RADIO TEST REPORT

Test Report No. : 11830772H-B-R1

Applicant	:	**MITSUBISHI ELECTRIC CORPORATION SANDA WORKS**
Type of Equipment	:	**Rear Seat Infotainment**
Model No.	:	**SU-0G**
FCC ID	:	**UJHSU0G**
Test regulation	:	**FCC Part 15 Subpart E: 2017**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 11830772H-B. 11830772H-B is replaced with this report.

Date of test: June 23 to August 17, 2017

Representative test engineer:
Hiroyuki Furutaka
Engineer
Consumer Technology Division

Approved by:
Tsubasa Takayama
Engineer
Consumer Technology Division

NVLAP TESTING
NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
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http://japan.ul.com/resources/emc_accredited/

REVISION HISTORY

Original Test Report No.: 11830772H-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11830772H-B	September 27, 2017	-	-
1	11830772H-B-R1	November 29, 2017	P.6	Update to FCC version.
1	11830772H-B-R1	November 29, 2017	P.29	Correction of 99% OBM value of Tx 11a data in Maximum Conducted Output Power.
1	11830772H-B-R1	November 29, 2017	P.106	Correction of Antenna Gain value. Deletion of note sentence.

CONTENTS PAGE

SECTION 1: Customer information....4
SECTION 2: Equipment under test (E.U.T.)....4
SECTION 3: Test specification, procedures & results....6
SECTION 4: Operation of E.U.T. during testing....9
SECTION 5: Radiated Spurious Emission and Band Edge Compliance....11
SECTION 6: Antenna Terminal Conducted Tests....13
APPENDIX 1: Test data....14
99 % Occupied Bandwidth....14
20 dB Bandwidth....22
6 dB Bandwidth....25
Maximum Conducted Output Power....29
Average Output Power....37
Maximum Power Spectral Density....45
Radiated Spurious Emission....57
Conducted Spurious Emission....106
APPENDIX 2: Test instruments....107
APPENDIX 3: Photographs of test setup....108
Radiated Spurious Emission....108

SECTION 1: Customer information

Company Name	:	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS
Address	:	2-3-33, Miwa, Sanda-city, Hyogo, 669-1513, Japan
Telephone Number	:	+81-79-559-3607
Facsimile Number	:	+81-79-559-3875
Contact Person	:	Harutaka Nomura

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

2.1 Identification of E.U.T.

Type of Equipment	:	Rear Seat Infotainment
Model No.	:	SU-0G
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12.0 V
Receipt Date of Sample	:	June 21, 2017
Country of Mass-production	:	Thailand
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: SU-0G (referred to as the EUT in this report) is a Rear Seat Infotainment.

General Specification

Clock frequency(ies) in the system : 37.4 MHz

Radio Specification

Radio Type : Transceiver
Power Supply (inner) : DC 3.3 V

Specification of Wireless LAN (IEEE802.11b/g/a/n-20/n-40/11ac-20/11ac-40/11ac-80)

Type of radio	IEEE802.11b	IEEE802.11g/n-20	IEEE802.11a/n-20/ac-20 *1)	IEEE802.11n-40/ac-40 *1)	IEEE802.11ac-80 *1)
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5180 MHz - 5240 MHz 5745 MHz - 5825 MHz	5190 MHz - 5230 MHz 5755 MHz - 5795 MHz	5210 MHz 5775 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)		256QAM (MCS8, MCS9)
Channel spacing	5 MHz		20 MHz	40 MHz	80 MHz
Antenna type	Inverted F Antenna				
Antenna Gain	2.4 GHz : -0.13 dBi 5 GHz: 5150 MHz - 5350 MHz : 3.99 dBi 5470 MHz - 5875 MHz : 3.86 dBi				
Antenna Connector type	UFL-LP-066				

*1) This test report applied for WLAN (5 GHz band).

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E FCC Part 15 final revised on November 2, 2017
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

* The revision on November 2, 2017, does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013	**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)	N/A	N/A *2)	-
	IC: -	**IC:** -			
Maximum Conducted Output Power	**FCC:** KDB Publication Number 789033	**FCC:** 15.407 (a) (1) (2) (3)	See data	Complied	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	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	3.6 dB 810.000 MHz, Horizontal, QP	Complied	Conducted (< 30 MHz) / Radiated (> 30 MHz) *3)
	IC: -	**IC:** RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2			
20dB Emission Bandwidth	**FCC:** ANSI C63.10-2013	**FCC :** 15.215(c)	See data	Complied	Conducted
	IC: -	**IC:** -			
6 dB Emission Bandwidth	**FCC:** ANSI C63.10-2013	**FCC:** 15.407 (e)	See data	Complied	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.
*DFS is not required in the W52 and W58 bands, and the EUT does not have DFS function.
99% Occupied Band Width is within intended transmission frequency band.
*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.
*2) The EUT does not have W53 and W56 bands.
*3) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b).

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

FCC Part 15.31 (e)

This EUT provides stable voltage (DC 3.3 V) constantly to RF Module regardless of input voltage. Therefore, this 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 6.6	**IC: -**	N/A	N/A	Conducted

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

3.4 Uncertainty

EMI

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

Ise EMC Lab.

Antenna terminal test	Uncertainty (+/-)
RF output power	1.2 dB
Antenna terminal conducted emission / Power density / Burst power	3.1 dB
Adjacent channel power / Channel power	
Below 3 GHz	1.8 dB
3 GHz to 6 GHz	2.7 dB

Polarity	Radiated emission (Below 1 GHz)			
	(3 m*) (+/-)		(10 m*) (+/-)	
	30 MHz - 200 MHz	200 MHz - 1000 MHz	30 MHz - 200 MHz	200 MHz - 1000 MHz
Horizontal	5.0 dB	5.3 dB	5.0 dB	5.0 dB
Vertical	5.2 dB	6.3 dB	5.0 dB	5.0 dB

Radiated emission (Above 1 GHz)				
(3 m*) (+/-)		(1 m*) (+/-)		(10 m*) (+/-)
1 GHz - 6 GHz	6 GHz - 18 GHz	10 GHz - 26.5 GHz	26.5 GHz - 40 GHz	1 GHz - 18 GHz
5.2 dB	5.5 dB	5.5 dB	5.4 dB	5.5 dB

*Measurement distance

Radiated emission test

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

3.5 Test Location

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

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

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

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

4.1 Operating Mode(s)

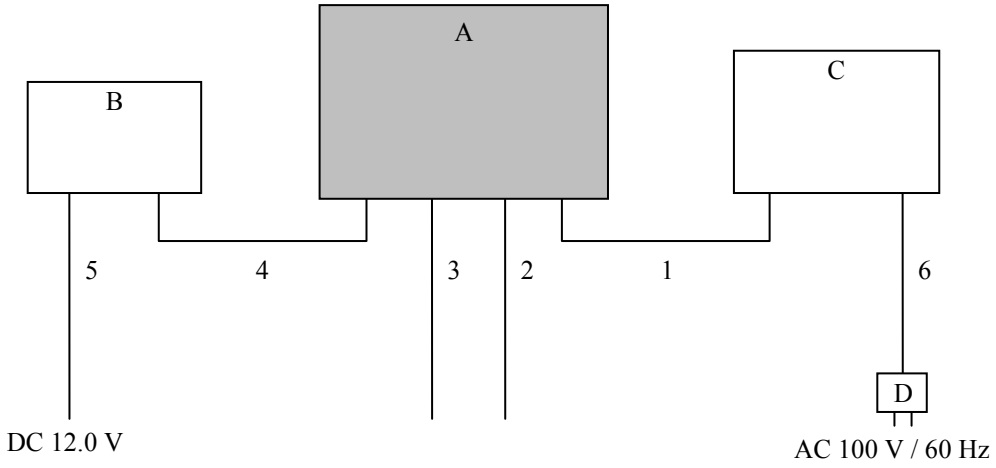
Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals -" of TCB Council Workshop October 2009 and also was judged the necessity of 802.11ac mode by the pre-test.

Mode	Remarks*
IEEE 802.11a (11a)	6 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 7, PN9
IEEE 802.11ac 20 MHz BW (11ac-20)	MCS 4, PN9
IEEE 802.11n 40 MHz BW (11n-40)	MCS 6, PN9
IEEE 802.11ac 40 MHz BW (11ac-40)	MCS 0, PN9
IEEE 802.11ac 80 MHz BW (11ac-80)	MCS 0, PN9
*The worst 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 Setting: 11a: 11 dBm, 11n-20: 10 dBm, 11ac-20: 10 dBm, 11n-40: 10 dBm, 11ac-40: 9 dBm, 11ac-80: 9 dBm - Software: Wi-Fi_TEST_ver0.30 *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 Frequency	
		Lower Band	Upper Band
99% Occupied Bandwidth, Maximum Conducted Output Power, Maximum Power Spectral Density	11a Tx 11n-20 Tx 11ac-20 Tx	5180 MHz 5220 MHz 5240 MHz	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx 11ac-40 Tx	5190 MHz 5230 MHz	5755 MHz 5795 MHz
	11ac-80 Tx	5210 MHz	5775 MHz
20dB Bandwidth	11a Tx 11n-20 Tx 11ac-20 Tx	5240 MHz	-
	11n-40 Tx 11ac-40 Tx	5230 MHz	-
	11ac-80 Tx	5210 MHz	-
Radiated Spurious Emission *1)	11a Tx 11n-20 Tx	5180 MHz 5220 MHz 5240 MHz	5745 MHz 5785 MHz 5825 MHz
	11ac-20 Tx	5180 MHz 5240 MHz	5745 MHz 5825 MHz
	11n-40 Tx 11ac-40 Tx	5190 MHz 5230 MHz	5755 MHz 5795 MHz
	11ac-80 Tx	5210 MHz	5775 MHz
Conducted Spurious Emission	11a Tx *2)	-	5745 MHz
6dB Bandwidth	11a Tx 11n-20 Tx 11ac-20 Tx	-	5745 MHz 5785 MHz 5825 MHz
	11n-40 Tx 11ac-40 Tx	-	5755 MHz 5795 MHz
	11ac-80 Tx	-	5775 MHz
*1) Since 11n and 11ac have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest peak output power. 11ac-20 was tested only band-edge. *2) The mode was tested as a representative, because it had the highest power at antenna terminal test.			

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	Rear Seat Infotainment	SU-0G	6117054AF7200009 *1) 6117054AF7200056 *2)	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS	EUT
B	Jig board	NJ00044711	082	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS	-
C	Display	-	099	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS	-
D	AC Adapter	STD-05030U	-	Adapter Technology Co., Ltd.	-

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

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Display Cable	1.0	Shielded	Shielded	-
2	Dummy Cable	3.0	Shielded	Shielded	-
3	Dummy Cable	1.0	Shielded	Shielded	-
4	Jig Cable	0.5	Unshielded	Unshielded	-
5	DC Cable	2.0	Unshielded	Unshielded	-
6	DC Cable	1.6	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1GHz >
EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

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

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

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

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

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

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:

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

Test Antennas are used as below;

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

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

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01r04 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".
*2) Distance Factor: 20 x log (4.45 m/3.0 m) = 3.43 dB
*3) Distance Factor: 20 x log (1.0 m/3.0 m) = -9.5 dB

The test was made on EUT at the normal use position.

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
26 dB Bandwidth	Enough to capture the emission	Close to 1 % of EBW	> RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 % to 5 % of OBW	≥ 3 RBW	Auto	Peak	Max Hold	Spectrum Analyzer
20 dB Bandwidth	Enough to capture the emission	100 kHz	300 kHz	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: 80 MHz BW) (Method PM)
Maximum Power Spectral Density	Encompass the entire EBW	1 MHz 470 kHz *2)	≥ 3 RBW	Auto	RMS Power Averaging (200 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	9.1 kHz	27 kHz				

* The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v01r04 "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 low enough as shown in the chart. (9 kHz-150 kHz: RBW = 200 Hz, 150 kHz-30 MHz: RBW = 9.1 kHz).

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

99 % Occupied Bandwidth

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx	

11a

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5180	17.298	-
5220	17.287	-
5240	17.279	-
5745	17.218	-
5785	17.315	-
5825	17.393	-

11n-20

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5180	18.119	-
5220	18.045	-
5240	18.022	-
5745	18.016	-
5785	18.048	-
5825	18.041	-

11ac-20

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5180	18.153	-
5220	18.105	-
5240	18.089	-
5745	18.195	-
5785	18.056	-
5825	18.117	-

99 % Occupied Bandwidth

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx	

11n-40

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5190	36.335	-
5230	36.334	-
5755	36.390	-
5795	36.398	-

11ac-40

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5190	36.499	-
5230	36.345	-
5755	36.364	-
5795	36.316	-

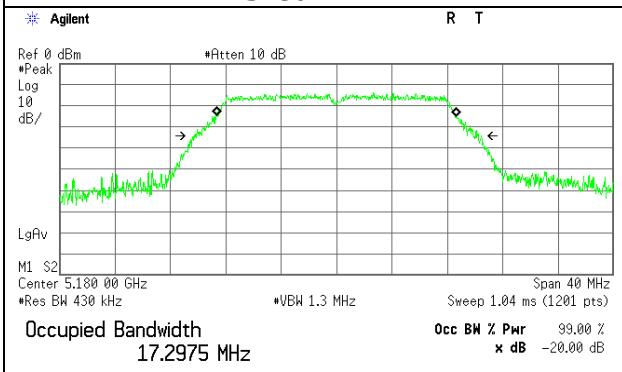
11ac-80

Tested Frequency [MHz]	99 % Occupied Bandwidth [MHz]	Limit [MHz]
5210	75.799	-
5775	76.043	-

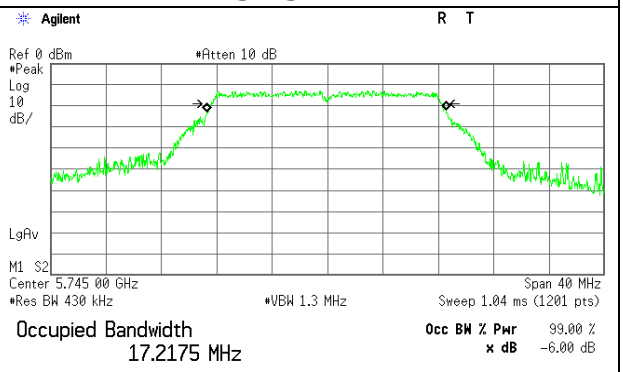
99 % Occupied Bandwidth

11a

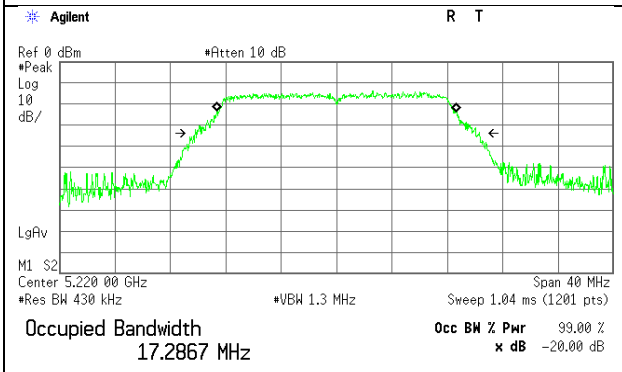
5180 MHz



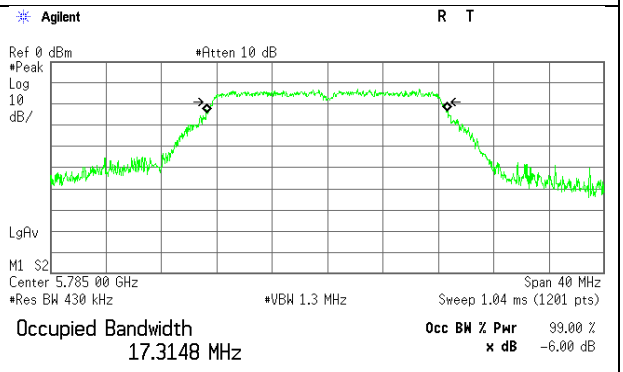
5745 MHz



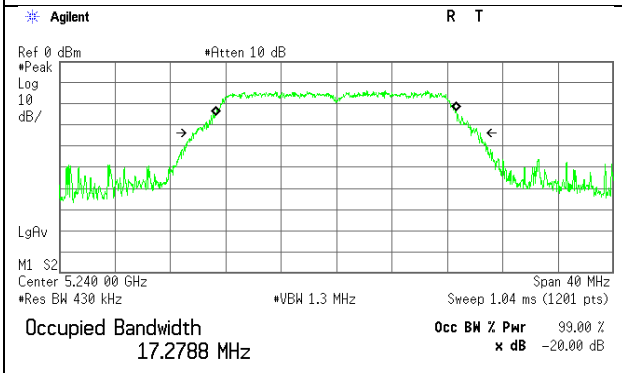
5220 MHz



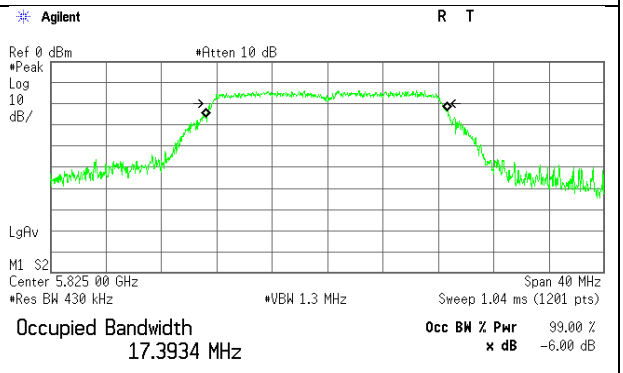
5785 MHz



5240 MHz



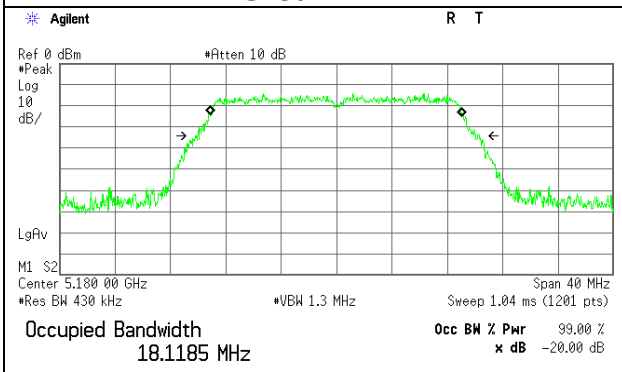
5825 MHz



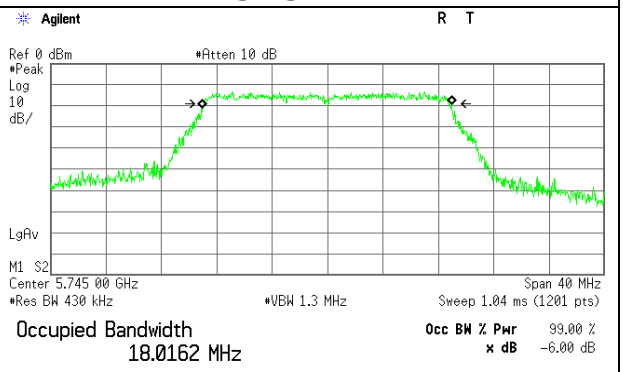
99 % Occupied Bandwidth

11n-20

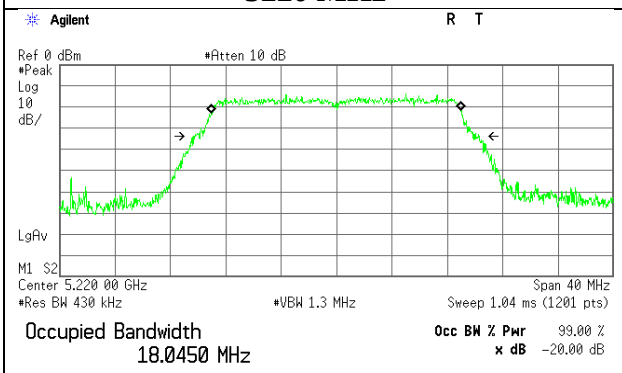
5180 MHz



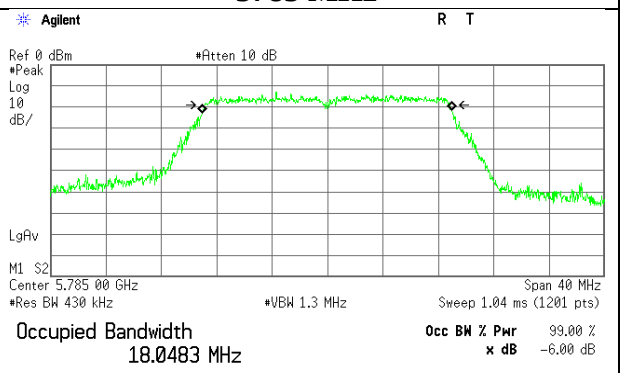
5745 MHz



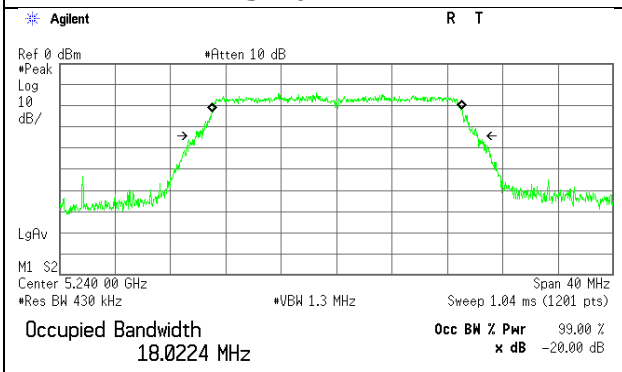
5220 MHz



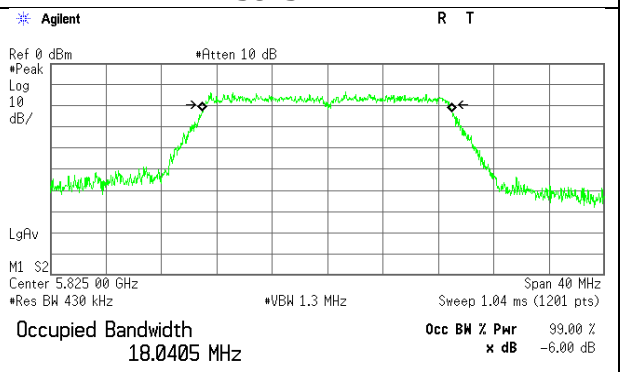
5785 MHz



5240 MHz



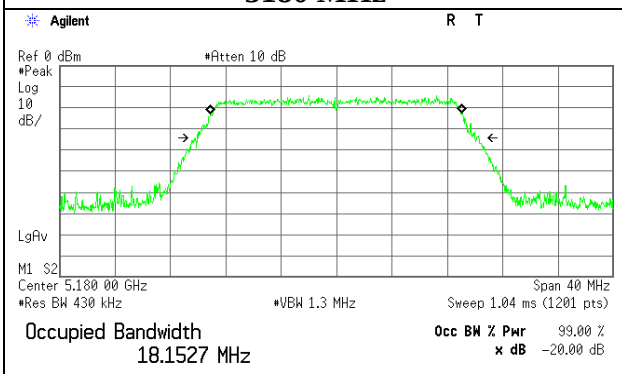
5825 MHz



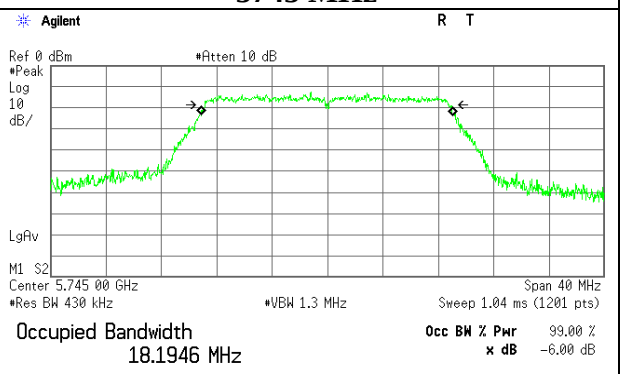
99 % Occupied Bandwidth

11ac-20

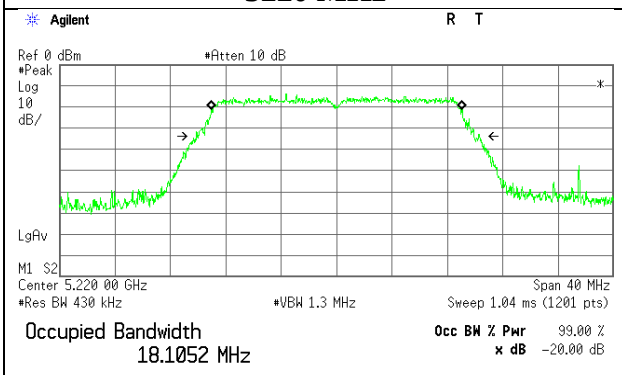
5180 MHz



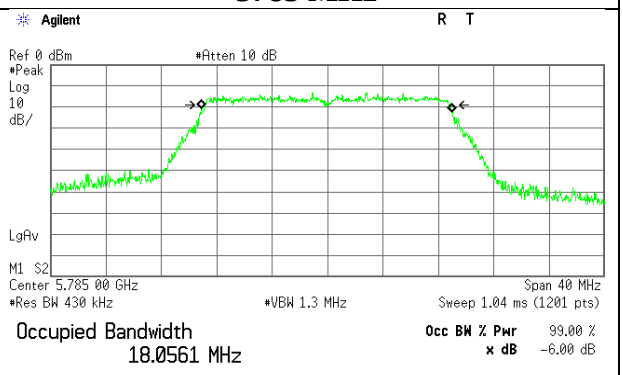
5745 MHz



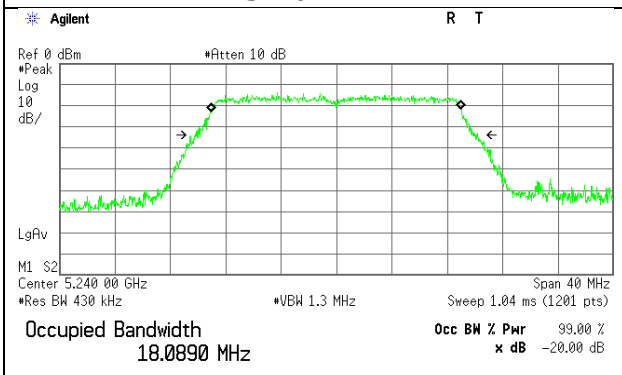
5220 MHz



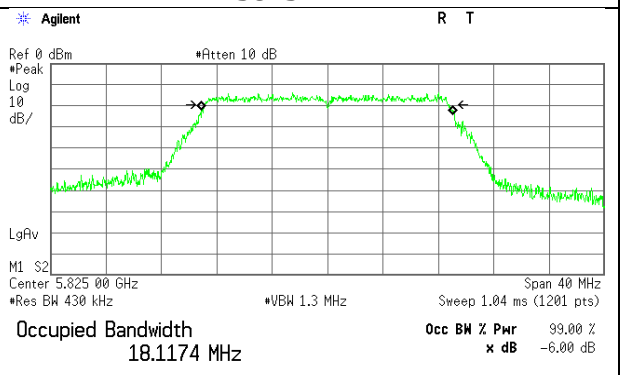
5785 MHz



5240 MHz



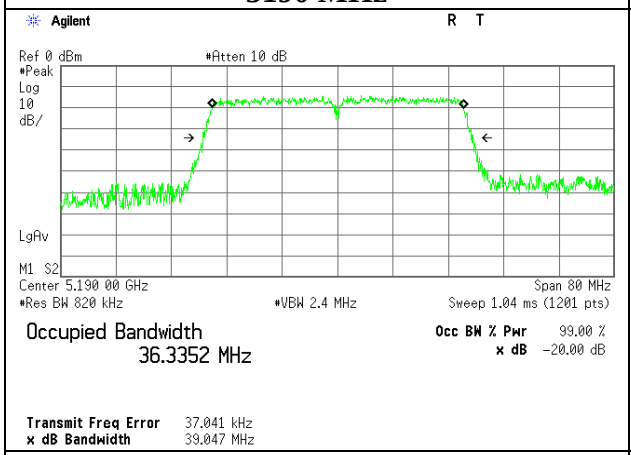
5825 MHz



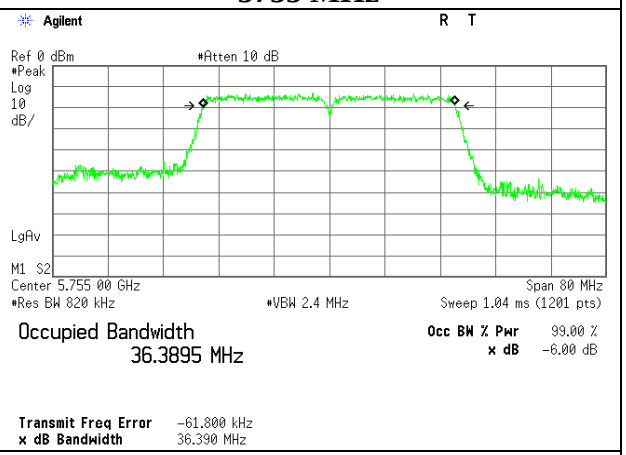
99 % Occupied Bandwidth

11n-40

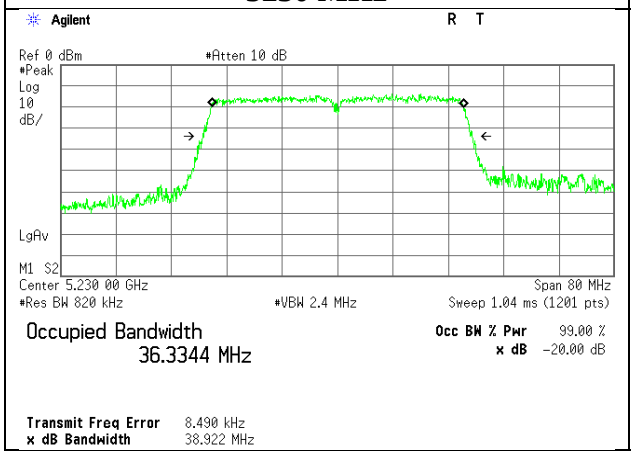
5190 MHz



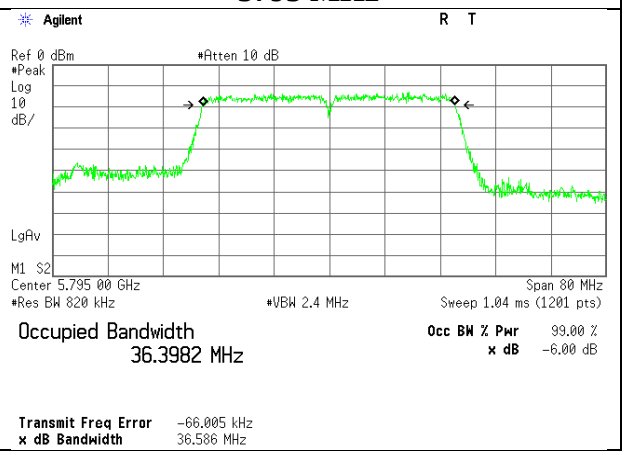
5755 MHz



5230 MHz



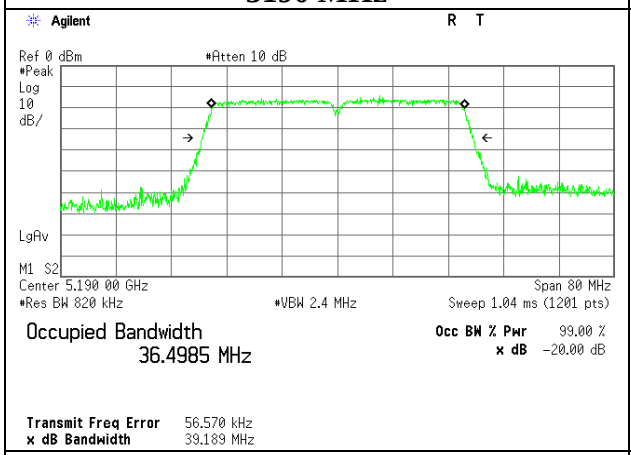
5795 MHz



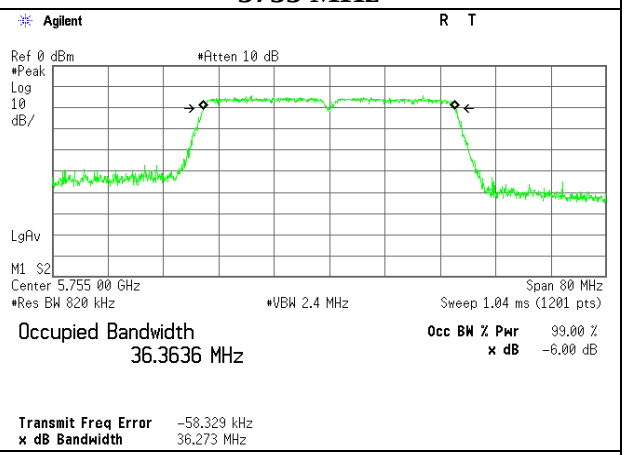
99 % Occupied Bandwidth

11ac-40

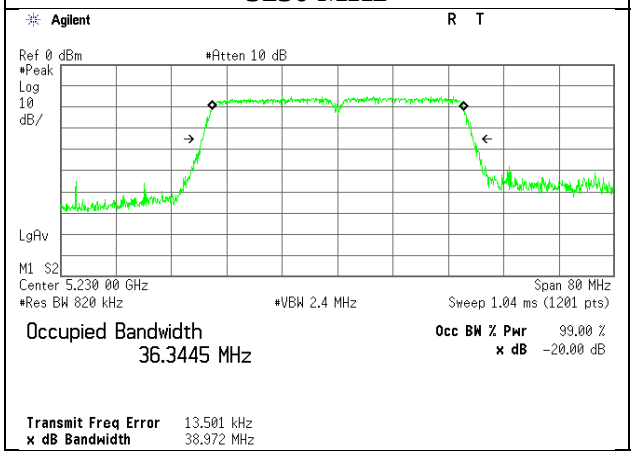
5190 MHz



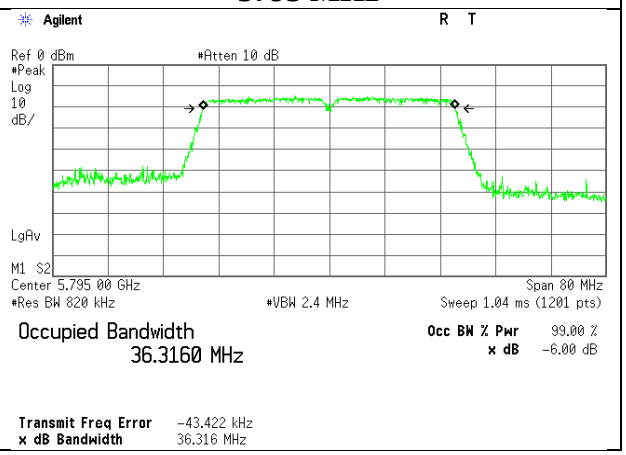
5755 MHz



5230 MHz

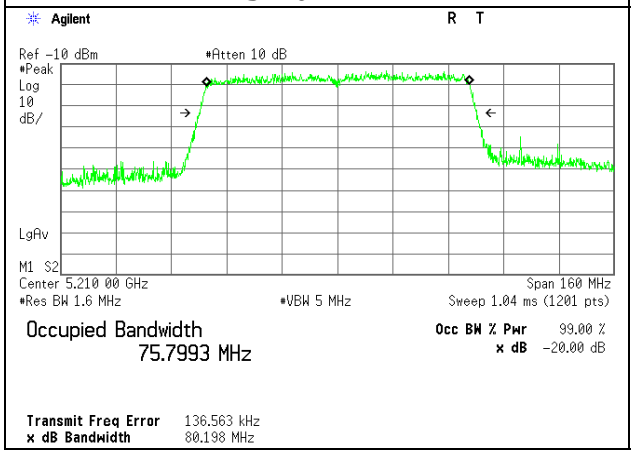
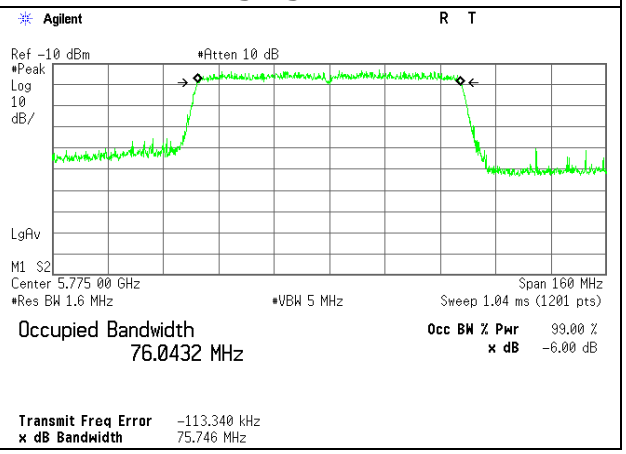


5795 MHz



99 % Occupied Bandwidth

11ac-80

5210 MHz	5775 MHz
	

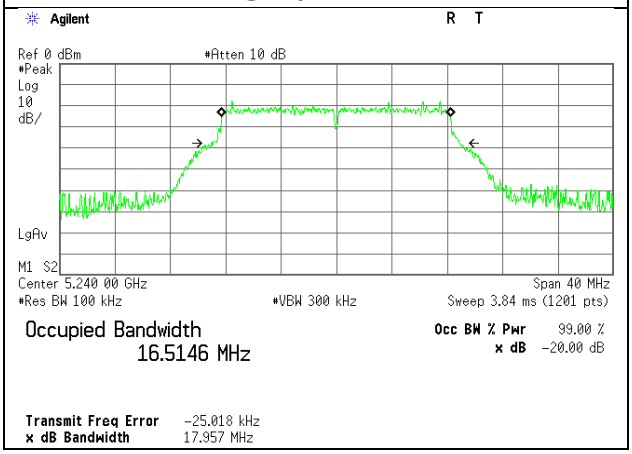
20 dB Bandwidth

Test place	Ise EMC Lab. No. 11 Measurement Room
Report No.	11830772H
Date	August 2, 2017
Temperature / Humidity	24 deg. C / 46 % RH
Engineer	Yuta Moriya
Mode	Tx

11a

Tested Frequency [MHz]	20 dB Emission Bandwidth [MHz]
5240	17.957

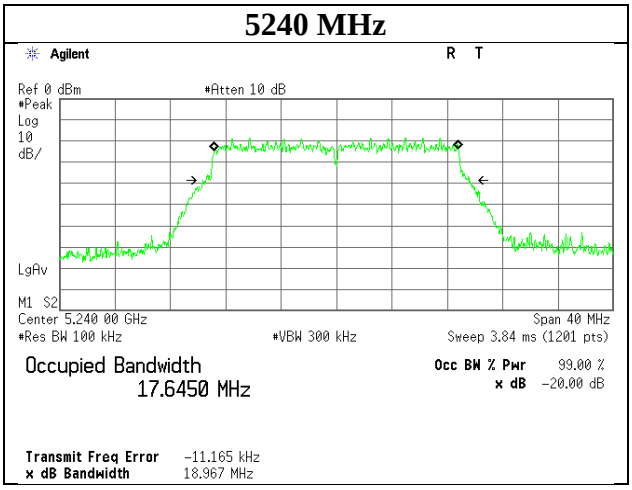
11a
5240 MHz



11n-20

Tested Frequency [MHz]	20 dB Emission Bandwidth [MHz]
5240	18.967

11n-20
5240 MHz



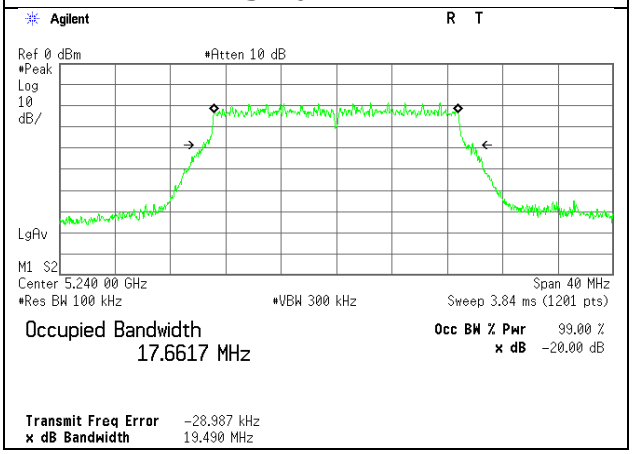
20 dB Bandwidth

Test place	Ise EMC Lab. No. 11 Measurement Room
Report No.	11830772H
Date	August 2, 2017
Temperature / Humidity	24 deg. C / 46 % RH
Engineer	Yuta Moriya
Mode	Tx

11ac-20

Tested Frequency [MHz]	20 dB Emission Bandwidth [MHz]
5240	19.490

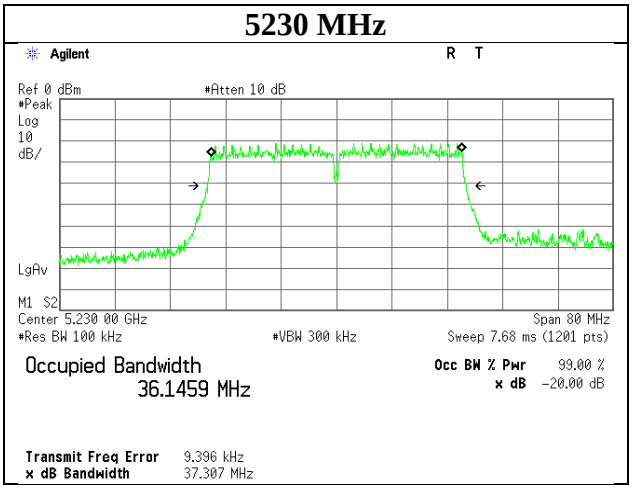
11ac-20
5240 MHz



11n-40

Tested Frequency [MHz]	20 dB Emission Bandwidth [MHz]
5230	37.307

11n-40
5230 MHz



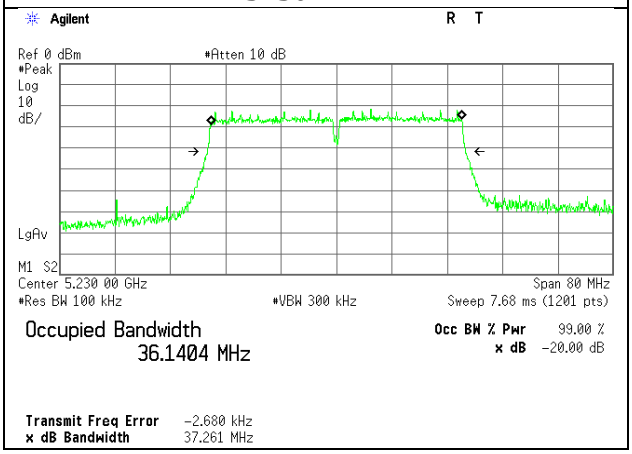
20 dB Bandwidth

Test place	Ise EMC Lab. No. 11 Measurement Room
Report No.	11830772H
Date	August 2, 2017
Temperature / Humidity	24 deg. C / 46 % RH
Engineer	Yuta Moriya
Mode	Tx

11ac-40

Tested Frequency [MHz]	20 dB Emission Bandwidth [MHz]
5230	37.261

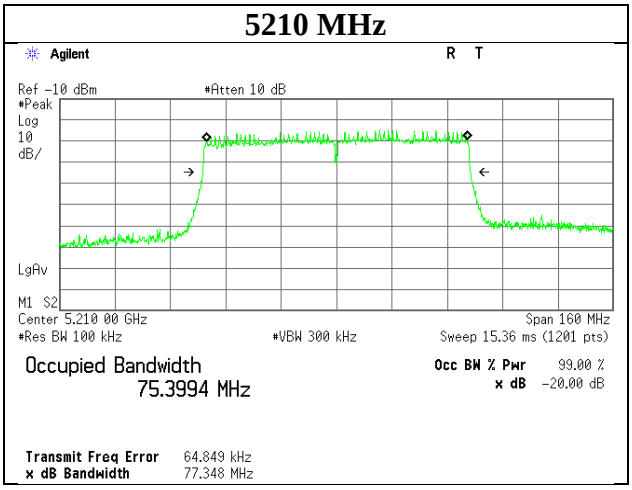
11ac-40
5230 MHz



11ac-80

Tested Frequency [MHz]	20 dB Emission Bandwidth [MHz]
5210	77.348

11ac-80
5210 MHz



6 dB Bandwidth

Test place	Ise EMC Lab. No. 11 Measurement Room
Report No.	11830772H
Date	August 2, 2017
Temperature / Humidity	24 deg. C / 46 % RH
Engineer	Yuta Moriya
Mode	Tx

11a

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5745	16.328	> 500
5785	16.415	> 500
5825	16.393	> 500

11n-20

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5745	17.667	> 500
5785	17.653	> 500
5825	17.708	> 500

11ac-20

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5745	17.593	> 500
5785	17.662	> 500
5825	17.751	> 500

11n-40

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5755	36.400	> 500
5795	36.325	> 500

11ac-40

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5755	36.363	> 500
5795	36.353	> 500

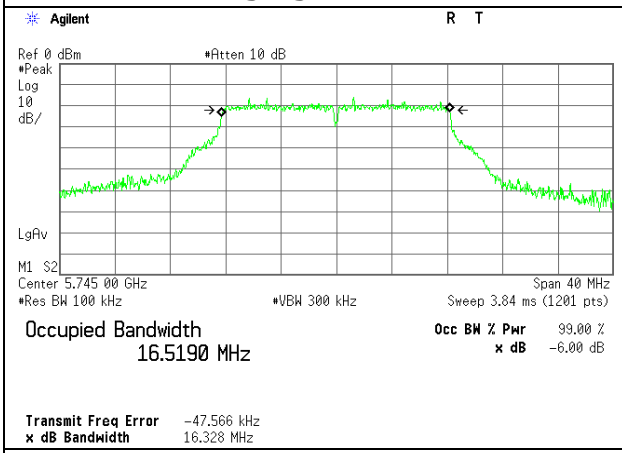
11ac-80

Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [kHz]
5775	75.633	> 500

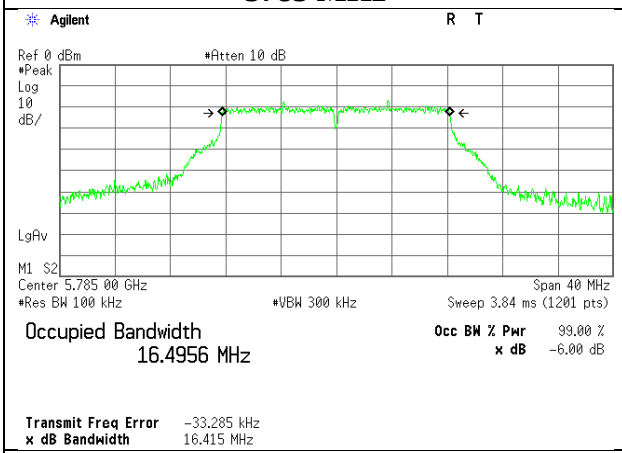
6 dB Bandwidth

11a

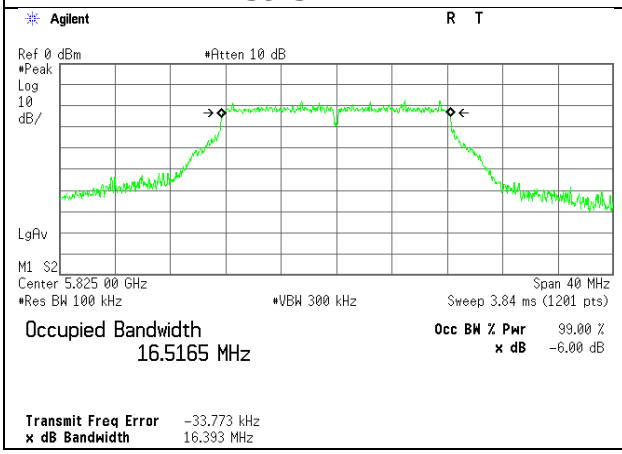
5745 MHz



5785 MHz

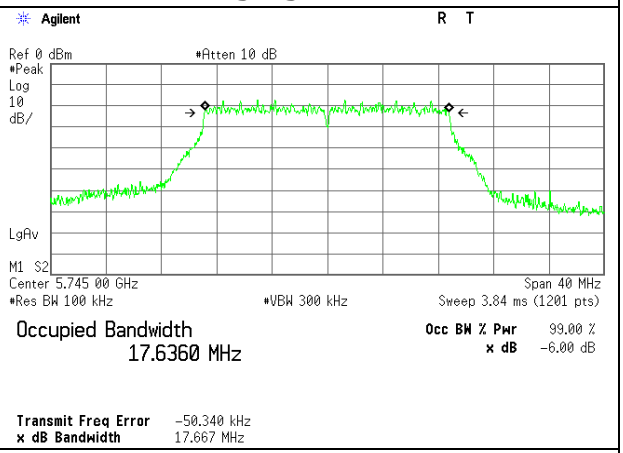


5825 MHz

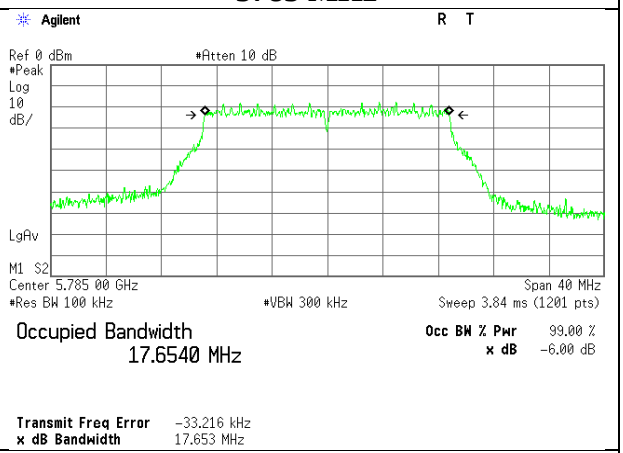


11n-20

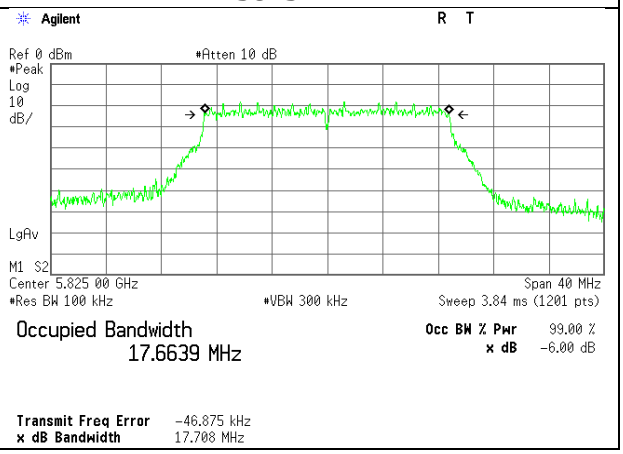
5745 MHz



5785 MHz



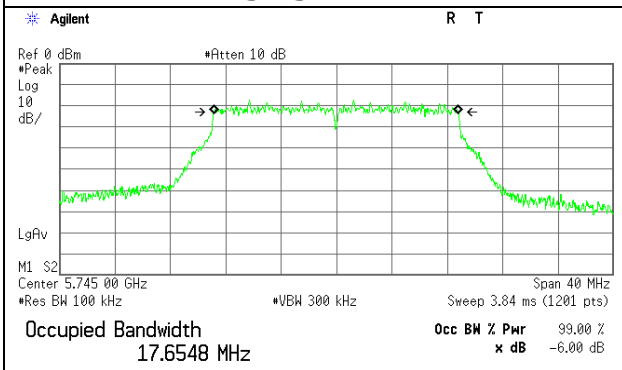
5825 MHz



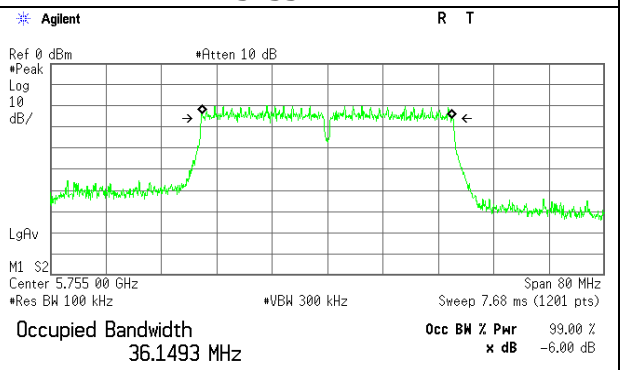
6 dB Bandwidth

11ac-20

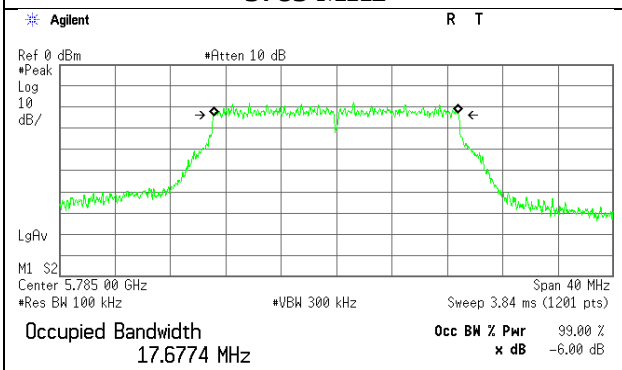
5745 MHz



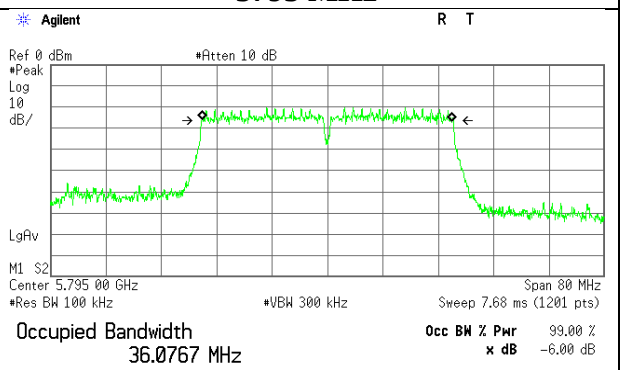
5755 MHz



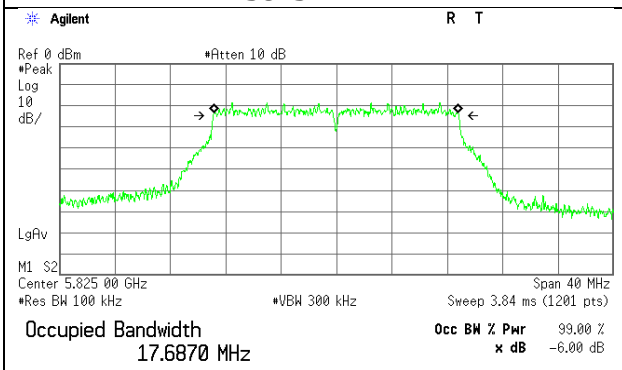
5785 MHz



5795 MHz



5825 MHz

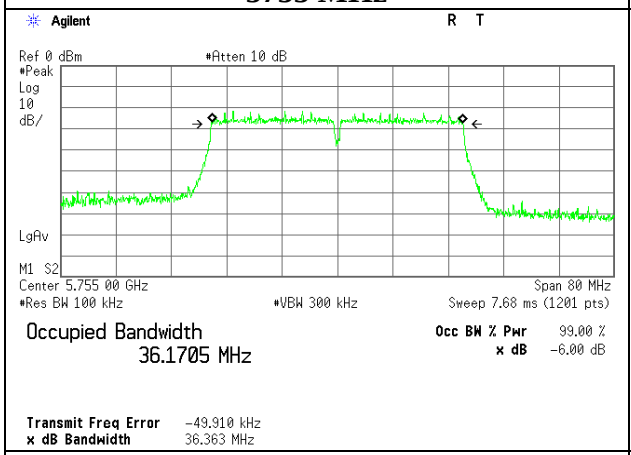


11n-40

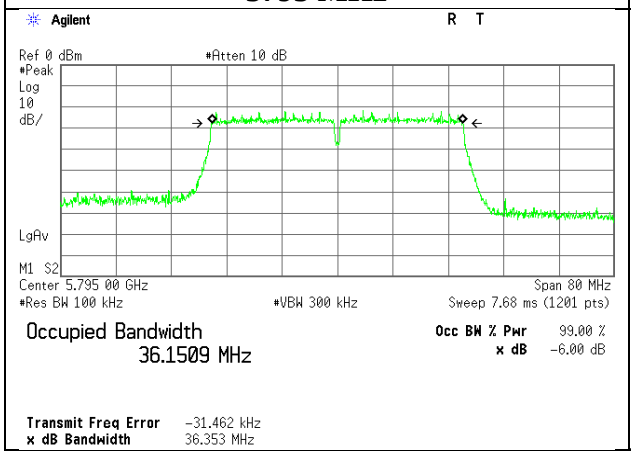
6 dB Bandwidth

11ac-40

5755 MHz

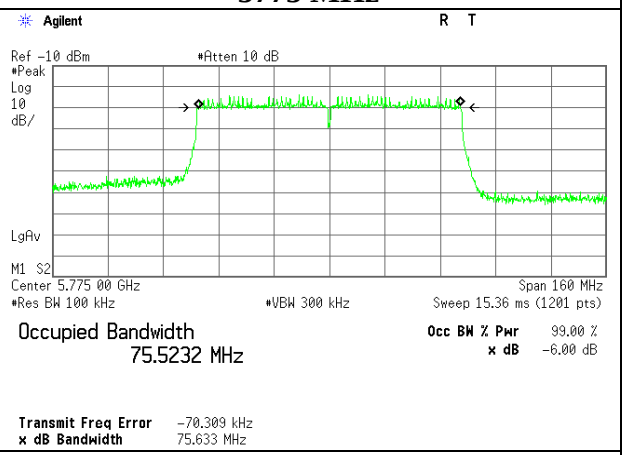


5795 MHz



11ac-80

5775 MHz



Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Shielded Room
Report No.	11830772H
Date	August 3, 2017
Temperature / Humidity	24 deg. C / 60 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11a

Applied limit: 15.407, mobile and portable client device

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		Conducted Power Limit	Conducted Power Margin	e.i.r.p. Result		e.i.r.p. Limit	e.i.r.p. Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-5.24	1.00	10.13	0.27	3.99	-	17.298	6.16	4.13	23.97	17.81	10.15	10.35	29.97	19.82
5220	-4.92	1.00	10.13	0.27	3.99	-	17.287	6.48	4.45	23.97	17.49	10.47	11.14	29.97	19.50
5240	-4.82	1.00	10.13	0.27	3.99	-	17.279	6.58	4.55	23.97	17.39	10.57	11.40	29.97	19.40
5745	-4.18	1.00	10.13	0.27	3.86	-	-	7.22	5.27	30.00	22.78	11.08	12.82	36.00	24.92
5785	-4.54	1.00	10.12	0.27	3.86	-	-	6.85	4.84	30.00	23.15	10.71	11.78	36.00	25.29
5825	-5.15	1.00	10.12	0.27	3.86	-	-	6.24	4.21	30.00	23.76	10.10	10.23	36.00	25.90

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Shielded Room
Report No.	11830772H
Date	August 3, 2017
Temperature / Humidity	24 deg. C / 60 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11n-20

Applied limit: 15.407, mobile and portable client device

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]
5180	-7.95	1.00	10.13	1.94	3.99	-	18.119	5.12	3.25	23.97	18.85	9.11	8.15	29.97	20.86
5220	-7.74	1.00	10.13	1.94	3.99	-	18.045	5.33	3.41	23.97	18.64	9.32	8.55	29.97	20.65
5240	-7.63	1.00	10.13	1.94	3.99	-	18.022	5.44	3.50	23.97	18.53	9.43	8.77	29.97	20.54
5745	-6.89	1.00	10.13	1.94	3.86	-	-	6.18	4.15	30.00	23.82	10.04	10.09	36.00	25.96
5785	-7.48	1.00	10.12	1.94	3.86	-	-	5.58	3.61	30.00	24.42	9.44	8.79	36.00	26.56
5825	-8.09	1.00	10.12	1.94	3.86	-	-	4.97	3.14	30.00	25.03	8.83	7.64	36.00	27.17

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Shielded Room
Report No.	11830772H
Date	August 3, 2017
Temperature / Humidity	24 deg. C / 60 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-20

Applied limit: 15.407, mobile and portable client device

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		Conducted Power Limit	Conducted Power Margin	e.i.r.p. Result		e.i.r.p. Limit	e.i.r.p. Margin
[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]	[mW]	[dBm]	[dB]	[dBm]	[mW]	[dBm]	[dB]
5180	-7.34	1.00	10.13	1.39	3.99	-	18.153	5.18	3.30	23.97	18.79	9.17	8.26	29.97	20.80
5220	-7.12	1.00	10.13	1.39	3.99	-	18.105	5.40	3.47	23.97	18.57	9.39	8.69	29.97	20.58
5240	-7.04	1.00	10.13	1.39	3.99	-	18.089	5.48	3.53	23.97	18.49	9.47	8.85	29.97	20.50
5745	-6.41	1.00	10.13	1.39	3.86	-	-	6.11	4.08	30.00	23.89	9.97	9.93	36.00	26.03
5785	-6.73	1.00	10.12	1.39	3.86	-	-	5.78	3.78	30.00	24.22	9.64	9.20	36.00	26.36
5825	-7.50	1.00	10.12	1.39	3.86	-	-	5.01	3.17	30.00	24.99	8.87	7.71	36.00	27.13

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Shielded Room
Report No.	11830772H
Date	August 3, 2017
Temperature / Humidity	24 deg. C / 60 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11n-40

Applied limit: 15.407, mobile and portable client device

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]
5190	-8.31	1.00	10.13	2.75	3.99	-	36.335	5.57	3.61	23.97	18.40	9.56	9.04	29.97	20.41
5230	-8.21	1.00	10.13	2.75	3.99	-	36.334	5.67	3.69	23.97	18.30	9.66	9.25	29.97	20.31
5755	-7.63	1.00	10.12	2.75	3.86	-	-	6.24	4.21	30.00	23.76	10.10	10.23	36.00	25.90
5795	-8.29	1.00	10.12	2.75	3.86	-	-	5.58	3.61	30.00	24.42	9.44	8.79	36.00	26.56

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Shielded Room
Report No.	11830772H
Date	August 3, 2017
Temperature / Humidity	24 deg. C / 60 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-40

Applied limit: 15.407, mobile and portable client device

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]
5190	-6.77	1.00	10.13	0.58	3.99	-	36.499	4.94	3.12	23.97	19.03	8.93	7.82	29.97	21.04
5230	-6.54	1.00	10.13	0.58	3.99	-	36.345	5.17	3.29	23.97	18.80	9.16	8.24	29.97	20.81
5755	-6.37	1.00	10.12	0.58	3.86	-	-	5.33	3.41	30.00	24.67	9.19	8.30	36.00	26.81
5795	-6.85	1.00	10.12	0.58	3.86	-	-	4.85	3.05	30.00	25.15	8.71	7.43	36.00	27.29

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.6 Shielded Room
Report No.	11830772H
Date	August 3, 2017
Temperature / Humidity	24 deg. C / 60 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-80

Applied limit: 15.407, mobile and portable client device

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]
5210	-7.70	1.00	10.13	1.11	3.99	-	75.799	4.54	2.84	23.97	19.43	8.53	7.13	29.97	21.44
5775	-7.52	1.00	10.12	1.11	3.86	-	-	4.71	2.96	30.00	25.29	8.57	7.19	36.00	27.43

Sample Calculation:
Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss
e.i.r.p. Result = Conducted Power Result + Antenna Gain

Conducted Power Limit (5250 MHz-5350 MHz, 5470 MHz-5725 MHz) = 250 mW or (11 + 10logB) dBm, whichever is lower

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.7 Shielded Room
Report No.	11830772H
Date	June 23, 2017
Temperature / Humidity	24 deg. C / 58 % RH
Engineer	Tomoki Matusi
Mode	Tx

5220 MHz

Mode	Rate Mbps	Reading [dBm]	Remarks
11a	6	0.97	*
	9	0.90	
	12	0.79	
	18	0.83	
	24	0.77	
	36	0.74	
	48	0.85	
	54	0.78	

* Worst rate

5220 MHz

Mode	MCS Number	Reading [dBm]	Remarks
11n-20	0	0.24	
	1	0.18	
	2	0.27	
	3	0.30	
	4	0.28	
	5	0.28	
	6	0.38	
	7	0.39	*

* Worst rate

5220 MHz

Mode	MCS Number	Reading [dBm]	Remarks
11ac-20	0	0.33	
	1	0.36	
	2	0.37	
	3	0.39	
	4	0.43	*
	5	0.23	
	6	0.28	
	7	0.28	
	8	0.26	
	9	0.12	

* Worst rate

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

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.7 Shielded Room
Report No.	11830772H
Date	June 23, 2017
Temperature / Humidity	24 deg. C / 58 % RH
Engineer	Tomoki Matusi
Mode	Tx

5190 MHz

Mode	MCS Number	Reading [dBm]	Remarks
11n-40	0	0.46	
	1	0.37	
	2	0.43	
	3	0.50	
	4	0.48	
	5	0.66	
	6	0.67	*
	7	0.53	

* Worst rate

5190 MHz

Mode	MCS Number	Reading [dBm]	Remarks
11ac-40	0	-0.01	*
	1	-0.15	
	2	-0.17	
	3	-0.09	
	4	-0.16	
	5	-0.21	
	6	-0.27	
	7	-0.21	
	8	-0.28	
	9	-0.21	

* Worst rate

5210 MHz

Mode	MCS Number	Reading [dBm]	Remarks
11ac-80	0	-0.17	*
	1	-0.22	
	2	-0.23	
	3	-0.28	
	4	-0.29	
	5	-0.20	
	6	-0.27	
	7	-0.19	
	8	-0.30	
	9	-0.31	

* Worst rate

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

Average Output Power
(Reference data for RF Exposure)

Test place	Ise EMC Lab. No. 11 Shielded Room
Report No.	11830772H
Date	August 10, 2017
Temperature / Humidity	24 deg. C / 54 % RH
Engineer	Ryota Yamanaka
Mode	Tx

11a 6Mbps

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average) [mW]	Duty factor [dB]	Result (Burst power average) [dBm]	Result (Burst power average) [mW]
5180	-5.44	1.00	10.13	5.69	3.71	0.27	5.96	3.94
5220	-5.16	1.00	10.13	5.97	3.95	0.27	6.24	4.21
5240	-5.04	1.00	10.13	6.09	4.06	0.27	6.36	4.33
5745	-4.24	1.00	10.13	6.89	4.89	0.27	7.16	5.20
5785	-4.61	1.00	10.12	6.51	4.48	0.27	6.78	4.76
5825	-5.20	1.00	10.12	5.92	3.91	0.27	6.19	4.16

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Test place	Ise EMC Lab. No. 11 Shielded Room
Report No.	11830772H
Date	August 10, 2017
Temperature / Humidity	24 deg. C / 54 % RH
Engineer	Ryota Yamanaka
Mode	Tx

11n20 MCS0

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average) [mW]	Duty factor [dB]	Result (Burst power average) [dBm]	Result (Burst power average) [mW]
5180	-6.36	1.00	10.13	4.77	3.00	0.30	5.07	3.21
5220	-6.10	1.00	10.13	5.03	3.18	0.30	5.33	3.41
5240	-5.95	1.00	10.13	5.18	3.30	0.30	5.48	3.53
5745	-5.48	1.00	10.13	5.65	3.67	0.30	5.95	3.94
5785	-5.90	1.00	10.12	5.22	3.33	0.30	5.52	3.56
5825	-6.35	1.00	10.12	4.77	3.00	0.30	5.07	3.21

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

11ac20 MCS0

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average) [mW]	Duty factor [dB]	Result (Burst power average) [dBm]	Result (Burst power average) [mW]
5180	-6.35	1.00	10.13	4.78	3.01	0.31	5.09	3.23
5220	-6.13	1.00	10.13	5.00	3.16	0.31	5.31	3.40
5240	-5.96	1.00	10.13	5.17	3.29	0.31	5.48	3.53
5745	-5.31	1.00	10.13	5.82	3.82	0.31	6.13	4.10
5785	-5.80	1.00	10.12	5.32	3.40	0.31	5.63	3.66
5825	-6.40	1.00	10.12	4.72	2.96	0.31	5.03	3.18

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Test place	Ise EMC Lab. No. 11 Shielded Room
Report No.	11830772H
Date	August 10, 2017
Temperature / Humidity	24 deg. C / 54 % RH
Engineer	Ryota Yamanaka
Mode	Tx

11n-40 MCS0

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average) [mW]	Duty factor [dB]	Result (Burst power average) [dBm]	Result (Burst power average) [mW]
5190	-6.27	1.00	10.13	4.86	3.06	0.60	5.46	3.52
5230	-5.92	1.00	10.13	5.21	3.32	0.60	5.81	3.81
5755	-5.59	1.00	10.12	5.53	3.57	0.60	6.13	4.10
5795	-6.01	1.00	10.12	5.11	3.24	0.60	5.71	3.72

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

11ac-40 MCS0

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average) [mW]	Duty factor [dB]	Result (Burst power average) [dBm]	Result (Burst power average) [mW]
5190	-7.16	1.00	10.13	3.97	2.49	0.58	4.55	2.85
5230	-6.87	1.00	10.13	4.26	2.67	0.58	4.84	3.05
5755	-6.51	1.00	10.12	4.61	2.89	0.58	5.19	3.30
5795	-7.17	1.00	10.12	3.95	2.48	0.58	4.53	2.84

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Test place	Ise EMC Lab. No. 11 Shielded Room
Report No.	11830772H
Date	August 10, 2017
Temperature / Humidity	24 deg. C / 54 % RH
Engineer	Ryota Yamanaka
Mode	Tx

11ac-80 MCS0

Tested Frequency [MHz]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Timed average) [dBm]	Result (Timed average) [mW]	Duty factor [dB]	Result (Burst power average) [dBm]	Result (Burst power average) [mW]
5210	-8.02	1.00	10.13	3.11	2.05	1.11	4.22	2.64
5775	-7.40	1.00	10.12	3.72	2.36	1.11	4.83	3.04

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

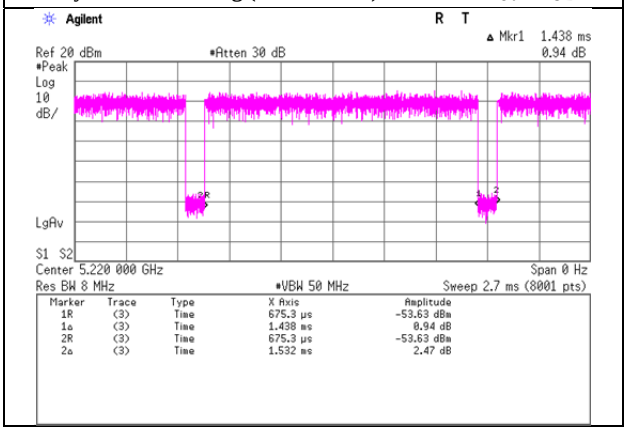
The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Burst rate confirmation

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	11830772H
Date	July 6, 2017
Temperature / Humidity	24deg. C / 47 % RH
Engineer	Yuta Moriya
Mode	Tx

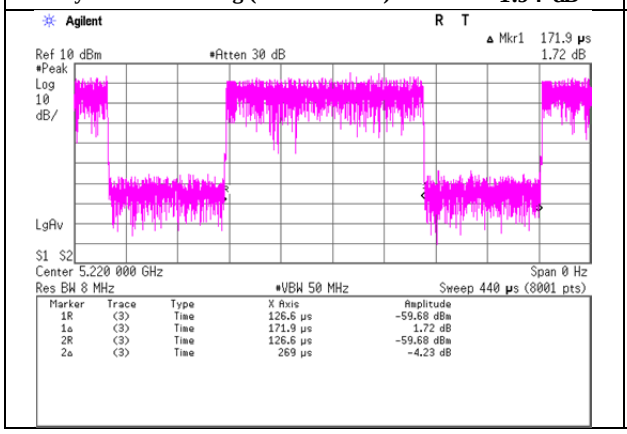
11a 6Mbps

Tx on / (Tx on + Tx off) =	**0.939**
Tx on / (Tx on + Tx off) * 100 =	**93.9 %**
Duty factor = 10 * log (1.532 / 1.438) =	**0.27 dB**



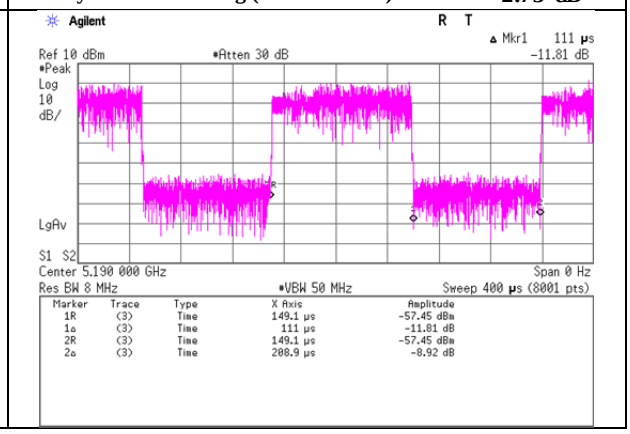
11n-20 MCS7

Tx on / (Tx on + Tx off) =	**0.639**
Tx on / (Tx on + Tx off) * 100 =	**63.9 %**
Duty factor = 10 * log (0.269 / 0.1719) =	**1.94 dB**



11n-40 MCS6

Tx on / (Tx on + Tx off) =	**0.531**
Tx on / (Tx on + Tx off) * 100 =	**53.1 %**
Duty factor = 10 * log (0.2089 / 0.111) =	**2.75 dB**

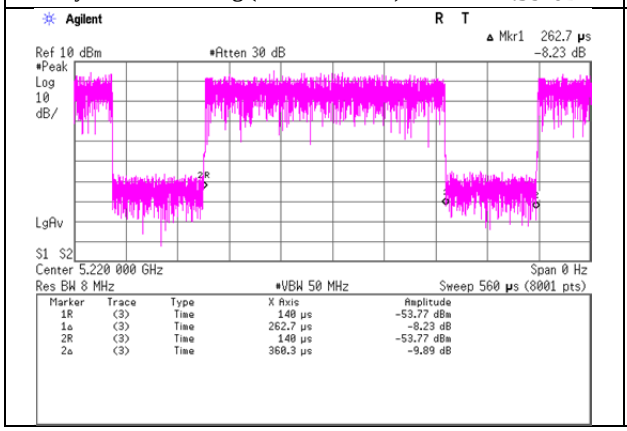


Burst rate confirmation

Test place	Ise EMC Lab. No.11 Measurement Room
Report No.	11830772H
Date	July 6, 2017
Temperature / Humidity	24deg. C / 47 % RH
Engineer	Yuta Moriya
Mode	Tx

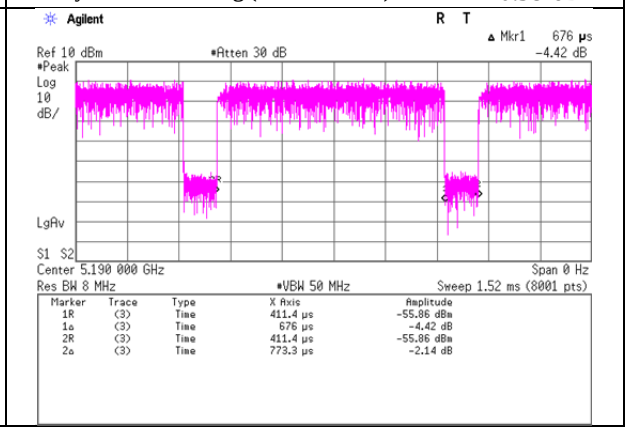
11ac-20 MCS4

Tx on / (Tx on + Tx off) =	**0.726**
Tx on / (Tx on + Tx off) * 100 =	**72.6 %**
Duty factor = 10 * log (0.3603 / 0.2617) =	**1.39 dB**



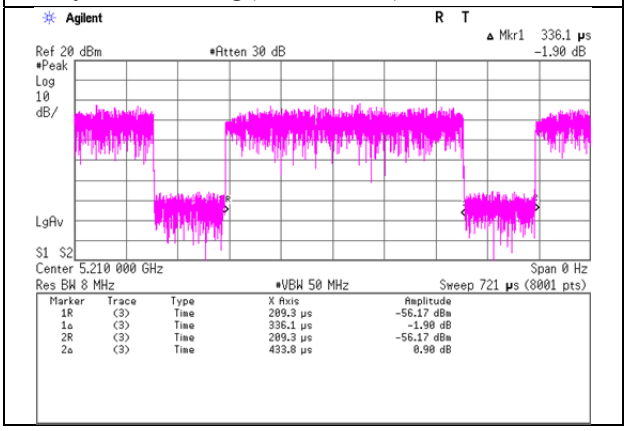
11ac-40 MCS0

Tx on / (Tx on + Tx off) =	**0.874**
Tx on / (Tx on + Tx off) * 100 =	**87.4 %**
Duty factor = 10 * log (0.7733 / 0.676) =	**0.58 dB**



11ac-80 MCS0

Tx on / (Tx on + Tx off) =	**0.775**
Tx on / (Tx on + Tx off) * 100 =	**77.5 %**
Duty factor = 10 * log (0.4338 / 0.3361) =	**1.11 dB**

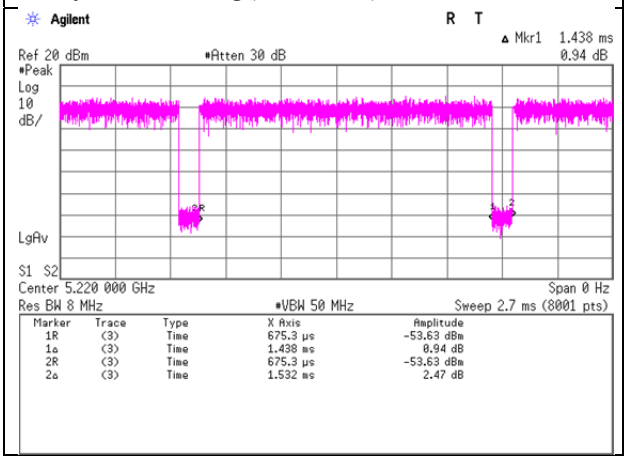


Burst rate confirmation

Test place	Ise EMC Lab. No. 11 Shielded Room
Report No.	11830772H
Date	August 10, 2017
Temperature / Humidity	24 deg. C / 54 % RH
Engineer	Ryota Yamanaka
Mode	Tx

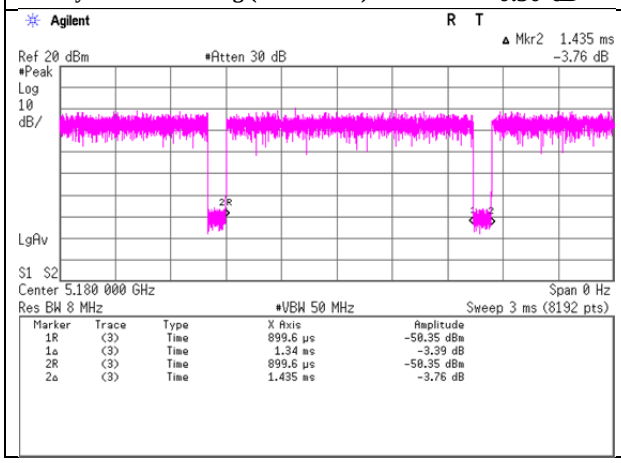
11a 6Mbps

Tx on / (Tx on + Tx off) = 0.939
Tx on / (Tx on + Tx off) * 100 = 93.9 %
Duty factor = 10 * log (1.532 / 1.438) = 0.27 dB



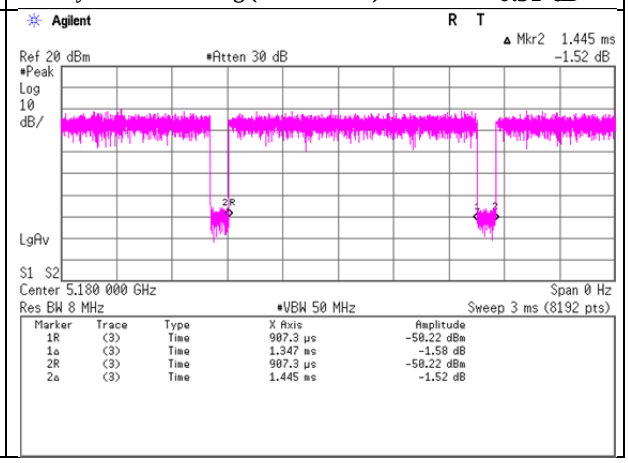
11n-20 MCS0

Tx on / (Tx on + Tx off) = 0.933
Tx on / (Tx on + Tx off) * 100 = 93.3 %
Duty factor = 10 * log (1.436 / 1.34) = 0.30 dB



11ac-20 MCS0

Tx on / (Tx on + Tx off) = 0.932
Tx on / (Tx on + Tx off) * 100 = 93.2 %
Duty factor = 10 * log (1.445 / 1.347) = 0.31 dB

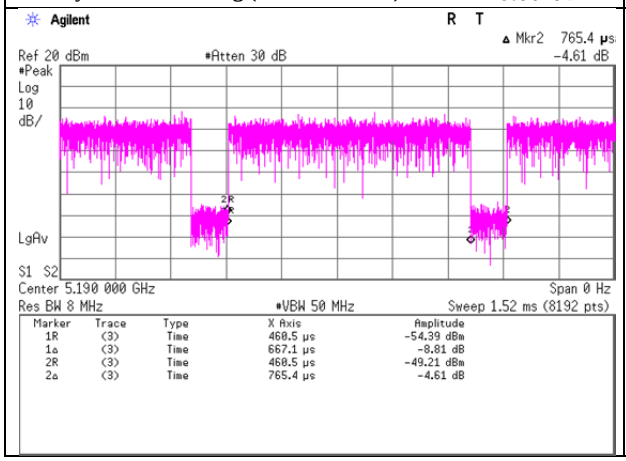


Burst rate confirmation

Test place	Ise EMC Lab. No. 11 Shielded Room
Report No.	11830772H
Date	August 10, 2017
Temperature / Humidity	24 deg. C / 54 % RH
Engineer	Ryota Yamanaka
Mode	Tx

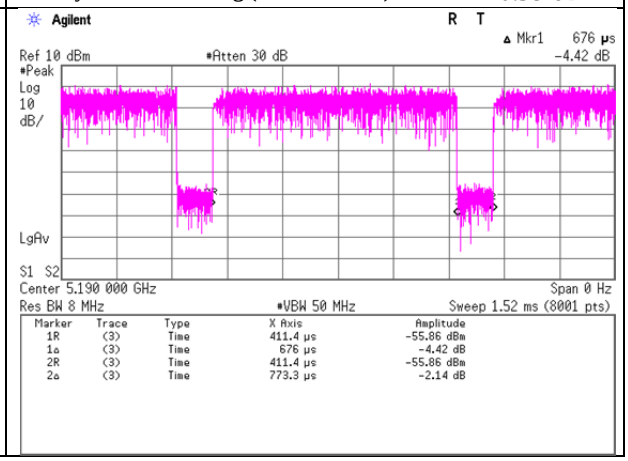
11n-40 MCS0

Tx on / (Tx on + Tx off) =	**0.872**
Tx on / (Tx on + Tx off) * 100 =	**87.2 %**
Duty factor = 10 * log (0.7654 / 0.6671) =	**0.60 dB**



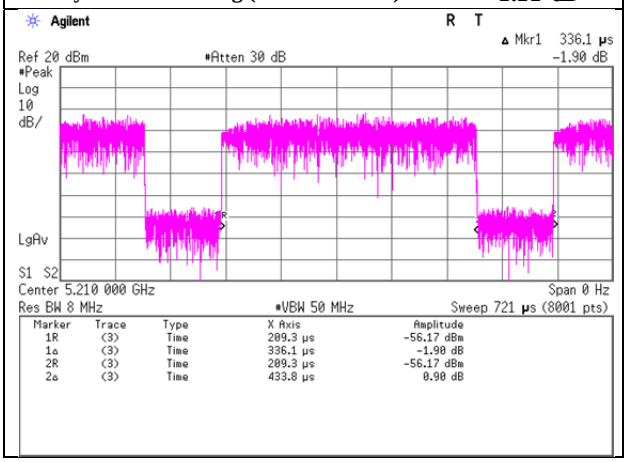
11ac-40 MCS0

Tx on / (Tx on + Tx off) =	**0.874**
Tx on / (Tx on + Tx off) * 100 =	**87.4 %**
Duty factor = 10 * log (0.7733 / 0.676) =	**0.58 dB**



11ac-80 MCS0

Tx on / (Tx on + Tx off) =	**0.775**
Tx on / (Tx on + Tx off) * 100 =	**77.5 %**
Duty factor = 10 * log (0.4338 / 0.3361) =	**1.11 dB**



Maximum Power Spectral Density

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11a	

11a

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]
5180	-17.59	2.33	10.13	0.27	3.99	0.00	-4.86	11.00	15.86	-0.87	17.00	17.87
5220	-17.69	2.34	10.13	0.27	3.99	0.00	-4.95	11.00	15.95	-0.96	17.00	17.96
5240	-17.49	2.34	10.13	0.27	3.99	0.00	-4.75	11.00	15.75	-0.76	17.00	17.76
5745	-19.32	2.41	10.13	0.27	3.86	0.27	-6.24	30.00	36.24	-2.38	36.00	38.38
5785	-20.06	2.42	10.12	0.27	3.86	0.27	-6.98	30.00	36.98	-3.12	36.00	39.12
5825	-20.26	2.42	10.12	0.27	3.86	0.27	-7.18	30.00	37.18	-3.32	36.00	39.32

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

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11n-20	

11n-20 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]
5180	-20.48	2.33	10.13	1.94	3.99	0.00	-6.08	11.00	17.08	-2.09	17.00	19.09
5220	-20.06	2.34	10.13	1.94	3.99	0.00	-5.65	11.00	16.65	-1.66	17.00	18.66
5240	-20.23	2.34	10.13	1.94	3.99	0.00	-5.82	11.00	16.82	-1.83	17.00	18.83
5745	-22.17	2.41	10.13	1.94	3.86	0.27	-7.42	30.00	37.42	-3.56	36.00	39.56
5785	-22.50	2.42	10.12	1.94	3.86	0.27	-7.75	30.00	37.75	-3.89	36.00	39.89
5825	-22.95	2.42	10.12	1.94	3.86	0.27	-8.20	30.00	38.20	-4.34	36.00	40.34

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

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11ac-20	

11ac-20 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]
5180	-19.89	2.33	10.13	1.39	3.99	0.00	-6.04	11.00	17.04	-2.05	17.00	19.05
5220	-19.80	2.34	10.13	1.39	3.99	0.00	-5.94	11.00	16.94	-1.95	17.00	18.95
5240	-19.75	2.34	10.13	1.39	3.99	0.00	-5.89	11.00	16.89	-1.90	17.00	18.90
5745	-21.78	2.41	10.13	1.39	3.86	0.27	-7.58	30.00	37.58	-3.72	36.00	39.72
5785	-22.25	2.42	10.12	1.39	3.86	0.27	-8.05	30.00	38.05	-4.19	36.00	40.19
5825	-22.66	2.42	10.12	1.39	3.86	0.27	-8.46	30.00	38.46	-4.60	36.00	40.60

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

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11n-40	

11n-40

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]
5190	-23.66	2.33	10.13	2.75	3.99	0.00	-8.45	11.00	19.45	-4.46	17.00	21.46
5230	-23.60	2.34	10.13	2.75	3.99	0.00	-8.38	11.00	19.38	-4.39	17.00	21.39
5755	-25.26	2.42	10.12	2.75	3.86	0.27	-9.71	30.00	39.71	-5.85	36.00	41.85
5795	-25.65	2.42	10.12	2.75	3.86	0.27	-10.09	30.00	40.09	-6.23	36.00	42.23

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

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11ac-40	

11ac-40

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]
5190	-22.93	2.33	10.13	0.58	3.99	0.00	-9.89	11.00	20.89	-5.90	17.00	22.90
5230	-22.45	2.34	10.13	0.58	3.99	0.00	-9.40	11.00	20.40	-5.41	17.00	22.41
5755	-25.33	2.42	10.12	0.58	3.86	0.27	-11.94	30.00	41.94	-8.08	36.00	44.08
5795	-25.35	2.42	10.12	0.58	3.86	0.27	-11.96	30.00	41.96	-8.10	36.00	44.10

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

Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11ac-80	

11ac-80 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]
5210	-26.02	2.34	10.13	1.11	3.99	0.00	-12.44	11.00	23.44	-8.45	17.00	25.45
5775	-29.00	2.42	10.12	1.11	3.86	0.27	-15.08	30.00	45.08	-11.22	36.00	47.22

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

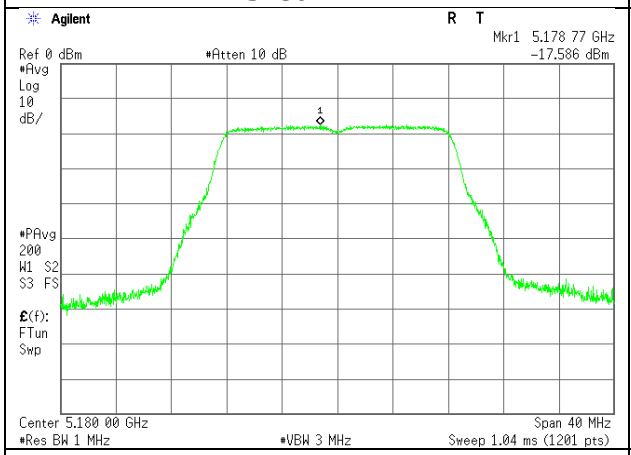
Although the EUT operates on Master mode, more stringent limit for Client device was applied. (W52 for FCC)

Maximum Power Spectral Density

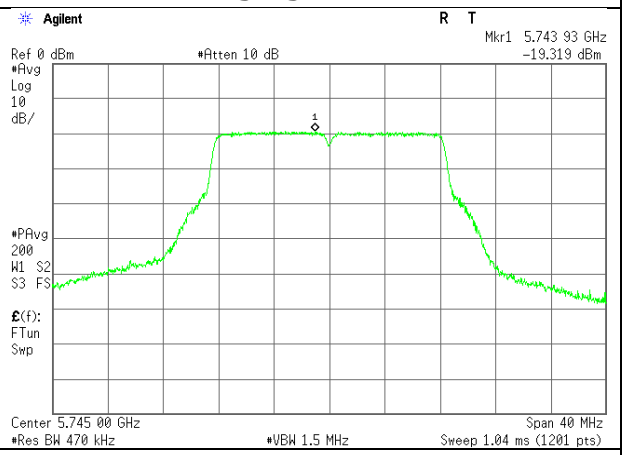
Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11a	

11a

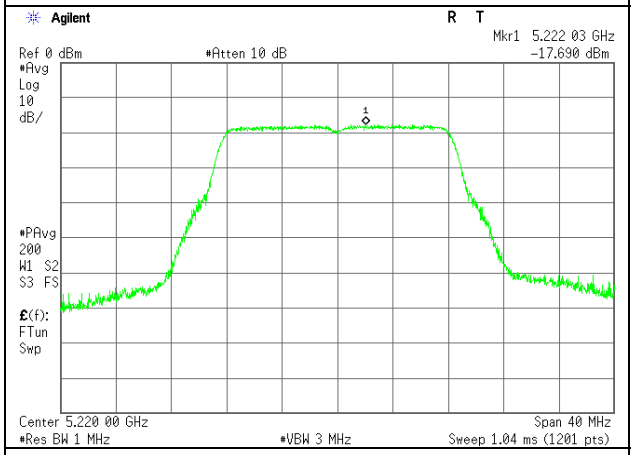
5180 MHz



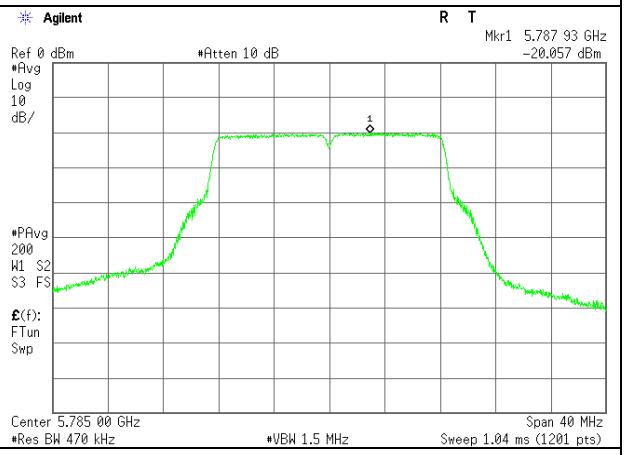
5745 MHz



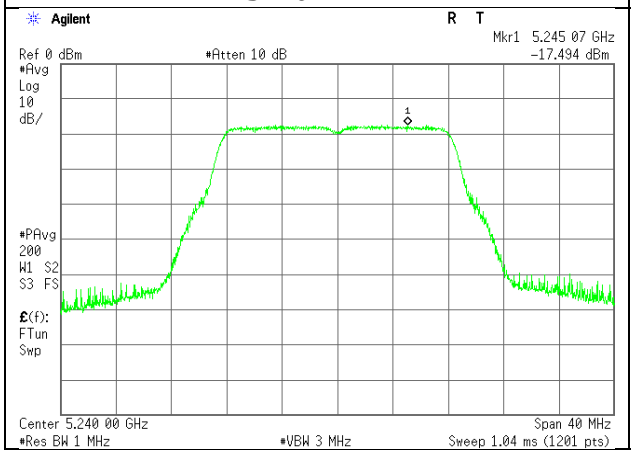
5220 MHz



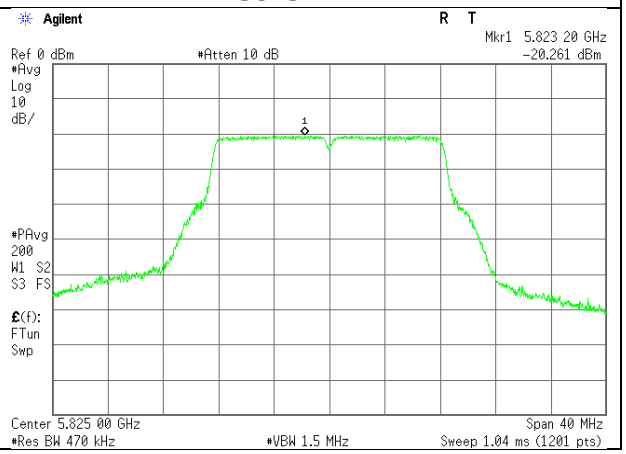
5785 MHz



5240 MHz



5825 MHz

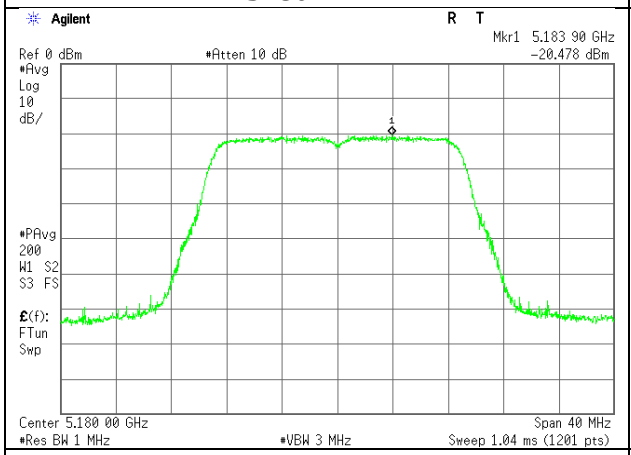


Maximum Power Spectral Density

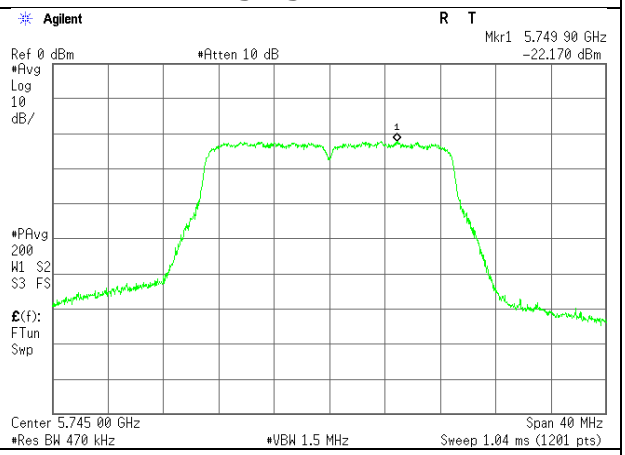
Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11n-20	

11n-20

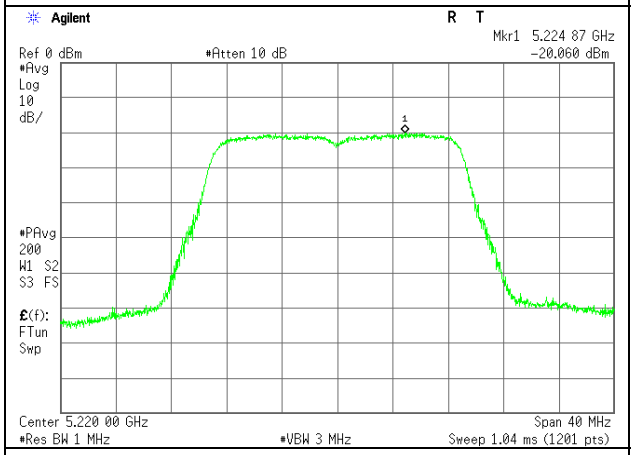
5180 MHz



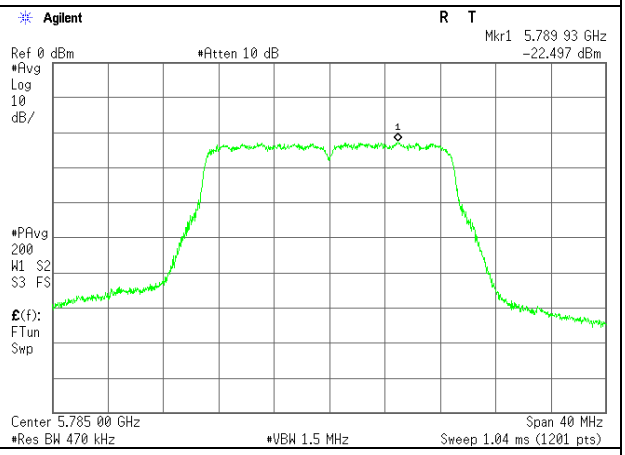
5745 MHz



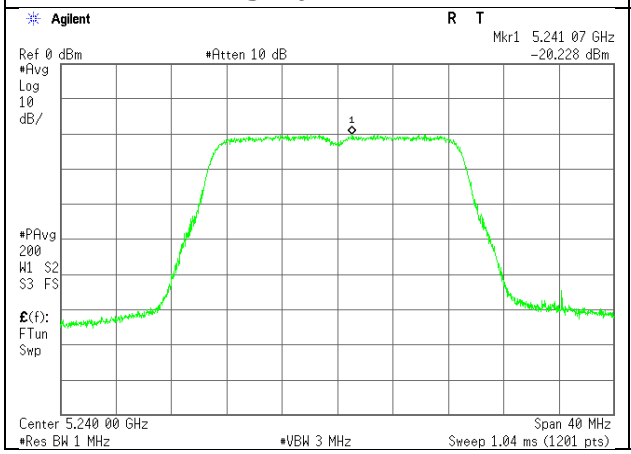
5220 MHz



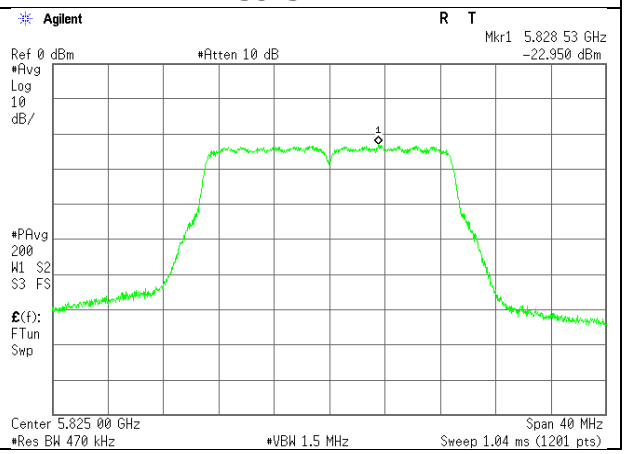
5785 MHz



5240 MHz



5825 MHz

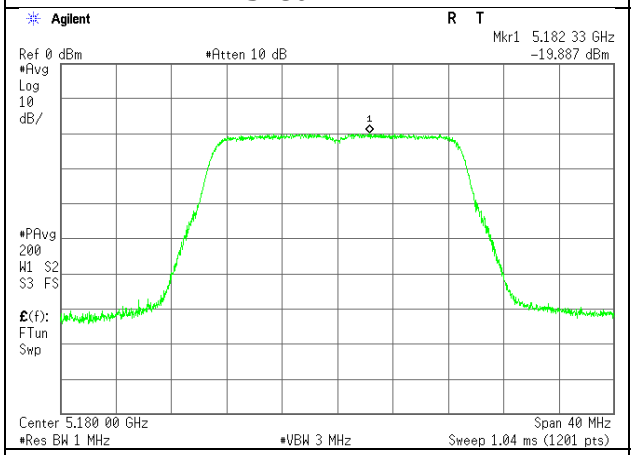


Maximum Power Spectral Density

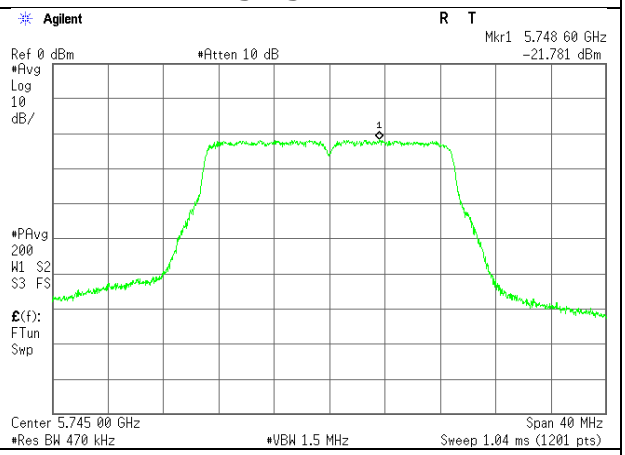
Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11ac-20	

11ac-20

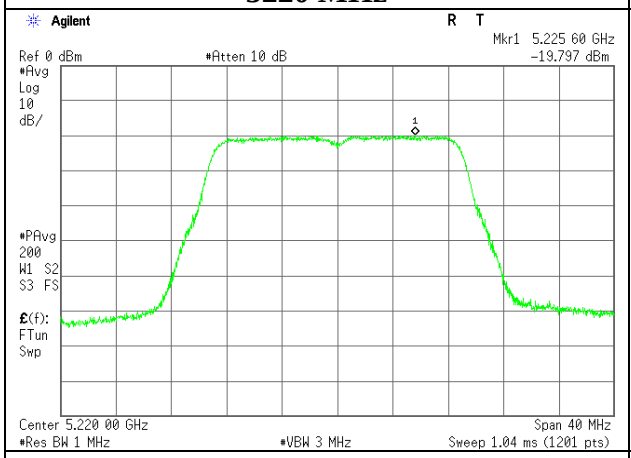
5180 MHz



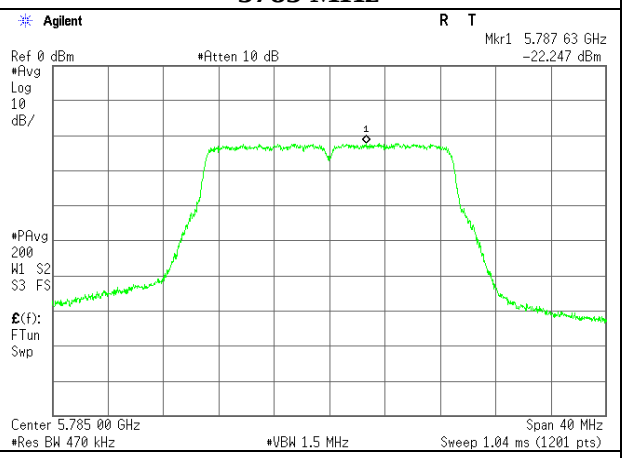
5745 MHz



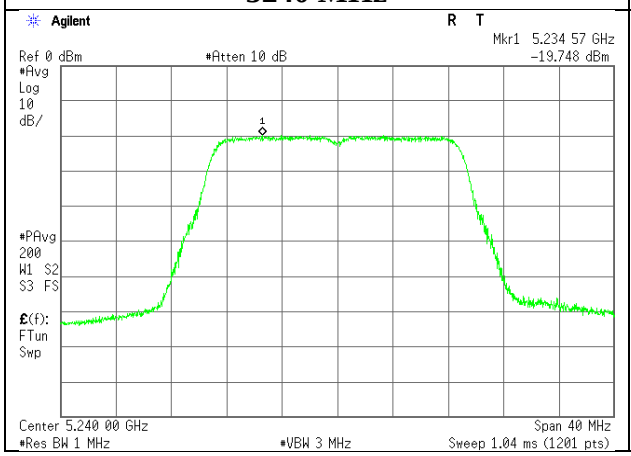
5220 MHz



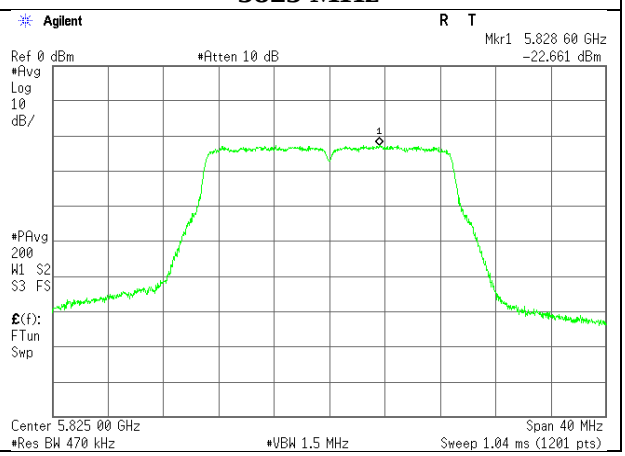
5785 MHz



5240 MHz



5825 MHz

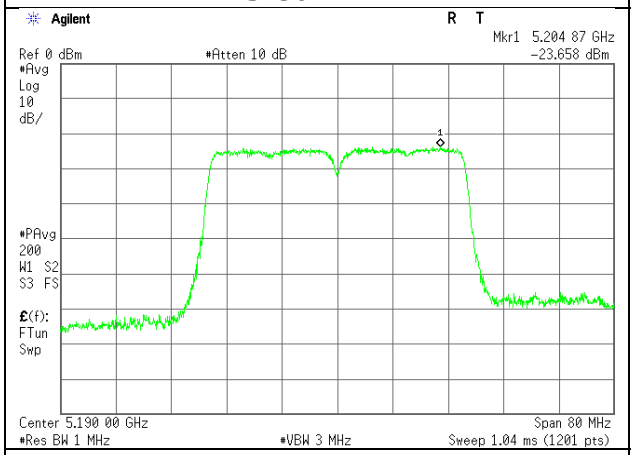


Maximum Power Spectral Density

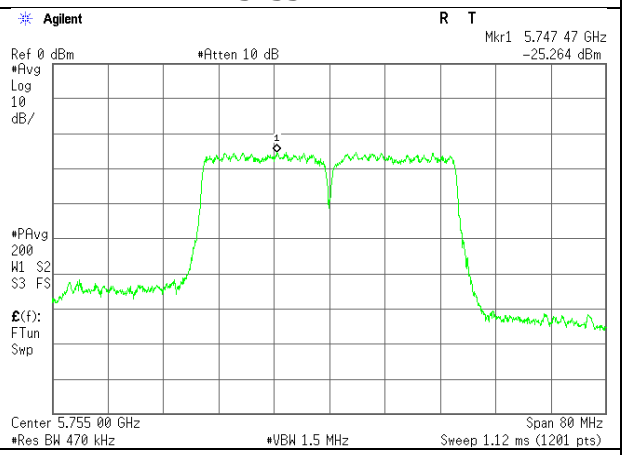
Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11n-40	

11n-40

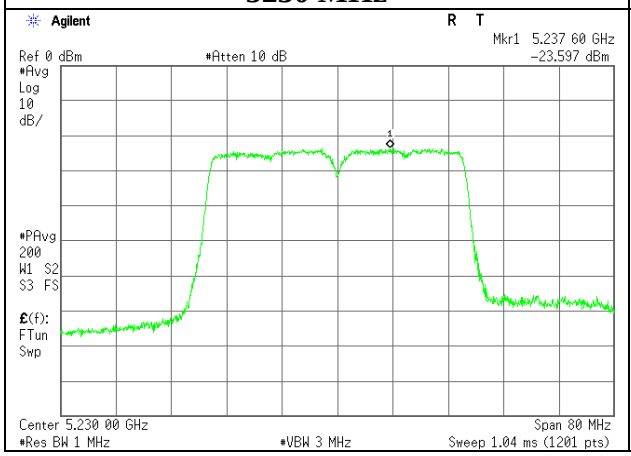
5190 MHz



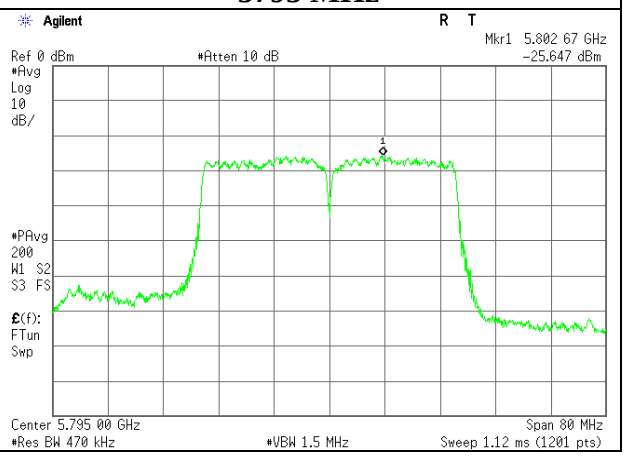
5755 MHz



5230 MHz



5795 MHz

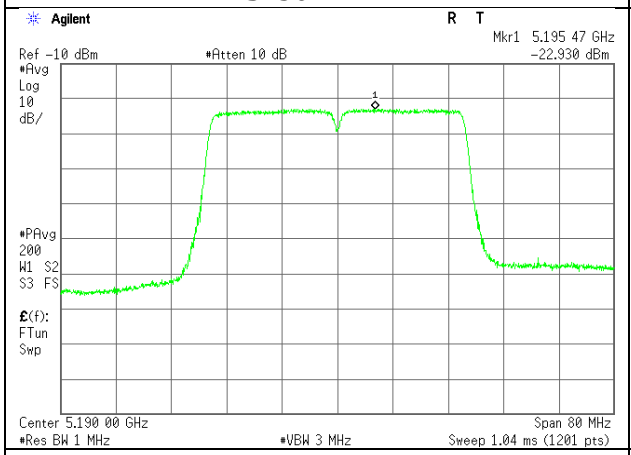


Maximum Power Spectral Density

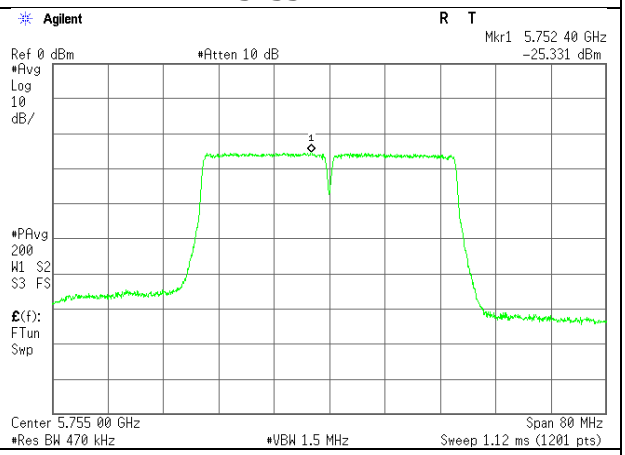
Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11ac-40	

11ac-40

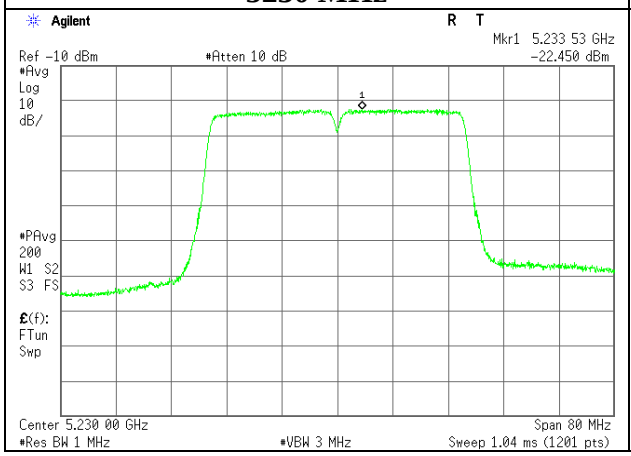
5190 MHz



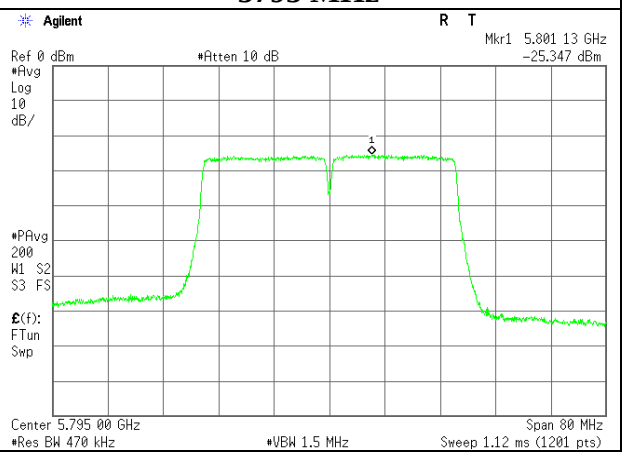
5755 MHz



5230 MHz



5795 MHz

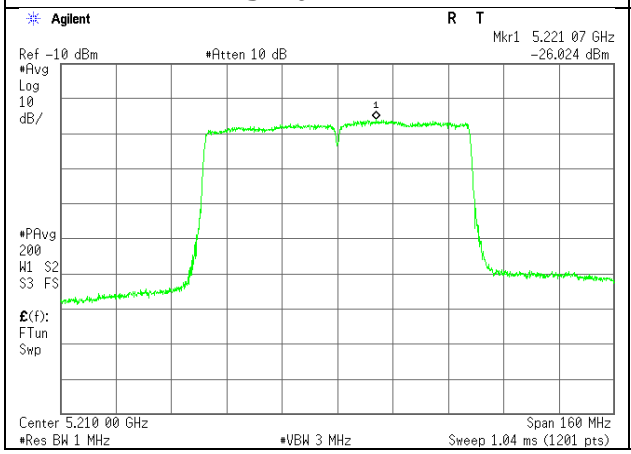


Maximum Power Spectral Density

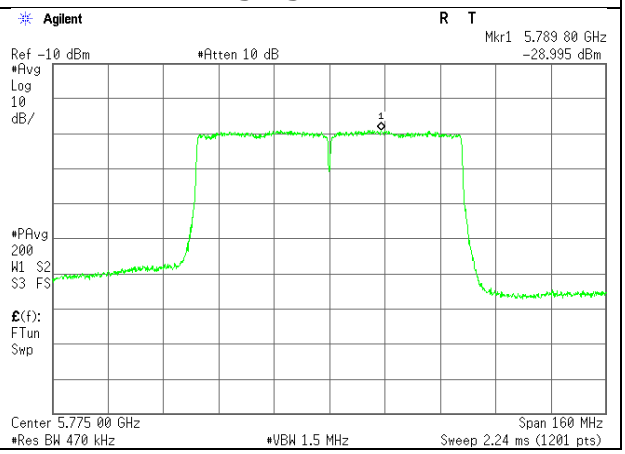
Test place	Ise EMC Lab. No. 11 Measurement Room	
Report No.	11830772H	
Date	August 2, 2017	August 3, 2017
Temperature / Humidity	24 deg. C / 46 % RH	24 deg. C / 60 % RH
Engineer	Yuta Moriya	Ryota Yamanaka
Mode	Tx 11ac-80	

11ac-80

5210 MHz



5775 MHz



Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11a 5180 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	47.9	32.2	7.3	31.3	-	56.1	73.9	17.8	
Hori	10360.000	PK	43.3	39.5	1.9	33.2	-	51.5	73.9	22.4	Floor noise
Hori	15540.000	PK	43.6	39.0	3.5	32.6	-	53.5	73.9	20.4	Floor noise
Hori	5150.000	AV	31.0	32.2	7.3	31.3	0.3	39.5	53.9	14.4	*1)
Hori	10360.000	AV	34.3	39.5	1.9	33.2	-	42.5	53.9	11.4	Floor noise
Hori	15540.000	AV	34.0	39.0	3.5	32.6	-	43.9	53.9	10.0	Floor noise
Vert	5150.000	PK	51.1	32.2	7.3	31.3	-	59.3	73.9	14.6	
Vert	10360.000	PK	43.2	39.5	1.9	33.2	-	51.4	73.9	22.5	Floor noise
Vert	15540.000	PK	43.4	39.0	3.5	32.6	-	53.3	73.9	20.6	Floor noise
Vert	5150.000	AV	31.9	32.2	7.3	31.3	0.3	40.4	53.9	13.5	*1)
Vert	10360.000	AV	33.9	39.5	1.9	33.2	-	42.1	53.9	11.8	Floor noise
Vert	15540.000	AV	34.0	39.0	3.5	32.6	-	43.9	53.9	10.0	Floor noise

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

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

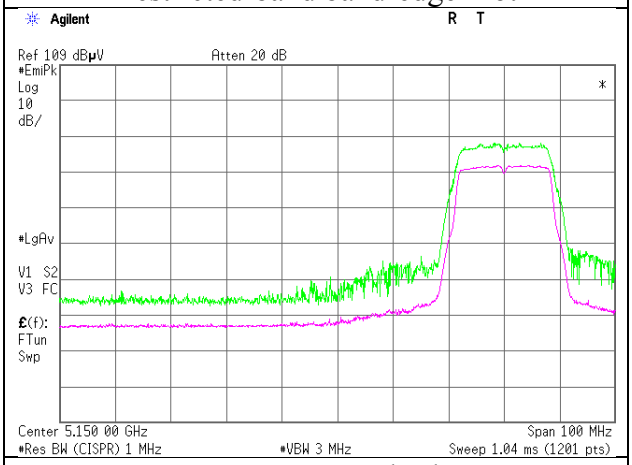
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11a 5180 MHz

Horizontal

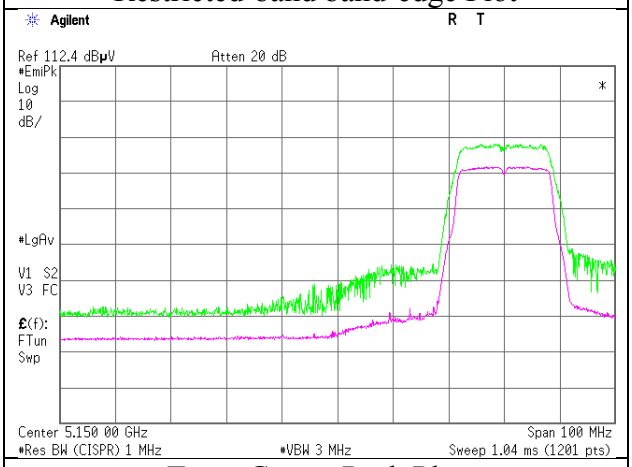
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11a 5220 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	10440.000	PK	43.4	39.6	1.9	33.2	-	51.7	73.9	22.2	Floor noise
Hori	15660.000	PK	43.7	38.7	3.5	32.6	-	53.3	73.9	20.6	Floor noise
Hori	10440.000	AV	34.2	39.6	1.9	33.2	-	42.5	53.9	11.4	Floor noise
Hori	15660.000	AV	34.1	38.7	3.5	32.6	-	43.7	53.9	10.2	Floor noise
Vert	10440.000	PK	43.4	39.6	1.9	33.2	-	51.7	73.9	22.2	Floor noise
Vert	15660.000	PK	43.5	38.7	3.5	32.6	-	53.1	73.9	20.8	Floor noise
Vert	10440.000	AV	33.7	39.6	1.9	33.2	-	42.0	53.9	11.9	Floor noise
Vert	15660.000	AV	34.1	38.7	3.5	32.6	-	43.7	53.9	10.2	Floor noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11a 5240 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	40.5	32.1	7.4	31.3	-	48.7	73.9	25.2	
Hori	10480.000	PK	43.6	39.7	1.9	33.2	-	52.0	73.9	21.9	Floor noise
Hori	15720.000	PK	43.8	38.5	3.7	32.6	-	53.4	73.9	20.5	Floor noise
Hori	5350.000	AV	32.1	32.1	7.4	31.3	0.3	40.6	53.9	13.3	*1)
Hori	10480.000	AV	34.3	39.7	1.9	33.2	-	42.7	53.9	11.2	Floor noise
Hori	15720.000	AV	34.2	38.5	3.7	32.6	-	43.8	53.9	10.1	Floor noise
Vert	5350.000	PK	40.4	32.1	7.4	31.3	-	48.6	73.9	25.3	
Vert	10480.000	PK	43.5	39.7	1.9	33.2	-	51.9	73.9	22.0	Floor noise
Vert	15720.000	PK	43.4	38.5	3.7	32.6	-	53.0	73.9	20.9	Floor noise
Vert	5350.000	AV	32.4	32.1	7.4	31.3	0.3	40.9	53.9	13.0	*1)
Vert	10480.000	AV	33.6	39.7	1.9	33.2	-	42.0	53.9	11.9	Floor noise
Vert	15720.000	AV	34.2	38.5	3.7	32.6	-	43.8	53.9	10.1	Floor noise

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

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

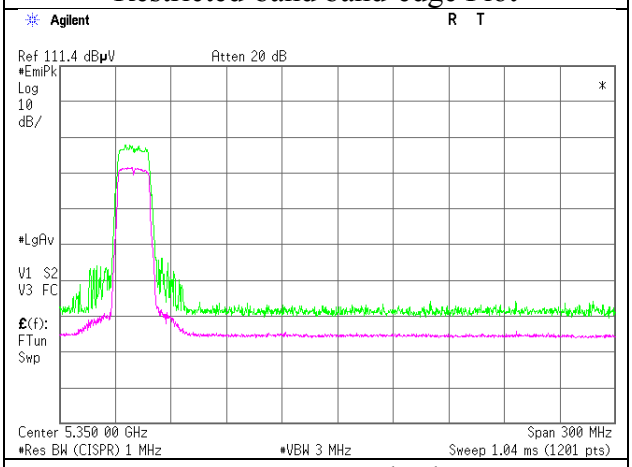
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11a 5240 MHz

Horizontal

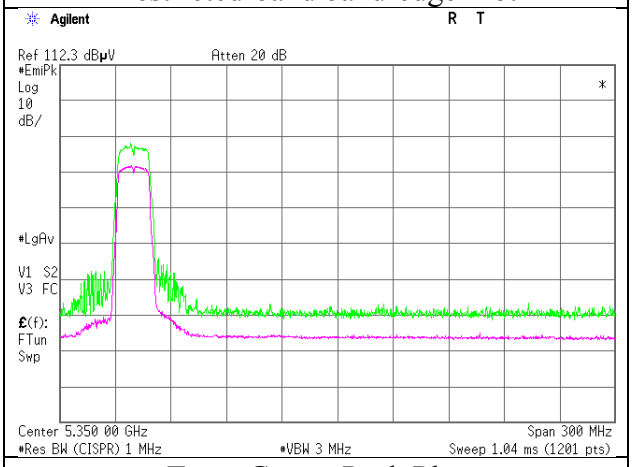
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11830772H		
Date	July 18, 2017	August 16, 2017	August 17, 2017
Temperature / Humidity	25deg. C / 58 % RH	23deg. C / 61 % RH	23deg. C / 56 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)	Tomohisa Nakagawa (Above 10 GHz)	Ryota Yamanaka (Below 1 GHz)
Mode	Tx 11a 5745 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	182.458	QP	40.3	16.3	9.0	32.1	-	33.5	43.5	10.0	
Hori	337.210	QP	43.8	14.3	10.3	32.0	-	36.4	46.0	9.6	
Hori	674.234	QP	37.2	19.6	12.3	32.1	-	37.0	46.0	9.0	
Hori	810.000	QP	40.0	20.8	13.0	31.4	-	42.4	46.0	3.6	
Hori	877.024	QP	35.0	21.8	13.3	31.1	-	39.0	46.0	7.0	
Hori	944.498	QP	34.9	22.2	13.6	30.7	-	40.0	46.0	6.0	
Hori	5650.000	PK	41.0	32.2	7.6	31.4	-	49.4	68.2	18.8	
Hori	5700.000	PK	40.9	32.3	7.6	31.4	-	49.4	105.2	55.8	
Hori	5715.000	PK	44.9	32.3	7.6	31.4	-	53.4	109.4	56.0	
Hori	5720.000	PK	49.5	32.3	7.6	31.4	-	58.0	110.8	52.8	
Hori	5725.000	PK	53.0	32.3	7.6	31.4	-	61.5	122.2	60.7	
Hori	11490.000	PK	43.7	40.1	2.2	33.3	-	52.7	73.9	21.2	Floor noise
Hori	17235.000	PK	43.8	42.2	3.6	32.5	-	57.1	73.9	16.8	Floor noise
Hori	11490.000	AV	34.0	40.1	2.2	33.3	-	43.0	53.9	10.9	Floor noise
Hori	17235.000	AV	34.2	42.2	3.6	32.5	-	47.5	53.9	6.4	Floor noise
Vert	134.943	QP	46.3	14.1	8.6	32.1	-	36.9	43.5	6.6	
Vert	539.711	QP	38.8	18.2	11.5	32.0	-	36.5	46.0	9.5	
Vert	810.000	QP	37.8	20.8	13.0	31.4	-	40.2	46.0	5.8	
Vert	877.025	QP	34.5	21.8	13.3	31.1	-	38.5	46.0	7.5	
Vert	917.760	QP	32.7	22.2	13.5	30.9	-	37.5	46.0	8.5	
Vert	944.871	QP	33.0	22.2	13.6	30.7	-	38.1	46.0	7.9	
Vert	5650.000	PK	41.1	32.2	7.6	31.4	-	49.5	68.2	18.7	
Vert	5700.000	PK	45.7	32.3	7.6	31.4	-	54.2	105.2	51.0	
Vert	5715.000	PK	48.0	32.3	7.6	31.4	-	56.5	109.4	52.9	
Vert	5720.000	PK	52.9	32.3	7.6	31.4	-	61.4	110.8	49.4	
Vert	5725.000	PK	56.6	32.3	7.6	31.4	-	65.1	122.2	57.1	
Vert	11490.000	PK	43.6	40.1	2.2	33.3	-	52.6	73.9	21.3	Floor noise
Vert	17235.000	PK	43.6	42.2	3.6	32.5	-	56.9	73.9	17.0	Floor noise
Vert	11490.000	AV	33.6	40.1	2.2	33.3	-	42.6	53.9	11.3	Floor noise
Vert	17235.000	AV	34.2	42.2	3.6	32.5	-	47.5	53.9	6.4	Floor noise

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

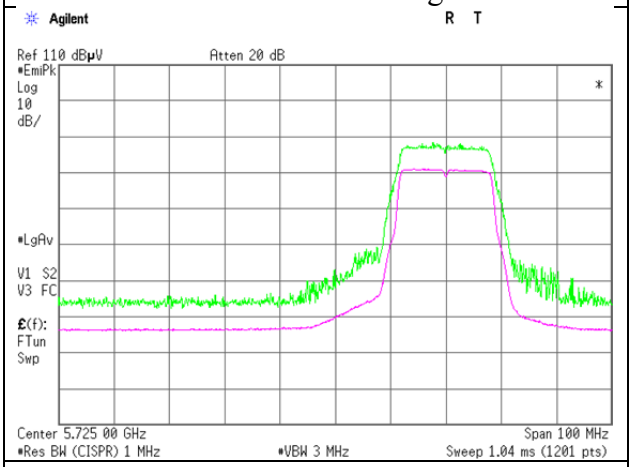
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	July 18, 2017
Temperature / Humidity	25deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Tx 11a 5745 MHz

Horizontal

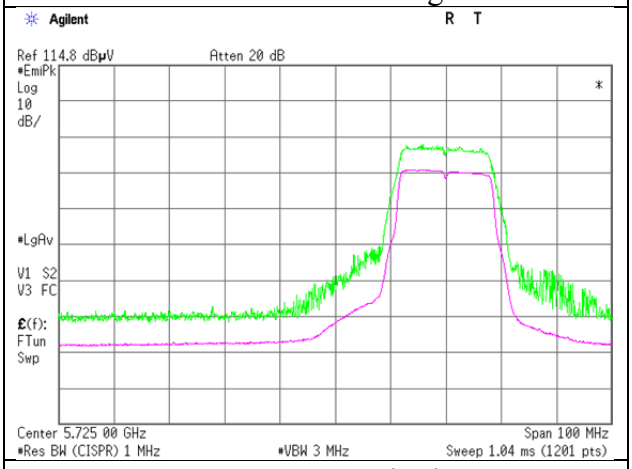
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11a 5785 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	43.9	40.0	2.3	33.3	-	52.9	73.9	21.0	Floor noise
Hori	17355.000	PK	43.2	42.9	3.7	32.5	-	57.3	73.9	16.6	Floor noise
Hori	11570.000	AV	34.1	40.0	2.3	33.3	-	43.1	53.9	10.8	Floor noise
Hori	17355.000	AV	33.3	42.9	3.7	32.5	-	47.4	53.9	6.5	Floor noise
Vert	11570.000	PK	43.5	40.0	2.3	33.3	-	52.5	73.9	21.4	Floor noise
Vert	17355.000	PK	43.3	42.9	3.7	32.5	-	57.4	73.9	16.5	Floor noise
Vert	11570.000	AV	33.5	40.0	2.3	33.3	-	42.5	53.9	11.4	Floor noise
Vert	17355.000	AV	33.4	42.9	3.7	32.5	-	47.5	53.9	6.4	Floor noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11a 5825 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	48.4	32.5	7.6	31.4	-	57.1	122.2	65.1	
Hori	5855.000	PK	44.6	32.5	7.6	31.4	-	53.3	110.8	57.5	
Hori	5860.000	PK	41.2	32.5	7.6	31.4	-	49.9	109.4	59.5	
Hori	5875.000	PK	40.5	32.5	7.6	31.4	-	49.2	105.2	56.0	
Hori	5925.000	PK	40.5	32.6	7.7	31.4	-	49.4	68.2	18.8	
Hori	11650.000	PK	43.2	39.9	2.3	33.3	-	52.1	73.9	21.8	Floor noise
Hori	17475.000	PK	43.4	43.6	3.7	32.5	-	58.2	73.9	15.7	Floor noise
Hori	11650.000	AV	34.3	39.9	2.3	33.3	-	43.2	53.9	10.7	Floor noise
Hori	17475.000	AV	32.4	43.6	3.7	32.5	-	47.2	53.9	6.7	Floor noise
Vert	5850.000	PK	50.8	32.5	7.6	31.4	-	59.5	122.2	62.7	
Vert	5855.000	PK	47.9	32.5	7.6	31.4	-	56.6	110.8	54.2	
Vert	5860.000	PK	41.7	32.5	7.6	31.4	-	50.4	109.4	59.0	
Vert	5875.000	PK	40.8	32.5	7.6	31.4	-	49.5	105.2	55.7	
Vert	5925.000	PK	40.2	32.6	7.7	31.4	-	49.1	68.2	19.1	
Vert	11650.000	PK	43.3	39.9	2.3	33.3	-	52.2	73.9	21.7	Floor noise
Vert	17475.000	PK	43.5	43.6	3.7	32.5	-	58.3	73.9	15.6	Floor noise
Vert	11650.000	AV	33.7	39.9	2.3	33.3	-	42.6	53.9	11.3	Floor noise
Vert	17475.000	AV	32.2	43.6	3.7	32.5	-	47.0	53.9	6.9	Floor noise

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

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

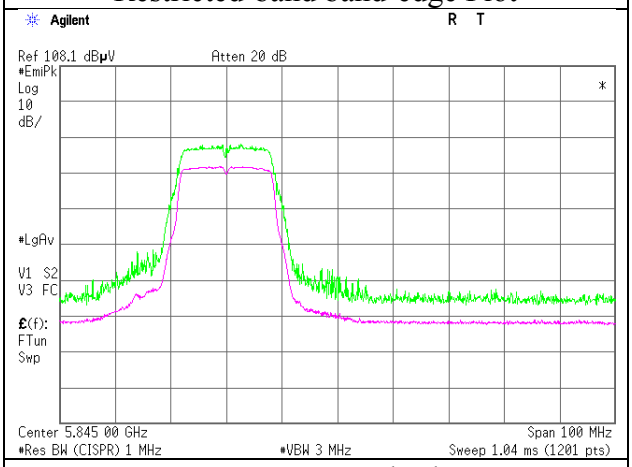
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11a 5825 MHz

Horizontal

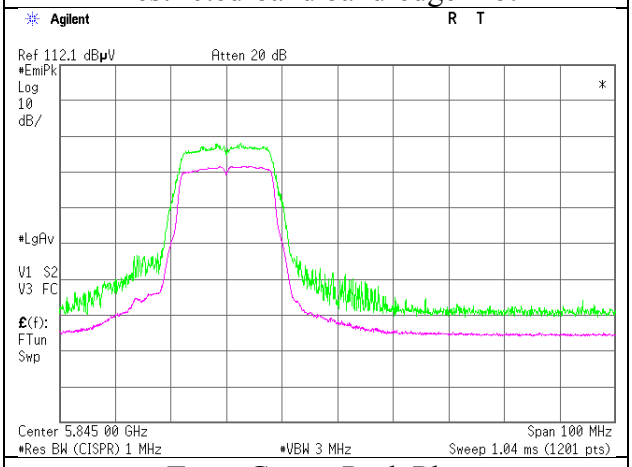
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11n-20 5180 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	48.2	32.2	7.3	31.3	-	56.4	73.9	17.5	
Hori	10360.000	PK	43.3	39.5	1.9	33.2	-	51.5	73.9	22.4	Floor noise
Hori	15540.000	PK	43.6	39.0	3.5	32.6	-	53.5	73.9	20.4	Floor noise
Hori	5150.000	AV	32.6	32.2	7.3	31.3	1.9	42.7	53.9	11.2	*1)
Hori	10360.000	AV	34.3	39.5	1.9	33.2	-	42.5	53.9	11.4	Floor noise
Hori	15540.000	AV	34.0	39.0	3.5	32.6	-	43.9	53.9	10.0	Floor noise
Vert	5150.000	PK	47.0	32.2	7.3	31.3	-	55.2	73.9	18.7	
Vert	10360.000	PK	43.2	39.5	1.9	33.2	-	51.4	73.9	22.5	Floor noise
Vert	15540.000	PK	43.4	39.0	3.5	32.6	-	53.3	73.9	20.6	Floor noise
Vert	5150.000	AV	33.7	32.2	7.3	31.3	1.9	43.8	53.9	10.1	*1)
Vert	10360.000	AV	33.9	39.5	1.9	33.2	-	42.1	53.9	11.8	Floor noise
Vert	15540.000	AV	34.0	39.0	3.5	32.6	-	43.9	53.9	10.0	Floor noise

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

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

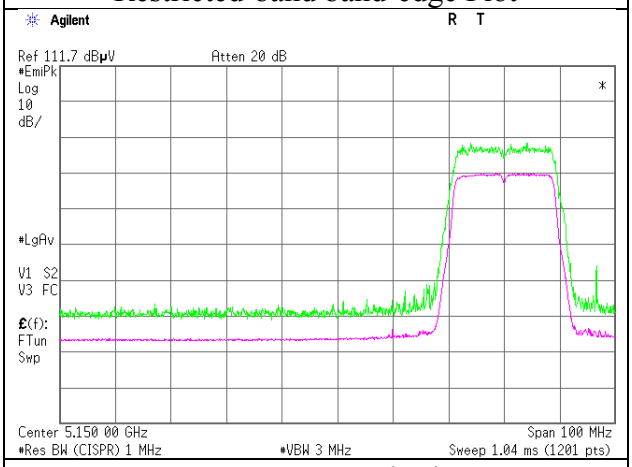
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11n-20 5180 MHz

Horizontal

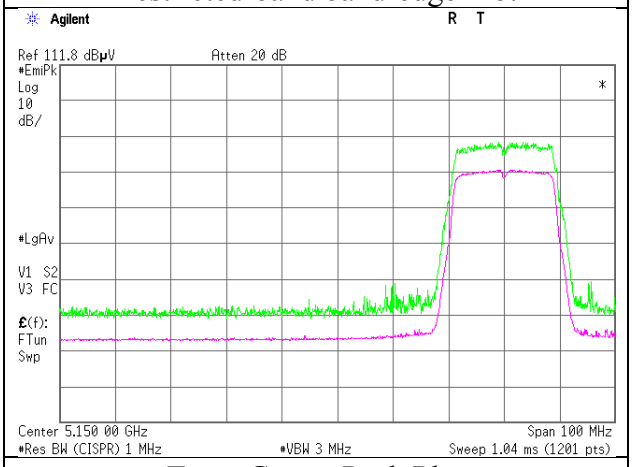
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11n-20 5220 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	10440.000	PK	43.4	39.6	1.9	33.2	-	51.7	73.9	22.2	Floor noise
Hori	15660.000	PK	43.7	38.7	3.5	32.6	-	53.3	73.9	20.6	Floor noise
Hori	10440.000	AV	34.2	39.6	1.9	33.2	-	42.5	53.9	11.4	Floor noise
Hori	15660.000	AV	34.1	38.7	3.5	32.6	-	43.7	53.9	10.2	Floor noise
Vert	10440.000	PK	43.4	39.6	1.9	33.2	-	51.7	73.9	22.2	Floor noise
Vert	15660.000	PK	43.5	38.7	3.5	32.6	-	53.1	73.9	20.8	Floor noise
Vert	10440.000	AV	33.7	39.6	1.9	33.2	-	42.0	53.9	11.9	Floor noise
Vert	15660.000	AV	34.1	38.7	3.5	32.6	-	43.7	53.9	10.2	Floor noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11n-20 5240 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	39.9	32.1	7.4	31.3	-	48.1	73.9	25.8	
Hori	10480.000	PK	43.6	39.7	1.9	33.2	-	52.0	73.9	21.9	Floor noise
Hori	15720.000	PK	43.8	38.5	3.7	32.6	-	53.4	73.9	20.5	Floor noise
Hori	5350.000	AV	30.1	32.1	7.4	31.3	1.9	40.2	53.9	13.7	*1)
Hori	10480.000	AV	34.3	39.7	1.9	33.2	-	42.7	53.9	11.2	Floor noise
Hori	15720.000	AV	34.2	38.5	3.7	32.6	-	43.8	53.9	10.1	Floor noise
Vert	5350.000	PK	40.0	32.1	7.4	31.3	-	48.2	73.9	25.7	
Vert	10480.000	PK	43.5	39.7	1.9	33.2	-	51.9	73.9	22.0	Floor noise
Vert	15720.000	PK	43.4	38.5	3.7	32.6	-	53.0	73.9	20.9	Floor noise
Vert	5350.000	AV	32.3	32.1	7.4	31.3	1.9	42.4	53.9	11.5	*1)
Vert	10480.000	AV	33.6	39.7	1.9	33.2	-	42.0	53.9	11.9	Floor noise
Vert	15720.000	AV	34.2	38.5	3.7	32.6	-	43.8	53.9	10.1	Floor noise

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

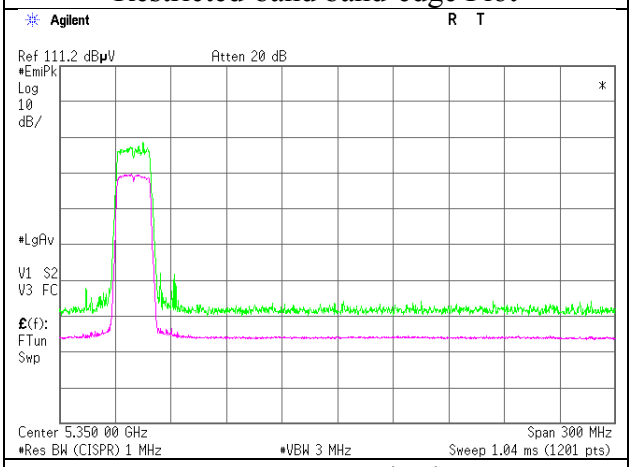
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11n-20 5240 MHz

Horizontal

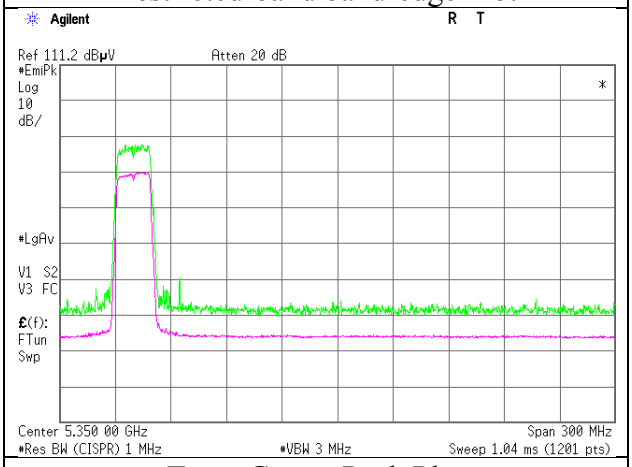
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11n-20 5745 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	39.7	32.2	7.6	31.4	-	48.1	68.2	20.1	
Hori	5700.000	PK	40.8	32.3	7.6	31.4	-	49.3	105.2	55.9	
Hori	5715.000	PK	45.5	32.3	7.6	31.4	-	54.0	109.4	55.4	
Hori	5720.000	PK	47.8	32.3	7.6	31.4	-	56.3	110.8	54.5	
Hori	5725.000	PK	53.0	32.3	7.6	31.4	-	61.5	122.2	60.7	
Hori	11490.000	PK	43.7	40.1	2.2	33.3	-	52.7	73.9	21.2	Floor noise
Hori	17235.000	PK	43.8	42.2	3.6	32.5	-	57.1	73.9	16.8	Floor noise
Hori	11490.000	AV	34.0	40.1	2.2	33.3	-	43.0	53.9	10.9	Floor noise
Hori	17235.000	AV	34.2	42.2	3.6	32.5	-	47.5	53.9	6.4	Floor noise
Vert	5650.000	PK	40.5	32.2	7.6	31.4	-	48.9	68.2	19.3	
Vert	5700.000	PK	42.3	32.3	7.6	31.4	-	50.8	105.2	54.4	
Vert	5715.000	PK	48.4	32.3	7.6	31.4	-	56.9	109.4	52.5	
Vert	5720.000	PK	50.5	32.3	7.6	31.4	-	59.0	110.8	51.8	
Vert	5725.000	PK	54.3	32.3	7.6	31.4	-	62.8	122.2	59.4	
Vert	11490.000	PK	43.6	40.1	2.2	33.3	-	52.6	73.9	21.3	Floor noise
Vert	17235.000	PK	43.6	42.2	3.6	32.5	-	56.9	73.9	17.0	Floor noise
Vert	11490.000	AV	33.6	40.1	2.2	33.3	-	42.6	53.9	11.3	Floor noise
Vert	17235.000	AV	34.2	42.2	3.6	32.5	-	47.5	53.9	6.4	Floor noise

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

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

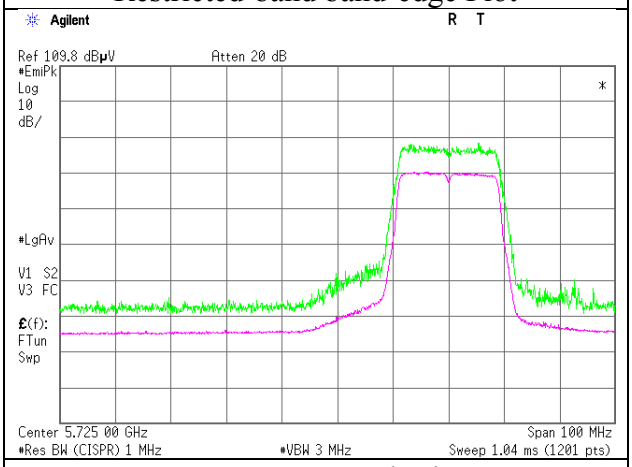
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11n-20 5745 MHz

Horizontal

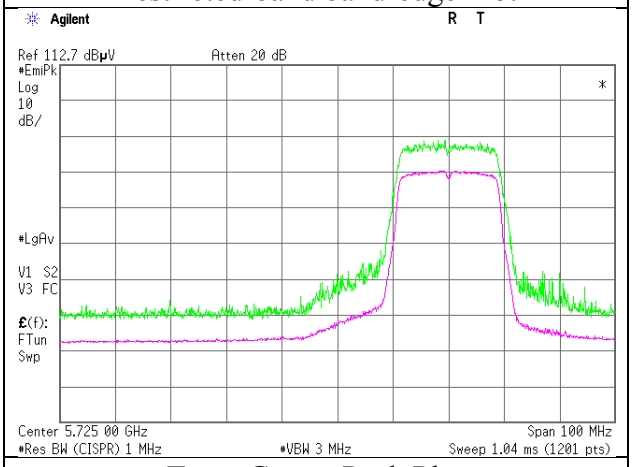
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11n-20 5785 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	11570.000	PK	43.9	40.0	2.3	33.3	-	52.9	73.9	21.0	Floor noise
Hori	17355.000	PK	43.2	42.9	3.7	32.5	-	57.3	73.9	16.6	Floor noise
Hori	11570.000	AV	34.1	40.0	2.3	33.3	-	43.1	53.9	10.8	Floor noise
Hori	17355.000	AV	33.3	42.9	3.7	32.5	-	47.4	53.9	6.5	Floor noise
Vert	11570.000	PK	43.5	40.0	2.3	33.3	-	52.5	73.9	21.4	Floor noise
Vert	17355.000	PK	43.3	42.9	3.7	32.5	-	57.4	73.9	16.5	Floor noise
Vert	11570.000	AV	33.5	40.0	2.3	33.3	-	42.5	53.9	11.4	Floor noise
Vert	17355.000	AV	33.4	42.9	3.7	32.5	-	47.5	53.9	6.4	Floor noise

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11n-20 5825 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	43.8	32.5	7.6	31.4	-	52.5	122.2	69.7	
Hori	5855.000	PK	41.8	32.5	7.6	31.4	-	50.5	110.8	60.3	
Hori	5860.000	PK	42.1	32.5	7.6	31.4	-	50.8	109.4	58.6	
Hori	5875.000	PK	40.6	32.5	7.6	31.4	-	49.3	105.2	55.9	
Hori	5925.000	PK	40.1	32.6	7.7	31.4	-	49.0	68.2	19.2	
Hori	11650.000	PK	43.2	39.9	2.3	33.3	-	52.1	73.9	21.8	Floor noise
Hori	17475.000	PK	43.4	43.6	3.7	32.5	-	58.2	73.9	15.7	Floor noise
Hori	11650.000	AV	34.3	39.9	2.3	33.3	-	43.2	53.9	10.7	Floor noise
Hori	17475.000	AV	32.4	43.6	3.7	32.5	-	47.2	53.9	6.7	Floor noise
Vert	5850.000	PK	48.8	32.5	7.6	31.4	-	57.5	122.2	64.7	
Vert	5855.000	PK	47.5	32.5	7.6	31.4	-	56.2	110.8	54.6	
Vert	5860.000	PK	43.3	32.5	7.6	31.4	-	52.0	109.4	57.4	
Vert	5875.000	PK	41.2	32.5	7.6	31.4	-	49.9	105.2	55.3	
Vert	5925.000	PK	40.8	32.6	7.7	31.4	-	49.7	68.2	18.5	
Vert	11650.000	PK	43.3	39.9	2.3	33.3	-	52.2	73.9	21.7	Floor noise
Vert	17475.000	PK	43.5	43.6	3.7	32.5	-	58.3	73.9	15.6	Floor noise
Vert	11650.000	AV	33.7	39.9	2.3	33.3	-	42.6	53.9	11.3	Floor noise
Vert	17475.000	AV	32.2	43.6	3.7	32.5	-	47.0	53.9	6.9	Floor noise

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

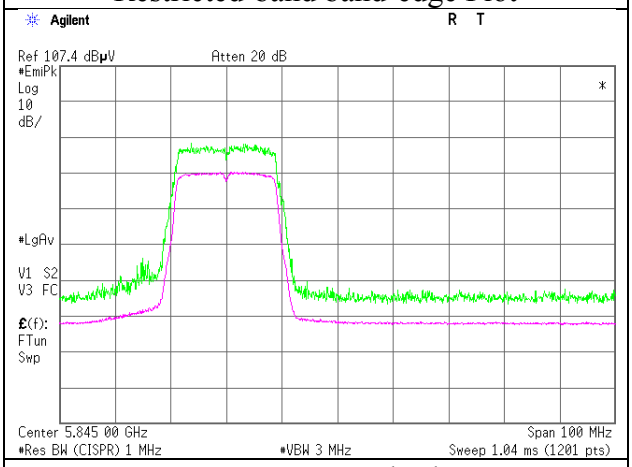
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11n-20 5825 MHz

Horizontal

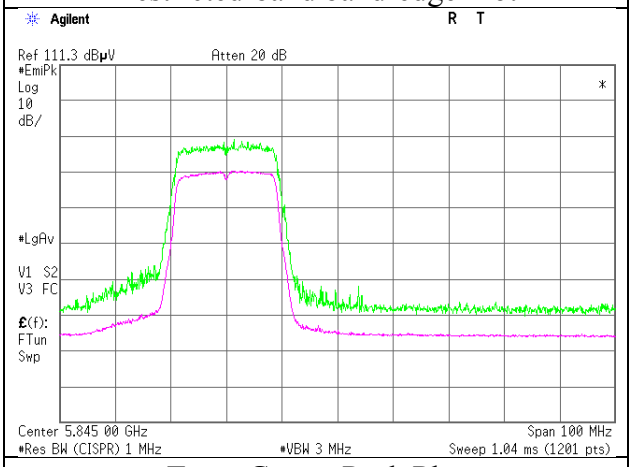
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11ac-20 5180 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	47.0	32.2	7.3	31.3	-	55.2	73.9	18.7	
Hori	5150.000	AV	30.4	32.2	7.3	31.3	1.4	40.0	53.9	13.9	*1)
Vert	5150.000	PK	50.2	32.2	7.3	31.3	-	58.4	73.9	15.5	
Vert	5150.000	AV	30.4	32.2	7.3	31.3	1.4	40.0	53.9	13.9	*1)

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

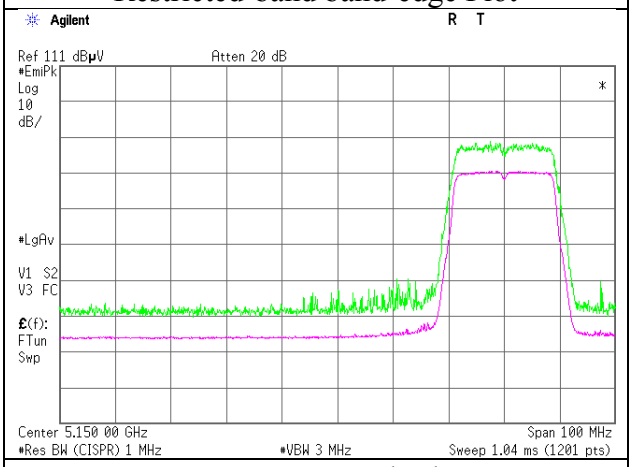
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11ac-20 5180 MHz

Horizontal

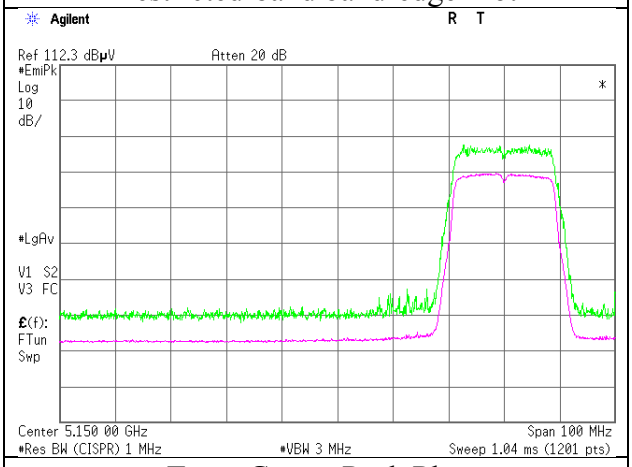
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11ac-20 5240 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	40.4	32.1	7.4	31.3	-	48.6	73.9	25.3	
Hori	5350.000	AV	30.2	32.1	7.4	31.3	1.4	39.8	53.9	14.1	*1)
Vert	5350.000	PK	41.4	32.1	7.4	31.3	-	49.6	73.9	24.3	
Vert	5350.000	AV	30.2	32.1	7.4	31.3	1.4	39.8	53.9	14.1	*1)

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

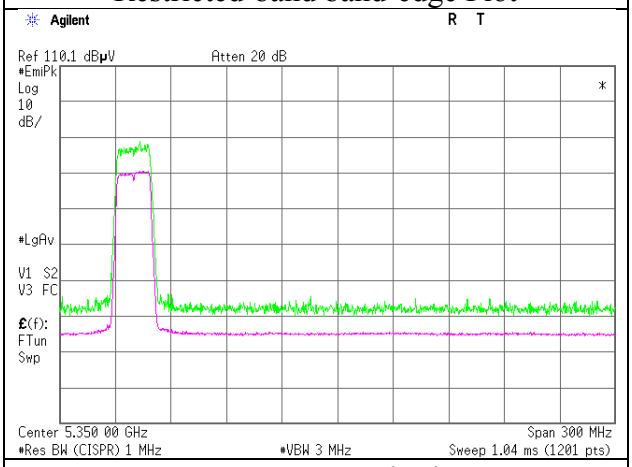
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11ac-20 5240 MHz

Horizontal

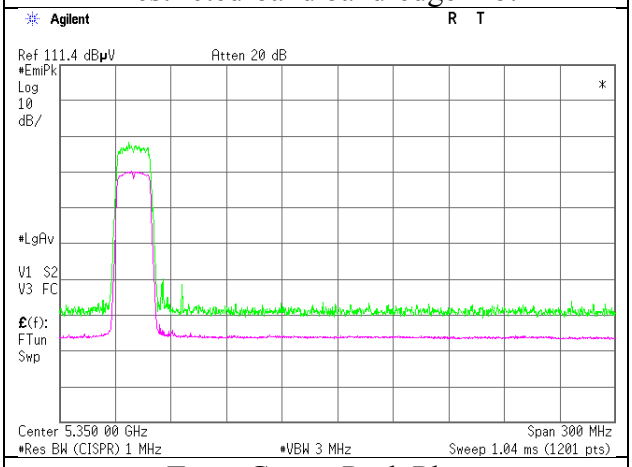
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11ac-20 5745 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	39.9	32.2	7.6	31.4	-	48.3	68.2	19.9	
Hori	5700.000	PK	41.3	32.3	7.6	31.4	-	49.8	105.2	55.4	
Hori	5715.000	PK	43.5	32.3	7.6	31.4	-	52.0	109.4	57.4	
Hori	5720.000	PK	46.6	32.3	7.6	31.4	-	55.1	110.8	55.7	
Hori	5725.000	PK	51.1	32.3	7.6	31.4	-	59.6	122.2	62.6	
Vert	5650.000	PK	39.8	32.2	7.6	31.4	-	48.2	68.2	20.0	
Vert	5700.000	PK	42.5	32.3	7.6	31.4	-	51.0	105.2	54.2	
Vert	5715.000	PK	47.0	32.3	7.6	31.4	-	55.5	109.4	53.9	
Vert	5720.000	PK	49.9	32.3	7.6	31.4	-	58.4	110.8	52.4	
Vert	5725.000	PK	53.6	32.3	7.6	31.4	-	62.1	122.2	60.1	

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

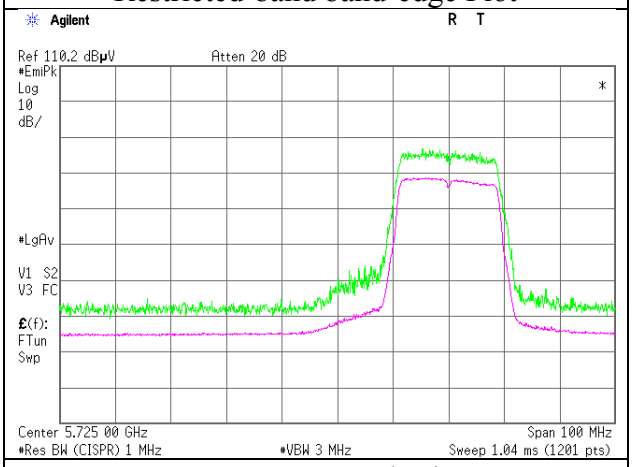
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11ac-20 5745 MHz

Horizontal

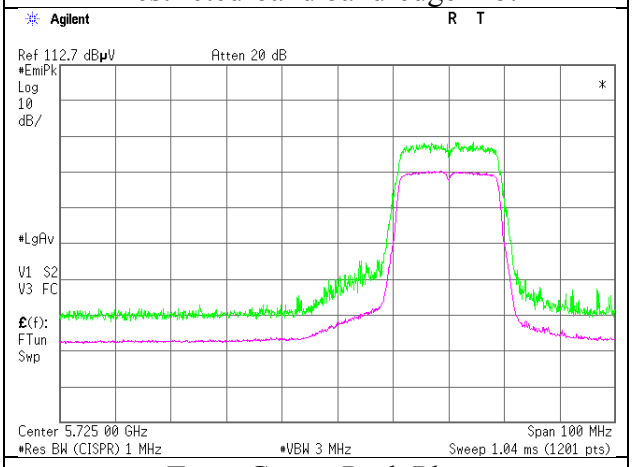
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa (Above 1 GHz)
Mode	Tx 11ac-20 5825 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	44.1	32.5	7.6	31.4	-	52.8	122.2	69.4	
Hori	5855.000	PK	41.5	32.5	7.6	31.4	-	50.2	110.8	60.6	
Hori	5860.000	PK	41.0	32.5	7.6	31.4	-	49.7	109.4	59.7	
Hori	5875.000	PK	40.9	32.5	7.6	31.4	-	49.6	105.2	55.6	
Hori	5925.000	PK	40.2	32.6	7.7	31.4	-	49.1	68.2	19.1	
Vert	5850.000	PK	47.2	32.5	7.6	31.4	-	55.9	122.2	66.3	
Vert	5855.000	PK	47.0	32.5	7.6	31.4	-	55.7	110.8	55.1	
Vert	5860.000	PK	44.3	32.5	7.6	31.4	-	53.0	109.4	56.4	
Vert	5875.000	PK	41.0	32.5	7.6	31.4	-	49.7	105.2	55.5	
Vert	5925.000	PK	40.9	32.6	7.7	31.4	-	49.8	68.2	18.4	

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

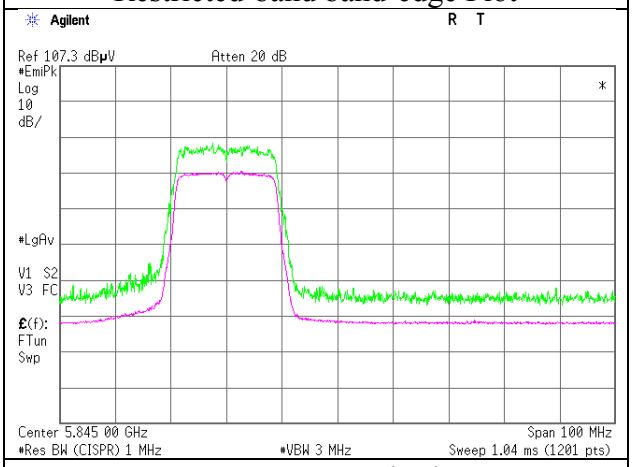
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 16, 2017
Temperature / Humidity	23deg. C / 61 % RH
Engineer	Tomohisa Nakagawa
Mode	Tx 11ac-20 5825 MHz

Horizontal

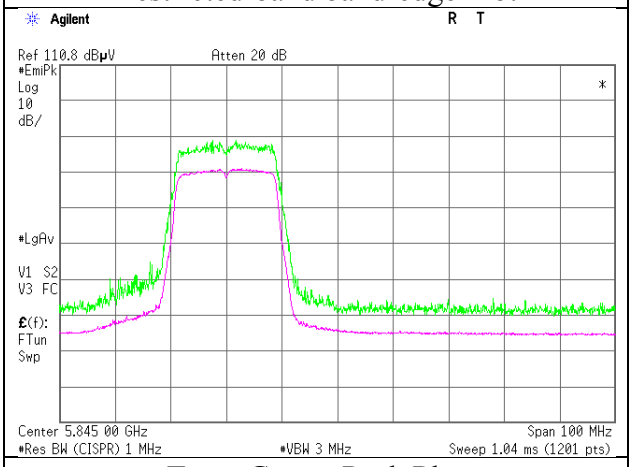
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11830772H	
Date	July 18, 2017	August 17, 2017
Temperature / Humidity	25deg. C / 58 % RH	23deg. C / 56 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)	Ryota Yamanaka (Above 10 GHz)
Mode	Tx 11n-40 5190 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	47.6	32.2	7.3	31.3	-	55.8	73.9	18.1	
Hori	10380.000	PK	43.8	39.5	1.9	33.2	-	52.0	73.9	21.9	Floor noise
Hori	15570.000	PK	43.2	38.9	3.5	32.6	-	53.0	73.9	20.9	Floor noise
Hori	5150.000	AV	34.0	32.2	7.3	31.3	2.8	45.0	53.9	9.0	*1)
Hori	10380.000	AV	34.0	39.5	1.9	33.2	-	42.2	53.9	11.7	Floor noise
Hori	15570.000	AV	33.4	38.9	3.5	32.6	-	43.2	53.9	10.7	Floor noise
Vert	5150.000	PK	51.2	32.2	7.3	31.3	-	59.4	73.9	14.5	
Vert	10380.000	PK	44.1	39.5	1.9	33.2	-	52.3	73.9	21.6	Floor noise
Vert	15570.000	PK	43.4	38.9	3.5	32.6	-	53.2	73.9	20.7	Floor noise
Vert	5150.000	AV	35.6	32.2	7.3	31.3	2.8	46.6	53.9	7.3	*1)
Vert	10380.000	AV	33.3	39.5	1.9	33.2	-	41.5	53.9	12.4	Floor noise
Vert	15570.000	AV	34.3	38.9	3.5	32.6	-	44.1	53.9	9.8	Floor noise

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

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

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

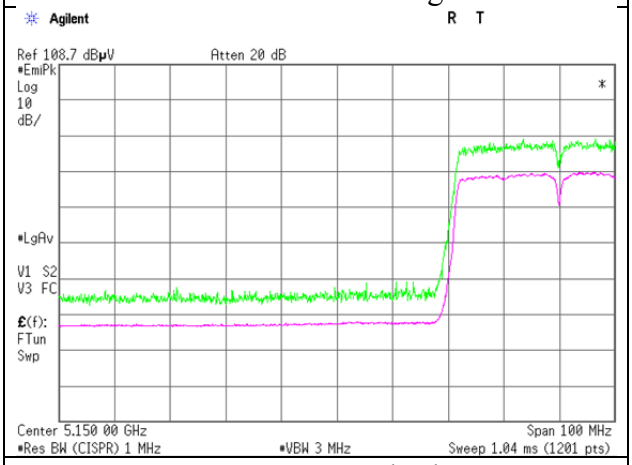
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	July 18, 2017
Temperature / Humidity	25deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Tx 11n-40 5190 MHz

Horizontal

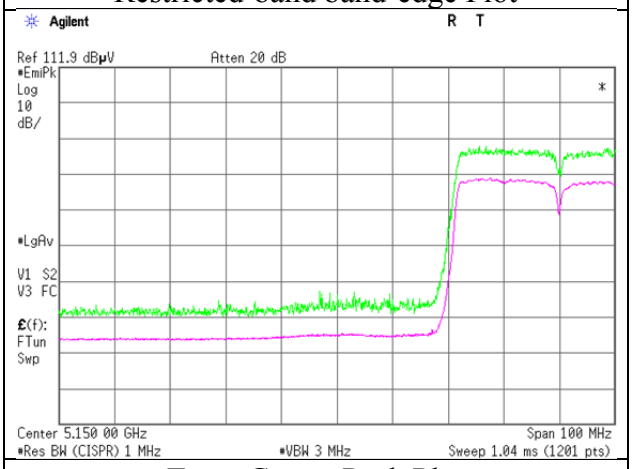
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11n-40 5230 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	39.8	32.1	7.4	31.3	-	48.0	73.9	25.9	
Hori	10460.000	PK	43.5	39.6	1.9	33.2	-	51.8	73.9	22.1	Floor noise
Hori	15690.000	PK	43.3	38.6	3.5	32.6	-	52.8	73.9	21.1	Floor noise
Hori	5350.000	AV	29.8	32.1	7.4	31.3	2.8	40.8	53.9	13.2	*1)
Hori	10460.000	AV	34.1	39.6	1.9	33.2	-	42.4	53.9	11.5	Floor noise
Hori	15690.000	AV	33.6	38.6	3.5	32.6	-	43.1	53.9	10.8	Floor noise
Vert	5350.000	PK	40.4	32.1	7.4	31.3	-	48.6	73.9	25.3	
Vert	10460.000	PK	44.0	39.6	1.9	33.2	-	52.3	73.9	21.6	Floor noise
Vert	15690.000	PK	43.3	38.6	3.5	32.6	-	52.8	73.9	21.1	Floor noise
Vert	5350.000	AV	30.0	32.1	7.4	31.3	2.8	41.0	53.9	13.0	*1)
Vert	10460.000	AV	33.5	39.6	1.9	33.2	-	41.8	53.9	12.1	Floor noise
Vert	15690.000	AV	34.1	38.6	3.5	32.6	-	43.6	53.9	10.3	Floor noise

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

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

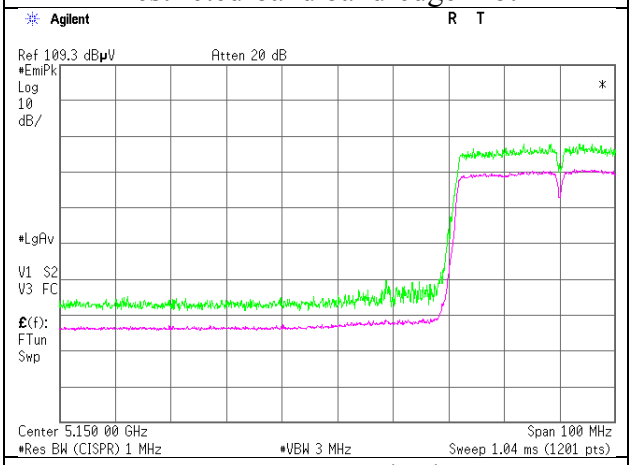
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11n-40 5230 MHz

Horizontal

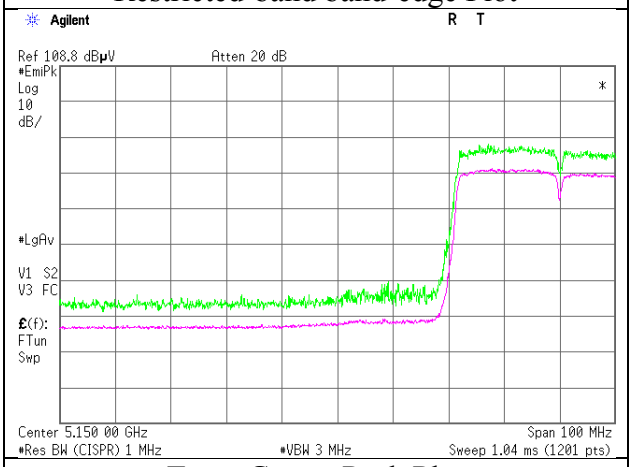
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11830772H	
Date	July 18, 2017	August 17, 2017
Temperature / Humidity	25deg. C / 58 % RH	23deg. C / 56 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)	Ryota Yamanaka (Above 10 GHz)
Mode	Tx 11n-40 5755 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	40.5	32.2	7.6	31.4	-	48.9	68.2	19.3	
Hori	5700.000	PK	42.0	32.3	7.6	31.4	-	50.5	105.2	54.7	
Hori	5715.000	PK	49.2	32.3	7.6	31.4	-	57.7	109.4	51.7	
Hori	5720.000	PK	50.6	32.3	7.6	31.4	-	59.1	110.8	51.7	
Hori	5725.000	PK	52.7	32.3	7.6	31.4	-	61.2	122.2	61.0	
Hori	11510.000	PK	43.6	40.0	2.3	33.3	-	52.6	73.9	21.3	Floor noise
Hori	17265.000	PK	43.4	42.4	3.6	32.5	-	56.9	73.9	17.0	Floor noise
Hori	11510.000	AV	34.3	40.0	2.3	33.3	-	43.3	53.9	10.6	Floor noise
Hori	17265.000	AV	33.8	42.4	3.6	32.5	-	47.3	53.9	6.6	Floor noise
Vert	5650.000	PK	41.9	32.2	7.6	31.4	-	50.3	68.2	17.9	
Vert	5700.000	PK	48.2	32.3	7.6	31.4	-	56.7	105.2	48.5	
Vert	5715.000	PK	54.7	32.3	7.6	31.4	-	63.2	109.4	46.2	
Vert	5720.000	PK	54.0	32.3	7.6	31.4	-	62.5	110.8	48.3	
Vert	5725.000	PK	53.1	32.3	7.6	31.4	-	61.6	122.2	60.6	
Vert	11510.000	PK	44.4	40.0	2.3	33.3	-	53.4	73.9	20.5	Floor noise
Vert	17265.000	PK	43.6	42.4	3.6	32.5	-	57.1	73.9	16.8	Floor noise
Vert	11510.000	AV	33.4	40.0	2.3	33.3	-	42.4	53.9	11.5	Floor noise
Vert	17265.000	AV	34.3	42.4	3.6	32.5	-	47.8	53.9	6.1	Floor noise

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

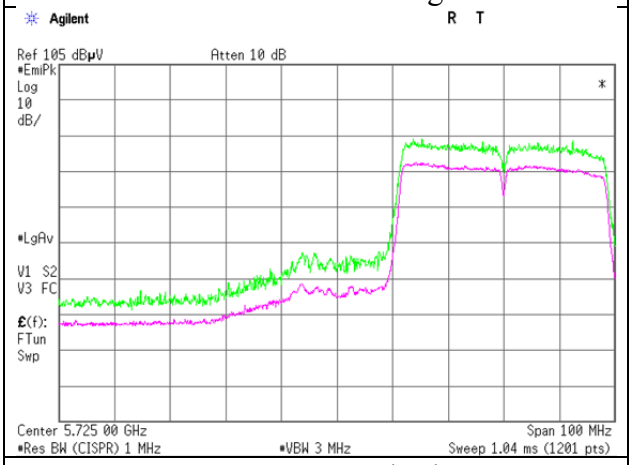
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	July 18, 2017
Temperature / Humidity	25deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Tx 11n-40 5755 MHz

Horizontal

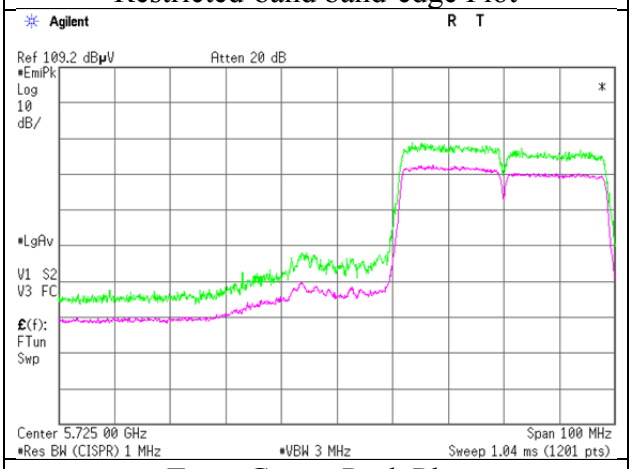
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11n-40 5795 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	41.8	32.5	7.6	31.4	-	50.5	122.2	71.7	
Hori	5855.000	PK	40.3	32.5	7.6	31.4	-	49.0	110.8	61.8	
Hori	5860.000	PK	40.2	32.5	7.6	31.4	-	48.9	109.4	60.5	
Hori	5875.000	PK	40.2	32.5	7.6	31.4	-	48.9	105.2	56.3	
Hori	5925.000	PK	40.4	32.6	7.7	31.4	-	49.3	68.2	18.9	
Hori	11590.000	PK	43.2	40.0	2.3	33.3	-	52.2	73.9	21.7	Floor noise
Hori	17385.000	PK	43.6	43.1	3.6	32.5	-	57.8	73.9	16.1	Floor noise
Hori	11590.000	AV	34.2	40.0	2.3	33.3	-	43.2	53.9	10.7	Floor noise
Hori	17385.000	AV	33.5	43.1	3.6	32.5	-	47.7	53.9	6.2	Floor noise
Vert	5850.000	PK	43.9	32.5	7.6	31.4	-	52.6	122.2	69.6	
Vert	5855.000	PK	41.9	32.5	7.6	31.4	-	50.6	110.8	60.2	
Vert	5860.000	PK	41.8	32.5	7.6	31.4	-	50.5	109.4	58.9	
Vert	5875.000	PK	41.1	32.5	7.6	31.4	-	49.8	105.2	55.4	
Vert	5925.000	PK	40.5	32.6	7.7	31.4	-	49.4	68.2	18.8	
Vert	11590.000	PK	44.5	40.0	2.3	33.3	-	53.5	73.9	20.4	Floor noise
Vert	17385.000	PK	43.3	43.1	3.6	32.5	-	57.5	73.9	16.4	Floor noise
Vert	11590.000	AV	33.5	40.0	2.3	33.3	-	42.5	53.9	11.4	Floor noise
Vert	17385.000	AV	33.4	43.1	3.6	32.5	-	47.6	53.9	6.3	Floor noise

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

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

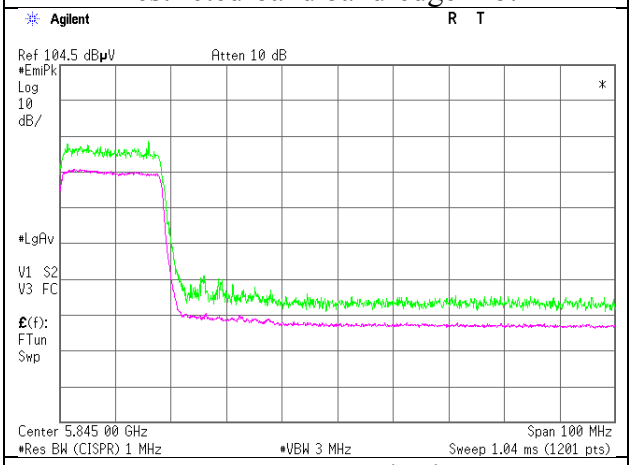
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11n-40 5795 MHz

Horizontal

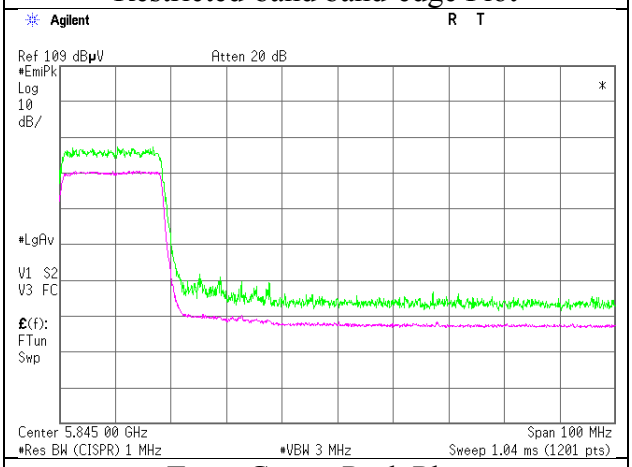
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11ac-40 5190 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	43.0	32.2	7.3	31.3	-	51.2	73.9	22.7	
Hori	10380.000	PK	43.8	39.5	1.9	33.2	-	52.0	73.9	21.9	Floor noise
Hori	15570.000	PK	43.2	38.9	3.5	32.6	-	53.0	73.9	20.9	Floor noise
Hori	5150.000	AV	31.3	32.2	7.3	31.3	0.6	40.1	53.9	13.8	*1)
Hori	10380.000	AV	34.0	39.5	1.9	33.2	-	42.2	53.9	11.7	Floor noise
Hori	15570.000	AV	33.4	38.9	3.5	32.6	-	43.2	53.9	10.7	Floor noise
Vert	5150.000	PK	46.4	32.2	7.3	31.3	-	54.6	73.9	19.3	
Vert	10380.000	PK	44.1	39.5	1.9	33.2	-	52.3	73.9	21.6	Floor noise
Vert	15570.000	PK	43.4	38.9	3.5	32.6	-	53.2	73.9	20.7	Floor noise
Vert	5150.000	AV	31.5	32.2	7.3	31.3	0.6	40.3	53.9	13.6	*1)
Vert	10380.000	AV	33.3	39.5	1.9	33.2	-	41.5	53.9	12.4	Floor noise
Vert	15570.000	AV	34.3	38.9	3.5	32.6	-	44.1	53.9	9.8	Floor noise

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

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

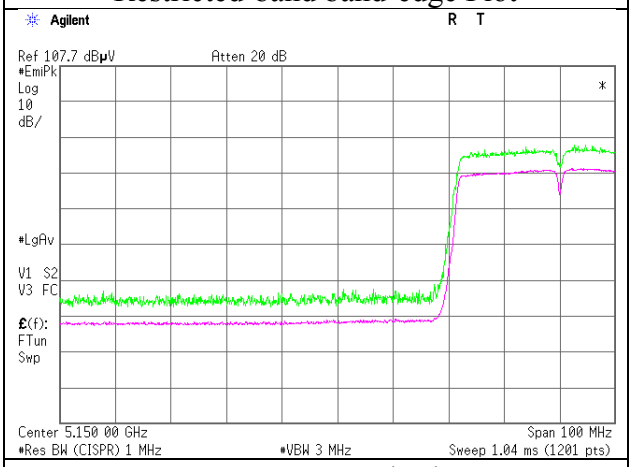
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-40 5190 MHz

Horizontal

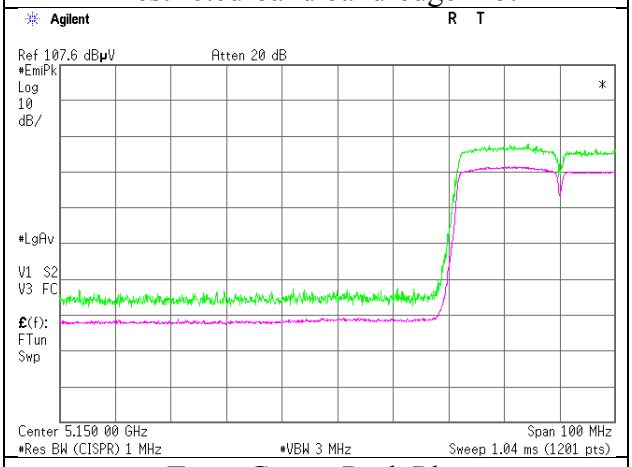
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11ac-40 5230 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5350.000	PK	40.4	32.1	7.4	31.3	-	48.6	73.9	25.3	
Hori	10460.000	PK	43.5	39.6	1.9	33.2	-	51.8	73.9	22.1	Floor noise
Hori	15690.000	PK	43.3	38.6	3.5	32.6	-	52.8	73.9	21.1	Floor noise
Hori	5350.000	AV	29.9	32.1	7.4	31.3	0.6	38.7	53.9	15.2	*1)
Hori	10460.000	AV	34.1	39.6	1.9	33.2	-	42.4	53.9	11.5	Floor noise
Hori	15690.000	AV	33.6	38.6	3.5	32.6	-	43.1	53.9	10.8	Floor noise
Vert	5350.000	PK	40.2	32.1	7.4	31.3	-	48.4	73.9	25.5	
Vert	10460.000	PK	44.0	39.6	1.9	33.2	-	52.3	73.9	21.6	Floor noise
Vert	15690.000	PK	43.3	38.6	3.5	32.6	-	52.8	73.9	21.1	Floor noise
Vert	5350.000	AV	30.2	32.1	7.4	31.3	0.6	39.0	53.9	14.9	*1)
Vert	10460.000	AV	33.5	39.6	1.9	33.2	-	41.8	53.9	12.1	Floor noise
Vert	15690.000	AV	34.1	38.6	3.5	32.6	-	43.6	53.9	10.3	Floor noise

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

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

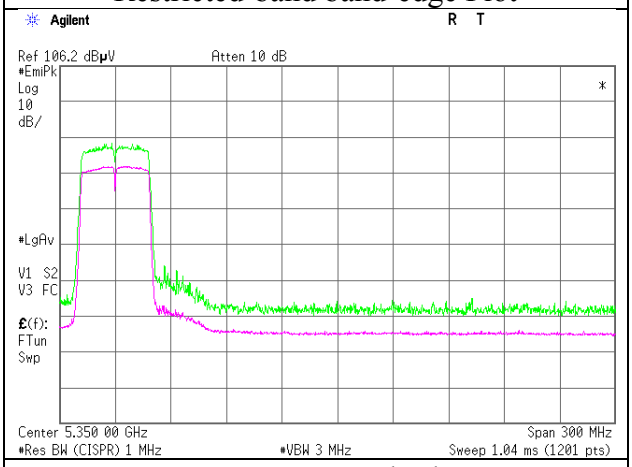
*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-40 5230 MHz

Horizontal

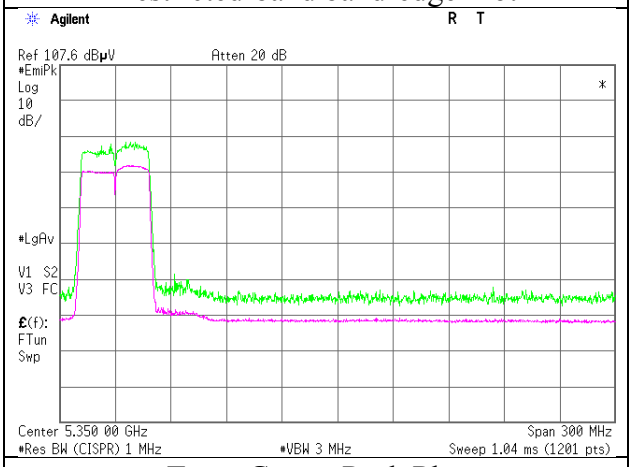
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11830772H	
Date	July 18, 2017	August 17, 2017
Temperature / Humidity	25deg. C / 58 % RH	23deg. C / 56 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)	Ryota Yamanaka (Above 10 GHz)
Mode	Tx 11ac-40 5755 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	40.5	32.2	7.6	31.4	-	48.9	68.2	19.3	
Hori	5700.000	PK	41.4	32.3	7.6	31.4	-	49.9	105.2	55.3	
Hori	5715.000	PK	49.8	32.3	7.6	31.4	-	58.3	109.4	51.1	
Hori	5720.000	PK	51.3	32.3	7.6	31.4	-	59.8	110.8	51.0	
Hori	5725.000	PK	52.5	32.3	7.6	31.4	-	61.0	122.2	61.2	
Hori	11510.000	PK	43.6	40.0	2.3	33.3	-	52.6	73.9	21.3	Floor noise
Hori	17265.000	PK	43.4	42.4	3.6	32.5	-	56.9	73.9	17.0	Floor noise
Hori	11510.000	AV	34.3	40.0	2.3	33.3	-	43.3	53.9	10.6	Floor noise
Hori	17265.000	AV	33.8	42.4	3.6	32.5	-	47.3	53.9	6.6	Floor noise
Vert	5650.000	PK	41.1	32.2	7.6	31.4	-	49.5	68.2	18.7	
Vert	5700.000	PK	42.2	32.3	7.6	31.4	-	50.7	105.2	54.5	
Vert	5715.000	PK	55.4	32.3	7.6	31.4	-	63.9	109.4	45.5	
Vert	5715.000	PK	64.4	32.3	7.6	31.4	-	72.9	109.4	36.5	
Vert	5720.000	PK	54.2	32.3	7.6	31.4	-	62.7	110.8	48.1	
Vert	5725.000	PK	54.7	32.3	7.6	31.4	-	63.2	122.2	59.0	
Vert	11510.000	PK	44.4	40.0	2.3	33.3	-	53.4	73.9	20.5	Floor noise
Vert	17265.000	PK	43.6	42.4	3.6	32.5	-	57.1	73.9	16.8	Floor noise
Vert	11510.000	AV	33.4	40.0	2.3	33.3	-	42.4	53.9	11.5	Floor noise
Vert	17265.000	AV	34.3	42.4	3.6	32.5	-	47.8	53.9	6.1	Floor noise

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

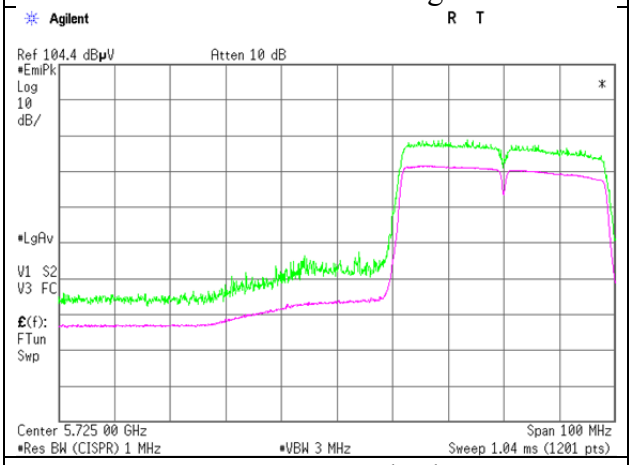
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	July 18, 2017
Temperature / Humidity	25deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Tx 11ac-40 5755 MHz

Horizontal

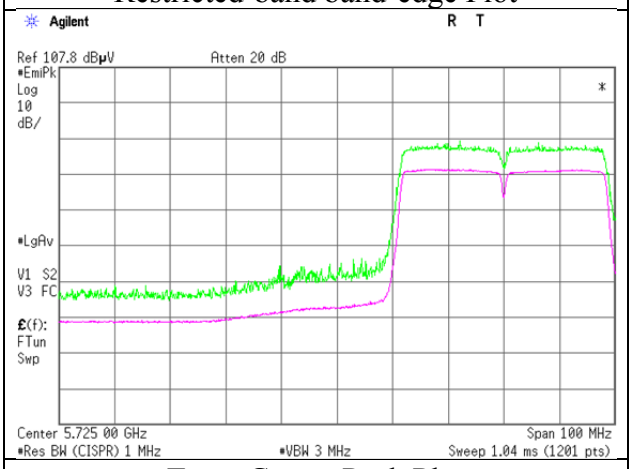
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 10 GHz)
Mode	Tx 11ac-40 5795 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5850.000	PK	41.5	32.5	7.6	31.4	-	50.2	122.2	72.0	
Hori	5855.000	PK	41.2	32.5	7.6	31.4	-	49.9	110.8	60.9	
Hori	5860.000	PK	40.4	32.5	7.6	31.4	-	49.1	109.4	60.3	
Hori	5875.000	PK	40.3	32.5	7.6	31.4	-	49.0	105.2	56.2	
Hori	5925.000	PK	40.1	32.6	7.7	31.4	-	49.0	68.2	19.2	
Hori	11590.000	PK	43.2	40.0	2.3	33.3	-	52.2	73.9	21.7	Floor noise
Hori	17385.000	PK	43.6	43.1	3.6	32.5	-	57.8	73.9	16.1	Floor noise
Hori	11590.000	AV	34.2	40.0	2.3	33.3	-	43.2	53.9	10.7	Floor noise
Hori	17385.000	AV	33.5	43.1	3.6	32.5	-	47.7	53.9	6.2	Floor noise
Vert	5850.000	PK	41.6	32.5	7.6	31.4	-	50.3	122.2	71.9	
Vert	5855.000	PK	41.3	32.5	7.6	31.4	-	50.0	110.8	60.8	
Vert	5860.000	PK	41.7	32.5	7.6	31.4	-	50.4	109.4	59.0	
Vert	5875.000	PK	41.1	32.5	7.6	31.4	-	49.8	105.2	55.4	
Vert	5925.000	PK	41.0	32.6	7.7	31.4	-	49.9	68.2	18.3	
Vert	11590.000	PK	44.5	40.0	2.3	33.3	-	53.5	73.9	20.4	Floor noise
Vert	17385.000	PK	43.3	43.1	3.6	32.5	-	57.5	73.9	16.4	Floor noise
Vert	11590.000	AV	33.5	40.0	2.3	33.3	-	42.5	53.9	11.4	Floor noise
Vert	17385.000	AV	33.4	43.1	3.6	32.5	-	47.6	53.9	6.3	Floor noise

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

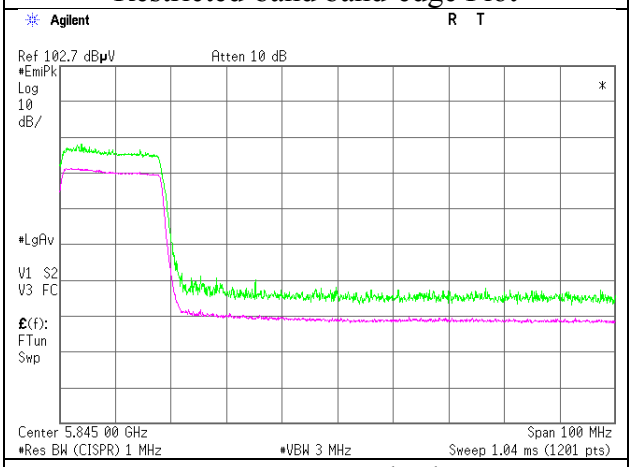
Distance factor:	1 GHz - 10 GHz	20log (4.45 m / 3.0 m) = 3.43 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-40 5795 MHz

Horizontal

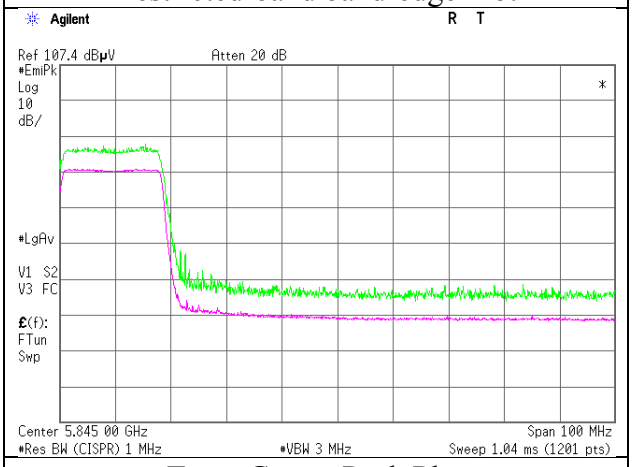
Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green: Peak Plot
Trace Purple: Average Plot

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka (Above 1 GHz)
Mode	Tx 11ac-80 5210 MHz

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5150.000	PK	45.2	32.2	7.3	31.3	-	53.4	73.9	20.5	
Hori	5350.000	PK	40.4	32.1	7.4	31.3	-	48.6	73.9	25.3	
Hori	10420.000	PK	43.2	39.6	1.9	33.2	-	51.5	73.9	22.4	Floor noise
Hori	15630.000	PK	43.2	38.8	3.5	32.6	-	52.9	73.9	21.0	Floor noise
Hori	5150.000	AV	31.0	32.2	7.3	31.3	1.1	40.3	53.9	13.6	*1)
Hori	5350.000	AV	30.3	32.1	7.4	31.3	1.1	39.6	53.9	14.3	*1)
Hori	10420.000	AV	33.1	39.6	1.9	33.2	-	41.4	53.9	12.5	Floor noise
Hori	15630.000	AV	33.4	38.8	3.5	32.6	-	43.1	53.9	10.8	Floor noise
Vert	5150.000	PK	47.5	32.2	7.3	31.3	-	55.7	73.9	18.2	
Vert	5350.000	PK	41.5	32.1	7.4	31.3	-	49.7	73.9	24.2	
Vert	10420.000	PK	43.1	39.6	1.9	33.2	-	51.4	73.9	22.5	Floor noise
Vert	15630.000	PK	43.1	38.8	3.5	32.6	-	52.8	73.9	21.1	Floor noise
Vert	5150.000	AV	31.1	32.2	7.3	31.3	1.1	40.4	53.9	13.5	*1)
Vert	5350.000	AV	30.9	32.1	7.4	31.3	1.1	40.2	53.9	13.7	*1)
Vert	10420.000	AV	32.9	39.6	1.9	33.2	-	41.2	53.9	12.7	Floor noise
Vert	15630.000	AV	33.0	38.8	3.5	32.6	-	42.7	53.9	11.2	Floor noise

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

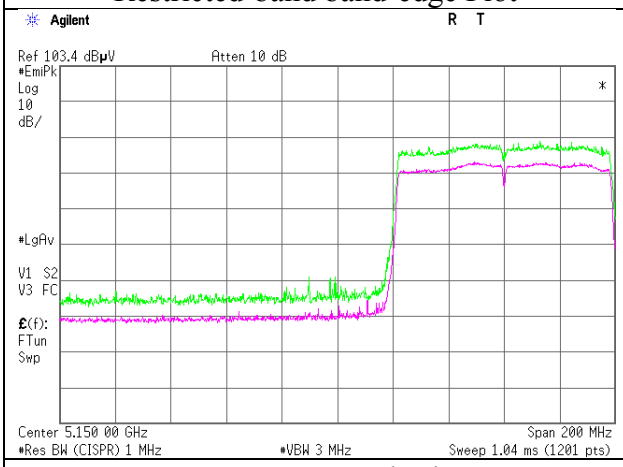
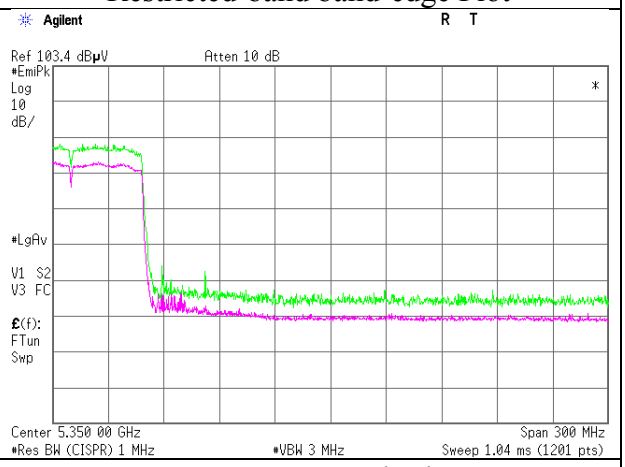
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

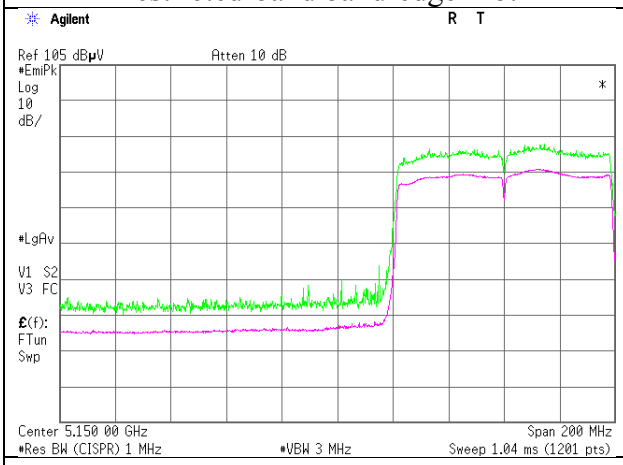
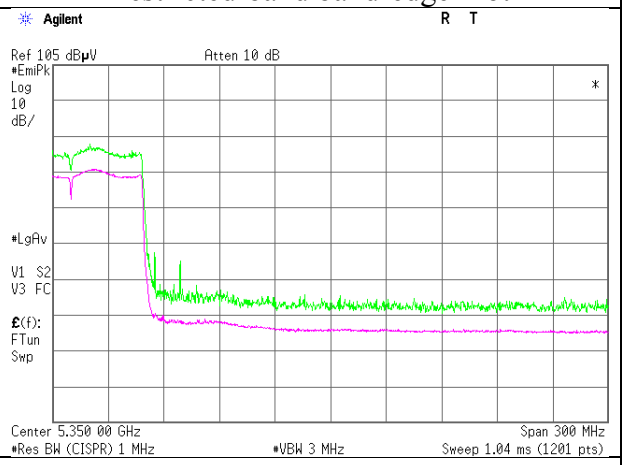
Distance factor: 1 GHz - 10 GHz 20log (4.45 m / 3.0 m) = 3.43 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	August 17, 2017
Temperature / Humidity	23deg. C / 56 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11ac-80 5210 MHz

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

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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber	
Report No.	11830772H	
Date	July 18, 2017	August 17, 2017
Temperature / Humidity	25deg. C / 58 % RH	23deg. C / 56 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)	Ryota Yamanaka (Above 10 GHz)
Mode	Tx 11ac-80 5775 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	5650.000	PK	40.5	32.2	7.6	31.4	-	48.9	68.2	19.3	
Hori	5700.000	PK	43.2	32.3	7.6	31.4	-	51.7	105.2	53.5	
Hori	5715.000	PK	49.0	32.3	7.6	31.4	-	57.5	109.4	51.9	
Hori	5720.000	PK	50.4	32.3	7.6	31.4	-	58.9	110.8	51.9	
Hori	5725.000	PK	49.9	32.3	7.6	31.4	-	58.4	122.2	63.8	
Hori	5850.000	PK	39.6	32.5	7.6	31.4	-	48.3	122.2	73.9	
Hori	5855.000	PK	40.6	32.5	7.6	31.4	-	49.3	110.8	61.5	
Hori	5860.000	PK	40.5	32.5	7.6	31.4	-	49.2	109.4	60.2	
Hori	5875.000	PK	40.6	32.5	7.6	31.4	-	49.3	105.2	55.9	
Hori	5925.000	PK	41.6	32.6	7.7	31.4	-	50.5	68.2	17.7	
Hori	11550.000	PK	43.1	40.0	2.3	33.3	-	52.1	73.9	21.8	Floor noise
Hori	17325.000	PK	43.1	42.7	3.7	32.5	-	57.0	73.9	16.9	Floor noise
Hori	11550.000	AV	33.4	40.0	2.3	33.3	-	42.4	53.9	11.5	Floor noise
Hori	17325.000	AV	33.2	42.7	3.7	32.5	-	47.1	53.9	6.8	Floor noise
Vert	5650.000	PK	41.9	32.2	7.6	31.4	-	50.3	68.2	17.9	
Vert	5700.000	PK	48.2	32.3	7.6	31.4	-	56.7	105.2	48.5	
Vert	5715.000	PK	55.4	32.3	7.6	31.4	-	63.9	109.4	45.5	
Vert	5720.000	PK	54.0	32.3	7.6	31.4	-	62.5	110.8	48.3	
Vert	5725.000	PK	53.1	32.3	7.6	31.4	-	61.6	122.2	60.6	
Vert	5850.000	PK	45.1	32.5	7.6	31.4	-	53.8	122.2	68.4	
Vert	5855.000	PK	41.9	32.5	7.6	31.4	-	50.6	110.8	60.2	
Vert	5860.000	PK	41.7	32.5	7.6	31.4	-	50.4	109.4	59.0	
Vert	5875.000	PK	41.7	32.5	7.6	31.4	-	50.4	105.2	54.8	
Vert	5925.000	PK	41.1	32.6	7.7	31.4	-	50.0	68.2	18.2	
Vert	11550.000	PK	43.3	40.0	2.3	33.3	-	52.3	73.9	21.6	Floor noise
Vert	17325.000	PK	43.0	42.7	3.7	32.5	-	56.9	73.9	17.0	Floor noise
Vert	11550.000	AV	32.2	40.0	2.3	33.3	-	41.2	53.9	12.7	Floor noise
Vert	17325.000	AV	33.1	42.7	3.7	32.5	-	47.0	53.9	6.9	Floor noise

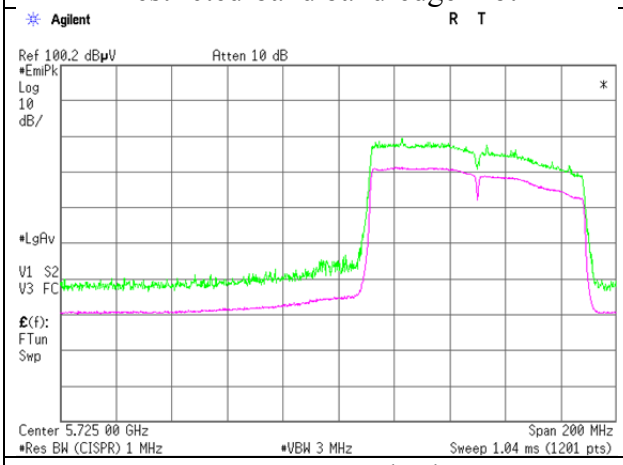
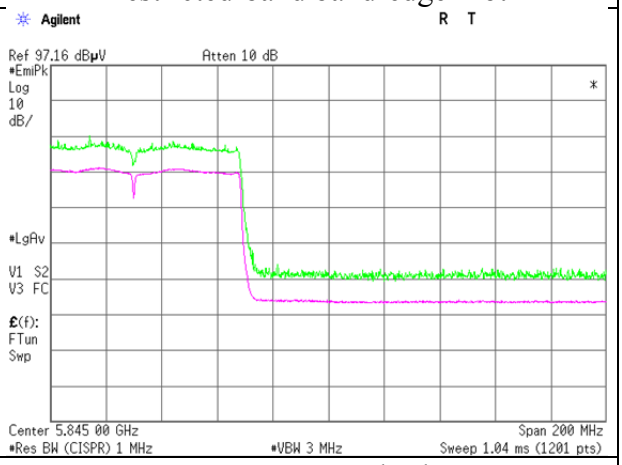
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

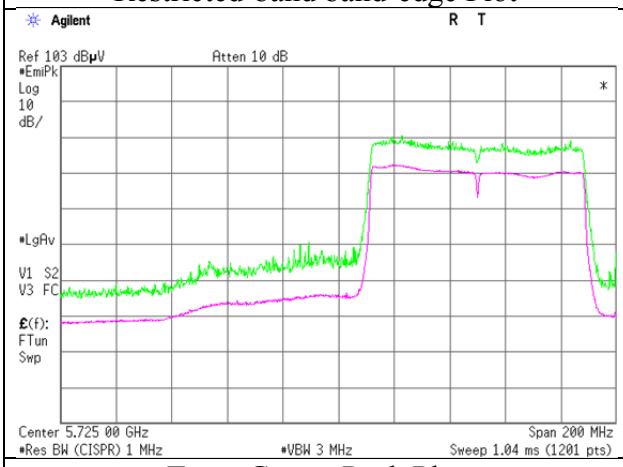
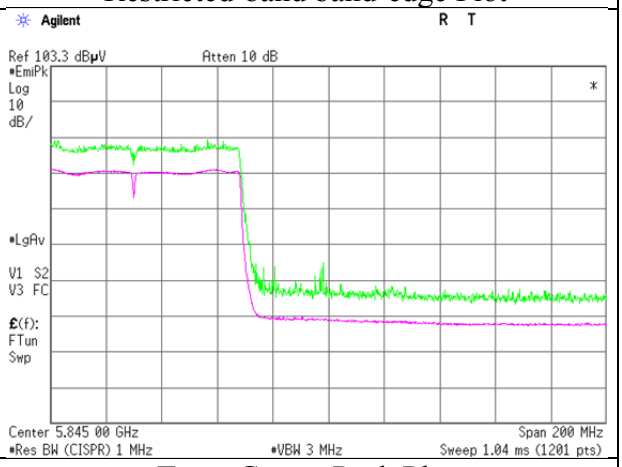
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11830772H
Date	July 18, 2017
Temperature / Humidity	25deg. C / 58 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)
Mode	Tx 11ac-80 5775 MHz

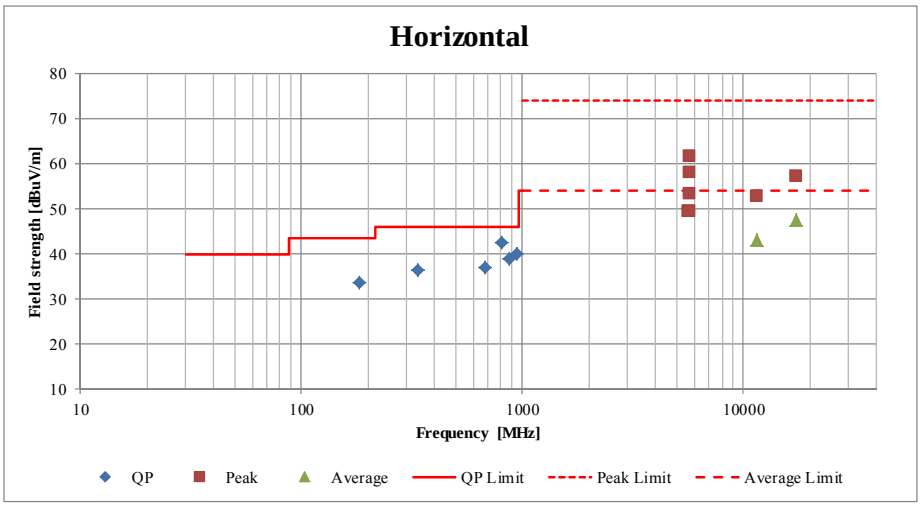
Horizontal	Horizontal
Restricted-band band-edge Plot	Restricted-band band-edge Plot
	
Trace Green: Peak Plot Trace Purple: Average Plot	Trace Green: Peak Plot Trace Purple: Average Plot

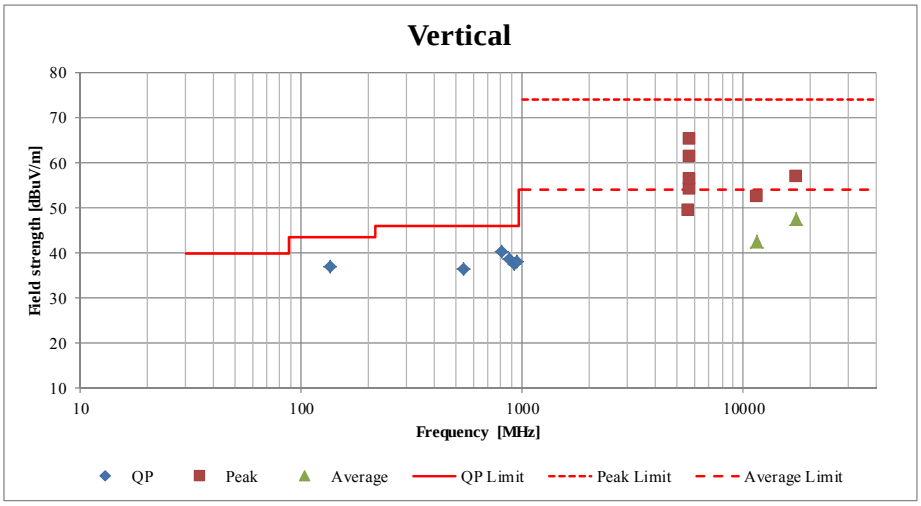
Vertical	Vertical
Restricted-band band-edge Plot	Restricted-band band-edge Plot
	
Trace Green: Peak Plot Trace Purple: Average Plot	Trace Green: Peak Plot Trace Purple: Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber		
Report No.	11830772H		
Date	July 18, 2017	August 16, 2017	August 17, 2017
Temperature / Humidity	25deg. C / 58 % RH	23deg. C / 61 % RH	23deg. C / 56 % RH
Engineer	Hiroyuki Furutaka (1 GHz - 10 GHz)	Tomohisa Nakagawa (Above 10 GHz)	Ryota Yamanaka (Below 1 GHz)
Mode	Tx 11a 5745 MHz		



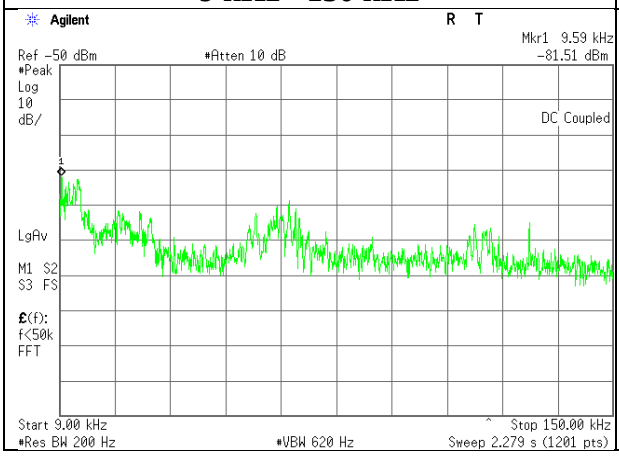


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

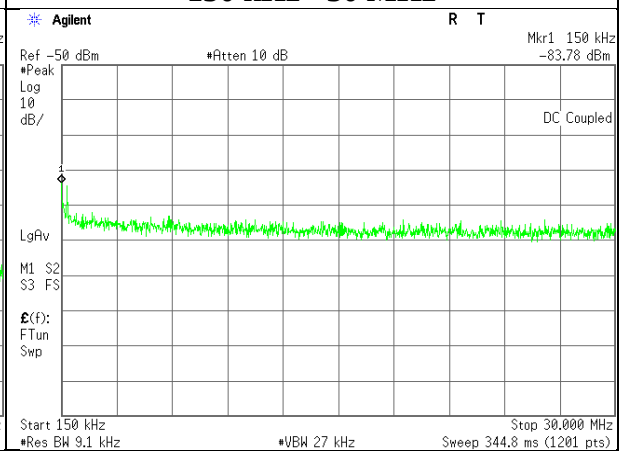
Conducted Spurious Emission

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11830772H
Date	August 4, 2017
Temperature / Humidity	25 deg. C / 55 % RH
Engineer	Ryota Yamanaka
Mode	Tx 11a 5745 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
9.59	-81.5	1.00	9.8	3.86	1	-66.8	300	6.0	-5.6	47.9	53.5	
150.00	-83.8	1.01	9.8	3.86	1	-69.1	300	6.0	-7.8	24.0	31.8	

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

APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MRENT-126	Spectrum Analyzer	KEYSIGHT	E4440A	MY46185516	AT	2016/07/01 * 12 *1)
MAT-57	Attenuator(10dB)	Suhner	6810.19.A	-	AT	2016/12/15 * 12
MCC-174	Microwave Cable	Junkosha	MWX221	1409S497	AT	2017/03/13 * 12
MOS-34	Thermo-Hygrometer	Custom	CTH-201	3401	AT	2017/01/20 * 12
MPM-16	Power Meter	Agilent	8990B	MY51000271	AT	2017/04/28 * 12
MPSE-22	Power sensor	Agilent	N1923A	MY54070003	AT	2017/04/28 * 12
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2016/10/20 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2017/01/20 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	
MSA-04	Spectrum Analyzer	Agilent	E4448A	US44300523	RE	2016/11/10 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2017/05/22 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2017/05/29 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2017/03/21 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2017/05/14 * 12
MMM-08	DIGITAL HiTESTER	Hioki	3805	051201197	RE	2017/01/19 * 12
MCC-54	Microwave Cable	Suhner	SUCOFLEX101	2873(1m) / 2876(5m)	RE	2017/03/02 * 12
MPA-03	Microwave System Power Amplifier	Agilent	83050A	MY39500610	RE	2016/10/03 * 12
MHA-29	Horn Antenna 26.5-40GHz	ETS LINDGREN	3160-10	00152399	RE	2016/09/28 * 12
MPA-22	Pre Amplifier	MITEQ, Inc	AMF-6F-2600400-33-8P / AMF-4F-2600400-33-8P	1871355 /1871328	RE	2016/09/06 * 12
MSA-03	Spectrum Analyzer	Agilent	E4448A	MY44020357	RE	2017/05/29 * 12
MSA-15	Spectrum Analyzer	Agilent	E4440A	MY46187105	AT	2016/10/13 * 12
MCC-170	Microwave Cable	Junkosha	MWX221	1409S493	AT	2017/03/13 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2017/03/21 * 12
MOS-19	Thermo-Hygrometer	Custom	CTH-201	0001	AT	2016/12/13 * 12
MMM-17	DIGIITAL HiTESTER	Hioki	3805	070900530	AT	2017/01/19 * 12
MSA-13	Spectrum Analyzer	Agilent	E4440A	MY46185823	AT	2017/06/21 * 12
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2017/01/20 * 12
MAT-10	Attenuator(10dB)	Weinschel Corp	2	BL1173	AT	2016/11/28 * 12
MCC-38	Coaxial Cable	UL Japan	-	-	AT	2016/12/06 * 12
MSA-14	Spectrum Analyzer	Agilent	E4440A	MY48250080	RE	2016/10/14 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2017/08/22 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2016/10/15 * 12
MLA-22	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-191	RE	2017/01/26 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2017/07/12 * 12
MAT-98	Attenuator	KEYSIGHT	8491A	MY52462349	RE	2016/12/05 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2017/03/27 * 12

***1) This test equipment was used for the tests before the expiration date of the calibration.**

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