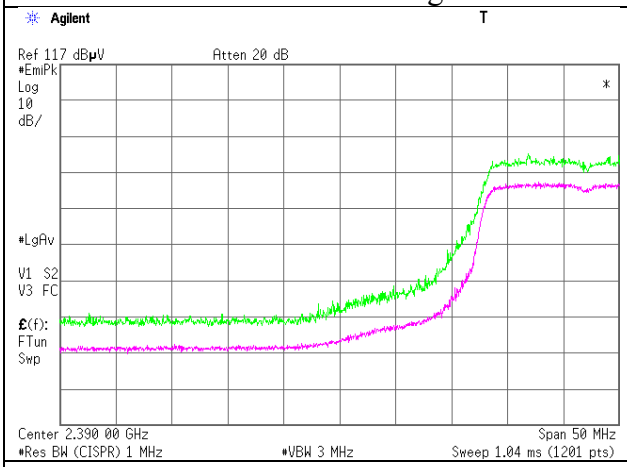
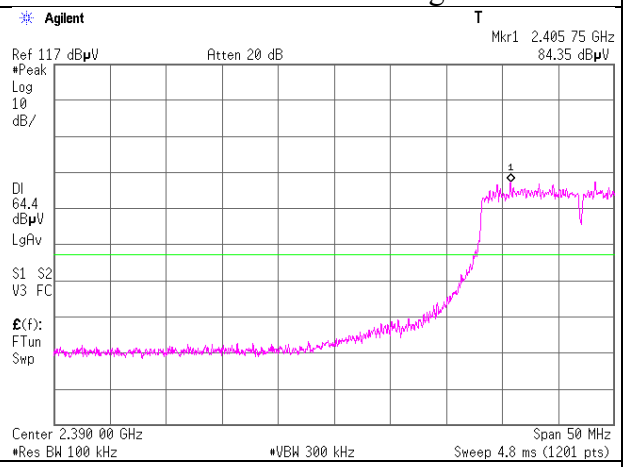
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11212760S-A
Date	April 14, 2016
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shinichi Takano
	(1-13GHz)
Mode	Tx 11n-20 2412 MHz

Horizontal

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

Vertical

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

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11n-20 2437 MHz		

(* 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	47.5	31.6	7.3	41.4	2.3	47.3	73.9	26.6	142	150	
Hori.	7311.000	PK	46.5	36.7	8.7	41.2	2.3	53.0	73.9	20.9	100	0	
Hori.	9748.000	PK	46.5	38.0	9.8	40.4	2.3	56.2	73.9	**17.7**	100	0	
Vert.	4874.000	PK	47.2	31.6	7.3	41.4	2.3	47.0	73.9	26.9	149	202	
Vert.	7311.000	PK	46.7	36.7	8.7	41.2	2.3	53.2	73.9	20.7	100	0	
Vert.	9748.000	PK	46.1	38.0	9.8	40.4	2.3	55.8	73.9	18.1	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4874.000	AV	37.4	31.6	7.3	41.4	0.2	2.3	37.4	53.9	16.5	
Hori.	7311.000	AV	37.4	36.7	8.7	41.2	0.2	2.3	44.1	53.9	9.8	
Hori.	9748.000	AV	36.7	38.0	9.8	40.4	0.2	2.3	46.6	53.9	7.3	
Vert.	4874.000	AV	37.3	31.6	7.3	41.4	0.2	2.3	37.3	53.9	16.6	
Vert.	7311.000	AV	37.4	36.7	8.7	41.2	0.2	2.3	44.1	53.9	9.8	
Vert.	9748.000	AV	36.9	38.0	9.8	40.4	0.2	2.3	46.8	53.9	**7.1**	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 41 % RH	23 deg. C / 41 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (18-26GHz)
Mode	Tx 11n-20 2462 MHz		

(* 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	55.8	27.9	13.8	40.7	2.3	59.1	73.9	**14.8**	143	16	
Hori.	3111.110	PK	53.1	28.3	5.3	41.0	2.3	48.0	73.9	25.9	142	162	
Hori.	4924.000	PK	47.0	31.8	6.3	41.3	2.3	46.1	73.9	27.8	157	196	
Hori.	7386.000	PK	47.4	36.9	7.6	41.3	2.3	52.9	73.9	21.0	100	0	
Hori.	9848.000	PK	46.0	38.1	8.8	40.4	2.3	54.8	73.9	19.1	100	0	
Hori.	3111.110	AV	40.4	28.3	5.3	41.0	2.3	35.3	53.9	18.6	142	162	
Vert.	2483.500	PK	49.8	27.9	13.8	40.7	2.3	53.1	73.9	20.8	146	329	
Vert.	3111.106	PK	49.3	28.3	5.3	41.0	2.3	44.2	73.9	29.7	157	160	
Vert.	4924.000	PK	48.4	31.8	6.3	41.3	2.3	47.5	73.9	26.4	158	178	
Vert.	7386.000	PK	47.5	36.9	7.6	41.3	2.3	53.0	73.9	20.9	100	0	
Vert.	9848.000	PK	46.4	38.1	8.8	40.4	2.3	55.2	73.9	18.7	100	0	
Vert.	3111.106	AV	38.3	28.3	5.3	41.0	2.3	33.2	53.9	20.7	157	160	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	43.7	27.9	13.8	40.7	0.2	2.3	47.2	53.9	**6.7**	*1)
Hori.	4924.000	AV	38.0	31.8	6.3	41.3	0.2	2.3	37.3	53.9	16.6	
Hori.	7386.000	AV	37.6	36.9	7.6	41.3	0.2	2.3	43.3	53.9	10.6	
Hori.	9848.000	AV	37.1	38.1	8.8	40.4	0.2	2.3	46.1	53.9	7.8	
Vert.	2483.500	AV	37.3	27.9	13.8	40.7	0.2	2.3	40.8	53.9	13.1	*1)
Vert.	4924.000	AV	38.2	31.8	6.3	41.3	0.2	2.3	37.5	53.9	16.4	
Vert.	7386.000	AV	37.7	36.9	7.6	41.3	0.2	2.3	43.4	53.9	10.5	
Vert.	9848.000	AV	37.3	38.1	8.8	40.4	0.2	2.3	46.3	53.9	7.6	

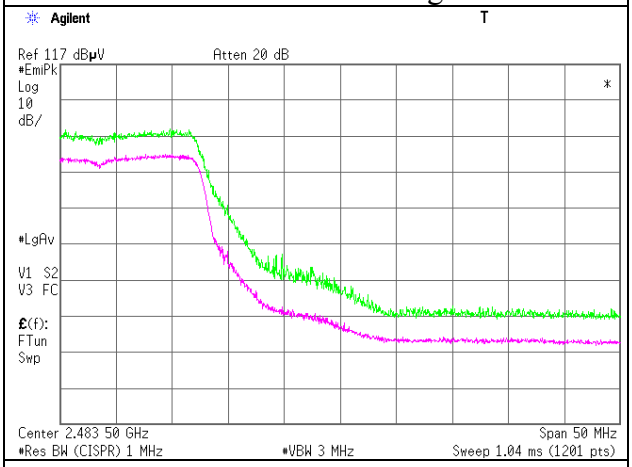
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.9 m / 3.0 m) = 2.28 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB
Duty factor refer to "Duty factor Calculation chart" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11212760S-A
Date	April 14, 2016
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shinichi Takano
	(1-13GHz)
Mode	Tx 11n-20 2462 MHz

Horizontal

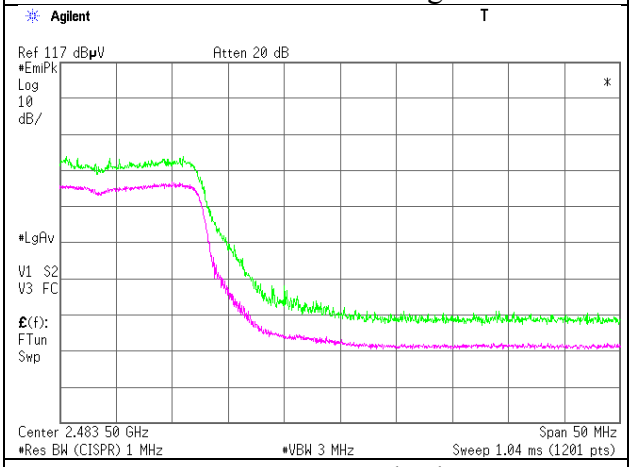
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

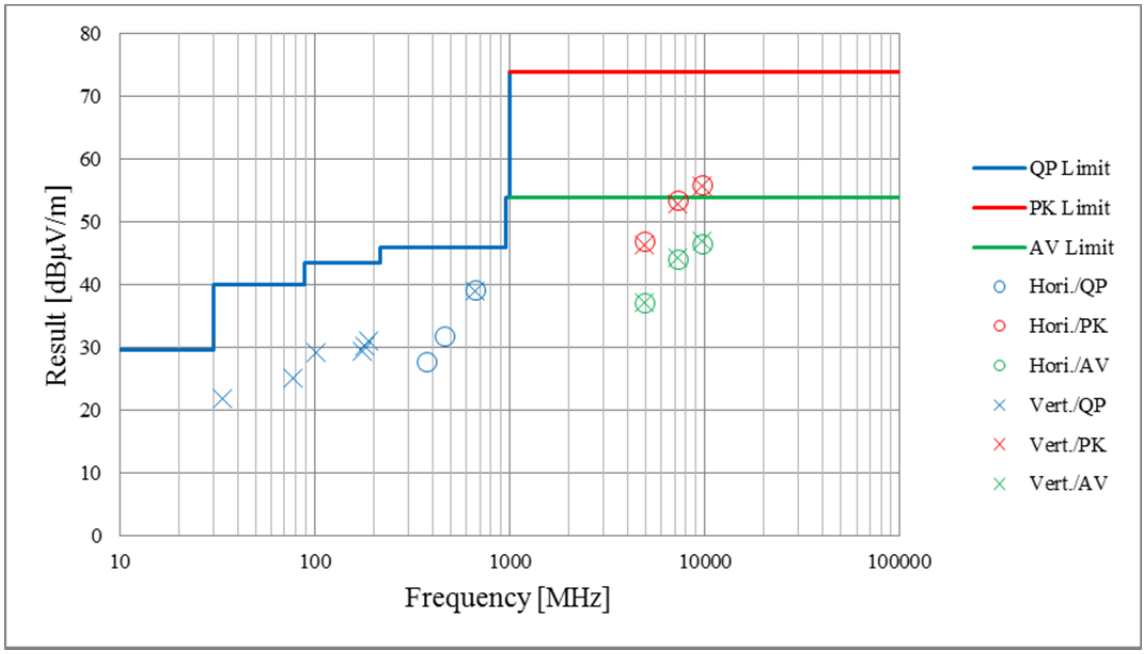


Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Shonan EMC Lab. No.1 and 2 Semi Anechoic Chamber		
Report No.	11212760S-A		
Date	April 13, 2016	April 14, 2016	April 15, 2016
Temperature / Humidity	23 deg. C / 40 % RH	22 deg. C / 40 % RH	23 deg. C / 40 % RH
Engineer	Shinichi Takano (1-13GHz)	Shinichi Takano (13-18GHz)	Shinichi Takano (30M-1GHz, 18-26GHz)
Mode	Tx 11g 2437 MHz		

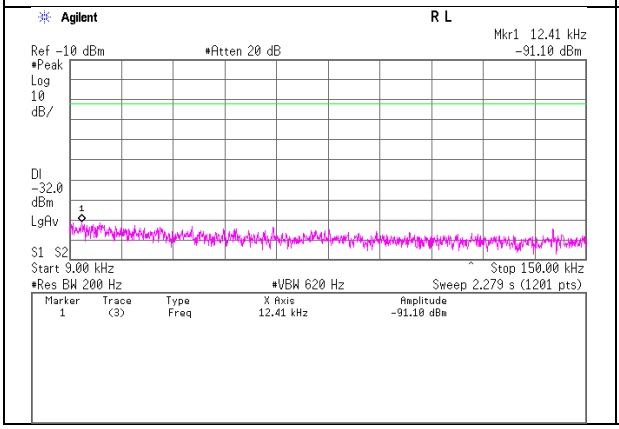


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

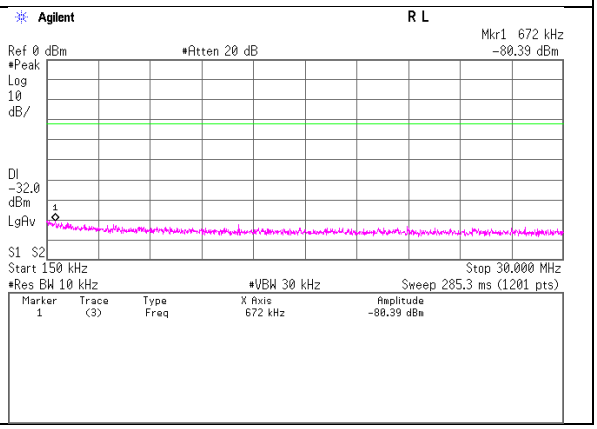
Conducted Spurious Emission

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx 11g 2437 MHz

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
12.41	-91.2	0.40	9.5	2.0	1	-79.2	300	6.0	-18.0	45.7	63.7	
672.00	-88.4	0.40	9.5	2.0	1	-76.5	30	6.0	4.8	31.0	26.2	

E = EIRP - 20 log (D) + Ground bounce + 104.8 [dBuV/m]
EIRP = Reading + Cable Loss + Attenator Loss + Antenna Gain + 10 * log (N)

Power Density

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

11b

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-8.49	1.17	9.67	2.35	8.00	5.65
2437.00	-8.35	1.18	9.67	2.50	8.00	5.50
2462.00	-9.07	1.18	9.67	1.78	8.00	6.22

11g

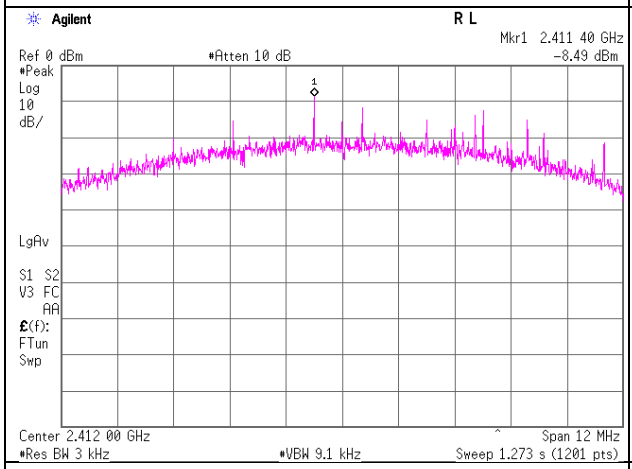
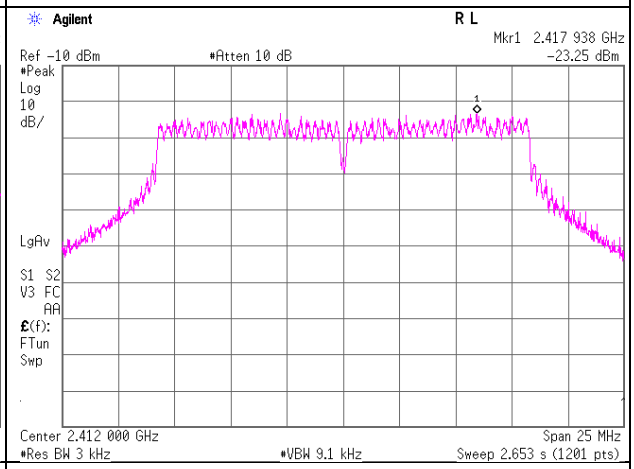
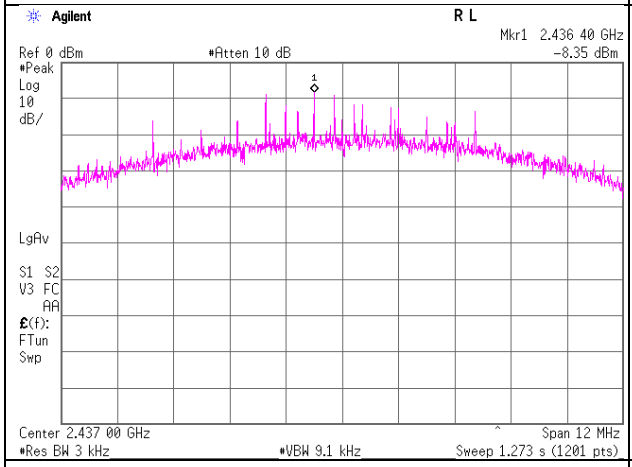
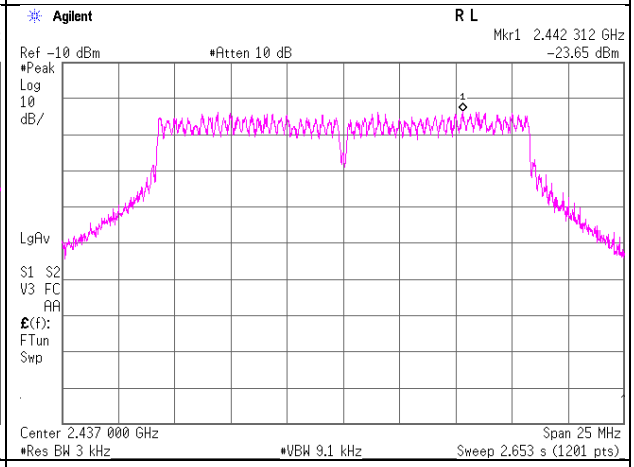
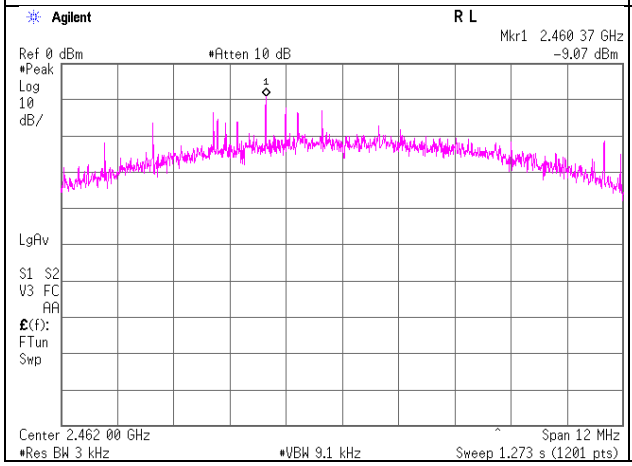
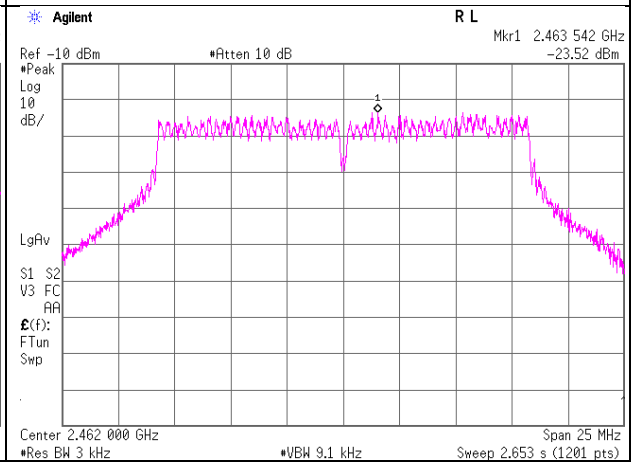
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-23.25	1.17	9.67	-12.41	8.00	20.41
2437.00	-23.65	1.18	9.67	-12.80	8.00	20.80
2462.00	-23.52	1.18	9.67	-12.67	8.00	20.67

11n-20

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412.00	-24.73	1.17	9.67	-13.89	8.00	21.89
2437.00	-23.86	1.18	9.67	-13.01	8.00	21.01
2462.00	-24.61	1.18	9.67	-13.76	8.00	21.76

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

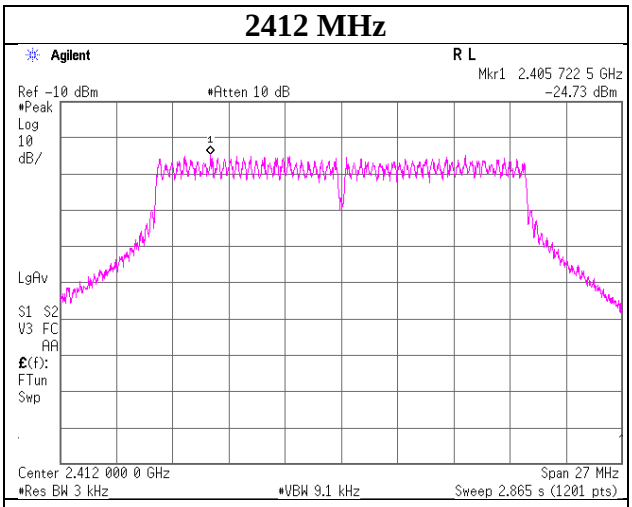
Power Density

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

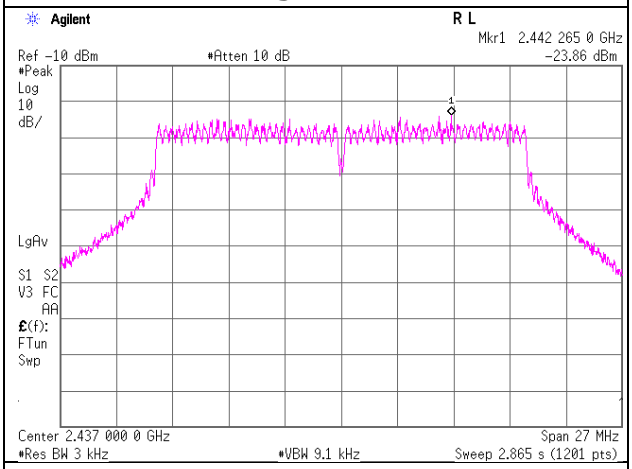
Power Density

11n-20

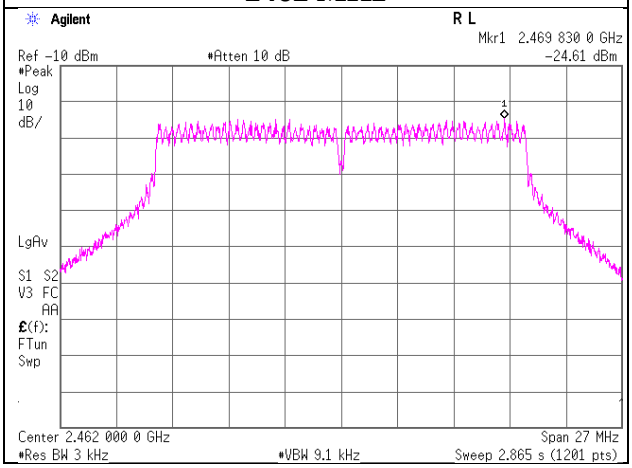
2412 MHz



2437 MHz

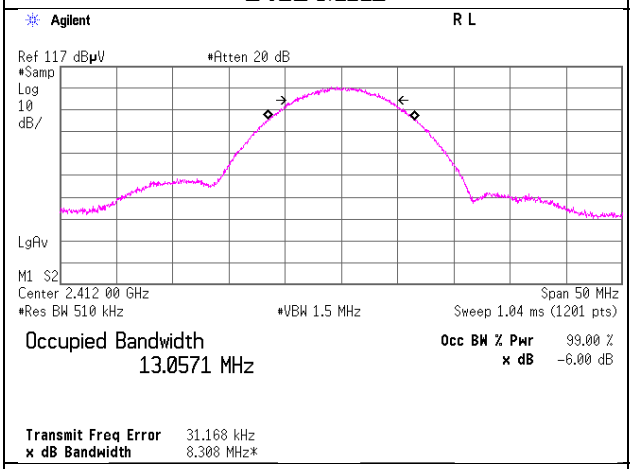
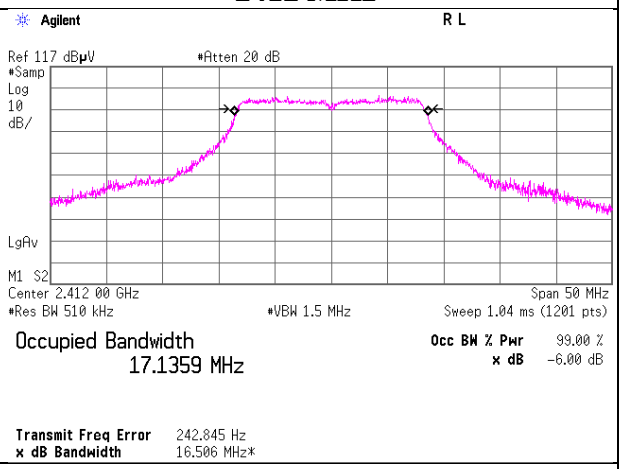
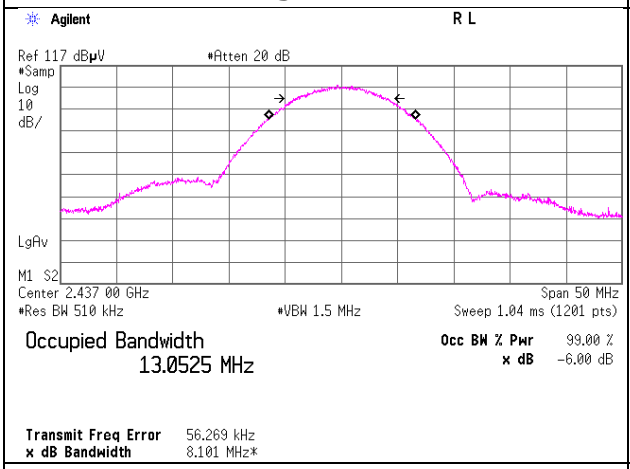
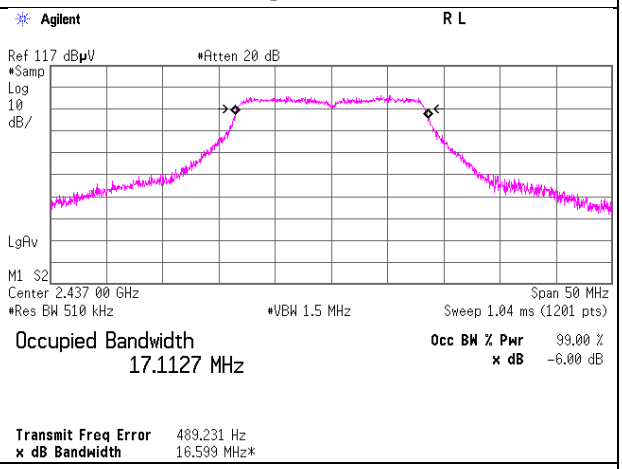
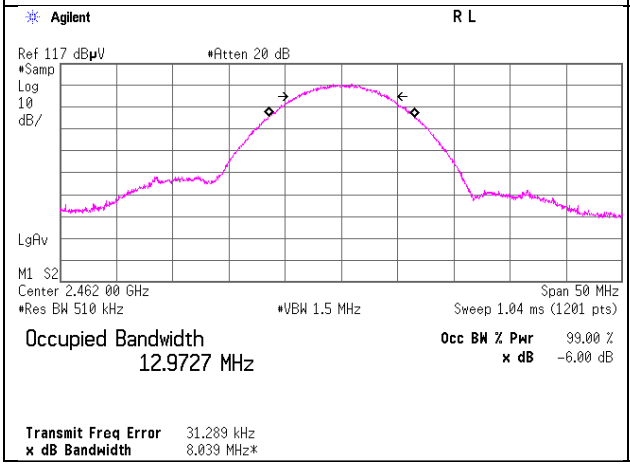
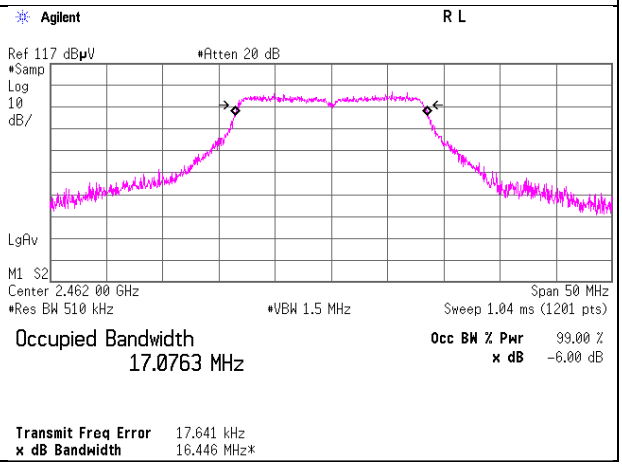


2462 MHz



99%Occupied Bandwidth

Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

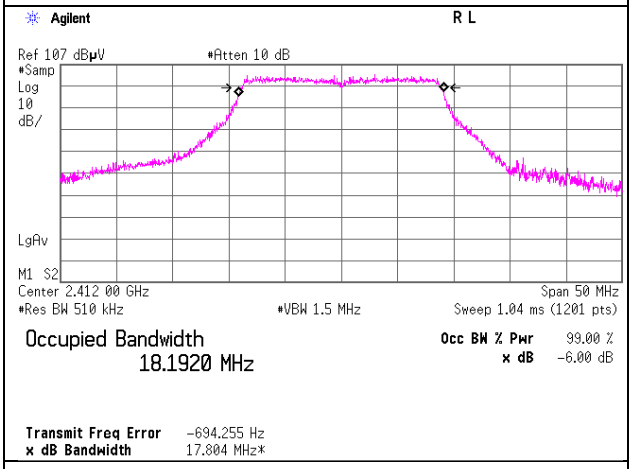
11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2437 MHz**
	
2462 MHz	**2462 MHz**
	

99% Occupied Bandwidth

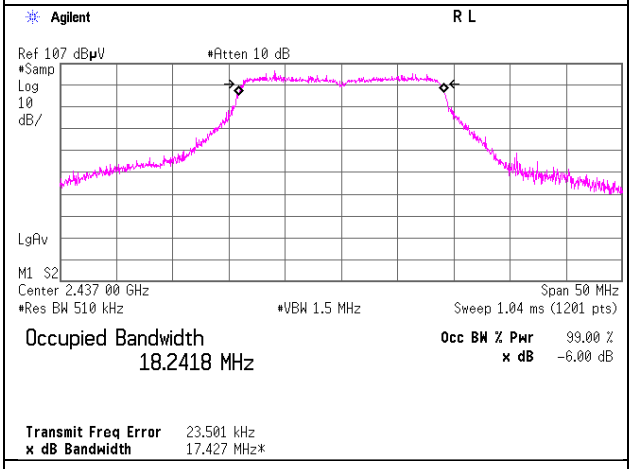
Test place	Shonan EMC Lab. No.5 Shielded Room
Report No.	11212760S-A
Date	April 12, 2016
Temperature / Humidity	23 deg. C / 41 % RH
Engineer	Makoto Hosaka
Mode	Tx

11n-20

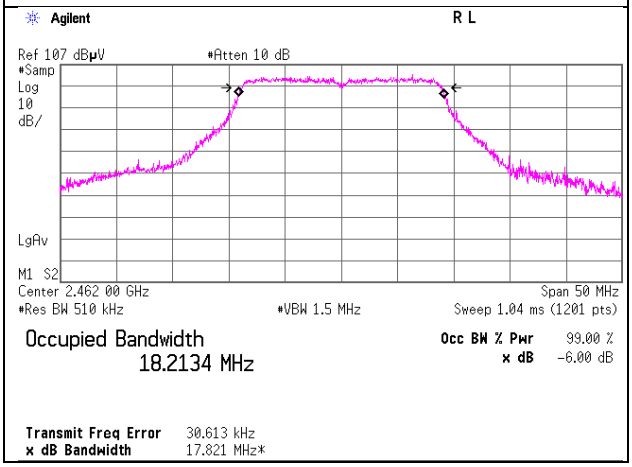
2412 MHz



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-06	Power Meter	Anritsu	ML2495A	0850009	AT	2016/04/01 * 12
SPSS-03	Power sensor	Anritsu	MA2411B	0917063	AT	2016/04/01 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	AT	2015/09/16 * 12
SAT10-09	Attenuator	Weinschel Corp.	54A-10	W5692	AT	2015/11/04 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2016/03/23 * 12
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	AT	2015/12/07 * 12
STS-05	Digital Hitester	Hioki	3805-50	080997828	AT	2015/11/18 * 12
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2016/03/22 * 12
SCC-G01	Coaxial Cable	Suhner	SUCOFLEX 104A	46497/4A	RE	2015/04/17 * 12
SCC-G21	Coaxial Cable	Suhner	SUCOFLEX 104	296169/4	RE	2015/05/19 * 12
SHA-01	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	RE	2015/08/10 * 12
SOS-01	Humidity Indicator	A&D	AD-5681	4062555	RE	2015/10/22 * 12
SRENT-04	Spectrum Analyzer	KEYSIGHT	E4440A	MY46186388	RE	2015/10/06 * 12
SJM-02	Measure	KOMELON	KMC-36	-	RE	-
SAEC-01(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	RE	2015/07/08 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
STS-01	Digital Hitester	Hioki	3805-50	080997812	RE	2015/11/18 * 12
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2015/11/04 * 12
SFL-18	Highpass Filter	MICRO-TRONICS	HPM50111	119	RE	2015/04/09 * 12
SAJ-02	Antenna Tilt Jig	Intelligent System Engineering Co., Ltd	Antenna Tilt Jig	T-S002	RE	Pre Check

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: RE: Radiated Emission test
AT: Antenna Terminal Conducted test

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2016/03/22 * 12
SCC-G05	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	RE	2015/05/11 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2015/05/19 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2015/08/10 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2015/10/22 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	RE	2015/09/16 * 12
SJM-09	Measure	PROMART	SEN1935	-	RE	-
SAEC-02(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	RE	2015/07/09 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI,MF)	-	RE	-
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE	2016/03/22 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2016/03/15 * 12
SCC-G33	Coaxial Cable	Junkosha	MWX241-01000KMSKMS	-	RE	2015/04/09 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2016/03/08 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2016/03/23 * 12
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2016/02/19 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2016/02/25 * 12
KAT3-11	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2015/08/31 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2015/11/02 * 12
SCC-B1/B3/B5/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2015/04/17 * 12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	RE	2015/04/17 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0893	RE	2015/11/03 * 12
STR-07	Test Receiver	Rohde & Schwarz	ESU26	100484	RE	2015/09/04 * 12
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2015/07/15 * 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: **RE: Radiated Emission test**
AT: Antenna Terminal Conducted test