RADIO TEST REPORT

Test Report No. : 12079930H-C-R1

Applicant	:	**Sony Interactive Entertainment Inc.**
Type of Equipment	:	**Wireless communication module**
Model No.	:	**AW-CB262**
FCC ID	:	**AK8M16DAM2**
Test regulation	:	**FCC Part 15 Subpart E: 2018** **For Permissive Change** **(Radiated Spurious Emission test only)**
Test Result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
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 12079930H-C. 12079930H-C is replaced with this report.

Date of test: December 16 to 20, 2017

Representative test engineer:
T. Noguchi
Takafumi Noguchi
Engineer
Consumer Technology Division

Approved by:
Takayuki. S
Takayuki Shimada
Leader
Consumer Technology Division

NVLAP TESTING
NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
http://japan.ul.com/resources/emc_accredited/

REVISION HISTORY

Original Test Report No.: 12079930H-C

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12079930H-C	January 25, 2018	-	-
1	12079930H-C-R1	February 15, 2018	P.75	Correction of Item B and C as follows; Item: from “Antenna” to “IFA Antenna” Model number: from “-” to “- (PWB Printed Antenna)”
1	12079930H-C-R1	February 15, 2018	P.75	Correction of Item D as follows; Item: from “Antenna” to “PIFA Antenna” Model number: from “ANT-F” to “2327815”

CONTENTS PAGE

SECTION 1: Customer information....4
SECTION 2: Equipment under test (E.U.T.)....4
SECTION 3: Test specification, procedures & results....7
SECTION 4: Operation of E.U.T. during testing....10
SECTION 5: Radiated Spurious Emission and Band Edge Compliance....12
APPENDIX 1: Test data....14
Radiated Spurious Emission....14
APPENDIX 2: Test instruments....71
APPENDIX 3: Photographs of test setup....72
Radiated Spurious Emission....72
Worst Case Position....73
Test Configuration and peripherals....75

SECTION 1: Customer information

Company Name	Sony Interactive Entertainment Inc.
Brand Name	SONY
Address	1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan
Telephone Number	+81-50-3807-5639
Facsimile Number	+81-50-3807-9594
Contact Person	Kiyoto Sasaki

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

2.1 Identification of E.U.T.

Type of Equipment	Wireless communication module
Model No	AW-CB262
Serial No	Refer to Clause 4.2
Country of Manufacture	China/Japan
Receipt Date of Sample	December 7, 2017
Condition of EUT	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	No modification by the test lab.

2.2 Product Description

AW-CB262 is the Wireless communication module.

Product Specification

Clock frequency in the system (radio part)	40 MHz
Operating Temperature	-10 deg. C - +85 deg. C
Power Supply	DC 3.3 V / DC 1.8 V
Size	20 x 18 x 3.0 mm , 55pin LGA

Radio Specification

WLAN (IEEE802.11b/g/n-20)

Equipment Type	Transceiver
Frequency of Operation	2412 MHz - 2462 MHz
Type of Modulation	DSSS, OFDM
Bandwidth & Channel spacing	Less than 20 MHz & 5 MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC 3.3 V / DC 1.8 V / DC 1.1 V
Antenna Type	IFA (Antenna port WA for 2.4 GHz / Antenna port WB for 2.4 GHz)
Antenna Gain: G_{ANT}	4.0 dBi (Antenna port WA for 2.4 GHz), 4.2 dBi (Antenna port WB for 2.4 GHz)
Directional Gain *1)	7.11 dBi

WLAN (IEEE802.11a/11n-20/11ac-20/11n-40/11ac-40/11ac-80)

Equipment Type	Transceiver
Frequency of Operation	U-NII-1: 5180 MHz - 5240 MHz U-NII-2A: 5260 MHz - 5320 MHz U-NII-2C: 5500 MHz - 5700 MHz U-NII-3: 5745 MHz - 5825 MHz
Type of Modulation	OFDM
Bandwidth & Channel spacing	Less than 20 MHz / 40 MHz / 80 MHz & 20 MHz / 40 MHz / 80 MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC 3.3 V / DC 1.8 V / DC 1.1 V
Antenna Type	IFA (Antenna port WA for 5 GHz), PIFA (Antenna port WC for 5 GHz)
Antenna Gain: G_{ANT}	5.0 dBi (Antenna port WA for 5 GHz)
	3.5 dBi (Antenna port WC for 5 GHz)
Directional Gain *1)	7.29 dBi

Bluetooth (BDR/EDR)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz - 2480 MHz
Type of Modulation	FHSS (GFSK, π/4DQPSK, 8DPSK)
Bandwidth & Channel spacing	79 MHz & 1 MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC 3.3 V / DC 1.8 V / DC 1.1 V
Antenna Type	PIFA (Antenna port WC for 2.4 GHz)
Antenna Gain	6.4 dBi (Antenna port WC for 2.4 GHz)

Bluetooth (Low Energy)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz - 2480 MHz
Type of Modulation	GFSK
Bandwidth & Channel spacing	1 MHz & 2 MHz
Method of frequency generation	Synthesizer
Power Supply (inner)	DC 3.3 V / DC 1.8 V / DC 1.1 V
Antenna Type	PIFA (Antenna port WC for 2.4 GHz)
Antenna Gain	6.4 dBi (Antenna port WC for 2.4 GHz)

*1) Directional antenna gain = $10\log((10^{\frac{G_{ANT1}}{20}}+10^{\frac{G_{ANT2}}{20}})^2/2)$

*This test report applies to WLAN (5 GHz band).

<Contents of the change from original model>
Test Report Number of original model is 11240438H-C-R1 (issued by UL Japan, Inc.).
Specification was changed from the original model as follows:
Antenna of the EUT was modified.
The radio specification is identical to the original.
Therefore only Radiated Spurious Emission test were performed in this report.
Additionally, only the information of modified antenna is described in this report.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E FCC Part 15 final revised on January 2, 2018 and effective February 1, 2018
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

* The revision on January 2, 2018, does not affect the test specification applied to the EUT.
** Also the EUT complies with FCC Part 15 Subpart B.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Spurious Emission Restricted Band Edge	**FCC:** ANSI C63.10-2013 KDB Publication Number 789033	**FCC:** 15.407 (b), 15.205 and 15.209	4.1 dB 5150.000 MHz, AV, Horizontal	Complied	Conducted (< 30 MHz) / Radiated (> 30 MHz) *1)
	IC: -	**IC:** RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2			
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 FCC 15.407 (b) and KDB 789033 D02 G.3.b).					

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

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

FCC Part 15.203/212 Antenna requirement
The EUT has unique coupling/antenna connectors (U.FL) for antenna ports WC and also has a pattern antenna (Antenna port WA and WB) that is not removable from the EUT.
Therefore the equipment complies with the requirement of 15.203/212.

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

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

Ise EMC Lab.
Radiated emission

Measurement distance	Frequency range		Uncertainty (+/-)
3 m	9 kHz to 30 MHz		3.3 dB
10 m			3.2 dB
3 m	30 MHz to 200 MHz	(Horizontal)	4.8 dB
		(Vertical)	5.0 dB
	200 MHz to 1000 MHz	(Horizontal)	5.2 dB
		(Vertical)	6.3 dB
10 m	30 MHz to 200 MHz	(Horizontal)	4.8 dB
		(Vertical)	4.9 dB
	200 MHz to 1000 MHz	(Horizontal)	5.0 dB
		(Vertical)	5.0 dB
3 m	1 GHz to 6 GHz		5.0 dB
	6 GHz to 18 GHz		5.3 dB
1 m	10 GHz to 26.5 GHz		5.8 dB
	26.5 GHz to 40 GHz		5.8 dB
10 m	1 GHz to 18 GHz		5.2 dB

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

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81 596 24 8999, Facsimile: +81 596 24 8124
NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	N/A	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0 m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

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

Mode	Remarks*
IEEE 802.11a (11a)	6 Mbps, PN9
IEEE 802.11ac MIMO 20 MHz BW (11ac-20)	MCS 0 (1Tx), PN9
IEEE 802.11ac MIMO 40 MHz BW (11ac-40)	MCS 0 (1Tx), PN9
IEEE 802.11ac MIMO 80 MHz BW (11ac-80)	MCS 0 (1Tx), PN9
*The worst antenna and condition was determined based on the test result of Maximum Conducted Output Power.	
*The power value of the EUT was set for testing as follows (setting value might be different from product specification value); Power settings: 20 M band: 8 dBm 40 M band: 5 dBm 80 M band: 3 dBm Software: Opro_DOS_Labtool_Ver2.0.0.93 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

*The details of Operation mode(s)

Test Item	Operating Mode	Tested Antenna port	Tested Frequency			
			Lower Band	Middle Band	Additional Band	Upper Band
Radiated Spurious Emission (Below 1 GHz)	11a Tx *1)	WA+WC	5180 MHz	-	-	-
Radiated Spurious Emission (Above 1 GHz)	11a Tx *2) 11ac-20 Tx	WA+WC	5180 MHz	5260 MHz 5320 MHz	5500 MHz 5580 MHz 5700 MHz	5745 MHz 5785 MHz 5825 MHz
	11ac-40 Tx *3)	WA+WC	5190 MHz	5270 MHz 5310 MHz	5510 MHz 5550 MHz 5670 MHz	5755 MHz 5795 MHz
	11ac-80 Tx	WA+WC	5210 MHz	5290 MHz	5530 MHz 5610 MHz	5775 MHz
*1) The mode was tested as a representative, because it had the highest power at antenna terminal test. *2) Since 11a 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 *3) Since 11n-40 and 11ac-40 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.						

*Simultaneously transmission

Test Item	Operating Mode *1)	Tested Antenna port	Tested Frequency			
			Lower Band	Middle Band	Additional Band	Upper Band
Radiated Spurious Emission	Hopping on 3DH5 + 11ac-40	WA+WC	5190	-	-	-
*1) The mode was tested as a representative, because it had the worst margin of 5GHz at radiated emission test.						

4.2 Configuration and peripherals

This page has been submitted for a separate exhibit.

SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >
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.

< Above 1GHz >
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.

< Below 1GHz >
The result also satisfied with the general limits specified in section 15.209 (a).

< Above 1GHz >
Inside of restricted bands (Section 15.205):
Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:
Apply to limit 68.2 dBuV/m, 3 m (-27 dBm e.i.r.p.*) in the Section 15.407 (b) (1) (2) (3).

For U-NII-3 Bandedge
-27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge in the section 15.407(b)(4)(i).

Restricted band edge:
Apply to limit in the Section 15.209 (a).
Since this limit is severer than the limit of the inside of restricted bands.

*Electric field strength to e.i.r.p. conversion:

$$E = \frac{1000000\sqrt{30P}}{3} \text{ (uV/m)}$$:P is the e.i.r.p. (Watts)

Test Antennas are used as below;

Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

Frequency	Below 1 GHz	Above 1 GHz	
Instrument used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method AD *1) RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: ≥ 100 traces If duty cycle was less than 98%, a duty factor was added to the results.
Test Distance	3 m	3 m (below 1 GHz), 3 m*2) (1 GHz - 10GHz), 1 m*3) (10 GHz - 40 GHz),	

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".
*2) Distance Factor: 20 x log (4.45 m/3.0 m) = 3.43 dB
*3) Distance Factor: 20 x log (1.0 m/3.0 m) = -9.5 dB

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT (Antenna and Module) to see the position of maximum noise, and the test was made at the position that has the maximum noise.

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

Measurement range : 30 MHz - 40 GHz
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber			
Report No.	12079930H			
Date	December 16, 2017	December 18, 2017	December 19, 2017	December 20, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH	23 deg. C / 26 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)	Takafumi Noguchi (Below 1 GHz)
Mode	Tx 11a 5180 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	53.316	QP	21.8	9.5	7.5	32.2	-	6.6	40.0	33.4	
Hori	67.539	QP	22.6	6.4	7.7	32.2	-	4.5	40.0	35.5	
Hori	95.915	QP	25.6	9.4	8.1	32.2	-	10.9	43.5	32.6	
Hori	249.998	QP	27.2	11.8	9.6	32.0	-	16.6	46.0	29.4	
Hori	470.137	QP	21.3	17.1	11.2	32.0	-	17.6	46.0	28.4	
Hori	845.793	QP	21.2	21.3	13.2	31.2	-	24.5	46.0	21.5	
Hori	5150.000	PK	46.4	32.2	7.3	31.3	-	54.6	73.9	19.3	
Hori	10360.000	PK	42.8	39.5	-1.5	33.2	-	47.6	73.9	26.3	Floor noise
Hori	15540.000	PK	44.7	39.0	0.1	32.6	-	51.2	73.9	22.7	Floor noise
Hori	5150.000	AV	37.0	32.2	7.3	31.3	-	45.2	53.9	8.7	
Hori	10360.000	AV	33.8	39.5	-1.5	33.2	-	38.6	53.9	15.3	Floor noise
Hori	15540.000	AV	35.8	39.0	0.1	32.6	-	42.3	53.9	11.6	Floor noise
Vert	53.316	QP	28.5	9.5	7.5	32.2	-	13.3	40.0	26.7	
Vert	67.539	QP	29.2	6.4	7.7	32.2	-	11.1	40.0	28.9	
Vert	95.915	QP	25.0	9.4	8.1	32.2	-	10.3	43.5	33.2	
Vert	249.998	QP	32.2	11.8	9.6	32.0	-	21.6	46.0	24.4	
Vert	470.137	QP	21.3	17.1	11.2	32.0	-	17.6	46.0	28.4	
Vert	845.793	QP	21.2	21.3	13.2	31.2	-	24.5	46.0	21.5	
Vert	5150.000	PK	47.2	32.2	7.3	31.3	-	55.4	73.9	18.5	
Vert	10360.000	PK	42.8	39.5	-1.5	33.2	-	47.6	73.9	26.3	Floor noise
Vert	15540.000	PK	44.7	39.0	0.1	32.6	-	51.2	73.9	22.7	Floor noise
Vert	5150.000	AV	37.6	32.2	7.3	31.3	-	45.8	53.9	8.1	
Vert	10360.000	AV	33.9	39.5	-1.5	33.2	-	38.7	53.9	15.2	Floor noise
Vert	15540.000	AV	35.8	39.0	0.1	32.6	-	42.3	53.9	11.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

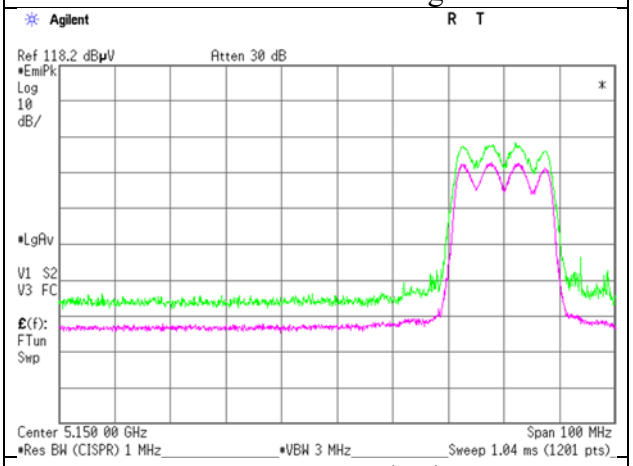
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a 5180 MHz

Horizontal

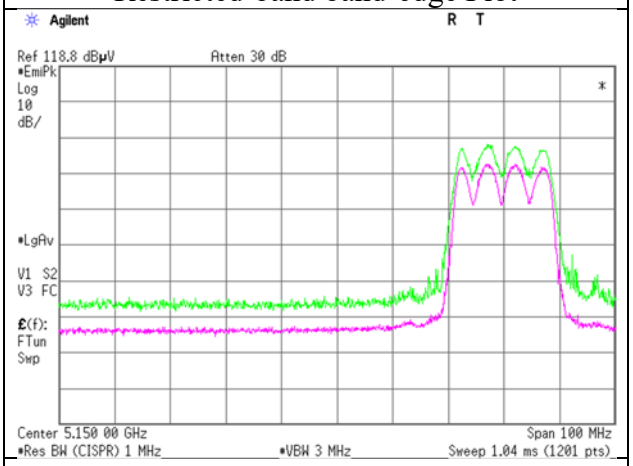
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5260 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	10520.000	PK	43.0	39.7	-1.5	33.2	-	48.0	73.9	25.9	Floor noise
Hori	15780.000	PK	43.4	38.3	0.3	32.6	-	49.4	73.9	24.5	Floor noise
Hori	10520.000	AV	33.3	39.7	-1.5	33.2	-	38.3	53.9	15.6	Floor noise
Hori	15780.000	AV	35.3	38.3	0.3	32.6	-	41.3	53.9	12.6	Floor noise
Vert	10520.000	PK	43.0	39.7	-1.5	33.2	-	48.0	73.9	25.9	Floor noise
Vert	15780.000	PK	43.4	38.3	0.3	32.6	-	49.4	73.9	24.5	Floor noise
Vert	10520.000	AV	33.4	39.7	-1.5	33.2	-	38.4	53.9	15.5	Floor noise
Vert	15780.000	AV	35.3	38.3	0.3	32.6	-	41.3	53.9	12.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5320 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	51.8	32.1	7.4	31.3	-	60.0	73.9	13.9	
Hori	10640.000	PK	42.5	39.9	-1.5	33.2	-	47.7	73.9	26.2	Floor noise
Hori	15960.000	PK	43.8	37.8	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Hori	5350.000	AV	38.3	32.1	7.4	31.3	-	46.5	53.9	7.4	
Hori	10640.000	AV	33.6	39.9	-1.5	33.2	-	38.8	53.9	15.1	Floor noise
Hori	15960.000	AV	34.8	37.8	0.3	32.6	-	40.3	53.9	13.6	Floor noise
Vert	5350.000	PK	50.8	32.1	7.4	31.3	-	59.0	73.9	14.9	
Vert	10640.000	PK	42.8	39.9	-1.5	33.2	-	48.0	73.9	25.9	Floor noise
Vert	15960.000	PK	43.9	37.8	0.3	32.6	-	49.4	73.9	24.5	Floor noise
Vert	5350.000	AV	37.8	32.1	7.4	31.3	-	46.0	53.9	7.9	
Vert	10640.000	AV	33.7	39.9	-1.5	33.2	-	38.9	53.9	15.0	Floor noise
Vert	15960.000	AV	34.9	37.8	0.3	32.6	-	40.4	53.9	13.5	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

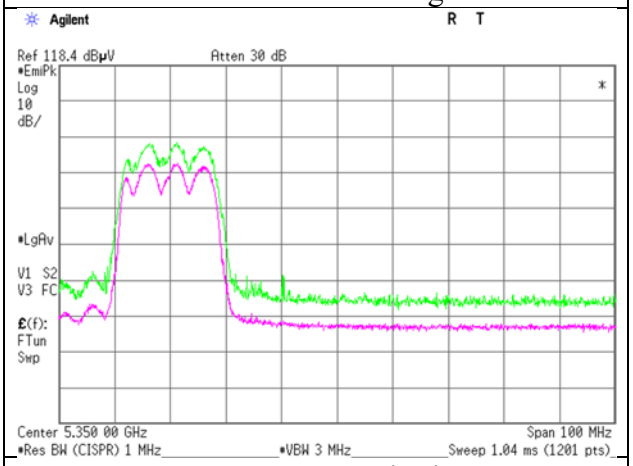
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a 5320 MHz

Horizontal

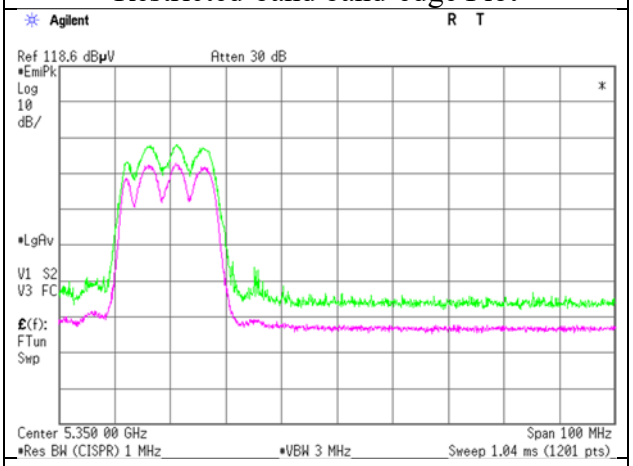
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5500 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5470.000	PK	46.7	32.0	7.5	31.3	-	54.9	73.9	19.0	
Hori	11000.000	PK	43.2	40.5	-1.4	33.3	-	49.0	73.9	24.9	Floor noise
Hori	16500.000	PK	44.9	39.3	0.3	32.6	-	51.9	73.9	22.0	Floor noise
Hori	5470.000	AV	37.0	32.0	7.5	31.3	-	45.2	53.9	8.7	
Hori	11000.000	AV	34.2	40.5	-1.4	33.3	-	40.0	53.9	13.9	Floor noise
Hori	16500.000	AV	35.9	39.3	0.3	32.6	-	42.9	53.9	11.0	Floor noise
Vert	5470.000	PK	47.4	32.0	7.5	31.3	-	55.6	73.9	18.3	
Vert	11000.000	PK	43.1	40.5	-1.4	33.3	-	48.9	73.9	25.0	Floor noise
Vert	16500.000	PK	44.8	39.3	0.3	32.6	-	51.8	73.9	22.1	Floor noise
Vert	5470.000	AV	37.5	32.0	7.5	31.3	-	45.7	53.9	8.2	
Vert	11000.000	AV	34.0	40.5	-1.4	33.3	-	39.8	53.9	14.1	Floor noise
Vert	16500.000	AV	35.8	39.3	0.3	32.6	-	42.8	53.9	11.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

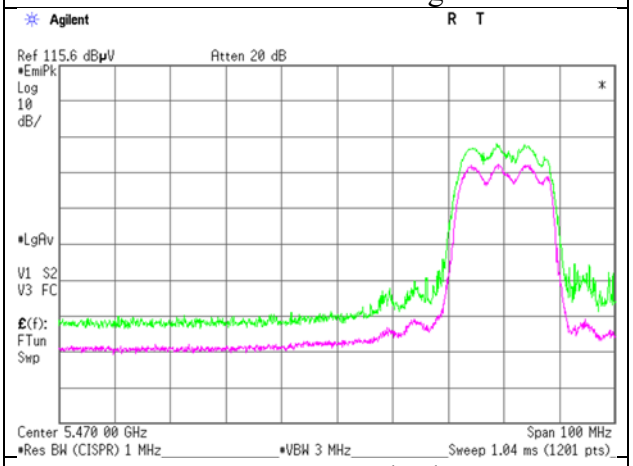
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a 5500 MHz

Horizontal

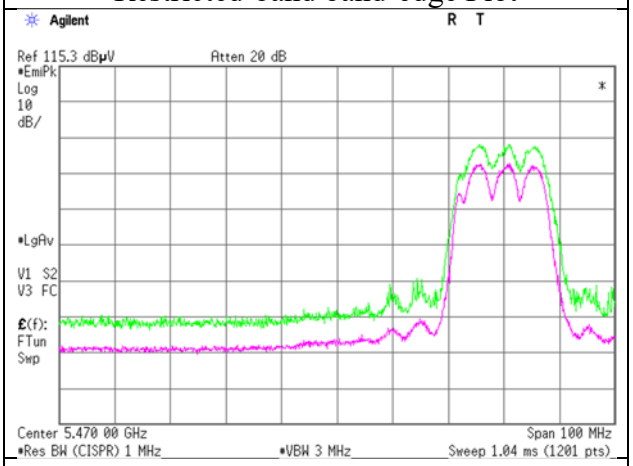
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5580 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11160.000	PK	42.8	40.4	-1.4	33.3	-	48.5	73.9	25.4	Floor noise
Hori	16740.000	PK	44.0	40.0	0.3	32.6	-	51.7	73.9	22.2	Floor noise
Hori	11160.000	AV	34.0	40.4	-1.4	33.3	-	39.7	53.9	14.2	Floor noise
Hori	16740.000	AV	35.0	40.0	0.3	32.6	-	42.7	53.9	11.2	Floor noise
Vert	11160.000	PK	42.9	40.4	-1.4	33.3	-	48.6	73.9	25.3	Floor noise
Vert	16740.000	PK	44.0	40.0	0.3	32.6	-	51.7	73.9	22.2	Floor noise
Vert	11160.000	AV	34.1	40.4	-1.4	33.3	-	39.8	53.9	14.1	Floor noise
Vert	16740.000	AV	34.9	40.0	0.3	32.6	-	42.6	53.9	11.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5700 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5725.000	PK	50.8	32.3	7.6	31.4	-	59.3	73.9	14.6	
Hori	11400.000	PK	43.2	40.1	-1.3	33.3	-	48.7	73.9	25.2	Floor noise
Hori	17100.000	PK	44.4	41.4	0.3	32.5	-	53.6	73.9	20.3	Floor noise
Hori	5725.000	AV	37.0	32.3	7.6	31.4	-	45.5	53.9	8.4	
Hori	11400.000	AV	33.7	40.1	-1.3	33.3	-	39.2	53.9	14.7	Floor noise
Hori	17100.000	AV	35.9	41.4	0.3	32.5	-	45.1	53.9	8.8	Floor noise
Vert	5725.000	PK	45.4	32.3	7.6	31.4	-	53.9	73.9	20.0	
Vert	11400.000	PK	43.2	40.1	-1.3	33.3	-	48.7	73.9	25.2	Floor noise
Vert	17100.000	PK	44.2	41.4	0.3	32.5	-	53.4	73.9	20.5	Floor noise
Vert	5725.000	AV	36.0	32.3	7.6	31.4	-	44.5	53.9	9.4	
Vert	11400.000	AV	33.8	40.1	-1.3	33.3	-	39.3	53.9	14.6	Floor noise
Vert	17100.000	AV	35.7	41.4	0.3	32.5	-	44.9	53.9	9.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

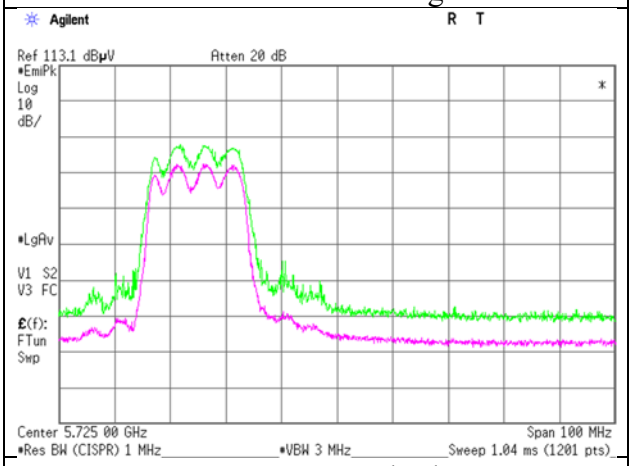
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a 5700 MHz

Horizontal

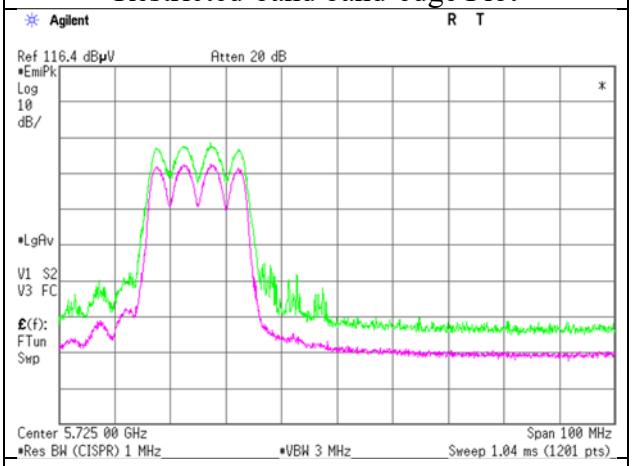
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5745 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	41.0	32.2	7.6	31.4	-	49.4	68.2	18.8	
Hori	5700.000	PK	42.2	32.3	7.6	31.4	-	50.7	105.2	54.5	
Hori	5720.000	PK	48.7	32.3	7.6	31.4	-	57.2	110.8	53.6	
Hori	5725.000	PK	53.5	32.3	7.6	31.4	-	62.0	122.2	60.2	
Hori	11490.000	PK	42.7	40.1	-1.2	33.3	-	48.3	73.9	25.6	Floor noise
Hori	17235.000	PK	44.3	42.2	0.2	32.5	-	54.2	73.9	19.7	Floor noise
Hori	11490.000	AV	33.9	40.1	-1.2	33.3	-	39.5	53.9	14.4	Floor noise
Hori	17235.000	AV	35.5	42.2	0.2	32.5	-	45.4	53.9	8.5	Floor noise
Vert	5650.000	PK	41.0	32.2	7.6	31.4	-	49.4	68.2	18.8	
Vert	5700.000	PK	42.0	32.3	7.6	31.4	-	50.5	105.2	54.7	
Vert	5720.000	PK	46.0	32.3	7.6	31.4	-	54.5	110.8	56.3	
Vert	5725.000	PK	53.2	32.3	7.6	31.4	-	61.7	122.2	60.5	
Vert	11490.000	PK	42.4	40.1	-1.2	33.3	-	48.0	73.9	25.9	Floor noise
Vert	17235.000	PK	44.3	42.2	0.2	32.5	-	54.2	73.9	19.7	Floor noise
Vert	11490.000	AV	33.7	40.1	-1.2	33.3	-	39.3	53.9	14.6	Floor noise
Vert	17235.000	AV	35.4	42.2	0.2	32.5	-	45.3	53.9	8.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

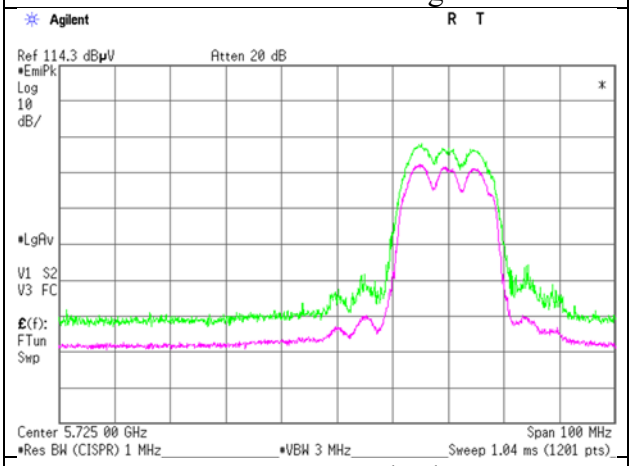
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a 5745 MHz

Horizontal

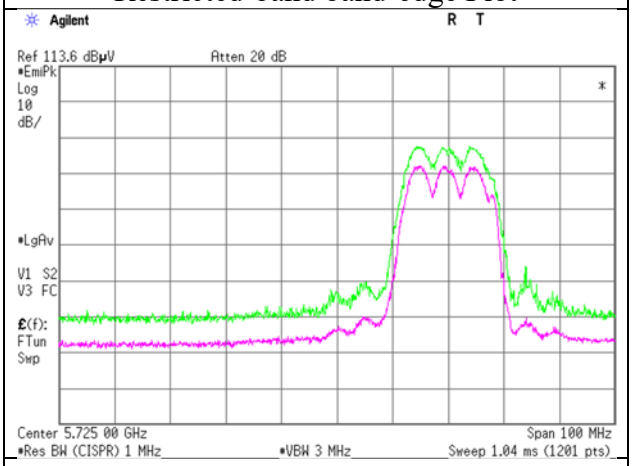
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5785 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	42.5	40.0	-1.1	33.3	-	48.1	73.9	25.8	Floor noise
Hori	17355.000	PK	43.8	42.9	0.3	32.5	-	54.5	73.9	19.4	Floor noise
Hori	11570.000	AV	33.6	40.0	-1.1	33.3	-	39.2	53.9	14.7	Floor noise
Hori	17355.000	AV	35.1	42.9	0.3	32.5	-	45.8	53.9	8.1	Floor noise
Vert	11570.000	PK	42.7	40.0	-1.1	33.3	-	48.3	73.9	25.6	Floor noise
Vert	17355.000	PK	43.8	42.9	0.3	32.5	-	54.5	73.9	19.4	Floor noise
Vert	11570.000	AV	33.7	40.0	-1.1	33.3	-	39.3	53.9	14.6	Floor noise
Vert	17355.000	AV	35.1	42.9	0.3	32.5	-	45.8	53.9	8.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21deg. C / 31 % RH	23deg. C / 28 % RH	22deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11a 5825 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	47.7	32.5	7.6	31.4	-	56.4	122.2	65.8	
Hori	5855.000	PK	44.5	32.5	7.6	31.4	-	53.2	110.8	57.6	
Hori	5875.000	PK	41.9	32.5	7.6	31.4	-	50.6	105.2	54.6	
Hori	5925.000	PK	41.8	32.6	7.7	31.4	-	50.7	68.2	17.5	
Hori	11650.000	PK	43.2	39.9	-1.1	33.3	-	48.7	73.9	25.2	Floor noise
Hori	17475.000	PK	43.7	43.6	0.3	32.5	-	55.1	73.9	18.8	Floor noise
Hori	11650.000	AV	34.2	39.9	-1.1	33.3	-	39.7	53.9	14.2	Floor noise
Hori	17475.000	AV	34.7	43.6	0.3	32.5	-	46.1	53.9	7.8	Floor noise
Vert	5850.000	PK	47.7	32.5	7.6	31.4	-	56.4	122.2	65.8	
Vert	5855.000	PK	45.2	32.5	7.6	31.4	-	53.9	110.8	56.9	
Vert	5875.000	PK	41.8	32.5	7.6	31.4	-	50.5	105.2	54.7	
Vert	5925.000	PK	41.8	32.6	7.7	31.4	-	50.7	68.2	17.5	
Vert	11650.000	PK	43.0	39.9	-1.1	33.3	-	48.5	73.9	25.4	Floor noise
Vert	17475.000	PK	43.7	43.6	0.3	32.5	-	55.1	73.9	18.8	Floor noise
Vert	11650.000	AV	34.1	39.9	-1.1	33.3	-	39.6	53.9	14.3	Floor noise
Vert	17475.000	AV	34.8	43.6	0.3	32.5	-	46.2	53.9	7.7	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

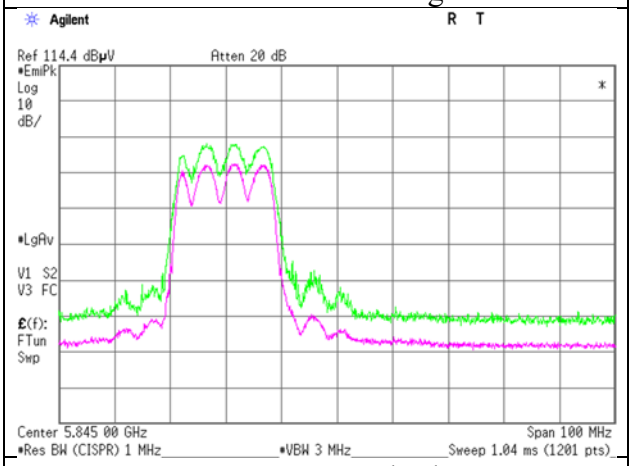
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11a 5825 MHz

Horizontal

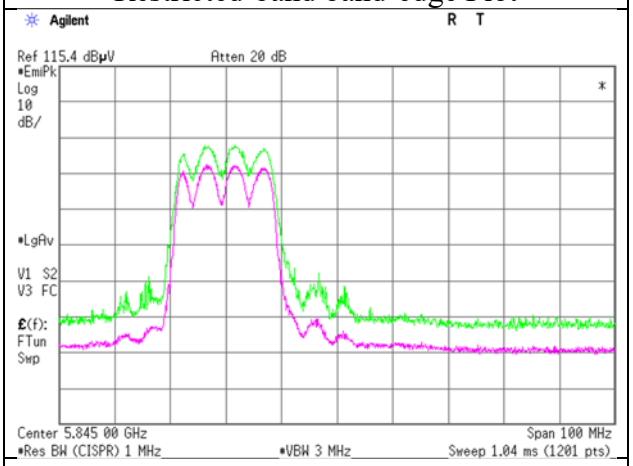
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5180 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	48.8	32.2	7.3	31.3	-	57.0	73.9	16.9	
Hori	10360.000	PK	42.7	39.5	-1.5	33.2	-	47.5	73.9	26.4	Floor noise
Hori	15540.000	PK	44.6	39.0	0.1	32.6	-	51.1	73.9	22.8	Floor noise
Hori	5150.000	AV	38.3	32.2	7.3	31.3	-	46.5	53.9	7.4	
Hori	10360.000	AV	33.8	39.5	-1.5	33.2	-	38.6	53.9	15.3	Floor noise
Hori	15540.000	AV	35.8	39.0	0.1	32.6	-	42.3	53.9	11.6	Floor noise
Vert	5150.000	PK	49.0	32.2	7.3	31.3	-	57.2	73.9	16.7	
Vert	10360.000	PK	42.8	39.5	-1.5	33.2	-	47.6	73.9	26.3	Floor noise
Vert	15540.000	PK	44.7	39.0	0.1	32.6	-	51.2	73.9	22.7	Floor noise
Vert	5150.000	AV	38.3	32.2	7.3	31.3	-	46.5	53.9	7.4	
Vert	10360.000	AV	33.8	39.5	-1.5	33.2	-	38.6	53.9	15.3	Floor noise
Vert	15540.000	AV	35.8	39.0	0.1	32.6	-	42.3	53.9	11.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

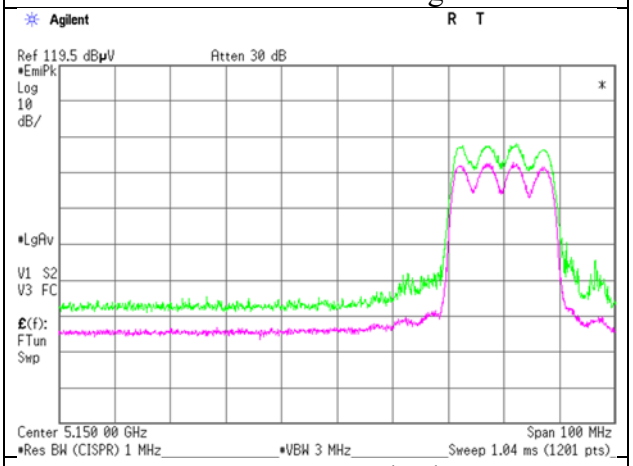
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-20 5180 MHz

Horizontal

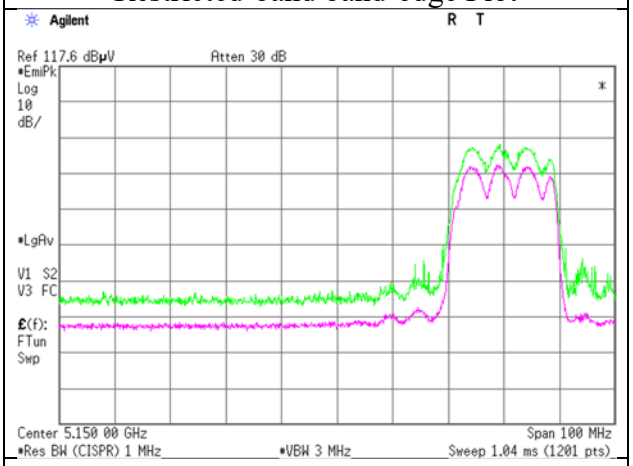
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5260 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	10520.000	PK	43.1	39.7	-1.5	33.2	-	48.1	73.9	25.8	Floor noise
Hori	15780.000	PK	43.3	38.3	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Hori	10520.000	AV	33.3	39.7	-1.5	33.2	-	38.3	53.9	15.6	Floor noise
Hori	15780.000	AV	35.3	38.3	0.3	32.6	-	41.3	53.9	12.6	Floor noise
Vert	10520.000	PK	43.0	39.7	-1.5	33.2	-	48.0	73.9	25.9	Floor noise
Vert	15780.000	PK	43.4	38.3	0.3	32.6	-	49.4	73.9	24.5	Floor noise
Vert	10520.000	AV	33.3	39.7	-1.5	33.2	-	38.3	53.9	15.6	Floor noise
Vert	15780.000	AV	35.3	38.3	0.3	32.6	-	41.3	53.9	12.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5320 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	51.7	32.1	7.4	31.3	-	59.9	73.9	14.0	
Hori	10640.000	PK	42.5	39.9	-1.5	33.2	-	47.7	73.9	26.2	Floor noise
Hori	15960.000	PK	43.8	37.8	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Hori	5350.000	AV	38.0	32.1	7.4	31.3	-	46.2	53.9	7.7	
Hori	10640.000	AV	33.6	39.9	-1.5	33.2	-	38.8	53.9	15.1	Floor noise
Hori	15960.000	AV	34.8	37.8	0.3	32.6	-	40.3	53.9	13.6	Floor noise
Vert	5350.000	PK	52.9	32.1	7.4	31.3	-	61.1	73.9	12.8	
Vert	10640.000	PK	42.6	39.9	-1.5	33.2	-	47.8	73.9	26.1	Floor noise
Vert	15960.000	PK	43.8	37.8	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Vert	5350.000	AV	38.2	32.1	7.4	31.3	-	46.4	53.9	7.5	
Vert	10640.000	AV	33.6	39.9	-1.5	33.2	-	38.8	53.9	15.1	Floor noise
Vert	15960.000	AV	34.8	37.8	0.3	32.6	-	40.3	53.9	13.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

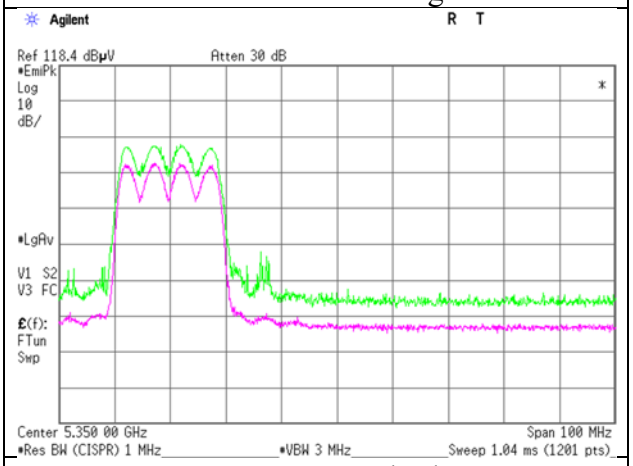
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-20 5320 MHz

Horizontal

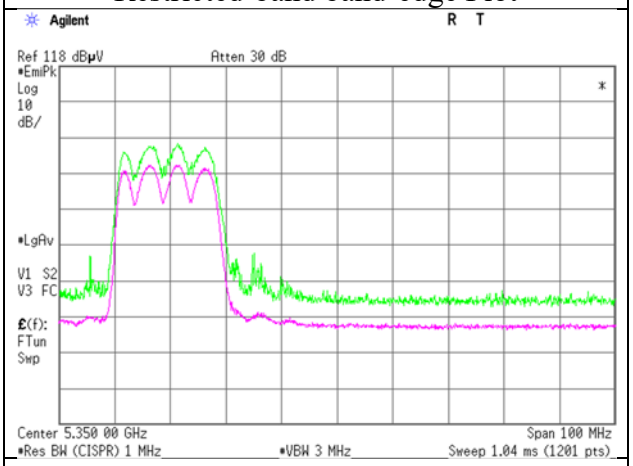
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5500 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5470.000	PK	49.0	32.0	7.5	31.3	-	57.2	73.9	16.7	
Hori	11000.000	PK	43.2	40.5	-1.4	33.3	-	49.0	73.9	24.9	Floor noise
Hori	16500.000	PK	44.9	39.3	0.3	32.6	-	51.9	73.9	22.0	Floor noise
Hori	5470.000	AV	37.3	32.0	7.5	31.3	-	45.5	53.9	8.4	
Hori	11000.000	AV	34.2	40.5	-1.4	33.3	-	40.0	53.9	13.9	Floor noise
Hori	16500.000	AV	35.9	39.3	0.3	32.6	-	42.9	53.9	11.0	Floor noise
Vert	5470.000	PK	49.0	32.0	7.5	31.3	-	57.2	73.9	16.7	
Vert	11000.000	PK	43.2	40.5	-1.4	33.3	-	49.0	73.9	24.9	Floor noise
Vert	16500.000	PK	44.8	39.3	0.3	32.6	-	51.8	73.9	22.1	Floor noise
Vert	5470.000	AV	37.2	32.0	7.5	31.3	-	45.4	53.9	8.5	
Vert	11000.000	AV	34.1	40.5	-1.4	33.3	-	39.9	53.9	14.0	Floor noise
Vert	16500.000	AV	35.9	39.3	0.3	32.6	-	42.9	53.9	11.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

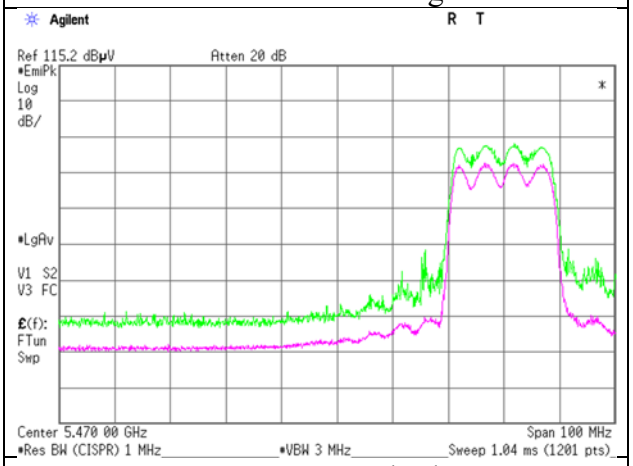
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-20 5500 MHz

Horizontal

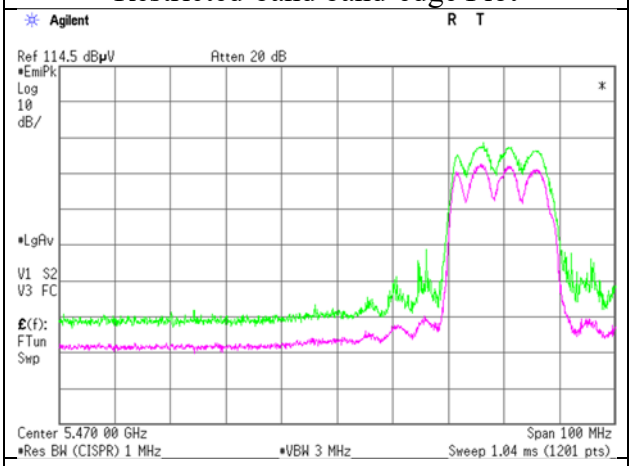
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5580 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11160.000	PK	42.8	40.4	-1.4	33.3	-	48.5	73.9	25.4	Floor noise
Hori	16740.000	PK	44.1	40.0	0.3	32.6	-	51.8	73.9	22.1	Floor noise
Hori	11160.000	AV	34.0	40.4	-1.4	33.3	-	39.7	53.9	14.2	Floor noise
Hori	16740.000	AV	34.9	40.0	0.3	32.6	-	42.6	53.9	11.3	Floor noise
Vert	11160.000	PK	42.8	40.4	-1.4	33.3	-	48.5	73.9	25.4	Floor noise
Vert	16740.000	PK	44.0	40.0	0.3	32.6	-	51.7	73.9	22.2	Floor noise
Vert	11160.000	AV	34.0	40.4	-1.4	33.3	-	39.7	53.9	14.2	Floor noise
Vert	16740.000	AV	34.9	40.0	0.3	32.6	-	42.6	53.9	11.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5700 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5725.000	PK	52.2	32.3	7.6	31.4	-	60.7	73.9	13.2	
Hori	11400.000	PK	43.1	40.1	-1.3	33.3	-	48.6	73.9	25.3	Floor noise
Hori	17100.000	PK	44.2	41.4	0.3	32.5	-	53.4	73.9	20.5	Floor noise
Hori	5725.000	AV	37.7	32.3	7.6	31.4	-	46.2	53.9	7.7	
Hori	11400.000	AV	33.7	40.1	-1.3	33.3	-	39.2	53.9	14.7	Floor noise
Hori	17100.000	AV	35.8	41.4	0.3	32.5	-	45.0	53.9	8.9	Floor noise
Vert	5725.000	PK	52.1	32.3	7.6	31.4	-	60.6	73.9	13.3	
Vert	11400.000	PK	43.1	40.1	-1.3	33.3	-	48.6	73.9	25.3	Floor noise
Vert	17100.000	PK	44.2	41.4	0.3	32.5	-	53.4	73.9	20.5	Floor noise
Vert	5725.000	AV	37.6	32.3	7.6	31.4	-	46.1	53.9	7.8	
Vert	11400.000	AV	33.7	40.1	-1.3	33.3	-	39.2	53.9	14.7	Floor noise
Vert	17100.000	AV	35.8	41.4	0.3	32.5	-	45.0	53.9	8.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

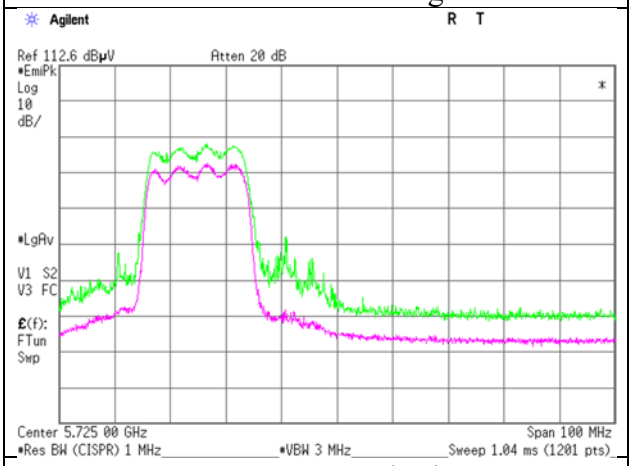
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-20 5700 MHz

Horizontal

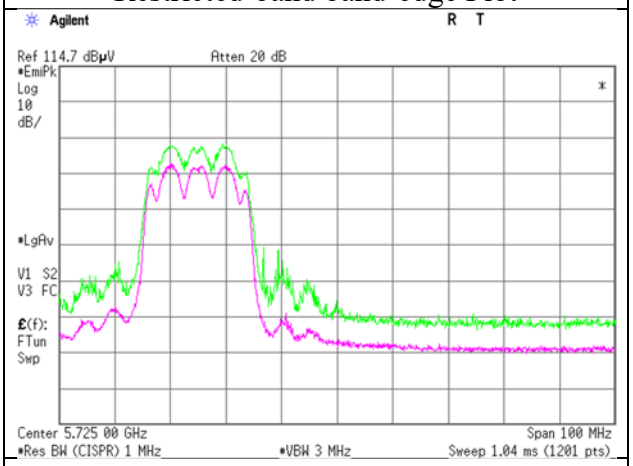
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5745 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	40.8	32.2	7.6	31.4	-	49.2	68.2	19.0	
Hori	5700.000	PK	41.7	32.3	7.6	31.4	-	50.2	105.2	55.0	
Hori	5720.000	PK	49.7	32.3	7.6	31.4	-	58.2	110.8	52.6	
Hori	5725.000	PK	56.0	32.3	7.6	31.4	-	64.5	122.2	57.7	
Hori	11490.000	PK	42.5	40.1	-1.2	33.3	-	48.1	73.9	25.8	Floor noise
Hori	17235.000	PK	44.3	42.2	0.2	32.5	-	54.2	73.9	19.7	Floor noise
Hori	11490.000	AV	33.8	40.1	-1.2	33.3	-	39.4	53.9	14.5	Floor noise
Hori	17235.000	AV	35.4	42.2	0.2	32.5	-	45.3	53.9	8.6	Floor noise
Vert	5650.000	PK	41.1	32.2	7.6	31.4	-	49.5	68.2	18.7	
Vert	5700.000	PK	41.9	32.3	7.6	31.4	-	50.4	105.2	54.8	
Vert	5720.000	PK	52.5	32.3	7.6	31.4	-	61.0	110.8	49.8	
Vert	5725.000	PK	56.9	32.3	7.6	31.4	-	65.4	122.2	56.8	
Vert	11490.000	PK	42.4	40.1	-1.2	33.3	-	48.0	73.9	25.9	Floor noise
Vert	17235.000	PK	44.3	42.2	0.2	32.5	-	54.2	73.9	19.7	Floor noise
Vert	11490.000	AV	33.8	40.1	-1.2	33.3	-	39.4	53.9	14.5	Floor noise
Vert	17235.000	AV	35.4	42.2	0.2	32.5	-	45.3	53.9	8.6	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

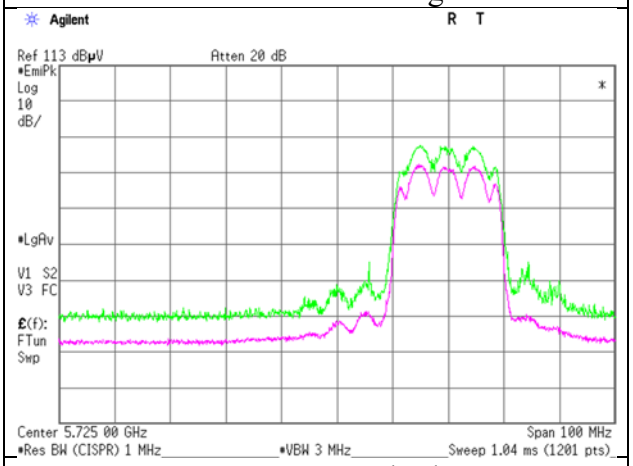
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-20 5745 MHz

Horizontal

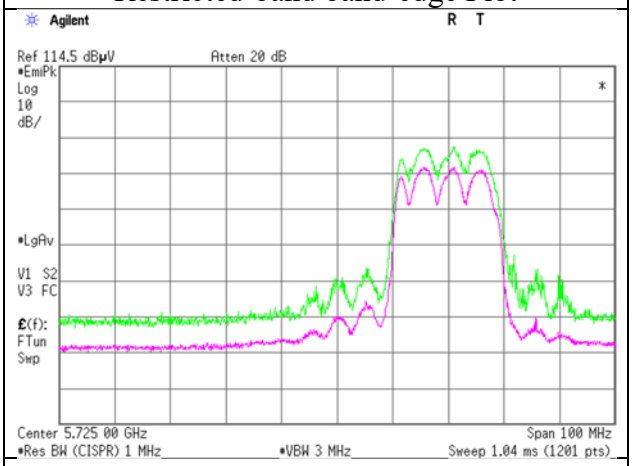
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5785 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	42.5	40.0	-1.1	33.3	-	48.1	73.9	25.8	Floor noise
Hori	17355.000	PK	43.7	42.9	0.3	32.5	-	54.4	73.9	19.5	Floor noise
Hori	11570.000	AV	33.5	40.0	-1.1	33.3	-	39.1	53.9	14.8	Floor noise
Hori	17355.000	AV	35.1	42.9	0.3	32.5	-	45.8	53.9	8.1	Floor noise
Vert	11570.000	PK	42.5	40.0	-1.1	33.3	-	48.1	73.9	25.8	Floor noise
Vert	17355.000	PK	43.8	42.9	0.3	32.5	-	54.5	73.9	19.4	Floor noise
Vert	11570.000	AV	33.5	40.0	-1.1	33.3	-	39.1	53.9	14.8	Floor noise
Vert	17355.000	AV	35.1	42.9	0.3	32.5	-	45.8	53.9	8.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-20 5825 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	48.0	32.5	7.6	31.4	-	56.7	122.2	65.5	
Hori	5855.000	PK	46.7	32.5	7.6	31.4	-	55.4	110.8	55.4	
Hori	5875.000	PK	41.7	32.5	7.6	31.4	-	50.4	105.2	54.8	
Hori	5925.000	PK	41.4	32.6	7.7	31.4	-	50.3	68.2	17.9	
Hori	11650.000	PK	43.1	39.9	-1.1	33.3	-	48.6	73.9	25.3	Floor noise
Hori	17475.000	PK	43.5	43.6	0.3	32.5	-	54.9	73.9	19.0	Floor noise
Hori	11650.000	AV	34.1	39.9	-1.1	33.3	-	39.6	53.9	14.3	Floor noise
Hori	17475.000	AV	34.7	43.6	0.3	32.5	-	46.1	53.9	7.8	Floor noise
Vert	5850.000	PK	48.9	32.5	7.6	31.4	-	57.6	122.2	64.6	
Vert	5855.000	PK	45.2	32.5	7.6	31.4	-	53.9	110.8	56.9	
Vert	5875.000	PK	41.5	32.5	7.6	31.4	-	50.2	105.2	55.0	
Vert	5925.000	PK	41.5	32.6	7.7	31.4	-	50.4	68.2	17.8	
Vert	11650.000	PK	43.1	39.9	-1.1	33.3	-	48.6	73.9	25.3	Floor noise
Vert	17475.000	PK	43.7	43.6	0.3	32.5	-	55.1	73.9	18.8	Floor noise
Vert	11650.000	AV	34.1	39.9	-1.1	33.3	-	39.6	53.9	14.3	Floor noise
Vert	17475.000	AV	34.7	43.6	0.3	32.5	-	46.1	53.9	7.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

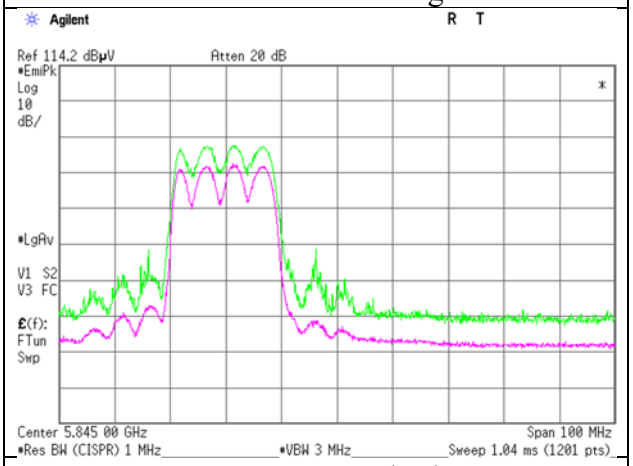
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-20 5825 MHz

Horizontal

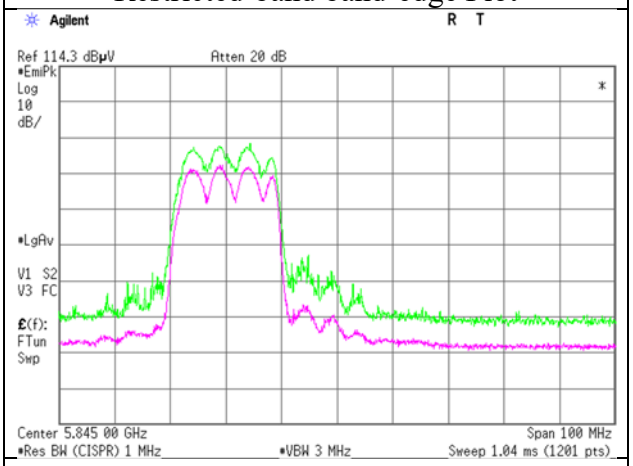
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5190 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	52.1	32.2	7.3	31.3	-	60.3	73.9	13.6	
Hori	10380.000	PK	43.0	39.5	-1.5	33.2	-	47.8	73.9	26.1	Floor noise
Hori	15570.000	PK	44.7	38.9	0.1	32.6	-	51.1	73.9	22.8	Floor noise
Hori	5150.000	AV	41.2	32.2	7.3	31.3	-	49.4	53.9	4.5	
Hori	10380.000	AV	33.9	39.5	-1.5	33.2	-	38.7	53.9	15.2	Floor noise
Hori	15570.000	AV	35.6	38.9	0.1	32.6	-	42.0	53.9	11.9	Floor noise
Vert	5150.000	PK	51.9	32.2	7.3	31.3	-	60.1	73.9	13.8	
Vert	10380.000	PK	42.9	39.5	-1.5	33.2	-	47.7	73.9	26.2	Floor noise
Vert	15570.000	PK	44.7	38.9	0.1	32.6	-	51.1	73.9	22.8	Floor noise
Vert	5150.000	AV	41.0	32.2	7.3	31.3	-	49.2	53.9	4.7	
Vert	10380.000	AV	33.9	39.5	-1.5	33.2	-	38.7	53.9	15.2	Floor noise
Vert	15570.000	AV	35.7	38.9	0.1	32.6	-	42.1	53.9	11.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

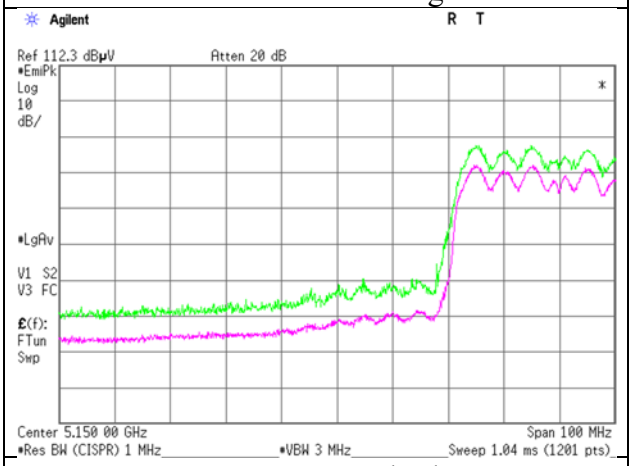
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-40 5190 MHz

Horizontal

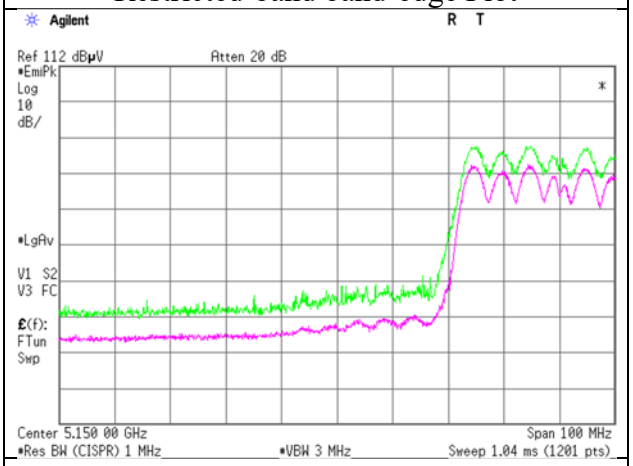
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5270 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	10540.000	PK	42.8	39.8	-1.5	33.2	-	47.9	73.9	26.0	Floor noise
Hori	15810.000	PK	43.3	38.3	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Hori	10540.000	AV	33.5	39.8	-1.5	33.2	-	38.6	53.9	15.3	Floor noise
Hori	15810.000	AV	35.0	38.3	0.3	32.6	-	41.0	53.9	12.9	Floor noise
Vert	10540.000	PK	42.9	39.8	-1.5	33.2	-	48.0	73.9	25.9	Floor noise
Vert	15810.000	PK	43.3	38.3	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Vert	10540.000	AV	33.6	39.8	-1.5	33.2	-	38.7	53.9	15.2	Floor noise
Vert	15810.000	AV	35.1	38.3	0.3	32.6	-	41.1	53.9	12.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5310 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	50.7	32.1	7.4	31.3	-	58.9	73.9	15.0	
Hori	10620.000	PK	42.3	39.9	-1.5	33.2	-	47.5	73.9	26.4	Floor noise
Hori	15930.000	PK	43.7	37.9	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Hori	5350.000	AV	37.7	32.1	7.4	31.3	-	45.9	53.9	8.0	
Hori	10620.000	AV	33.9	39.9	-1.5	33.2	-	39.1	53.9	14.8	Floor noise
Hori	15930.000	AV	34.8	37.9	0.3	32.6	-	40.4	53.9	13.5	Floor noise
Vert	5350.000	PK	51.6	32.1	7.4	31.3	-	59.8	73.9	14.1	
Vert	10620.000	PK	42.4	39.9	-1.5	33.2	-	47.6	73.9	26.3	Floor noise
Vert	15930.000	PK	43.7	37.9	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Vert	5350.000	AV	38.7	32.1	7.4	31.3	-	46.9	53.9	7.0	
Vert	10620.000	AV	33.9	39.9	-1.5	33.2	-	39.1	53.9	14.8	Floor noise
Vert	15930.000	AV	34.9	37.9	0.3	32.6	-	40.5	53.9	13.4	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

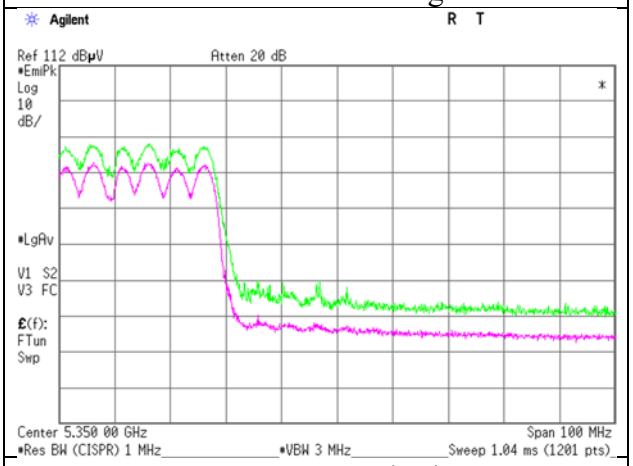
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-40 5310 MHz

Horizontal

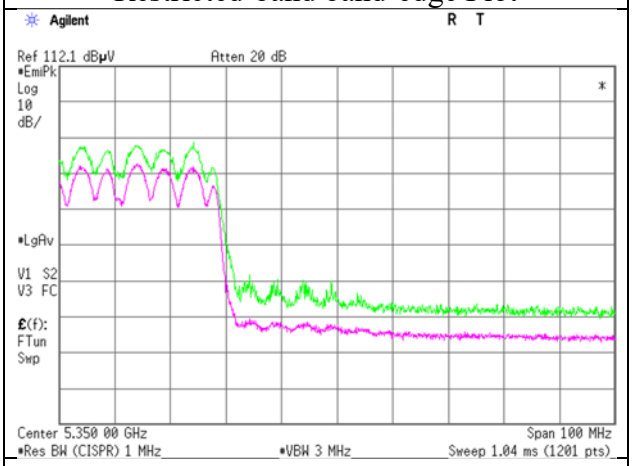
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5510 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5470.000	PK	51.3	32.0	7.5	31.3	-	59.5	73.9	14.4	
Hori	11020.000	PK	42.6	40.5	-1.5	33.3	-	48.3	73.9	25.6	Floor noise
Hori	16530.000	PK	44.5	39.4	0.3	32.6	-	51.6	73.9	22.3	Floor noise
Hori	5470.000	AV	40.0	32.0	7.5	31.3	-	48.2	53.9	5.7	
Hori	11020.000	AV	33.9	40.5	-1.5	33.3	-	39.6	53.9	14.3	Floor noise
Hori	16530.000	AV	35.7	39.4	0.3	32.6	-	42.8	53.9	11.1	Floor noise
Vert	5470.000	PK	50.6	32.0	7.5	31.3	-	58.8	73.9	15.1	
Vert	11020.000	PK	42.8	40.5	-1.5	33.3	-	48.5	73.9	25.4	Floor noise
Vert	16530.000	PK	44.7	39.4	0.3	32.6	-	51.8	73.9	22.1	Floor noise
Vert	5470.000	AV	39.6	32.0	7.5	31.3	-	47.8	53.9	6.1	
Vert	11020.000	AV	34.0	40.5	-1.5	33.3	-	39.7	53.9	14.2	Floor noise
Vert	16530.000	AV	35.6	39.4	0.3	32.6	-	42.7	53.9	11.2	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

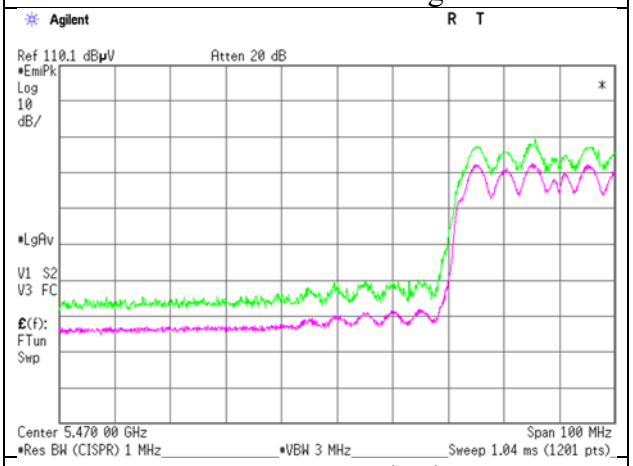
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-40 5510 MHz

Horizontal

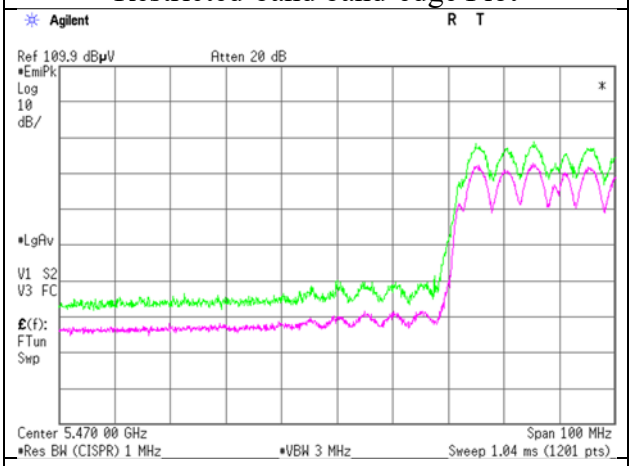
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5550 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11100.000	PK	43.2	40.4	-1.4	33.3	-	48.9	73.9	25.0	Floor noise
Hori	16650.000	PK	44.1	39.8	0.3	32.6	-	51.6	73.9	22.3	Floor noise
Hori	11100.000	AV	34.4	40.4	-1.4	33.3	-	40.1	53.9	13.8	Floor noise
Hori	16650.000	AV	35.5	39.8	0.3	32.6	-	43.0	53.9	10.9	Floor noise
Vert	11100.000	PK	43.2	40.4	-1.4	33.3	-	48.9	73.9	25.0	Floor noise
Vert	16650.000	PK	44.0	39.8	0.3	32.6	-	51.5	73.9	22.4	Floor noise
Vert	11100.000	AV	34.3	40.4	-1.4	33.3	-	40.0	53.9	13.9	Floor noise
Vert	16650.000	AV	35.6	39.8	0.3	32.6	-	43.1	53.9	10.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5670 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5725.000	PK	42.3	32.3	7.6	31.4	-	50.8	73.9	23.1	
Hori	11340.000	PK	42.8	40.2	-1.3	33.3	-	48.4	73.9	25.5	Floor noise
Hori	17010.000	PK	44.1	40.9	0.3	32.6	-	52.7	73.9	21.2	Floor noise
Hori	5725.000	AV	33.4	32.3	7.6	31.4	-	41.9	53.9	12.0	
Hori	11340.000	AV	33.6	40.2	-1.3	33.3	-	39.2	53.9	14.7	Floor noise
Hori	17010.000	AV	35.3	40.9	0.3	32.6	-	43.9	53.9	10.0	Floor noise
Vert	5725.000	PK	43.0	32.3	7.6	31.4	-	51.5	73.9	22.4	
Vert	11340.000	PK	43.0	40.2	-1.3	33.3	-	48.6	73.9	25.3	Floor noise
Vert	17010.000	PK	44.2	40.9	0.3	32.6	-	52.8	73.9	21.1	Floor noise
Vert	5725.000	AV	34.2	32.3	7.6	31.4	-	42.7	53.9	11.2	
Vert	11340.000	AV	33.6	40.2	-1.3	33.3	-	39.2	53.9	14.7	Floor noise
Vert	17010.000	AV	35.3	40.9	0.3	32.6	-	43.9	53.9	10.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

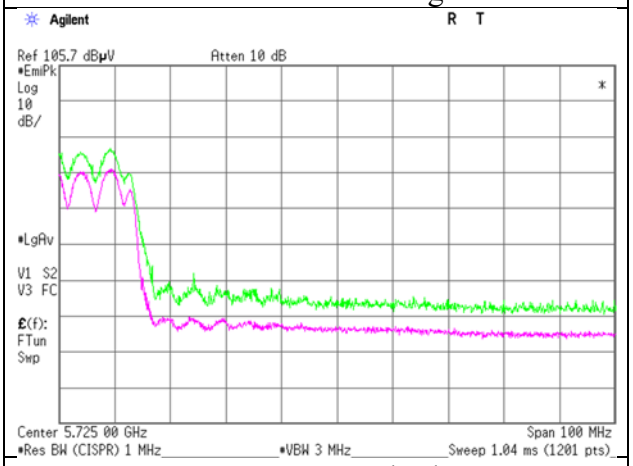
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-40 5670 MHz

Horizontal

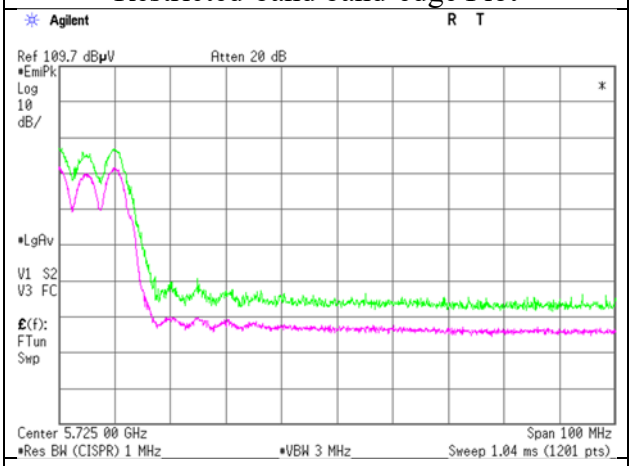
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5755 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	40.8	32.2	7.6	31.4	-	49.2	68.2	19.0	
Hori	5700.000	PK	44.4	32.3	7.6	31.4	-	52.9	105.2	52.3	
Hori	5720.000	PK	53.4	32.3	7.6	31.4	-	61.9	110.8	48.9	
Hori	5725.000	PK	53.7	32.3	7.6	31.4	-	62.2	122.2	60.0	
Hori	11510.000	PK	42.6	40.0	-1.1	33.3	-	48.2	73.9	25.7	Floor noise
Hori	17265.000	PK	44.4	42.4	0.2	32.5	-	54.5	73.9	19.4	Floor noise
Hori	11510.000	AV	33.6	40.0	-1.1	33.3	-	39.2	53.9	14.7	Floor noise
Hori	17265.000	AV	35.3	42.4	0.2	32.5	-	45.4	53.9	8.5	Floor noise
Vert	5650.000	PK	41.3	32.2	7.6	31.4	-	49.7	68.2	18.5	
Vert	5700.000	PK	44.4	32.3	7.6	31.4	-	52.9	105.2	52.3	
Vert	5720.000	PK	53.8	32.3	7.6	31.4	-	62.3	110.8	48.5	
Vert	5725.000	PK	53.1	32.3	7.6	31.4	-	61.6	122.2	60.6	
Vert	11510.000	PK	42.7	40.0	-1.1	33.3	-	48.3	73.9	25.6	Floor noise
Vert	17265.000	PK	44.3	42.4	0.2	32.5	-	54.4	73.9	19.5	Floor noise
Vert	11510.000	AV	33.7	40.0	-1.1	33.3	-	39.3	53.9	14.6	Floor noise
Vert	17265.000	AV	35.4	42.4	0.2	32.5	-	45.5	53.9	8.4	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

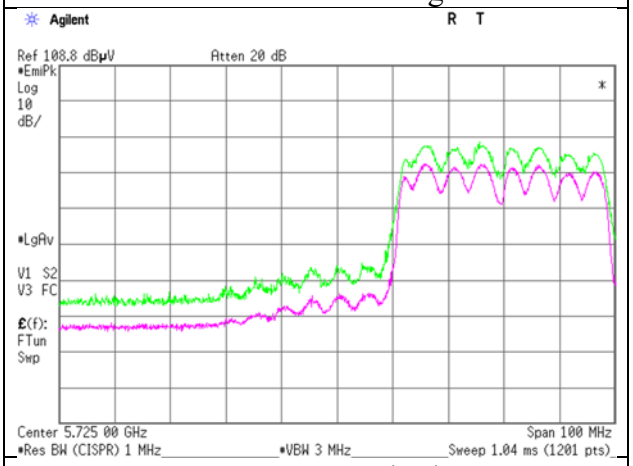
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-40 5755 MHz

Horizontal

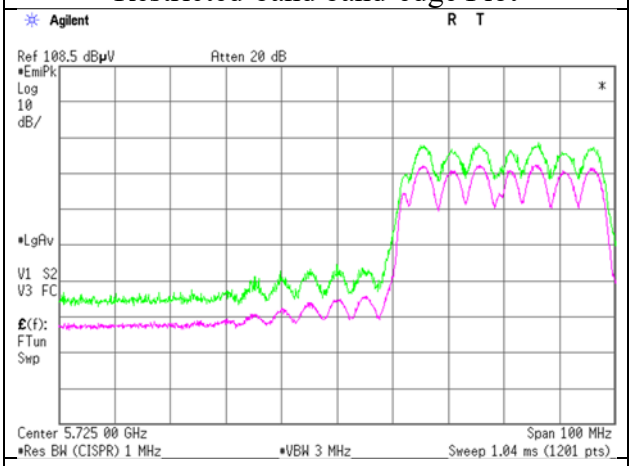
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 16, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-40 5795 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	43.0	32.5	7.6	31.4	-	51.7	122.2	70.5	
Hori	5855.000	PK	42.7	32.5	7.6	31.4	-	51.4	110.8	59.4	
Hori	5875.000	PK	41.7	32.5	7.6	31.4	-	50.4	105.2	54.8	
Hori	5925.000	PK	40.8	32.6	7.7	31.4	-	49.7	68.2	18.5	
Hori	11590.000	PK	43.2	40.0	-1.1	33.3	-	48.8	73.9	25.1	Floor noise
Hori	17385.000	PK	43.9	43.1	0.2	32.5	-	54.7	73.9	19.2	Floor noise
Hori	11590.000	AV	34.1	40.0	-1.1	33.3	-	39.7	53.9	14.2	Floor noise
Hori	17385.000	AV	34.8	43.1	0.2	32.5	-	45.6	53.9	8.3	Floor noise
Vert	5850.000	PK	42.5	32.5	7.6	31.4	-	51.2	122.2	71.0	
Vert	5855.000	PK	42.1	32.5	7.6	31.4	-	50.8	110.8	60.0	
Vert	5875.000	PK	41.6	32.5	7.6	31.4	-	50.3	105.2	54.9	
Vert	5925.000	PK	40.9	32.6	7.7	31.4	-	49.8	68.2	18.4	
Vert	11590.000	PK	43.1	40.0	-1.1	33.3	-	48.7	73.9	25.2	Floor noise
Vert	17385.000	PK	43.8	43.1	0.2	32.5	-	54.6	73.9	19.3	Floor noise
Vert	11590.000	AV	34.1	40.0	-1.1	33.3	-	39.7	53.9	14.2	Floor noise
Vert	17385.000	AV	34.8	43.1	0.2	32.5	-	45.6	53.9	8.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

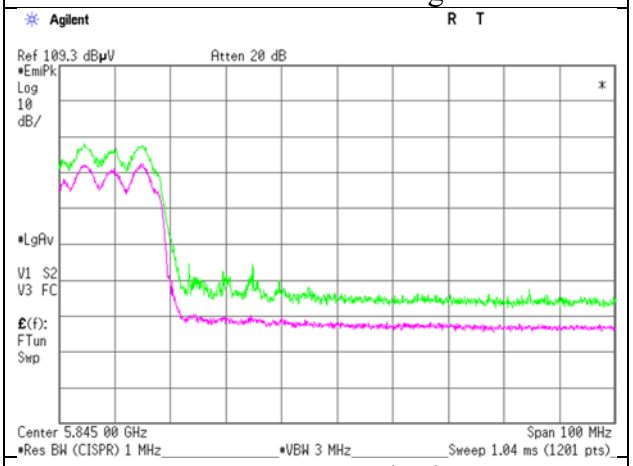
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 16, 2017
Temperature / Humidity	21 deg. C / 31 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ac-40 5795 MHz

Horizontal

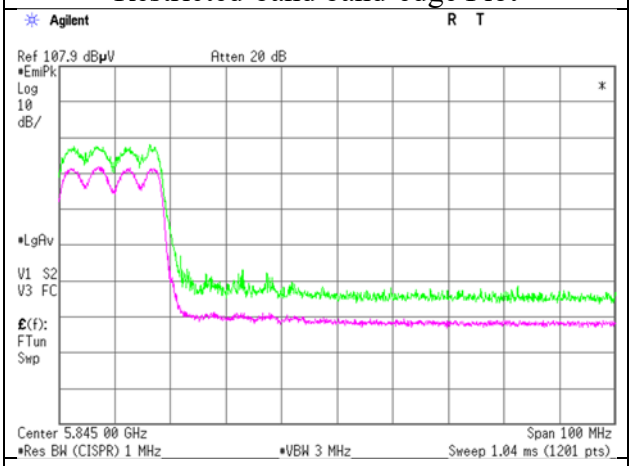
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 17, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 33 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takumi Shimada (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-80 5210 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5137.750	PK	48.7	32.2	7.3	31.3	-	56.9	73.9	17.0	
Hori	5150.000	PK	47.0	32.2	7.3	31.3	-	55.2	73.9	18.7	
Hori	10420.000	PK	43.2	39.6	-1.5	33.2	-	48.1	73.9	25.8	Floor noise
Hori	15630.000	PK	44.2	38.8	0.1	32.6	-	50.5	73.9	23.4	Floor noise
Hori	5137.750	AV	36.1	32.2	7.3	31.3	0.1	44.4	53.9	9.5	
Hori	5150.000	AV	34.8	32.2	7.3	31.3	0.1	43.1	53.9	10.8	*1)
Hori	10420.000	AV	33.9	39.6	-1.5	33.2	-	38.8	53.9	15.1	Floor noise
Hori	15630.000	AV	35.6	38.8	0.1	32.6	-	41.9	53.9	12.0	Floor noise
Vert	5137.750	PK	47.7	32.2	7.3	31.3	-	55.9	73.9	18.0	
Vert	5150.000	PK	43.3	32.2	7.3	31.3	-	51.5	73.9	22.4	
Vert	10420.000	PK	43.4	39.6	-1.5	33.2	-	48.3	73.9	25.6	Floor noise
Vert	15630.000	PK	44.5	38.8	0.1	32.6	-	50.8	73.9	23.1	Floor noise
Vert	5137.750	AV	37.8	32.2	7.3	31.3	0.1	46.1	53.9	7.8	
Vert	5150.000	AV	34.8	32.2	7.3	31.3	0.1	43.1	53.9	10.8	*1)
Vert	10420.000	AV	33.9	39.6	-1.5	33.2	-	38.8	53.9	15.1	Floor noise
Vert	15630.000	AV	35.7	38.8	0.1	32.6	-	42.0	53.9	11.9	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

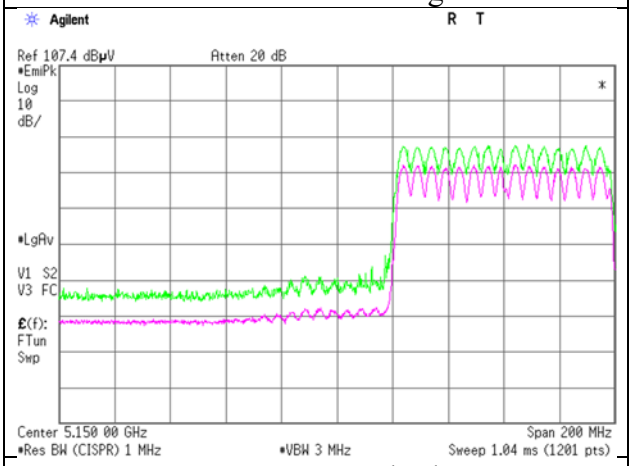
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 17, 2017
Temperature / Humidity	21 deg. C / 33 % RH
Engineer	Takumi Shimada
Mode	Tx 11ac-80 5210 MHz

Horizontal

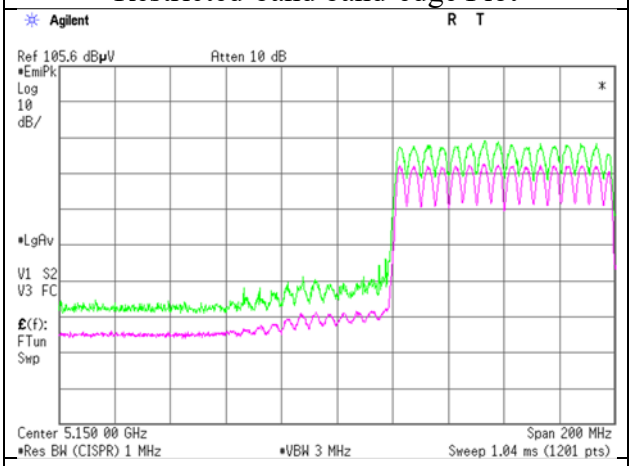
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 17, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 33 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takumi Shimada (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-80 5290 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	50.4	32.1	7.4	31.3	-	58.6	73.9	15.3	
Hori	10580.000	PK	42.6	39.8	-1.5	33.2	-	47.7	73.9	26.2	Floor noise
Hori	15870.000	PK	43.5	38.1	0.3	32.6	-	49.3	73.9	24.6	Floor noise
Hori	5350.000	AV	35.8	32.1	7.4	31.3	0.1	44.1	53.9	9.8	*1)
Hori	10580.000	AV	33.8	39.8	-1.5	33.2	-	38.9	53.9	15.0	Floor noise
Hori	15870.000	AV	34.8	38.1	0.3	32.6	-	40.6	53.9	13.3	Floor noise
Vert	5350.000	PK	48.3	32.1	7.4	31.3	-	56.5	73.9	17.4	
Vert	10580.000	PK	42.7	39.8	-1.5	33.2	-	47.8	73.9	26.1	Floor noise
Vert	15870.000	PK	43.6	38.1	0.3	32.6	-	49.4	73.9	24.5	Floor noise
Vert	5350.000	AV	37.2	32.1	7.4	31.3	0.1	45.5	53.9	8.4	*1)
Vert	10580.000	AV	33.9	39.8	-1.5	33.2	-	39.0	53.9	14.9	Floor noise
Vert	15870.000	AV	34.8	38.1	0.3	32.6	-	40.6	53.9	13.3	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

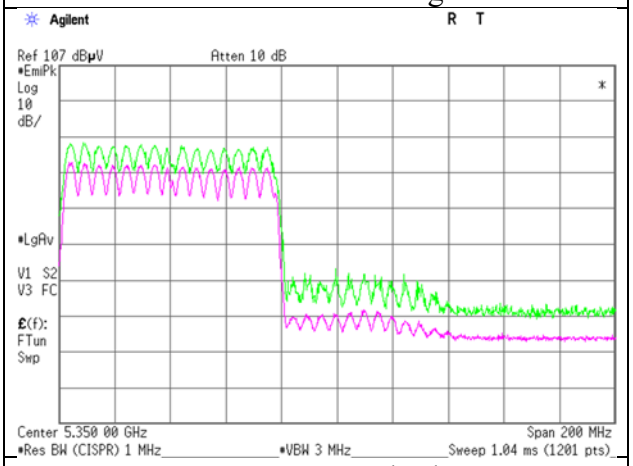
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 17, 2017
Temperature / Humidity	21 deg. C / 33 % RH
Engineer	Takumi Shimada
Mode	Tx 11ac-80 5290 MHz

Horizontal

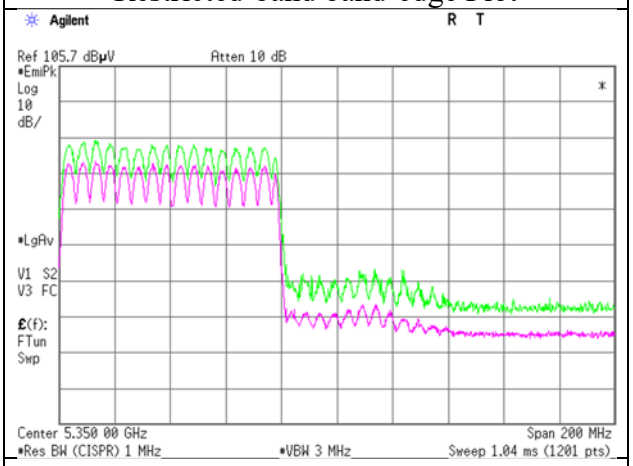
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 17, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 33 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takumi Shimada (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-80 5530 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5460.000	PK	48.0	32.0	7.5	31.3	-	56.2	73.9	17.7	
Hori	5470.000	PK	45.4	32.0	7.5	31.3	-	53.6	73.9	20.3	
Hori	11060.000	PK	42.5	40.5	-1.5	33.3	-	48.2	73.9	25.7	Floor noise
Hori	16590.000	PK	44.5	39.6	0.3	32.6	-	51.8	73.9	22.1	Floor noise
Hori	5460.000	AV	35.5	32.0	7.5	31.3	0.1	43.8	53.9	10.1	*1)
Hori	5470.000	AV	34.6	32.0	7.5	31.3	0.1	42.9	53.9	11.0	*1)
Hori	11060.000	AV	34.0	40.5	-1.5	33.3	-	39.7	53.9	14.2	Floor noise
Hori	16590.000	AV	35.6	39.6	0.3	32.6	-	42.9	53.9	11.0	Floor noise
Vert	5460.000	PK	49.6	32.0	7.5	31.3	-	57.8	73.9	16.1	
Vert	5470.000	PK	47.4	32.0	7.5	31.3	-	55.6	73.9	18.3	
Vert	11060.000	PK	42.4	40.5	-1.5	33.3	-	48.1	73.9	25.8	Floor noise
Vert	16590.000	PK	44.5	39.6	0.3	32.6	-	51.8	73.9	22.1	Floor noise
Vert	5460.000	AV	39.5	32.0	7.5	31.3	0.1	47.8	53.9	6.1	*1)
Vert	5470.000	AV	37.6	32.0	7.5	31.3	0.1	45.9	53.9	8.0	*1)
Vert	11060.000	AV	34.0	40.5	-1.5	33.3	-	39.7	53.9	14.2	Floor noise
Vert	16590.000	AV	35.6	39.6	0.3	32.6	-	42.9	53.9	11.0	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

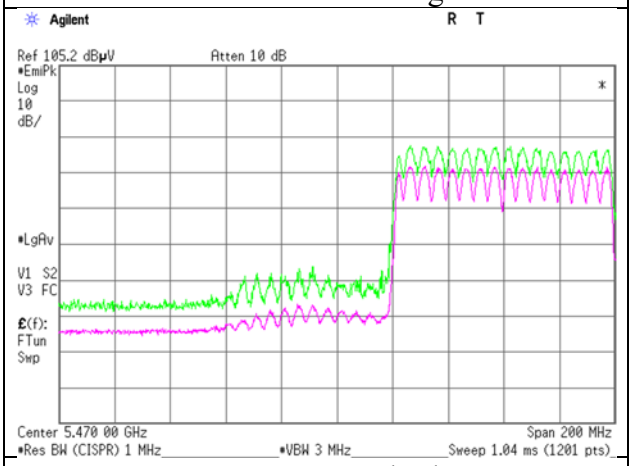
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 17, 2017
Temperature / Humidity	21 deg. C / 33 % RH
Engineer	Takumi Shimada
Mode	Tx 11ac-80 5530 MHz

Horizontal

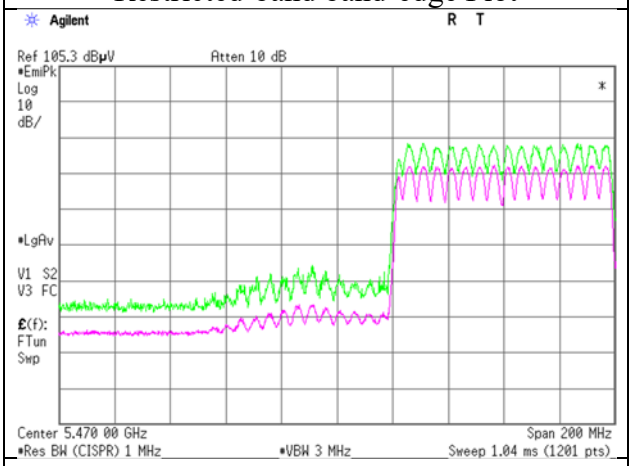
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 17, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 33 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takumi Shimada (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-80 5610 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5725.000	PK	40.3	32.3	7.6	31.4	-	48.8	73.9	25.1	
Hori	11220.000	PK	43.0	40.3	-1.4	33.3	-	48.6	73.9	25.3	Floor noise
Hori	16830.000	PK	44.2	40.3	0.4	32.6	-	52.3	73.9	21.6	Floor noise
Hori	5725.000	AV	30.2	32.3	7.6	31.4	0.1	38.8	53.9	15.1	*1)
Hori	11220.000	AV	34.0	40.3	-1.4	33.3	-	39.6	53.9	14.3	Floor noise
Hori	16830.000	AV	34.8	40.3	0.4	32.6	-	42.9	53.9	11.0	Floor noise
Vert	5725.000	PK	40.5	32.3	7.6	31.4	-	49.0	73.9	24.9	
Vert	11220.000	PK	43.0	40.3	-1.4	33.3	-	48.6	73.9	25.3	Floor noise
Vert	16830.000	PK	44.0	40.3	0.4	32.6	-	52.1	73.9	21.8	Floor noise
Vert	5725.000	AV	32.0	32.3	7.6	31.4	0.1	40.6	53.9	13.3	*1)
Vert	11220.000	AV	34.1	40.3	-1.4	33.3	-	39.7	53.9	14.2	Floor noise
Vert	16830.000	AV	34.7	40.3	0.4	32.6	-	42.8	53.9	11.1	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

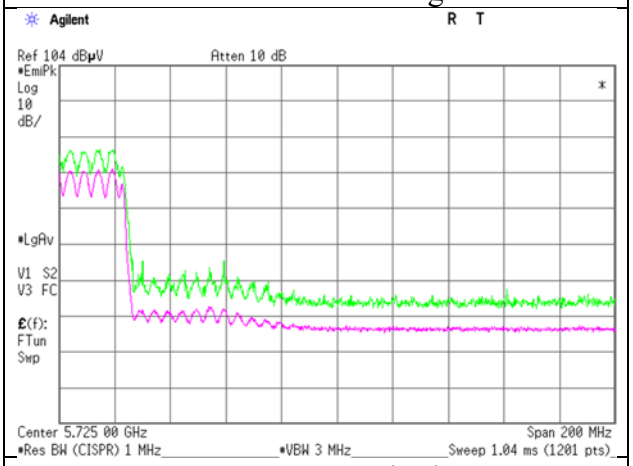
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 17, 2017
Temperature / Humidity	21 deg. C / 33 % RH
Engineer	Takumi Shimada
Mode	Tx 11ac-80 5610 MHz

Horizontal

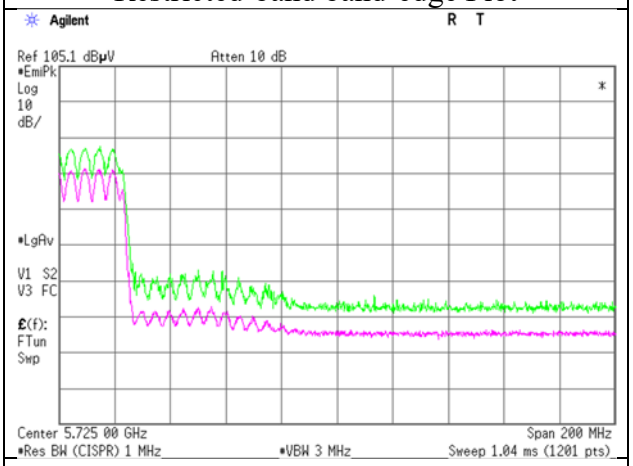
Restricted-band band-edge Plot



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	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	12079930H		
Date	December 17, 2017	December 18, 2017	December 19, 2017
Temperature / Humidity	21 deg. C / 33 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH
Engineer	Takumi Shimada (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)
Mode	Tx 11ac-80 5775 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	40.6	32.2	7.6	31.4	-	49.0	68.2	19.2	
Hori	5700.000	PK	44.9	32.3	7.6	31.4	-	53.4	105.2	51.8	
Hori	5720.000	PK	42.5	32.3	7.6	31.4	-	51.0	110.8	59.8	
Hori	5725.000	PK	44.3	32.3	7.6	31.4	-	52.8	122.2	69.4	
Hori	5850.000	PK	48.1	32.5	7.6	31.4	-	56.8	122.2	65.4	
Hori	5855.000	PK	42.9	32.5	7.6	31.4	-	51.6	110.8	59.2	
Hori	5875.000	PK	40.6	32.5	7.6	31.4	-	49.3	105.2	55.9	
Hori	5925.000	PK	40.9	32.6	7.7	31.4	-	49.8	68.2	18.4	
Hori	11550.000	PK	42.6	40.0	-1.1	33.3	-	48.2	73.9	25.7	Floor noise
Hori	17325.000	PK	44.1	42.7	0.3	32.5	-	54.6	73.9	19.3	Floor noise
Hori	17325.000	AV	35.4	42.7	0.3	32.5	-	45.9	53.9	8.0	Floor noise
Vert	5650.000	PK	40.8	32.2	7.6	31.4	-	49.2	68.2	19.0	
Vert	5700.000	PK	45.7	32.3	7.6	31.4	-	54.2	105.2	51.0	
Vert	5720.000	PK	43.0	32.3	7.6	31.4	-	51.5	110.8	59.3	
Vert	5725.000	PK	43.5	32.3	7.6	31.4	-	52.0	122.2	70.2	
Vert	5850.000	PK	47.3	32.5	7.6	31.4	-	56.0	122.2	66.2	
Vert	5855.000	PK	44.8	32.5	7.6	31.4	-	53.5	110.8	57.3	
Vert	5875.000	PK	40.7	32.5	7.6	31.4	-	49.4	105.2	55.8	
Vert	5925.000	PK	40.4	32.6	7.7	31.4	-	49.3	68.2	18.9	
Vert	11550.000	PK	42.7	40.0	-1.1	33.3	-	48.3	73.9	25.6	Floor noise
Vert	17325.000	PK	44.0	42.7	0.3	32.5	-	54.5	73.9	19.4	Floor noise
Vert	17325.000	AV	35.4	42.7	0.3	32.5	-	45.9	53.9	8.0	Floor noise

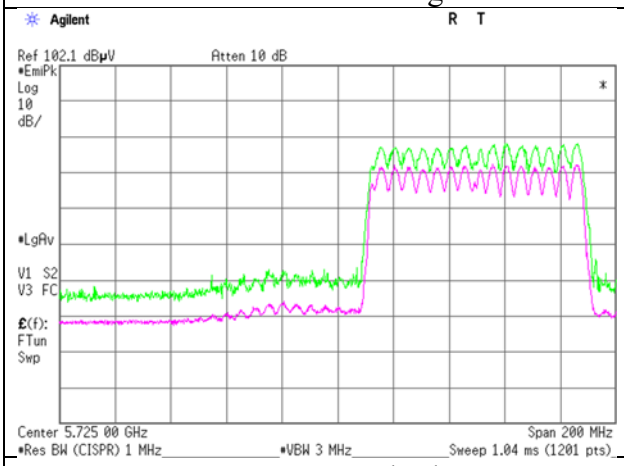
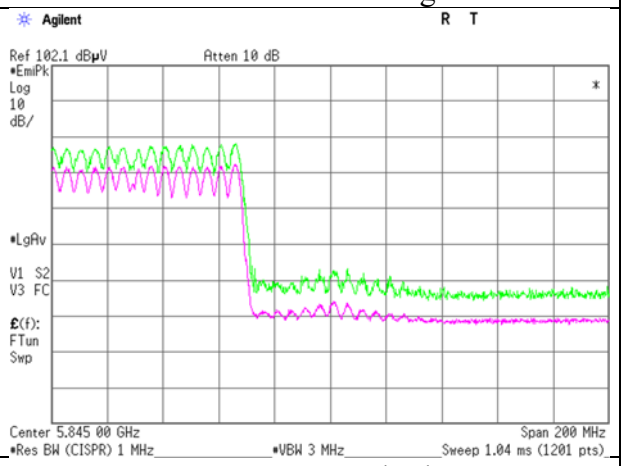
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

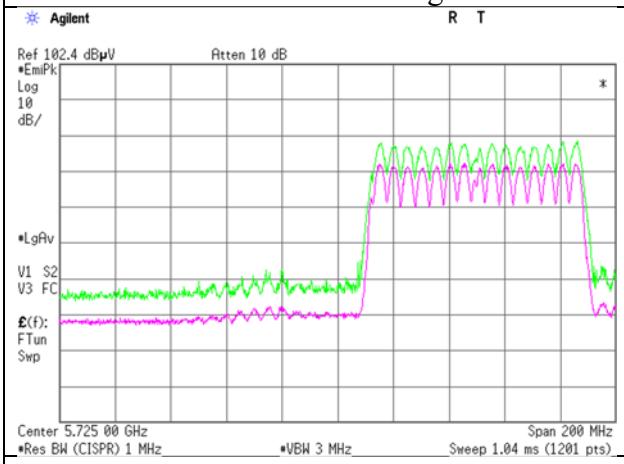
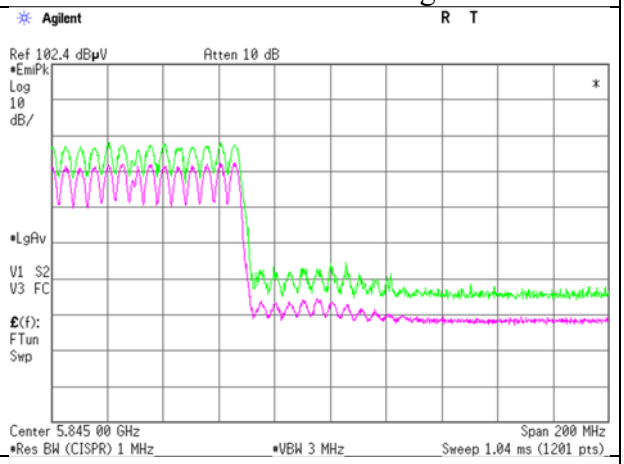
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	12079930H
Date	December 17, 2017
Temperature / Humidity	21 deg. C / 33 % RH
Engineer	Takumi Shimada
Mode	Tx 11ac-80 5775 MHz

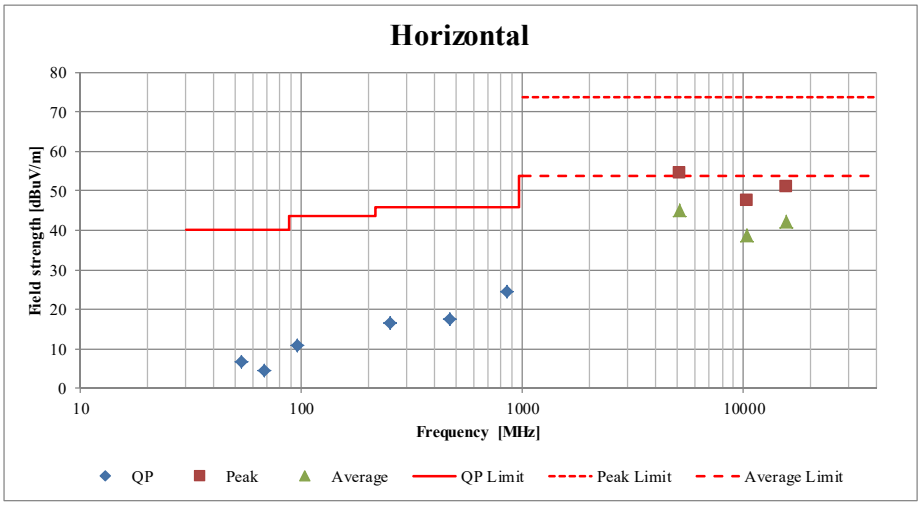
Horizontal	Horizontal
Restricted-band band-edge Plot	Restricted-band band-edge Plot
	
Trace Green: Peak Plot Trace Purple: Average Plot	Trace Green: Peak Plot Trace Purple: Average Plot

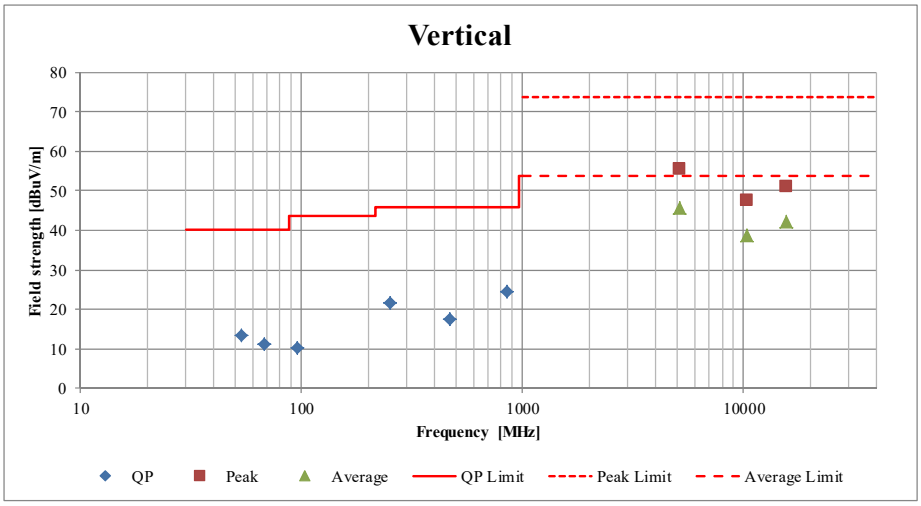
Vertical	Vertical
Restricted-band band-edge Plot	Restricted-band band-edge Plot
	
Trace Green: Peak Plot Trace Purple: Average Plot	Trace Green: Peak Plot Trace Purple: Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber			
Report No.	12079930H			
Date	December 16, 2017	December 18, 2017	December 19, 2017	December 20, 2017
Temperature / Humidity	21 deg. C / 31 % RH	23 deg. C / 28 % RH	22 deg. C / 31 % RH	23 deg. C / 26 % RH
Engineer	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)	Takafumi Noguchi (Below 1 GHz)
Mode	Tx 11a 5180 MHz			





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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber			
Report No.	12079930H			
Date	December 18, 2017	December 19, 2017	December 19, 2017	December 20, 2017
Temperature / Humidity	23 deg. C / 28 % RH	22 deg. C / 31 % RH	23 deg. C / 28 % RH	23 deg. C / 26 % RH
Engineer	Takafumi Noguchi (10 GHz - 18 GHz)	Yuta Moriya (18 GHz - 40 GHz)	Takafumi Noguchi (1 GHz - 10 GHz)	Takafumi Noguchi (Below 1 GHz)
Mode	Tx, Hopping On, 3DH5 and 11ac-40 5190 MHz			

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	53.316	QP	21.8	9.5	7.5	32.2	-	6.6	40.0	33.4	
Hori	67.539	QP	22.4	6.4	7.7	32.2	-	4.3	40.0	35.7	
Hori	95.915	QP	25.9	9.4	8.1	32.2	-	11.2	43.5	32.3	
Hori	249.998	QP	28.0	11.8	9.6	32.0	-	17.4	46.0	28.6	
Hori	470.308	QP	21.3	17.1	11.2	32.0	-	17.6	46.0	28.4	
Hori	845.884	QP	21.2	21.3	13.2	31.2	-	24.5	46.0	21.5	
Hori	5150.000	PK	52.8	32.2	7.3	31.3	-	61.0	73.9	12.9	
Hori	10380.000	PK	43.0	39.5	-1.5	33.2	-	47.8	73.9	26.1	Floor noise
Hori	15570.000	PK	44.7	38.9	0.1	32.6	-	51.1	73.9	22.8	Floor noise
Hori	5150.000	AV	41.6	32.2	7.3	31.3	-	49.8	53.9	4.1	
Hori	10380.000	AV	33.9	39.5	-1.5	33.2	-	38.7	53.9	15.2	Floor noise
Hori	15570.000	AV	35.7	38.9	0.1	32.6	-	42.1	53.9	11.8	Floor noise
Vert	53.316	QP	28.0	9.5	7.5	32.2	-	12.8	40.0	27.2	
Vert	67.539	QP	29.8	6.4	7.7	32.2	-	11.7	40.0	28.3	
Vert	95.915	QP	24.6	9.4	8.1	32.2	-	9.9	43.5	33.6	
Vert	249.998	QP	32.3	11.8	9.6	32.0	-	21.7	46.0	24.3	
Vert	470.308	QP	21.3	17.1	11.2	32.0	-	17.6	46.0	28.4	
Vert	845.884	QP	21.2	21.3	13.2	31.2	-	24.5	46.0	21.5	
Vert	5150.000	PK	52.5	32.2	7.3	31.3	-	60.7	73.9	13.2	
Vert	10380.000	PK	43.0	39.5	-1.5	33.2	-	47.8	73.9	26.1	Floor noise
Vert	15570.000	PK	44.7	38.9	0.1	32.6	-	51.1	73.9	22.8	Floor noise
Vert	5150.000	AV	41.2	32.2	7.3	31.3	-	49.4	53.9	4.5	
Vert	10380.000	AV	33.9	39.5	-1.5	33.2	-	38.7	53.9	15.2	Floor noise
Vert	15570.000	AV	35.7	38.9	0.1	32.6	-	42.1	53.9	11.8	Floor noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

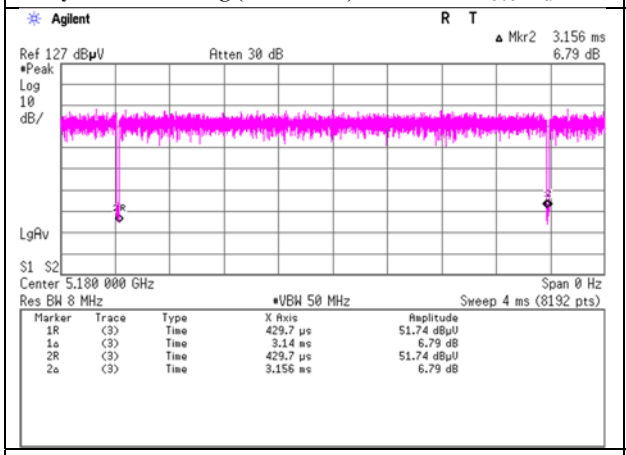
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Burst rate confirmation

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	12079930H	
Date	December 16, 2017	December 17, 2017
Temperature / Humidity	21 deg. C / 31 % RH	21 deg. C / 33 % RH
Engineer	Takafumi Noguchi	Takumi Shimada
Mode	Tx	

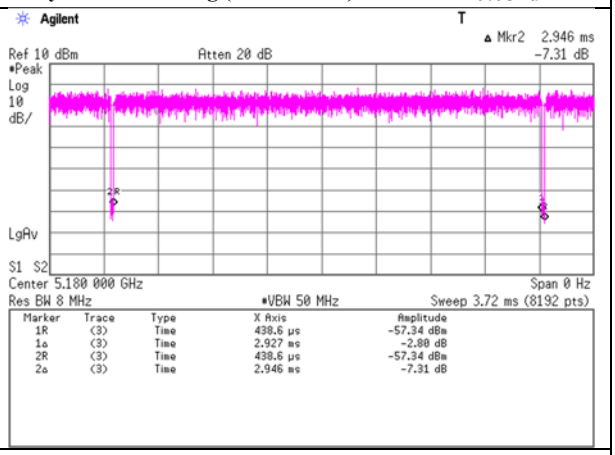
11a 6Mbps

Tx on / (Tx on + Tx off) =	0.995
Tx on / (Tx on + Tx off) * 100 =	99.5 %
Duty factor = 10 * log (3.156 / 3.14) =	0.02 dB



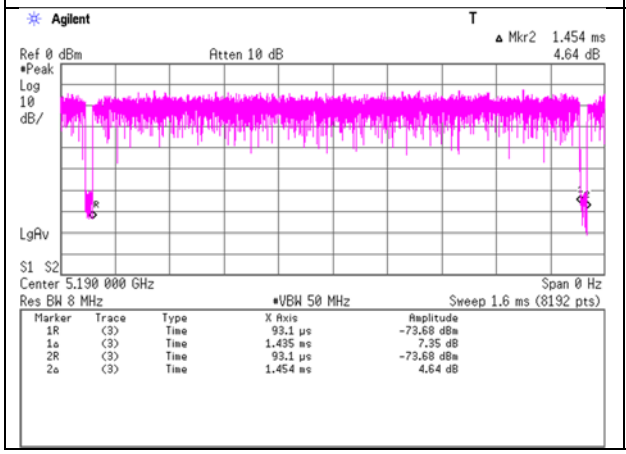
11ac-20 MCS0

Tx on / (Tx on + Tx off) =	0.994
Tx on / (Tx on + Tx off) * 100 =	99.4 %
Duty factor = 10 * log (2.946 / 2.927) =	0.03 dB



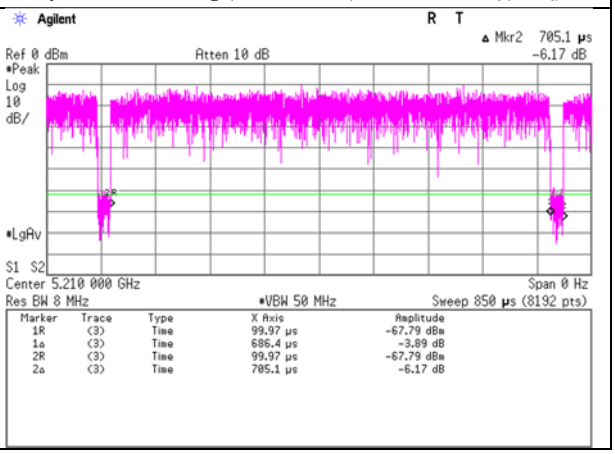
11ac-40 MCS0

Tx on / (Tx on + Tx off) =	0.987
Tx on / (Tx on + Tx off) * 100 =	98.7 %
Duty factor = 10 * log (1.454 / 1.435) =	0.06 dB



11ac-80 MCS0

Tx on / (Tx on + Tx off) =	0.973
Tx on / (Tx on + Tx off) * 100 =	97.3 %
Duty factor = 10 * log (705.1 / 686.4) =	0.12 dB



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2017/10/31 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2017/01/20 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2017/08/22 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2017/05/22 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2017/05/29 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2017/03/21 * 12
MMM-08	DIGITAL HiTESTER	Hioki	3805	051201197	RE	2017/01/19 * 12
MCC-177	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S304	RE	2017/03/13 * 12
MHF-22	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCB	602	RE	2017/01/13 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2017/05/14 * 12
MHA-29	Horn Antenna 26.5-40GHz	ETS LINDGREN	3160-10	00152399	RE	2017/09/15 * 12
MPA-22	Pre Amplifier	MITEQ, Inc	AMF-6F-2600400-33-8P / AMF-4F-2600400-33-8P	1871355 /1871328	RE	2017/09/07 * 12
MCC-224	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	RE	2017/11/08 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2017/08/22 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2017/10/02 * 12
MLA-22	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-191	RE	2017/01/26 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2017/07/12 * 12
MAT-98	Attenuator	KEYSIGHT	8491A	MY52462349	RE	2017/12/14 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2017/03/27 * 12

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

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

Test Item: RE: Radiated Emission