RADIO TEST REPORT

Test Report No. : 12622648S-D-R2

Applicant	:	**JVC KENWOOD Corporation**
Type of Equipment	:	**GPS NAVIGATION SYSTEM**
Model No.	:	**DNX996XR**
FCC ID	:	**IOMJ5220**
Test regulation	:	**FCC Part 15 Subpart E: 2018**
Test Result	:	**Complied (Refer to Section 3.2)**

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3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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   It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in SECTION 1.
10. This report is a revised version of 12622648S-D-R1. 12622648S-D-R1 is replaced with this report.

Date of test:
November 30, 2018 to February 22, 2019

Representative test engineer:
Shiro Kobayashi
Engineer
Consumer Technology Division

Approved by:
Hikaru Shirasawa
Engineer
Consumer Technology Division

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

RTL02610

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REVISION HISTORY

Original Test Report No.: 12622648S-D

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12622648S-D	January 23, 2019	-	-
1	12622648S-D-R1	February 18, 2019	1, 4 4 5	Correction of "Type of Equipment" Addition of Comment "The information provided…" Correction of Antenna Gain
2	12622648S-D-R2	February 25, 2019	4 10 17 28 70-74 74-97, 99	Correction of Similar model Addition of Tested Antenna "ANT-0+ ANT-1" Addition of Comment "11n-40 /11ac-40 (SISO)" Correction of Data "11n-40, 11ac-40 (99%OBW)" Correction of Mode Addition of Data

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SECTION 1: Customer information

Company Name	:	JVC KENWOOD Corporation
Address	:	2967-3, Ishikawa-machi, Hachioji, Tokyo 192-8525 Japan
Telephone Number	:	+81-42-646-5525
Facsimile Number	:	+81-42-646-1440
Contact Person	:	Seigo Tsutsumi

The information provided from the customer is as follows:
- Applicant, Type of Equipment, Model No. on the cover page and other relevant pages
- Section 1: Customer information
- Section 2: Equipment under test (E.U.T.)
- Section 4: Operation of E.U.T. during testing

* The laboratory is exempted from liability of any test results affected from the above information in Section 2 and 4.

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

2.1 Identification of E.U.T.

Type of Equipment	:	GPS NAVIGATION SYSTEM
Model No.	:	DNX996XR
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12 V
Receipt Date of Sample (Information from test lab.)	:	November 27, 2018
Country of Mass-production	:	Indonesia
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: DNX996XR (referred to as the EUT in this report) is a GPS NAVIGATION SYSTEM.

There are eight variant models DDX9906XR, DDX8906S, DDX8706S, DNR876S, DMX906S, DMX9706S, KW-V950BW, KW-M855BW, These models are identical except for the presence of Navigation function, Panel, DVD Slot, DVD, Dashboard Camera terminal, HD Radio, Display or SD card, and these differences do not affect the radio.

Radio Specification

Type of radio	Bluetooth (BDR/EDR)	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20 M band)	IEEE802.11n (40 M band)	IEEE 802.11 ac
Frequency of operation	2402 MHz - 2480 MHz	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5745 MHz - 5805 MHz	2412 MHz - 2462 MHz 5745 MHz - 5805 MHz	5755 MHz - 5795 MHz	5745 MHz-5805 MHz (20M) 5755 MHz-5795 MHz (40M) 5775 MHz (80M)
Type of modulation	FHSS	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)			OFDM (256QAM,16QAM,QPSK,BPSK)
Channel spacing	1 MHz	5 MHz		20 MHz	2.4 GHz band 5 MHz 5 GHz band 20 MHz	2.4 GHz band 5 MHz 5 GHz band 40 MHz	20 MHz (20M) 40 MHz (40M) 80 MHz (80M)

Antenna type	Internal Antenna (Chip Antenna)
Antenna Gain	Antenna 0 (ANT-0) : -4.4 dBi (2.4 GHz Wireless LAN only), -2.8 dBi (5 GHz) Antenna 1 (ANT-1) : -2.3 dBi (2.4 GHz Bluetooth only), -4.2 dBi (5 GHz),
Power Supply (radio art input)	DC 3.6 V/ 3.3 V/1.8 V
Clock frequency (Maximum)	37.4 MHz

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart E
FCC Part 15 final revised on March 12, 2018 and effective April 11, 2018

Title : FCC 47CFR Part15 Radio Frequency Device Subpart E
Unlicensed National Information Infrastructure Devices
Section 15.407 General technical requirements

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013	**FCC:** 15.407 (b) (6) / 15.207	N/A	N/A*1)	-
	IC: RSS-Gen 8.8	**IC:** RSS-Gen 8.8			
26 dB Emission Bandwidth	**FCC:** KDB Publication Number 789033	**FCC:** 15.407 (a) (1) (2) (3)	See data	N/A	Conducted
	IC: -	**IC:** -			
Maximum Conducted Output Power	**FCC:** KDB Publication Number 789033	**FCC:** 15.407 (a) (1) (2) (3)		Complied a)	Conducted
	IC: -	**IC:** RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1			
Maximum Power Spectral Density	**FCC:** KDB Publication Number 789033	**FCC :** 15.407 (a) (1) (2) (3)		Complied b)	Conducted
	IC: -	**IC:** RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.1			
Spurious Emission Restricted Band Edge	**FCC:** ANSI C63.10-2013 KDB Publication Number 789033	**FCC:** 15.407 (b), 15.205 and 15.209	4.3 dB 11550.000 MHz, AV, Vert. Tx 11ac-80 (MIMO) 5755 MHz	Complied c)/d)	Conducted (< 30 MHz)/ Radiated (> 30 MHz) *2)
	IC: -	**IC:** RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2			
6 dB Emission Bandwidth	**FCC:** ANSI C63.10-2013	**FCC:** 15.407 (e)	See data	Complied e)	Conducted
	IC: -	**IC:** RSS-247 6.2.4.1			

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) The test is not applicable since the EUT does not have AC Mains.
*2) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b).
a) Refer to APPENDIX 1 (data of Maximum Conducted Output Power)
b) Refer to APPENDIX 1 (data of Maximum Power Spectral Density)
c) Refer to APPENDIX 1 (data of Radiated Spurious Emission)
d) Refer to APPENDIX 1 (data of Conducted Spurious Emission)
e) Refer to APPENDIX 1 (data of 6 dB Bandwidth)

Symbols:
Complied The data of this test item has enough margin, more than the measurement uncertainty.
Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

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

FCC Part 15.31 (e)
The EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage.
Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

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

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99 % Occupied Band Width	RSS-Gen 6.7	**IC:** -	N/A	Complied a)	Conducted
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. a) Refer to APPENDIX 1 (data of 99 % Occupied Bandwidth)					

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

3.4 Uncertainty

EMI

There is no applicable rule of uncertainty in this applied standard. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

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

Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)		
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.1 dB
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.7 dB
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.1 dB
	1 GHz-6 GHz	4.8 dB	4.8 dB	4.8 dB
	6 GHz-18 GHz	5.4 dB	5.4 dB	5.4 dB
	18 GHz-40 GHz	5.6 dB	5.6 dB	5.6 dB
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.7 dB	5.7 dB	5.7 dB
	18 GHz-40 GHz	5.9 dB	5.9 dB	5.9 dB

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.48 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	0.66 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.47 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	0.64 dB
Power Measurement above 1 GHz (Average Detector)_SPM-13	0.90 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-13	1.04 dB
Spurious emission (Conducted) below 1GHz	1.8 dB
Spurious emission (Conducted) 1 GHz-3 GHz	1.7 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.5 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.5 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.7 dB
Bandwidth Measurement	1.01 %
Duty cycle and Time Measurement	0.012 %

3.5 Test Location

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JAB Accreditation No. RTL02610
FCC Test Firm Registration Number: 839876

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
No.1 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

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

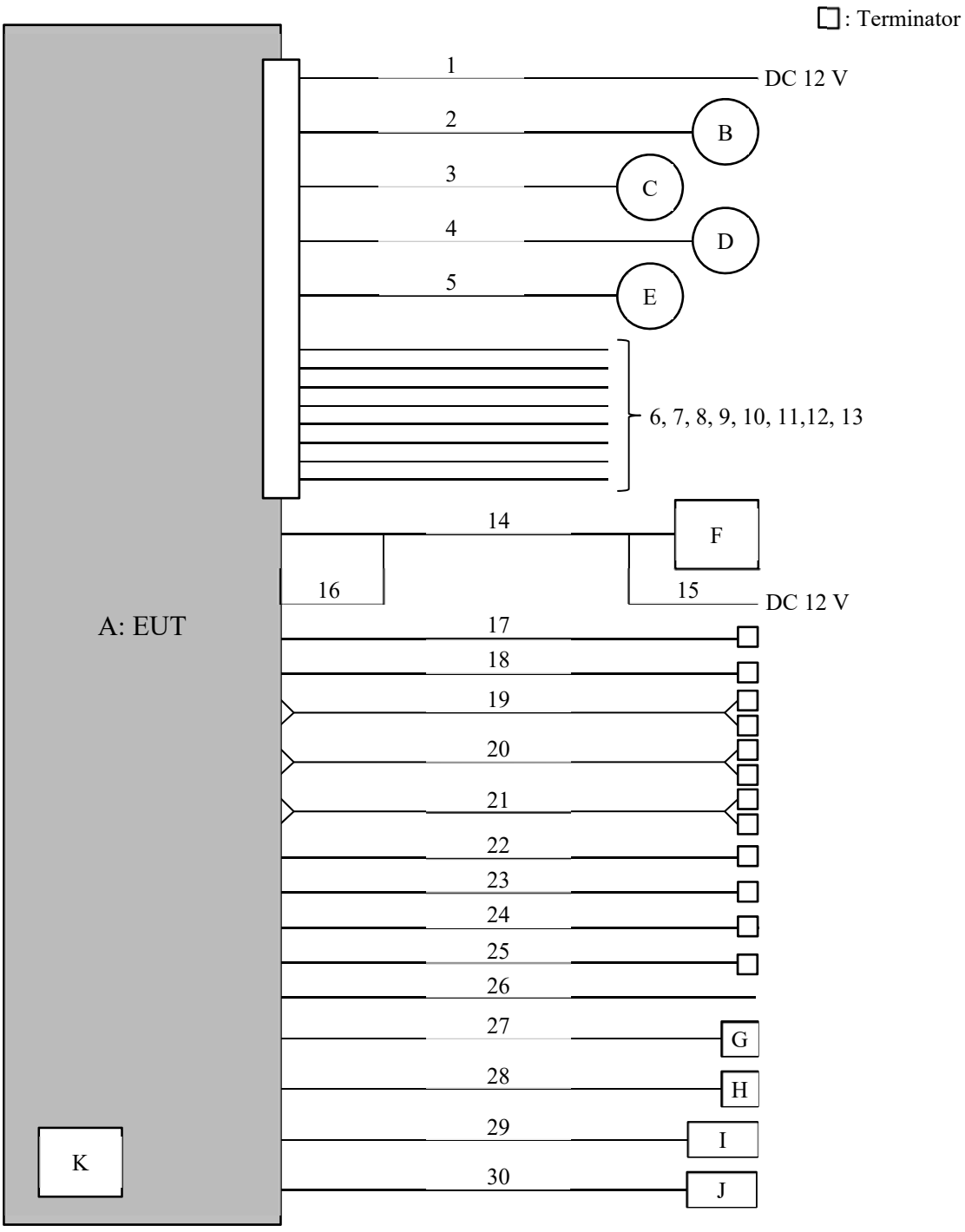
Mode	Worst Data mode*
Transmitting (Tx), IEEE 802.11a (11a)	48 Mbps (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n SISO 20 MHz BW (11n-20) Transmitting (Tx), IEEE 802.11n SISO 20 MHz BW (11ac-20)	MCS 1 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n MIMO 20 MHz BW (11n-20) Transmitting (Tx), IEEE 802.11n MIMO 20 MHz BW (11ac-20)	MCS 1 (2 Streams), PN9
Transmitting (Tx), IEEE 802.11n SISO 40 MHz BW (11n-40) Transmitting (Tx), IEEE 802.11n SISO 40 MHz BW (11ac-40)	MCS 5 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n MIMO 40 MHz BW (11n-40) Transmitting (Tx), IEEE 802.11n MIMO 40 MHz BW (11ac-40)	MCS 0 (2 Streams), PN9
Transmitting (Tx), IEEE 802.11n SISO 80 MHz BW (11ac-80)	MCS 0 (ANT-1), PN9
Transmitting (Tx), IEEE 802.11n MIMO 80 MHz BW (11ac-80)	MCS 2 (2 Streams), PN9
*The worst antenna (ANT-1) and condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power settings: Fixed Software: Syscom : 0.0.0189.3100 Panel CPU : 0.0.0139.3700 SoC : 0.0.2509.3700 *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 *2)	Tested Frequency
99 % Occupied Bandwidth, Maximum Conducted Output Power 6 dB Bandwidth,	Tx 11a Tx 11n-20 (SISO) Tx 11ac-20 (SISO)	ANT-1	5745 MHz 5785 MHz 5805 MHz
	Tx 11n-20 (MIMO) Tx 11ac-20 (MIMO)	ANT-0+ ANT-1	
	Tx 11n-40 (SISO) Tx 11ac-40 (SISO)	ANT-1	5755 MHz 5795 MHz
	Tx 11n-40 (MIMO) Tx 11ac-40 (MIMO)	ANT-0+ ANT-1	
	Tx 11ac-80 (SISO)	ANT-1	5775 MHz
	Tx 11ac-80 (MIMO)	ANT-0+ ANT-1	
Maximum Power Spectral Density Radiated Spurious Emission (Above 1 GHz)	Tx 11a Tx 11n-20 (SISO) Tx 11ac-20 (SISO)	ANT-1	5745 MHz 5785 MHz 5805 MHz
	Tx 11n-20 (MIMO) Tx 11ac-20 (MIMO)	ANT-0+ ANT-1	
	Tx 11n-40 (SISO) Tx 11ac-40 (SISO)	ANT-1	5755 MHz 5795 MHz
	Tx 11n-40 (MIMO) Tx 11ac-40 (MIMO)	ANT-0+ ANT-1	
	Tx 11ac-80 (SISO)	ANT-1	5775 MHz
	Tx 11ac-80 (MIMO)	ANT-0+ ANT-1	
Radiated Spurious Emission (Below 1 GHz) *1)	11ac-80(MIMO)	ANT-0+ ANT-1	5775 MHz
Conducted Spurious Emission *1)	11ac-80 (MIMO)	ANT-0+ ANT-1	5775 MHz

*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*2) The test was performed with the antenna that had higher power as a representative.

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	GPS NAVIGATION SYSTEM	DNX996XR	PK-X0001 *1) PK-X0003 *2)	JVC KENWOOD	EUT
B	Speaker	LV-002	-	L&V	-
C	Speaker	LV-002	-	L&V	-
D	Speaker	LV-002	-	L&V	-
E	Speaker	LV-002	-	L&V	-
F	DASH BOARD CAMERA	DRV-N520	082T1224	JVC KENWOOD	-
G	GPS Antenna	-	-	JVC KENWOOD	-
H	Microphone	-	-	JVC KENWOOD	-
I	USB Memory	AH321	-	Apacer	-
J	USB Memory	USM1GL	-	SONY	-
K	SDHC MEMORY CARD	MF-FSDH08GC6	-	ELECOM	-

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

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC (ACC, B+, GND)	3.0 + 0.5	Unshielded	Unshielded	-
2	Speaker	1.8 + 2.0	Unshielded	Unshielded	-
3	Speaker	1.8 + 2.0	Unshielded	Unshielded	-
4	Speaker	1.8 + 2.0	Unshielded	Unshielded	-
5	Speaker	1.8 + 2.0	Unshielded	Unshielded	-
6	ANT. CONT	0.15 + 1.0	Unshielded	Unshielded	-
7	P. CONT	0.15 + 1.0	Unshielded	Unshielded	-
8	ILLUMI	0.15 + 1.0	Unshielded	Unshielded	-
9	REMOTE CONT	0.15 + 1.0	Unshielded	Unshielded	-
10	CAM +	0.15 + 1.0	Unshielded	Unshielded	-
11	CAM -	0.15 + 1.0	Unshielded	Unshielded	-
12	PRK SW	0.15 + 1.0	Unshielded	Unshielded	-
13	REVERSE	0.15 + 1.0	Unshielded	Unshielded	-
14	DASH CAM	3.5	Unshielded	Unshielded	-
15	DC	1.9	Unshielded	Unshielded	-
16	FRONT VIEW CAMERA	0.2	Shielded	Shielded	-
17	REAR VIEW CAMERA	0.2 + 1.5	Shielded	Shielded	-
18	VIDEO OUT	0.2 + 1.0	Shielded	Shielded	-
19	AUDIO (FRONT)	3.0	Shielded	Shielded	-
20	AUDIO (REAR)	3.0	Shielded	Shielded	-
21	AUDIO (SW)	2.0	Shielded	Shielded	-
22	AV-OUT AUDIO	1.0	Shielded	Shielded	-
23	AV-IN	0.2 + 2.0	Shielded	Shielded	-
24	Antenna	0.15 + 1.5	Shielded	Shielded	-
25	Data Link	0.8	Shielded	Shielded	-
26	EXT-I/F	1.0	Shielded	Shielded	-
27	GPS	3.5	Shielded	Shielded	-
28	Microphone	3.0	Shielded	Shielded	-
29	USB	0.2 + 1.0	Shielded	Shielded	-
30	USB	0.2 + 1.0	Shielded	Shielded	-

SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >
EUT was placed on a urethane platform of nominal size, 1.5 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 W58 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:

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

Test Antennas are used as below;

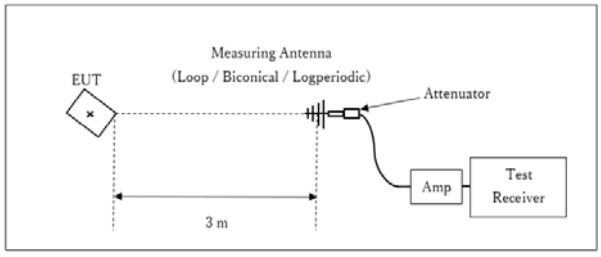
Frequency	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Biconical	Logperiodic	Horn

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 VB *1) RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak Trace: ≥ 100 traces

*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".

Figure 2: Test Setup

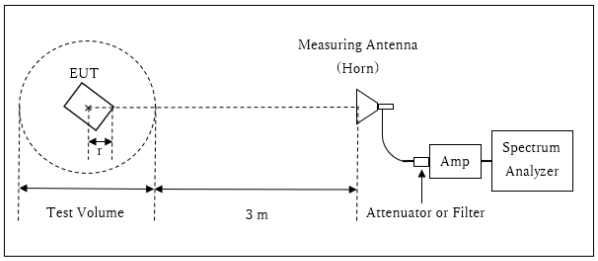
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz

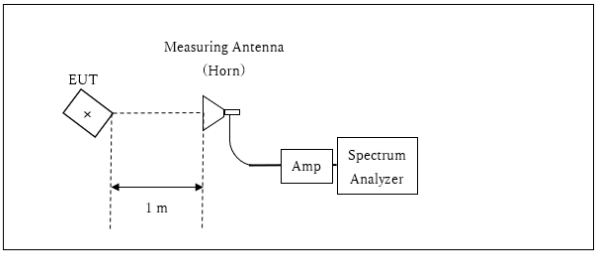


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.88 m / 3.0 m) = 2.24 dB
* Test Distance: (3 + Test Volume /2) - r = 3.88 m

Test Volume : 2.0 m
(Test Volume has been calibrated based on CISPR 16-1-4.)
r = 0.12 m

13 GHz - 40 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*Test Distance: 1 m

- The carrier level and noise levels were confirmed at angle of 0 to 30 deg. Based on the product specification to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Frequency	30 MHz - 1000 MHz	1 GHz – 6.4 GHz	6.4 GHz – 40 GHz
Horizontal	0 deg.	0 deg.	0 deg.
Vertical	0 deg.	30 deg.	0 deg.

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

SECTION 6: Antenna Terminal Conducted Tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used and Test method
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 % to 5 % of OBW	≥ 3 RBW	Auto	Peak	Max Hold	Spectrum Analyzer
6 dB Bandwidth	Enough to capture the emission	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Conducted Output Power	-	-	-	Auto	Average	-	Power Meter (Sensor: 160 MHz BW) (Method PM)
Maximum Power Spectral Density	Encompass the entire EBW	100 kHz *2)	≥ 3 RBW	Auto	RMS Power Averaging (100 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3)	9 kHz – 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz – 30 MHz	10 kHz	30 kHz				

* 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".

*1) Peak hold was applied as Worst-case measurement.
*2) KDB 789033 D02 says that RBW is set to be 500 kHz for 5.725 GHz - 5.850 GHz, but it is not possible with spectrum analyzer, so RBW Correction Factor (10 log (500 kHz / 470 kHz)) was added to the test result.
*3) In the frequency range below 30 MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9 kHz - 150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz)

The test results and limit are rounded off to two decimals place, so some differences might be observed.
The equipment and cables were not used for factor 0 dB of the data sheets.

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

99 % Occupied Bandwidth

Report No.	12622648S-D-R2	
Test place	Shonan EMC Lab. No.1 Measurement Room	
Date	December 5, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 48 % RH	21 deg. C / 39 % RH
Engineer	Yosuke Ishikawa	Kazutaka Takeyama
Mode	Tx	

11a

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5745	17329.1	-
	5785	17245.0	-
	5805	17375.3	-

11n-20/11ac-20 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5745	18380.7	-
	5785	18474.6	-
	5805	18443.6	-

11n-20/11ac-20 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5745	18306.4	-
	5785	18438.6	-
	5805	18378.6	-

11n-40/11ac-40 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5755	36567.4	-
	5795	36590.9	-

11n-40/11ac-40 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5755	36550.4	-
	5795	36572.8	-

99 % Occupied Bandwidth

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 7, 2018
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

11ac-80 (SISO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5775	76337.1	-

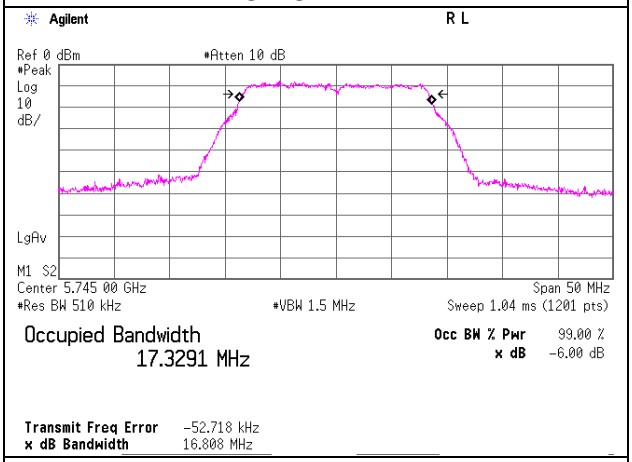
11ac-80 (MIMO)

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]	Limit [MHz]
Antenna 1	5775	76308.3	-

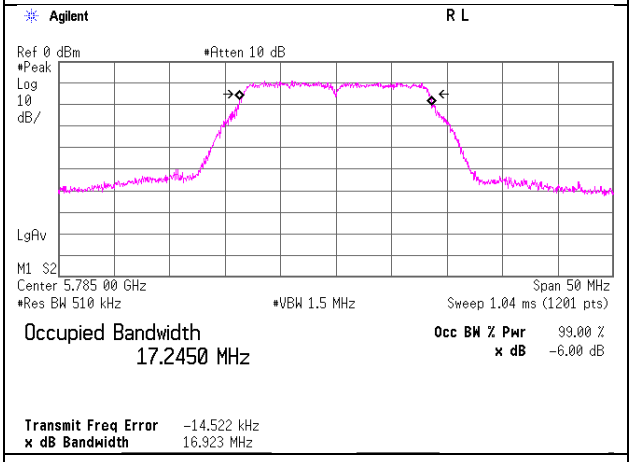
99 % Occupied Bandwidth

11a

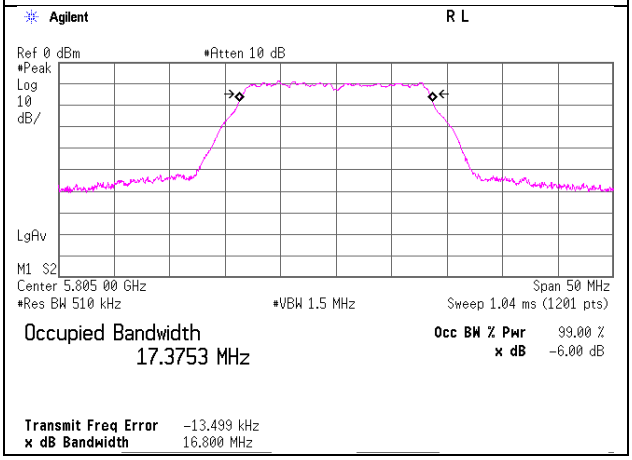
5745 MHz



5785 MHz



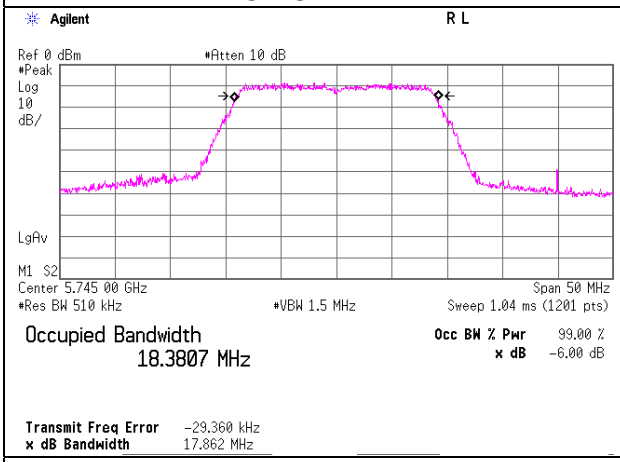
5805 MHz



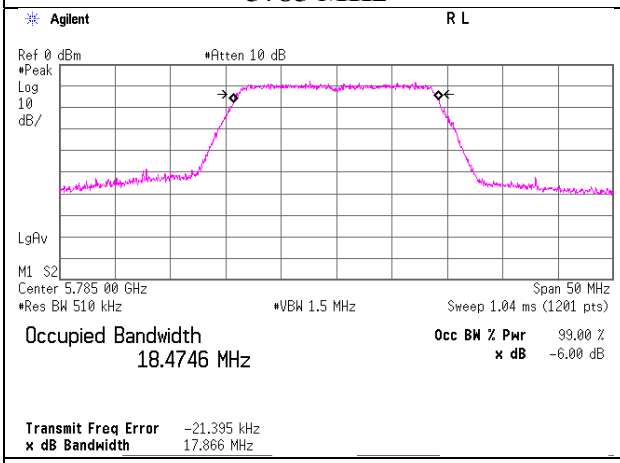
99 % Occupied Bandwidth

11n-20/11ac-20 (SISO)

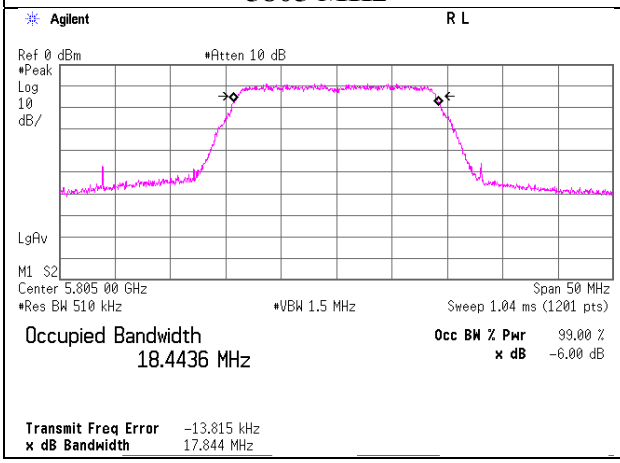
5745 MHz



5785 MHz

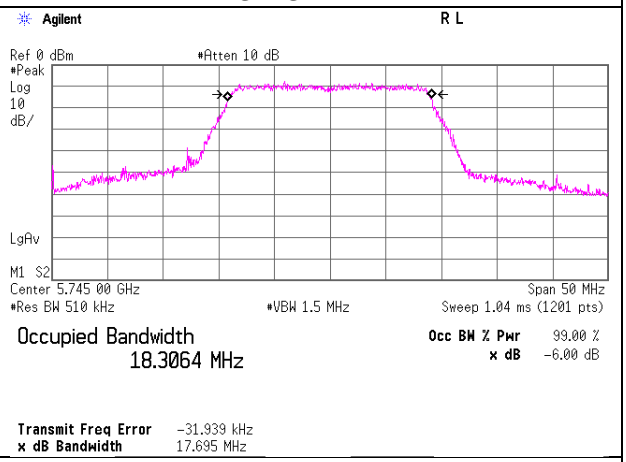


5805 MHz

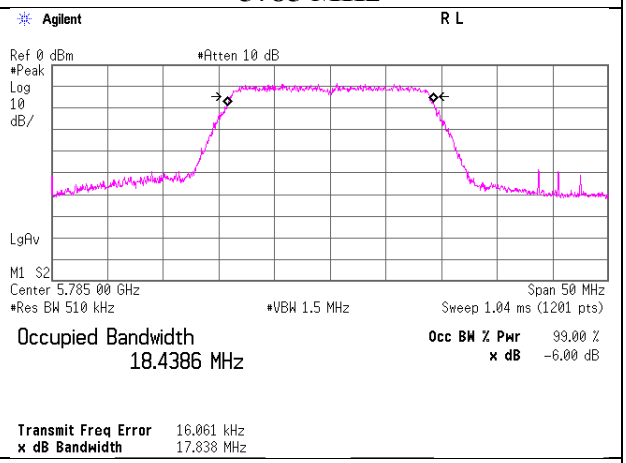


11n-20/11ac-20 (MIMO)

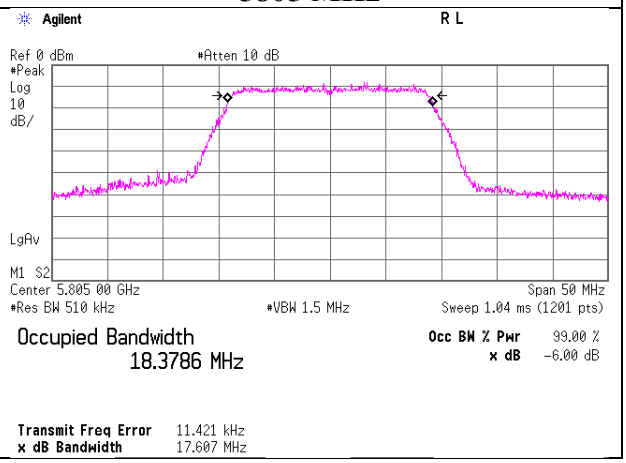
5745 MHz



5785 MHz



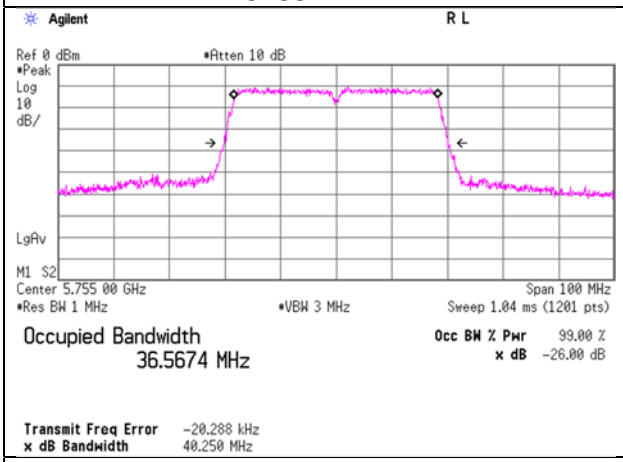
5805 MHz



99 % Occupied Bandwidth

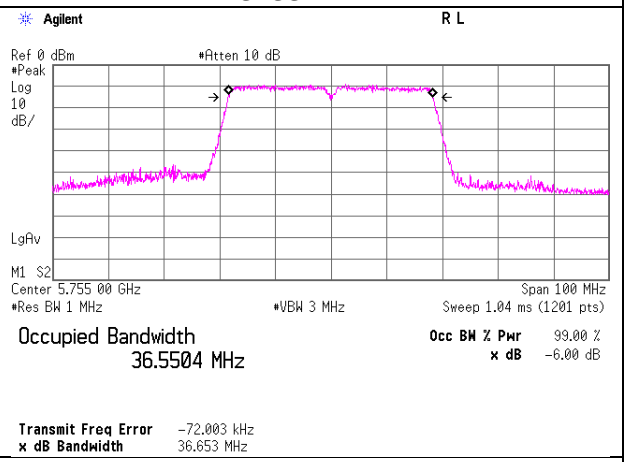
11n-40/11ac-40 (SISO)

5755 MHz

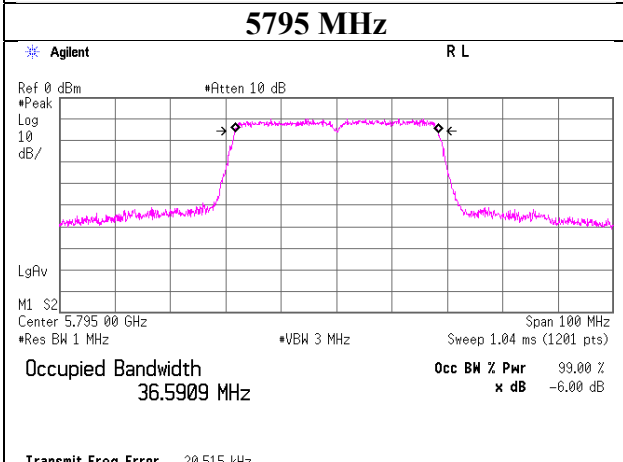


11n-40/11ac-40 (MIMO)

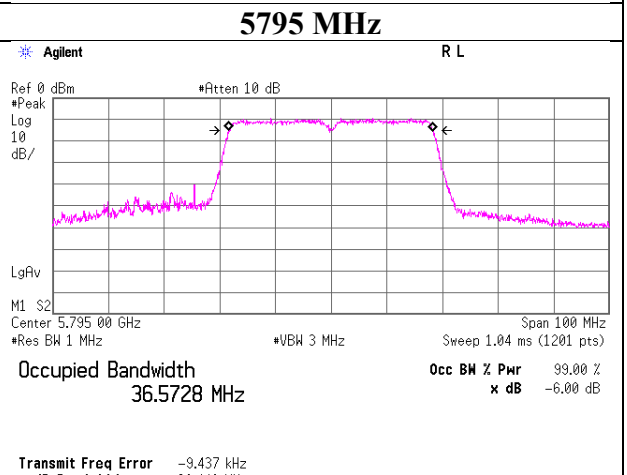
5755 MHz



5795 MHz

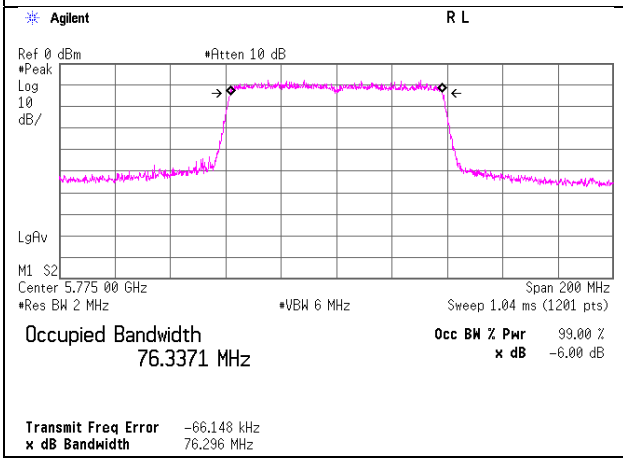


5795 MHz



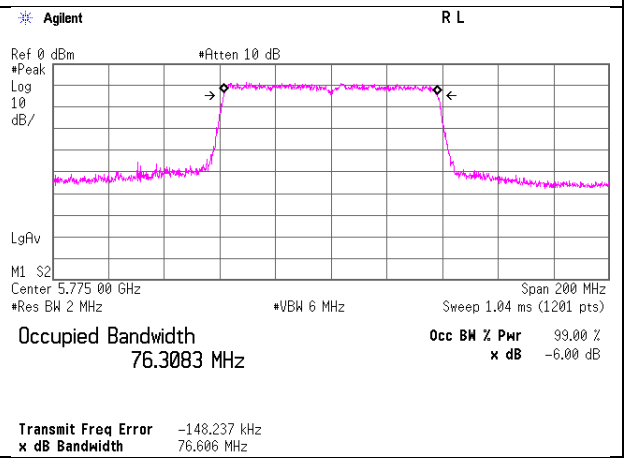
11ac-80 (SISO)

5775 MHz



11ac-80 (MIMO)

5775 MHz



6 dB Bandwidth

Report No.	12622648S-D-R2	
Test place	Shonan EMC Lab. No.1 Measurement Room	
Date	December 5, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 48 % RH	21 deg. C / 39 % RH
Engineer	Yosuke Ishikawa	Kazutaka Takeyama
Mode	Tx	

11a

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5745	16.460	> 0.500
	5785	16.469	> 0.500
	5805	16.449	> 0.500

11n-20/11ac-20 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5745	17.668	> 0.500
	5785	17.723	> 0.500
	5805	17.684	> 0.500

11n-20/11ac-20 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5745	17.693	> 0.500
	5785	17.700	> 0.500
	5805	17.608	> 0.500

11n-40/11ac-40 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5755	36.459	> 0.500
	5795	36.458	> 0.500

11n-40/11ac-40 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5755	36.426	> 0.500
	5795	36.422	> 0.500

6 dB Bandwidth

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 7, 2018
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

11ac-80 (SISO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5775	76.368	> 0.500

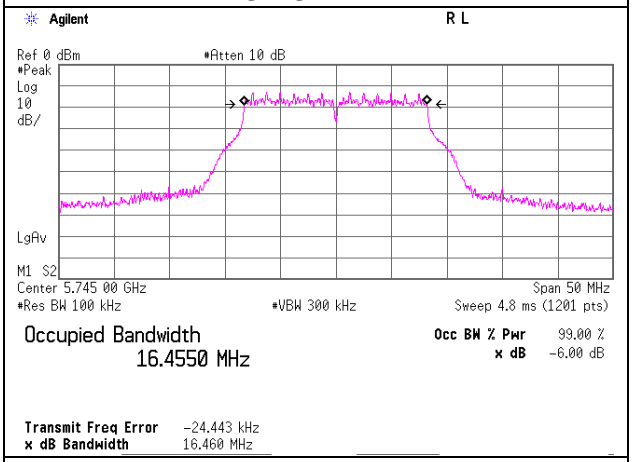
11ac-80 (MIMO)

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 1	5775	76.252	> 0.500

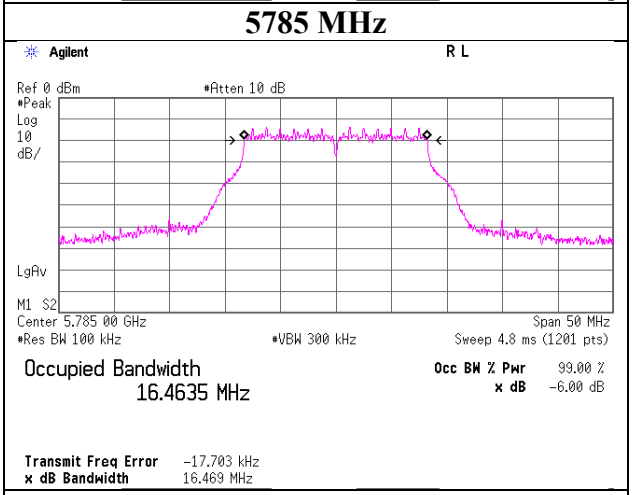
6 dB Bandwidth

11a

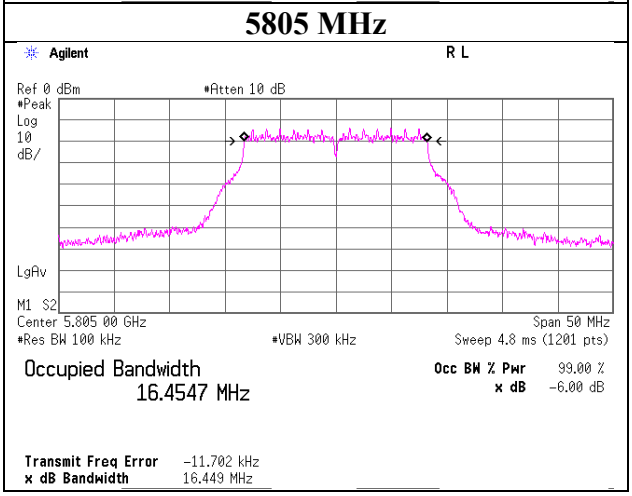
5745 MHz



5785 MHz



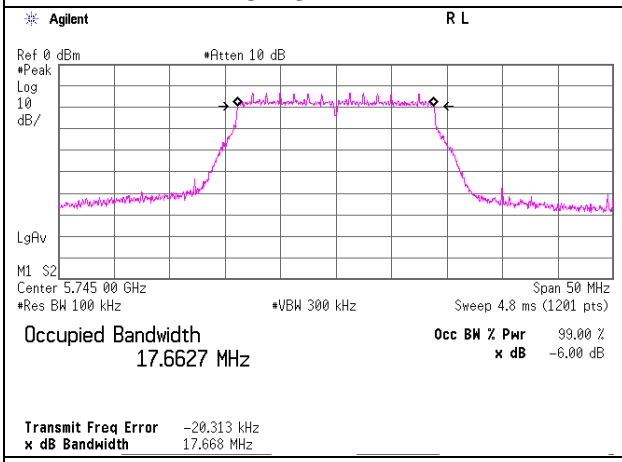
5805 MHz



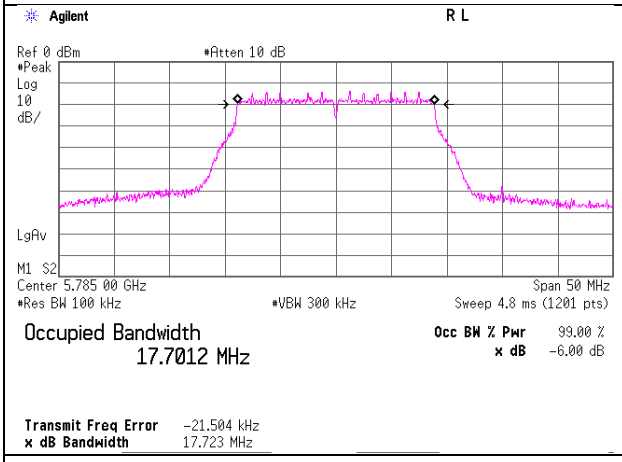
6 dB Bandwidth

11n-20/11ac-20 (SISO)

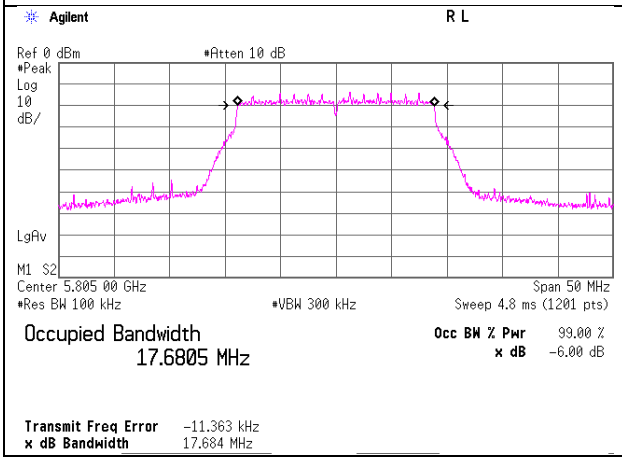
5745 MHz



5785 MHz

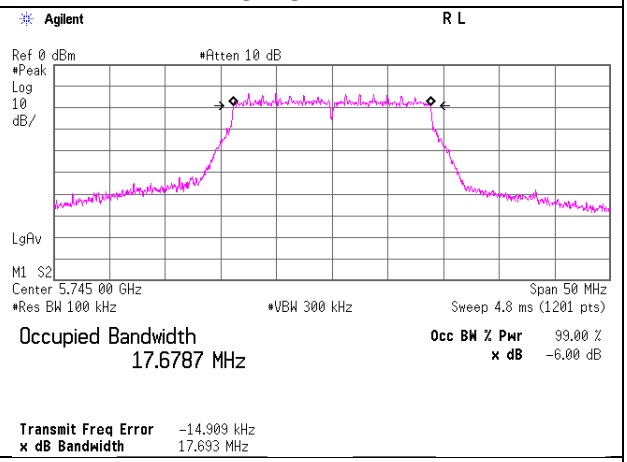


5805 MHz

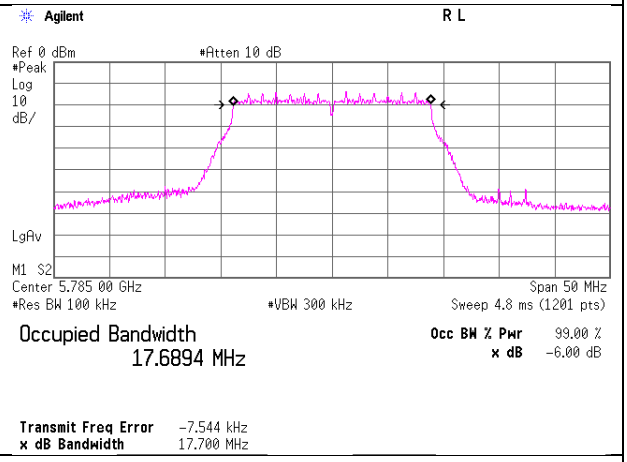


11n-20/11ac-20 (MIMO)

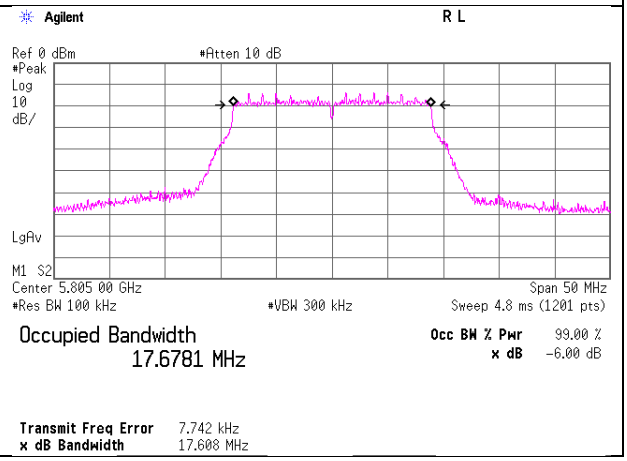
5745 MHz



5785 MHz



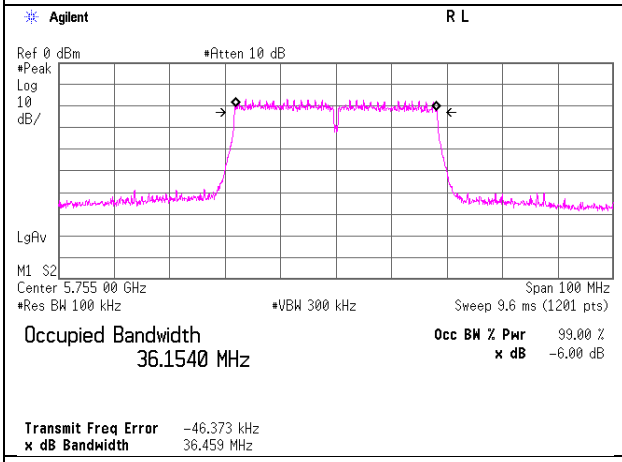
5805 MHz



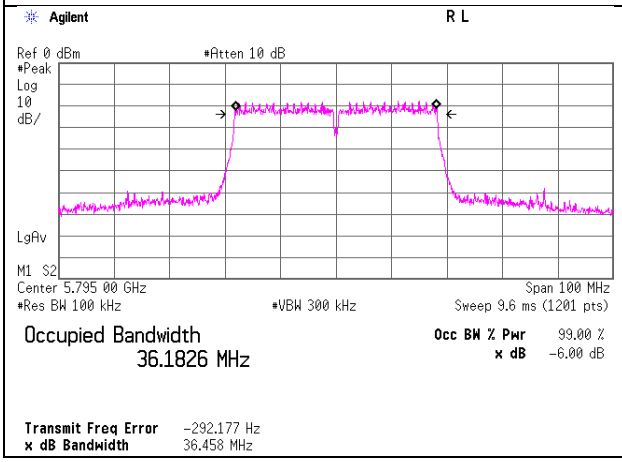
6 dB Bandwidth

11n-40/11ac-40 (SISO)

5755 MHz

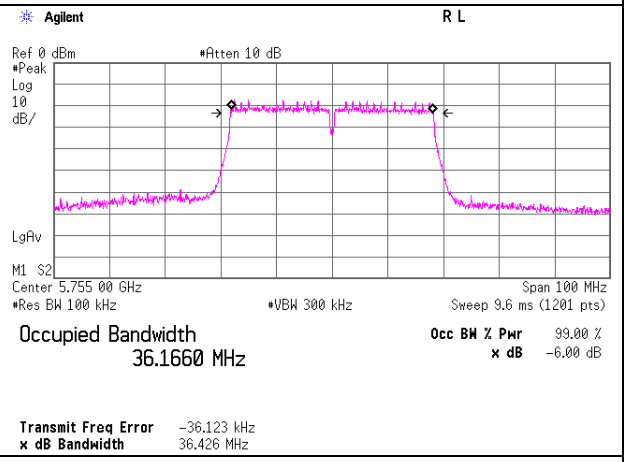


5795 MHz

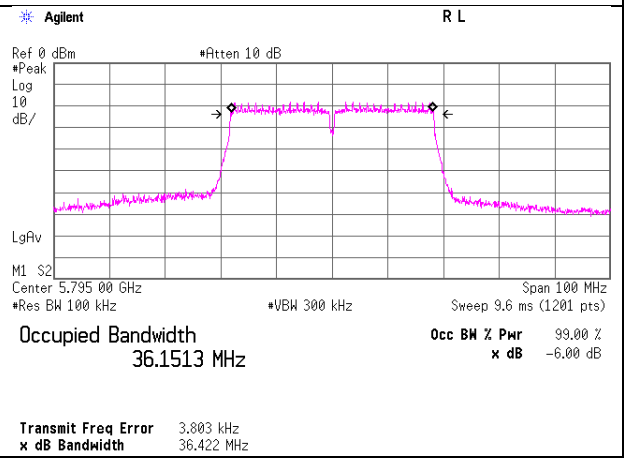


11n-40/11ac-40 (MIMO)

5755 MHz



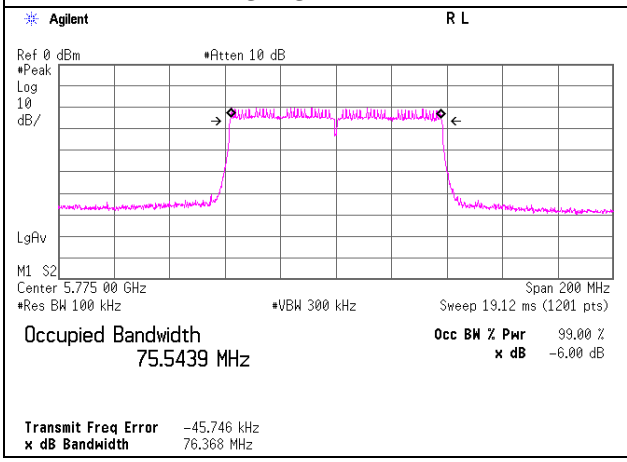
5795 MHz



6 dB Bandwidth

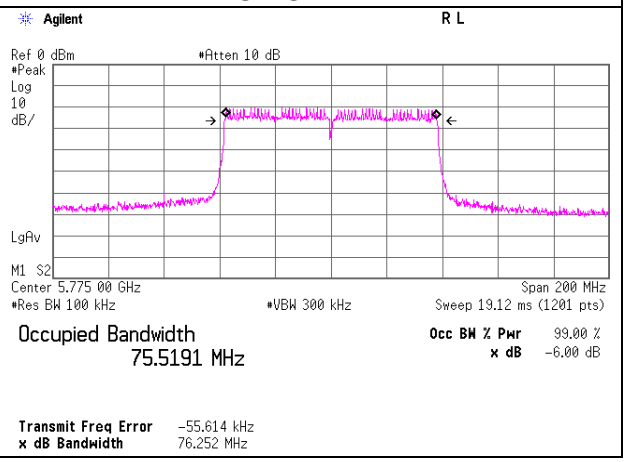
11n-80/11ac-80 (SISO)

5775 MHz



11n-80/11ac-80 (MIMO)

5775 MHz



Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx

Applied limit: 15.407, mobile and portable client device

Mode	Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted Power Result		Limit	Margin	e.i.r.p. Result		Limit	Margin
	[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
11a	5745	-4.73	3.18	9.84	1.69	-4.2	-	17.329	9.98	9.95	30.00	20.02	5.78	3.78	36.00	30.22
	5785	-4.81	3.20	9.84	1.69	-4.2	-	17.245	9.92	9.82	30.00	20.08	5.72	3.73	36.00	30.28
	5805	-4.89	3.21	9.84	1.69	-4.2	-	17.375	9.85	9.66	30.00	20.15	5.65	3.67	36.00	30.35
11n-20	5745	-3.55	3.18	9.84	0.59	-4.2	-	18.381	10.06	10.13	30.00	19.94	5.86	3.85	36.00	30.14
11ac-20	5785	-3.71	3.20	9.84	0.59	-4.2	-	18.475	9.92	9.81	30.00	20.08	5.72	3.73	36.00	30.28
(SISO)	5805	-3.75	3.21	9.84	0.59	-4.2	-	18.444	9.89	9.74	30.00	20.11	5.69	3.70	36.00	30.31
11n-40	5755	-6.67	3.18	9.84	2.63	-4.2	-	36.567	8.98	7.91	30.00	21.02	4.78	3.01	36.00	31.22
11ac-40 (SISO)	5795	-7.17	3.20	9.84	2.63	-4.2	-	36.591	8.50	7.08	30.00	21.50	4.30	2.69	36.00	31.70
11ac-80 (SISO)	5775	-5.34	3.19	9.84	1.02	-4.2	-	76.337	8.71	7.43	30.00	21.29	4.51	2.82	36.00	31.49

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Antenna Gain
Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 3, 2018
Temperature / Humidity	21 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
Mode	Tx

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Mode	Tested Frequency	26 dB EBW (B for FCC)	99% OBW (B for IC)	Conducted power						e.i.r.p.					
				Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
				1	2	Sum				1	2	Sum			
	[MHz]	[MHz]	[MHz]	[mW]	[mW]	[mW]	[dBm]	[dBm]	[dB]	[mW]	[mW]	[mW]	[dBm]	[dBm]	[dB]
11n-20	5745	-	18.306	8.93	11.19	20.13	13.04	30.00	16.96	4.69	4.26	8.94	9.52	36.00	26.48
11ac-20	5785	-	18.439	7.67	9.75	17.42	12.41	30.00	17.59	4.03	3.71	7.73	8.88	36.00	27.12
(MIMO)	5805	-	18.379	7.48	9.57	17.05	12.32	30.00	17.68	3.93	3.64	7.57	8.79	36.00	27.21
11n-40 11ac-40	5755	-	36.550	7.19	8.00	15.19	11.82	30.00	18.18	3.78	3.04	6.82	8.34	36.00	27.66
(MIMO)	5795	-	36.573	5.83	6.85	12.69	11.03	30.00	18.97	3.06	2.61	5.67	7.53	36.00	28.47
11ac-80 (MIMO)	5775	-	76.308	6.30	7.66	13.95	11.45	30.00	18.55	3.30	2.91	6.21	7.93	36.00	28.07

Mode	Tested Frequency	Duty Factor	**Antenna 0** Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result		**Antenna 1** Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	
							Cond. Power	e.i.r.p.					Cond. Power	e.i.r.p.
	[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[dBm]
11n-20	5745	0.54	-4.05	3.18	9.84	-2.80	9.51	6.71	-3.07	3.18	9.84	-4.20	10.49	6.29
11ac-20	5785	0.54	-4.73	3.20	9.84	-2.80	8.85	6.05	-3.69	3.20	9.84	-4.20	9.89	5.69
(MIMO)	5805	0.54	-4.85	3.21	9.84	-2.80	8.74	5.94	-3.78	3.21	9.84	-4.20	9.81	5.61
11n-40	5755	0.59	-5.04	3.18	9.84	-2.80	8.57	5.77	-4.58	3.18	9.84	-4.20	9.03	4.83
11ac-40 (MIMO)	5795	0.59	-5.97	3.20	9.84	-2.80	7.66	4.86	-5.27	3.20	9.84	-4.20	8.36	4.16
11ac-80 (MIMO)	5775	2.24	-7.28	3.19	9.84	-2.80	7.99	5.19	-6.43	3.19	9.84	-4.20	8.84	4.64

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor
e.i.r.p. Result = Conducted Power Result + Antenna Gain
Conducted Power Limit (5725 MHz-5850 MHz) = 1W

The conducted power limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx 11a

5785 MHz

Mode	Rate Mbps	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	6	-4.24	0.26	-3.98	
	9	-4.37	0.43	-3.94	
	12	-4.90	0.56	-4.34	
	18	-5.14	0.72	-4.42	
	24	-5.31	0.92	-4.39	
	36	-5.57	1.41	-4.16	
	48	-5.71	1.69	-4.02	
	54	-5.88	1.83	-4.05	
Antenna 1	6	-3.57	0.26	-3.31	
	9	-4.06	0.43	-3.63	
	12	-4.23	0.56	-3.67	
	18	-4.51	0.72	-3.79	
	24	-4.39	0.92	-3.47	
	36	-4.56	1.41	-3.15	
	48	-4.81	1.69	-3.12	*
	54	-4.96	1.83	-3.13	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx 11n-20/11ac-20 (SISO)

5785 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-4.22	0.28	-3.94	
	1	-4.47	0.59	-3.88	
	2	-4.70	0.75	-3.95	
	3	-4.93	0.95	-3.98	
	4	-5.67	1.41	-4.26	
	5	-5.70	1.55	-4.15	
	6	-5.83	1.82	-4.01	
	7	-5.98	1.92	-4.06	
	8	-7.12	2.12	-5.00	
Antenna 1	0	-3.43	0.28	-3.15	
	1	-3.71	0.59	-3.12	*
	2	-3.88	0.75	-3.13	
	3	-4.49	0.95	-3.54	
	4	-4.69	1.41	-3.28	
	5	-4.93	1.55	-3.38	
	6	-5.08	1.82	-3.26	
	7	-5.14	1.92	-3.22	
	8	-6.30	2.12	-4.18	

* Worst rate

MCS8 is only 11ac-20.

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx 11n-40/11ac-40 (SISO)

5755 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-5.09	0.55	-4.54	
	1	-5.47	0.97	-4.50	
	2	-5.78	1.46	-4.32	
	3	-5.94	1.76	-4.18	
	4	-6.84	2.22	-4.62	
	5	-7.18	2.63	-4.55	
	6	-7.31	2.71	-4.60	
	7	-7.42	2.88	-4.54	
	8	-7.53	2.96	-4.57	
	9	-8.89	3.13	-5.76	
Antenna 1	0	-4.69	0.55	-4.14	
	1	-5.45	0.97	-4.48	
	2	-5.62	1.46	-4.16	
	3	-5.98	1.76	-4.22	
	4	-6.35	2.22	-4.13	
	5	-6.67	2.63	-4.04	*
	6	-6.76	2.71	-4.05	
	7	-6.95	2.88	-4.07	
	8	-7.48	2.96	-4.52	
	9	-8.36	3.13	-5.23	

* Worst rate

MCS8 and MCS9 is only 11ac-40.

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx 11ac-80 (SISO)

5775 MHz

Mode	MCS Number	Reading (timed average) [dBm]	Duty factor [dB]	Burst power [dBm]	Remarks
Antenna 0	0	-5.78	1.02	-4.76	
	1	-6.92	1.84	-5.08	
	2	-7.24	2.34	-4.90	
	3	-7.56	2.63	-4.93	
	4	-7.88	2.79	-5.09	
	5	-8.12	3.35	-4.77	
	6	-8.23	3.45	-4.78	
	7	-8.29	3.55	-4.74	
	8	-9.77	3.69	-6.08	
	9	-10.75	3.87	-6.88	
Antenna 1	0	-5.34	1.02	-4.32	*
	1	-6.28	1.84	-4.44	
	2	-6.78	2.34	-4.44	
	3	-7.03	2.63	-4.40	
	4	-7.51	2.79	-4.72	
	5	-7.87	3.35	-4.52	
	6	-7.81	3.45	-4.36	
	7	-7.88	3.55	-4.33	
	8	-9.19	3.69	-5.50	
	9	-10.11	3.87	-6.24	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 3, 2018
Temperature / Humidity	21 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 11n-20/11ac-20 (MIMO)

5785 MHz

MCS Number	Reading (timed average) Antenna						Duty factor	Burst power Antenna			Remarks
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]	[dB]	0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-4.50	-3.54	0.35	0.44	0.80	-0.98	0.30	-	-	-0.68	
1	-4.73	-3.69	0.34	0.43	0.76	-1.17	0.54	-	-	-0.63	*
2	-5.06	-4.00	0.31	0.40	0.71	-1.49	0.80	-	-	-0.69	
3	-5.40	-4.33	0.29	0.37	0.66	-1.82	1.02	-	-	-0.80	
4	-5.64	-4.82	0.27	0.33	0.60	-2.20	1.38	-	-	-0.82	
5	-5.98	-5.07	0.25	0.31	0.56	-2.49	1.66	-	-	-0.83	
6	-6.03	-5.11	0.25	0.31	0.56	-2.54	1.82	-	-	-0.72	
7	-6.48	-5.20	0.22	0.30	0.53	-2.78	1.94	-	-	-0.84	
8	-6.52	-6.53	0.22	0.22	0.45	-3.51	2.08	-	-	-1.43	

* Worst rate

MCS8 is 11ac-20 only.

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 3, 2018
Temperature / Humidity	21 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 11n-40/11ac-40 (MIMO)

5755 MHz

MCS Number	Reading (timed average) Antenna						Duty factor	Burst power Antenna			Remarks
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]	[dB]	0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-5.04	-4.58	0.31	0.35	0.66	-1.79	0.59	-	-	-1.20	*
1	-5.76	-5.36	0.27	0.29	0.56	-2.55	1.04	-	-	-1.51	
2	-6.34	-5.81	0.23	0.26	0.49	-3.06	1.41	-	-	-1.65	
3	-6.32	-5.67	0.23	0.27	0.50	-2.97	1.69	-	-	-1.28	
4	-6.89	-6.41	0.20	0.23	0.43	-3.63	2.21	-	-	-1.42	
5	-7.42	-7.07	0.18	0.20	0.38	-4.23	2.60	-	-	-1.63	
6	-7.56	-6.84	0.18	0.21	0.38	-4.17	2.71	-	-	-1.46	
7	-7.67	-7.29	0.17	0.19	0.36	-4.47	2.86	-	-	-1.61	
8	-7.84	-7.13	0.16	0.19	0.36	-4.46	2.91	-	-	-1.55	
9	-8.93	-8.30	0.13	0.15	0.28	-5.59	3.09	-	-	-2.50	

* Worst rate

MCS8 and MCS9 is 11ac-40 only.

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Maximum Conducted Output Power

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 3, 2018
Temperature / Humidity	21 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
Mode	Tx 11ac-80 (MIMO)

5775 MHz

MCS Number	Reading (timed average) Antenna						Duty factor	Burst power Antenna			Remarks
	0 [dBm]	1 [dBm]	0 [mW]	1 [mW]	0+1 [mW]	0+1 [dBm]	[dB]	0 [dBm]	1 [dBm]	0+1 [dBm]	
0	-6.14	-5.47	0.24	0.28	0.53	-2.78	1.10	-	-	-1.68	
1	-6.89	-6.09	0.20	0.25	0.45	-3.46	1.72	-	-	-1.74	
2	-7.28	-6.43	0.19	0.23	0.41	-3.82	2.24	-	-	-1.58	*
3	-7.65	-6.85	0.17	0.21	0.38	-4.22	2.55	-	-	-1.67	
4	-7.99	-7.41	0.16	0.18	0.34	-4.68	3.02	-	-	-1.66	
5	-8.50	-7.63	0.14	0.17	0.31	-5.03	3.34	-	-	-1.69	
6	-8.59	-7.70	0.14	0.17	0.31	-5.11	3.43	-	-	-1.68	
7	-8.80	-8.01	0.13	0.16	0.29	-5.38	3.57	-	-	-1.81	
8	-9.91	-8.90	0.10	0.13	0.23	-6.37	3.70	-	-	-2.67	
9	-10.81	-9.80	0.08	0.10	0.19	-7.27	3.86	-	-	-3.41	

* Worst rate

Sample Calculation:

Burst power = Reading (timed average) + Duty factor

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

Average Output Power
(Reference data for RF Exposure)

Report No.	12622648S-D-R2	
Test place	Shonan EMC Lab.	
	No.5 Shielded Room	No.1 Measurement Room
Date	November 30, 2018	December 3, 2018
Temperature / Humidity	25 deg. C / 40 % RH	21 deg. C / 40 % RH
Engineer	Kazuya Noda	Yosuke Ishikawa
Mode	Tx	

Antenna 1

Mode	Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Result (Timed average)		Duty factor	Result (Burst power average)	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
11a	5745	-4.73	3.18	9.84	8.29	6.75	1.69	9.98	9.95
	5785	-4.81	3.20	9.84	8.23	6.65	1.69	9.92	9.82
	5805	-4.89	3.21	9.84	8.16	6.55	1.69	9.85	9.66
11n-20	5745	-3.55	3.18	9.84	9.47	8.85	0.59	10.06	10.14
11ac-20	5785	-3.71	3.20	9.84	9.33	8.57	0.59	9.92	9.82
(SISO)	5805	-3.75	3.21	9.84	9.30	8.51	0.59	9.89	9.75
11n-40	5755	-6.67	3.18	9.84	6.35	4.32	2.63	8.98	7.91
11ac-40 (SISO)	5795	-7.17	3.20	9.84	5.87	3.86	2.63	8.50	7.08
11ac-80 (SISO)	5775	-5.34	3.19	9.84	7.69	5.87	1.02	8.71	7.43

Sample Calculation:
Result (Timed average) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
Result (Burst power average) = Time average + Duty factor

		Antenna 0				Antenna 1				Antenna 0+1						
Mode	Tested Frequency	Power Meter Reading	Cable Loss	Atten. Loss	Result (Timed average)	Power Meter Reading	Cable Loss	Atten. Loss	Result (Timed average)	Result (Timed average) Antenna 1	Antenna 2	Sum 1+2		Duty factor	Result(Burst power average) Sum 1+2	
	[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[mW]	[mW]	[dBm]	[dB]	[mW]	[dBm]
11n-20	5745	-4.05	3.18	9.84	8.97	-3.07	3.18	9.84	9.95	7.89	9.89	17.77	12.50	0.54	20.13	13.04
11ac-20	5785	-4.73	3.20	9.84	8.31	-3.69	3.20	9.84	9.35	6.78	8.61	15.39	11.87	0.54	17.42	12.41
(MIMO)	5805	-4.85	3.21	9.84	8.20	-3.78	3.21	9.84	9.27	6.61	8.45	15.06	11.78	0.54	17.05	12.32
11n-40	5755	-5.04	3.18	9.84	7.98	-4.58	3.18	9.84	8.44	6.28	6.98	13.26	11.23	0.59	15.19	11.82
11ac-40 (MIMO)	5795	-5.97	3.20	9.84	7.07	-5.27	3.20	9.84	7.77	5.09	5.98	11.08	10.44	0.59	12.69	11.03
11ac-80 (MIMO)	5775	-7.28	3.19	9.84	5.75	-6.43	3.19	9.84	6.60	3.76	4.57	8.33	9.21	2.24	13.95	11.45

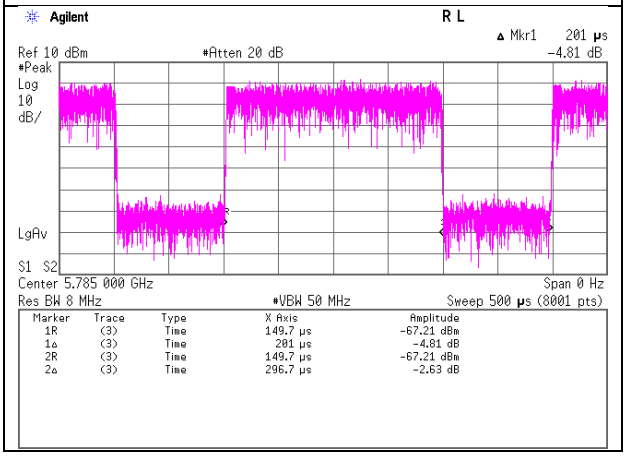
Sample Calculation:
Result (Timed average) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
Result (Burst power average) = Time average + Duty factor

Burst rate confirmation

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx

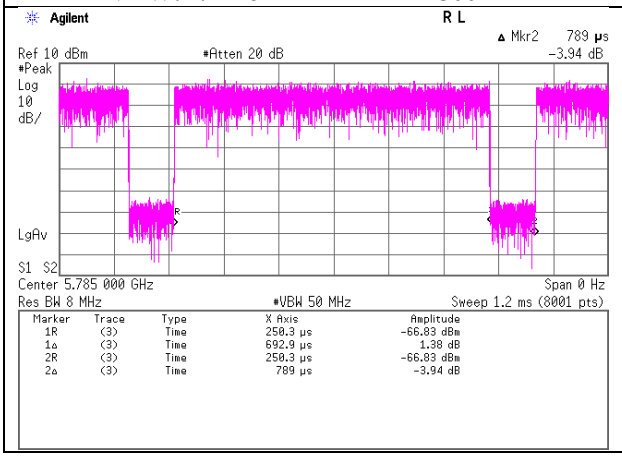
11a 48 Mbps

Tx on / (Tx on + Tx off) = 0.677
Tx on / (Tx on + Tx off) * 100 = 67.7 %
Duty factor = 10 * log (0.297 / 0.201) = 1.69 dB
VBW: 1/Tx on = 4976 Hz < 5100 Hz



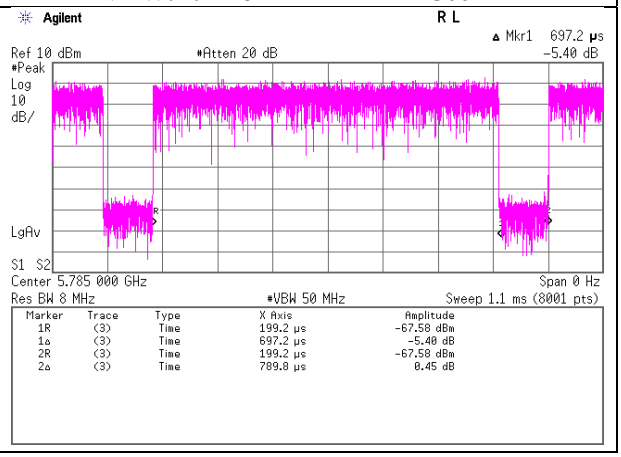
11n-20/11ac-20 (SISO) MCS 1

Tx on / (Tx on + Tx off) = 0.873
Tx on / (Tx on + Tx off) * 100 = 87.3 %
Duty factor = 10 * log (0.79 / 0.69) = 0.59 dB
VBW: 1/Tx on = 1444 Hz < 1500 Hz



11n-20/11ac-20 (MIMO) MCS 1

Tx on / (Tx on + Tx off) = 0.886
Tx on / (Tx on + Tx off) * 100 = 88.6 %
Duty factor = 10 * log (0.79 / 0.7) = 0.54 dB
VBW: 1/Tx on = 1444 Hz < 1500 Hz



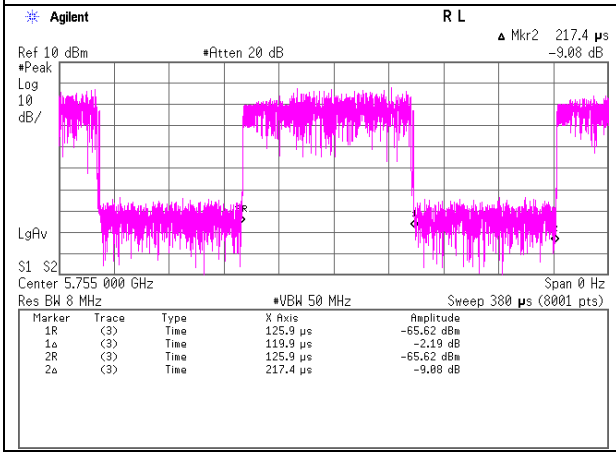
Burst rate confirmation

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	November 30, 2018
Temperature / Humidity	25 deg. C / 40 % RH
Engineer	Kazuya Noda
Mode	Tx

11n-40/11ac-40 (SISO) MCS 5

Tx on / (Tx on + Tx off) =	0.545
Tx on / (Tx on + Tx off) * 100 =	54.5 %
Duty factor = 10 * log (0.22 / 0.12) =	2.63 dB

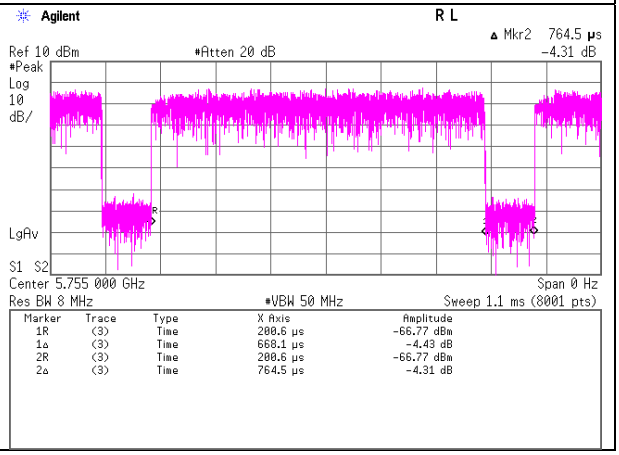
VBW: 1/Tx on = 8341 Hz < 9100 Hz



11n-40/11ac-40 (MIMO) MCS 0

Tx on / (Tx on + Tx off) =	0.882
Tx on / (Tx on + Tx off) * 100 =	88.2 %
Duty factor = 10 * log (0.76 / 0.67) =	0.59 dB

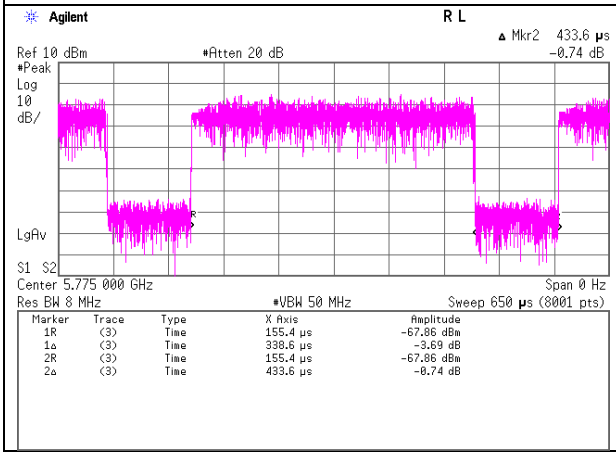
VBW: 1/Tx on = 1497 Hz < 1500 Hz



11ac-80 (SISO) MCS 0

Tx on / (Tx on + Tx off) =	0.791
Tx on / (Tx on + Tx off) * 100 =	79.1 %
Duty factor = 10 * log (0.43 / 0.34) =	1.02 dB

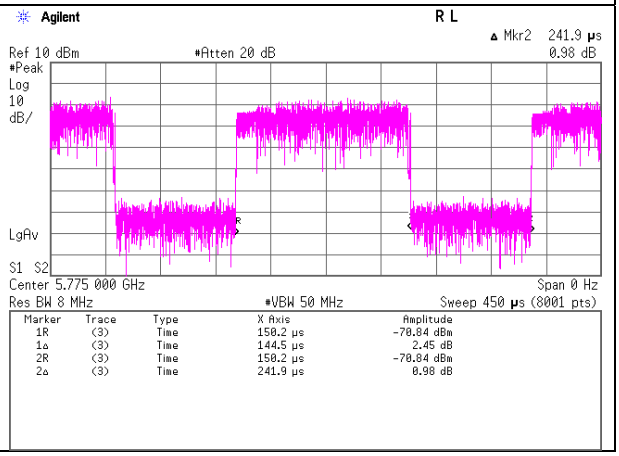
VBW: 1/Tx on = 2954 Hz < 3000 Hz



11ac-80 (MIMO) MCS 2

Tx on / (Tx on + Tx off) =	0.583
Tx on / (Tx on + Tx off) * 100 =	58.3 %
Duty factor = 10 * log (0.24 / 0.14) =	2.24 dB

VBW: 1/Tx on = 6921 Hz < 7500 Hz



Maximum Power Spectral Density

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 48 % RH
Engineer	Yosuke Ishikawa
Mode	Tx

11a Antenna 1 Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted) Result [dBm /MHz]	PSD (Conducted) Limit [dBm /MHz]	PSD (Conducted) Margin [dB]	PSD (e.i.r.p.) Result [dBm /MHz]	PSD (e.i.r.p.) Limit [dBm /MHz]	PSD (e.i.r.p.) Margin [dB]
5745	-22.63	3.18	9.84	1.69	-4.2	6.99	-0.93	30.00	30.93	-5.13	36.00	41.13
5785	-22.89	3.20	9.84	1.69	-4.2	6.99	-1.17	30.00	31.17	-5.37	36.00	41.37
5805	-22.72	3.21	9.84	1.69	-4.2	6.99	-0.99	30.00	30.99	-5.19	36.00	41.19

Sample Calculation:
PSD: Power Spectral Density
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

11n-20/11ac-20 (SISO) Antenna 1 Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted) Result [dBm /MHz]	PSD (Conducted) Limit [dBm /MHz]	PSD (Conducted) Margin [dB]	PSD (e.i.r.p.) Result [dBm /MHz]	PSD (e.i.r.p.) Limit [dBm /MHz]	PSD (e.i.r.p.) Margin [dB]
5745	-22.80	3.18	9.84	0.59	-4.2	6.99	-2.20	30.00	32.20	-6.40	36.00	42.40
5785	-23.15	3.20	9.84	0.59	-4.2	6.99	-2.53	30.00	32.53	-6.73	36.00	42.73
5805	-22.77	3.21	9.84	0.59	-4.2	6.99	-2.14	30.00	32.14	-6.34	36.00	42.34

Sample Calculation:
PSD: Power Spectral Density
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

Maximum Power Spectral Density

Report No.	12622648S-D-R2	
Test place	Shonan EMC Lab. No.1 Measurement Room	
Date	December 6, 2018	December 7, 2018
Temperature / Humidity	21 deg. C / 39 % RH	22 deg. C / 37 % RH
Engineer	Kazutaka Takeyama	Kazutaka Takeyama
Mode	Tx	

11n-40/11ac-40 (SISO) Antenna 1 Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted) Result [dBm /MHz]	PSD (Conducted) Limit [dBm /MHz]	PSD (Conducted) Margin [dB]	PSD (e.i.r.p.) Result [dBm /MHz]	PSD (e.i.r.p.) Limit [dBm /MHz]	PSD (e.i.r.p.) Margin [dB]
5755	-26.74	3.18	9.84	2.63	-4.2	6.99	-4.10	30.00	34.10	-8.30	36.00	44.30
5795	-27.28	3.20	9.84	2.63	-4.2	6.99	-4.62	30.00	34.62	-8.82	36.00	44.82

Sample Calculation:
PSD: Power Spectral Density
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

11ac-80 (SISO) Antenna 1 Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	PSD Reading [dBm /MHz]	Cable Loss [dB]	Atten. Loss [dB]	Duty Factor [dB]	Antenna Gain [dBi]	RBW Correction Factor [dB]	PSD (Conducted) Result [dBm /MHz]	PSD (Conducted) Limit [dBm /MHz]	PSD (Conducted) Margin [dB]	PSD (e.i.r.p.) Result [dBm /MHz]	PSD (e.i.r.p.) Limit [dBm /MHz]	PSD (e.i.r.p.) Margin [dB]
5775	-30.67	3.19	9.84	1.02	-4.2	6.99	-9.63	30.00	39.63	-13.83	36.00	49.83

Sample Calculation:
PSD: Power Spectral Density
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain

Maximum Power Spectral Density

Report No.	12622648S-D-R2		
Test place	Shonan EMC Lab. No.1 Measurement Room		
Date	December 5, 2018	December 6, 2018	December 7, 2018
Temperature / Humidity	25 deg. C / 48 % RH	21 deg. C / 39 % RH	22 deg. C / 37 % RH
Engineer	Yosuke Ishikawa	Kazutaka Takeyama	Kazutaka Takeyama
Mode	Tx		

Antenna 0+1 Applied limit: 15.407, mobile and portable client device

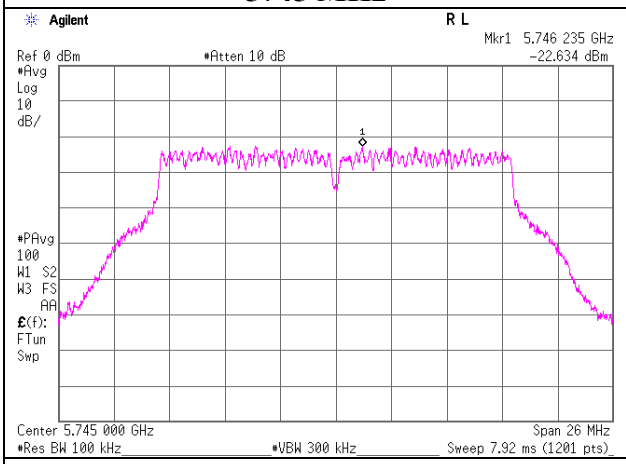
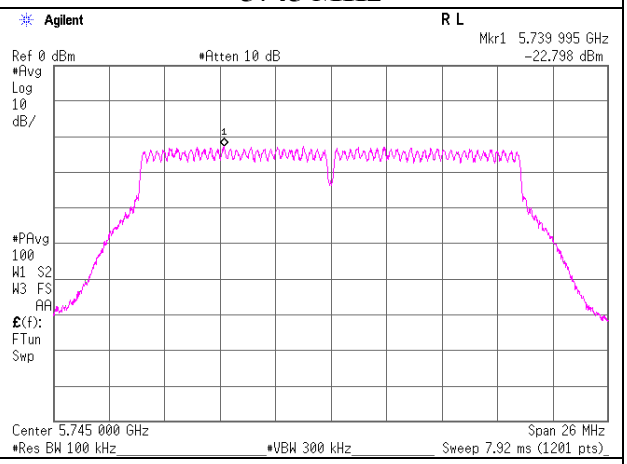
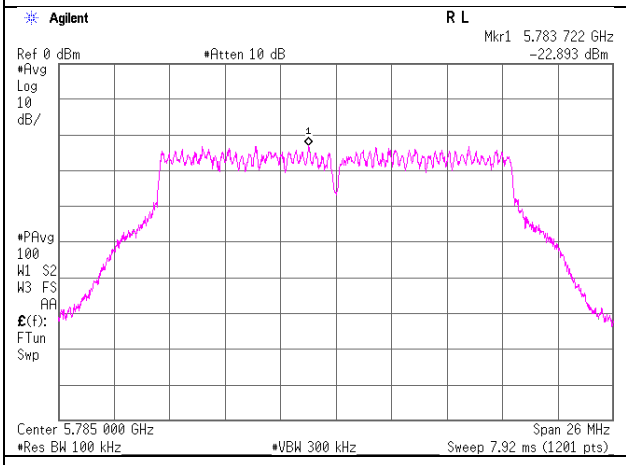
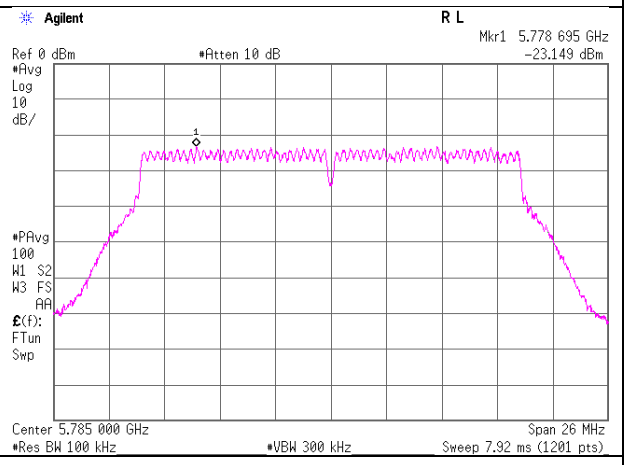
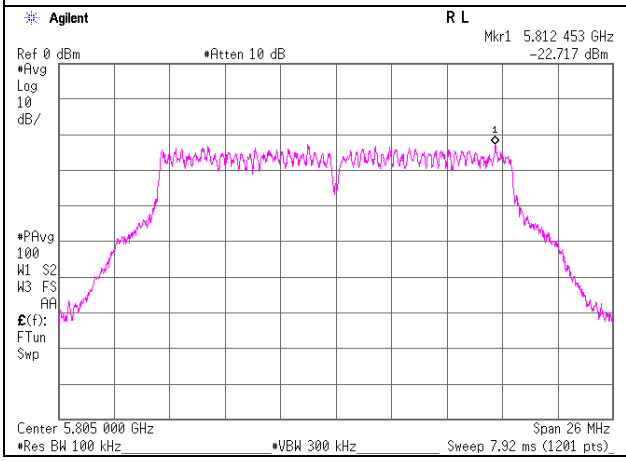
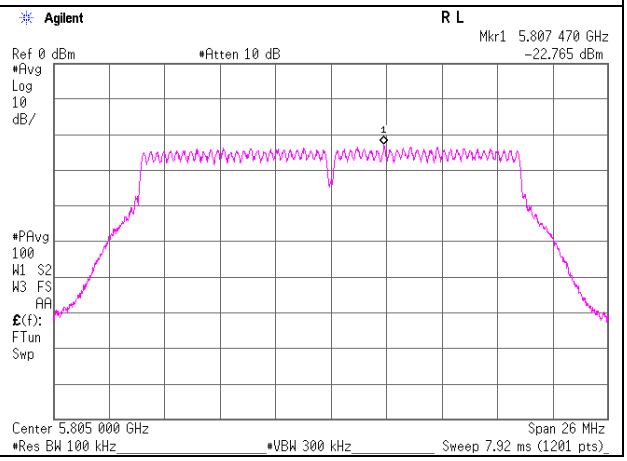
Mode	Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)					
		Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
		1	2	Sum				1	2	Sum			
	[MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
11n-20	5745	0.53	0.66	1.18	0.73	30.00	29.27	0.28	0.25	0.53	-2.79	36.00	38.79
11ac-20	5785	0.42	0.55	0.97	-0.14	30.00	30.14	0.22	0.21	0.43	-3.67	36.00	39.67
(MIMO)	5805	0.44	0.53	0.97	-0.15	30.00	30.15	0.23	0.20	0.43	-3.66	36.00	39.66
11n-40	5755	0.19	0.24	0.43	-3.69	30.00	33.69	0.10	0.09	0.19	-7.23	36.00	43.23
11ac-40 (MIMO)	5795	0.20	0.21	0.40	-3.96	30.00	33.96	0.10	0.08	0.18	-7.42	36.00	43.42
11ac-80 (MIMO)	5775	0.13	0.16	0.29	-5.43	30.00	35.43	0.07	0.06	0.13	-8.95	36.00	44.95

Mode	Tested Frequency	Duty Factor	RBW Correction Factor	**Antenna 0** PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		**Antenna 1** PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
								Cond.	e.i.r.p.					Cond.	e.i.r.p.
	[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
11n-20	5745	0.54	6.99	-23.33	3.18	9.84	-2.80	-2.78	-5.58	-22.38	3.18	9.84	-4.20	-1.83	-6.03
11ac-20	5785	0.54	6.99	-24.30	3.20	9.84	-2.80	-3.73	-6.53	-23.20	3.20	9.84	-4.20	-2.63	-6.83
(MIMO)	5805	0.54	6.99	-24.18	3.21	9.84	-2.80	-3.60	-6.40	-23.34	3.21	9.84	-4.20	-2.76	-6.96
11n-40	5755	0.59	6.99	-27.90	3.18	9.84	-2.80	-7.30	-10.10	-26.78	3.18	9.84	-4.20	-6.18	-10.38
11ac-40 (MIMO)	5795	0.59	6.99	-27.71	3.20	9.84	-2.80	-7.09	-9.89	-27.47	3.20	9.84	-4.20	-6.85	-11.05
11ac-80 (MIMO)	5775	2.24	6.99	-31.15	3.19	9.84	-2.80	-8.89	-11.69	-30.30	3.19	9.84	-4.20	-8.04	-12.24

Sample Calculation:
PSD: Power Spectral Density
The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.
RBW Correction Factor = 10 * log (Specified bandwidth / Measured bandwidth)
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor
PSD Result (e.i.r.p.) = Conducted PSD Result + Antenna Gain
The conducted PSD limit was reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. (All frequencies for FCC, 5725 MHz-5850 MHz for IC)

Maximum Power Spectral Density

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 48 % RH
Engineer	Yosuke Ishikawa
Mode	Tx

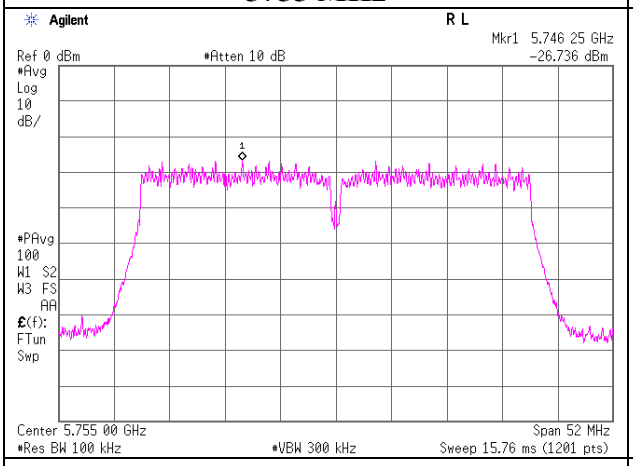
11a	11n-20/11ac-20 (SISO)
5745 MHz	**5745 MHz**
	
5785 MHz	**5785 MHz**
	
5805 MHz	**5805 MHz**
	

Maximum Power Spectral Density

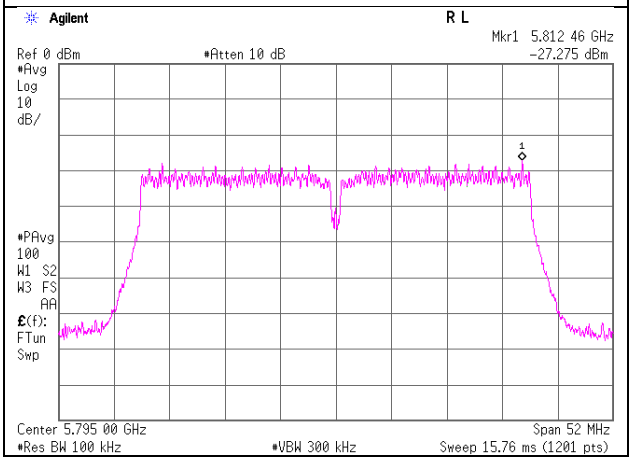
Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 6, 2018
Temperature / Humidity	21 deg. C / 39 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

11n-40/11ac-40 (SISO)

5755 MHz

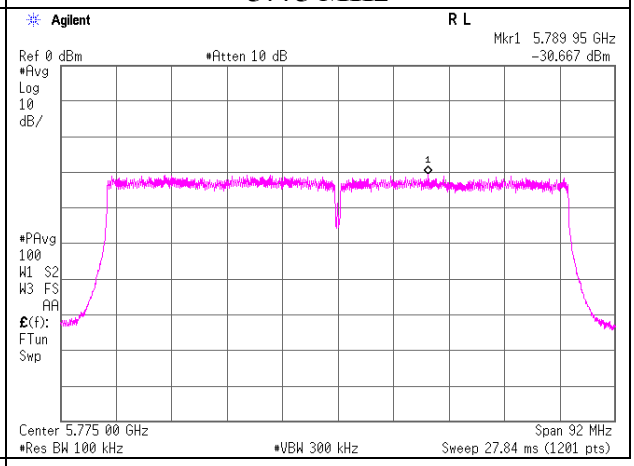


5795 MHz



11ac-80 (SISO)

5775 MHz

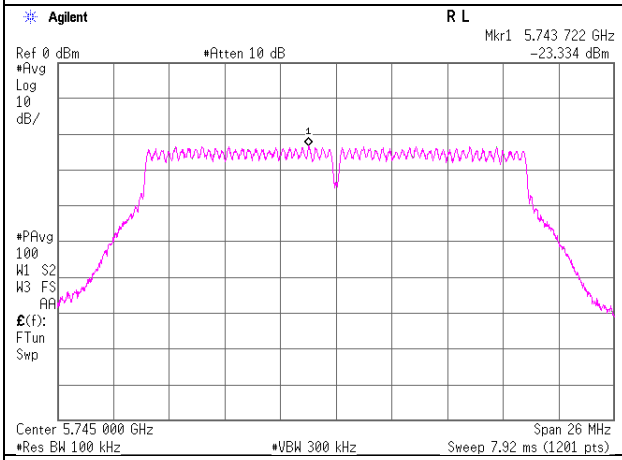


Maximum Power Spectral Density

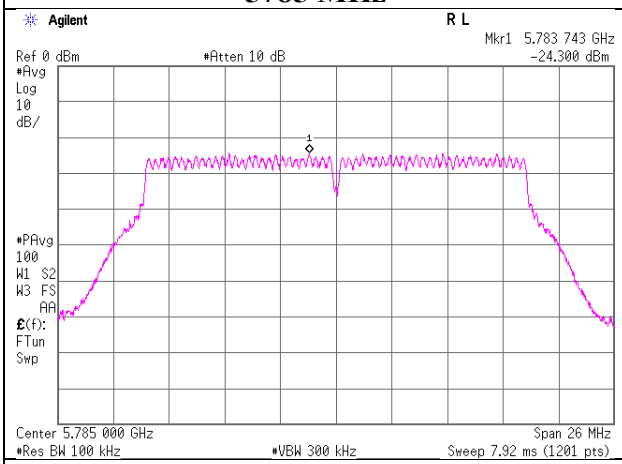
Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 48 % RH
Engineer	Yosuke Ishikawa
Mode	Tx

11n-20/11ac-20 (MIMO) , Antenna 0

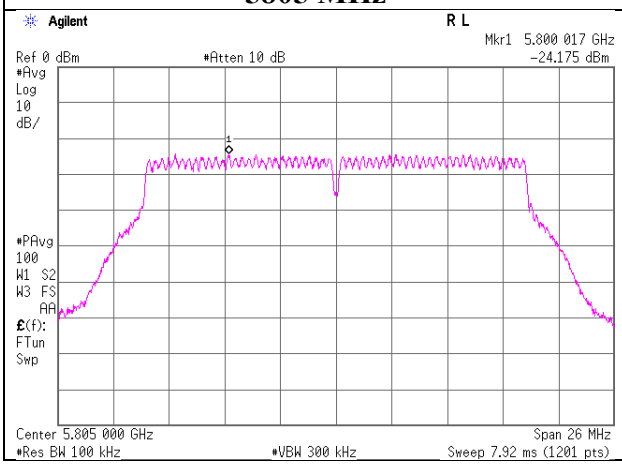
5745 MHz



5785 MHz

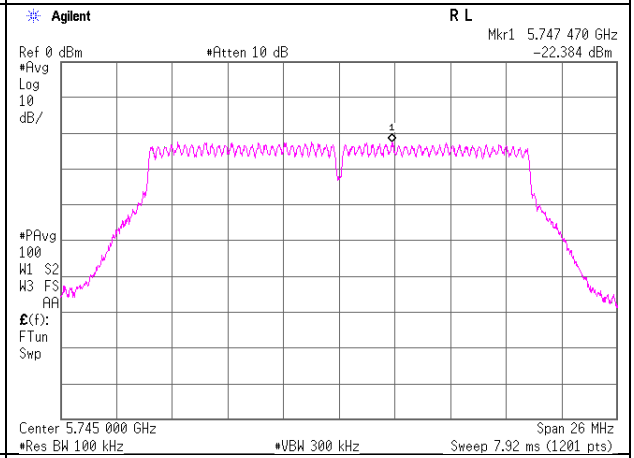


5805 MHz

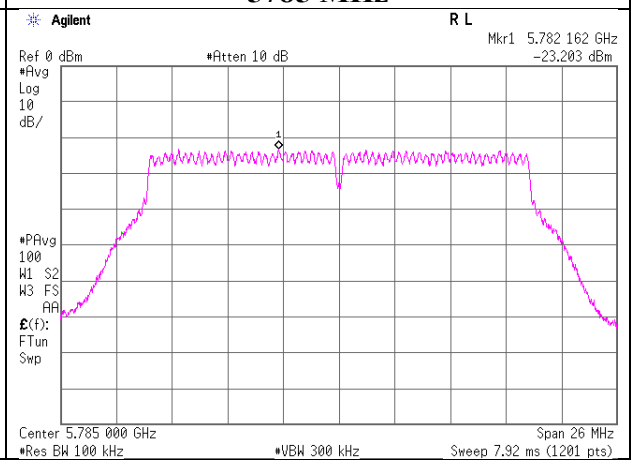


11n-20/11ac-20 (MIMO) , Antenna 1

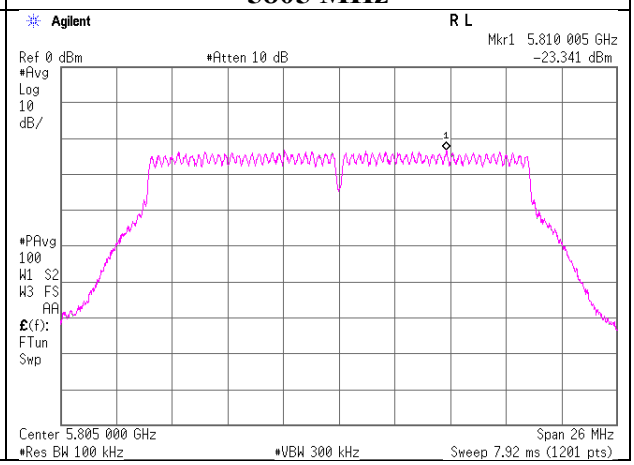
5745 MHz



5785 MHz



5805 MHz

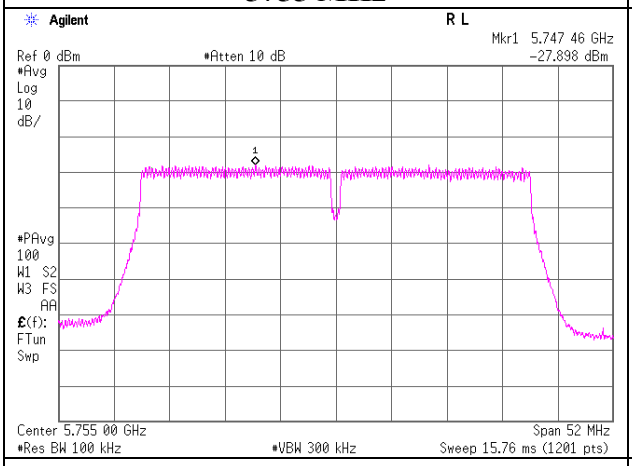


Maximum Power Spectral Density

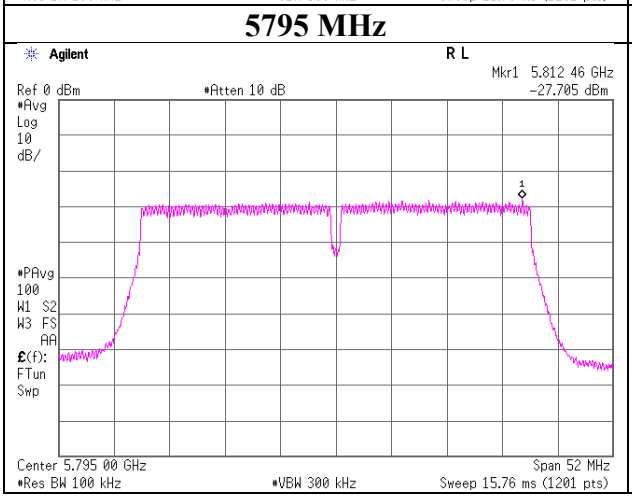
Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 6, 2018
Temperature / Humidity	21 deg. C / 39 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

11n-40/11ac-40 (MIMO) , Antenna 0

5755 MHz

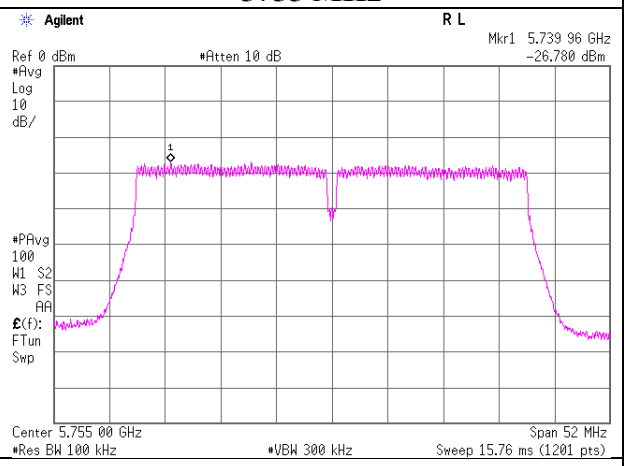


5795 MHz

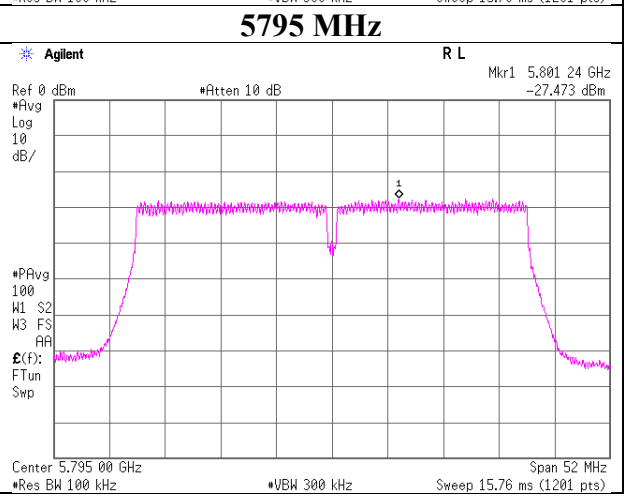


11n-40/11ac-40 (MIMO) , Antenna 1

5755 MHz



5795 MHz

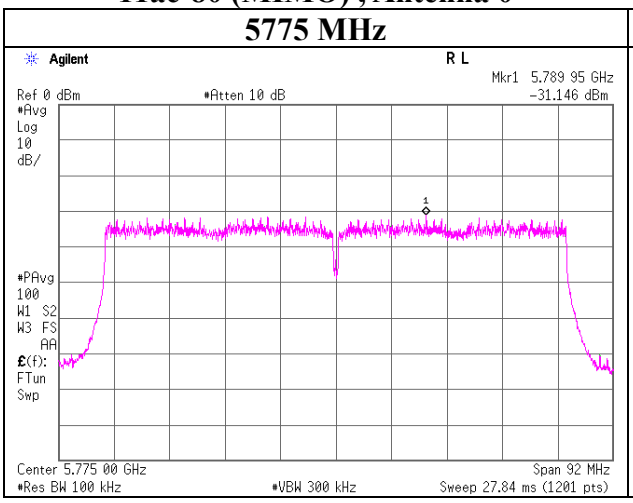


Maximum Power Spectral Density

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 7, 2018
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Kazutaka Takeyama
Mode	Tx

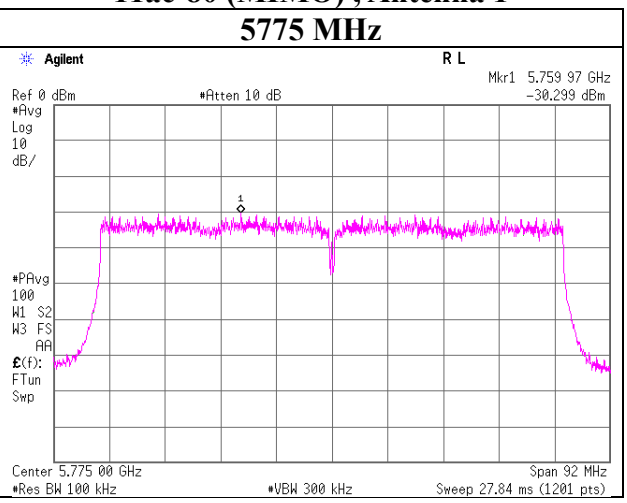
11ac-80 (MIMO) , Antenna 0

5775 MHz



11ac-80 (MIMO) , Antenna 1

5775 MHz



Radiated Spurious Emission

Report No.	12622648S-D-R2			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11a 5745 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1439.970	PK	47.77	24.97	13.55	39.08	2.24	49.45	73.90	24.4	102	251	
Hori.	11490.000	PK	45.73	40.01	11.20	39.27	2.24	59.91	73.90	13.9	100	0	
Hori.	17235.000	PK	45.65	40.25	13.46	38.66	-9.54	51.16	73.90	22.7	100	0	
Hori.	1439.970	AV	40.01	24.97	13.55	39.08	2.24	41.69	53.90	12.2	102	251	VBW: 10 Hz
Hori.	11490.000	AV	35.21	40.01	11.20	39.27	2.24	49.39	53.90	**4.5**	100	0	VBW: 5.1 kHz
Hori.	17235.000	AV	35.46	40.25	13.46	38.66	-9.54	40.97	53.90	12.9	100	0	VBW: 5.1 kHz
Vert.	1440.036	PK	48.57	24.97	13.55	39.08	2.24	50.25	73.90	23.6	108	273	
Vert.	11490.000	PK	45.50	40.01	11.20	39.27	2.24	59.68	73.90	14.2	100	0	
Vert.	17235.000	PK	45.46	40.25	13.46	38.66	-9.54	50.97	73.90	22.9	100	0	
Vert.	1440.036	AV	40.86	24.97	13.55	39.08	2.24	42.54	53.90	11.3	108	273	VBW: 10 Hz
Vert.	11490.000	AV	35.13	40.01	11.20	39.27	2.24	49.31	53.90	**4.5**	100	0	VBW: 5.1 kHz
Vert.	17235.000	AV	35.45	40.25	13.46	38.66	-9.54	40.96	53.90	12.9	100	0	VBW: 5.1 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.30	32.04	17.10	39.83	2.24	56.85	-38.37	-27.00	11.3	156	63	
Hori.	5700.000	PK	45.31	32.11	17.14	39.86	2.24	56.94	-38.28	10.00	48.2	156	63	
Hori.	5720.000	PK	45.67	32.18	17.15	39.87	2.24	57.37	-37.85	15.60	53.4	156	63	
Hori.	5725.000	PK	45.74	32.20	17.15	39.88	2.24	57.45	-37.77	27.00	64.7	156	63	
Vert.	5650.000	PK	45.45	32.04	17.10	39.83	2.24	57.00	-38.22	-27.00	**11.2**	104	185	
Vert.	5700.000	PK	45.66	32.11	17.14	39.86	2.24	57.29	-37.93	10.00	47.9	104	185	
Vert.	5720.000	PK	45.74	32.18	17.15	39.87	2.24	57.44	-37.78	15.60	53.3	104	185	
Vert.	5725.000	PK	46.04	32.20	17.15	39.88	2.24	57.75	-37.47	27.00	64.4	104	185	

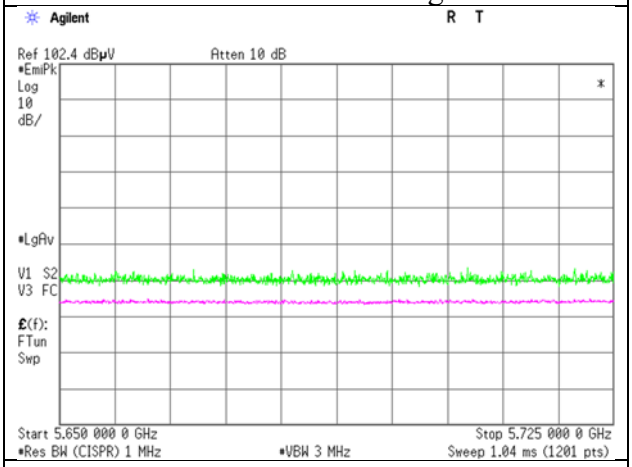
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11a 5745 MHz

Horizontal

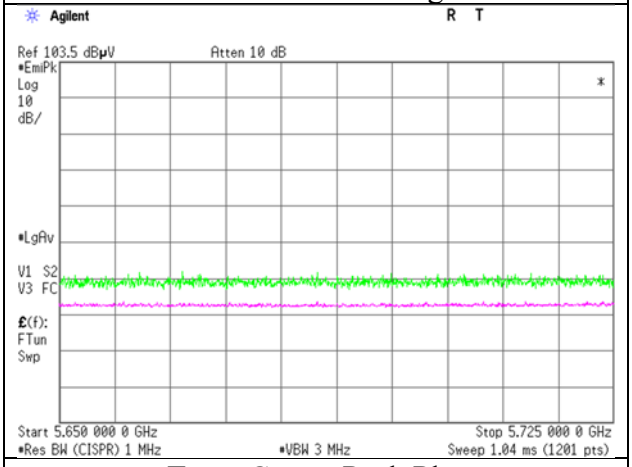
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11a 5785 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1440.010	PK	47.49	24.97	13.55	39.08	2.24	49.17	73.90	24.7	100	249	
Hori.	11570.000	PK	45.56	39.98	11.17	39.21	2.24	59.74	73.90	14.1	100	0	
Hori.	17355.000	PK	45.52	41.01	13.47	38.42	-9.54	52.04	73.90	21.8	100	0	
Hori.	1440.010	AV	40.00	24.97	13.55	39.08	2.24	41.68	53.90	12.2	100	249	VBW: 10 Hz
Hori.	11570.000	AV	35.19	39.98	11.17	39.21	2.24	49.37	53.90	**4.5**	100	0	VBW: 5.1 kHz
Hori.	17355.000	AV	35.47	41.01	13.47	38.42	-9.54	41.99	53.90	11.9	100	0	VBW: 5.1 kHz
Vert.	1440.007	PK	48.80	24.97	13.55	39.08	2.24	50.48	73.90	23.4	105	282	
Vert.	11570.000	PK	45.04	39.98	11.17	39.21	2.24	59.22	73.90	14.6	100	0	
Vert.	17355.000	PK	45.33	41.01	13.47	38.42	-9.54	51.85	73.90	22.0	100	0	
Vert.	1440.007	AV	41.56	24.97	13.55	39.08	2.24	43.24	53.90	10.6	105	282	VBW: 10 Hz
Vert.	11570.000	AV	35.18	39.98	11.17	39.21	2.24	49.36	53.90	**4.5**	100	0	VBW: 5.1 kHz
Vert.	17355.000	AV	35.42	41.01	13.47	38.42	-9.54	41.94	53.90	11.9	100	0	VBW: 5.1 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No.	12622648S-D-R2			
Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11a 5805 MHz			

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1439.981	PK	48.57	24.97	13.55	39.08	2.24	50.25	73.90	23.6	100	252	
Hori.	11610.000	PK	45.24	39.87	11.15	39.17	2.24	59.33	73.90	14.5	100	0	
Hori.	17415.000	PK	44.88	41.43	13.49	38.30	-9.54	51.96	73.90	21.9	100	0	
Hori.	1439.981	AV	40.26	24.97	13.55	39.08	2.24	41.94	53.90	11.9	100	252	VBW: 10 Hz
Hori.	11610.000	AV	35.09	39.87	11.15	39.17	2.24	49.18	53.90	4.7	100	0	VBW: 5.1 kHz
Hori.	17415.000	AV	34.63	41.43	13.49	38.30	-9.54	41.71	53.90	12.1	100	0	VBW: 5.1 kHz
Vert.	1440.009	PK	48.50	24.97	13.55	39.08	2.24	50.18	73.90	23.7	105	280	
Vert.	11610.000	PK	45.20	39.87	11.15	39.17	2.24	59.29	73.90	14.6	100	0	
Vert.	17415.000	PK	44.86	41.43	13.49	38.30	-9.54	51.94	73.90	21.9	100	0	
Vert.	1440.009	AV	41.62	24.97	13.55	39.08	2.24	43.30	53.90	10.6	105	280	VBW: 10 Hz
Vert.	11610.000	AV	35.37	39.87	11.15	39.17	2.24	49.46	53.90	**4.4**	100	0	VBW: 5.1 kHz
Vert.	17415.000	AV	34.48	41.43	13.49	38.30	-9.54	41.56	53.90	12.3	100	0	VBW: 5.1 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	45.10	32.64	17.22	39.95	2.24	57.25	-37.97	27.00	64.9	148	65	
Hori.	5855.000	PK	45.53	32.64	17.23	39.95	2.24	57.69	-37.53	15.60	53.1	148	65	
Hori.	5875.000	PK	44.80	32.66	17.24	39.96	2.24	56.98	-38.24	10.00	48.2	148	65	
Hori.	5925.000	PK	44.86	32.66	17.26	39.99	2.24	57.03	-38.19	-27.00	11.1	148	65	
Vert.	5850.000	PK	45.58	32.64	17.22	39.95	2.24	57.73	-37.49	27.00	64.4	103	195	
Vert.	5855.000	PK	45.16	32.64	17.23	39.95	2.24	57.32	-37.90	15.60	53.5	103	195	
Vert.	5875.000	PK	45.27	32.66	17.24	39.96	2.24	57.45	-37.77	10.00	47.7	103	195	
Vert.	5925.000	PK	45.37	32.66	17.26	39.99	2.24	57.54	-37.68	-27.00	**10.6**	103	195	

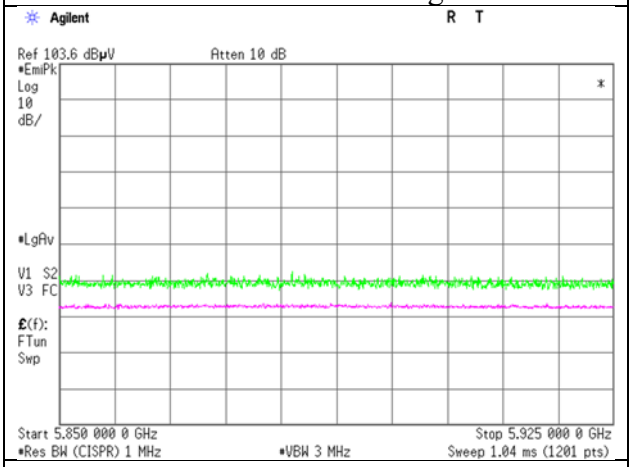
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11a 5805 MHz

Horizontal

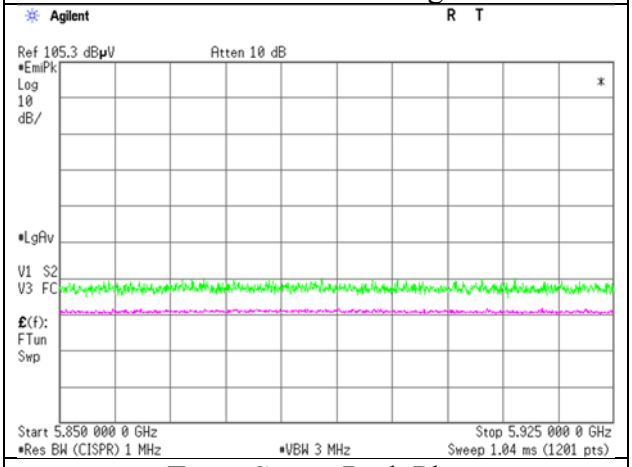
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5745 MHz

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.45	32.04	17.10	39.83	2.24	57.00	-38.23	-27.00	11.2	151	62	
Hori.	5700.000	PK	45.86	32.11	17.14	39.86	2.24	57.49	-37.74	10.00	47.7	151	62	
Hori.	5720.000	PK	45.44	32.18	17.15	39.87	2.24	57.14	-38.09	15.60	53.7	151	62	
Hori.	5725.000	PK	45.84	32.20	17.15	39.88	2.24	57.55	-37.68	27.00	64.7	151	62	
Vert.	5650.000	PK	45.67	32.04	17.10	39.83	2.24	57.22	-38.01	-27.00	**11.0**	103	192	
Vert.	5700.000	PK	45.36	32.11	17.14	39.86	2.24	56.99	-38.24	10.00	48.2	103	192	
Vert.	5720.000	PK	45.73	32.18	17.15	39.87	2.24	57.43	-37.80	15.60	53.4	103	192	
Vert.	5725.000	PK	45.45	32.20	17.15	39.88	2.24	57.16	-38.07	27.00	65.1	103	192	

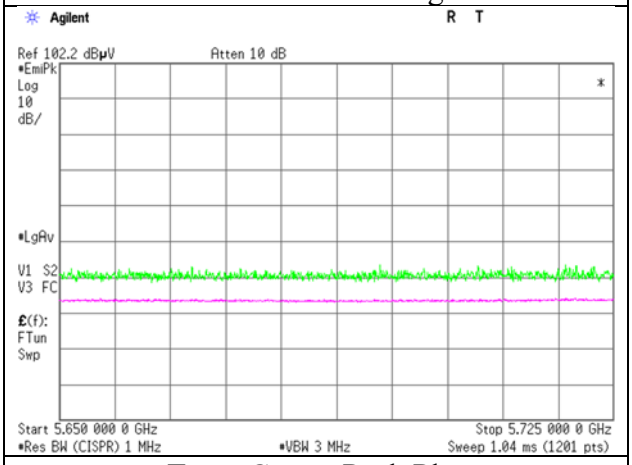
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5745 MHz

Horizontal

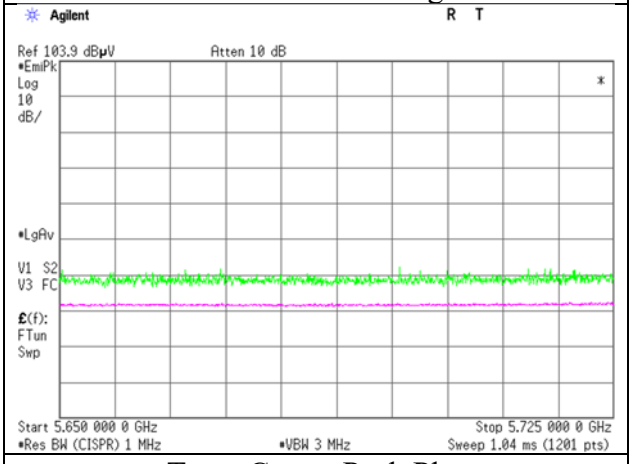
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5805 MHz

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	46.06	32.64	17.22	39.95	2.24	58.21	-37.02	27.00	64.0	146	64	
Hori.	5855.000	PK	45.30	32.64	17.23	39.95	2.24	57.46	-37.77	15.60	53.4	146	64	
Hori.	5875.000	PK	45.77	32.66	17.24	39.96	2.24	57.95	-37.28	10.00	47.3	146	64	
Hori.	5925.000	PK	45.73	32.66	17.26	39.99	2.24	57.90	-37.33	-27.00	10.3	146	64	
Vert.	5850.000	PK	45.82	32.64	17.22	39.95	2.24	57.97	-37.26	27.00	64.3	105	195	
Vert.	5855.000	PK	45.59	32.64	17.23	39.95	2.24	57.75	-37.48	15.60	53.1	105	195	
Vert.	5875.000	PK	45.43	32.66	17.24	39.96	2.24	57.61	-37.62	10.00	47.6	105	195	
Vert.	5925.000	PK	45.83	32.66	17.26	39.99	2.24	58.00	-37.23	-27.00	**10.2**	105	195	

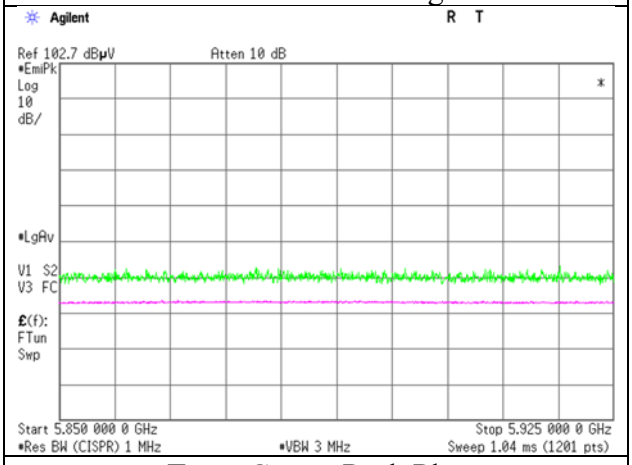
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5805 MHz

Horizontal

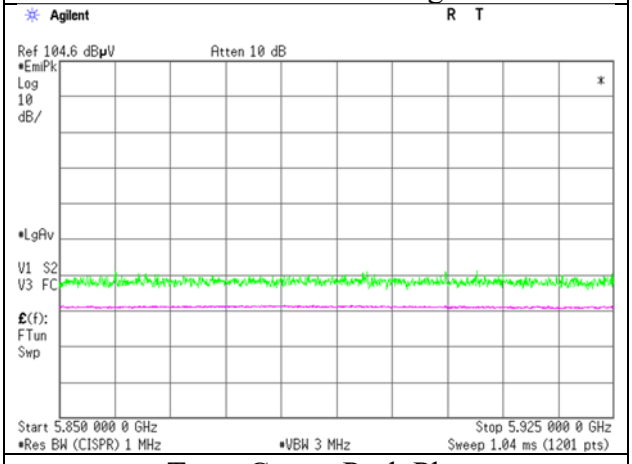
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	1	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5745 MHz				

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1440.039	PK	47.82	24.97	13.55	39.08	2.24	49.50	73.90	24.4	100	0	
Hori.	11490.000	PK	45.73	40.01	11.20	39.27	2.24	59.91	73.90	13.9	100	0	
Hori.	17235.000	PK	45.29	40.25	13.46	38.66	-9.54	50.80	73.90	23.1	100	0	
Hori.	1440.039	AV	40.29	24.97	13.55	39.08	2.24	41.97	53.90	11.9	100	0	VBW: 10 Hz
Hori.	11490.000	AV	34.14	40.01	11.20	39.27	2.24	48.32	53.90	5.5	100	0	VBW: 1.5 kHz
Hori.	17235.000	AV	34.09	40.25	13.46	38.66	-9.54	39.60	53.90	14.3	100	0	VBW: 1.5 kHz
Vert.	1440.014	PK	49.06	24.97	13.55	39.08	2.24	50.74	73.90	23.1	109	282	
Vert.	11490.000	PK	45.74	40.01	11.20	39.27	2.24	59.92	73.90	13.9	100	0	
Vert.	17235.000	PK	45.26	40.25	13.46	38.66	-9.54	50.77	73.90	23.1	100	0	
Vert.	1440.014	AV	41.52	24.97	13.55	39.08	2.24	43.20	53.90	10.7	109	282	VBW: 10 Hz
Vert.	11490.000	AV	34.26	40.01	11.20	39.27	2.24	48.44	53.90	**5.4**	100	0	VBW: 1.5 kHz
Vert.	17235.000	AV	33.84	40.25	13.46	38.66	-9.54	39.35	53.90	14.5	100	0	VBW: 1.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.67	32.04	17.10	39.83	2.24	57.22	-38.00	-27.00	**11.0**	266	261	
Hori.	5700.000	PK	45.56	32.11	17.14	39.86	2.24	57.19	-38.03	10.00	48.0	266	261	
Hori.	5720.000	PK	46.41	32.18	17.15	39.87	2.24	58.11	-37.11	15.60	52.7	266	261	
Hori.	5725.000	PK	46.91	32.20	17.15	39.88	2.24	58.62	-36.60	27.00	63.6	266	261	
Vert.	5650.000	PK	45.32	32.04	17.10	39.83	2.24	56.87	-38.35	-27.00	11.3	106	300	
Vert.	5700.000	PK	45.80	32.11	17.14	39.86	2.24	57.43	-37.79	10.00	47.7	106	300	
Vert.	5720.000	PK	48.40	32.18	17.15	39.87	2.24	60.10	-35.12	15.60	50.7	106	300	
Vert.	5725.000	PK	50.21	32.20	17.15	39.88	2.24	61.92	-33.30	27.00	60.3	106	300	

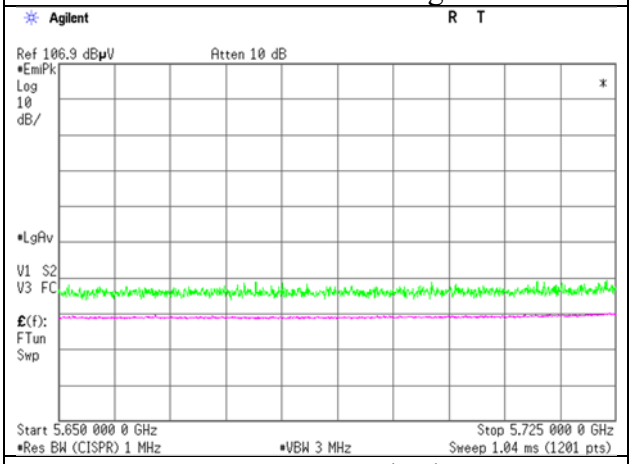
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5745 MHz

Horizontal

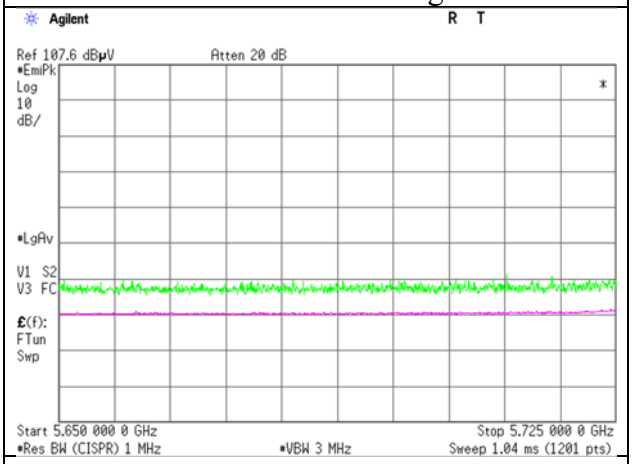
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	1	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5785 MHz				

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1440.000	PK	48.11	24.97	13.55	39.08	2.24	49.79	73.90	24.1	100	252	
Hori.	11570.000	PK	46.16	39.98	11.17	39.21	2.24	60.34	73.90	13.5	100	0	
Hori.	17355.000	PK	45.29	41.01	13.47	38.42	-9.54	51.81	73.90	22.0	100	0	
Hori.	1440.000	AV	40.29	24.97	13.55	39.08	2.24	41.97	53.90	11.9	100	252	VBW: 10 Hz
Hori.	11570.000	AV	34.06	39.98	11.17	39.21	2.24	48.24	53.90	**5.6**	100	0	VBW: 1.5 kHz
Hori.	17355.000	AV	34.47	41.01	13.47	38.42	-9.54	40.99	53.90	12.9	100	0	VBW: 1.5 kHz
Vert.	1440.011	PK	48.15	24.97	13.55	39.08	2.24	49.83	73.90	24.0	104	281	
Vert.	11570.000	PK	46.02	39.98	11.17	39.21	2.24	60.20	73.90	13.7	100	0	
Vert.	17355.000	PK	45.44	41.01	13.47	38.42	-9.54	51.96	73.90	21.9	100	0	
Vert.	1440.011	AV	41.17	24.97	13.55	39.08	2.24	42.85	53.90	11.0	104	281	VBW: 10 Hz
Vert.	11570.000	AV	34.10	39.98	11.17	39.21	2.24	48.28	53.90	**5.6**	100	0	VBW: 1.5 kHz
Vert.	17355.000	AV	34.34	41.01	13.47	38.42	-9.54	40.86	53.90	13.0	100	0	VBW: 1.5 kHz

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

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

*The 4th harmonic was not seen so the result was its base noise level.

Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB

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

Radiated Spurious Emission

Report No.	12622648S-D-R2				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	1	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5805 MHz				

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1440.042	PK	48.38	24.97	13.55	39.08	2.24	50.06	73.90	23.8	103	252	
Hori.	11610.000	PK	45.84	39.87	11.15	39.17	2.24	59.93	73.90	13.9	100	0	
Hori.	17415.000	PK	45.10	41.43	13.49	38.30	-9.54	52.18	73.90	21.7	100	0	
Hori.	1440.042	AV	40.17	24.97	13.55	39.08	2.24	41.85	53.90	12.0	103	252	VBW: 10 Hz
Hori.	11610.000	AV	34.18	39.87	11.15	39.17	2.24	48.27	53.90	**5.6**	100	0	VBW: 1.5 kHz
Hori.	17415.000	AV	34.28	41.43	13.49	38.30	-9.54	41.36	53.90	12.5	100	0	VBW: 1.5 kHz
Vert.	1440.008	PK	48.46	24.97	13.55	39.08	2.24	50.14	73.90	23.7	108	277	
Vert.	11610.000	PK	45.54	39.87	11.15	39.17	2.24	59.63	73.90	14.2	100	0	
Vert.	17415.000	PK	44.97	41.43	13.49	38.30	-9.54	52.05	73.90	21.8	100	0	
Vert.	1440.008	AV	40.91	24.97	13.55	39.08	2.24	42.59	53.90	11.3	108	277	VBW: 10 Hz
Vert.	11610.000	AV	33.93	39.87	11.15	39.17	2.24	48.02	53.90	5.8	100	0	VBW: 1.5 kHz
Vert.	17415.000	AV	34.45	41.43	13.49	38.30	-9.54	41.53	53.90	12.3	100	0	VBW: 1.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	45.33	32.64	17.22	39.95	2.24	57.48	-37.74	27.00	64.7	252	251	
Hori.	5855.000	PK	45.02	32.64	17.23	39.95	2.24	57.18	-38.04	15.60	53.6	252	251	
Hori.	5875.000	PK	45.44	32.66	17.24	39.96	2.24	57.62	-37.60	10.00	47.6	252	251	
Hori.	5925.000	PK	45.55	32.66	17.26	39.99	2.24	57.72	-37.50	-27.00	10.5	252	251	
Vert.	5850.000	PK	45.57	32.64	17.22	39.95	2.24	57.72	-37.50	27.00	64.5	110	304	
Vert.	5855.000	PK	45.74	32.64	17.23	39.95	2.24	57.90	-37.32	15.60	52.9	110	304	
Vert.	5875.000	PK	46.14	32.66	17.24	39.96	2.24	58.32	-36.90	10.00	46.9	110	304	
Vert.	5925.000	PK	45.72	32.66	17.26	39.99	2.24	57.89	-37.33	-27.00	**10.3**	110	304	

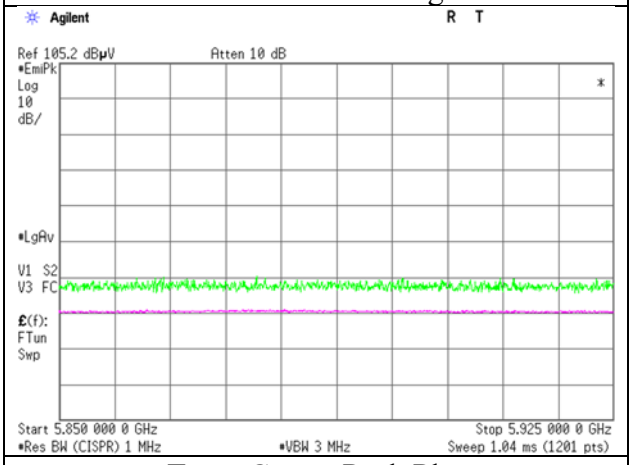
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5805 MHz

Horizontal

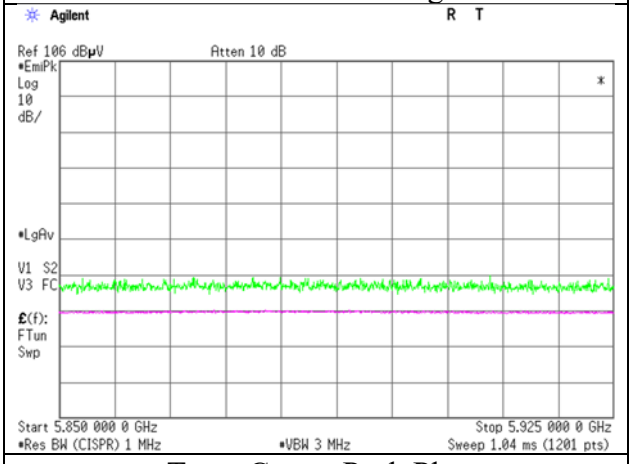
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5755 MHz

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.50	32.04	17.10	39.83	2.24	57.05	-38.17	-27.00	11.1	144	63	
Hori.	5700.000	PK	45.33	32.11	17.14	39.86	2.24	56.96	-38.26	10.00	48.2	144	63	
Hori.	5720.000	PK	45.62	32.18	17.15	39.87	2.24	57.32	-37.90	15.60	53.5	144	63	
Hori.	5725.000	PK	45.76	32.20	17.15	39.88	2.24	57.47	-37.75	27.00	64.7	144	63	
Vert.	5650.000	PK	45.58	32.04	17.10	39.83	2.24	57.13	-38.09	-27.00	**11.0**	113	190	
Vert.	5700.000	PK	45.12	32.11	17.14	39.86	2.24	56.75	-38.47	10.00	48.4	113	190	
Vert.	5720.000	PK	45.08	32.18	17.15	39.87	2.24	56.78	-38.44	15.60	54.0	113	190	
Vert.	5725.000	PK	45.74	32.20	17.15	39.88	2.24	57.45	-37.77	27.00	64.7	113	190	

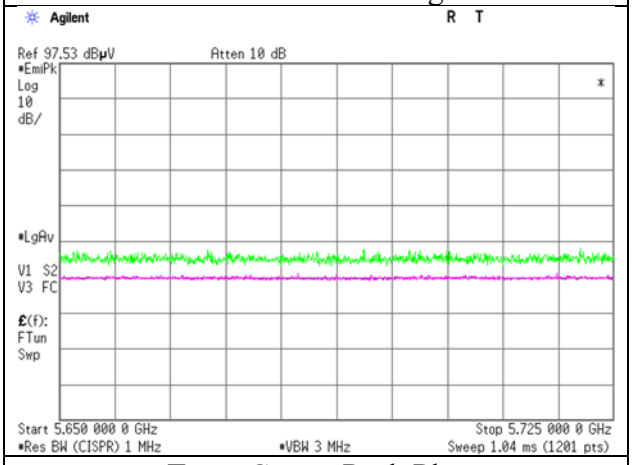
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5755 MHz

Horizontal

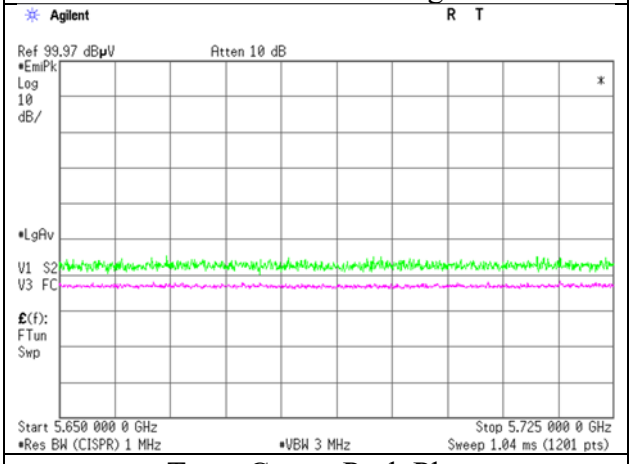
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5795 MHz

(Calculation) (above 1GHz Outside of the restricted band)

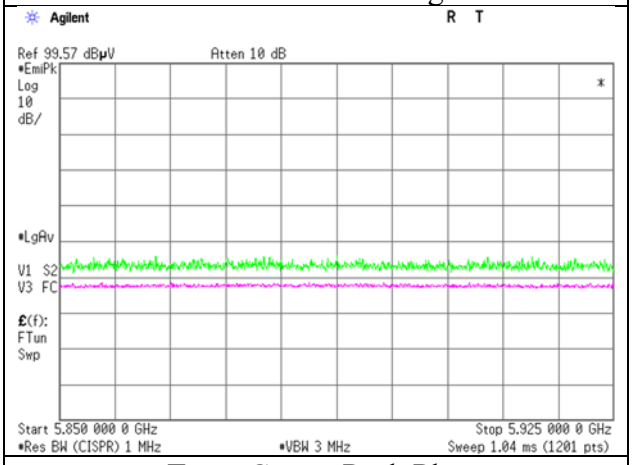
(* PK: Peak, AV: Average, QP: Quasi-Peak)

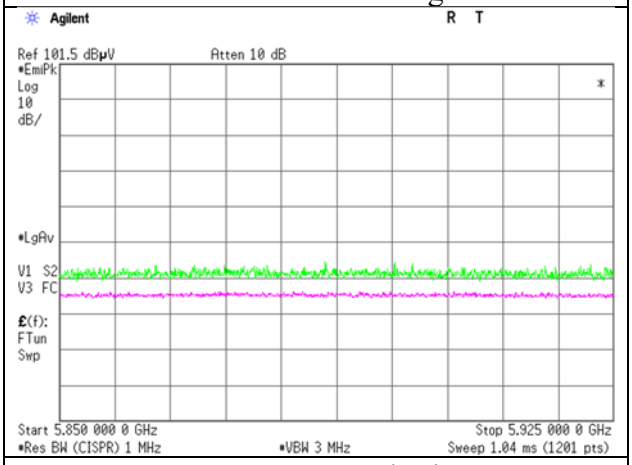
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	45.35	32.64	17.22	39.95	2.24	57.50	-37.72	27.00	64.7	146	64	
Hori.	5855.000	PK	45.28	32.64	17.23	39.95	2.24	57.44	-37.78	15.60	53.3	146	64	
Hori.	5875.000	PK	45.20	32.66	17.24	39.96	2.24	57.38	-37.84	10.00	47.8	146	64	
Hori.	5925.000	PK	45.27	32.66	17.26	39.99	2.24	57.44	-37.78	-27.00	10.7	146	64	
Vert.	5850.000	PK	45.36	32.64	17.22	39.95	2.24	57.51	-37.71	27.00	64.7	102	194	
Vert.	5855.000	PK	45.74	32.64	17.23	39.95	2.24	57.90	-37.32	15.60	52.9	102	194	
Vert.	5875.000	PK	45.63	32.66	17.24	39.96	2.24	57.81	-37.41	10.00	47.4	102	194	
Vert.	5925.000	PK	45.48	32.66	17.26	39.99	2.24	57.65	-37.57	-27.00	**10.5**	102	194	

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 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

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	1	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5755 MHz				

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1440.020	PK	48.16	24.97	13.55	39.08	2.24	49.84	73.90	24.0	102	253	
Hori.	11510.000	PK	45.55	40.01	11.21	39.26	2.24	59.75	73.90	14.1	100	0	
Hori.	17265.000	PK	44.93	40.39	13.47	38.60	-9.54	50.65	73.90	23.2	100	0	
Hori.	1440.020	AV	40.19	24.97	13.55	39.08	2.24	41.87	53.90	12.0	102	253	VBW: 10 Hz
Hori.	11510.000	AV	34.21	40.01	11.21	39.26	2.24	48.41	53.90	**5.4**	100	0	VBW: 1.5 kHz
Hori.	17265.000	AV	34.51	40.39	13.47	38.60	-9.54	40.23	53.90	13.6	100	0	VBW: 1.5 kHz
Vert.	1440.015	PK	48.62	24.97	13.55	39.08	2.24	50.30	73.90	23.6	106	277	
Vert.	11510.000	PK	45.60	40.01	11.21	39.26	2.24	59.80	73.90	14.1	100	0	
Vert.	17265.000	PK	44.61	40.39	13.47	38.60	-9.54	50.33	73.90	23.5	100	0	
Vert.	1440.015	AV	41.13	24.97	13.55	39.08	2.24	42.81	53.90	11.0	106	277	VBW: 10 Hz
Vert.	11510.000	AV	34.06	40.01	11.21	39.26	2.24	48.26	53.90	5.6	100	0	VBW: 1.5 kHz
Vert.	17265.000	AV	34.36	40.39	13.47	38.60	-9.54	40.08	53.90	13.8	100	0	VBW: 1.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.49	32.04	17.10	39.83	2.24	57.04	-38.18	-27.00	11.1	270	260	
Hori.	5700.000	PK	46.65	32.11	17.14	39.86	2.24	58.28	-36.94	10.00	46.9	270	260	
Hori.	5720.000	PK	47.03	32.18	17.15	39.87	2.24	58.73	-36.49	15.60	52.0	270	260	
Hori.	5725.000	PK	47.09	32.20	17.15	39.88	2.24	58.80	-36.42	27.00	63.4	270	260	
Vert.	5650.000	PK	46.18	32.04	17.10	39.83	2.24	57.73	-37.49	-27.00	**10.4**	104	298	
Vert.	5700.000	PK	45.45	32.11	17.14	39.86	2.24	57.08	-38.14	10.00	48.1	104	298	
Vert.	5720.000	PK	49.23	32.18	17.15	39.87	2.24	60.93	-34.29	15.60	49.8	104	298	
Vert.	5725.000	PK	49.65	32.20	17.15	39.88	2.24	61.36	-33.86	27.00	60.8	104	298	

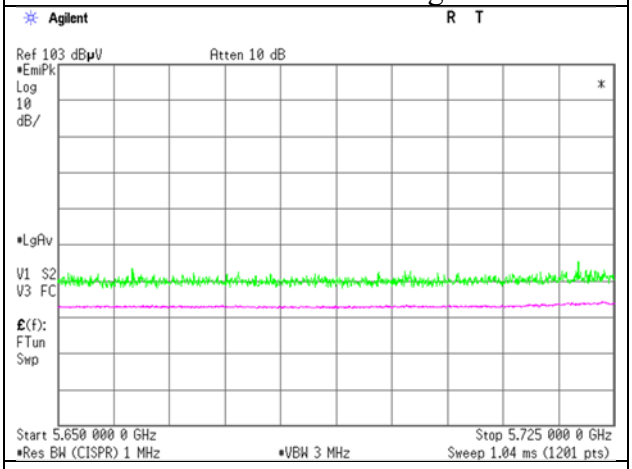
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5755 MHz

Horizontal

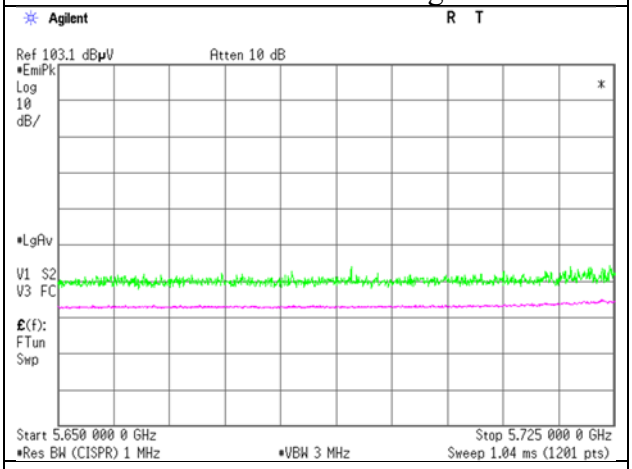
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2				
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	1	1	1	1	1
Date	December 5, 2018	December 7, 2018	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	25 deg. C / 30 % RH	21 deg. C / 43 % RH	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Shiro Kobayashi	Kazuya Noda	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5795 MHz				

(above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	1439.992	PK	47.95	24.97	13.55	39.08	2.24	49.63	73.90	24.2	104	250	
Hori.	11590.000	PK	45.56	39.93	11.16	39.19	2.24	59.70	73.90	14.2	100	0	
Hori.	17385.000	PK	45.17	41.22	13.48	38.36	-9.54	51.97	73.90	21.9	100	0	
Hori.	1439.992	AV	40.25	24.97	13.55	39.08	2.24	41.93	53.90	11.9	104	250	VBW: 10 Hz
Hori.	11590.000	AV	34.07	39.93	11.16	39.19	2.24	48.21	53.90	5.6	100	0	VBW: 1.5 kHz
Hori.	17385.000	AV	34.61	41.22	13.48	38.36	-9.54	41.41	53.90	12.4	100	0	VBW: 1.5 kHz
Vert.	1440.044	PK	48.67	24.97	13.55	39.08	2.24	50.35	73.90	23.5	104	276	
Vert.	11590.000	PK	45.98	39.93	11.16	39.19	2.24	60.12	73.90	13.7	100	0	
Vert.	17385.000	PK	45.09	41.22	13.48	38.36	-9.54	51.89	73.90	22.0	100	0	
Vert.	1440.044	AV	41.13	24.97	13.55	39.08	2.24	42.81	53.90	11.0	104	276	VBW: 10 Hz
Vert.	11590.000	AV	34.28	39.93	11.16	39.19	2.24	48.42	53.90	**5.4**	100	0	VBW: 1.5 kHz
Vert.	17385.000	AV	34.58	41.22	13.48	38.36	-9.54	41.38	53.90	12.5	100	0	VBW: 1.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	45.09	32.64	17.22	39.95	2.24	57.24	-37.98	27.00	64.9	266	260	
Hori.	5855.000	PK	45.49	32.64	17.23	39.95	2.24	57.65	-37.57	15.60	53.1	266	260	
Hori.	5875.000	PK	45.23	32.66	17.24	39.96	2.24	57.41	-37.81	10.00	47.8	266	260	
Hori.	5925.000	PK	45.24	32.66	17.26	39.99	2.24	57.41	-37.81	-27.00	10.8	266	260	
Vert.	5850.000	PK	45.29	32.64	17.22	39.95	2.24	57.44	-37.78	27.00	64.7	116	304	
Vert.	5855.000	PK	45.54	32.64	17.23	39.95	2.24	57.70	-37.52	15.60	53.1	116	304	
Vert.	5875.000	PK	45.49	32.66	17.24	39.96	2.24	57.67	-37.55	10.00	47.5	116	304	
Vert.	5925.000	PK	45.29	32.66	17.26	39.99	2.24	57.46	-37.76	-27.00	**10.7**	116	304	

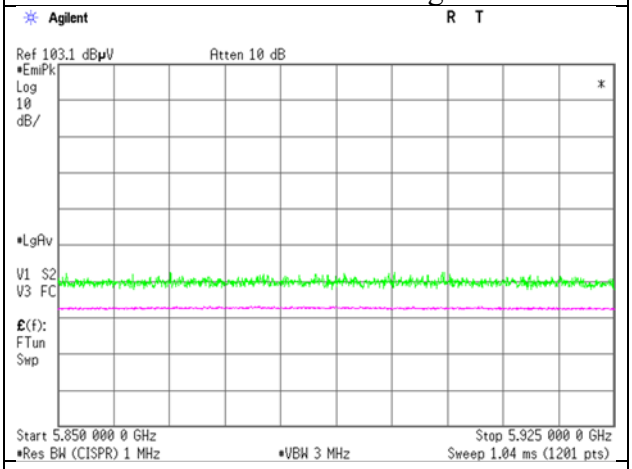
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5795 MHz

Horizontal

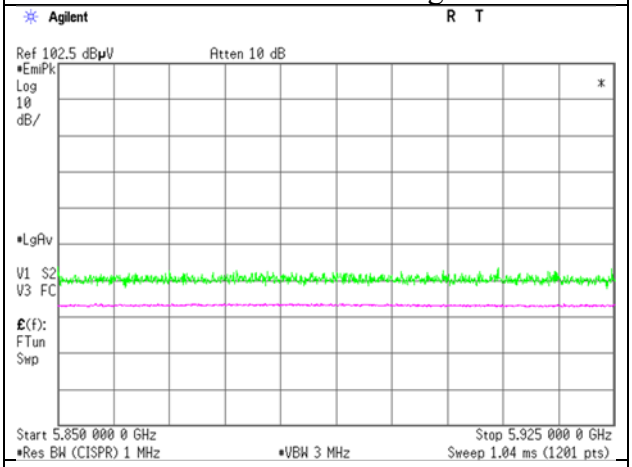
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-80 (SISO) 5775 MHz

(Calculation) (above 1GHz Outside of the restricted band)

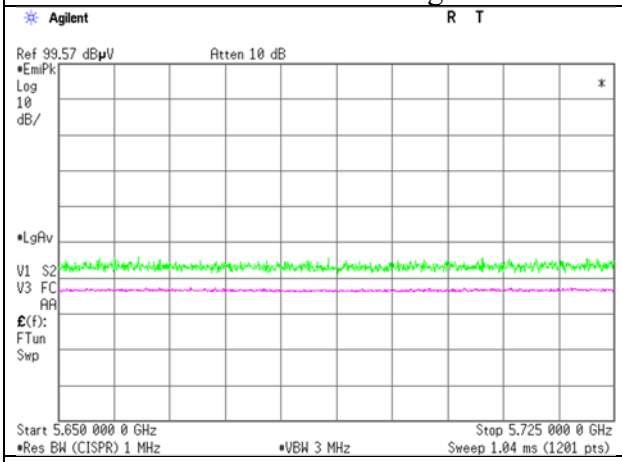
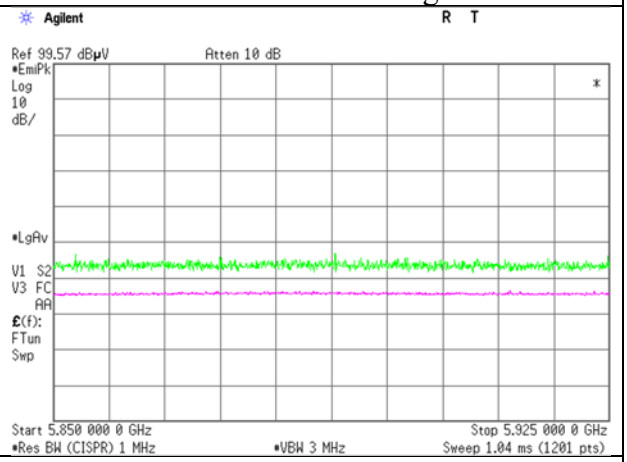
(* PK: Peak, AV: Average, QP: Quasi-Peak)

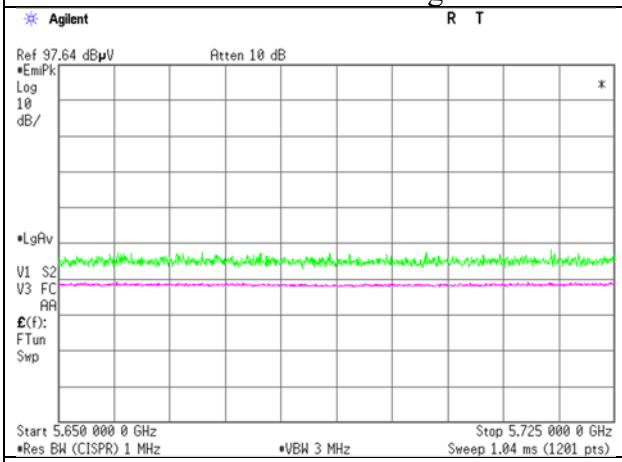
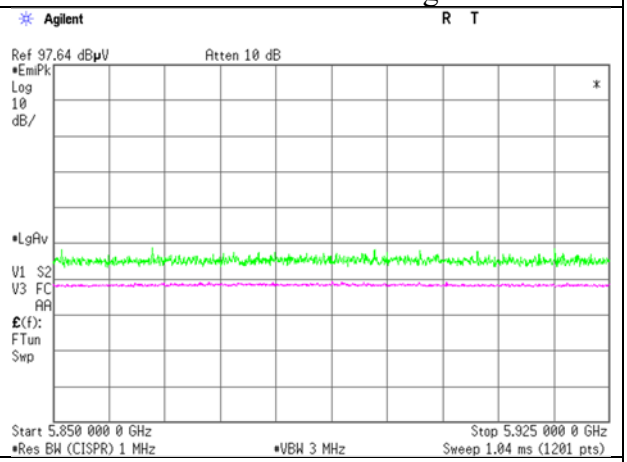
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.31	32.04	17.10	39.83	2.24	56.86	-38.36	-27.00	11.3	145	66	
Hori.	5700.000	PK	45.22	32.11	17.14	39.86	2.24	56.85	-38.37	20.00	58.3	145	66	
Hori.	5720.000	PK	45.27	32.18	17.15	39.87	2.24	56.97	-38.25	15.60	53.8	145	66	
Hori.	5725.000	PK	45.24	32.20	17.15	39.88	2.24	56.95	-38.27	27.00	65.2	145	66	
Hori.	5850.000	PK	45.33	32.64	17.22	39.95	2.24	57.48	-37.74	27.00	64.7	145	66	
Hori.	5855.000	PK	45.40	32.64	17.23	39.95	2.24	57.56	-37.66	15.60	53.2	145	66	
Hori.	5875.000	PK	45.51	32.66	17.24	39.96	2.24	57.69	-37.53	10.00	47.5	145	66	
Hori.	5925.000	PK	45.52	32.66	17.26	39.99	2.24	57.69	-37.53	-27.00	10.5	145	66	
Vert.	5650.000	PK	45.54	32.04	17.10	39.83	2.24	57.09	-38.13	-27.00	11.1	105	192	
Vert.	5700.000	PK	45.10	32.11	17.14	39.86	2.24	56.73	-38.49	10.00	48.4	105	192	
Vert.	5720.000	PK	45.07	32.18	17.15	39.87	2.24	56.77	-38.45	15.60	54.0	105	192	
Vert.	5725.000	PK	45.69	32.20	17.15	39.88	2.24	57.40	-37.82	27.00	64.8	105	192	
Vert.	5850.000	PK	45.22	32.64	17.22	39.95	2.24	57.37	-37.85	27.00	64.8	105	192	
Vert.	5855.000	PK	45.38	32.64	17.23	39.95	2.24	57.54	-37.68	15.60	53.2	105	192	
Vert.	5875.000	PK	45.85	32.66	17.24	39.96	2.24	58.03	-37.19	10.00	47.1	105	192	
Vert.	5925.000	PK	45.84	32.66	17.26	39.99	2.24	58.01	-37.21	-27.00	**10.2**	105	192	

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（{ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-80 (SISO) 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

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	1
Date	December 5, 2018	December 5, 2018	December 7, 2018
Temperature / Humidity	23 deg. C / 57 % RH	25 deg. C / 30 % RH	21 deg. C / 43 % RH
Engineer	Kenichi Adachi	Shiro Kobayashi	Kazuya Noda
	(30 MHz – 1 GHz)	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	1
Date	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11ac-80 (MIMO) 5775 MHz		

(below 1GHz and above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	73.728	QP	46.63	6.35	7.85	31.82	0.00	29.01	40.00	10.9	255	309	
Hori.	164.789	QP	36.68	15.43	8.95	31.78	0.00	29.28	43.50	14.2	191	119	
Hori.	242.999	QP	45.14	11.61	6.29	31.75	0.00	31.29	46.00	14.7	171	142	
Hori.	419.999	QP	45.85	16.08	7.57	31.85	0.00	37.65	46.00	8.3	100	186	
Hori.	466.942	QP	46.15	16.96	7.76	31.89	0.00	38.98	46.00	7.0	100	338	
Hori.	840.003	QP	33.88	21.28	9.42	31.65	0.00	32.93	46.00	13.0	114	203	
Hori.	960.267	QP	38.32	22.06	9.87	30.89	0.00	39.36	53.90	14.5	100	266	
Hori.	1440.033	PK	47.62	24.97	13.55	39.08	2.24	49.30	73.90	24.6	101	250	
Hori.	11550.000	PK	45.16	40.03	11.18	39.23	2.24	59.38	73.90	14.5	100	0	
Hori.	17325.000	PK	45.59	40.79	13.48	38.48	-9.54	51.84	73.90	22.0	100	0	
Hori.	1440.033	AV	40.35	24.97	13.55	39.08	2.24	42.03	53.90	11.8	101	250	VBW: 10 Hz
Hori.	11550.000	AV	35.10	40.03	11.18	39.23	2.24	49.32	53.90	4.5	100	0	VBW: 7.5 kHz
Hori.	17325.000	AV	35.92	40.79	13.48	38.48	-9.54	42.17	53.90	11.7	100	0	VBW: 7.5 kHz
Vert.	33.868	QP	34.32	17.12	7.11	31.84	0.00	26.71	40.00	13.2	100	309	
Vert.	44.645	QP	36.45	13.13	7.37	31.83	0.00	25.12	40.00	14.8	100	39	
Vert.	73.728	QP	46.77	6.35	7.85	31.82	0.00	29.15	40.00	10.8	100	301	
Vert.	164.789	QP	35.11	15.43	8.95	31.78	0.00	27.71	43.50	15.7	100	241	
Vert.	242.999	QP	47.15	11.61	6.29	31.75	0.00	33.30	46.00	12.7	100	167	
Vert.	419.999	QP	42.33	16.08	7.57	31.85	0.00	34.13	46.00	11.8	136	142	
Vert.	466.942	QP	40.01	16.96	7.76	31.89	0.00	32.84	46.00	13.1	118	318	
Vert.	840.003	QP	36.86	21.28	9.42	31.65	0.00	35.91	46.00	10.0	100	309	
Vert.	960.267	QP	34.33	22.06	9.87	30.89	0.00	35.37	53.90	18.5	100	299	
Vert.	1439.989	PK	48.49	24.97	13.55	39.08	2.24	50.17	73.90	23.7	104	284	
Vert.	11550.000	PK	45.10	40.03	11.18	39.23	2.24	59.32	73.90	14.5	100	0	
Vert.	17325.000	PK	45.53	40.79	13.48	38.48	-9.54	51.78	73.90	22.1	100	0	
Vert.	1439.989	AV	41.34	24.97	13.55	39.08	2.24	43.02	53.90	10.8	104	284	VBW: 10 Hz
Vert.	11550.000	AV	35.33	40.03	11.18	39.23	2.24	49.55	53.90	**4.3**	100	0	VBW: 7.5 kHz
Vert.	17325.000	AV	36.11	40.79	13.48	38.48	-9.54	42.36	53.90	11.5	100	0	VBW: 7.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

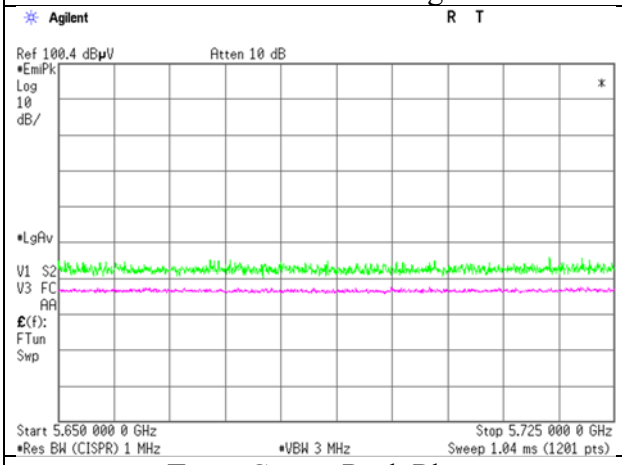
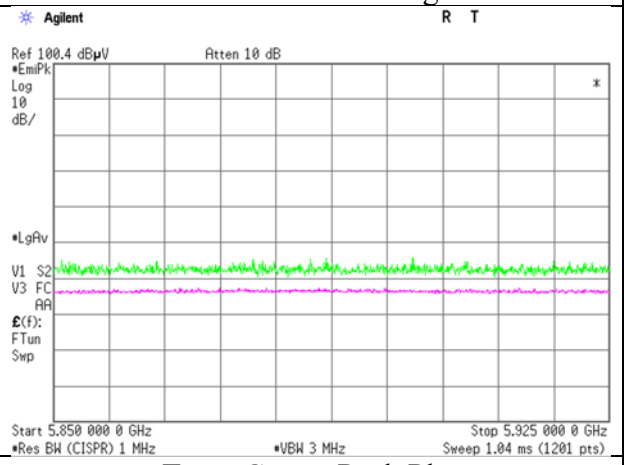
(* PK: Peak, AV: Average, QP: Quasi-Peak)

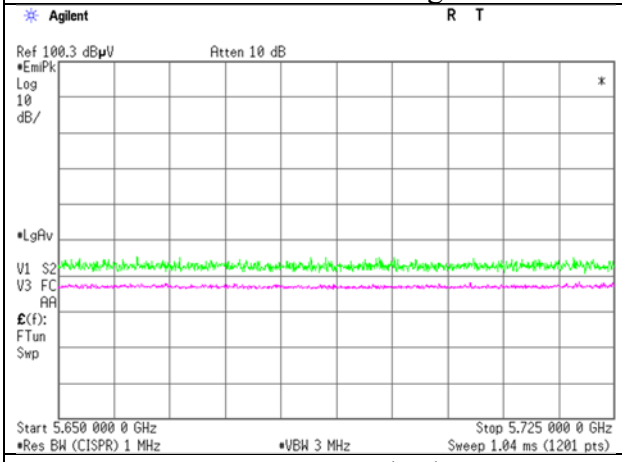
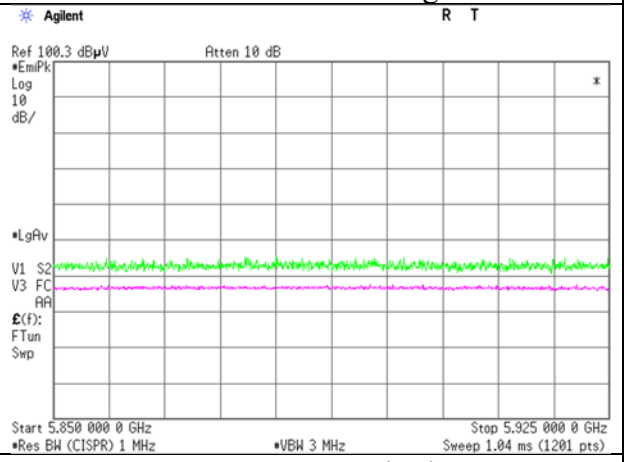
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	45.53	32.04	17.10	39.83	2.24	57.08	-38.14	27.00	65.1	243	259	
Hori.	5700.000	PK	45.93	32.11	17.14	39.86	2.24	57.56	-37.66	15.60	53.2	243	259	
Hori.	5720.000	PK	45.97	32.18	17.15	39.87	2.24	57.67	-37.55	10.00	47.5	243	259	
Hori.	5725.000	PK	45.79	32.20	17.15	39.88	2.24	57.50	-37.72	-27.00	10.7	243	259	
Hori.	5850.000	PK	45.34	32.64	17.22	39.95	2.24	57.49	-37.73	27.00	64.7	243	259	
Hori.	5855.000	PK	45.22	32.64	17.23	39.95	2.24	57.38	-37.84	15.60	53.4	243	259	
Hori.	5875.000	PK	45.58	32.66	17.24	39.96	2.24	57.76	-37.46	10.00	47.4	243	259	
Hori.	5925.000	PK	45.45	32.66	17.26	39.99	2.24	57.62	-37.60	-27.00	10.6	243	259	
Vert.	5650.000	PK	46.52	32.04	17.10	39.83	2.24	58.07	-37.15	-27.00	10.1	105	301	
Vert.	5700.000	PK	46.76	32.11	17.14	39.86	2.24	58.39	-36.83	10.00	46.8	105	301	
Vert.	5720.000	PK	46.90	32.18	17.15	39.87	2.24	58.60	-36.62	15.60	52.2	105	301	
Vert.	5725.000	PK	47.20	32.20	17.15	39.88	2.24	58.91	-36.31	27.00	63.3	105	301	
Vert.	5850.000	PK	46.12	32.64	17.22	39.95	2.24	58.27	-36.95	27.00	63.9	105	301	
Vert.	5855.000	PK	46.16	32.64	17.23	39.95	2.24	58.32	-36.90	15.60	52.5	105	301	
Vert.	5875.000	PK	46.14	32.66	17.24	39.96	2.24	58.32	-36.90	10.00	46.9	105	301	
Vert.	5925.000	PK	46.15	32.66	17.26	39.99	2.24	58.32	-36.90	-27.00	**9.9**	105	301	

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	December 5, 2018
Temperature / Humidity	25 deg. C / 30 % RH
Engineer	Shiro Kobayashi
	(1 GHz – 6.4 GHz)
Mode	Tx 11ac-80 (MIMO) 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

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11a 5745 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	48.80	32.18	17.41	43.33	2.24	57.30	-37.93	-27.00	10.9	176	74	
Hori.	5700.000	PK	48.51	32.23	17.45	43.33	2.24	57.10	-38.13	10.00	48.1	176	74	
Hori.	5720.000	PK	49.22	32.33	17.46	43.33	2.24	57.92	-37.31	15.60	52.9	176	74	
Hori.	5725.000	PK	49.61	32.35	17.46	43.33	2.24	58.33	-36.90	27.00	63.9	176	74	
Vert.	5650.000	PK	49.80	32.18	17.41	43.33	2.24	58.30	-36.93	-27.00	**9.9**	113	176	
Vert.	5700.000	PK	48.94	32.23	17.45	43.33	2.24	57.53	-37.70	10.00	47.7	113	176	
Vert.	5720.000	PK	49.17	32.33	17.46	43.33	2.24	57.87	-37.36	15.60	53.0	113	176	
Vert.	5725.000	PK	48.78	32.35	17.46	43.33	2.24	57.50	-37.73	27.00	64.7	113	176	

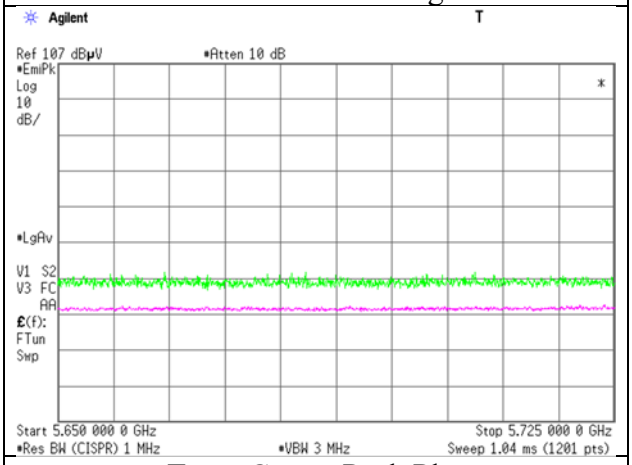
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	1
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11a 5745 MHz with Tx 3-DH5 Hopping On

Horizontal

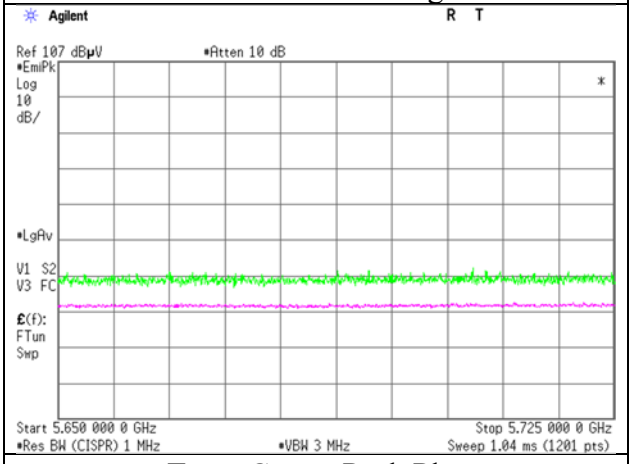
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11a 5805 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	49.49	32.65	17.54	43.34	2.24	58.58	-36.65	27.00	63.7	169	80	
Hori.	5855.000	PK	48.80	32.66	17.54	43.34	2.24	57.90	-37.33	15.60	52.9	169	80	
Hori.	5875.000	PK	48.83	32.72	17.55	43.34	2.24	58.00	-37.23	10.00	47.2	169	80	
Hori.	5925.000	PK	49.32	32.80	17.58	43.34	2.24	58.60	-36.63	-27.00	**9.6**	169	80	
Vert.	5850.000	PK	49.76	32.65	17.54	43.34	2.24	58.85	-36.38	27.00	63.4	117	182	
Vert.	5855.000	PK	48.87	32.66	17.54	43.34	2.24	57.97	-37.26	15.60	52.9	117	182	
Vert.	5875.000	PK	48.75	32.72	17.55	43.34	2.24	57.92	-37.31	10.00	47.3	117	182	
Vert.	5925.000	PK	48.70	32.80	17.58	43.34	2.24	57.98	-37.25	-27.00	10.3	117	182	

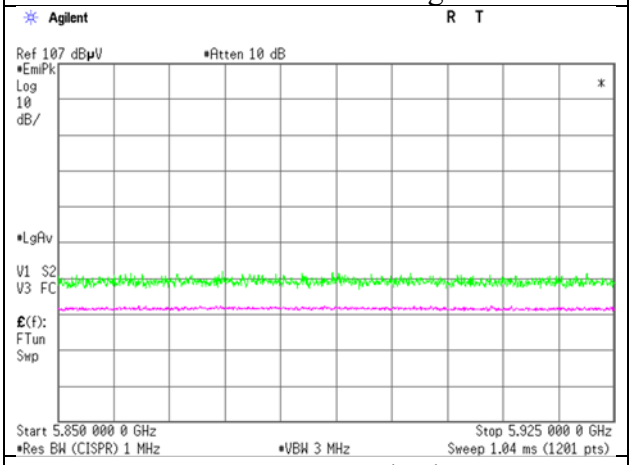
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11a 5805 MHz with Tx 3-DH5 Hopping On

Horizontal

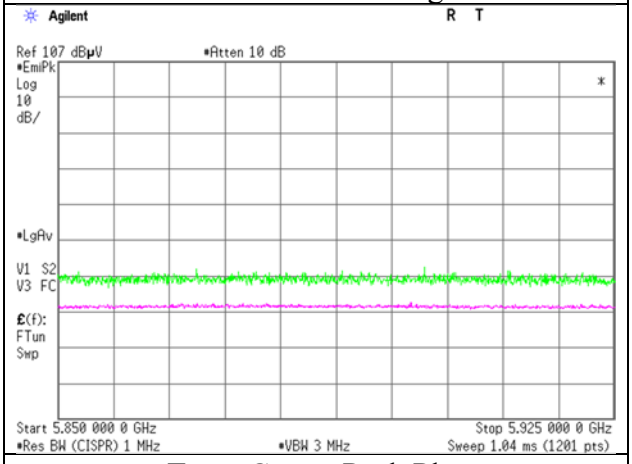
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5745 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	48.90	32.18	17.41	43.33	2.24	57.40	-37.83	-27.00	10.8	178	75	
Hori.	5700.000	PK	49.00	32.23	17.45	43.33	2.24	57.59	-37.64	10.00	47.6	178	75	
Hori.	5720.000	PK	48.82	32.33	17.46	43.33	2.24	57.52	-37.71	15.60	53.3	178	75	
Hori.	5725.000	PK	49.40	32.35	17.46	43.33	2.24	58.12	-37.11	27.00	64.1	178	75	
Vert.	5650.000	PK	49.11	32.18	17.41	43.33	2.24	57.61	-37.62	-27.00	**10.6**	110	181	
Vert.	5700.000	PK	48.95	32.23	17.45	43.33	2.24	57.54	-37.69	10.00	47.7	110	181	
Vert.	5720.000	PK	49.38	32.33	17.46	43.33	2.24	58.08	-37.15	15.60	52.8	110	181	
Vert.	5725.000	PK	50.35	32.35	17.46	43.33	2.24	59.07	-36.16	27.00	63.2	110	181	

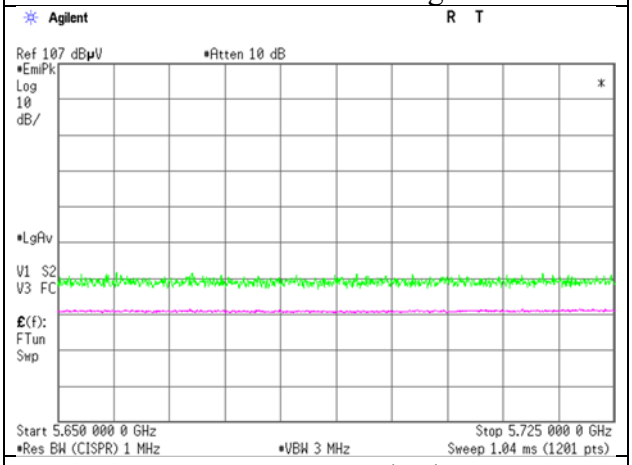
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 22, 2019
Temperature / Humidity	21 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5745 MHz with Tx 3-DH5 Hopping On

Horizontal

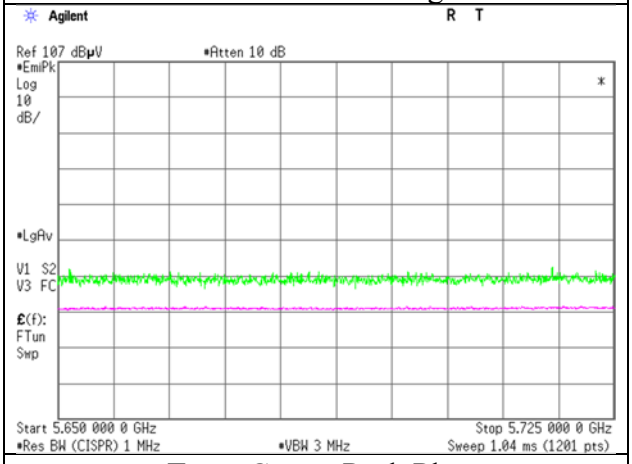
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5805 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	49.76	32.65	17.54	43.34	2.24	58.85	-36.38	27.00	63.4	179	77	
Hori.	5855.000	PK	48.81	32.66	17.54	43.34	2.24	57.91	-37.32	15.60	52.9	179	77	
Hori.	5875.000	PK	49.44	32.72	17.55	43.34	2.24	58.61	-36.62	10.00	46.6	179	77	
Hori.	5925.000	PK	49.38	32.80	17.58	43.34	2.24	58.66	-36.57	-27.00	**9.6**	179	77	
Vert.	5850.000	PK	49.62	32.65	17.54	43.34	2.24	58.71	-36.52	27.00	63.5	115	184	
Vert.	5855.000	PK	49.35	32.66	17.54	43.34	2.24	58.45	-36.78	15.60	52.4	115	184	
Vert.	5875.000	PK	48.64	32.72	17.55	43.34	2.24	57.81	-37.42	10.00	47.4	115	184	
Vert.	5925.000	PK	48.96	32.80	17.58	43.34	2.24	58.24	-36.99	-27.00	10.0	115	184	

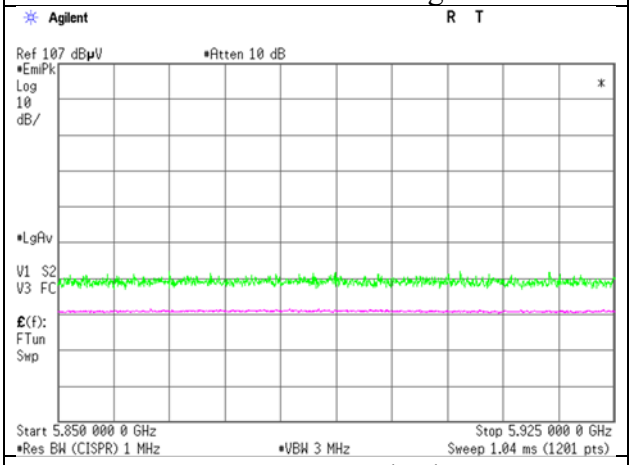
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (SISO) 5805 MHz with Tx 3-DH5 Hopping On

Horizontal

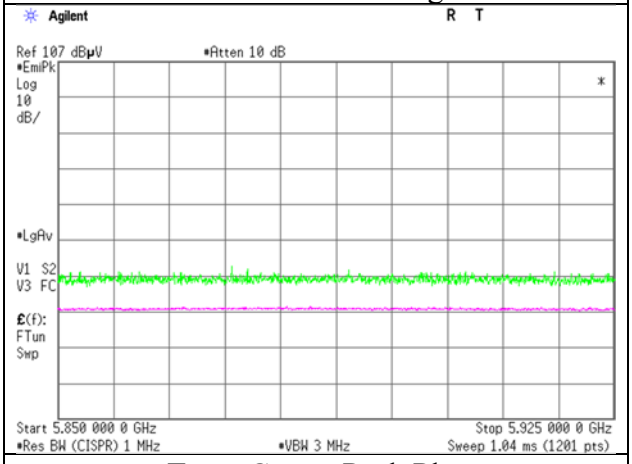
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5745 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	48.94	32.18	17.41	43.33	2.24	57.44	-37.79	-27.00	10.8	270	252	
Hori.	5700.000	PK	48.80	32.23	17.45	43.33	2.24	57.39	-37.84	10.00	47.8	270	252	
Hori.	5720.000	PK	49.55	32.33	17.46	43.33	2.24	58.25	-36.98	15.60	52.6	270	252	
Hori.	5725.000	PK	53.46	32.35	17.46	43.33	2.24	62.18	-33.05	27.00	60.1	270	252	
Vert.	5650.000	PK	49.08	32.18	17.41	43.33	2.24	57.58	-37.65	-27.00	**10.7**	116	295	
Vert.	5700.000	PK	48.84	32.23	17.45	43.33	2.24	57.43	-37.80	10.00	47.8	116	295	
Vert.	5720.000	PK	52.17	32.33	17.46	43.33	2.24	60.87	-34.36	15.60	50.0	116	295	
Vert.	5725.000	PK	57.71	32.35	17.46	43.33	2.24	66.43	-28.80	27.00	55.8	116	295	

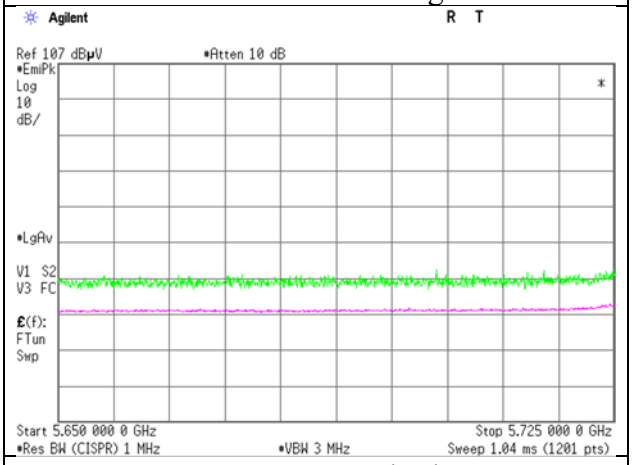
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5745 MHz with Tx 3-DH5 Hopping On

Horizontal

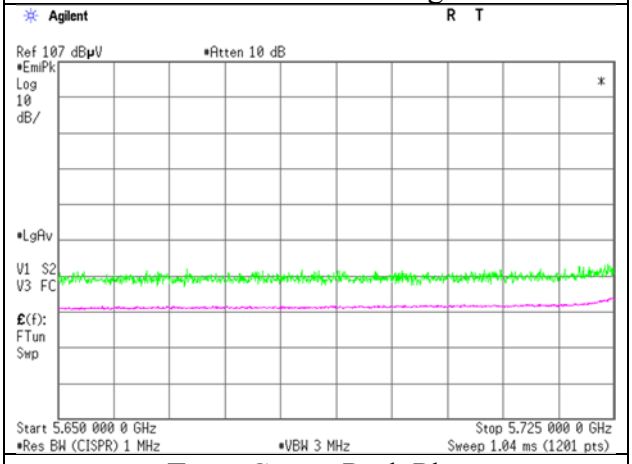
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5805 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	49.43	32.65	17.54	43.34	2.24	58.52	-36.71	27.00	63.7	254	250	
Hori.	5855.000	PK	49.10	32.66	17.54	43.34	2.24	58.20	-37.03	15.60	52.6	254	250	
Hori.	5875.000	PK	48.32	32.72	17.55	43.34	2.24	57.49	-37.74	10.00	47.7	254	250	
Hori.	5925.000	PK	47.63	32.80	17.58	43.34	2.24	56.91	-38.32	-27.00	11.3	254	250	
Vert.	5850.000	PK	49.23	32.65	17.54	43.34	2.24	58.32	-36.91	27.00	63.9	117	294	
Vert.	5855.000	PK	49.00	32.66	17.54	43.34	2.24	58.10	-37.13	15.60	52.7	117	294	
Vert.	5875.000	PK	49.76	32.72	17.55	43.34	2.24	58.93	-36.30	10.00	46.3	117	294	
Vert.	5925.000	PK	48.41	32.80	17.58	43.34	2.24	57.69	-37.54	-27.00	**10.5**	117	294	

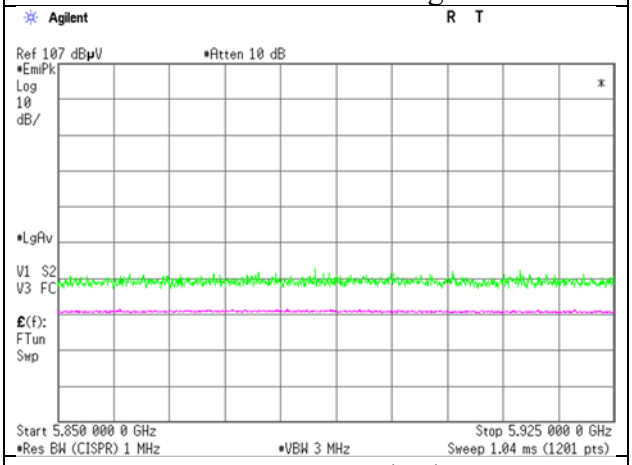
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-20/11ac-20 (MIMO) 5805 MHz with Tx 3-DH5 Hopping On

Horizontal

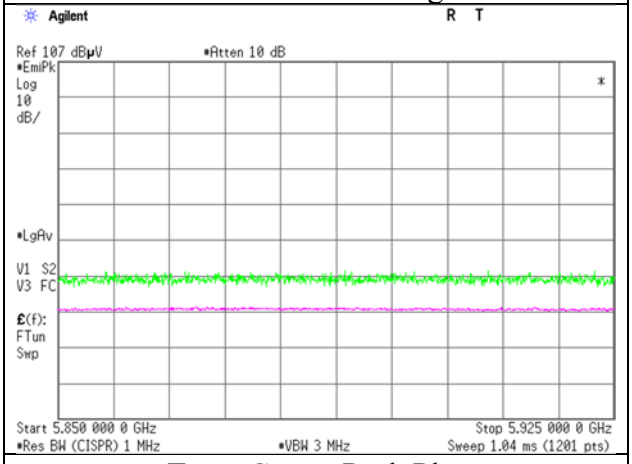
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5755 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	49.09	32.18	17.41	43.33	2.24	57.59	-37.64	-27.00	10.6	149	66	
Hori.	5700.000	PK	48.77	32.23	17.45	43.33	2.24	57.36	-37.87	10.00	47.9	149	66	
Hori.	5720.000	PK	49.07	32.33	17.46	43.33	2.24	57.77	-37.46	15.60	53.1	149	66	
Hori.	5725.000	PK	49.81	32.35	17.46	43.33	2.24	58.53	-36.70	27.00	63.7	149	66	
Vert.	5650.000	PK	49.53	32.18	17.41	43.33	2.24	58.03	-37.20	-27.00	**10.2**	112	200	
Vert.	5700.000	PK	49.21	32.23	17.45	43.33	2.24	57.80	-37.43	10.00	47.4	112	200	
Vert.	5720.000	PK	48.70	32.33	17.46	43.33	2.24	57.40	-37.83	15.60	53.4	112	200	
Vert.	5725.000	PK	49.74	32.35	17.46	43.33	2.24	58.46	-36.77	27.00	63.8	112	200	

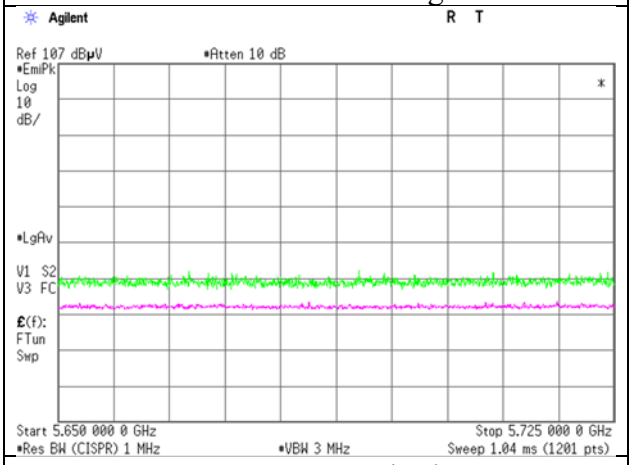
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5755 MHz with Tx 3-DH5 Hopping On

Horizontal

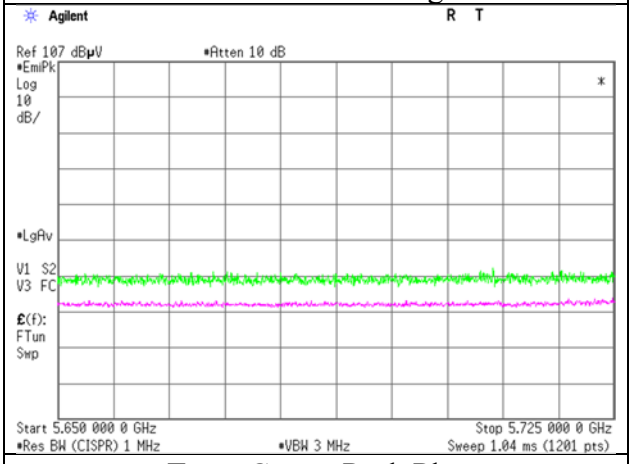
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5795 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	50.07	32.65	17.54	43.34	2.24	59.16	-36.07	27.00	63.1	140	59	
Hori.	5855.000	PK	48.98	32.66	17.54	43.34	2.24	58.08	-37.15	15.60	52.8	140	59	
Hori.	5875.000	PK	48.68	32.72	17.55	43.34	2.24	57.85	-37.38	10.00	47.4	140	59	
Hori.	5925.500	PK	48.00	32.80	17.58	43.34	2.24	57.28	-37.95	-27.00	11.0	140	59	
Vert.	5850.000	PK	49.05	32.65	17.54	43.34	2.24	58.14	-37.09	27.00	64.1	104	200	
Vert.	5855.000	PK	50.00	32.66	17.54	43.34	2.24	59.10	-36.13	15.60	51.7	104	200	
Vert.	5875.000	PK	48.99	32.72	17.55	43.34	2.24	58.16	-37.07	10.00	47.1	104	200	
Vert.	5925.000	PK	48.53	32.80	17.58	43.34	2.24	57.81	-37.42	-27.00	**10.4**	104	200	

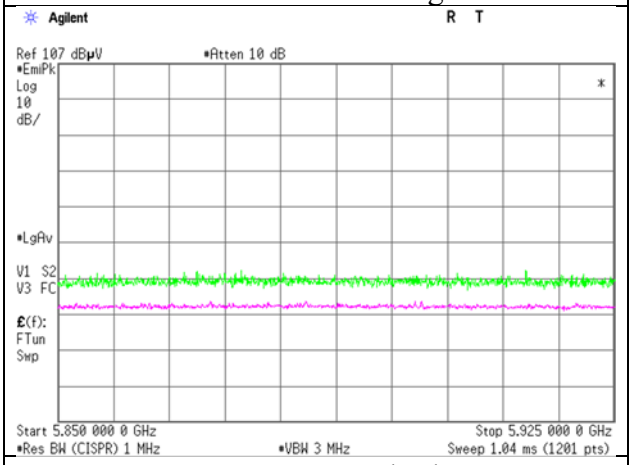
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (SISO) 5795 MHz with Tx 3-DH5 Hopping On

Horizontal

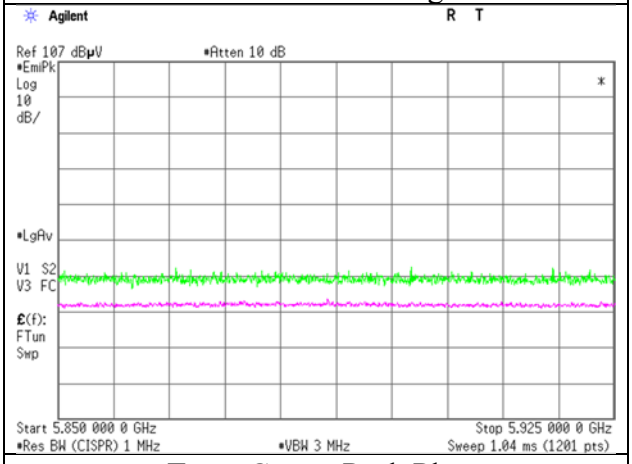
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5755 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	49.96	32.18	17.41	43.33	2.24	58.46	-36.77	-27.00	**9.8**	263	262	
Hori.	5700.000	PK	48.70	32.23	17.45	43.33	2.24	57.29	-37.94	10.00	47.9	263	262	
Hori.	5720.000	PK	51.52	32.33	17.46	43.33	2.24	60.22	-35.01	15.60	50.6	263	262	
Hori.	5725.000	PK	51.15	32.35	17.46	43.33	2.24	59.87	-35.36	27.00	62.4	263	262	
Vert.	5650.000	PK	48.48	32.18	17.41	43.33	2.24	56.98	-38.25	-27.00	11.3	100	294	
Vert.	5700.000	PK	48.94	32.23	17.45	43.33	2.24	57.53	-37.70	10.00	47.7	100	294	
Vert.	5720.000	PK	53.69	32.33	17.46	43.33	2.24	62.39	-32.84	15.60	48.4	100	294	
Vert.	5725.000	PK	53.55	32.35	17.46	43.33	2.24	62.27	-32.96	27.00	60.0	100	294	

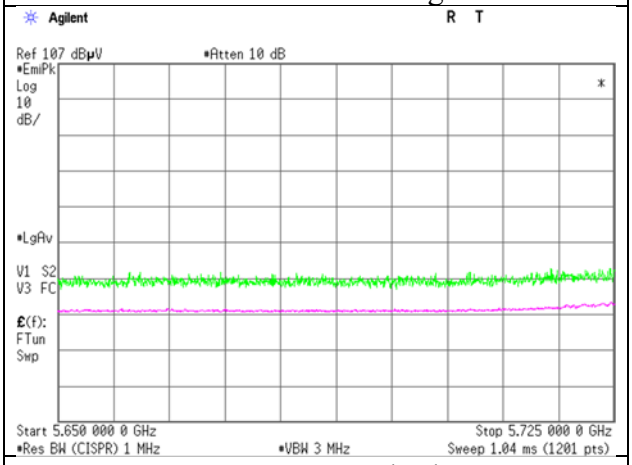
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5755 MHz with Tx 3-DH5 Hopping On

Horizontal

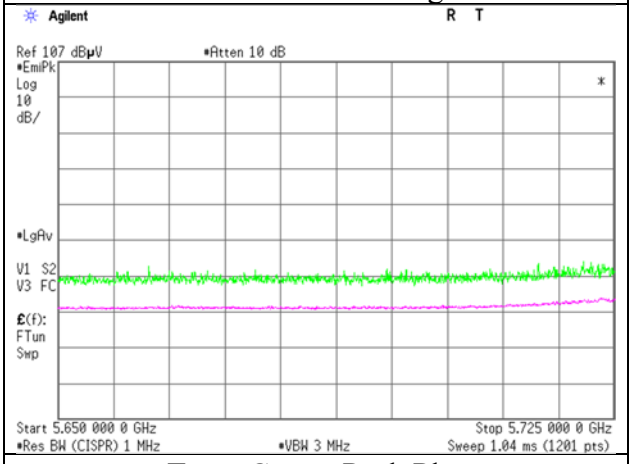
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5795 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5850.000	PK	48.94	32.65	17.54	43.34	2.24	58.03	-37.20	27.00	64.2	260	256	
Hori.	5855.000	PK	48.71	32.66	17.54	43.34	2.24	57.81	-37.42	15.60	53.0	260	256	
Hori.	5875.000	PK	48.85	32.72	17.55	43.34	2.24	58.02	-37.21	10.00	47.2	260	256	
Hori.	5925.000	PK	48.72	32.80	17.58	43.34	2.24	58.00	-37.23	-27.00	10.2	260	256	
Vert.	5850.000	PK	48.73	32.65	17.54	43.34	2.24	57.82	-37.41	27.00	64.4	112	298	
Vert.	5855.000	PK	49.10	32.66	17.54	43.34	2.24	58.20	-37.03	15.60	52.6	112	298	
Vert.	5875.000	PK	49.50	32.72	17.55	43.34	2.24	58.67	-36.56	10.00	46.6	112	298	
Vert.	5925.000	PK	49.14	32.80	17.58	43.34	2.24	58.42	-36.81	-27.00	**9.8**	112	298	

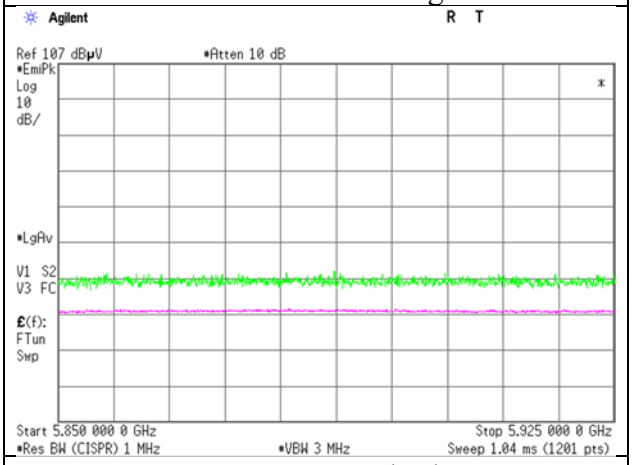
Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11n-40/11ac-40 (MIMO) 5795 MHz with Tx 3-DH5 Hopping On

Horizontal

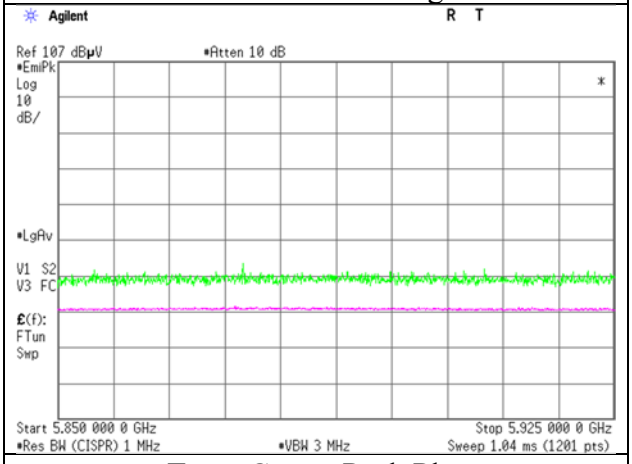
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11ac-80 (SISO) 5775 MHz with Tx 3-DH5 Hopping On

(Calculation) (above 1GHz Outside of the restricted band)

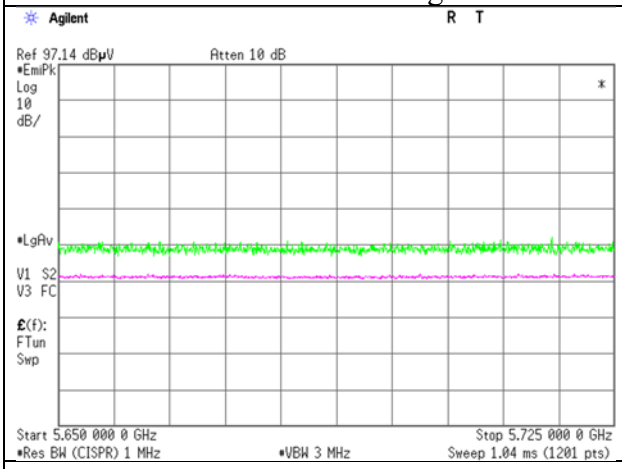
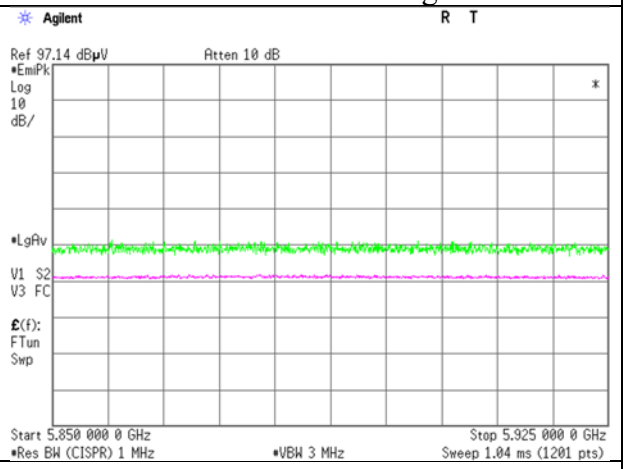
(* PK: Peak, AV: Average, QP: Quasi-Peak)

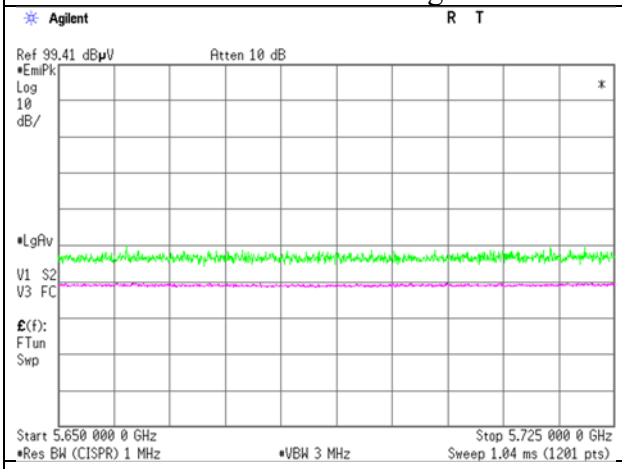
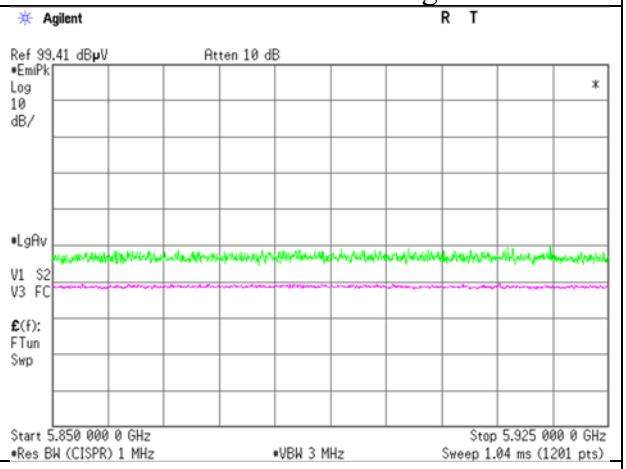
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	49.10	32.18	17.41	43.33	2.24	57.60	-37.63	-27.00	10.6	145	66	
Hori.	5700.000	PK	48.87	32.23	17.45	43.33	2.24	57.46	-37.77	10.00	47.8	145	66	
Hori.	5720.000	PK	48.68	32.33	17.46	43.33	2.24	57.38	-37.85	15.60	53.5	145	66	
Hori.	5725.000	PK	49.06	32.35	17.46	43.33	2.24	57.78	-37.45	27.00	64.5	145	66	
Hori.	5850.000	PK	49.30	32.65	17.54	43.34	2.24	58.39	-36.84	27.00	63.8	145	66	
Hori.	5855.000	PK	49.03	32.66	17.54	43.34	2.24	58.13	-37.10	15.60	52.7	145	66	
Hori.	5875.000	PK	48.82	32.72	17.55	43.34	2.24	57.99	-37.24	10.00	47.2	145	66	
Hori.	5925.000	PK	48.92	32.80	17.58	43.34	2.24	58.20	-37.03	-27.00	**10.0**	145	66	
Vert.	5650.000	PK	48.53	32.18	17.41	43.33	2.24	57.03	-38.20	-27.00	11.2	105	192	
Vert.	5700.000	PK	48.92	32.23	17.45	43.33	2.24	57.51	-37.72	10.00	47.7	105	192	
Vert.	5720.000	PK	48.64	32.33	17.46	43.33	2.24	57.34	-37.89	15.60	53.5	105	192	
Vert.	5725.000	PK	48.55	32.35	17.46	43.33	2.24	57.27	-37.96	27.00	65.0	105	192	
Vert.	5850.000	PK	48.74	32.65	17.54	43.34	2.24	57.83	-37.40	27.00	64.4	105	192	
Vert.	5855.000	PK	48.66	32.66	17.54	43.34	2.24	57.76	-37.47	15.60	53.1	105	192	
Vert.	5875.000	PK	49.33	32.72	17.55	43.34	2.24	58.50	-36.73	10.00	46.7	105	192	
Vert.	5925.000	PK	48.71	32.80	17.58	43.34	2.24	57.99	-37.24	-27.00	10.2	105	192	

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11ac-80 (SISO) 5775 MHz with Tx 3-DH5 Hopping On

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

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12622648S-D-R2	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	3
Date	February 21, 2019	February 22, 2019
Temperature / Humidity	22 deg. C / 40 % RH	25 deg. C / 30 % RH
Engineer	Yosuke Ishikawa	Yosuke Ishikawa
	(1 GHz – 13 GHz)	(30 MHz – 1 GHz), (13 GHz – 40 GHz)
Mode	Tx 11ac-80 (MIMO) 5775 MHz with Tx 3-DH5 Hopping On	

(below 1GHz and above 1GHz Inside of the restricted band)

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	73.724	QP	48.62	6.37	7.05	32.18	0.00	29.86	40.00	10.1	400	286	
Hori.	168.051	QP	37.28	15.46	7.81	32.10	0.00	28.45	43.50	15.0	203	63	
Hori.	242.990	QP	45.12	11.69	8.33	32.02	0.00	33.12	46.00	12.8	143	316	
Hori.	419.996	QP	39.50	16.16	9.33	31.98	0.00	33.01	46.00	12.9	100	135	
Hori.	466.942	QP	41.53	16.94	9.51	31.97	0.00	36.01	46.00	9.9	100	132	
Hori.	960.260	QP	41.02	22.22	11.28	30.57	0.00	43.95	53.90	9.9	100	303	
Hori.	1440.033	PK	47.09	24.98	13.70	41.05	2.24	46.96	73.90	26.9	101	250	
Hori.	11550.000	PK	47.23	39.93	11.06	42.57	2.24	57.89	73.90	16.0	100	0	
Hori.	17325.000	PK	47.27	40.32	13.75	40.27	-9.54	51.53	73.90	22.3	100	0	
Hori.	1440.033	AV	34.57	24.98	13.70	41.05	2.24	34.44	53.90	19.5	101	250	VBW: 10 Hz
Hori.	11550.000	AV	35.23	39.93	11.06	42.57	2.24	45.89	53.90	8.0	100	0	VBW: 7.5 kHz
Hori.	17325.000	AV	37.38	40.32	13.75	40.27	-9.54	41.64	53.90	12.2	100	0	VBW: 7.5 kHz
Vert.	48.026	QP	36.86	11.92	6.80	32.19	0.00	23.39	40.00	16.6	100	6	
Vert.	73.713	QP	41.58	6.37	7.05	32.18	0.00	22.82	40.00	17.1	400	0	
Vert.	221.181	QP	42.82	11.16	8.18	32.05	0.00	30.11	46.00	15.8	100	188	
Vert.	840.000	QP	34.43	21.38	10.90	31.43	0.00	35.28	46.00	10.7	100	22	
Vert.	960.272	QP	34.21	22.22	11.28	30.57	0.00	37.14	53.90	16.7	186	33	
Vert.	1439.989	PK	47.08	24.98	13.70	41.05	2.24	46.95	73.90	27.0	104	284	
Vert.	11550.000	PK	46.41	39.93	11.06	42.57	2.24	57.07	73.90	16.8	100	0	
Vert.	17325.000	PK	47.40	40.32	13.75	40.27	-9.54	51.66	73.90	22.2	100	0	
Vert.	1439.989	AV	35.20	24.98	13.70	41.05	2.24	35.07	53.90	18.8	104	284	VBW: 10 Hz
Vert.	11550.000	AV	35.35	39.93	11.06	42.57	2.24	46.01	53.90	**7.9**	100	0	VBW: 7.5 kHz
Vert.	17325.000	AV	37.74	40.32	13.75	40.27	-9.54	42.00	53.90	11.9	100	0	VBW: 7.5 kHz

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

(Calculation) (above 1GHz Outside of the restricted band)

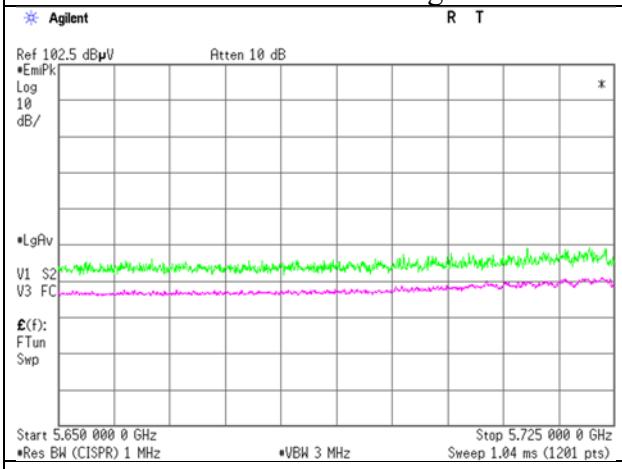
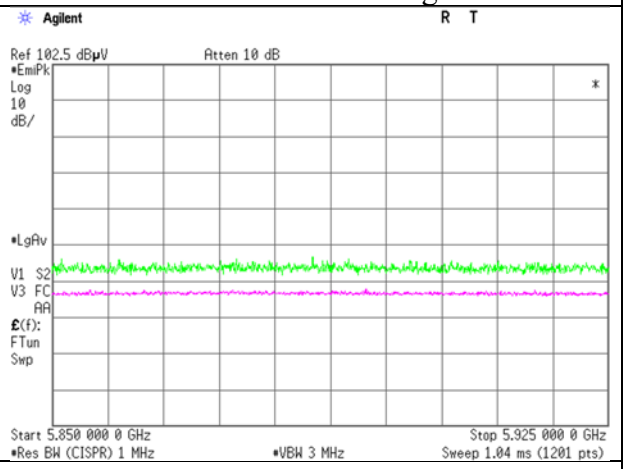
(* PK: Peak, AV: Average, QP: Quasi-Peak)

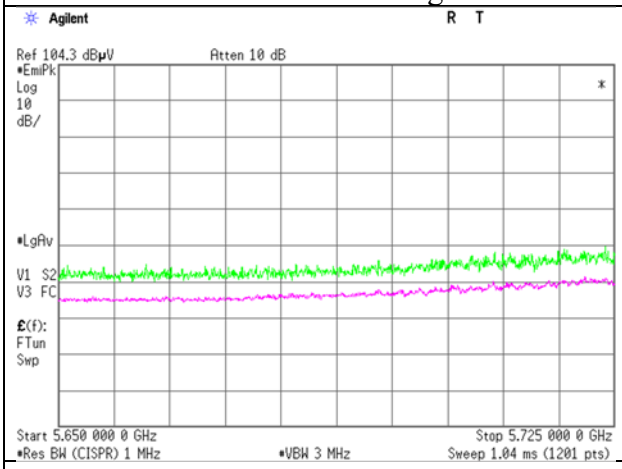
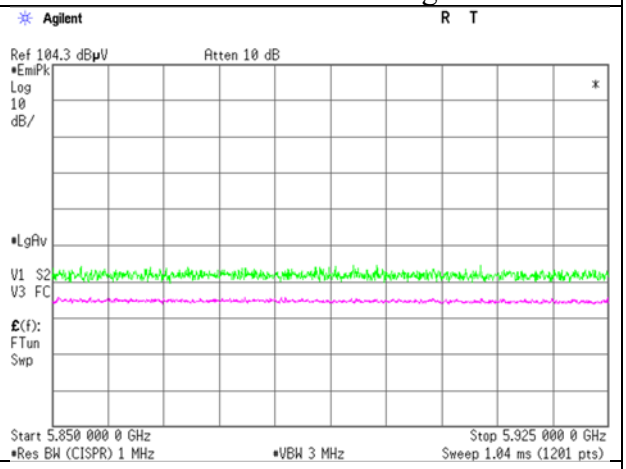
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Result (EIRP) [dBm]	Limit [dBm]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	5650.000	PK	48.42	32.18	17.41	43.33	2.24	56.92	-38.31	-27.00	11.3	234	257	
Hori.	5700.000	PK	49.93	32.23	17.45	43.33	2.24	58.52	-36.71	10.00	46.7	234	257	
Hori.	5720.000	PK	52.56	32.33	17.46	43.33	2.24	61.26	-33.97	15.60	49.6	234	257	
Hori.	5725.000	PK	52.25	32.35	17.46	43.33	2.24	60.97	-34.26	27.00	61.3	234	257	
Hori.	5850.000	PK	49.72	32.65	17.54	43.34	2.24	58.81	-36.42	27.00	63.4	234	257	
Hori.	5855.000	PK	48.68	32.66	17.54	43.34	2.24	57.78	-37.45	15.60	53.1	234	257	
Hori.	5875.000	PK	49.40	32.72	17.55	43.34	2.24	58.57	-36.66	10.00	46.7	234	257	
Hori.	5925.000	PK	48.98	32.80	17.58	43.34	2.24	58.26	-36.97	-27.00	**10.0**	234	257	
Vert.	5650.000	PK	49.57	32.18	17.41	43.33	2.24	58.07	-37.16	-27.00	10.2	106	304	
Vert.	5700.000	PK	51.29	32.23	17.45	43.33	2.24	59.88	-35.35	10.00	45.4	106	304	
Vert.	5720.000	PK	53.93	32.33	17.46	43.33	2.24	62.63	-32.60	15.60	48.2	106	304	
Vert.	5725.000	PK	54.66	32.35	17.46	43.33	2.24	63.38	-31.85	27.00	58.9	106	304	
Vert.	5850.000	PK	49.32	32.65	17.54	43.34	2.24	58.41	-36.82	27.00	63.8	106	304	
Vert.	5855.000	PK	48.60	32.66	17.54	43.34	2.24	57.70	-37.53	15.60	53.1	106	304	
Vert.	5875.000	PK	48.88	32.72	17.55	43.34	2.24	58.05	-37.18	10.00	47.2	106	304	
Vert.	5925.000	PK	48.36	32.80	17.58	43.34	2.24	57.64	-37.59	-27.00	10.6	106	304	

Result [dBuV/m] = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Resrult(EIRP[dBm])=10*LOG（({ 10 ^ (Electric Field Strength [dBuV/m] / 20) * 10 ^ (-6) * Distance:3[m]) ^ 2 } / 30) *10^3)
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20dB).
*The 4th harmonic was not seen so the result was its base noise level.
Distance factor : 1 GHz - 13 GHz : 20log (3.88 m / 3.0 m) = 2.24 dB
13 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	February 21, 2019
Temperature / Humidity	22 deg. C / 40 % RH
Engineer	Yosuke Ishikawa
	(1 GHz – 13 GHz)
Mode	Tx 11ac-80 (MIMO) 5775 MHz with Tx 3-DH5 Hopping On

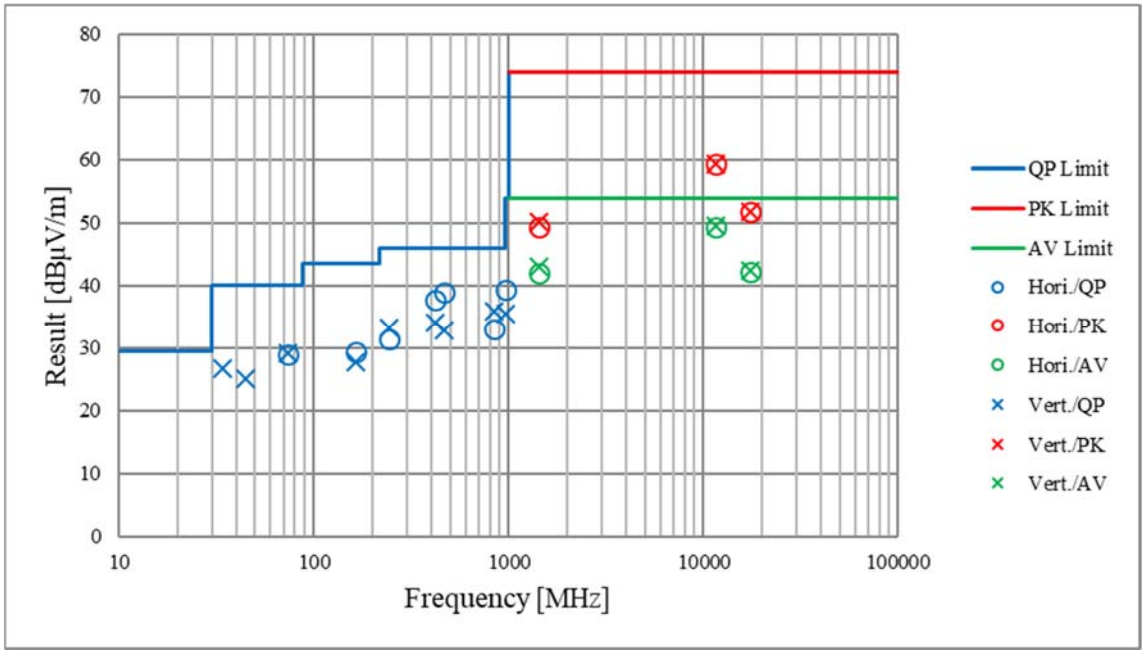
Horizontal	Horizontal
Restricted-band band-edge Plot	Restricted-band band-edge Plot
	
Trace Green: Peak Plot Trace Purple: Average Plot	Trace Green: Peak Plot Trace Purple: Average Plot

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

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)

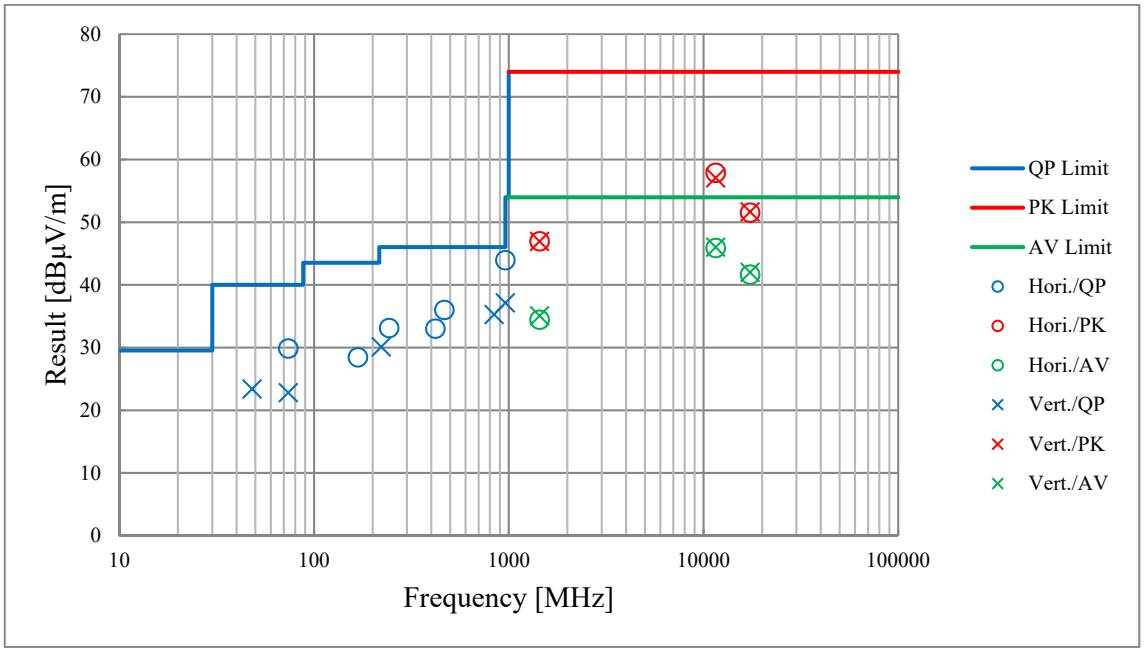
Report No.	12622648S-D-R2		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	1	1	1
Date	December 5, 2018	December 5, 2018	December 7, 2018
Temperature / Humidity	23 deg. C / 57 % RH	25 deg. C / 30 % RH	21 deg. C / 43 % RH
Engineer	Kenichi Adachi	Shiro Kobayashi	Kazuya Noda
	(30 MHz – 1 GHz)	(1 GHz – 6.4 GHz)	(6.4 GHz – 13 GHz)
Semi Anechoic Chamber	1	1	1
Date	December 9, 2018	December 4, 2018	December 6, 2018
Temperature / Humidity	22 deg. C / 35 % RH	21 deg. C / 41 % RH	25 deg. C / 35 % RH
Engineer	Kazuya Noda	Shiro Kobayashi	Shiro Kobayashi
	(13 GHz – 18 GHz)	(18 GHz – 26.5 GHz)	(26.5 GHz – 40 GHz)
Mode	Tx 11ac-80 (MIMO) 5775 MHz		



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

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	12622648S-D-R2	
Test place	Shonan EMC Lab.	
Semi Anechoic Chamber	3	3
Date	February 21, 2019	February 22, 2019
Temperature / Humidity	22 deg. C / 40 % RH	25 deg. C / 30 % RH
Engineer	Yosuke Ishikawa	Yosuke Ishikawa
	(1 GHz – 13 GHz)	(30 MHz – 1 GHz), (13 GHz – 40 GHz)
Mode	Tx 11ac-80 (MIMO) 5775 MHz with Tx 3-DH5 Hopping On	

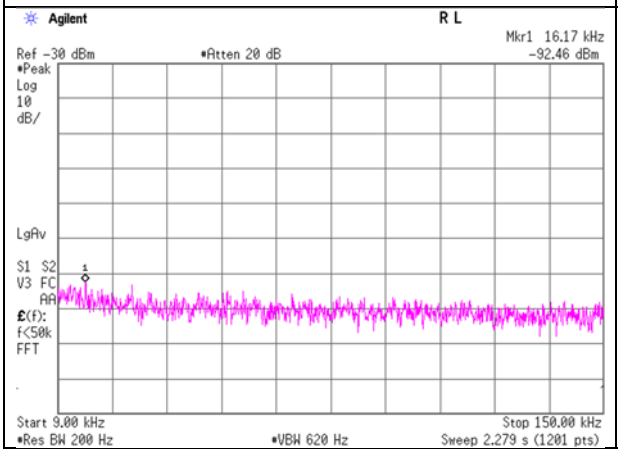


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

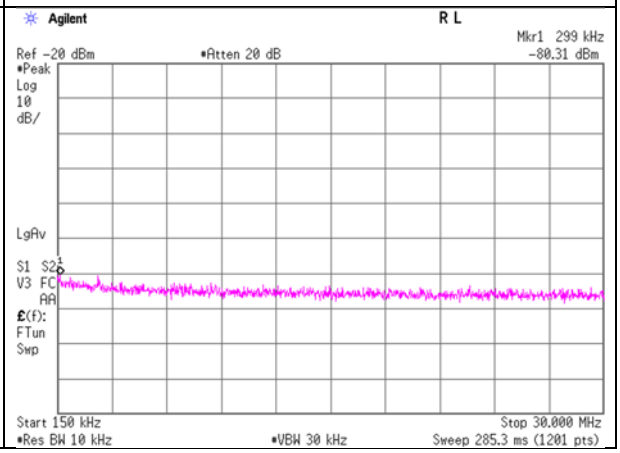
Conducted Spurious Emission

Report No.	12622648S-D-R2
Test place	Shonan EMC Lab. No.1 Measurement Room
Date	December 7, 2018
Temperature / Humidity	22 deg. C / 37 % RH
Engineer	Kazutaka Takeyama
Mode	Tx 11ac-80 (MIMO) 5775 MHz

9 kHz - 150 kHz



150 kHz - 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator [dB]	Antenna Gain* [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
16.17	-92.5	0.01	9.73	2.0	2	-77.7	300	6.0	-16.5	43.4	59.9	
299.00	-80.3	0.01	9.74	2.0	2	-65.5	300	6.0	-4.3	18.0	22.3	

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

EIRP[dBm] = Reading [dBm] + Cable loss [dB] + Attenuator Loss [dB] + Antenna gain [dBi] + 10 * log (N)

N: Number of output

*2.0 dBi was applied to the test result based on KDB 789033 since antenna gain was less than 2.0 dBi.

APPENDIX 2: Test instruments

Test Instruments [1/2]

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
KTS-07	AT	145111	Digital Tester	SANWA	PC500	7019232	2018/10/17	2019/10/31	12
KTS-08	AT	145095	Digital Tester	SANWA	PC500	7019224	2018/3/5	2019/3/31	12
SAT10-14	AT	154591	Attenuator	Weinschel Corp.	54A-10	81595	2018/4/20	2019/4/30	12
SCC-G14	AT	145175	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	2018/12/25	2019/12/31	12
SOS-09	AT	146318	Humidity Indicator	A&D	AD-5681	4061484	2018/12/5	2019/12/31	12
SOS-10	AT	146319	Humidity Indicator	A&D	AD-5681	4064561	2018/10/25	2019/10/31	12
SOS-13	AT	146321	Humidity Indicator	CUSTOM	CTH-202	Q.C.17	2018/12/5	2019/12/31	12
SPM-07	AT	146247	Power Meter	AGILENT	8990B	MY51002722	2018/7/13	2019/7/31	12
SPSS-04	AT	146310	Power sensor	AGILENT	N1923A	MY53260009	2018/7/13	2019/7/31	12
SSA-03	AT	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2018/8/30	2019/8/31	12
STM-G10	AT	171617	Terminator	WEINSCHEL	M1459A	92420	2018/7/10	2019/7/31	12
STM-G6	AT	146207	Terminator	JFW	50T-128	-	2018/11/25	2019/11/30	12
COTS-SEMI-5	RE	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,PE)	-	-	-	-
KAT6-04	RE	144899	Attenuator	Inmet	18N-6dB	-	2018/12/25	2019/12/31	12
KJM-02	RE	146432	Measure	TAJIMA	GL19-55	-	-	-	-
KJM-09	RE	145929	Measure	KOMELON	KMC-36	-	-	-	-
KSA-08	RE	145089	Spectrum Analyzer	AGILENT	E4446A	MY46180525	2018/10/7	2019/10/31	12
SAEC-01(NSA)	RE	145597	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	2018/5/29	2019/5/31	12
SAEC-01(SVSWR)	RE	145561	Semi-Anechoic Chamber	TDK	SAEC-01(SVSWR)	1	2018/7/19	2019/7/31	12
SAEC-03(NSA)	RE	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2018/6/2	2019/6/30	12
SAEC-03(SVSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2018/7/17	2019/7/31	12
SAF-01	RE	145003	Pre Amplifier	SONOMA	310N	290211	2018/2/16	2019/2/28	12
SAF-03	RE	145126	Pre Amplifier	SONOMA	310N	290213	2019/2/5	2020/2/29	12
SAF-04	RE	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2018/6/26	2019/6/30	12
SAF-06	RE	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	1440491	2019/2/8	2020/2/29	12
SAF-08	RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2018/3/27	2019/3/31	12
SAF-09	RE	145008	Pre Amplifier	Toyo Corporation	HAP18-26W	18	2018/9/21	2019/9/30	12
SAF-10	RE	145129	Pre Amplifier	Toyo Corporation	HAP26-40W	10	2018/3/27	2019/3/31	12
SAT10-06	RE	145137	Attenuator	AGILENT	8493C-010	74865	2018/11/25	2019/11/30	12
SAT3-09	RE	144959	Attenuator	JFW	50HF-003N	-	2018/8/23	2019/8/31	12
SAT6-13	RE	167094	Attenuator	JFW	50HF-006N		2019/2/5	2020/2/29	12
SBA-01	RE	145161	Biconical Antenna	Schwarzbeck	BBA9106	91032664	2018/6/5	2019/6/30	12
SBA-03	RE	145023	Biconical Antenna	Schwarzbeck	BBA9106	91032666	2018/6/17	2019/6/30	12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	RE	144967	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-269(RF Selector)	2018/4/9	2019/4/30	12

Test Instruments [2/2]

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	RE	144968	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-269(RF Selector)	2018/4/9	2019/4/30	12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	RE	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-271(RF Selector)	2018/4/9	2019/4/30	12
SCC-G05	RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2019/1/25	2020/1/31	12
SCC-G22	RE	145180	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	2018/5/11	2019/5/31	12
SCC-G33	RE	145184	Coaxial Cable	Junkosha	MWX241-01000KMSKMS	-	2018/4/20	2019/4/30	12
SCC-G40	RE	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2018/1/29	2019/1/31	12
SCC-G41	RE	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2019/1/25	2020/1/31	12
SCC-G45	RE	168301	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102 E	800137/2EA	2018/3/28	2019/3/31	12
SFL-03	RE	145377	Highpass Filter	MICRO-TRONICS	HPM50112	28	2018/11/16	2019/11/30	12
SHA-01	RE	145383	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-725	2018/7/23	2019/7/31	12
SHA-03	RE	145501	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	2018/7/23	2019/7/31	12
SHA-04	RE	145512	Horn Antenna	ETS LINDGREN	Sep-60	LM3640	2018/7/23	2019/7/31	12
SHA-05	RE	145513	Horn Antenna	ETS LINDGREN	Sep-60	LM4210	2018/7/23	2019/7/31	12
SHA-06	RE	145514	Horn Antenna	ETS LINDGREN	Oct-60	LM3459	2018/7/23	2019/7/31	12
SLA-05	RE	145527	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	193	2018/6/5	2019/6/30	12
SLA-07	RE	145529	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	196	2018/6/17	2019/6/30	12
SOS-01	RE	146316	Humidity Indicator	A&D	AD-5681	4062555	2018/10/25	2019/10/31	12
SOS-05	RE	146293	Humidity Indicator	A&D	AD-5681	4062518	2018/10/25	2019/10/31	12
SSA-02	RE	145800	Spectrum Analyzer	AGILENT	E4448A	MY48250106	2018/3/5	2019/3/31	12
STR-01	RE	145790	Test Receiver	Rohde & Schwarz	ESU40	100093	2018/4/13	2019/4/30	12
STR-08	RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2018/11/28	2019/11/30	12
STS-01	RE	145792	Digital Hitester	HIOKI	3805-50	80997812	2018/10/16	2019/10/31	12
STS-03	RE	146210	Digital Hitester	HIOKI	3805-50	80997823	2018/10/16	2019/10/31	12

***Hyphens for Last Calibration Date, Calibration Due Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.**

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
AT: Antenna Terminal Conducted test