RADIO TEST REPORT

Test Report No. : 11143372S-A-R1

Applicant	:	**FUJIFILM Corporation**
Type of Equipment	:	**Wireless LAN Module**
Model No.	:	**SX-PCEAN(FF-E)**
FCC ID	:	**W2Z-01000008**
Test regulation	:	**FCC Part 15 Subpart C: 2015**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 11143372S-A. 11143372S-A is replaced with this report.

Date of test: February 1 to March 1, 2016

Representative test engineer:
Hiroyuki Morikawa
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

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REVISION HISTORY

Original Test Report No.: 11143372S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11143372S-A	April 11, 2016	-	-
1	11143372S-A-R1	June 6, 2016	4	Modification of antenna information

CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	FUJIFILM Corporation
Address	:	9-7-3 Akasaka, Minato-ku, Tokyo 107-0052 Japan
Telephone Number	:	+81-3-6271-1654
Facsimile Number	:	+81-3-6271-1189
Contact Person	:	Takao Ozaki

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

2.1 Identification of E.U.T.

Type of Equipment	:	Wireless LAN Module
Model No.	:	SX-PCEAN(FF-E)
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V
Receipt Date of Sample	:	February 1, 2016
Country of Mass-production	:	Japan
Condition of EUT	:	Production model
Modification of EUT	:	No Modification by the test lab.

2.2 Product Description

Model: SX-PCEAN(FF-E) (referred to as the EUT in this report) is a Wireless LAN Module.

General Specification

Clock frequency(ies) in the system : 40 MHz

Radio Specification

Radio Type : Transceiver
Method of Frequency Generation : Synthesizer

	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20M band)	IEEE802.11n (40M band)
Frequency of operation *1)	2412-2462 MHz	2412-2462 MHz	5180-5320 MHz 5500-5700 MHz 5745-5825 MHz	2412-2462 MHz 5180-5320 MHz 5500-5700 MHz 5745-5825 MHz	2422-2452 MHz 5190-5310 MHz 5510-5670 MHz 5755-5795 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		
Channel spacing	5MHz		20 MHz	2.4 GHz band 5 MHz 5 GHz band 20 MHz	2.4 GHz band 5 MHz 5 GHz band 40 MHz

Antenna	Antenna #1 (Bottom)	Antenna #0 (Side)
Antenna quantity	2 pcs. (*. Separation distance between the antenna #0 and the antenna #1: 480 mm) 11b,g,a: One selected Tx antenna operation. 11n(20HT),n(40HT): One selected Tx antenna operation (MCS0~7) / Two Tx antenna operation (MCS8~13)	
Antenna model	113Y120035A (cable length: 300 mm)	113Y1200036A (cable length: 575 mm)
Antenna type / connector type	Monopole antenna / Connector; PCB side: U.FL, Antenna side: soldered	
Antenna gain (max.peak) (excluding cable loss)	-5.1 dBi (2.4 GHz), -1.3 dBi (5 GHz)	-6.9 dBi (2.4 GHz) -1.8 dBi (5 GHz)

*1) Refer to the test reports: 11143372S-B-R1 for FCC 15.407.

* The EUT does not perform simultaneous transmission of 2.4 GHz and 5 GHz Wireless LAN.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2015, final revised on November 23, 2015
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

*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.

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	31.8 dB, 0.39955 MHz, N&L1, QP, Tx 2417 MHz, IEEE 802.11n (HT20)	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	0.5 dB 2390.00 MHz, AV, Vertical Tx 2427 MHz IEEE 802.11n-40	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 RF Module has own regulator. The RF Module is constantly voltage through the regulator regardless of input voltage. Therefore, the EUT complies with the requirement.

FCC Part 15.203 / 212
The EUT has a unique antenna connector (U.FL). Therefore, the EUT complies with the 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 the site margin.

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

3.5 Test Location

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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.

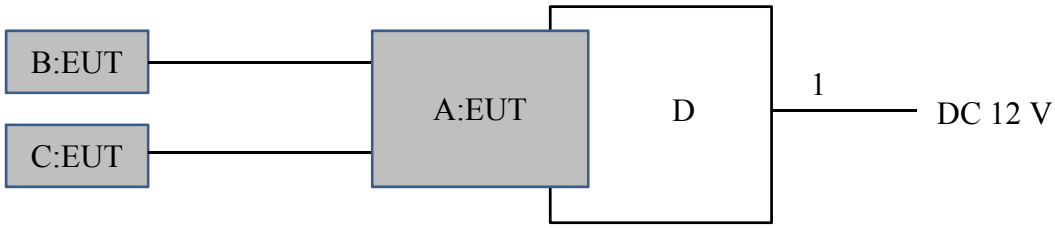
Power settings	IEEE 802.11b (1 Mbps) : 13.5 dBm, IEEE 802.11g (6 Mbps) : 13.5 dBm (2412 MHz), 17.0 dBm (2417 MHz), 16.0 dBm (2437 MHz), 15.0 dBm (2462 MHz) IEEE 802.11n (HT20, MCS8): 10.5 dBm (2412 MHz), 14.5 dBm (2417 MHz), 12.5 dBm (2437 MHz), 10.5 dBm (2462 MHz) IEEE 802.11n (HT40, MCS0): 6.0 dBm (2422 MHz), 13.5 dBm (2427 MHz), 10.5 dBm (2437 MHz), 7.0 dBm (2452 MHz)
Software	Atheros Radio Test (ART) - Revision 0.9 BUILD #34 ART_11n - Customer Version (ANWI BUILD)

*The details of Operating mode(s)

Test item	Mode	Tested frequency	Worst data rate *1)	Antenna *1)
Radiated emission (below 1GHz), Out of band emissions (Conducted) *2)	Transmitting IEEE 802.11n (HT20), MIMO	2417MHz	MCS8, PN9	Antenna 0 & Antenna 1
6dB bandwidth, Occupied Bandwidth (99%)	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	1Mbps, PN9	Antenna 0
	Transmitting IEEE 802.11g	2412MHz, 2437MHz, 2462MHz	6Mbps, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT20), SISO	2412MHz, 2437MHz, 2462MHz	MCS0, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT20), MIMO	2412MHz, 2437MHz, 2462MHz	MCS8, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT40), SISO	2422MHz, 2437MHz, 2452MHz	MCS0, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT40), MIMO	2422MHz, 2437MHz, 2452MHz	MCS8, PN9	Antenna 0
Maximum output power, Power density	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	1Mbps, PN9	Antenna 0
	Transmitting IEEE 802.11g	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	6Mbps, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT20), SISO	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	MCS0, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT20), MIMO	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	MCS8, PN9	Antenna 0 & Antenna 1
	Transmitting IEEE 802.11n (HT40), SISO	2422MHz, 2427MHz*3), 2437MHz, 2452MHz	MCS0, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT40), MIMO	2422MHz, 2427MHz*3), 2437MHz, 2452MHz	MCS8, PN9	Antenna 0 & Antenna 1
Radiated emission (above 1GHz) *4)	Transmitting IEEE 802.11b	2412MHz, 2437MHz, 2462MHz	1Mbps, PN9	Antenna 0
	Transmitting IEEE 802.11n (HT20), MIMO	2412MHz, 2417MHz*3), 2437MHz, 2462MHz	MCS8, PN9	Antenna 0 & Antenna 1
	Transmitting IEEE 802.11n (HT40), MIMO	2422MHz, 2427MHz*3), 2437MHz, 2452MHz	MCS8, PN9	Antenna 0 & Antenna 1

*1) The worst condition was determined based on the test result of Maximum Peak Output Power.
*2) 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.
*3) Measurement was performed additionally since the channel has the highest power setting.
*4) Since 11g and 11n-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power.

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	Wireless LAN Module	SX-PCEAN (FF-E)	008092609256	Silex technology, Inc.	EUT
B	Antenna	ANTDC-084A0	-	-	EUT
C	Antenna	ANTDC-083A0	-	-	EUT
D	Jig	113Y120019	57024134	Silex technology, Inc.	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	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 urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

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

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

Test Antennas are used as below;

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

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

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

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *3)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	Average Power Method: 12.2.5.2 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (Linear voltage) Trace: 100 traces	RBW: 100 kHz VBW: 300kHz
Test Distance	3 m	3 m (below 1 GHz), 3 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)		3 m (below 1 GHz), 3 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)

*1) Distance Factor: 20 x log (3.76 m / 3.0 m) = 2.0 dB (11n 40 2472 MHz only), 20 x log (4.26 m / 3.0 m) = 3.1 dB (other mode)
*2) Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.5 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.

	Frequency / Test / Antenna	Carrier	Spurious			
			30 MHz-1 GHz	1-13 GHz	13-18 GHz	18-26.5 GHz
Module	Horizontal	Y	X	Y	X	X
	Vertical	Y	Z	Y	X	X
Antenna 0	Horizontal	Z	X	Z	X	X
	Vertical	Z	X	Z	X	X
Antenna 1	Horizontal	X	X	X	X	X
	Vertical	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 M - 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 / 100 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	Sample	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				

*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

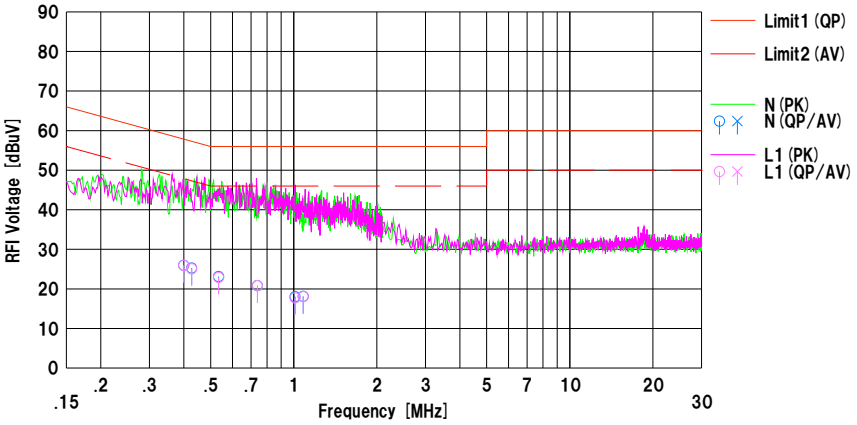
UL Japan,Inc. Shonan EMC Lab. No.1 Shielded Room
Date : 2016/03/01

Mode : IEEE802.11n (HT20), Tx, 2417MHz

Temp./Humi. : 22 deg.C / 33 %RH

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

Engineer : Wataru Kojima



No.	Freq.	Reading <QP>	Reading <AV>	C.Fac	Results <QP>	Results <AV>	Limit <QP>	Limit <AV>	Margin <QP>	Margin <AV>	Phase	Comment
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.39955	13.60	---	12.38	25.98	---	57.86	47.86	31.8	---	N	
2	0.42680	12.90	---	12.39	25.29	---	57.31	47.31	32.0	---	N	
3	0.53440	10.72	---	12.41	23.13	---	56.00	46.00	32.8	---	N	
4	0.73870	8.40	---	12.41	20.81	---	56.00	46.00	35.1	---	N	
5	1.01100	5.60	---	12.43	18.03	---	56.00	46.00	37.9	---	N	
6	1.08280	5.70	---	12.43	18.13	---	56.00	46.00	37.8	---	N	
7	0.39955	13.60	---	12.38	25.98	---	57.86	47.86	31.8	---	L1	
8	0.42680	12.70	---	12.39	25.09	---	57.31	47.31	32.2	---	L1	
9	0.53440	10.50	---	12.41	22.91	---	56.00	46.00	33.0	---	L1	
10	0.73870	8.40	---	12.41	20.81	---	56.00	46.00	35.1	---	L1	
11	1.01100	5.30	---	12.43	17.73	---	56.00	46.00	38.2	---	L1	
12	1.08280	5.60	---	12.43	18.03	---	56.00	46.00	37.9	---	L1	

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

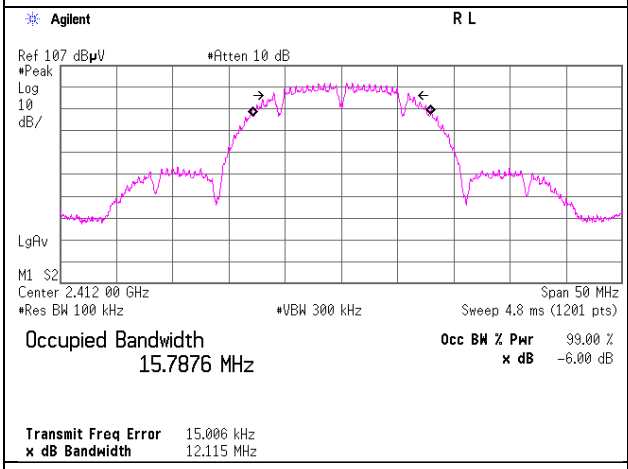
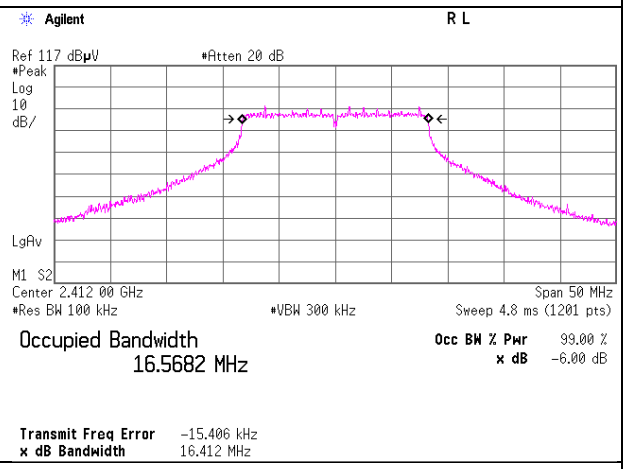
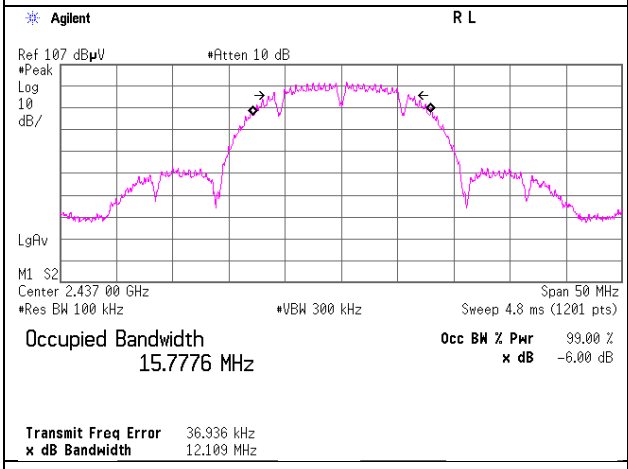
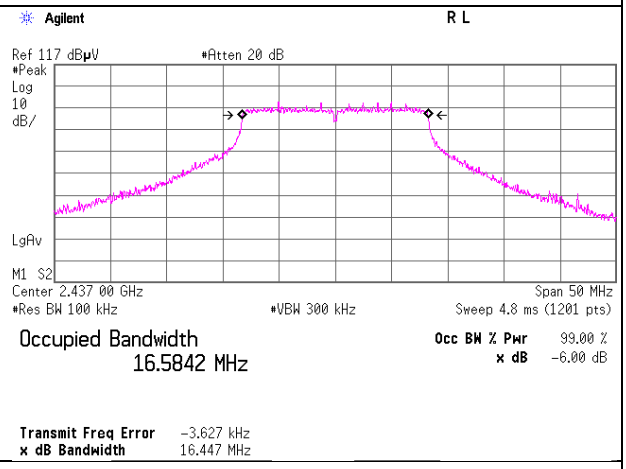
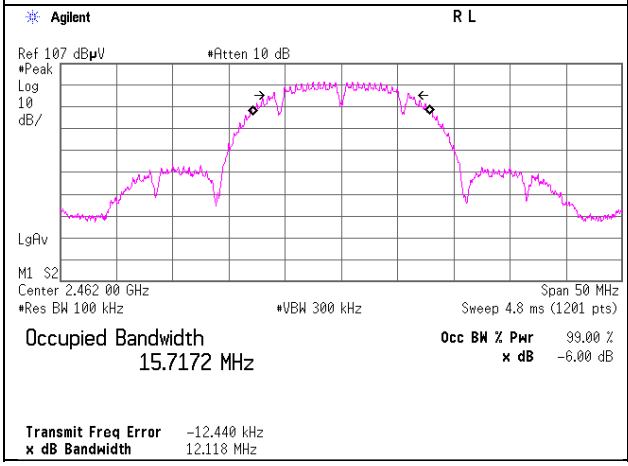
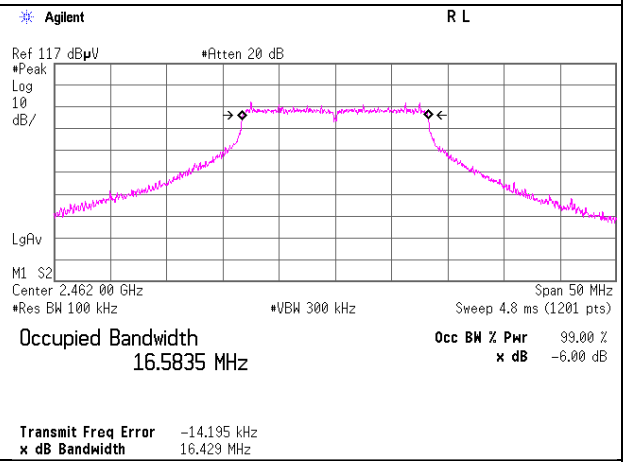
6dB Bandwidth

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

Antenna 0

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
11b	2412	12.115	> 500
	2437	12.109	> 500
	2462	12.118	> 500
11g	2412	16.412	> 500
	2437	16.447	> 500
	2462	16.429	> 500
11n HT-20 SISO	2412	17.632	> 500
	2437	17.625	> 500
	2462	17.629	> 500
11n HT-20 MIMO	2422	17.686	> 500
	2437	17.669	> 500
	2452	17.724	> 500
11n HT-40 SISO	2412	36.377	> 500
	2437	36.389	> 500
	2462	36.396	> 500
11n HT-40 MIMO	2422	36.444	> 500
	2437	36.310	> 500
	2452	36.377	> 500

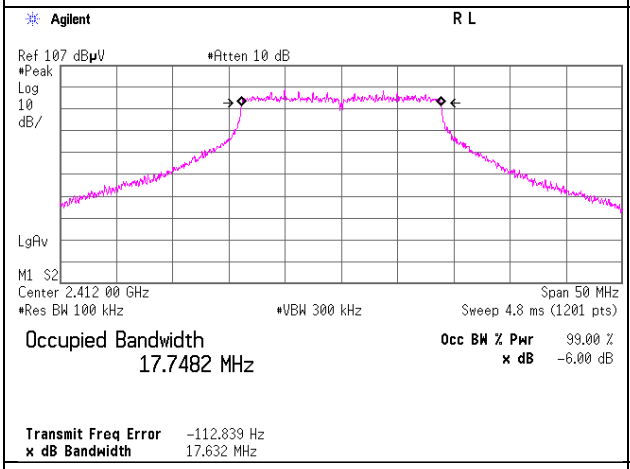
6dB Bandwidth

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

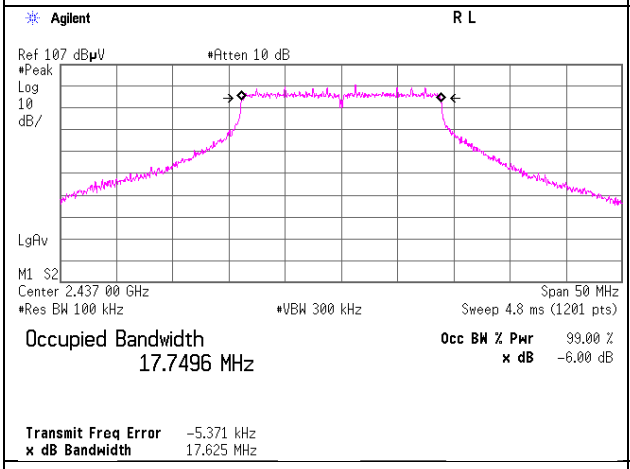
6dB Bandwidth

11n-20 SISO

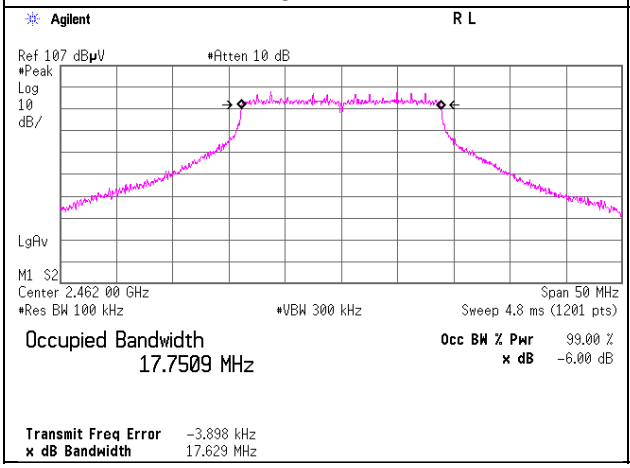
2412 MHz



2437 MHz

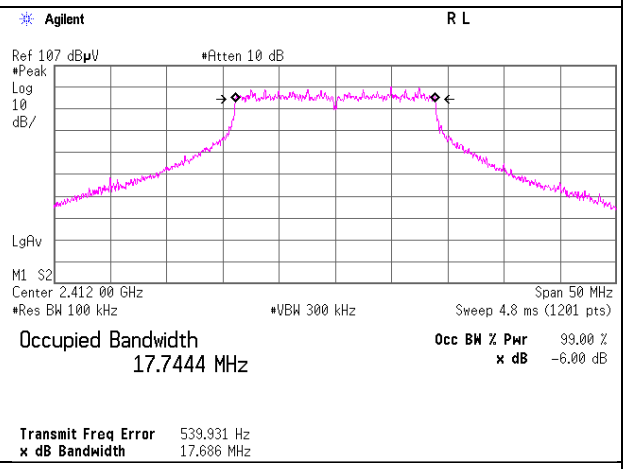


2462 MHz

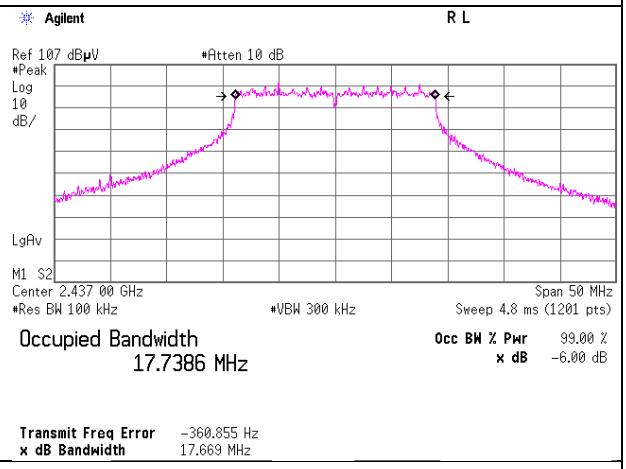


11n-20 MIMO

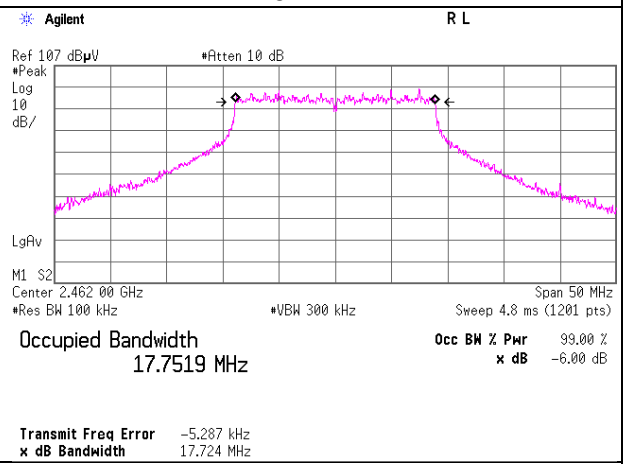
2412 MHz



2437 MHz



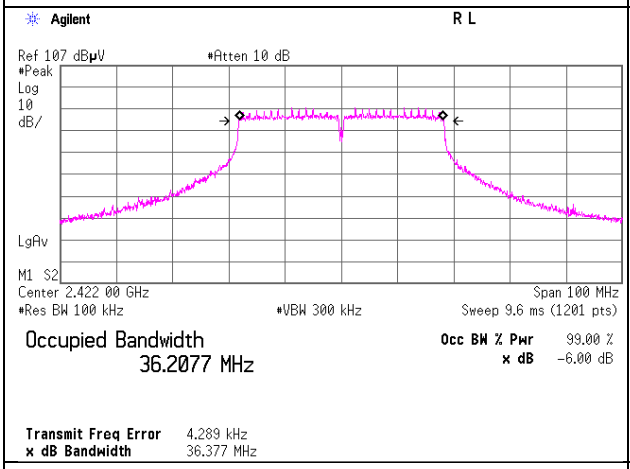
2462 MHz



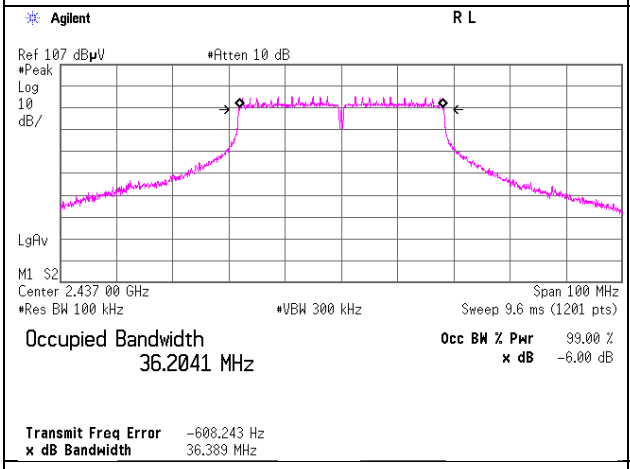
6dB Bandwidth

11n-40 SISO

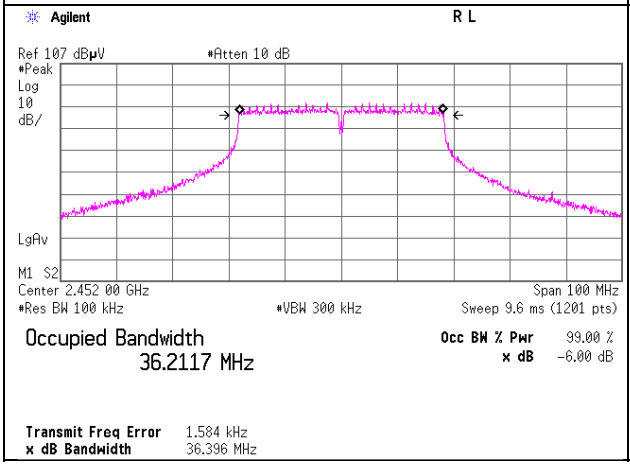
2422 MHz



2437 MHz

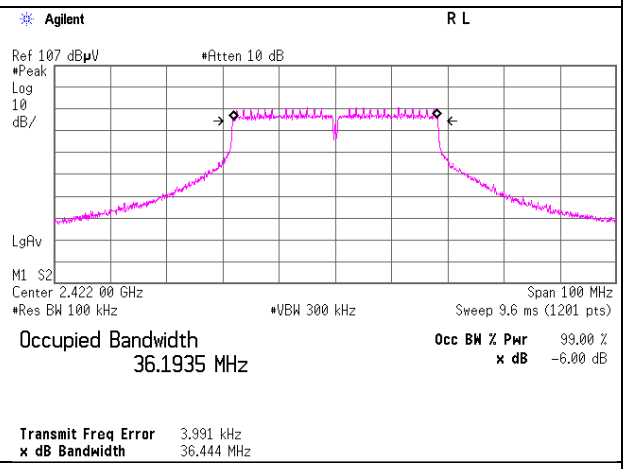


2452 MHz

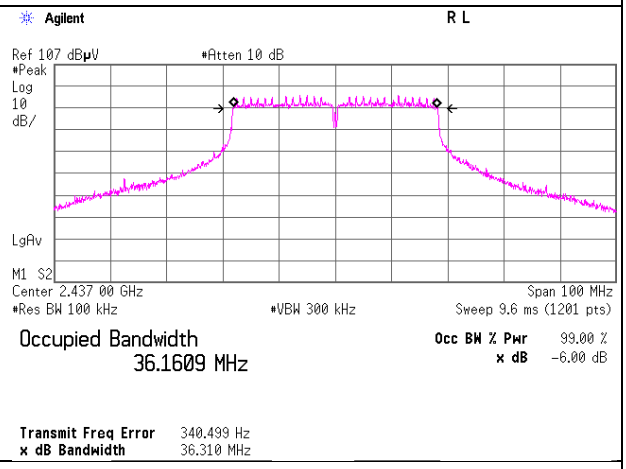


11n-40 MIMO

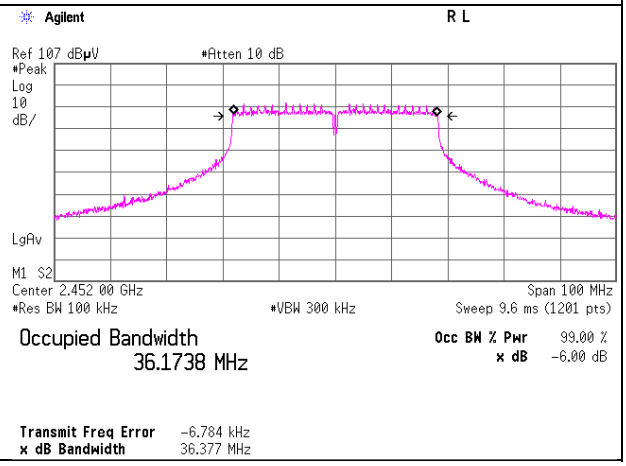
2422 MHz



2437 MHz



2452 MHz



Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11b

Antenna 0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	4.74	1.84	9.93	16.51	44.77	30.00	1000	13.49
2437	4.06	1.85	9.93	15.84	38.37	30.00	1000	14.16
2462	4.13	1.86	9.93	15.92	39.08	30.00	1000	14.08

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

Antenna 0, 2412MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	4.74	*
2	4.55	
5.5	4.17	
11	4.28	

Antenna 1, 2412MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
1	4.68	
2	4.37	
5.5	4.46	
11	4.60	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11g

Antenna 0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	12.19	1.84	9.93	23.96	248.89	30.00	1000	6.04
2417 *1	13.69	1.84	9.93	25.46	351.56	30.00	1000	4.54
2437	13.08	1.85	9.93	24.86	306.20	30.00	1000	5.14
2462	12.76	1.86	9.93	24.55	285.10	30.00	1000	5.45

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Antenna 0, 2417 MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	13.69	*
9	13.66	
12	13.48	
18	13.58	
24	13.43	
36	13.40	
48	12.58	
54	12.95	

Antenna 1, 2417 MHz

Rate	Reading	Remark
[Mbps]	[dBm]	
6	13.67	
9	13.58	
12	13.61	
18	13.61	
24	13.65	
36	13.65	
48	13.26	
54	13.05	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 SISO

Antenna 0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	10.72	1.84	9.93	22.49	177.42	30.00	1000	7.51
2417 *1	12.95	1.84	9.93	24.72	296.48	30.00	1000	5.28
2437	12.13	1.85	9.93	23.91	246.04	30.00	1000	6.09
2462	10.30	1.86	9.93	22.09	161.81	30.00	1000	7.91

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Antenna 0, 2417 MHz

MCS Number	Reading [dBm]	Remark
0	12.95	*
1	12.17	
2	12.69	
3	12.31	
4	12.57	
5	12.41	
6	11.46	
7	11.48	

Antenna 1, 2417 MHz

MCS Number	Reading [dBm]	Remark
0	12.89	
1	12.64	
2	12.63	
3	12.67	
4	12.85	
5	12.60	
6	11.81	
7	11.65	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 MIMO

Antenna 0 + 1

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	194.09	190.11	25.85	384.20	30.00	1000	4.15
2417 *1	285.10	284.45	27.56	569.55	30.00	1000	2.44
2437	232.81	251.19	26.85	484.00	30.00	1000	3.15
2462	134.59	157.40	24.65	291.98	30.00	1000	5.35

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.11	1.84	9.93	22.88	194.09	30.00	1000	7.12
2417 *1	12.78	1.84	9.93	24.55	285.10	30.00	1000	5.45
2437	11.89	1.85	9.93	23.67	232.81	30.00	1000	6.33
2462	9.50	1.86	9.93	21.29	134.59	30.00	1000	8.71

Antenna 1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2412	11.02	1.84	9.93	22.79	190.11	30.00	1000	7.21
2417 *1	12.77	1.84	9.93	24.54	284.45	30.00	1000	5.46
2437	12.22	1.85	9.93	24.00	251.19	30.00	1000	6.00
2462	10.18	1.86	9.93	21.97	157.40	30.00	1000	8.03

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 MIMO

2417MHz

Mode	Reading Antenna 0		Reading Antenna 1		Reading Antenna 0 + 1		Remark
(MCS)	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
8	12.78	18.97	12.77	18.92	15.79	37.89	*
9	12.29	16.94	12.4	17.38	15.36	34.32	
10	12.47	17.66	12.57	18.07	15.53	35.73	
11	12.42	17.46	12.56	18.03	15.50	35.49	
12	12.23	16.71	12.75	18.84	15.51	35.55	
13	12.33	17.1	12.06	16.07	15.21	33.17	
14	11.95	15.67	11.87	15.38	14.92	31.05	
15	11.49	14.09	11.7	14.79	14.61	28.88	

*: Worst Rate

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 SISO

Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Result [mW]	Limit [dBm]	Limit [mW]	Margin [dB]
2422	6.71	1.85	9.93	18.49	70.63	30.00	1000	11.51
2427 *1	13.15	1.85	9.93	24.93	311.17	30.00	1000	5.07
2437	11.22	1.85	9.93	23.00	199.53	30.00	1000	7.00
2452	7.86	1.85	9.93	19.64	92.04	30.00	1000	10.36

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Antenna 0, 2427 MHz

MCS Number	Reading [dBm]	Remark
0	13.15	*
1	11.94	
2	12.29	
3	12.26	
4	12.21	
5	12.08	
6	11.49	
7	11.37	

Antenna 1, 2427 MHz

MCS Number	Reading [dBm]	Remark
0	13.11	
1	12.37	
2	12.36	
3	12.40	
4	12.28	
5	12.09	
6	11.51	
7	11.55	

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

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 MIMO

Antenna 0 + 1

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit		Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	74.64	73.79	21.72	148.44	30.00	1000	8.28
2427 *1	273.53	241.55	27.12	515.07	30.00	1000	2.88
2437	199.53	198.61	26.00	398.14	30.00	1000	4.00
2452	92.47	88.31	22.57	180.78	30.00	1000	7.43

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	6.95	1.85	9.93	18.73	74.64	30.00	1000	11.27
2427 *1	12.59	1.85	9.93	24.37	273.53	30.00	1000	5.63
2437	11.22	1.85	9.93	23.00	199.53	30.00	1000	7.00
2452	7.88	1.85	9.93	19.66	92.47	30.00	1000	10.34

Antenna 1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	6.90	1.85	9.93	18.68	73.79	30.00	1000	11.32
2427 *1	12.55	1.35	9.93	23.83	241.55	30.00	1000	6.17
2437	11.20	1.85	9.93	22.98	198.61	30.00	1000	7.02
2452	7.68	1.85	9.93	19.46	88.31	30.00	1000	10.54

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Maximum Peak Output Power

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 MIMO

2427MHz

Mode	Reading Antenna 0		Reading Antenna 1		Reading Antenna 0 + 1		Remark
(MCS)	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
8	12.59	18.16	12.55	17.99	15.58	36.15	*
9	12.34	17.14	12.03	15.96	15.20	33.1	
10	12.19	16.56	12.42	17.46	15.32	34.02	
11	12.16	16.44	12.27	16.87	15.23	33.31	
12	12.46	17.62	12.53	17.91	15.51	35.53	
13	11.99	15.81	12.2	16.6	15.11	32.41	
14	11.31	13.52	11.7	14.79	14.52	28.31	
15	11.97	15.74	11.49	14.09	14.75	29.83	

*: Worst Rate

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11b **1 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	1.56	1.84	9.93	13.33	21.53	0.00	13.33	21.53
2437	1.57	1.85	9.93	13.35	21.63	0.00	13.35	21.63
2462	1.25	1.86	9.93	13.04	20.14	0.00	13.04	20.14

11g **6 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	2.19	1.84	9.93	13.96	24.89	0.01	13.97	24.95
2437	4.83	1.85	9.93	16.61	45.81	0.01	16.62	45.92
2462	3.70	1.86	9.93	15.49	35.40	0.01	15.50	35.48

11n-20 SISO **MCS 0**

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-0.49	1.84	9.93	11.28	13.43	0.02	11.30	13.49
2437	1.21	1.85	9.93	12.99	19.91	0.02	13.01	20.00
2462	-1.05	1.86	9.93	10.74	11.86	0.02	10.76	11.91

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 SAR testing)

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 MIMO

Antenna 0 + Antenna 1 MCS 8

Freq.	Ant 0 Result	Ant 1 Result			Result	
[MHz]	[mW]	[mW]			[dBm]	[mW]
2412.0	14.89	15.10			14.77	29.99
2437.0	20.51	22.59			16.35	43.11
2462.0	12.30	13.15			14.06	25.45

Antenna 0

Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
2412.0	-0.07	1.84	9.93	0.03	11.73	14.89
2437.0	1.31	1.85	9.93	0.03	13.12	20.51
2462.0	-0.92	1.86	9.93	0.03	10.90	12.30

Antenna 1

Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
2412.0	-0.01	1.84	9.93	0.03	11.79	15.10
2437.0	1.73	1.85	9.93	0.03	13.54	22.59
2462.0	-0.63	1.86	9.93	0.03	11.19	13.15

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 SISO

MCS 0

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2412	-4.41	1.85	9.93	7.37	5.46	0.03	7.40	5.50
2437	-0.35	1.85	9.93	11.43	13.90	0.03	11.46	14.00
2462	-3.80	1.85	9.93	7.98	6.28	0.03	8.01	6.32

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 SAR testing)

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 MIMO

Antenna 0 + Antenna 1 MCS 8

Freq.	Ant 0 Result	Ant 1 Result			Result	
[MHz]	[mW]	[mW]			[dBm]	[mW]
2412.0	4.59	6.21			10.33	10.80
2437.0	13.80	15.60			14.68	29.40
2462.0	6.00	6.53			10.98	12.53

Antenna 0

Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
2412.0	-5.22	1.85	9.93	0.06	6.62	4.59
2437.0	-0.44	1.85	9.93	0.06	11.40	13.80
2462.0	-4.06	1.85	9.93	0.06	7.78	6.00

Antenna 1

Freq.	P/M (AV) Reading	Cable Loss	Atten. Loss	Duty Factor	Result	
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBm]	[mW]
2412.0	-3.91	1.85	9.93	0.06	7.93	6.21
2437.0	0.09	1.85	9.93	0.06	11.93	15.60
2462.0	-3.69	1.85	9.93	0.06	8.15	6.53

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11b

Antenna 0, 2412 MHz

Rate Mbps	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
1	1.46	0.00	1.46	
2	1.30	0.00	1.30	
5.5	1.43	0.01	1.44	
11	1.41	0.02	1.43	

Antenna 1, 24127 MHz

Rate Mbps	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
1	1.56	0.00	1.56	*
2	1.53	0.00	1.53	
5.5	1.54	0.01	1.55	
11	1.50	0.02	1.52	

* 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.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11g

Antenna 0, 2417 MHz

Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
6	5.28	0.01	5.29	
9	5.16	0.02	5.18	
12	5.15	0.03	5.18	
18	5.12	0.04	5.16	
24	5.11	0.05	5.16	
36	5.06	0.09	5.15	
48	3.41	0.11	3.52	
54	2.69	0.11	2.80	

Antenna 1, 2417 MHz

Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
6	5.83	0.01	5.84	*
9	5.76	0.02	5.78	
12	5.73	0.03	5.76	
18	5.75	0.04	5.79	
24	5.71	0.05	5.76	
36	5.65	0.09	5.74	
48	4.61	0.11	4.72	
54	3.58	0.11	3.69	

* 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.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 SISO

Antenna 0, 2417 MHz

Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
0	2.30	0.02	2.32	
1	2.21	0.02	2.23	
2	2.22	0.04	2.26	
3	2.22	0.06	2.28	
4	2.19	0.09	2.28	
5	1.89	0.11	2.00	
6	1.35	0.13	1.48	
7	0.85	0.14	0.99	

Antenna 1, 2417 MHz

Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
0	3.30	0.02	3.32	*
1	3.29	0.02	3.31	
2	2.95	0.04	2.99	
3	2.99	0.06	3.05	
4	3.10	0.09	3.19	
5	2.58	0.11	2.69	
6	1.50	0.13	1.63	
7	1.08	0.14	1.22	

* 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.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 MIMO

2417MHz

Mode	Reading Antenna 0		Reading Antenna 1		Duty Factor	Reading Antenna 0 + 1		Remark
(MCS)	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	
8	2.85	2.88	3.27	3.30	0.03	7.91	6.18	*
9	2.64	2.70	2.97	3.03	0.06	7.58	5.73	
10	2.62	2.72	3.10	3.20	0.10	7.72	5.92	
11	2.58	2.71	3.20	3.33	0.13	7.81	6.04	
12	2.42	2.60	3.14	3.32	0.18	7.72	5.92	
13	2.13	2.36	2.35	2.58	0.23	6.94	4.94	
14	1.75	2.00	1.70	1.95	0.25	5.97	3.95	
15	1.01	1.28	1.30	1.57	0.27	4.55	2.85	

* Worst rate

Average Output Power
(Reference data for SAR testing)

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 SISO

Antenna 0, 2427 MHz

Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
0	1.77	0.03	1.80	
1	1.48	0.07	1.55	
2	1.32	0.09	1.41	
3	1.30	0.13	1.43	
4	1.14	0.18	1.32	
5	1.00	0.23	1.23	
6	0.67	0.25	0.92	
7	0.08	0.27	0.35	

Antenna 1, 2427 MHz

Rate MCS	Reading [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
0	2.66	0.03	2.69	*
1	2.53	0.07	2.60	
2	2.30	0.09	2.39	
3	2.17	0.13	2.30	
4	2.08	0.18	2.26	
5	1.12	0.23	1.35	
6	0.58	0.25	0.83	
7	0.41	0.27	0.68	

* 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.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 2, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 MIMO

2417MHz

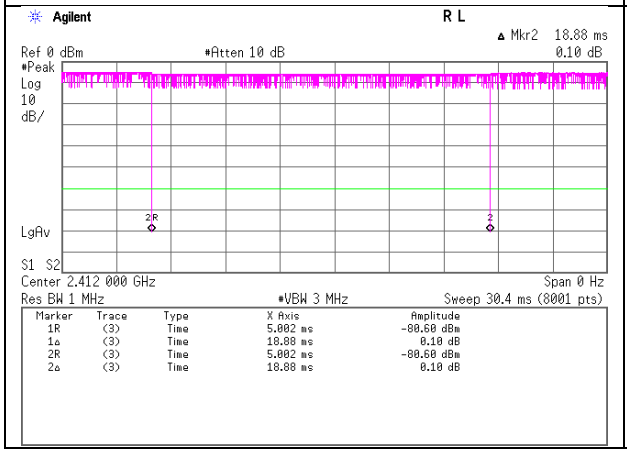
Mode	Reading Antenna 0		Reading Antenna 1		Duty Factor	Reading Antenna 0 + 1		Remark
(MCS)	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBm]	[mW]	
8	2.03	2.09	2.62	2.68	0.06	6.79	4.77	*
9	1.89	2.02	2.47	2.6	0.13	6.65	4.62	
10	1.73	1.92	2.39	2.58	0.19	6.53	4.5	
11	1.7	1.93	2.35	2.58	0.23	6.54	4.51	
12	1.56	1.88	2.24	2.56	0.32	6.47	4.44	
13	1.19	1.55	1.62	1.98	0.36	5.48	3.53	
14	0.66	1.05	0.93	1.32	0.39	3.75	2.37	
15	0.26	0.67	0.57	0.98	0.41	2.17	1.65	

Burst rate confirmation

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

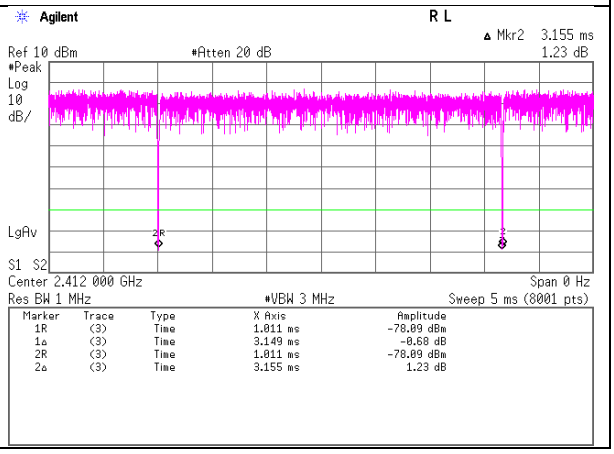
11b 1 Mbps

Tx on / (Tx on + Tx off) = 1.000
Tx on / (Tx on + Tx off) * 100 = 100.0 %
Duty factor = 10 * log (18.88 / 18.88) = 0.00 dB



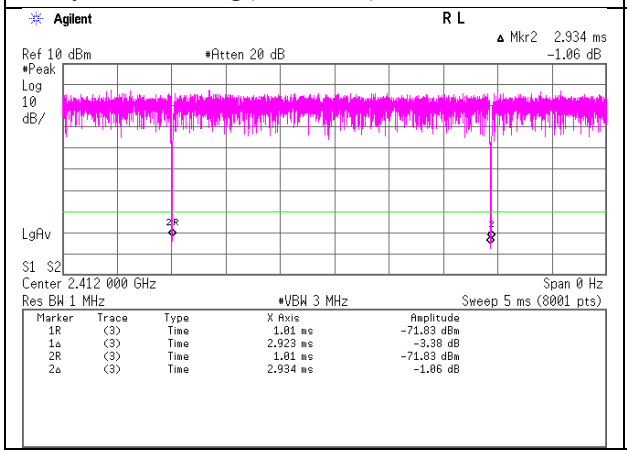
11g 6 Mbps

Tx on / (Tx on + Tx off) = 0.998
Tx on / (Tx on + Tx off) * 100 = 99.8 %
Duty factor = 10 * log (3.155 / 3.149) = 0.01 dB



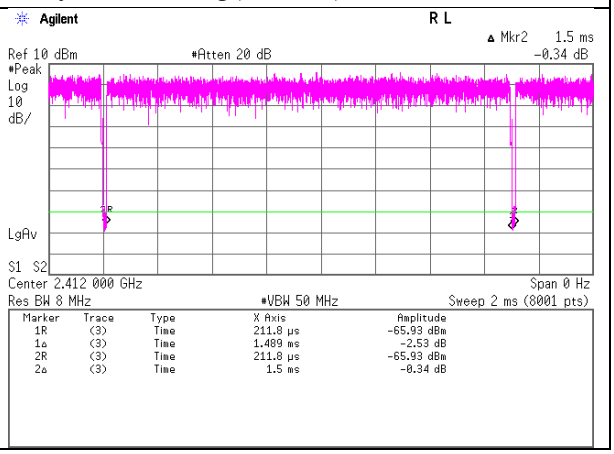
11n-20 SISO MCS 0

Tx on / (Tx on + Tx off) = 0.996
Tx on / (Tx on + Tx off) * 100 = 99.6 %
Duty factor = 10 * log (2.934 / 2.923) = 0.02 dB



11n-20 MIMO MCS 0

Tx on / (Tx on + Tx off) = 0.993
Tx on / (Tx on + Tx off) * 100 = 99.3 %
Duty factor = 10 * log (1.5 / 1.489) = 0.03 dB

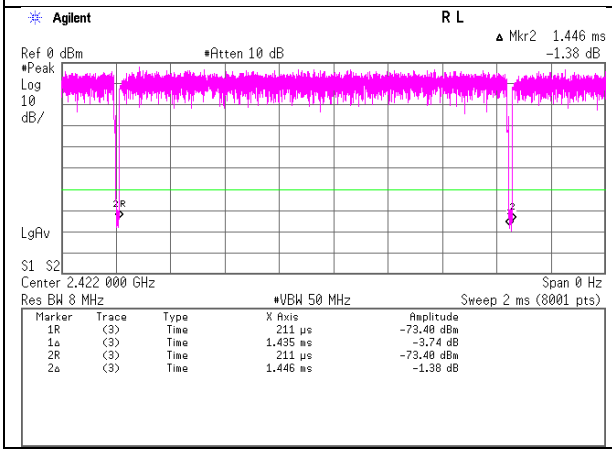


Burst rate confirmation

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 1, 2016
Temperature / Humidity	24 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

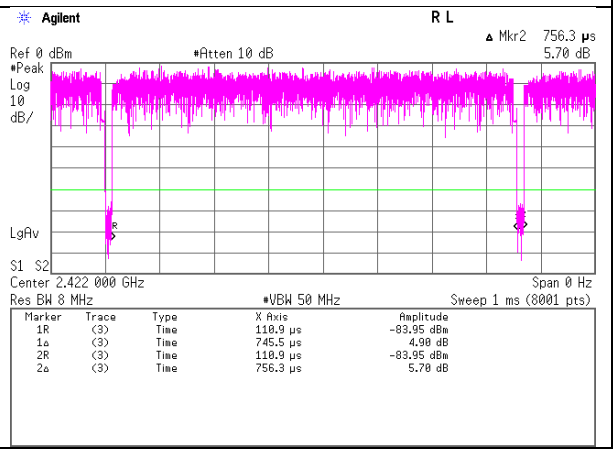
11n-40 SISO MCS 0

Tx on / (Tx on + Tx off) =	**0.992**
Tx on / (Tx on + Tx off) * 100 =	**99.2 %**
Duty factor = 10 * log (1.446 / 1.435) =	**0.03 dB**



11n-40 MIMO MCS 0

Tx on / (Tx on + Tx off) =	**0.986**
Tx on / (Tx on + Tx off) * 100 =	**98.6 %**
Duty factor = 10 * log (0.7563 / 0.7455) =	**0.06 dB**



Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano
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.	2385.500	PK	43.8	27.7	13.7	34.2	2.0	53.0	73.9	20.9	121	36	
Hori.	2390.000	PK	43.8	27.7	13.7	34.2	2.0	53.0	73.9	20.9	121	36	
Hori.	2499.988	PK	46.4	27.9	13.8	34.1	2.0	56.0	73.9	17.9	100	310	
Hori.	4824.000	PK	44.9	31.4	7.5	41.6	2.0	44.2	73.9	29.7	148	196	
Hori.	4999.999	PK	49.4	32.0	7.6	41.5	2.0	49.5	73.9	24.4	159	276	
Hori.	7236.000	PK	44.2	36.6	9.1	41.2	2.0	50.7	73.9	23.2	156	353	
Hori.	9648.000	PK	44.0	38.0	9.9	40.1	2.0	53.8	73.9	20.1	100	129	
Hori.	12060.000	PK	43.9	39.6	11.2	39.4	2.0	57.3	73.9	16.6	100	350	
Hori.	2385.500	AV	34.8	27.7	13.7	34.2	2.0	44.0	53.9	9.9	121	36	
Hori.	2390.000	AV	34.4	27.7	13.7	34.2	2.0	43.6	53.9	10.3	121	36	
Hori.	2499.988	AV	39.8	27.9	13.8	34.1	2.0	49.4	53.9	4.5	100	310	
Hori.	4824.000	AV	36.8	31.4	7.5	41.6	2.0	36.1	53.9	17.8	148	196	
Hori.	4999.999	AV	44.6	32.0	7.6	41.5	2.0	44.7	53.9	9.2	159	276	
Hori.	7236.000	AV	36.1	36.6	9.1	41.2	2.0	42.6	53.9	11.3	156	353	
Hori.	9648.000	AV	35.5	38.0	9.9	40.1	2.0	45.3	53.9	8.6	100	129	
Hori.	12060.000	AV	35.2	39.6	11.2	39.4	2.0	48.6	53.9	5.3	100	350	
Vert.	2385.500	PK	44.3	27.7	13.7	34.2	2.0	53.5	73.9	20.4	143	229	
Vert.	2390.000	PK	44.1	27.7	13.7	34.2	2.0	53.3	73.9	20.6	143	229	
Vert.	2499.988	PK	46.4	27.9	13.8	34.1	2.0	56.0	73.9	17.9	175	346	
Vert.	4824.000	PK	45.8	31.4	7.5	41.6	2.0	45.1	73.9	28.8	100	15	
Vert.	4999.989	PK	50.5	32.0	7.6	41.5	2.0	50.6	73.9	23.3	141	269	
Vert.	7236.000	PK	44.3	36.6	9.1	41.2	2.0	50.8	73.9	23.1	100	13	
Vert.	9648.000	PK	44.7	38.0	9.9	40.1	2.0	54.5	73.9	19.4	100	234	
Vert.	12060.000	PK	43.5	39.6	11.2	39.4	2.0	56.9	73.9	17.0	100	35	
Vert.	2385.500	AV	35.7	27.7	13.7	34.2	2.0	44.9	53.9	9.0	143	229	
Vert.	2390.000	AV	35.2	27.7	13.7	34.2	2.0	44.4	53.9	9.5	143	229	
Vert.	2499.988	AV	40.4	27.9	13.8	34.1	2.0	50.0	53.9	**3.9**	175	346	
Vert.	4824.000	AV	38.2	31.4	7.5	41.6	2.0	37.5	53.9	16.4	100	15	
Vert.	4999.989	AV	46.8	32.0	7.6	41.5	2.0	46.9	53.9	7.0	141	269	
Vert.	7236.000	AV	36.7	36.6	9.1	41.2	2.0	43.2	53.9	10.7	100	13	
Vert.	9648.000	AV	36.8	38.0	9.9	40.1	2.0	46.6	53.9	7.3	100	234	
Vert.	12060.000	AV	35.4	39.6	11.2	39.4	2.0	48.8	53.9	5.1	100	35	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 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)**

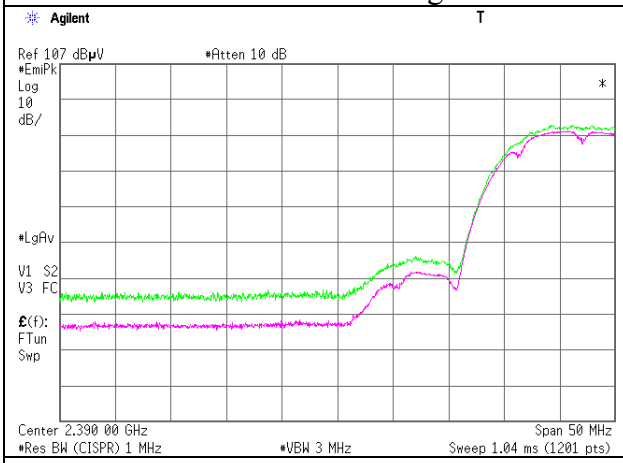
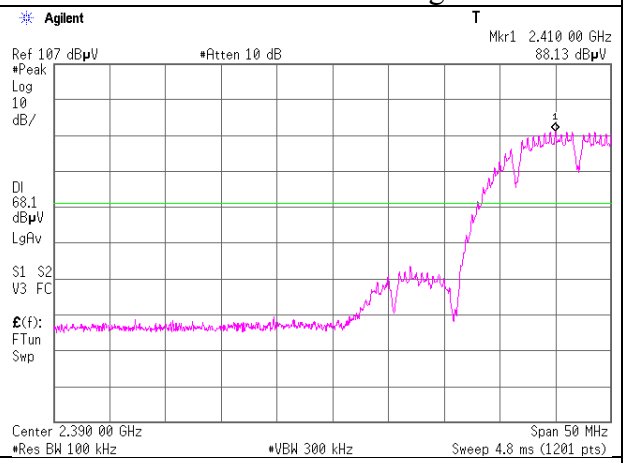
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	88.2	27.8	13.7	34.2	2.0	97.5	-	-	Carrier
Hori.	2400.000	PK	48.0	27.7	13.7	34.2	2.0	57.2	77.5	20.3	
Vert.	2412.000	PK	90.8	27.8	13.7	34.2	2.0	100.1	-	-	Carrier
Vert.	2400.000	PK	50.7	27.7	13.7	34.2	2.0	59.9	80.1	20.2	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

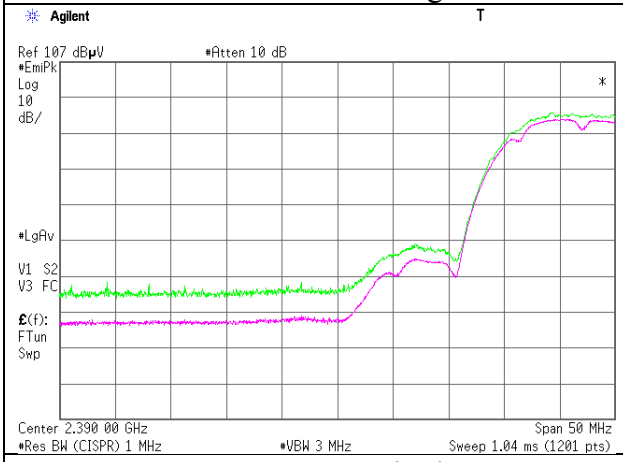
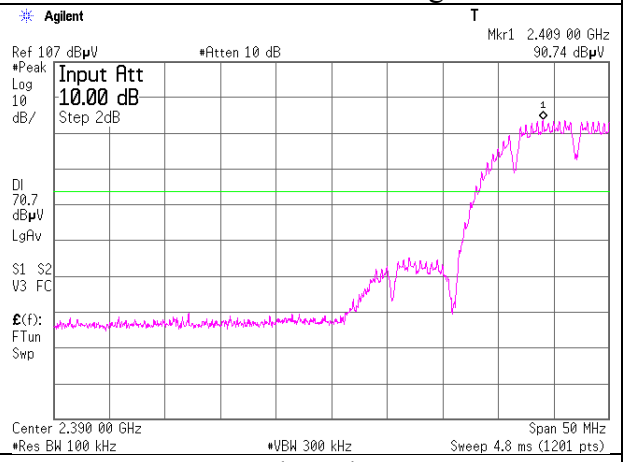
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

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.	2499.946	PK	45.3	27.9	13.8	34.1	2.0	54.9	73.9	19.0	124	333	
Hori.	4874.000	PK	45.5	31.6	7.5	41.6	2.0	45.0	73.9	28.9	156	180	
Hori.	5000.000	PK	48.8	32.0	7.6	41.5	2.0	48.9	73.9	25.0	157	274	
Hori.	7311.000	PK	44.9	36.7	9.1	41.3	2.0	51.4	73.9	22.5	150	18	
Hori.	9748.000	PK	44.6	38.0	10.0	40.1	2.0	54.5	73.9	19.4	150	328	
Hori.	12185.000	PK	43.7	39.6	11.2	39.3	2.0	57.2	73.9	16.7	100	13	
Hori.	2499.946	AV	39.4	27.9	13.8	34.1	2.0	49.0	53.9	4.9	124	333	
Hori.	4874.000	AV	36.7	31.6	7.5	41.6	2.0	36.2	53.9	17.7	156	180	
Hori.	5000.000	AV	44.6	32.0	7.6	41.5	2.0	44.7	53.9	9.2	157	274	
Hori.	7311.000	AV	36.7	36.7	9.1	41.3	2.0	43.2	53.9	10.7	150	18	
Hori.	9748.000	AV	35.6	38.0	10.0	40.1	2.0	45.5	53.9	8.4	150	328	
Hori.	12185.000	AV	34.9	39.6	11.2	39.3	2.0	48.4	53.9	5.5	100	13	
Vert.	2499.946	PK	45.8	27.9	13.8	34.1	2.0	55.4	73.9	18.5	147	345	
Vert.	4874.000	PK	46.3	31.6	7.5	41.6	2.0	45.8	73.9	28.1	143	174	
Vert.	5000.016	PK	50.2	32.0	7.6	41.5	2.0	50.3	73.9	23.6	144	274	
Vert.	7311.000	PK	45.5	36.7	9.1	41.3	2.0	52.0	73.9	21.9	155	187	
Vert.	9748.000	PK	43.8	38.0	10.0	40.1	2.0	53.7	73.9	20.2	158	69	
Vert.	12185.000	PK	43.6	39.6	11.2	39.3	2.0	57.1	73.9	16.8	100	248	
Vert.	2499.946	AV	39.8	27.9	13.8	34.1	2.0	49.4	53.9	**4.5**	147	345	
Vert.	4874.000	AV	37.2	31.6	7.5	41.6	2.0	36.7	53.9	17.2	143	174	
Vert.	5000.016	AV	46.8	32.0	7.6	41.5	2.0	46.9	53.9	7.0	144	274	
Vert.	7311.000	AV	37.4	36.7	9.1	41.3	2.0	43.9	53.9	10.0	155	187	
Vert.	9748.000	AV	35.4	38.0	10.0	40.1	2.0	45.3	53.9	8.6	158	69	
Vert.	12185.000	AV	35.5	39.6	11.2	39.3	2.0	49.0	53.9	4.9	100	248	

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

Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

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	42.7	27.9	13.8	34.1	2.0	52.3	73.9	21.6	131	25	
Hori.	2488.000	PK	43.4	27.9	13.8	34.1	2.0	53.0	73.9	20.9	131	25	
Hori.	2499.985	PK	45.2	27.9	13.8	34.1	2.0	54.8	73.9	19.1	139	241	
Hori.	4924.000	PK	46.1	31.7	7.6	41.6	2.0	45.8	73.9	28.1	152	265	
Hori.	5000.022	PK	48.7	32.0	7.6	41.5	2.0	48.8	73.9	25.1	151	154	
Hori.	7386.000	PK	45.0	36.7	9.1	41.3	2.0	51.5	73.9	22.4	150	24	
Hori.	9848.000	PK	44.3	38.1	10.1	40.0	2.0	54.5	73.9	19.4	161	268	
Hori.	12310.000	PK	44.0	39.6	11.2	39.1	2.0	57.7	73.9	16.2	152	74	
Hori.	2483.500	AV	33.6	27.9	13.8	34.1	2.0	43.2	53.9	10.7	131	25	
Hori.	2488.000	AV	33.7	27.9	13.8	34.1	2.0	43.3	53.9	10.6	131	25	
Hori.	2499.985	AV	39.0	27.9	13.8	34.1	2.0	48.6	53.9	5.3	139	241	
Hori.	4924.000	AV	38.3	31.7	7.6	41.6	2.0	38.0	53.9	15.9	152	265	
Hori.	5000.022	AV	44.4	32.0	7.6	41.5	2.0	44.5	53.9	9.4	151	154	
Hori.	7386.000	AV	37.1	36.7	9.1	41.3	2.0	43.6	53.9	10.3	150	24	
Hori.	9848.000	AV	36.7	38.1	10.1	40.0	2.0	46.9	53.9	7.0	161	268	
Hori.	12310.000	AV	35.2	39.6	11.2	39.1	2.0	48.9	53.9	5.0	152	74	
Vert.	2483.500	PK	42.9	27.9	13.8	34.1	2.0	52.5	73.9	21.4	146	229	
Vert.	2488.000	PK	43.7	27.9	13.8	34.1	2.0	53.3	73.9	20.6	146	229	
Vert.	2499.985	PK	45.8	27.9	13.8	34.1	2.0	55.4	73.9	18.5	185	345	
Vert.	4924.000	PK	46.5	31.7	7.6	41.6	2.0	46.2	73.9	27.7	161	350	
Vert.	5000.000	PK	49.9	32.0	7.6	41.5	2.0	50.0	73.9	23.9	141	275	
Vert.	7386.000	PK	45.2	36.7	9.1	41.3	2.0	51.7	73.9	22.2	100	52	
Vert.	9848.000	PK	44.1	38.1	10.1	40.0	2.0	54.3	73.9	19.6	152	146	
Vert.	12310.000	PK	44.9	39.6	11.2	39.1	2.0	58.6	73.9	15.3	150	335	
Vert.	2483.500	AV	34.7	27.9	13.8	34.1	2.0	44.3	53.9	9.6	146	229	
Vert.	2488.000	AV	34.0	27.9	13.8	34.1	2.0	43.6	53.9	10.3	146	229	
Vert.	2499.985	AV	40.6	27.9	13.8	34.1	2.0	50.2	53.9	**3.7**	185	345	
Vert.	4924.000	AV	40.3	31.7	7.6	41.6	2.0	40.0	53.9	13.9	161	350	
Vert.	5000.000	AV	46.4	32.0	7.6	41.5	2.0	46.5	53.9	7.4	141	275	
Vert.	7386.000	AV	37.1	36.7	9.1	41.3	2.0	43.6	53.9	10.3	100	52	
Vert.	9848.000	AV	37.1	38.1	10.1	40.0	2.0	47.3	53.9	6.6	152	146	
Vert.	12310.000	AV	35.3	39.6	11.2	39.1	2.0	49.0	53.9	4.9	150	335	

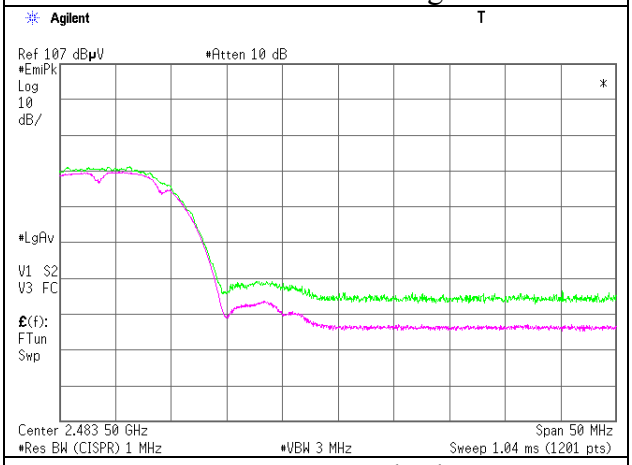
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
Mode	Tx 11b 2462 MHz

Horizontal

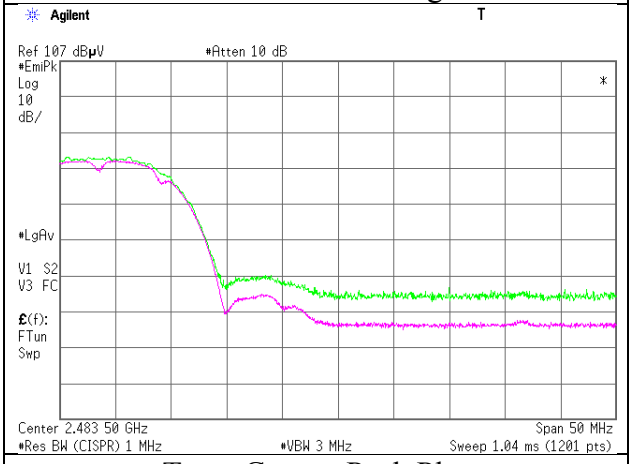
Restricted-band band-edge Plot



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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

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	53.6	27.7	13.7	34.2	2.0	62.8	73.9	11.1	137	214	
Hori.	2499.888	PK	45.0	27.9	13.8	34.1	2.0	54.6	73.9	19.3	139	241	
Hori.	4824.000	PK	46.2	31.4	7.5	41.6	2.0	45.5	73.9	28.4	110	37	
Hori.	5000.000	PK	48.5	32.0	7.6	41.5	2.0	48.6	73.9	25.3	159	277	
Hori.	7236.000	PK	45.0	36.6	9.1	41.2	2.0	51.5	73.9	22.4	157	26	
Hori.	9648.000	PK	43.3	38.0	9.9	40.1	2.0	53.1	73.9	20.8	151	313	
Hori.	12060.000	PK	43.3	39.6	11.2	39.4	2.0	56.7	73.9	17.2	150	357	
Hori.	2390.000	AV	40.6	27.7	13.7	34.2	2.0	49.8	53.9	4.1	137	214	
Hori.	2499.888	AV	38.6	27.9	13.8	34.1	2.0	48.2	53.9	5.7	139	241	
Hori.	4824.000	AV	38.1	31.4	7.5	41.6	2.0	37.4	53.9	16.5	110	37	
Hori.	5000.000	AV	43.9	32.0	7.6	41.5	2.0	44.0	53.9	9.9	159	277	
Hori.	7236.000	AV	36.4	36.6	9.1	41.2	2.0	42.9	53.9	11.0	157	26	
Hori.	9648.000	AV	35.5	38.0	9.9	40.1	2.0	45.3	53.9	8.6	151	313	
Hori.	12060.000	AV	33.8	39.6	11.2	39.4	2.0	47.2	53.9	6.7	150	357	
Vert.	2390.000	PK	54.6	27.7	13.7	34.2	2.0	63.8	73.9	10.1	147	233	
Vert.	2499.888	PK	46.1	27.9	13.8	34.1	2.0	55.7	73.9	18.2	179	342	
Vert.	4824.000	PK	45.9	31.4	7.5	41.6	2.0	45.2	73.9	28.7	100	311	
Vert.	5000.000	PK	49.9	32.0	7.6	41.5	2.0	50.0	73.9	23.9	141	268	
Vert.	7236.000	PK	45.1	36.6	9.1	41.2	2.0	51.6	73.9	22.3	149	29	
Vert.	9648.000	PK	44.7	38.0	9.9	40.1	2.0	54.5	73.9	19.4	159	349	
Vert.	12060.000	PK	43.8	39.6	11.2	39.4	2.0	57.2	73.9	16.7	150	12	
Vert.	2390.000	AV	41.2	27.7	13.7	34.2	2.0	50.4	53.9	**3.5**	147	233	
Vert.	2499.888	AV	39.9	27.9	13.8	34.1	2.0	49.5	53.9	4.4	179	342	
Vert.	4824.000	AV	37.6	31.4	7.5	41.6	2.0	36.9	53.9	17.0	100	311	
Vert.	5000.000	AV	46.1	32.0	7.6	41.5	2.0	46.2	53.9	7.7	141	268	
Vert.	7236.000	AV	36.4	36.6	9.1	41.2	2.0	42.9	53.9	11.0	149	29	
Vert.	9648.000	AV	35.6	38.0	9.9	40.1	2.0	45.4	53.9	8.5	159	349	
Vert.	12060.000	AV	33.5	39.6	11.2	39.4	2.0	46.9	53.9	7.0	150	12	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 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)**

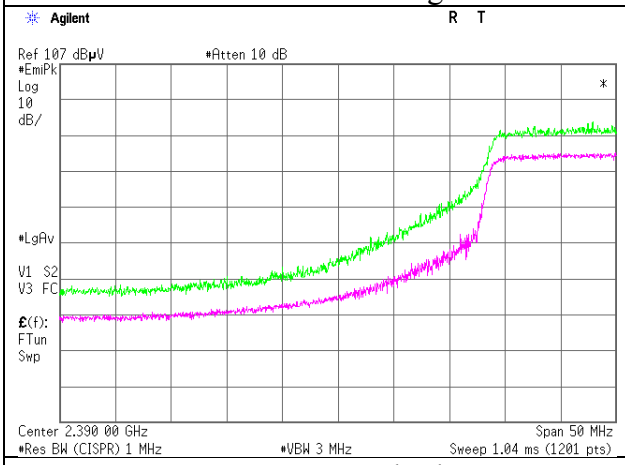
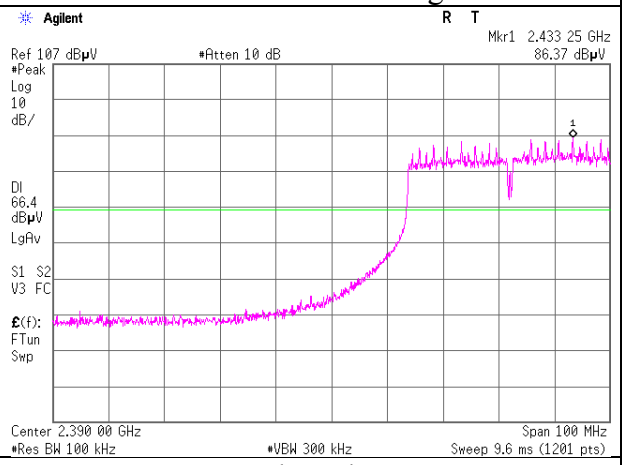
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	89.0	27.8	13.7	34.2	2.0	98.3	-	-	Carrier
Hori.	2400.000	PK	59.5	27.7	13.7	34.2	2.0	68.7	78.3	9.6	
Vert.	2412.000	PK	90.4	27.8	13.7	34.2	2.0	99.7	-	-	Carrier
Vert.	2400.000	PK	60.0	27.7	13.7	34.2	2.0	69.2	79.7	10.5	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

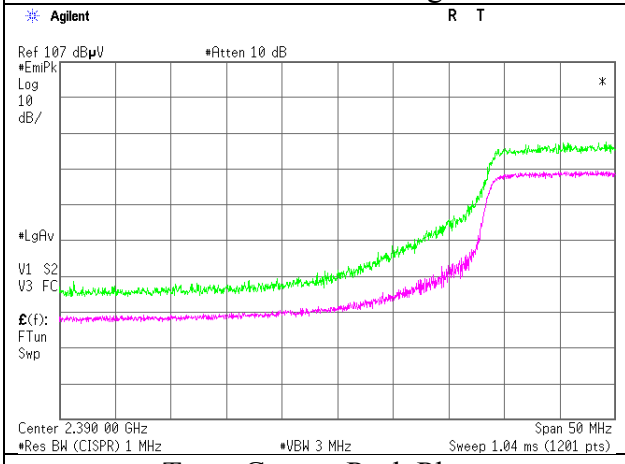
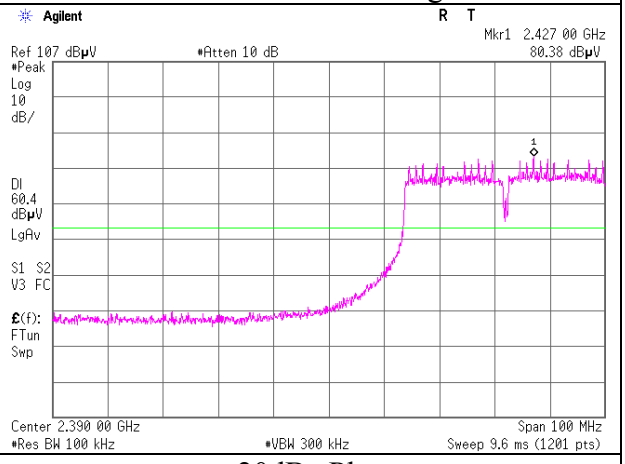
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

Mode Tx 11n-20 2417 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.	118.388	QP	49.4	12.3	7.4	32.1	0.0	37.0	43.5	6.5	162	12	
Hori.	224.997	QP	47.4	16.7	8.3	32.0	0.0	40.4	46.0	5.6	143	258	
Hori.	233.330	QP	44.2	16.8	8.3	32.0	0.0	37.3	46.0	8.7	143	344	
Hori.	300.002	QP	51.5	13.9	8.7	32.0	0.0	42.1	46.0	**3.9**	100	199	
Hori.	800.002	QP	36.8	21.0	10.6	31.6	0.0	36.8	46.0	9.2	105	232	
Hori.	2390.000	PK	52.4	27.7	13.7	34.2	2.0	61.6	73.9	12.3	109	206	
Hori.	2499.922	PK	45.4	27.9	13.8	34.1	2.0	55.0	73.9	18.9	100	309	
Hori.	3222.518	PK	52.7	28.2	7.0	41.0	2.0	48.9	73.9	25.0	118	231	
Hori.	4834.000	PK	48.1	31.4	7.5	41.6	2.0	47.4	73.9	26.5	111	36	
Hori.	4999.925	PK	49.1	32.0	7.6	41.5	2.0	49.2	73.9	24.7	157	278	
Hori.	7251.000	PK	46.4	36.6	9.1	41.2	2.0	52.9	73.9	21.0	137	274	
Hori.	9668.000	PK	47.2	38.0	9.9	40.1	2.0	57.0	73.9	16.9	141	77	
Hori.	12085.000	PK	43.0	39.6	11.2	39.4	2.0	56.4	73.9	17.5	150	341	
Hori.	2390.000	AV	39.9	27.7	13.7	34.2	2.0	49.1	53.9	4.8	109	206	
Hori.	2499.922	AV	39.2	27.9	13.8	34.1	2.0	48.8	53.9	5.1	100	309	
Hori.	3222.518	AV	50.1	28.2	7.0	41.0	2.0	46.3	53.9	7.6	118	231	
Hori.	4834.000	AV	39.8	31.4	7.5	41.6	2.0	39.1	53.9	14.8	111	36	
Hori.	4999.925	AV	44.3	32.0	7.6	41.5	2.0	44.4	53.9	9.5	157	278	
Hori.	7251.000	AV	37.5	36.6	9.1	41.2	2.0	44.0	53.9	9.9	137	274	
Hori.	9668.000	AV	38.4	38.0	9.9	40.1	2.0	48.2	53.9	5.7	141	77	
Hori.	12085.000	AV	35.3	39.6	11.2	39.4	2.0	48.7	53.9	5.2	150	341	
Vert.	88.865	QP	51.9	7.6	7.7	32.2	0.0	35.0	43.5	8.5	100	116	
Vert.	100.002	QP	48.7	9.7	7.5	32.1	0.0	33.8	43.5	9.7	100	79	
Vert.	125.000	QP	45.5	13.0	7.5	32.1	0.0	33.9	43.5	9.6	100	0	
Vert.	151.577	QP	39.5	14.7	7.9	32.1	0.0	30.0	43.5	13.5	100	252	
Vert.	433.330	QP	46.7	16.5	9.3	31.9	0.0	40.6	46.0	5.4	100	244	
Vert.	2390.000	PK	51.9	27.7	13.7	34.2	2.0	61.1	73.9	12.8	143	229	
Vert.	2499.922	PK	46.1	27.9	13.8	34.1	2.0	55.7	73.9	18.2	171	347	
Vert.	3222.603	PK	52.8	28.2	7.0	41.0	2.0	49.0	73.9	24.9	100	211	
Vert.	4834.000	PK	48.1	31.4	7.5	41.6	2.0	47.4	73.9	26.5	140	270	
Vert.	5000.000	PK	49.7	32.0	7.6	41.5	2.0	49.8	73.9	24.1	140	272	
Vert.	7251.000	PK	45.8	36.6	9.1	41.2	2.0	52.3	73.9	21.6	133	156	
Vert.	9668.000	PK	44.7	38.0	9.9	40.1	2.0	54.5	73.9	19.4	174	184	
Vert.	12085.000	PK	44.8	39.6	11.2	39.4	2.0	58.2	73.9	15.7	150	41	
Vert.	2390.000	AV	40.4	27.7	13.7	34.2	2.0	49.6	53.9	4.3	143	229	
Vert.	2499.922	AV	39.6	27.9	13.8	34.1	2.0	49.2	53.9	4.7	171	347	
Vert.	3222.603	AV	47.6	28.2	7.0	41.0	2.0	43.8	53.9	10.1	100	211	
Vert.	4834.000	AV	39.7	31.4	7.5	41.6	2.0	39.0	53.9	14.9	140	270	
Vert.	5000.000	AV	45.7	32.0	7.6	41.5	2.0	45.8	53.9	8.1	140	272	
Vert.	7251.000	AV	35.5	36.6	9.1	41.2	2.0	42.0	53.9	11.9	133	156	
Vert.	9668.000	AV	36.2	38.0	9.9	40.1	2.0	46.0	53.9	7.9	174	184	
Vert.	12085.000	AV	35.0	39.6	11.2	39.4	2.0	48.4	53.9	5.5	150	41	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 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)

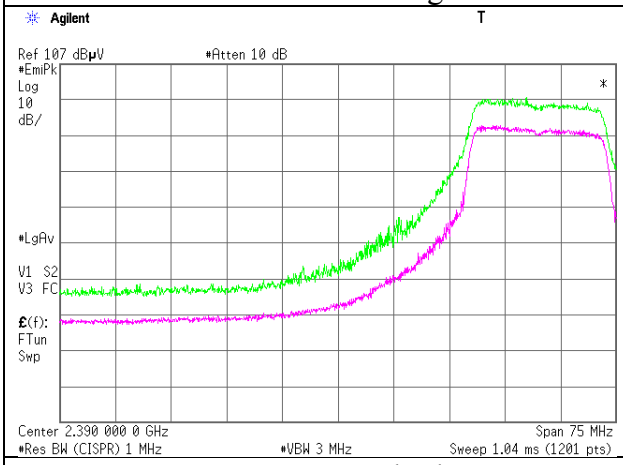
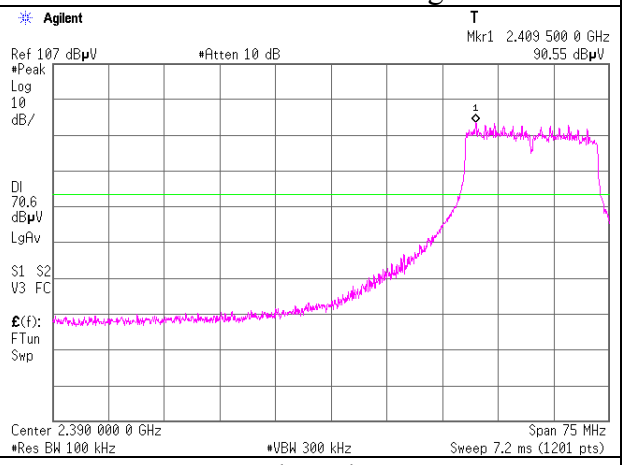
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2417.000	PK	90.6	27.8	13.7	34.2	2.0	99.9	-	-	Carrier
Hori.	2400.000	PK	50.2	27.7	13.7	34.2	2.0	59.4	79.9	20.5	
Vert.	2417.000	PK	93.9	27.8	13.7	34.2	2.0	103.2	-	-	Carrier
Vert.	2400.000	PK	52.2	27.7	13.7	34.2	2.0	61.4	83.2	21.8	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

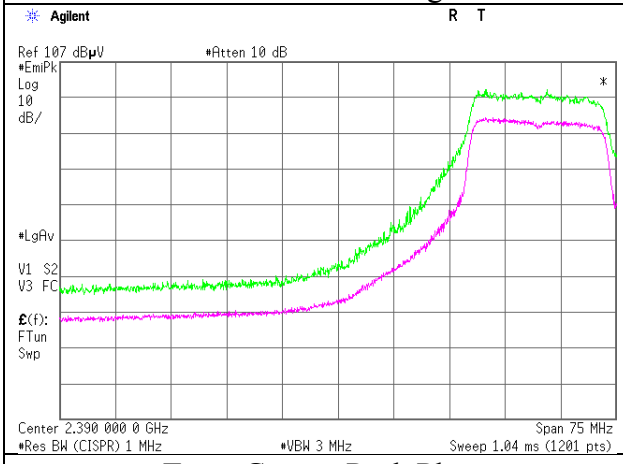
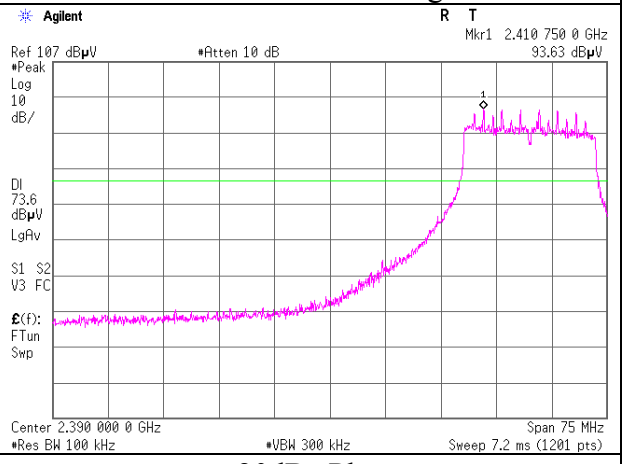
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
Mode	Tx 11n-20 2417 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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

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.	2499.992	PK	45.5	27.9	13.8	34.1	2.0	55.1	73.9	18.8	100	307	
Hori.	4874.000	PK	48.2	31.6	7.5	41.6	2.0	47.7	73.9	26.2	123	319	
Hori.	5000.061	PK	49.0	32.0	7.6	41.5	2.0	49.1	73.9	24.8	149	275	
Hori.	7311.000	PK	47.3	36.7	9.1	41.3	2.0	53.8	73.9	20.1	114	105	
Hori.	9748.000	PK	45.9	38.0	10.0	40.1	2.0	55.8	73.9	18.1	127	323	
Hori.	12185.000	PK	43.6	39.6	11.2	39.3	2.0	57.1	73.9	16.8	150	330	
Hori.	2499.992	AV	39.3	27.9	13.8	34.1	2.0	48.9	53.9	5.0	100	307	
Hori.	4874.000	AV	39.2	31.6	7.5	41.6	2.0	38.7	53.9	15.2	123	319	
Hori.	5000.061	AV	44.5	32.0	7.6	41.5	2.0	44.6	53.9	9.3	149	275	
Hori.	7311.000	AV	37.7	36.7	9.1	41.3	2.0	44.2	53.9	9.7	114	105	
Hori.	9748.000	AV	36.8	38.0	10.0	40.1	2.0	46.7	53.9	7.2	127	323	
Hori.	12185.000	AV	35.1	39.6	11.2	39.3	2.0	48.6	53.9	5.3	150	330	
Vert.	2499.992	PK	46.8	27.9	13.8	34.1	2.0	56.4	73.9	17.5	178	334	
Vert.	4874.000	PK	47.8	31.6	7.5	41.6	2.0	47.3	73.9	26.6	100	182	
Vert.	5000.013	PK	49.3	32.0	7.6	41.5	2.0	49.4	73.9	24.5	144	264	
Vert.	7311.000	PK	46.7	36.7	9.1	41.3	2.0	53.2	73.9	20.7	151	38	
Vert.	9748.000	PK	44.6	38.0	10.0	40.1	2.0	54.5	73.9	19.4	148	132	
Vert.	12185.000	PK	44.6	39.6	11.2	39.3	2.0	58.1	73.9	15.8	150	30	
Vert.	2499.992	AV	40.6	27.9	13.8	34.1	2.0	50.2	53.9	**3.7**	178	334	
Vert.	4874.000	AV	38.9	31.6	7.5	41.6	2.0	38.4	53.9	15.5	100	182	
Vert.	5000.013	AV	45.2	32.0	7.6	41.5	2.0	45.3	53.9	8.6	144	264	
Vert.	7311.000	AV	37.5	36.7	9.1	41.3	2.0	44.0	53.9	9.9	151	38	
Vert.	9748.000	AV	36.0	38.0	10.0	40.1	2.0	45.9	53.9	8.0	148	132	
Vert.	12185.000	AV	35.4	39.6	11.2	39.3	2.0	48.9	53.9	5.0	150	30	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

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Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

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	46.6	27.9	13.8	34.1	2.0	56.2	73.9	17.7	124	231	
Hori.	2499.999	PK	45.2	27.9	13.8	34.1	2.0	54.8	73.9	19.1	100	304	
Hori.	4924.000	PK	47.5	31.7	7.6	41.6	2.0	47.2	73.9	26.7	156	352	
Hori.	4999.969	PK	48.9	32.0	7.6	41.5	2.0	49.0	73.9	24.9	154	276	
Hori.	7386.000	PK	45.4	36.7	9.1	41.3	2.0	51.9	73.9	22.0	150	73	
Hori.	9848.000	PK	44.9	38.1	10.1	40.0	2.0	55.1	73.9	18.8	145	327	
Hori.	12310.000	PK	44.2	39.6	11.2	39.1	2.0	57.9	73.9	16.0	153	338	
Hori.	2483.500	AV	36.6	27.9	13.8	34.1	2.0	46.2	53.9	7.7	124	231	
Hori.	2499.999	AV	38.7	27.9	13.8	34.1	2.0	48.3	53.9	5.6	100	304	
Hori.	4924.000	AV	38.9	31.7	7.6	41.6	2.0	38.6	53.9	15.3	156	352	
Hori.	4999.969	AV	44.2	32.0	7.6	41.5	2.0	44.3	53.9	9.6	154	276	
Hori.	7386.000	AV	37.0	36.7	9.1	41.3	2.0	43.5	53.9	10.4	150	73	
Hori.	9848.000	AV	36.6	38.1	10.1	40.0	2.0	46.8	53.9	7.1	145	327	
Hori.	12310.000	AV	35.4	39.6	11.2	39.1	2.0	49.1	53.9	4.8	153	338	
Vert.	2483.500	PK	45.8	27.9	13.8	34.1	2.0	55.4	73.9	18.5	145	234	
Vert.	2499.999	PK	45.3	27.9	13.8	34.1	2.0	54.9	73.9	19.0	177	342	
Vert.	4924.000	PK	47.7	31.7	7.6	41.6	2.0	47.4	73.9	26.5	100	208	
Vert.	5000.016	PK	49.9	32.0	7.6	41.5	2.0	50.0	73.9	23.9	142	272	
Vert.	7386.000	PK	45.7	36.7	9.1	41.3	2.0	52.2	73.9	21.7	151	47	
Vert.	9848.000	PK	44.2	38.1	10.1	40.0	2.0	54.4	73.9	19.5	157	343	
Vert.	12310.000	PK	45.1	39.6	11.2	39.1	2.0	58.8	73.9	15.1	149	34	
Vert.	2483.500	AV	36.4	27.9	13.8	34.1	2.0	46.0	53.9	7.9	145	234	
Vert.	2499.999	AV	40.0	27.9	13.8	34.1	2.0	49.6	53.9	**4.3**	177	342	
Vert.	4924.000	AV	37.5	31.7	7.6	41.6	2.0	37.2	53.9	16.7	100	208	
Vert.	5000.016	AV	45.6	32.0	7.6	41.5	2.0	45.7	53.9	8.2	142	272	
Vert.	7386.000	AV	37.3	36.7	9.1	41.3	2.0	43.8	53.9	10.1	151	47	
Vert.	9848.000	AV	35.9	38.1	10.1	40.0	2.0	46.1	53.9	7.8	157	343	
Vert.	12310.000	AV	35.7	39.6	11.2	39.1	2.0	49.4	53.9	4.5	149	34	

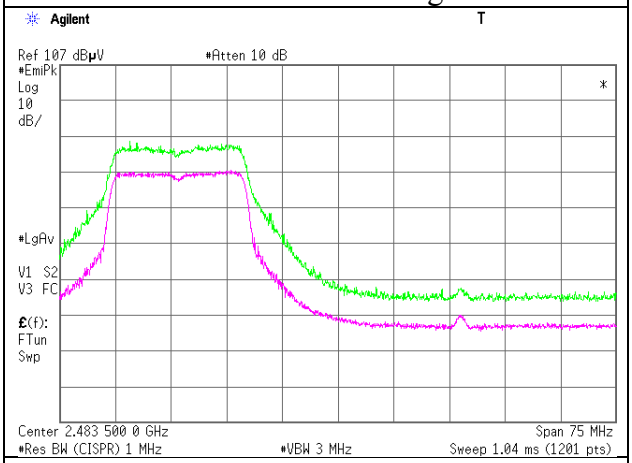
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
Mode	Tx 11n-20 2462 MHz

Horizontal

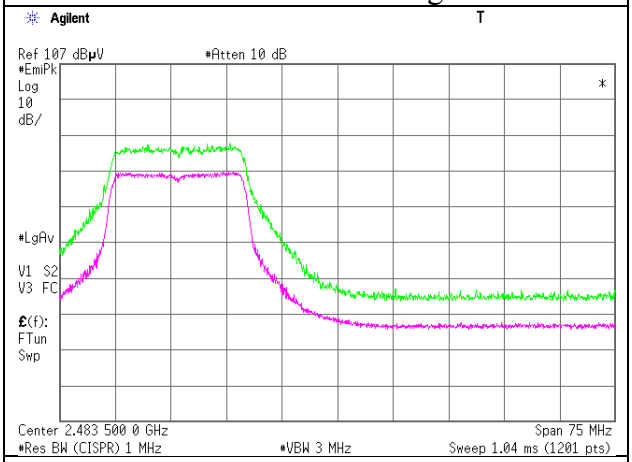
Restricted-band band-edge Plot



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

Test place	Shonan EMC Lab. No.1, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

Mode Tx 11n-40 2422 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	53.1	27.7	13.7	34.2	2.0	62.3	73.9	11.6	129	219	
Hori.	2499.930	PK	45.2	27.9	13.8	34.1	2.0	54.8	73.9	19.1	142	239	
Hori.	4844.000	PK	45.8	31.5	7.5	41.6	2.0	45.2	73.9	28.7	158	35	
Hori.	4999.945	PK	49.1	32.0	7.6	41.5	2.0	49.2	73.9	24.7	155	278	
Hori.	7266.000	PK	45.8	36.6	9.1	41.3	2.0	52.2	73.9	21.7	159	351	
Hori.	9688.000	PK	44.5	38.0	10.0	40.1	2.0	54.4	73.9	19.5	172	58	
Hori.	12110.000	PK	44.2	39.6	11.2	39.3	2.0	57.7	73.9	16.2	150	333	
Hori.	2390.000	AV	40.2	27.7	13.7	34.2	2.0	49.4	53.9	4.5	129	219	
Hori.	2499.930	AV	38.9	27.9	13.8	34.1	2.0	48.5	53.9	5.4	142	239	
Hori.	4844.000	AV	37.1	31.5	7.5	41.6	2.0	36.5	53.9	17.4	158	35	
Hori.	4999.945	AV	44.4	32.0	7.6	41.5	2.0	44.5	53.9	9.4	155	278	
Hori.	7266.000	AV	36.3	36.6	9.1	41.3	2.0	42.7	53.9	11.2	159	351	
Hori.	9688.000	AV	35.2	38.0	10.0	40.1	2.0	45.1	53.9	8.8	172	58	
Hori.	12110.000	AV	35.5	39.6	11.2	39.3	2.0	49.0	53.9	4.9	150	333	
Vert.	2390.000	PK	52.8	27.7	13.7	34.2	2.0	62.0	73.9	11.9	147	237	
Vert.	2499.930	PK	45.9	27.9	13.8	34.1	2.0	55.5	73.9	18.4	183	347	
Vert.	4844.000	PK	45.3	31.5	7.5	41.6	2.0	44.7	73.9	29.2	145	344	
Vert.	5000.001	PK	50.3	32.0	7.6	41.5	2.0	50.4	73.9	23.5	148	268	
Vert.	7266.000	PK	45.6	36.6	9.1	41.3	2.0	52.0	73.9	21.9	156	24	
Vert.	9688.000	PK	44.8	38.0	10.0	40.1	2.0	54.7	73.9	19.2	136	333	
Vert.	12110.000	PK	44.3	39.6	11.2	39.3	2.0	57.8	73.9	16.1	150	22	
Vert.	2390.000	AV	40.5	27.7	13.7	34.2	2.0	49.7	53.9	**4.2**	147	237	
Vert.	2499.930	AV	39.9	27.9	13.8	34.1	2.0	49.5	53.9	4.4	183	347	
Vert.	4844.000	AV	36.8	31.5	7.5	41.6	2.0	36.2	53.9	17.7	145	344	
Vert.	5000.001	AV	46.1	32.0	7.6	41.5	2.0	46.2	53.9	7.7	148	268	
Vert.	7266.000	AV	34.9	36.6	9.1	41.3	2.0	41.3	53.9	12.6	156	24	
Vert.	9688.000	AV	35.6	38.0	10.0	40.1	2.0	45.5	53.9	8.4	136	333	
Vert.	12110.000	AV	35.5	39.6	11.2	39.3	2.0	49.0	53.9	4.9	150	22	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 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)**

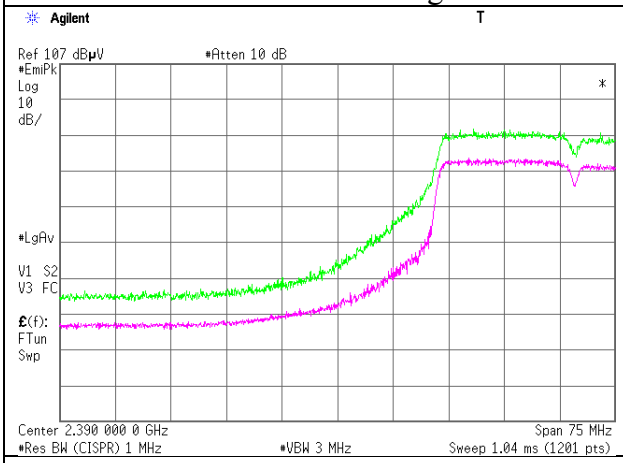
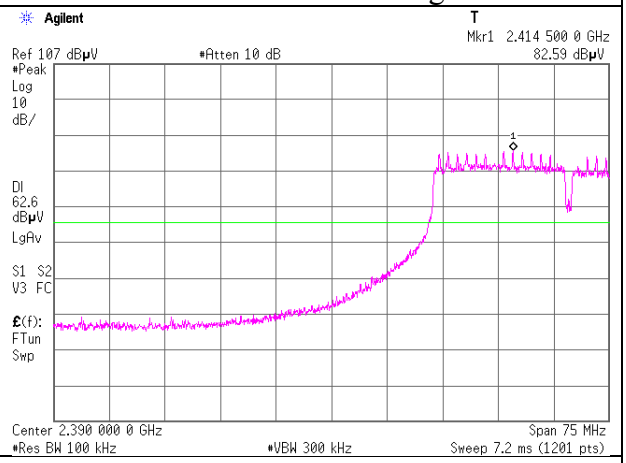
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	81.6	27.8	13.7	34.2	2.0	90.9	-	-	Carrier
Hori.	2400.000	PK	53.6	27.7	13.7	34.2	2.0	62.8	71.0	8.2	
Vert.	2422.000	PK	82.7	27.8	13.7	34.2	2.0	92.0	-	-	Carrier
Vert.	2400.000	PK	52.0	27.7	13.7	34.2	2.0	61.2	72.1	10.9	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

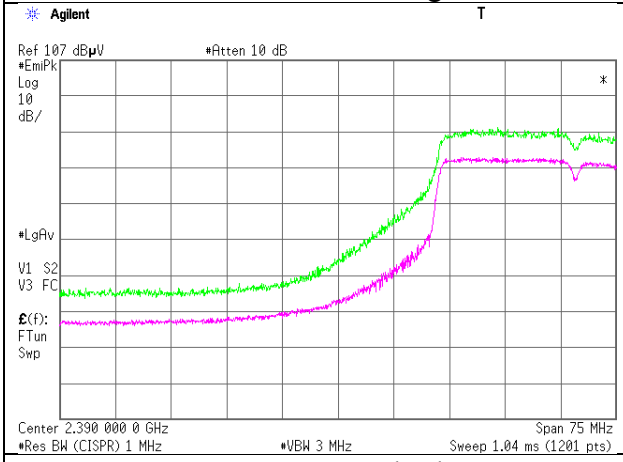
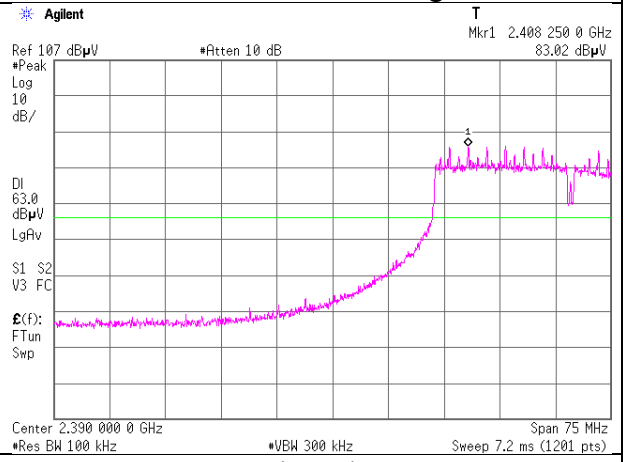
Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
Mode	Tx 11n-40 2422 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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 12, 2016	February 13, 2016	February 14, 2016	February 17, 2016
Temperature / Humidity	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH	24 deg. C / 31 % RH
Engineer	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano	Hiroyuki Morikawa

Mode Tx 11n-40 2427 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	59.8	27.8	13.7	41.0	3.1	63.4	73.9	10.5	152	143	
Hori.	4854.000	PK	49.0	31.5	7.5	41.6	3.1	49.5	73.9	24.4	109	37	
Hori.	4999.928	PK	49.4	32.0	7.6	41.5	3.1	50.6	73.9	23.3	159	272	
Hori.	7281.000	PK	45.3	36.7	9.1	41.3	3.1	52.9	73.9	21.0	145	12	
Hori.	9708.000	PK	47.7	38.0	10.0	40.1	3.1	58.7	73.9	15.2	121	318	
Hori.	12135.000	PK	44.2	39.6	11.2	39.3	3.1	58.8	73.9	15.1	150	18	
Hori.	2390.000	AV	47.5	27.8	13.7	41.0	3.1	51.1	53.9	2.8	152	143	
Hori.	4854.000	AV	38.6	31.5	7.5	41.6	3.1	39.1	53.9	14.8	109	37	
Hori.	4999.928	AV	43.7	32.0	7.6	41.5	3.1	44.9	53.9	9.0	159	272	
Hori.	7281.000	AV	36.6	36.7	9.1	41.3	3.1	44.2	53.9	9.7	145	12	
Hori.	9708.000	AV	37.3	38.0	10.0	40.1	3.1	48.3	53.9	5.6	121	318	
Hori.	12135.000	AV	35.5	39.6	11.2	39.3	3.1	50.1	53.9	3.8	150	18	
Vert.	2390.000	PK	61.9	27.8	13.7	41.0	3.1	65.5	73.9	8.4	140	227	
Vert.	4854.000	PK	47.9	31.5	7.5	41.6	3.1	48.4	73.9	25.5	146	30	
Vert.	4999.953	PK	50.1	32.0	7.6	41.5	3.1	51.3	73.9	22.6	154	266	
Vert.	7281.000	PK	45.3	36.7	9.1	41.3	3.1	52.9	73.9	21.0	147	324	
Vert.	9708.000	PK	44.5	38.0	10.0	40.1	3.1	55.5	73.9	18.4	139	135	
Vert.	12135.000	PK	44.6	39.6	11.2	39.3	3.1	59.2	73.9	14.7	150	327	
Vert.	2390.000	AV	49.8	27.8	13.7	41.0	3.1	53.4	53.9	**0.5**	140	227	
Vert.	4854.000	AV	38.4	31.5	7.5	41.6	3.1	38.9	53.9	15.0	146	30	
Vert.	4999.953	AV	45.5	32.0	7.6	41.5	3.1	46.7	53.9	7.2	154	266	
Vert.	7281.000	AV	37.0	36.7	9.1	41.3	3.1	44.6	53.9	9.3	147	324	
Vert.	9708.000	AV	35.8	38.0	10.0	40.1	3.1	46.8	53.9	7.1	139	135	
Vert.	12135.000	AV	35.5	39.6	11.2	39.3	3.1	50.1	53.9	3.8	150	327	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.26 m / 3.0 m) = 3.1 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.	2427.000	PK	89.1	27.8	13.7	41.0	3.1	92.7	-	-	Carrier
Hori.	2400.000	PK	55.5	27.8	13.7	41.0	3.1	59.1	72.8	13.7	
Vert.	2427.000	PK	91.6	27.8	13.7	41.0	3.1	95.2	-	-	Carrier
Vert.	2400.000	PK	56.2	27.8	13.7	41.0	3.1	59.8	75.3	15.5	

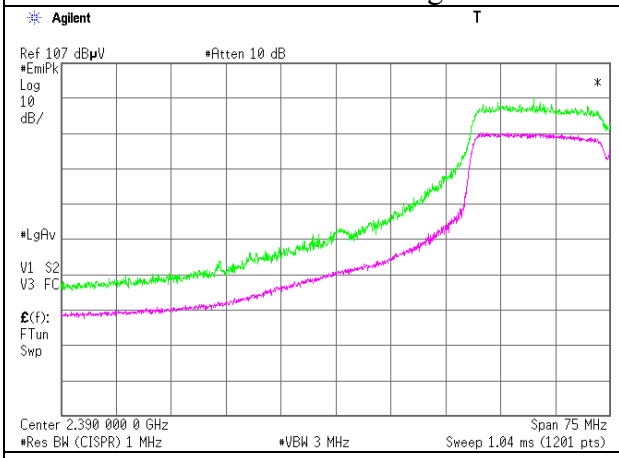
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (4.26 m / 3.0 m) = 3.1 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 17, 2016
Temperature / Humidity	24 deg. C / 31 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 2427 MHz

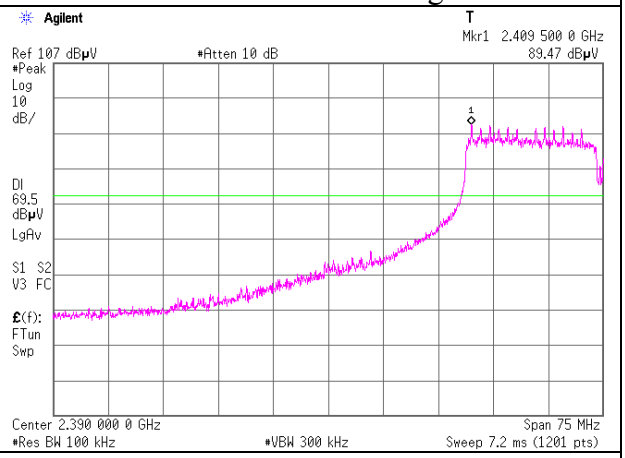
Horizontal

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

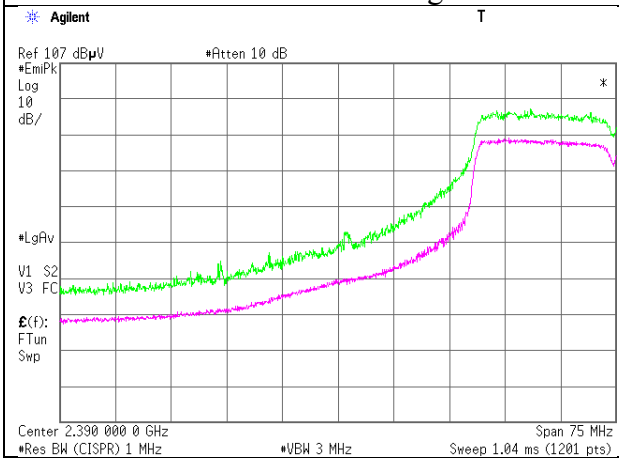
Authorized-band band-edge Plot



20dBc Plot

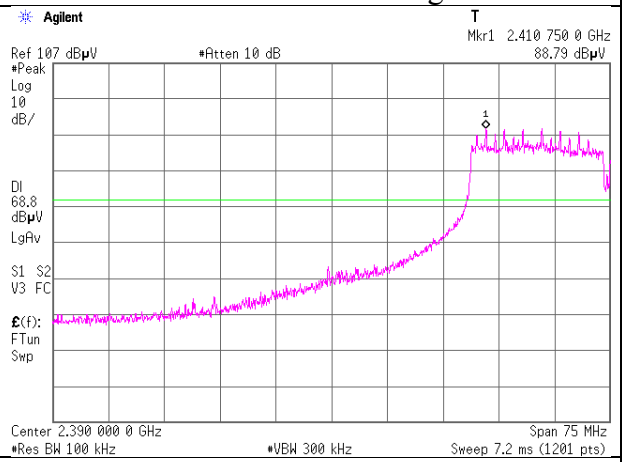
Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Authorized-band band-edge Plot



20dBc Plot

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

Radiated Spurious Emission

Test place	Shonan EMC Lab. No.1, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

Mode Tx 11n-40 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.	2499.999	PK	45.2	27.9	13.8	34.1	2.0	54.8	73.9	19.1	136	243	
Hori.	4874.000	PK	45.8	31.6	7.5	41.6	2.0	45.3	73.9	28.6	146	34	
Hori.	4999.962	PK	48.9	32.0	7.6	41.5	2.0	49.0	73.9	24.9	148	278	
Hori.	7311.000	PK	45.3	36.7	9.1	41.3	2.0	51.8	73.9	22.1	148	5	
Hori.	9748.000	PK	44.7	38.0	10.0	40.1	2.0	54.6	73.9	19.3	121	319	
Hori.	12185.000	PK	43.8	39.6	11.2	39.3	2.0	57.3	73.9	16.6	150	0	
Hori.	2499.999	AV	39.2	27.9	13.8	34.1	2.0	48.8	53.9	5.1	136	243	
Hori.	4874.000	AV	35.9	31.6	7.5	41.6	2.0	35.4	53.9	18.5	146	34	
Hori.	4999.962	AV	44.1	32.0	7.6	41.5	2.0	44.2	53.9	9.7	148	278	
Hori.	7311.000	AV	37.0	36.7	9.1	41.3	2.0	43.5	53.9	10.4	148	5	
Hori.	9748.000	AV	36.1	38.0	10.0	40.1	2.0	46.0	53.9	7.9	121	319	
Hori.	12185.000	AV	35.6	39.6	11.2	39.3	2.0	49.1	53.9	4.8	150	0	
Vert.	2499.987	PK	45.6	27.9	13.8	34.1	2.0	55.2	73.9	18.7	154	349	
Vert.	4874.000	PK	47.2	31.6	7.5	41.6	2.0	46.7	73.9	27.2	110	185	
Vert.	5000.000	PK	49.7	32.0	7.6	41.5	2.0	49.8	73.9	24.1	145	274	
Vert.	7311.000	PK	46.1	36.7	9.1	41.3	2.0	52.6	73.9	21.3	154	118	
Vert.	9748.000	PK	44.9	38.0	10.0	40.1	2.0	54.8	73.9	19.1	146	351	
Vert.	12185.000	PK	43.4	39.6	11.2	39.3	2.0	56.9	73.9	17.0	150	37	
Vert.	2499.987	AV	39.6	27.9	13.8	34.1	2.0	49.2	53.9	**4.7**	154	349	
Vert.	4874.000	AV	37.9	31.6	7.5	41.6	2.0	37.4	53.9	16.5	110	185	
Vert.	5000.000	AV	46.1	32.0	7.6	41.5	2.0	46.2	53.9	7.7	145	274	
Vert.	7311.000	AV	37.3	36.7	9.1	41.3	2.0	43.8	53.9	10.1	154	118	
Vert.	9748.000	AV	35.5	38.0	10.0	40.1	2.0	45.4	53.9	8.5	146	351	
Vert.	12185.000	AV	35.3	39.6	11.2	39.3	2.0	48.8	53.9	5.1	150	37	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano

Mode Tx 11n-40 2452 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	48.9	27.9	13.8	34.1	2.0	58.5	73.9	15.4	128	218	
Hori.	2499.992	PK	45.3	27.9	13.8	34.1	2.0	54.9	73.9	19.0	130	250	
Hori.	4904.000	PK	44.8	31.7	7.6	41.6	2.0	44.5	73.9	29.4	128	20	
Hori.	4999.995	PK	48.8	32.0	7.6	41.5	2.0	48.9	73.9	25.0	124	272	
Hori.	7356.000	PK	45.5	36.7	9.1	41.3	2.0	52.0	73.9	21.9	140	322	
Hori.	9808.000	PK	43.4	38.1	10.1	40.1	2.0	53.5	73.9	20.4	163	59	
Hori.	12260.000	PK	43.7	39.6	11.2	39.2	2.0	57.3	73.9	16.6	150	359	
Hori.	2483.500	AV	36.9	27.9	13.8	34.1	2.0	46.5	53.9	7.4	128	218	
Hori.	2499.992	AV	39.2	27.9	13.8	34.1	2.0	48.8	53.9	5.1	130	250	
Hori.	4904.000	AV	37.1	31.7	7.6	41.6	2.0	36.8	53.9	17.1	128	20	
Hori.	4999.995	AV	44.0	32.0	7.6	41.5	2.0	44.1	53.9	9.8	124	272	
Hori.	7356.000	AV	37.0	36.7	9.1	41.3	2.0	43.5	53.9	10.4	140	322	
Hori.	9808.000	AV	35.5	38.1	10.1	40.1	2.0	45.6	53.9	8.3	163	59	
Hori.	12260.000	AV	35.8	39.6	11.2	39.2	2.0	49.4	53.9	4.5	150	359	
Vert.	2483.500	PK	47.9	27.9	13.8	34.1	2.0	57.5	73.9	16.4	137	237	
Vert.	2499.992	PK	46.3	27.9	13.8	34.1	2.0	55.9	73.9	18.0	137	348	
Vert.	4904.000	PK	45.7	31.7	7.6	41.6	2.0	45.4	73.9	28.5	146	29	
Vert.	5000.015	PK	50.7	32.0	7.6	41.5	2.0	50.8	73.9	23.1	147	272	
Vert.	7356.000	PK	45.9	36.7	9.1	41.3	2.0	52.4	73.9	21.5	150	32	
Vert.	9808.000	PK	45.3	38.1	10.1	40.1	2.0	55.4	73.9	18.5	130	270	
Vert.	12260.000	PK	44.8	39.6	11.2	39.2	2.0	58.4	73.9	15.5	150	17	
Vert.	2483.500	AV	36.6	27.9	13.8	34.1	2.0	46.2	53.9	7.7	137	237	
Vert.	2499.992	AV	40.2	27.9	13.8	34.1	2.0	49.8	53.9	**4.1**	137	348	
Vert.	4904.000	AV	37.0	31.7	7.6	41.6	2.0	36.7	53.9	17.2	146	29	
Vert.	5000.015	AV	44.2	32.0	7.6	41.5	2.0	44.3	53.9	9.6	147	272	
Vert.	7356.000	AV	37.4	36.7	9.1	41.3	2.0	43.9	53.9	10.0	150	32	
Vert.	9808.000	AV	35.5	38.1	10.1	40.1	2.0	45.6	53.9	8.3	130	270	
Vert.	12260.000	AV	35.9	39.6	11.2	39.2	2.0	49.5	53.9	4.4	150	17	

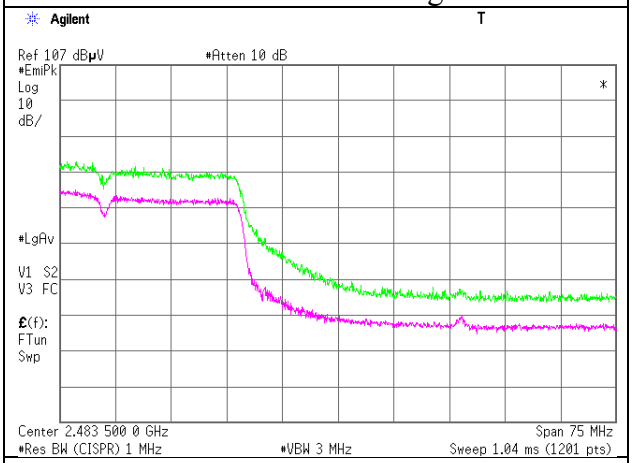
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.76 m / 3.0 m) = 2.0 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11143372S-A-R1
Date	February 11, 2016
Temperature / Humidity	22 deg. C / 38 % RH
Engineer	Wataru Kojima
Mode	Tx 11n-20 2462 MHz

Horizontal

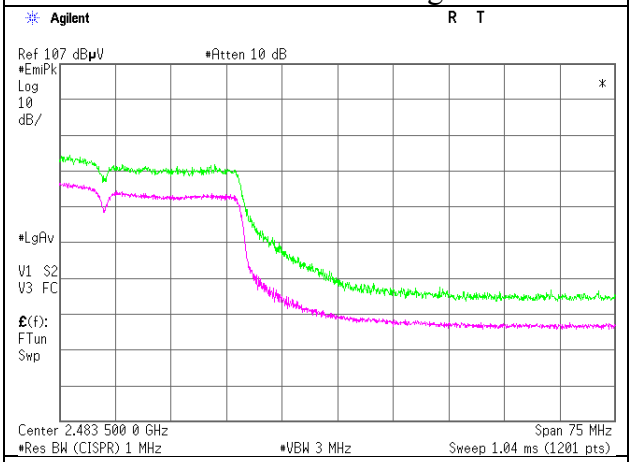
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

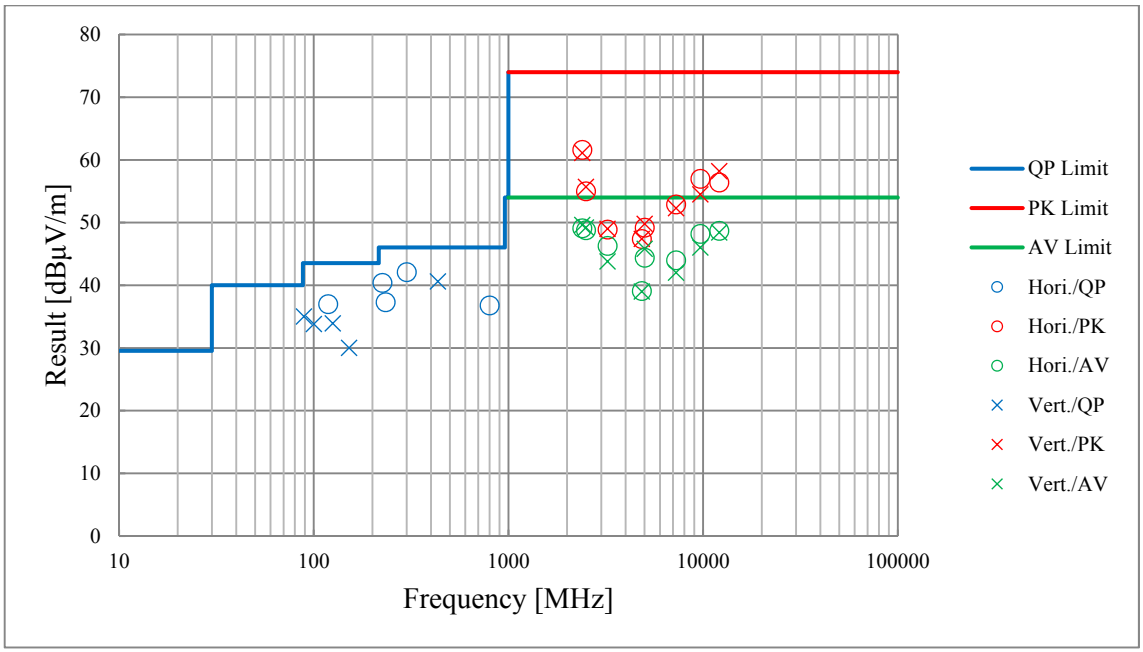


Trace Green : Peak Plot
Trace Purple : Average Plot

* 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, 2, 3 Semi Anechoic Chamber			
Report No.	11143372S-A-R1			
Date	February 11, 2016	February 12, 2016	February 13, 2016	February 14, 2016
Temperature / Humidity	22 deg. C / 38 % RH	24 deg. C / 31 % RH	24 deg. C / 31 % RH	24 deg. C / 49 % RH
Engineer	Wataru Kojima	Wataru Kojima	Hiroyuki Morikawa	Shinichi Takano
Mode	Tx 11n-20 2417 MHz			

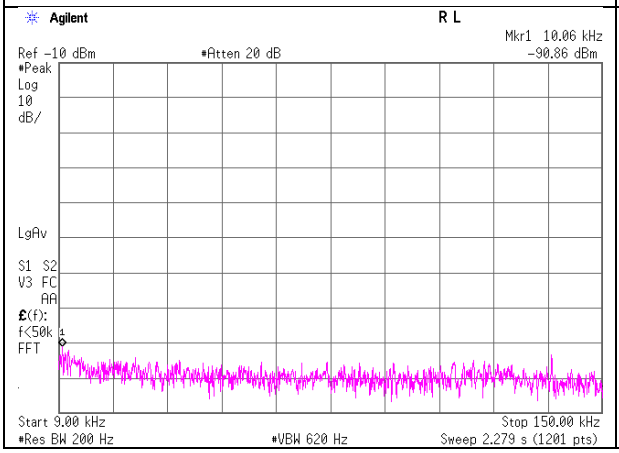


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

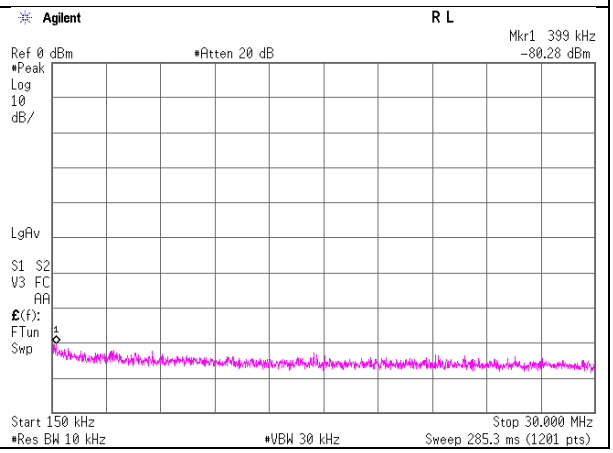
Conducted Spurious Emission

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 MIMO 2412 MHz Antenna 0

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
10.06	-91.8	0.04	9.8	-5.1	2	-84.0	300	6.0	-22.7	47.5	70.2	
399.00	-80.3	0.05	9.8	-5.1	2	-72.5	300	6.0	-11.2	15.5	26.7	

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.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11b Antenna 0

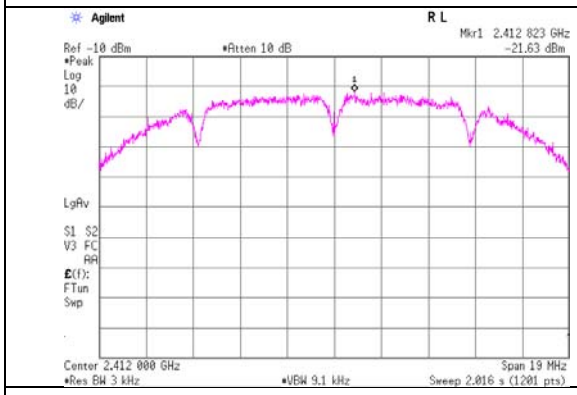
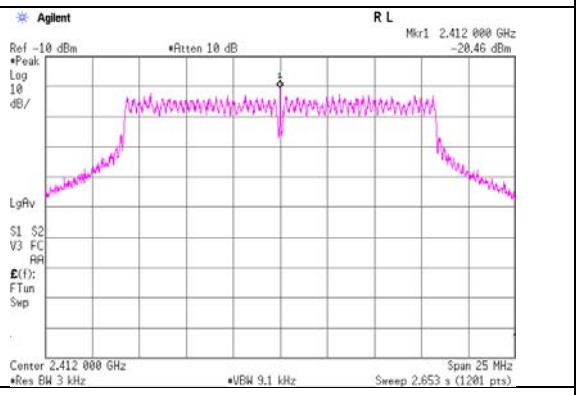
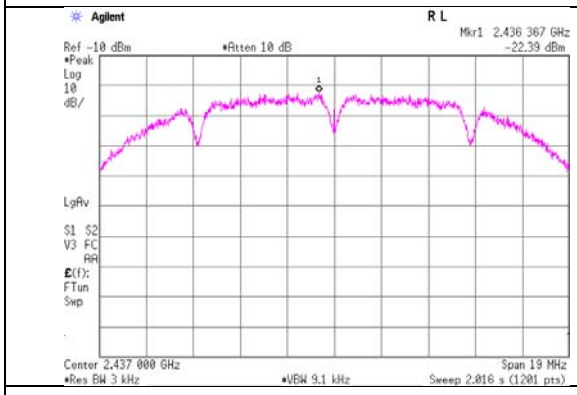
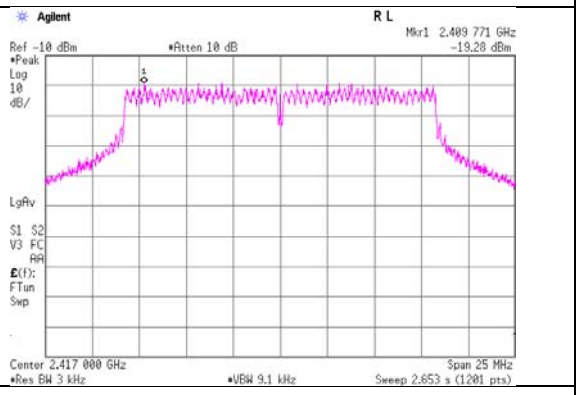
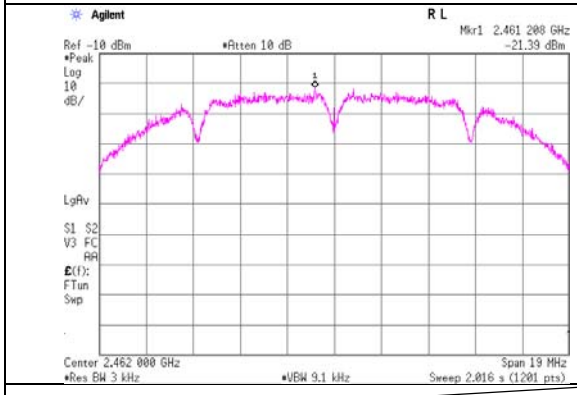
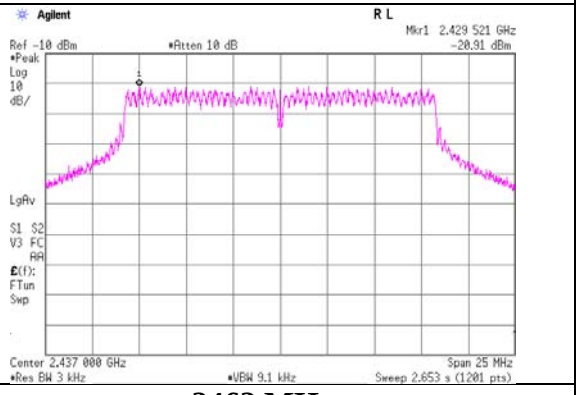
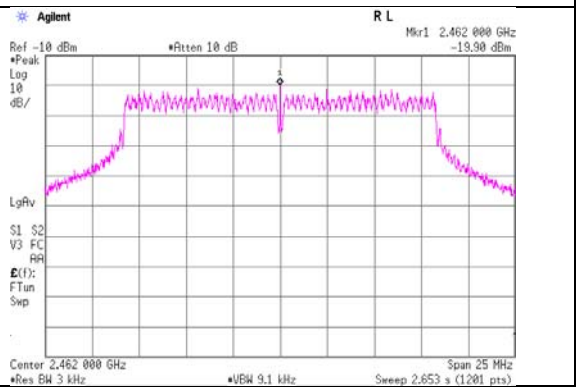
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-21.63	1.84	9.93	-9.86	8.00	17.86
2437	-22.39	1.85	9.93	-10.61	8.00	18.61
2462	-21.39	1.86	9.93	-9.60	8.00	17.60

11g Antenna 0

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-20.46	1.84	9.93	-8.69	8.00	16.69
2427 *1	-19.28	1.84	9.93	-7.51	8.00	15.51
2437	-20.91	1.85	9.93	-9.13	8.00	17.13
2462	-19.90	1.86	9.93	-8.11	8.00	16.11

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator
*1 Measurement was performed additionally since the channel has the highest power setting.

Power Density

11b	11g
2412 MHz	**2412 MHz**
	
2437 MHz	**2417 MHz**
	
2462 MHz	**2437 MHz**
	
	2462 MHz
	

Power Density

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11n-20 SISO Antenna 0

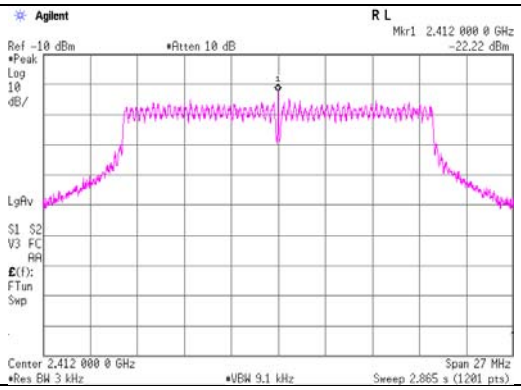
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2412	-22.22	1.84	9.93	-10.45	8.00	18.45
2427 *1	-20.55	1.84	9.93	-8.78	8.00	16.78
2437	-21.94	1.85	9.93	-10.16	8.00	18.16
2462	-21.87	1.86	9.93	-10.08	8.00	18.08

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator
*1 Measurement was performed additionally since the channel has the highest power setting.

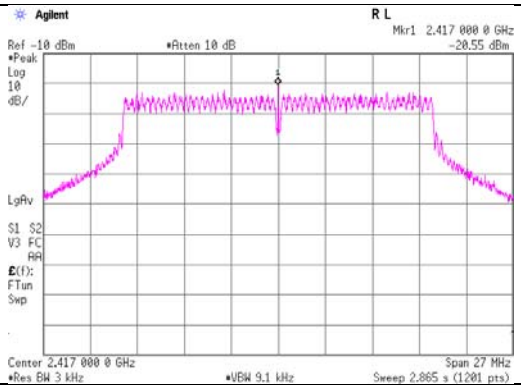
Power Density

11n-20 SISO

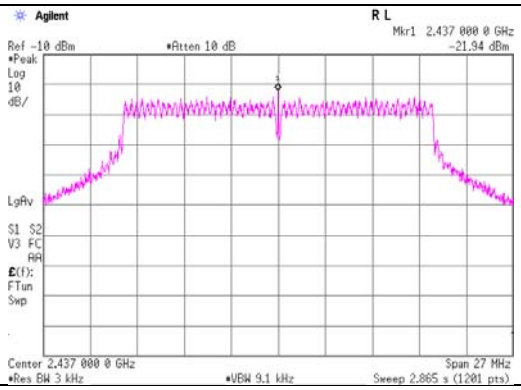
2412 MHz



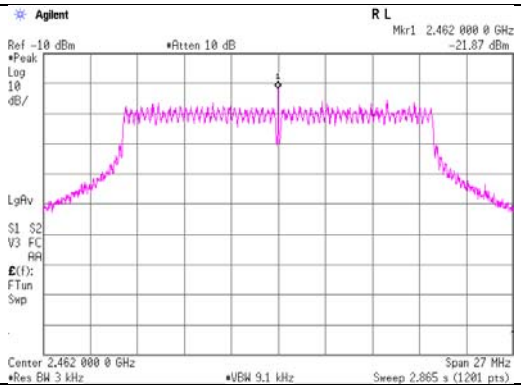
2417 MHz



2437 MHz



2462 MHz



Power Density

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-20 MIMO

Antenna 0 + 1

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2412.00	0.09	0.05	-8.40	0.14	8.00	16.40
2417 *1	0.13	0.08	-6.74	0.21	8.00	14.74
2437.00	0.06	0.07	-9.02	0.13	8.00	17.02
2462.00	0.07	0.04	-9.41	0.11	8.00	17.41

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0

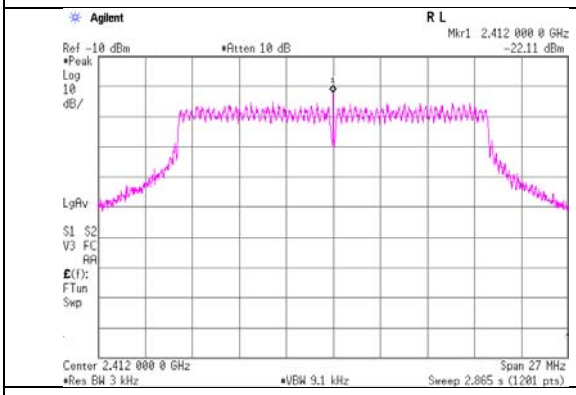
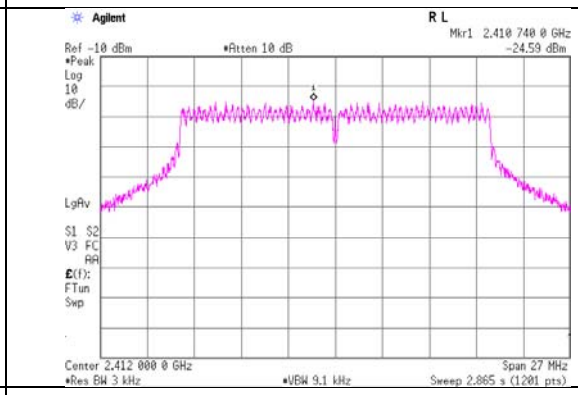
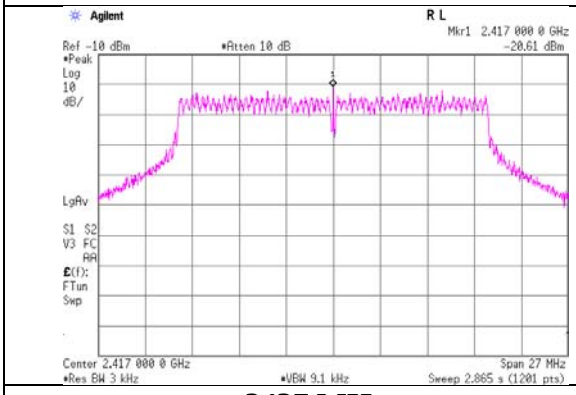
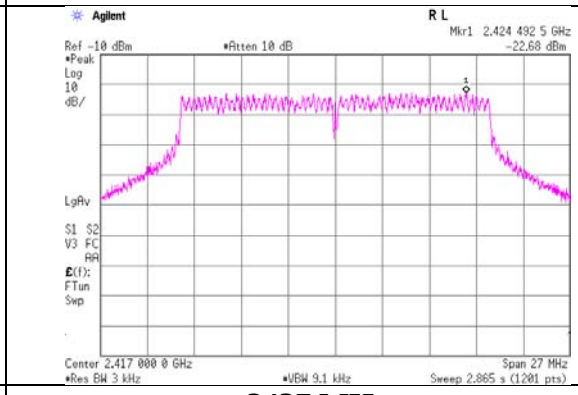
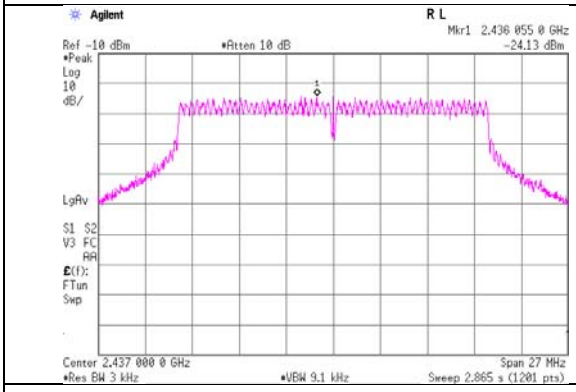
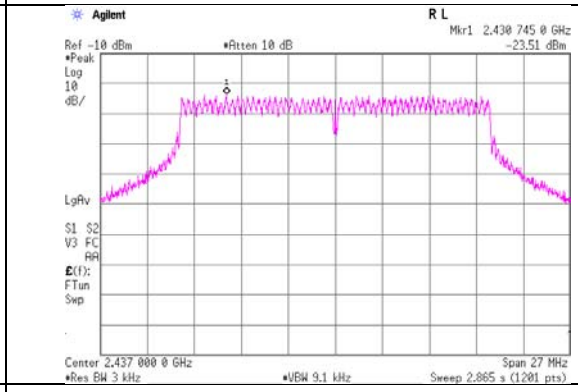
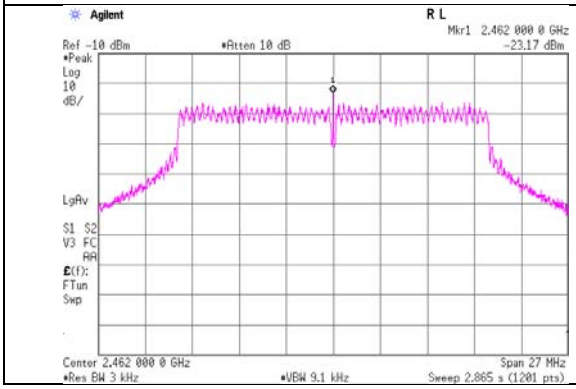
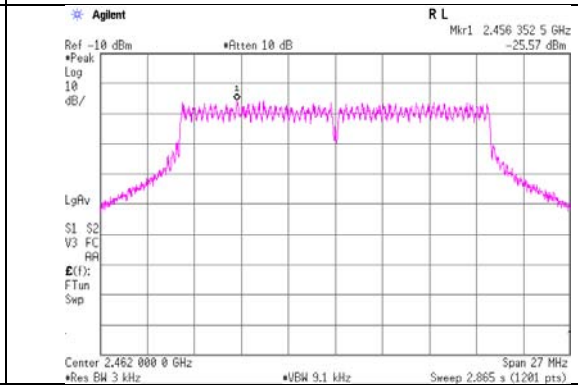
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412	-22.11	1.84	9.93	-10.34	0.09	8.00	18.34
2417 *1	-20.61	1.84	9.93	-8.84	0.13	8.00	16.84
2437	-24.13	1.85	9.93	-12.35	0.06	8.00	20.35
2462	-23.17	1.86	9.93	-11.38	0.07	8.00	19.38

Antenna 1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412	-24.59	1.84	9.93	-12.82	0.05	8.00	20.82
2417 *1	-22.68	1.84	9.93	-10.91	0.08	8.00	18.91
2437	-23.51	1.85	9.93	-11.73	0.07	8.00	19.73
2462	-25.57	1.86	9.93	-13.78	0.04	8.00	21.78

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Power Density

11n-20 MIMO Antenna 0	11n-20 MIMO Antenna 1
2412 MHz	2412 MHz
	
2417 MHz	2417 MHz
	
2437 MHz	2437 MHz
	
2462 MHz	2462 MHz
	

Power Density

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11n-40 SISO Antenna 0

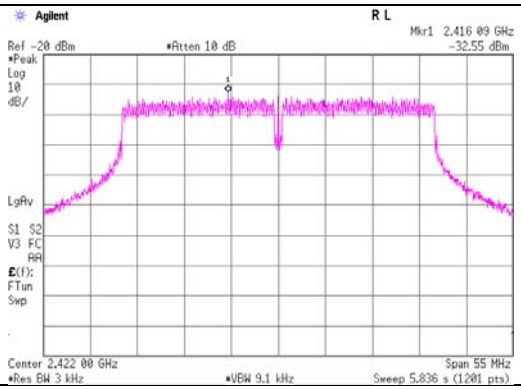
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2422	-32.55	1.85	9.93	-20.77	8.00	28.77
2427 *1	-24.08	1.85	9.93	-12.30	8.00	20.30
2437	-24.24	1.85	9.93	-12.46	8.00	20.46
2452	-31.03	1.85	9.93	-19.25	8.00	27.25

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator
*1 Measurement was performed additionally since the channel has the highest power setting.

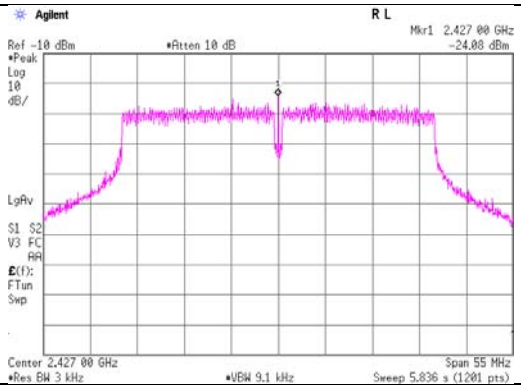
Power Density

11n-40 SISO

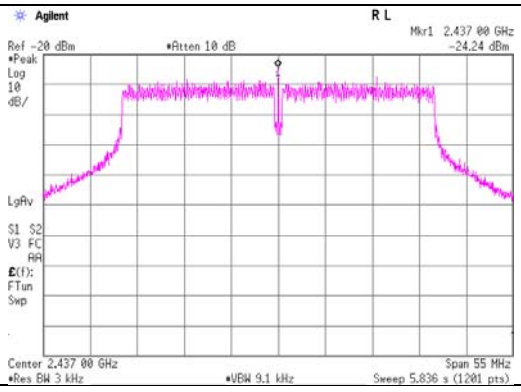
2422 MHz



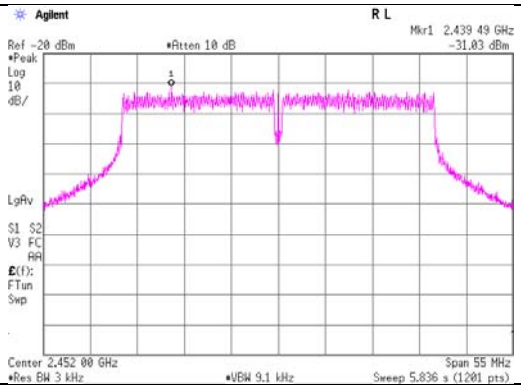
2427 MHz



2437 MHz



2452 MHz



Power Density

Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx 11n-40 MIMO

Antenna 0 + 1

Freq.	Antenna 0 Result	Antenna 1 Result	Result		Limit	Margin
[MHz]	[mW]	[mW]	[dBm]	[mW]	[dBm]	[dB]
2422	0.01	0.01	-17.04	0.02	8.00	25.04
2427 *1	0.06	0.05	-9.50	0.11	8.00	17.50
2437	0.04	0.03	-11.72	0.07	8.00	19.72
2452	0.03	0.02	-13.05	0.05	8.00	21.05

Sample Calculation:
Result = Antenna 0 + 1

Antenna 0

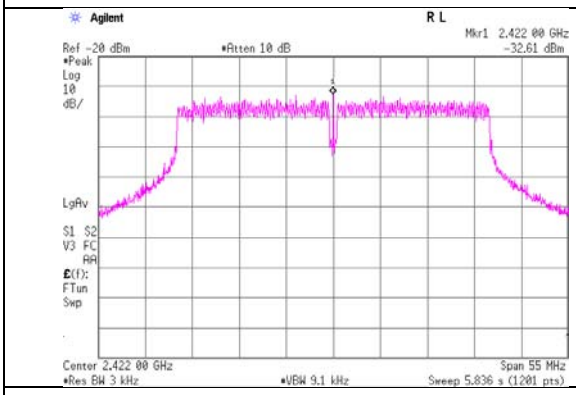
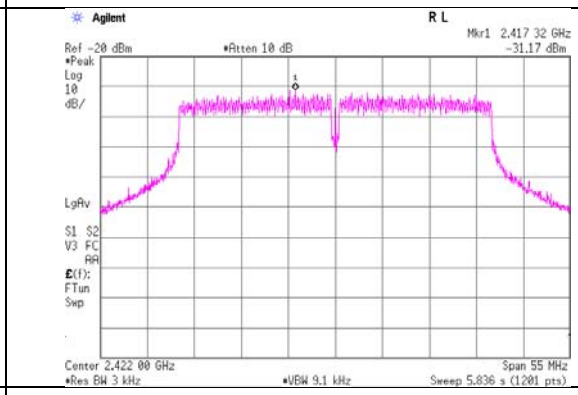
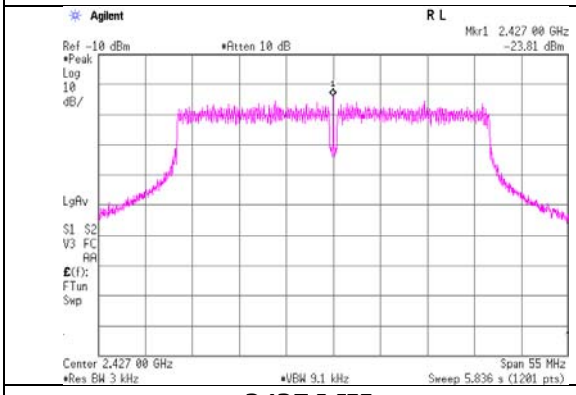
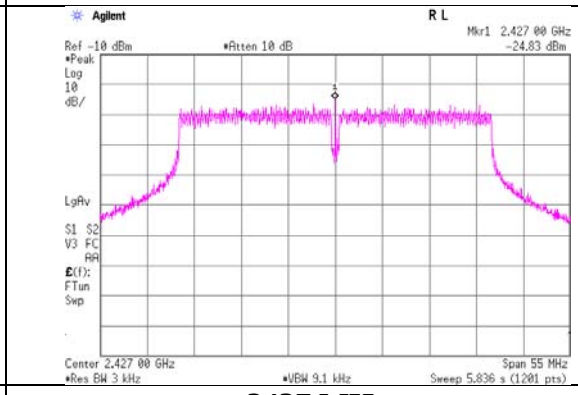
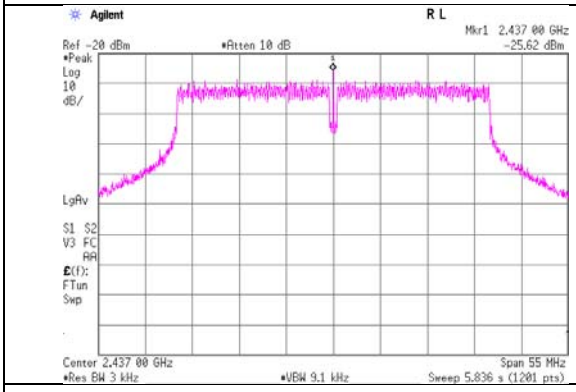
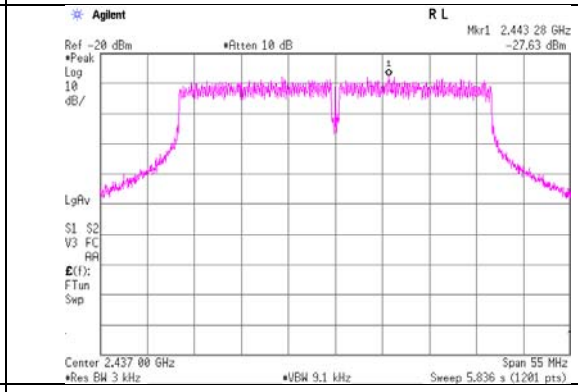
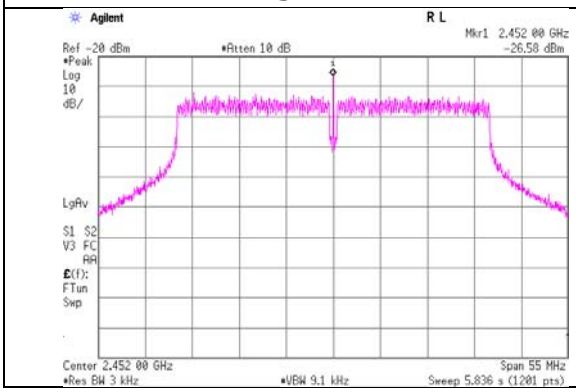
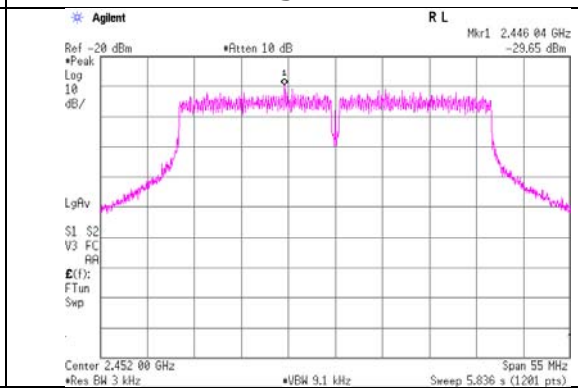
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412	-32.61	1.85	9.93	-20.83	0.01	8.00	28.83
2417 *1	-23.81	1.85	9.93	-12.03	0.06	8.00	20.03
2437	-25.63	1.85	9.93	-13.85	0.04	8.00	21.85
2462	-26.58	1.85	9.93	-14.80	0.03	8.00	22.80

Antenna 1

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[dB]
2412	-31.17	1.85	9.93	-19.39	0.01	8.00	27.39
2417 *1	-24.83	1.85	9.93	-13.05	0.05	8.00	21.05
2437	-27.63	1.85	9.93	-15.85	0.03	8.00	23.85
2462	-29.65	1.86	9.93	-17.86	0.02	8.00	25.86

Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
*1 Measurement was performed additionally since the channel has the highest power setting.

Power Density

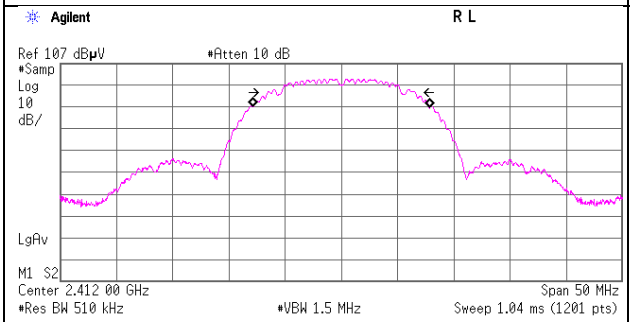
11n-40 MIMO Antenna 0	11n-40 MIMO Antenna 1
2422 MHz	2422 MHz
	
2427 MHz	2427 MHz
	
2437 MHz	2437 MHz
	
2452 MHz	2452 MHz
	

99%Occupied Bandwidth

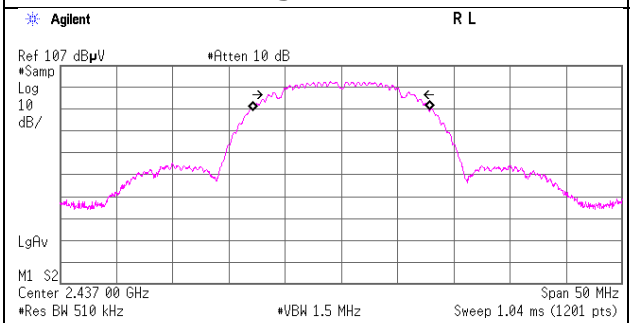
Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11b Antenna 0

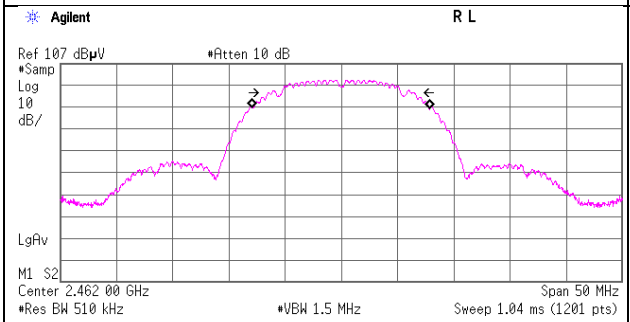
2412 MHz



2437 MHz

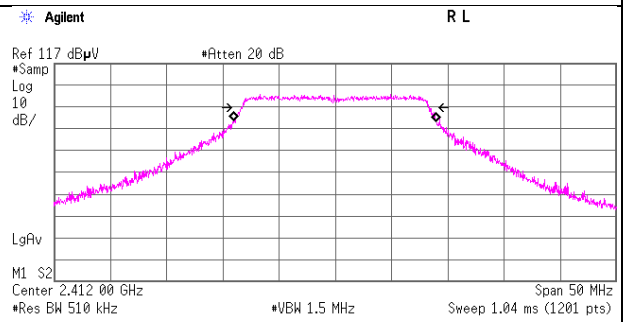


2462 MHz

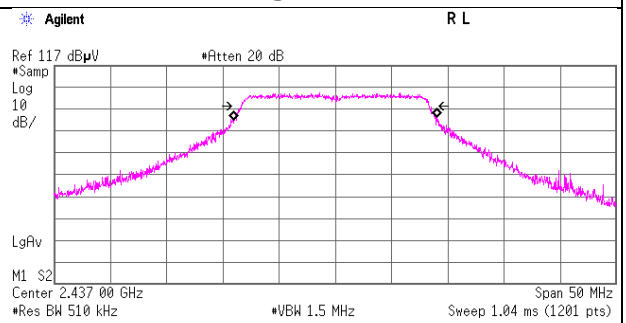


11g Antenna 0

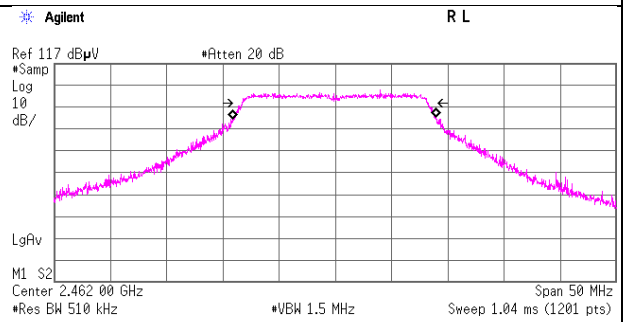
2412 MHz



2437 MHz



2462 MHz

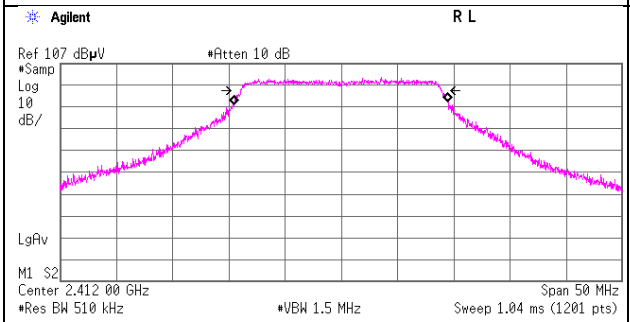


99%Occupied Bandwidth

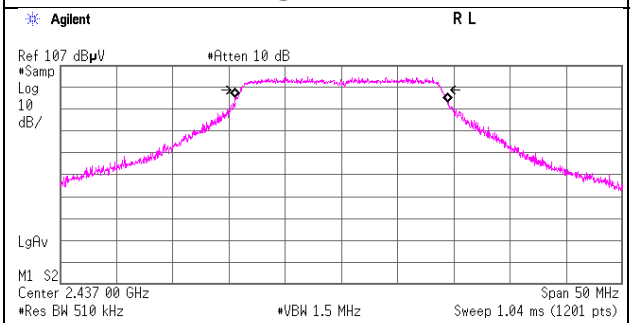
Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11n-20 SISO Antenna 0

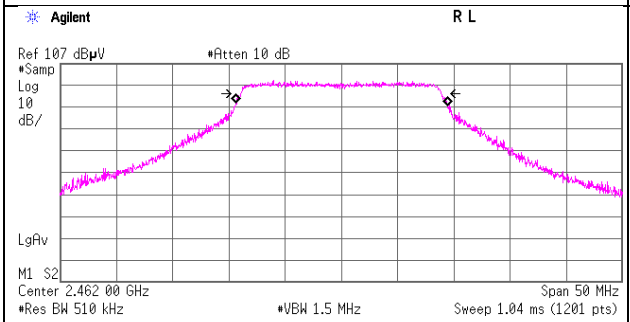
2412 MHz



2437 MHz

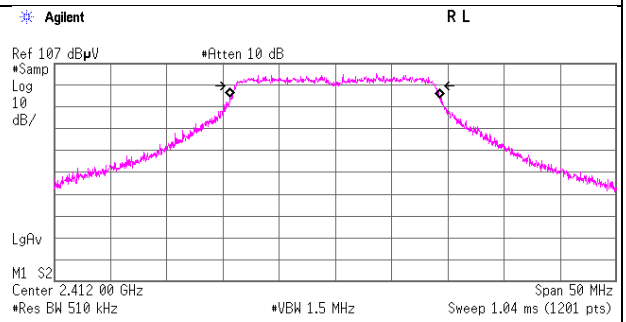


2462 MHz

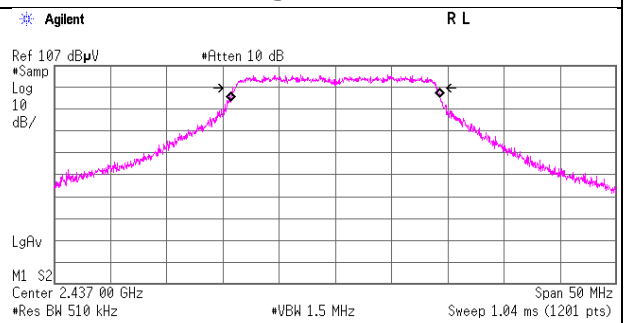


11n-20 MIMO Antenna 0

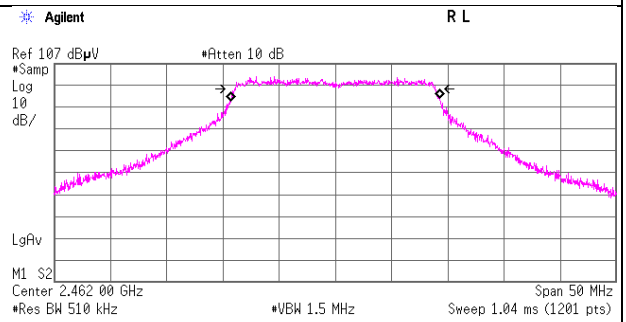
2412 MHz



2437 MHz



2462 MHz

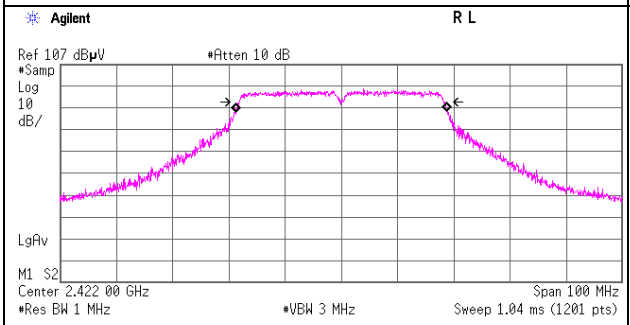


99% Occupied Bandwidth

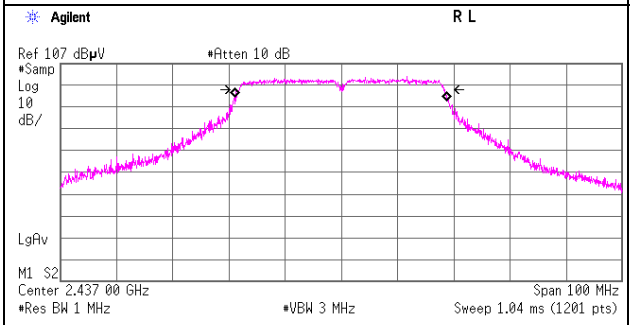
Test place	Shonan EMC Lab. No.1 Measurement Room
Report No.	11143372S-A-R1
Date	February 5, 2016
Temperature / Humidity	26 deg. C / 47 % RH
Engineer	Hiroyuki Morikawa
Mode	Tx

11n-40 SISO Antenna 0

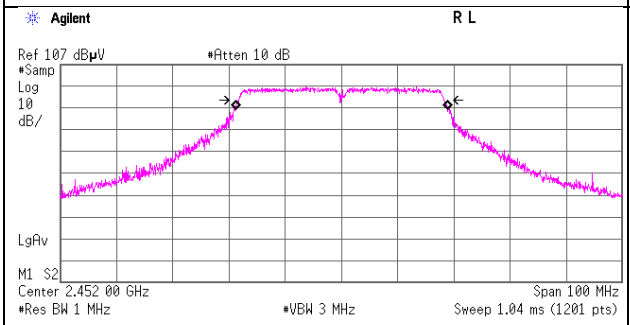
2422 MHz



2437 MHz

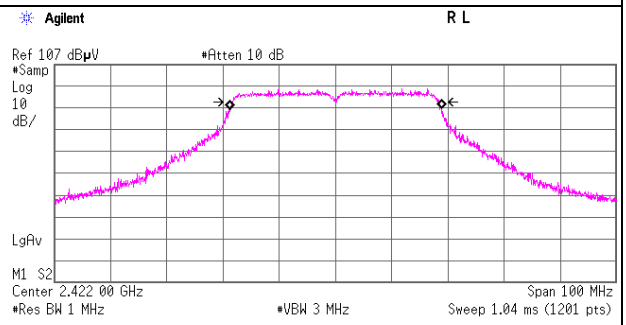


2452 MHz

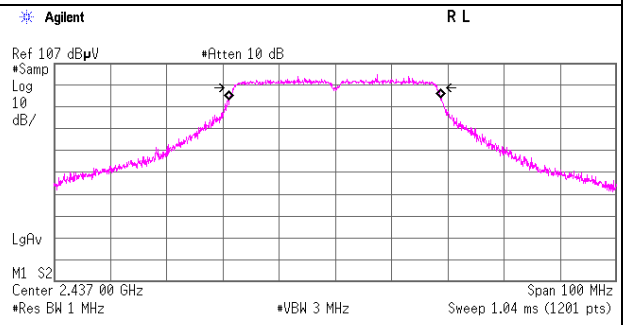


11n-40 MIMO Antenna 0

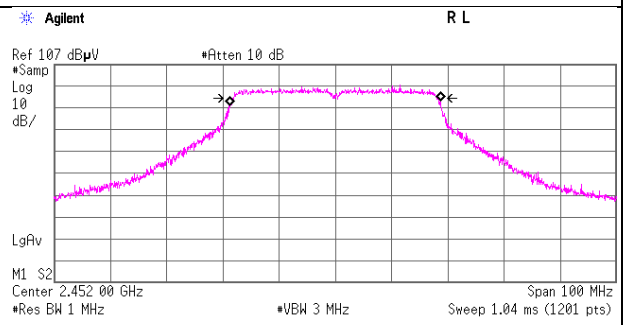
2422 MHz



2437 MHz



2452 MHz



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SRENT-05	Spectrum Analyzer	KEYSIGHT	E4440A	MY46187752	AT	2015/10/05 * 12
SPM-07	Power Meter	Agilent	8990B	MY5100272	AT	2015/04/02 * 12
SPSS-04	Power sensor	Agilent	N1923A	MY5326009	AT	2015/04/02 * 12
SCC-G13	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	AT	2015/03/11 * 12
SAT10-10	Attenuator	Weinschel Corp.	54A-10	37584	AT	2015/04/09 * 12
STM-G4	Terminator	Weinschel	M1459A	U6592	AT	2015/07/14 * 12
KTS-08	Digital Tester	SANWA	PC500	7019224	AT	2015/05/20 * 12
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	AT	2015/12/07 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	AT	2015/03/26 * 12
SAF-04	Pre Amplifier	TOYO Corporation	TPA0118-36	1440489	RE	2015/03/23 * 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
KSA-08	Spectrum Analyzer	Agilent	E4446A	MY46180525	RE	2015/03/23 * 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
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2015/11/04 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2015/11/16 * 12
SJM-09	Measure	PROMART	SEN1935	-		-
SAEC-02(SVSWR)	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	RE	2015/07/09 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2015/10/22 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2015/08/10 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2015/05/19 * 12
SCC-G05	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	RE	2015/05/11 * 12
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE	2015/03/10 * 12
KAF-04	Pre Amplifier	Agilent	8449B	3008A01600	RE	2015/04/28 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2015/07/16 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2015/05/27 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2015/06/08 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2015/05/19 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2015/08/11 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2015/10/22 * 12
STS-03	Digital Hitester	Hioki	3805-50	080997823	RE	2015/11/18 * 12
SHA-04	Horn Antenna	ETS LINDGREN	3160-09	LM3640	RE	2015/03/17 * 12
SAF-08	Pre Amplifier	TOYO Corporation	HAP18-26W	00000019	RE	2015/03/23 * 12
SCC-G15	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	RE	2015/03/11 * 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

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SCC-C9	Coaxial Cable	Suhner	RG223U	-	CE	2015/04/17 * 12
SLS-01	LISN	Rohde & Schwarz	ENV216	100511	CE	2016/02/08 * 12
SAT3-10	Attenuator	JFW	50HF-003N	-	CE	2015/08/31 * 12
SOS-02	Humidity Indicator	A&D	AD-5681	4063343	CE	2015/12/07 * 12
TR-09	Test Receiver	Rohde & Schwarz	ESCI	100769	CE	2015/09/30 * 12
SJM-02	Measure	KOMELON	KMC-36	-	CE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RFI, MF)	-	CE	-
STS-01	Digital Hitester	Hioki	3805-50	080997812	CE	2015/11/18 * 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