

RADIO TEST REPORT

Test Report No. 14839031H-C-R3

Customer	DENSO CORPORATION
Description of EUT	Cockpit Control Unit
Model Number of EUT	DNNS137
FCC ID	HYQDNNS137
Test Regulation	FCC Part 15 Subpart E
Test Result	Complied
Issue Date	June 27, 2024
Remarks	WLAN (5 GHz band) part Except for DFS test

Representative Test Engineer

Tomoya Sone
Engineer

Approved By

Ryota Yamanaka
Engineer

CERTIFICATE 5107.02

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

Report Cover Page - Form-ULID-003532 (DCS:13-EM-F0429) Issue# 23.0

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- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

REVISION HISTORY

Original Test Report No. 14839031H-C

This report is a revised version of 14839031H-C-R2. 14839031H-C-R2 is replaced with this report.

(1/2)

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14839031H-C	April 24, 2024	-
1	14839031H-C-R1	June 4, 2024	Correction of the following items due to re-test; - Clause 2.1: Test data (from "March 22 to April 2, 2024" to "March 22 to May 28, 2024") - Clause 3.2: Worst margin for Spurious Emission Restricted Band Edge (from "7.4 dB, 5725.0 MHz, Vertical, QP" to "5.6 dB, 5150.0 MHz, Horizontal / Vertical, AV") - APPENDIX 2: Test Instruments
1	14839031H-C-R1	June 4, 2024	Correction of the following items in Radio Specification for Clause 2.2; - Antenna gain for WLAN - FM frequency for Broadcast
1	14839031H-C-R1	June 4, 2024	Correction of the FCC Part 15.203 Antenna requirement in Clause 3.2.
1	14839031H-C-R1	June 4, 2024	Correction of following the Tested Antenna of Tx 11a in "The Details of Operation Mode(s)" table of Clause 4.1. - Maximum Conducted Output Power, Maximum Power Spectral Density from Antenna 0 to Antenna 1 - Radiated Spurious Emission (Above 1 GHz) from Antenna 0 + 1 to Antenna 1
1	14839031H-C-R1	June 4, 2024	Correction of the Simultaneous transmission description in Clause 4.1.
1	14839031H-C-R1	June 4, 2024	Replacement of the test data (Tx 11a) for the following test item due to the retest in the Antenna 1. - Maximum Conducted Output Power - Maximum Power Spectral Density - Radiated Spurious Emission

(2/2)

Revision	Test Report No.	Date	Page Revised Contents
1	14839031H-C-R1	June 4, 2024	Correction of the Antenna No. description in Conducted power and e.i.r.p. (other than 11a) for Maximum Conducted Output Power and Maximum Power Spectral Density. from Antenna 1 to Antenna 0 from Antenna 2 to Antenna 1
1	14839031H-C-R1	June 4, 2024	Addition of the Antenna Gain in the Maximum Conducted Output Power (Rate Check) data.
1	14839031H-C-R1	June 4, 2024	Addition of the TPC Power data in Maximum Conducted Output Power
1	14839031H-C-R1	June 4, 2024	Correction of the Antenna Gain for Maximum Conducted Output Power test data; from 0.75 to 1.66, from 2.72 to 4.04
1	14839031H-C-R1	June 4, 2024	Correction of the following Limit value in the Radiated Spurious Emission test data; <Test mode> Tx 11n-20 5745 MHz / Tx 11n-20 5825 MHz / Tx 11ac-20 5745 MHz / Tx 11ac-20 5825 MHz / Tx 11n-40 5755 MHz / Tx 11n-40 5795 MHz / Tx 11ac-40 5755 MHz / Tx 11ac-40 5795 MHz / Tx 11ac-80 5775 MHz
1	14839031H-C-R1	June 4, 2024	Replacement of the test data due to the retest of simultaneous transmission in the worst margin mode
1	14839031H-C-R1	June 4, 2024	Correction of the Antenna Gain for Conducted Spurious Emission test data; from 2 to 4.04
2	14839031H-C-R2	June 24, 2024	Correction of the RBDS frequency for Broadcast in Radio Specification for Clause 2.2
2	14839031H-C-R2	June 24, 2024	Correction of the Antenna Gain in Maximum Power Spectral Density test data (except for Tx 11a); From "0.75" to "1.66"
3	14839031H-C-R3	June 27, 2024	Deletion of the TPC data from Maximum Conducted Output Power test data

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	ICES	Interference-Causing Equipment Standard
AC	Alternating Current	IEC	International Electrotechnical Commission
AFH	Adaptive Frequency Hopping	IEEE	Institute of Electrical and Electronics Engineers
AM	Amplitude Modulation	IF	Intermediate Frequency
Amp, AMP	Amplifier	ILAC	International Laboratory Accreditation Conference
ANSI	American National Standards Institute	ISED	Innovation, Science and Economic Development Canada
Ant, ANT	Antenna	ISO	International Organization for Standardization
AP	Access Point	JAB	Japan Accreditation Board
ASK	Amplitude Shift Keying	LAN	Local Area Network
Atten., ATT	Attenuator	LIMS	Laboratory Information Management System
AV	Average	MCS	Modulation and Coding Scheme
BPSK	Binary Phase-Shift Keying	MRA	Mutual Recognition Arrangement
BR	Bluetooth Basic Rate	N/A	Not Applicable
BT	Bluetooth	NIST	National Institute of Standards and Technology
BT LE	Bluetooth Low Energy	NS	No signal detect.
BW	BandWidth	NSA	Normalized Site Attenuation
Cal Int	Calibration Interval	NVLAP	National Voluntary Laboratory Accreditation Program
CCK	Complementary Code Keying	OBW	Occupied Band Width
Ch., CH	Channel	OFDM	Orthogonal Frequency Division Multiplexing
CISPR	Comite International Special des Perturbations Radioelectriques	P/M	Power meter
CW	Continuous Wave	PCB	Printed Circuit Board
DBPSK	Differential BPSK	PER	Packet Error Rate
DC	Direct Current	PHY	Physical Layer
D-factor	Distance factor	PK	Peak
DFS	Dynamic Frequency Selection	PN	Pseudo random Noise
DQPSK	Differential QPSK	PRBS	Pseudo-Random Bit Sequence
DSSS	Direct Sequence Spread Spectrum	PSD	Power Spectral Density
EDR	Enhanced Data Rate	QAM	Quadrature Amplitude Modulation
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	QP	Quasi-Peak
EMC	ElectroMagnetic Compatibility	QPSK	Quadri-Phase Shift Keying
EMI	ElectroMagnetic Interference	RBW	Resolution Band Width
EN	European Norm	RDS	Radio Data System
ERP, e.r.p.	Effective Radiated Power	RE	Radio Equipment
EU	European Union	RF	Radio Frequency
EUT	Equipment Under Test	RMS	Root Mean Square
Fac.	Factor	RSS	Radio Standards Specifications
FCC	Federal Communications Commission	Rx	Receiving
FHSS	Frequency Hopping Spread Spectrum	SA, S/A	Spectrum Analyzer
FM	Frequency Modulation	SG	Signal Generator
Freq.	Frequency	SVSWR	Site-Voltage Standing Wave Ratio
FSK	Frequency Shift Keying	TR	Test Receiver
GFSK	Gaussian Frequency-Shift Keying	Tx	Transmitting
GNSS	Global Navigation Satellite System	VBW	Video BandWidth
GPS	Global Positioning System	Vert.	Vertical
Hori.	Horizontal	WLAN	Wireless LAN

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SECTION 1: Customer Information

Company Name	DENSO CORPORATION
Address	1-1, Showa-cho, Kariya-shi, Aichi-ken, 448-8661, Japan
Telephone Number	+81-566-26-5879
Contact Person	Takehiro Abeta

The information provided by the customer is as follows;

- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Cockpit Control Unit
Model Number	DNNS137
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	March 14, 2024
Test Date	March 22 to April 2, 2024

2.2 Product Description

General Specification

Rating	DC 13.2 V VDD DC 1.8 V, 3.3 V, 2.2 V
Operating temperature	5 deg. C to 35 deg. C

Radio Specification (1/2)

This report contains data provided by the customer which can impact the validity of results. UL Japan, Inc. is only responsible for the validity of results after the integration of the data provided by the customer. The data provided by the customer is marked "a)" in the table below.

WLAN (IEEE802.11b/11g/11n-20/n-40)

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band: 2412 MHz to 2462 MHz	
	40 MHz Band: 2432 MHz to 2452 MHz	
Type of Modulation	DSSS (CCK, DQPSK, DBPSK) OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM)	
Antenna Type	Inverted F Antenna	
Antenna Gain	Antenna 0:	0.71 dBi (Peak) (for Right)
	Antenna 1:	2.19 dBi (Peak) (for Left)

Radio Specification (2/2)

Bluetooth (BR / EDR)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	FHSS (GFSK, $\pi/4$ DQPSK, 8 DPSK)
Antenna Type	Inverted F Antenna
Antenna Gain	0.71 dBi (Peak) (for Right)

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

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band	5180 MHz to 5240 MHz 5745 MHz to 5825 MHz
	40 MHz Band	5190 MHz to 5230 MHz 5755 MHz to 5795 MHz
	80 MHz Band	5210 MHz 5775 MHz
Type of Modulation	OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM)	
Antenna Type	Inverted F Antenna	
Antenna Gain ^{a)}	Antenna 0:	1.66 dBi (Peak) (for Right)
	Antenna 1:	4.04 dBi (Peak) (for Left)

GNSS

Equipment Type	Receiver
Frequency of Operation	GPS: 1575.42MHz GLONASS: 1598.0625 MHz to 1605.375 MHz
Type of Modulation	BPSK

Broadcast

Equipment Type	Receiver
Frequency of Operation	AM: 522 kHz to 1710 kHz FM: 87.75 MHz to 107.9 MHz RBDS: 87.75 MHz to 107.9 MHz XM: 2333.465 MHz to 2344.045 MHz

SECTION 3: Test specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart E The latest version on the first day of the testing period
Title	FCC 47 CFR Part 15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements

* Also the EUT complies with FCC Part 15 Subpart B.

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 ISED: RSS-Gen 8.8	FCC: 15.407 (b) (6) / 15.207 ISED: RSS-Gen 8.8	-	N/A	*1)
26 dB Emission Bandwidth	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: -	-	N/A	*2)
Maximum Conducted Output Power	FCC: KDB Publication Number 789033 ISED: -	FCC: 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.2	See data	Complied	Conducted
Maximum Power Spectral Density	FCC: KDB Publication Number 789033 ISED: -	FCC : 15.407 (a) (1) (2) (3) ISED: RSS-247 6.2.1.1 6.2.2.1 6.2.3.1 6.2.4.2		Complied	Conducted
Spurious Emission Restricted Band Edge	FCC: ANSI C63.10-2013 KDB Publication Number 789033 ISED: -	FCC: 15.407 (b), 15.205 and 15.209 ISED: RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.3	5.6 dB 5150.0 MHz, Horizontal / Vertical, AV	Complied	Conducted (< 30 MHz) / Radiated (> 30 MHz) *3)
6 dB Emission Bandwidth	FCC: ANSI C63.10-2013 ISED: -	FCC: 15.407 (e) ISED: RSS-247 6.2.4.2	See data	Complied	Conducted
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593. * In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred. *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 test is not applicable since this product is a 5.2 GHz band and 5.8 GHz band product *3) Radiated test was selected over 30 MHz based on RSS-247 6.2 and KDB 789033 D02 G.3.b).					

FCC Part 15.31 (e)

This EUT provides the stable voltage constantly to RF part 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 vehicle.
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	ISED: RSS-Gen 6.7	ISED: -	N/A	-	Conducted

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

3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

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

Radiated emission

Measurement distance	Frequency range		Unit	Calculated Uncertainty (+/-)
3 m	9 kHz to 30 MHz		dB	3.3
10 m			dB	3.1
3 m	30 MHz to 200 MHz	Horizontal	dB	4.7
		Vertical	dB	4.7
	200 MHz to 1000 MHz	Horizontal	dB	4.8
		Vertical	dB	6.0
10 m	30 MHz to 200 MHz	Horizontal	dB	5.2
		Vertical	dB	5.1
	200 MHz to 1000 MHz	Horizontal	dB	5.2
		Vertical	dB	5.2
3 m	1 GHz to 6 GHz		dB	5.0
	6 GHz to 18 GHz		dB	5.2
1 m	10 GHz to 18 GHz		dB	5.3
	18 GHz to 26.5 GHz		dB	5.2
	26.5 GHz to 40 GHz		dB	4.7
0.5 m	26.5 GHz to 40 GHz		dB	4.8

Antenna Terminal Conducted

Item	Unit	Calculated Uncertainty (+/-)
Antenna terminated conducted emission / Power density / Burst power	dB	3.47
Adjacent channel power (ACP)	dB	2.28
Bandwidth (OBW)	%	0.96
Time readout (time span upto 100 msec)	%	0.11
Time readout (time span upto 1000 msec)	%	0.11
Time readout (time span upto 60 sec)	%	0.02
Power measurement (Power meter < 8 GHz)	dB	1.46
Power measurement (Call box < 6 GHz)	dB	1.69
Frequency readout (Frequency counter)	ppm	0.67
Frequency readout (Spectrum analyzer frequency readout function)	ppm	2.13
Temperature (constant temperature bath)	deg. C	0.69
Humidity (constant temperature bath)	%RH	2.98
Modulation characteristics	%	6.93
Frequency for mobile	ppm	0.08
Contention-based protocol	dB	2.26

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 Japan

Telephone: +81-596-24-8999

A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 884919

ISED Lab Company Number: 2973C / CAB identifier: JP0002

Test site	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	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	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	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	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.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
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	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room	2.6 x 3.4 x 2.5	N/A	-	-
Large Chamber	16.9 x 22.1 x 10.17	16.9 x 22.1	-	10 m
Small Chamber	5.3 x 6.69 x 3.59	5.3 x 6.69	-	-

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode	Remarks*
IEEE 802.11a SISO (11a)	18 Mbps, PN9
IEEE 802.11n SISO / MIMO 20 MHz BW (11n-20)	MCS 11 (Long GI), PN9
IEEE 802.11ac SISO / MIMO 20 MHz BW (11ac-20)	MCS 3 (Long GI), PN9
IEEE 802.11n SISO / MIMO 40 MHz BW (11n-40)	MCS 11 (Long GI), PN9
IEEE 802.11ac SISO / MIMO 40 MHz BW (11ac-40)	MCS 2 (Long GI), PN9
IEEE 802.11ac SISO / MIMO 80 MHz BW (11ac-80)	MCS 9 (Long GI), PN9
*The worst antenna and condition was determined based on the test result of Maximum Conducted Output Power.	
*Power of the EUT was set by the software as follows; Power Setting: Refer to the following table Software: CCU TEST Program Soc: Version: 20231214 (Date: 2023.12.14, Storage location: EUT memory) VCPU: Version: 20230421 (Date: 2023.04.21, Storage location: EUT memory)	
*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.	
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.	

[Power setting]

Mode	Power setting
11a	5 dBm
11n-20 (SISO)	5 dBm
11ac-20 (SISO)	3 dBm
11n-40 (SISO)	5 dBm
11ac-40 (SISO)	3 dBm
11ac-80 (SISO)	3 dBm
11n-20 (MIMO)	8 dBm
11ac-20 (MIMO)	6 dBm
11n-40 (MIMO)	8 dBm
11ac-40 (MIMO)	6 dBm
11ac-80 (MIMO)	6 dBm

*The Details of Operation Mode(s)

Test Item	Operating Mode	Tested Antenna	Tested Frequency	
			Lower Band	Upper Band
99 % Occupied Bandwidth	Tx 11a	Antenna 0 *2)	5180 MHz	5745 MHz
	Tx 11n-20		5220 MHz	5785 MHz
	Tx 11ac-20		5240 MHz	5825 MHz
	Tx 11n-40		5190 MHz	5755 MHz
	Tx 11ac-40		5230 MHz	5795 MHz
	Tx 11ac-80		5210 MHz	5775 MHz
Maximum Conducted Output Power, Maximum Power Spectral Density	Tx 11a	Antenna 1* 2)	5180 MHz	5745 MHz
			5220 MHz	5785 MHz
			5240 MHz	5825 MHz
	Tx 11n-20	Antenna 0	5180 MHz	5745 MHz
	Tx 11ac-20	Antenna 1	5220 MHz	5785 MHz
		Antenna 0 + 1	5240 MHz	5825 MHz
	Tx 11n-40		5190 MHz	5755 MHz
	Tx 11ac-40		5230 MHz	5795 MHz
	Tx 11ac-80		5210 MHz	5775 MHz
6 dB Bandwidth	Tx 11a	Antenna 0 *2)	-	5745 MHz
	Tx 11n-20			5785 MHz
	Tx 11ac-20			5825 MHz
	Tx 11n-40		-	5755 MHz
	Tx 11ac-40			5795 MHz
	Tx 11ac-80		-	5775 MHz
Radiated Spurious Emission (Below 1 GHz), Conducted Spurious Emission	Tx 11n-20 *1)	Antenna 0 + 1	5180 MHz	-
Radiated Spurious Emission (Above 1 GHz)	Tx 11a	Antenna 1 *2)	5180 MHz	5745 MHz
	Tx 11n-20	Antenna 0 + 1	5220 MHz	5785 MHz
	Tx 11ac-20		5240 MHz	5825 MHz
	Tx 11n-40		5190 MHz	5755 MHz
	Tx 11ac-40		5230 MHz	5795 MHz
	Tx 11ac-80		5210 MHz	5775 MHz

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

*2) The test was performed with the antenna that had higher power as a representative.

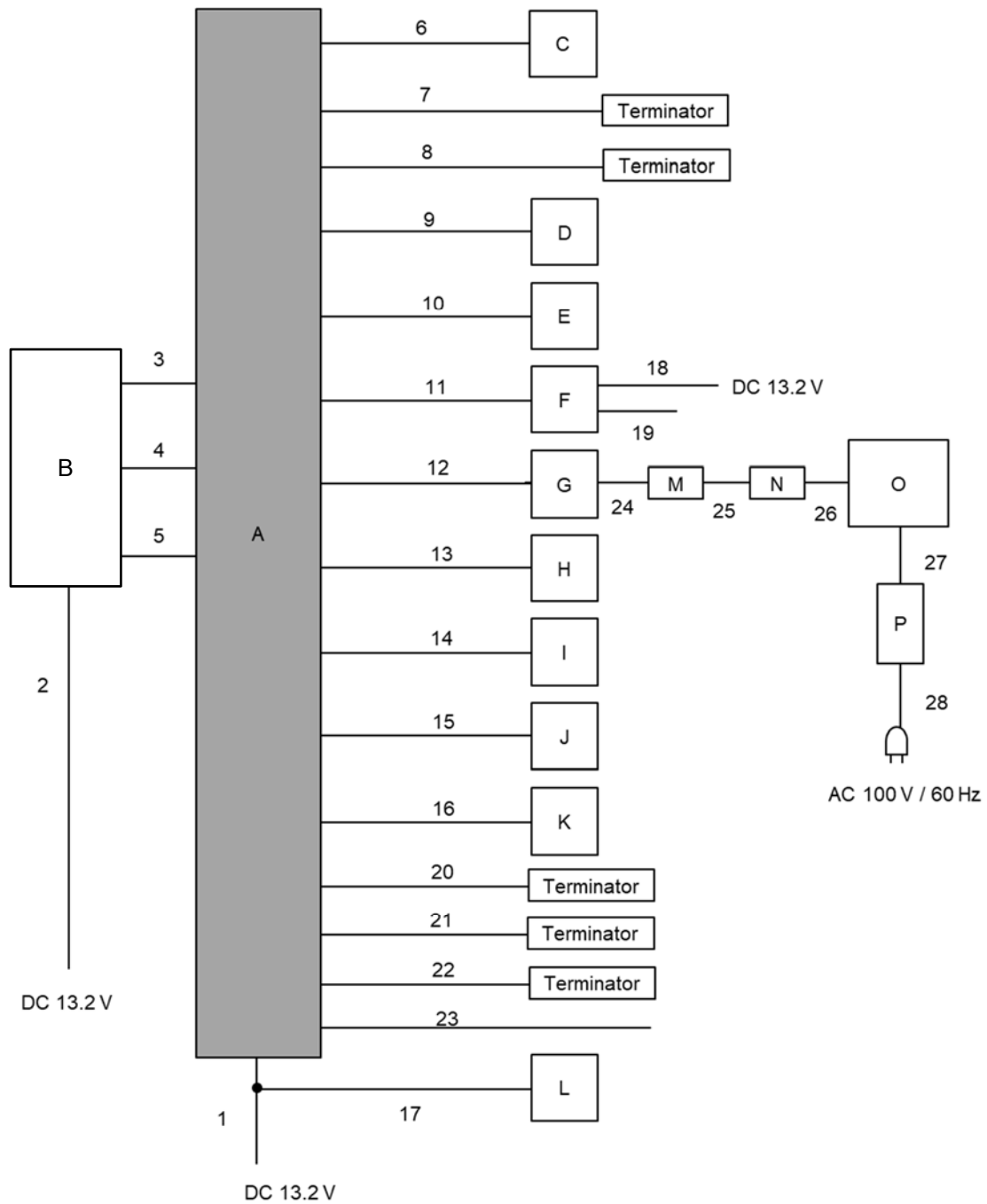
Simultaneous transmission

(Only Antenna 0 simultaneously transmits WLAN 5 GHz and BT on a signal antenna.)

Test Item	Mode *1)	Antenna type
Radiated Spurious Emission	Tx 11ac-80 5210 MHz + Tx BT 3DH5 Hopping On	Antenna 0
*1) The test was conducted on representative mode, the worst mode of GHz band at Spurious emission test and the mode had the highest power at Antenna terminal conducted test for WLAN 5 GHz band.		

4.2 Configuration and Peripherals

Antenna Terminal Conducted test



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

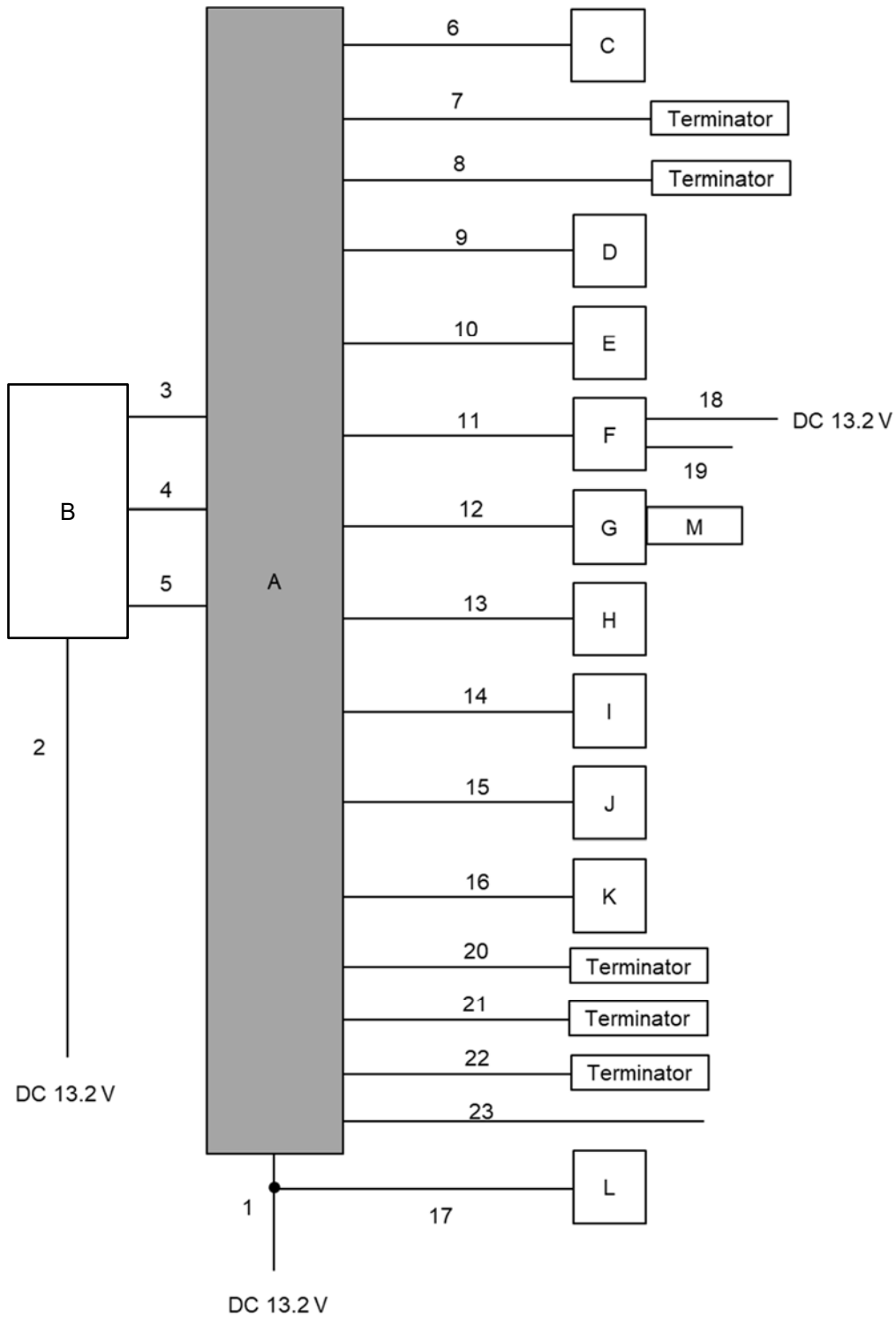
Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Cockpit Control Unit	DNNS137	468726001000000000 000003	DENSO CORPORATION	EUT
B	Display(CID)	137000-15890001	No.1	DENSO TEN CORPORATION	-
C	GPS Antenna	86277AL000	29550172	SUBARU CORPORATION	-
D	Camera Dummy	MAX96778COAXE VKIT	-	Maxim integrated	-
E	Ether Dummy	EtherBoard	-	DENSO CORPORATION	-
F	METER	5-157500-186	No.S44	DENSO CORPORATION	-
G	USB BOX	TAP8006 cable	No.12	HOSHIDEN	-
H	Speaker	AK-122	-	archill	-
I	Speaker	AK-122	-	archill	-
J	Speaker	AK-122	-	archill	-
K	Speaker	AK-122	-	archill	-
L	HEATER CONTROL Panel	137000-15990005	No.1	DENSO TEN CORPORATION	-
M	USB-LAN Adapter	LUA3-U2-ATX	26495621036190	BUFFALO INC.	-
N	USB-LAN Adapter	LUA3-U2-ATX	26495621036077	BUFFALO INC.	-
O	Laptop PC	X1 Carbon	R9-OH8OBW 15/9	LENOVO	-
P	AC Adapter	ADXL45NCC2A	11S45N0299Z1ZS944 B6KBR	LENOVO	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	4.20	Unshielded	Unshielded	-
2	DC Cable	4.30	Unshielded	Unshielded	-
3	Antenna Cable	0.57	Shielded	Shielded	-
4	Antenna Cable	0.57	Shielded	Shielded	-
5	Display Signal Cable	0.57	Shielded	Shielded	-
6	GPS Antenna Cable	1.00	Shielded	Shielded	-
7	Radio Antenna Cable(AM/FM)	2.00	Shielded	Shielded	-
8	Radio Antenna Cable(XM)	2.00	Shielded	Shielded	-
9	Camera Cable	2.00	Shielded	Shielded	-
10	Ether Cable	2.00	Shielded	Shielded	-
11	METER Signal Cable	2.00	Unshielded	Unshielded	-
12	USB BOX Cable	2.00	Shielded	Shielded	-
13	Speaker Cable	6.30	Unshielded	Unshielded	-
14	Speaker Cable	6.30	Unshielded	Unshielded	-
15	Speaker Cable	6.30	Unshielded	Unshielded	-
16	Speaker Cable	6.30	Unshielded	Unshielded	-
17	DC Cable	4.60	Unshielded	Unshielded	-
18	DC Cable	4.60	Unshielded	Unshielded	-
19	Signal Cable	2.00	Unshielded	Unshielded	-
20	Signal Cable	2.00	Unshielded	Unshielded	-
21	Signal Cable	2.00	Unshielded	Unshielded	-
22	Signal Cable	2.00	Unshielded	Unshielded	-
23	Signal Cable	2.00	Unshielded	Unshielded	-
24	USB Cable	0.18	Shielded	Shielded	-
25	LAN Cable	2.00	Shielded	Shielded	-
26	USB Cable	0.18	Shielded	Shielded	-
27	DC Cable	1.70	Unshielded	Unshielded	-
28	AC Cable	1.00	Unshielded	Unshielded	-

Radiated Emission test



* 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	Cockpit Control Unit	DNNS137	4687260010000000 00000003	DENSO CORPORATION	EUT
B	Display(CID)	137000-15890001	No.1	DENSO TEN CORPORATION	-
C	GPS Antenna	86277AL000	29550172	SUBARU CORPORATION	-
D	Camera Dummy	MAX96778COAX EVKIT	-	Maxim integrated	-
E	Ether Dummy	EtherBoard	-	DENSO CORPORATION	-
F	METER	5-157500-186	No.S44	DENSO CORPORATION	-
G	USB BOX	TAP8006 cable	No.12	HOSHIDEN	-
H	Speaker	AK-122	-	archill	-
I	Speaker	AK-122	-	archill	-
J	Speaker	AK-122	-	archill	-
K	Speaker	AK-122	-	archill	-
L	HEATER CONTROL Panel	137000-15990005	No.1	DENSO TEN CORPORATION	-
M	USB Memory	RUF3-K16GB	P10416	BUFFALO INC.	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	4.20	Unshielded	Unshielded	-
2	DC Cable	4.30	Unshielded	Unshielded	-
3	Antenna Cable	0.57	Shielded	Shielded	-
4	Antenna Cable	0.57	Shielded	Shielded	-
5	Display Signal Cable	0.57	Shielded	Shielded	-
6	GPS Antenna Cable	1.00	Shielded	Shielded	-
7	Radio Antenna Cable(AM/FM)	2.00	Shielded	Shielded	-
8	Radio Antenna Cable(XM)	2.00	Shielded	Shielded	-
9	Camera Cable	2.00	Shielded	Shielded	-
10	Ether Cable	2.00	Shielded	Shielded	-
11	METER Signal Cable	2.00	Unshielded	Unshielded	-
12	USB BOX Cable	2.00	Shielded	Shielded	-
13	Speaker Cable	6.30	Unshielded	Unshielded	-
14	Speaker Cable	6.30	Unshielded	Unshielded	-
15	Speaker Cable	6.30	Unshielded	Unshielded	-
16	Speaker Cable	6.30	Unshielded	Unshielded	-
17	DC Cable	4.60	Unshielded	Unshielded	-
18	DC Cable	4.60	Unshielded	Unshielded	-
19	Signal Cable	2.00	Unshielded	Unshielded	-
20	Signal Cable	2.00	Unshielded	Unshielded	-
21	Signal Cable	2.00	Unshielded	Unshielded	-
22	Signal Cable	2.00	Unshielded	Unshielded	-
23	Signal Cable	2.00	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission and Band Edge Compliance

Test Procedure

< Below 1 GHz >

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 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 1 GHz >

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane. Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

The height of the measuring antenna varied between 1 m 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 1 GHz >

The result also satisfied with the general limits specified in section 15.209 (a).

< Above 1 GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

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

For W58 Bandedge

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

Restricted band edge:

Apply to limit in the Section 15.209 (a).

Since this limit is severer than the limit of the inside of restricted bands.

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

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

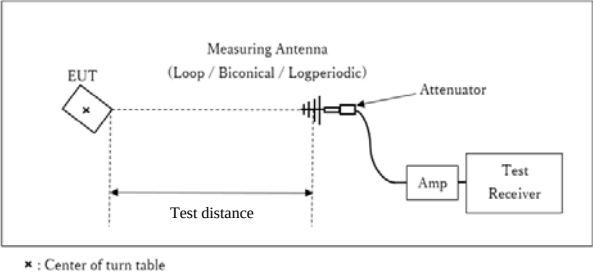
Test Antennas are used as below;

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

Frequency	Below 1 GHz	Above 1 GHz	
Instrument Used	Test Receiver	Spectrum Analyzer	
Detector	QP	Peak	Average
IF Bandwidth	BW: 120 kHz	RBW: 1 MHz VBW: 3 MHz	Method AD 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.

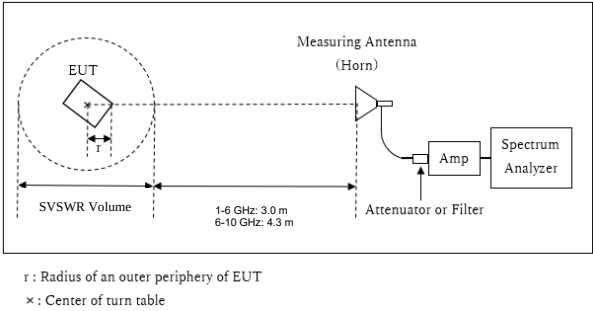
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz to 10 GHz



[1 GHz to 6 GHz]

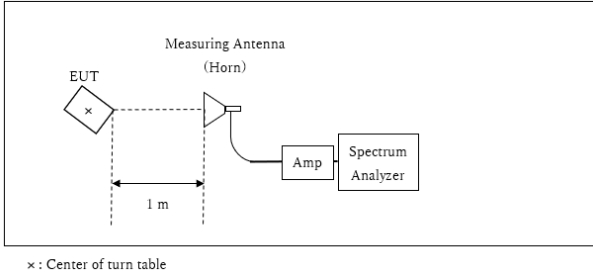
Distance Factor: $20 \times \log (3.8 \text{ m} / 3.0 \text{ m}) = 2.06 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.8 \text{ m}$
SVSWR Volume : 2.0 m

[6 GHz to 10 GHz]

Distance Factor: $20 \times \log (4.8 \text{ m} / 3.0 \text{ m}) = 4.09 \text{ dB}$
* Test Distance: $(4.3 + \text{SVSWR Volume} / 2) - r = 4.8 \text{ m}$
SVSWR Volume : 1.4 m

(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
 $r = 0.2 \text{ m}$

10 GHz to 40 GHz



Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$
*Test Distance: 1 m

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

Test results are rounded off and limit are rounded down, so some differences might be observed.

Measurement Range : 30 MHz to 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
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 or 470 kHz *2)	≥ 3 RBW	Auto	RMS or Sample Power Averaging (200 times)	Clear Write	Spectrum Analyzer
Conducted Spurious Emission*3))	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				

*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 to 5.850 GHz, but it is not possible with spectrum analyzer, so RBW Correction Factor ($10 \log(500 \text{ kHz} / 470 \text{ kHz})$) 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 to 150 kHz: RBW = 200 Hz, 150 kHz to 30 MHz: RBW = 9.1 kHz).

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

Test Data : APPENDIX
Test Result : Pass

APPENDIX 1: Test Data

99 % Occupied Bandwidth

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 1, 2024
23 deg. C / 37 % RH
Tomoya Sone
Tx

11a

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5180	16371.7
	5220	16377.7
	5240	16379.3
	5745	16373.1
	5785	16386.0
	5825	16373.9

11n-20

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5180	17567.4
	5220	17565.7
	5240	17586.1
	5745	17585.5
	5785	17574.6
	5825	17567.3

11ac-20

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5180	17566.3
	5220	17578.7
	5240	17589.1
	5745	17571.7
	5785	17580.2
	5825	17574.8

99 % Occupied Bandwidth

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 1, 2024
23 deg. C / 37 % RH
Tomoya Sone
Tx

11n-40

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5190	36150.6
	5230	36158.8
	5755	36140.2
	5795	36183.7

11ac-40

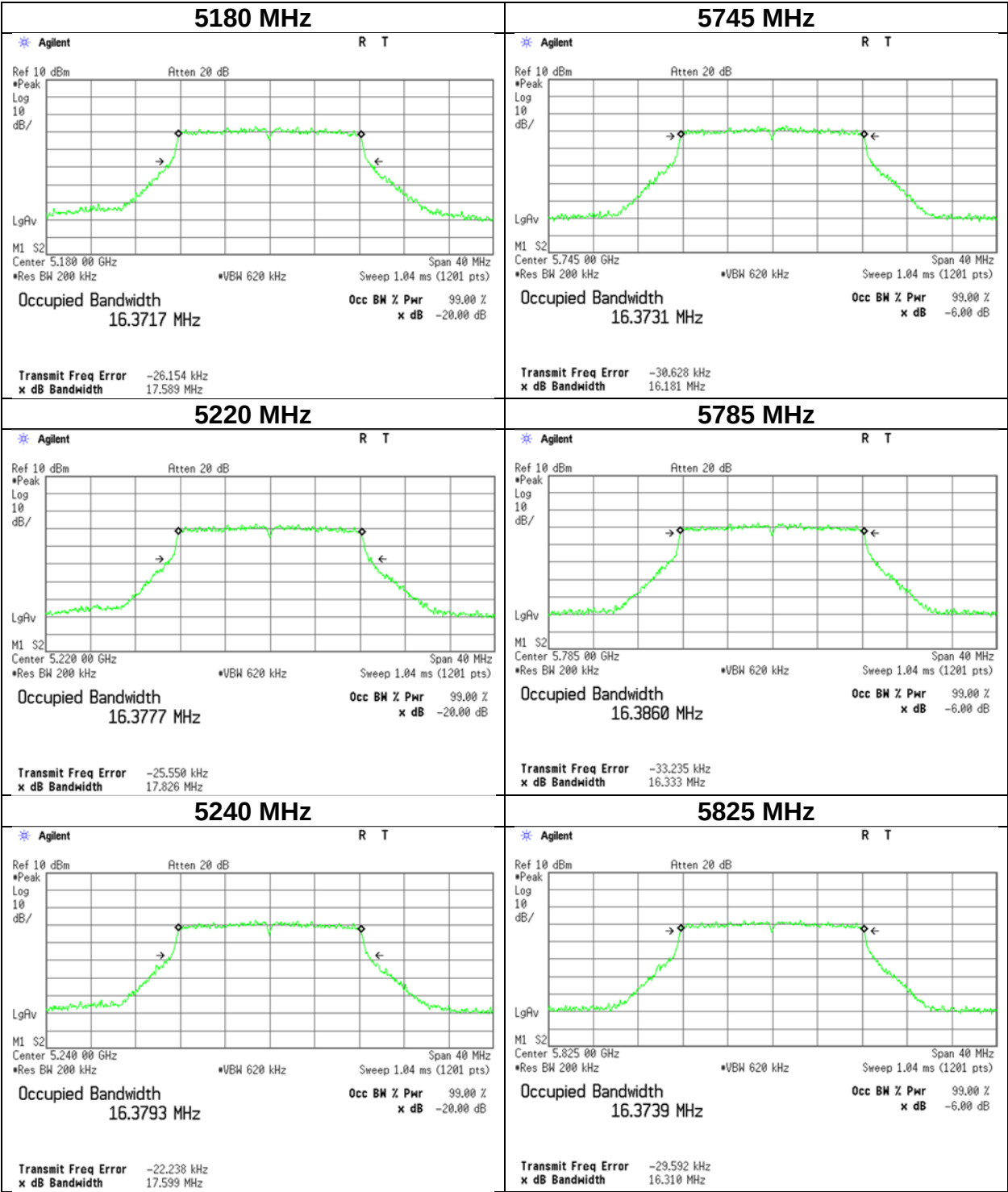
Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5190	36107.7
	5230	36086.8
	5755	36110.2
	5795	36116.6

11ac-80

Antenna	Tested Frequency [MHz]	99 % Occupied Bandwidth [kHz]
Antenna 0	5210	76010.8
	5775	76004.7

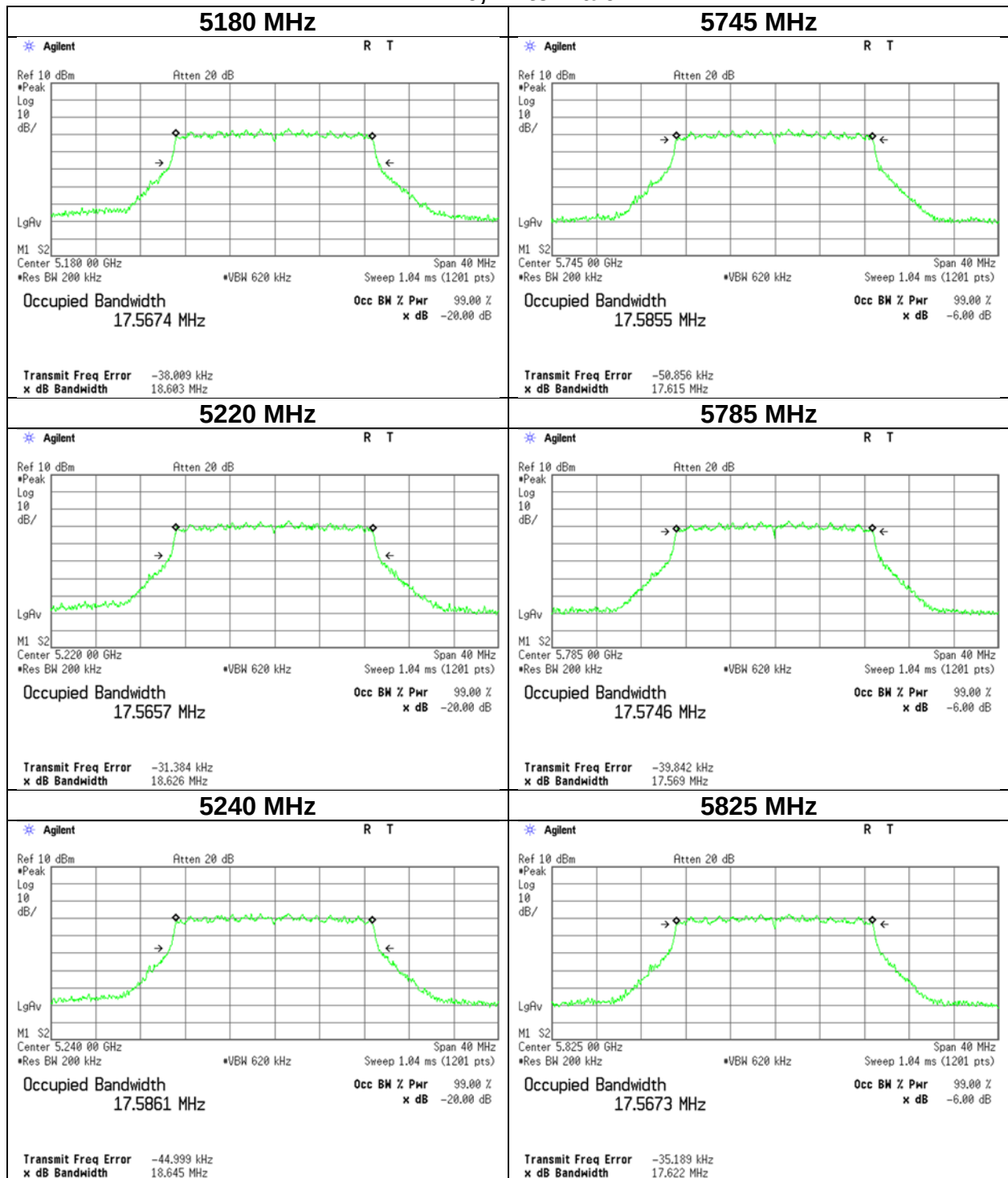
99 % Occupied Bandwidth

11a, Antenna 0



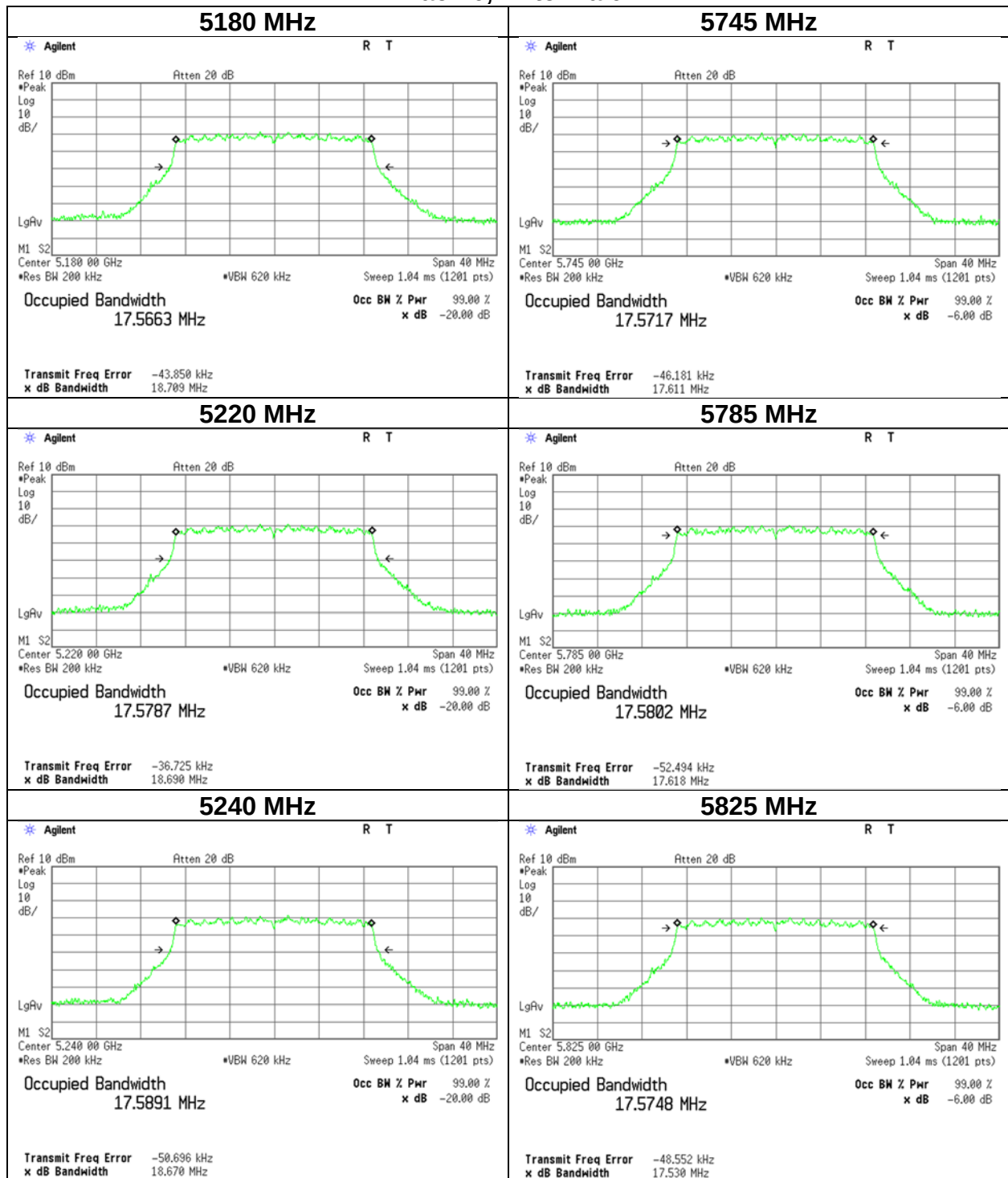
99 % Occupied Bandwidth

11n-20, Antenna 0



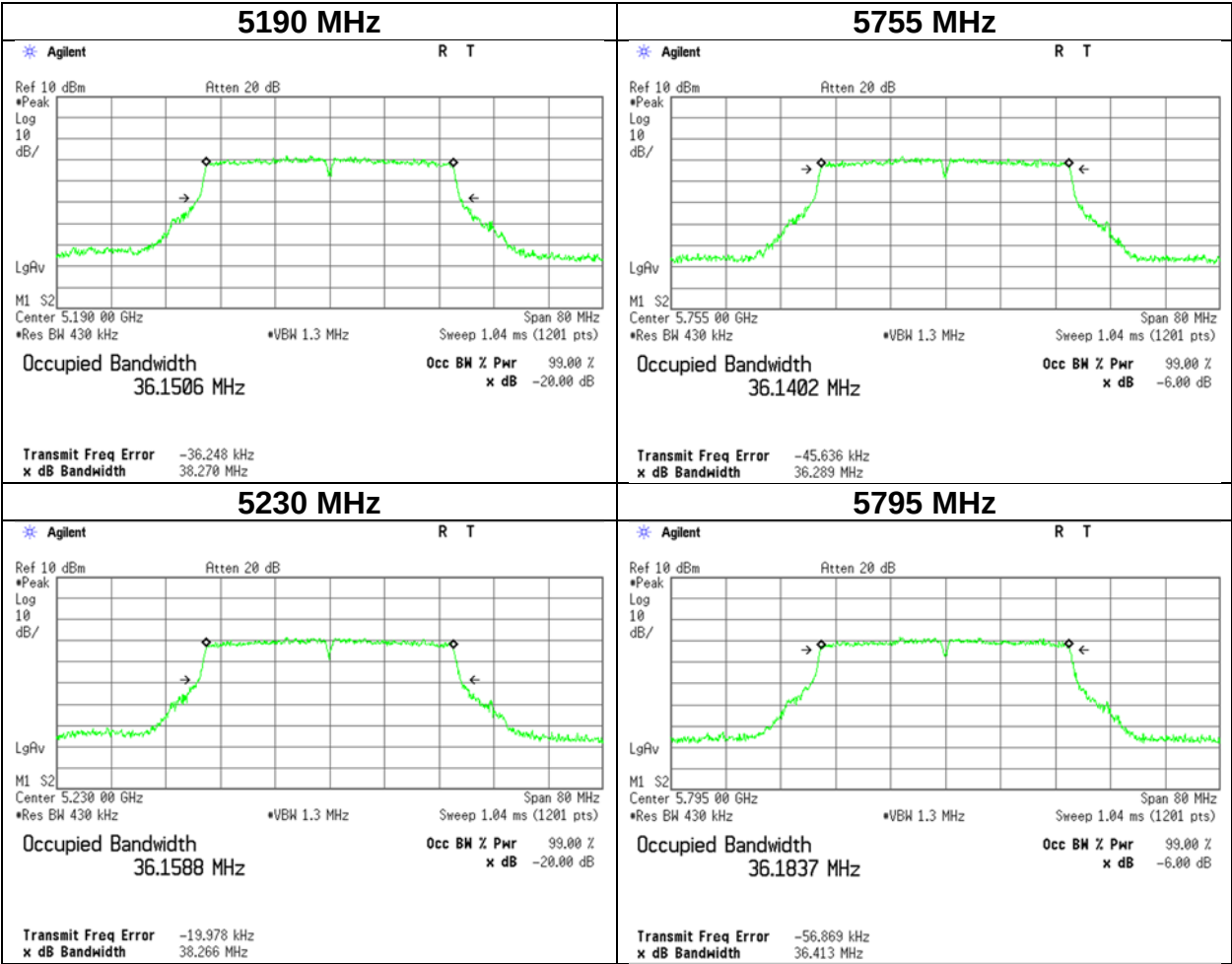
99 % Occupied Bandwidth

11ac-20, Antenna 0



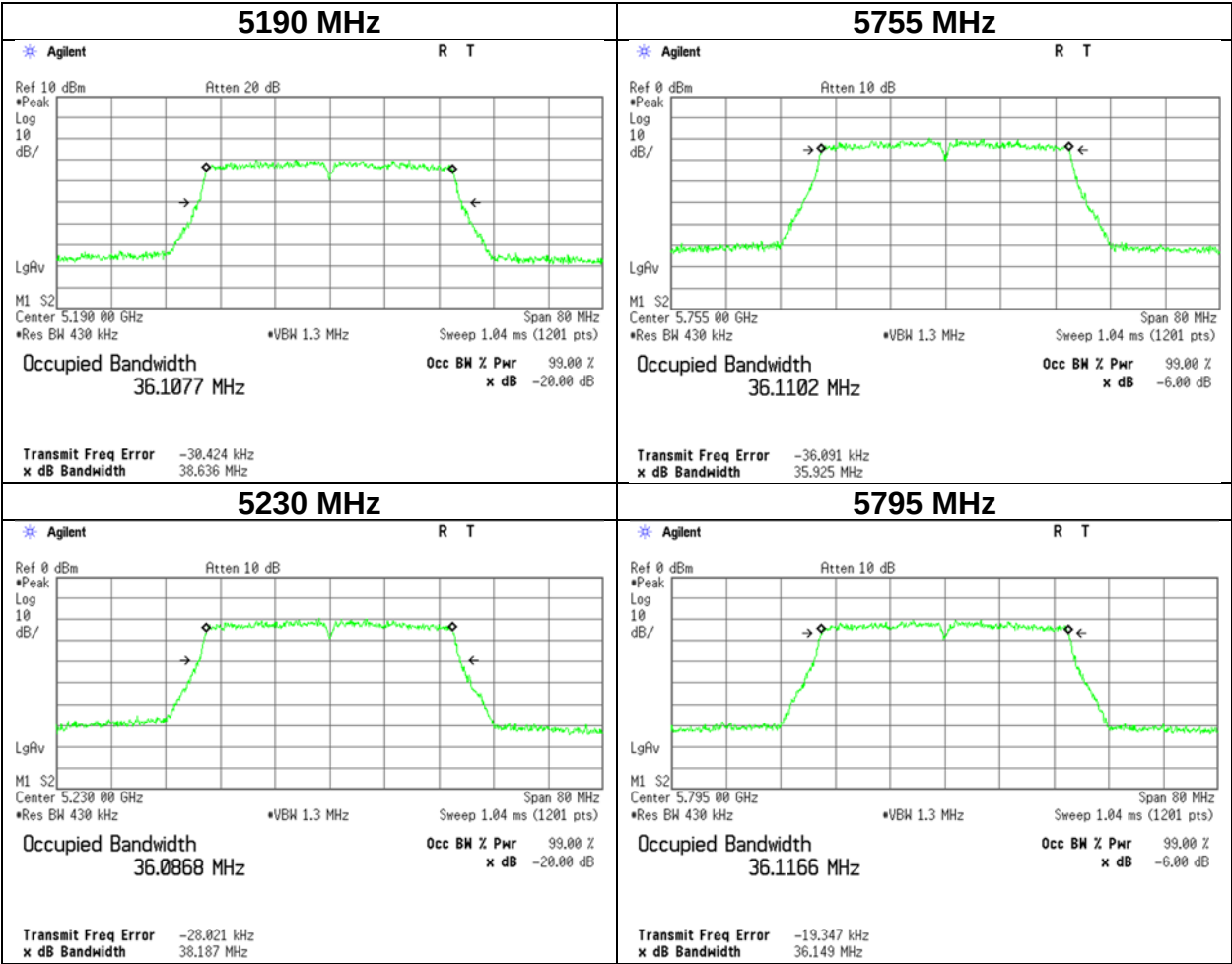
99 % Occupied Bandwidth

11n-40, Antenna 0



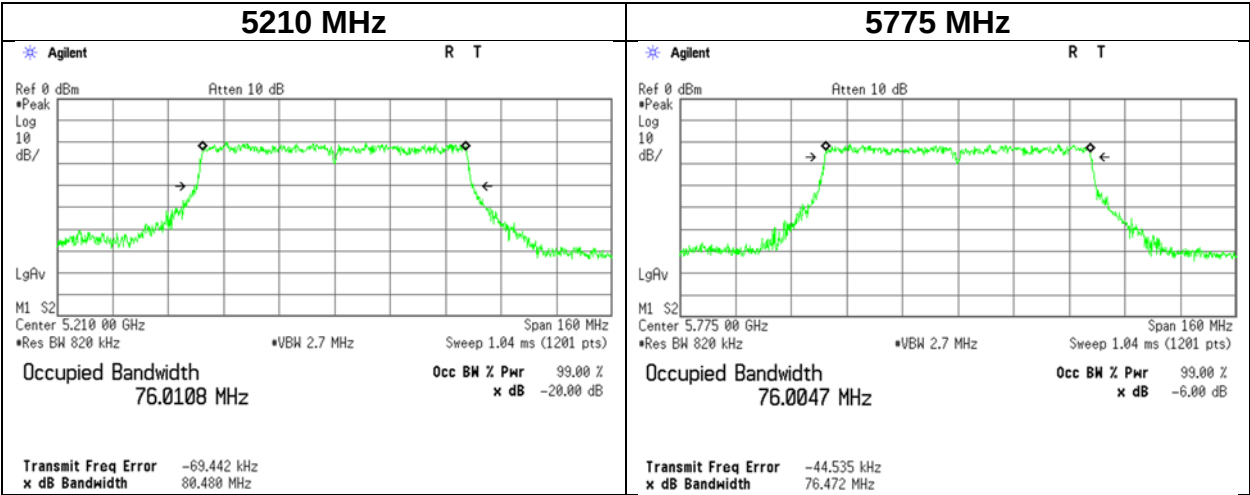
99 % Occupied Bandwidth

11ac-40, Antenna 0



99 % Occupied Bandwidth

11ac-80, Antenna 0



6 dB Bandwidth

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement
Room
April 1, 2024
23 deg. C / 37 % RH
Tomoya Sone
Tx

11a

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5745	15.703	> 0.500
	5785	15.798	> 0.500
	5825	15.875	> 0.500

11n-20

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5745	17.203	> 0.500
	5785	17.568	> 0.500
	5825	17.556	> 0.500

11ac-20

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5745	17.608	> 0.500
	5785	17.595	> 0.500
	5825	17.566	> 0.500

11n-40

Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5755	35.451	> 0.500
	5795	36.229	> 0.500

11ac-40

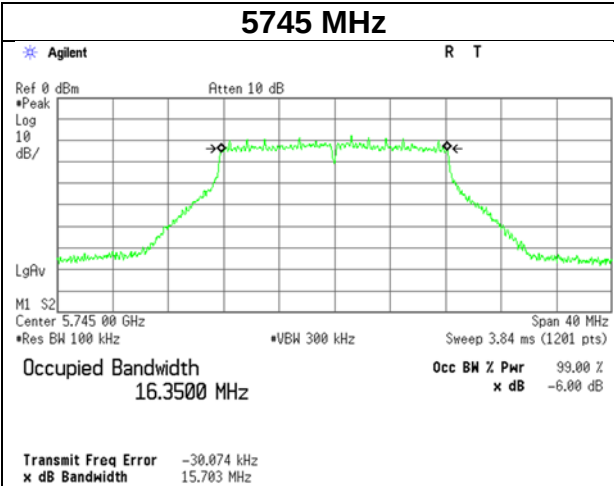
Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5755	35.256	> 0.500
	5795	35.488	> 0.500

11ac-80

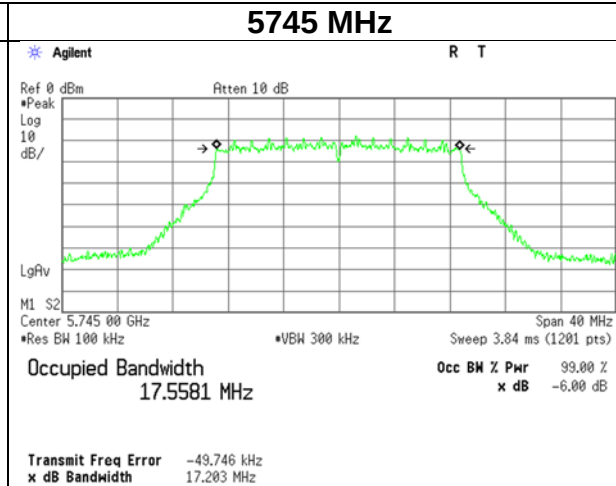
Antenna	Tested Frequency [MHz]	6 dB Bandwidth [MHz]	Limit [MHz]
Antenna 0	5775	76.467	> 0.500

6 dB Bandwidth

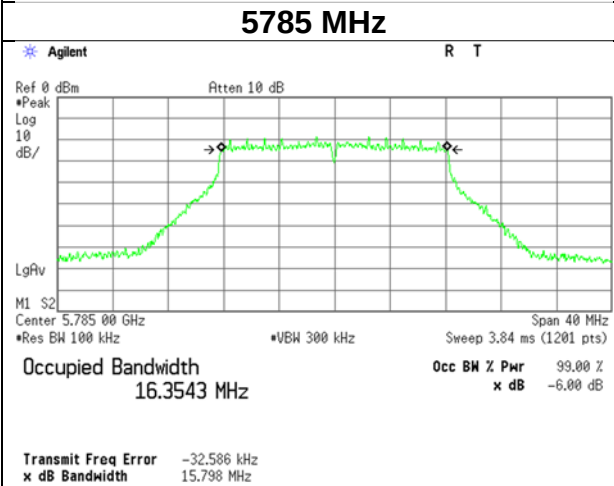
11a, Antenna 0
5745 MHz



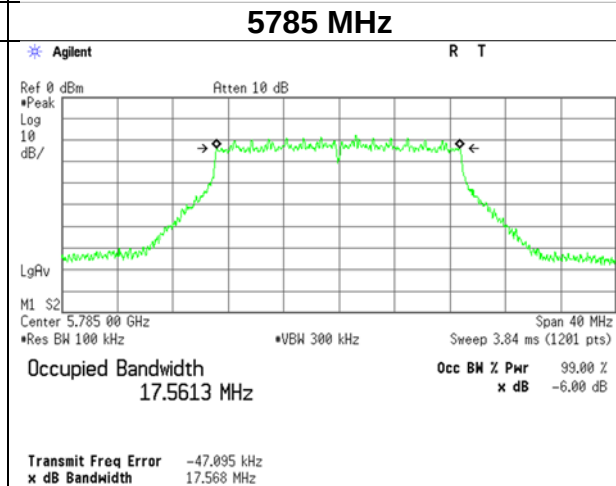
11n-20, Antenna 0
5745 MHz



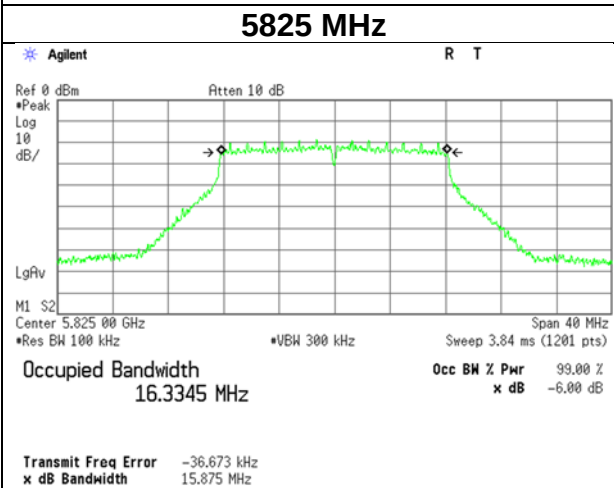
5785 MHz



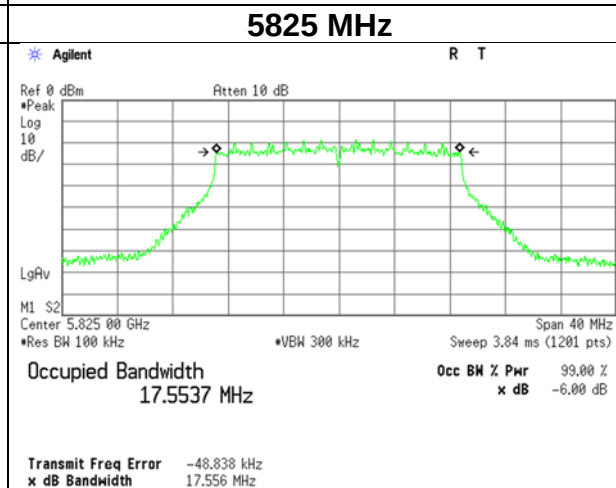
5785 MHz



5825 MHz

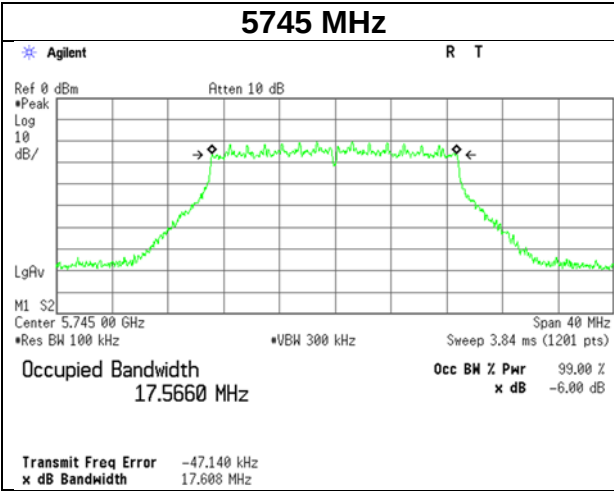


5825 MHz

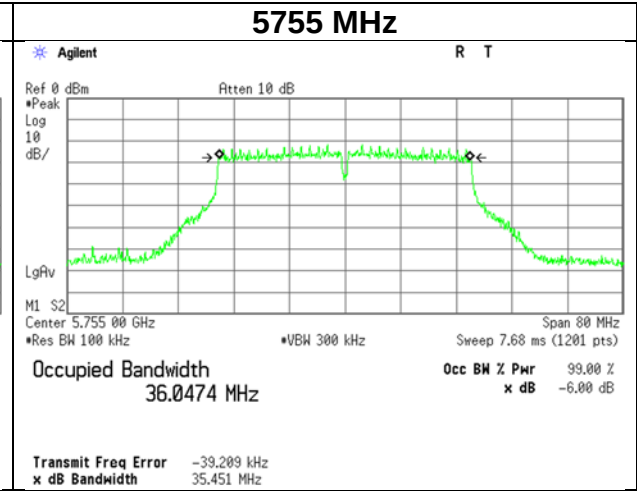


6 dB Bandwidth

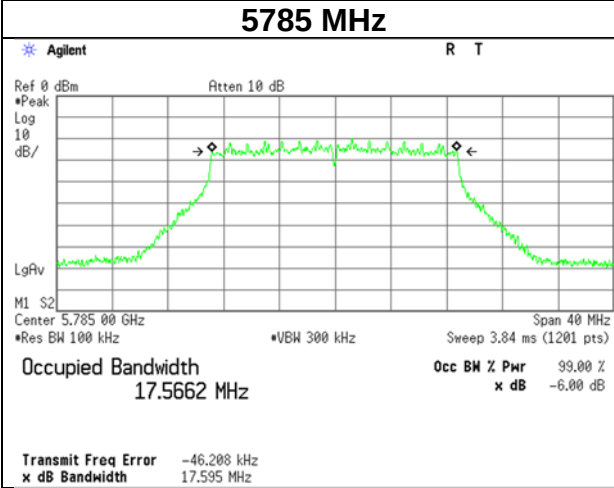
11ac-20, Antenna 0
5745 MHz



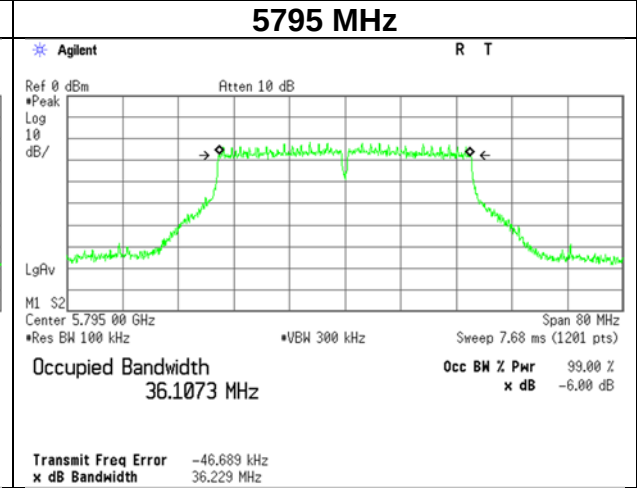
11n-40, Antenna 0
5755 MHz



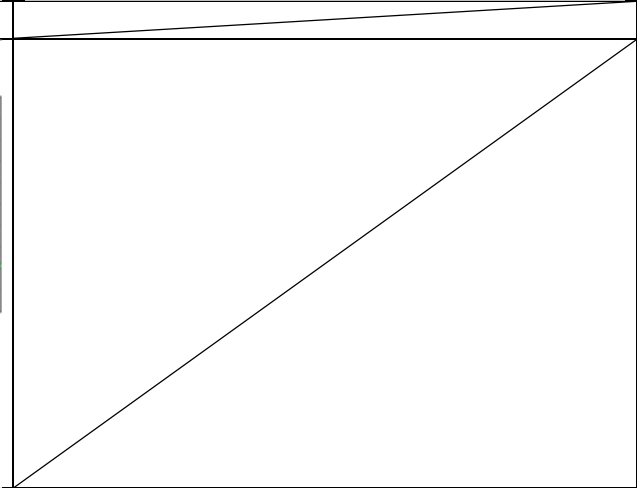
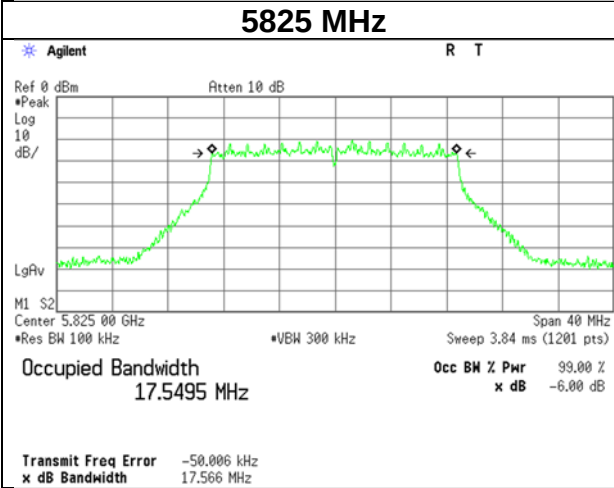
5785 MHz



5795 MHz

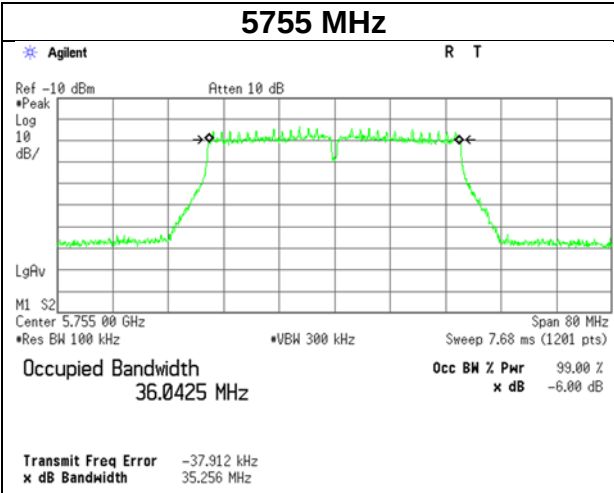


5825 MHz

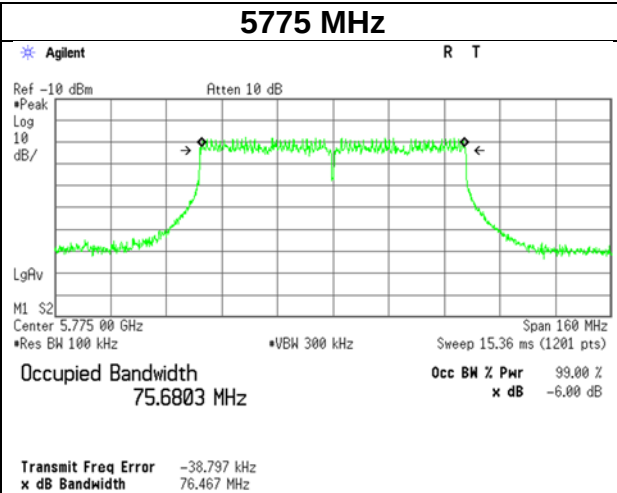


6 dB Bandwidth

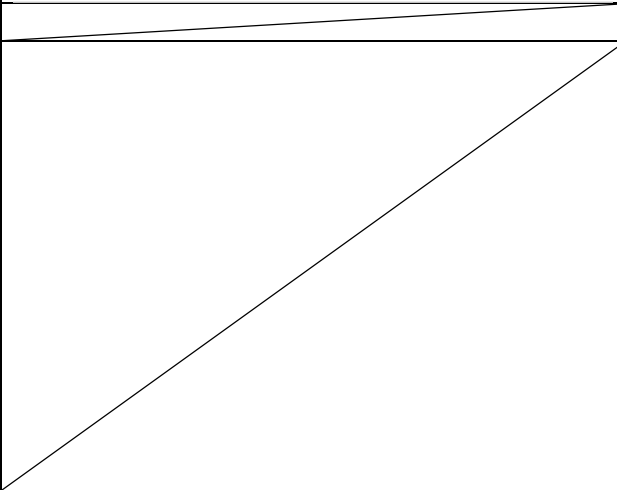
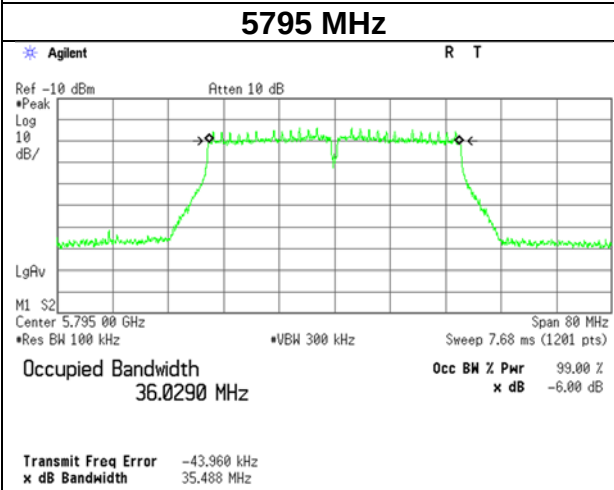
11ac-40, Antenna 0
5755 MHz



11ac-80, Antenna 0
5775 MHz



5795 MHz



Maximum Conducted Output Power

Test place Ise EMC Lab. No.4 Measurement Room
Date May 27, 2024 May 28, 2024
Temperature / Humidity 22 deg. C / 50 % RH 22 deg. C / 54 % RH
Engineer Junki Nagatomi Hiroki Numata
Mode Tx 11a Antenna 1

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						e.i.r.p.		
								Result		Limit	Margin	Result		Limit	Margin	
								[MHz]	[dBm]	[dB]	[dB]	[dB]	[dBi]	[MHz]	[MHz]	[dBm]
5180	-9.18	2.85	10.16	0.20	4.04	-	16.372	4.03	2.53	23.97	19.94	8.07	6.41	29.97	21.90	
5220	-9.13	2.86	10.16	0.20	4.04	-	16.378	4.09	2.56	23.97	19.88	8.13	6.50	29.97	21.84	
5240	-9.14	2.86	10.16	0.20	4.04	-	16.379	4.08	2.56	23.97	19.89	8.12	6.48	29.97	21.85	
5745	-8.15	2.96	10.18	0.20	4.04	-	16.373	5.19	3.31	30.00	24.81	9.23	8.38	36.00	26.77	
5785	-8.53	2.97	10.18	0.20	4.04	-	16.386	4.82	3.04	30.00	25.18	8.86	7.70	36.00	27.14	
5825	-8.54	2.98	10.18	0.20	4.04	-	16.374	4.82	3.04	30.00	25.18	8.86	7.70	36.00	27.14	

Sample Calculation:

Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

e.i.r.p. Result = Conducted Power Result + Antenna Gain

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

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Test place: Ise EMC Lab. No.4 Measurement Room
Date: March 28, 2024 May 28, 2024
Temperature / Humidity: 22 deg. C / 51 % RH 22 deg. C / 54 % RH
Engineer: Tomoya Sone Hiroki Numata
Mode: Tx 11n-20

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
			0	1	Sum				0	1	Sum			
			[mW]	[mW]	[mW]	[dBm]	[dBm]	[dB]	[mW]	[mW]	[mW]	[dBm]	[dBm]	[dB]
5180	-	17.567	3.90	2.66	6.56	8.17	23.97	15.80	5.71	6.75	12.46	10.96	29.97	19.01
5220	-	17.566	3.55	2.57	6.13	7.87	23.97	16.10	5.21	6.52	11.73	10.69	29.97	19.28
5240	-	17.586	3.43	2.66	6.09	7.85	23.97	16.12	5.03	6.73	11.77	10.71	29.97	19.26
5745	-	17.586	3.10	3.04	6.15	7.89	30.00	22.11	4.55	7.71	12.26	10.89	36.00	25.11
5785	-	17.575	3.16	2.95	6.11	7.86	30.00	22.14	4.63	7.47	12.10	10.83	36.00	25.17
5825	-	17.567	3.11	2.99	6.10	7.86	30.00	22.14	4.56	7.59	12.15	10.85	36.00	25.15

		Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result		Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	
						Cond. Power	e.i.r.p.					Cond. Power	e.i.r.p.
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[dBm]
5180	0.52	-7.12	2.35	10.16	1.66	5.91	7.57	-8.75	2.32	10.16	4.04	4.25	8.29
5220	0.52	-7.52	2.35	10.16	1.66	5.51	7.17	-8.90	2.32	10.16	4.04	4.10	8.14
5240	0.52	-7.67	2.35	10.16	1.66	5.36	7.02	-8.76	2.32	10.16	4.04	4.24	8.28
5745	0.52	-8.21	2.44	10.17	1.66	4.92	6.58	-8.27	2.41	10.17	4.04	4.83	8.87
5785	0.52	-8.16	2.46	10.18	1.66	5.00	6.66	-8.44	2.43	10.18	4.04	4.69	8.73
5825	0.52	-8.24	2.47	10.18	1.66	4.93	6.59	-8.38	2.44	10.18	4.04	4.76	8.80

Sample Calculation:

Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

e.i.r.p. Result = Conducted Power Result + Antenna Gain

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

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.4 Measurement Room	
Date	March 28, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 51 % RH	22 deg. C / 54 % RH
Engineer	Tomoya Sone	Hiroki Numata
Mode	Tx 11ac-20	

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power							e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]		Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			0 [mW]	1 [mW]	Sum [mW]					0 [mW]	1 [mW]	Sum [mW]			
5180	-	17.566	2.39	1.62	4.01	6.03	23.97	17.94		3.50	4.11	7.61	8.82	29.97	21.15
5220	-	17.579	2.28	1.55	3.83	5.83	23.97	18.14		3.35	3.92	7.27	8.61	29.97	21.36
5240	-	17.589	2.26	1.53	3.79	5.78	23.97	18.19		3.31	3.88	7.19	8.56	29.97	21.41
5745	-	17.572	1.92	1.69	3.61	5.57	30.00	24.43		2.81	4.28	7.09	8.51	36.00	27.49
5785	-	17.580	1.98	1.59	3.56	5.52	30.00	24.48		2.90	4.02	6.92	8.40	36.00	27.60
5825	-	17.575	1.89	1.70	3.59	5.55	30.00	24.45		2.77	4.31	7.08	8.50	36.00	27.50

Antenna 0									Antenna 1					
Tested Frequency [MHz]	Duty Factor [dB]	Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]		Power Meter Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Antenna Gain [dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]
5180	0.50	-9.23	2.35	10.16	1.66	3.78	5.44	-10.88	2.32	10.16	4.04	2.10	2.10	6.14
5220	0.50	-9.42	2.35	10.16	1.66	3.59	5.25	-11.09	2.32	10.16	4.04	1.89	1.89	5.93
5240	0.50	-9.47	2.35	10.16	1.66	3.54	5.20	-11.14	2.32	10.16	4.04	1.84	1.84	5.88
5745	0.50	-10.28	2.44	10.17	1.66	2.83	4.49	-10.81	2.41	10.17	4.04	2.27	2.27	6.31
5785	0.50	-10.18	2.46	10.18	1.66	2.96	4.62	-11.11	2.43	10.18	4.04	2.00	2.00	6.04
5825	0.50	-10.38	2.47	10.18	1.66	2.77	4.43	-10.82	2.44	10.18	4.04	2.30	2.30	6.34

Sample Calculation:

Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

e.i.r.p. Result = Conducted Power Result + Antenna Gain

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

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.4 Measurement Room	
Date	March 28, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 51 % RH	22 deg. C / 54 % RH
Engineer	Tomoya Sone	Hiroki Numata
Mode	Tx 11n-40	

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency		26 dB EBW	99% OBW	Conducted power						e.i.r.p.					
		(B for FCC)	(B for IC)	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
[MHz]	[MHz]	[MHz]		0 [mW]	1 [mW]	Sum [mW]	[dBm]	[dBm]	[dB]	0 [mW]	1 [mW]	Sum [mW]	[dBm]	[dBm]	[dB]
5190	-	36.151		2.94	2.19	5.14	7.11	23.97	16.86	4.31	5.56	9.88	9.95	29.97	20.02
5230	-	36.159		2.88	2.14	5.02	7.00	23.97	16.97	4.22	5.42	9.64	9.84	29.97	20.13
5755	-	36.140		2.40	2.77	5.17	7.14	30.00	22.86	3.52	7.02	10.54	10.23	36.00	25.77
5795	-	36.184		2.47	2.61	5.08	7.06	30.00	22.94	3.62	6.61	10.23	10.10	36.00	25.90

		Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result		Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]	[dBm]	[dB]	[dB]	[dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.86	-8.68	2.35	10.16	1.66	4.69	6.35	-9.93	2.32	10.16	4.04	3.41	7.45
5230	0.86	-8.78	2.35	10.16	1.66	4.59	6.25	-10.04	2.32	10.16	4.04	3.30	7.34
5755	0.86	-9.68	2.45	10.18	1.66	3.81	5.47	-9.04	2.42	10.18	4.04	4.42	8.46
5795	0.86	-9.57	2.46	10.18	1.66	3.93	5.59	-9.31	2.43	10.18	4.04	4.16	8.20

Sample Calculation:

Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

e.i.r.p. Result = Conducted Power Result + Antenna Gain

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

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.4 Measurement Room	
Date	March 28, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 51 % RH	22 deg. C / 54 % RH
Engineer	Tomoya Sone	Hiroki Numata
Mode	Tx 11ac-40	

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
			0 [mW]	1 [mW]	Sum [mW]				0 [mW]	1 [mW]	Sum [mW]			
5190	-	36.108	1.96	1.39	3.35	5.25	23.97	18.72	2.88	3.52	6.39	8.06	29.97	21.91
5230	-	36.087	1.77	1.29	3.06	4.86	23.97	19.11	2.59	3.28	5.87	7.69	29.97	22.28
5755	-	36.110	1.58	1.46	3.04	4.83	30.00	25.17	2.32	3.70	6.02	7.80	36.00	28.20
5795	-	36.117	1.55	1.42	2.97	4.73	30.00	25.27	2.27	3.60	5.87	7.69	36.00	28.31

		Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result		Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]	[dBm]	[dB]	[dB]	[dBi]	Cond. Power [dBm]	e.i.r.p. [dBm]
5190	0.70	-10.28	2.35	10.16	1.66	2.93	4.59	-11.76	2.32	10.16	4.04	1.42	5.46
5230	0.70	-10.73	2.35	10.16	1.66	2.48	4.14	-12.07	2.32	10.16	4.04	1.11	5.15
5755	0.70	-11.33	2.45	10.18	1.66	2.00	3.66	-11.66	2.42	10.18	4.04	1.64	5.68
5795	0.70	-11.43	2.46	10.18	1.66	1.91	3.57	-11.79	2.43	10.18	4.04	1.52	5.56

Sample Calculation:

Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

$$e.i.r.p. \text{ Result} = \text{Conducted Power Result} + \text{Antenna Gain}$$

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

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power

Test place	Ise EMC Lab. No.4 Measurement Room	
Date	March 28, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 51 % RH	22 deg. C / 54 % RH
Engineer	Tomoya Sone	Hiroki Numata
Mode	Tx 11ac-80	

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency [MHz]	26 dB EBW (B for FCC) [MHz]	99% OBW (B for IC) [MHz]	Conducted power						e.i.r.p.					
			Antenna			Result [dBm]	Limit [dBm]	Margin [dB]	Antenna			Result [dBm]	Limit [dBm]	Margin [dB]
			0 [mW]	1 [mW]	Sum [mW]				0 [mW]	1 [mW]	Sum [mW]			
5210	-	76.011	1.98	1.61	3.59	5.55	23.97	18.42	2.90	4.09	6.99	8.44	29.97	21.53
5775	-	76.005	1.67	1.66	3.33	5.23	30.00	24.77	2.45	4.21	6.66	8.23	36.00	27.77

		Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result		Power Meter Reading	Cable Loss	Atten. Loss	Antenna Gain	Result	
						Cond. Power	e.i.r.p.					Cond. Power	e.i.r.p.
[MHz]	[dB]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[dBm]	[dBm]	[dB]	[dB]	[dBi]	[dBm]	[dBm]
5210	7.25	-16.79	2.35	10.16	1.66	2.97	4.63	-17.66	2.32	10.16	4.04	2.07	6.11
5775	7.25	-17.65	2.45	10.18	1.66	2.23	3.89	-17.65	2.42	10.18	4.04	2.20	6.24

Sample Calculation:

Conducted Power Result = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor

e.i.r.p. Result = Conducted Power Result + Antenna Gain

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

Conducted Power Limit (5725 MHz-5850 MHz) = 1W

Maximum Conducted Output Power (Rate Check)

Test place	Ise EMC Lab. No.3 Measurement Room
Date	March 22, 2024
Temperature / Humidity	23 deg. C / 36 % RH
Engineer	Tomoya Sone
Mode	Tx 11a

5220 MHz

Tx	Rate Mbps	Antenna Gain [dBi]	Antenna 0 (Burst Average)		Antenna 1 (Burst Average)		Total Reading Power(Burst Average)		Remark
			[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
SISO	6	1.66	-7.10	0.29	-	-	-5.44	0.29	
	9	1.66	-7.05	0.29	-	-	-5.39	0.29	
	12	1.66	-7.05	0.29	-	-	-5.39	0.29	
	18	1.66	-6.18	0.35	-	-	-4.52	0.35	
	24	1.66	-6.38	0.34	-	-	-4.72	0.34	
	36	1.66	-6.83	0.30	-	-	-5.17	0.30	
	48	1.66	-6.79	0.31	-	-	-5.13	0.31	
	54	1.66	-6.81	0.31	-	-	-5.15	0.31	
	6	4.04	-	-	-8.73	0.34	-4.69	0.34	
	9	4.04	-	-	-8.72	0.34	-4.68	0.34	
	12	4.04	-	-	-8.72	0.34	-4.68	0.34	
	18	4.04	-	-	-7.63	0.44	-3.59	0.44	*
	24	4.04	-	-	-7.81	0.42	-3.77	0.42	
	36	4.04	-	-	-8.40	0.37	-4.36	0.37	
	48	4.04	-	-	-8.33	0.37	-4.29	0.37	
	54	4.04	-	-	-8.37	0.37	-4.33	0.37	

*Worst Rate

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

The test was conducted by the use of gate function

(Rate Check)

Ise EMC Lab. No.4 Semi Anechoic Chamber
March 26, 2024
22 deg. C / 43 % RH
Shousei Hamaguchi
Tx 11n-20

Tx	Rate	Antenna	Antenna 0		Antenna	Antenna 1		Long GI Total		Antenna 0		Antenna 1		Short GI Total		Remark
	MCS	Gain [dBi]	(Burst Average)		Gain [dBi]	(Burst Average)		Power(Burst Average)		(Burst Average)		(Burst Average)		Power(Burst Average)		
			[dBm]	[mW]		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
SISO	0	1.66	-8.23	0.22	-	-	-	-6.57	0.22	-	-	-	-	-	-	
	1	1.66	-8.12	0.23	-	-	-	-6.46	0.23	-	-	-	-	-	-	
	2	1.66	-7.21	0.28	-	-	-	-5.55	0.28	-	-	-	-	-	-	
	3	1.66	-7.19	0.28	-	-	-	-5.53	0.28	-	-	-	-	-	-	
	4	1.66	-7.56	0.26	-	-	-	-5.90	0.26	-	-	-	-	-	-	
	5	1.66	-7.41	0.27	-	-	-	-5.75	0.27	-	-	-	-	-	-	
	6	1.66	-7.44	0.26	-	-	-	-5.78	0.26	-	-	-	-	-	-	
	7	1.66	-7.55	0.26	-	-	-	-5.89	0.26	-	-	-	-	-	-	
	0	-	-	-	4.04	-9.50	0.28	-5.46	0.28	-	-	-	-	-	-	
	1	-	-	-	4.04	-9.45	0.29	-5.41	0.29	-	-	-	-	-	-	
	2	-	-	-	4.04	-8.52	0.36	-4.48	0.36	-	-	-	-	-	-	
	3	-	-	-	4.04	-8.52	0.36	-4.48	0.36	-	-	-	-	-	-	
	4	-	-	-	4.04	-9.05	0.32	-5.01	0.32	-	-	-	-	-	-	
	5	-	-	-	4.04	-8.82	0.33	-4.78	0.33	-	-	-	-	-	-	
	6	-	-	-	4.04	-8.82	0.33	-4.78	0.33	-	-	-	-	-	-	
7	-	-	-	4.04	-8.88	0.33	-4.84	0.33	-	-	-	-	-	-		
MIMO	0	1.66	-8.42	0.21	4.04	-9.66	0.27	-3.14	0.49	-	-	-	-	-	-	
	1	1.66	-8.17	0.22	4.04	-9.85	0.26	-3.14	0.49	-	-	-	-	-	-	
	2	1.66	-7.47	0.26	4.04	-8.69	0.34	-2.18	0.61	-	-	-	-	-	-	
	3	1.66	-7.41	0.27	4.04	-8.76	0.34	-2.19	0.60	-	-	-	-	-	-	
	4	1.66	-7.90	0.24	4.04	-9.10	0.31	-2.60	0.55	-	-	-	-	-	-	
	5	1.66	-7.86	0.24	4.04	-9.08	0.31	-2.57	0.55	-	-	-	-	-	-	
	6	1.66	-7.92	0.24	4.04	-8.94	0.32	-2.52	0.56	-	-	-	-	-	-	
	7	1.66	-7.77	0.24	4.04	-9.39	0.29	-2.70	0.54	-	-	-	-	-	-	
	8	1.66	-8.45	0.21	4.04	-9.65	0.27	-3.15	0.48	-	-	-	-	-	-	
	9	1.66	-8.34	0.21	4.04	-9.60	0.28	-3.07	0.49	-	-	-	-	-	-	
	10	1.66	-7.55	0.26	4.04	-8.62	0.35	-2.18	0.61	-	-	-	-	-	-	
	11	1.66	-7.31	0.27	4.04	-8.73	0.34	-2.13	0.61	-7.60	0.25	-8.92	0.33	-2.37	0.58	* Long GI
	12	1.66	-8.14	0.22	4.04	-9.19	0.31	-2.75	0.53	-	-	-	-	-	-	
	13	1.66	-7.89	0.24	4.04	-9.23	0.30	-2.67	0.54	-	-	-	-	-	-	
	14	1.66	-8.10	0.23	4.04	-8.97	0.32	-2.61	0.55	-	-	-	-	-	-	
15	1.66	-7.83	0.24	4.04	-9.31	0.30	-2.69	0.54	-	-	-	-	-	-		

All comparison were carried out on same frequency and measurement factors. The test was conducted by the use of gate function

Maximum Conducted Output Power (Rate Check)

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.4 Semi Anechoic Chamber
March 26, 2024
22 deg. C / 43 % RH
Shousei Hamaguchi
Tx 11ac-20

5220 MHz

5220 MHz

Tx	Rate	Antenna Gain	Antenna 0 (Burst Average)		Antenna Gain	Antenna 1 (Burst Average)		Long GI Total		Antenna 0 (Burst Average)		Antenna 1 (Burst Average)		Short GI Total		Remark
	MCS	[dBi]	[dBm]	[mW]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
SISO	0	1.66	-9.91	0.15	-	-	-	-8.25	0.15	-	-	-	-	-	-	
	1	1.66	-9.88	0.15	-	-	-	-8.22	0.15	-	-	-	-	-	-	
	2	1.66	-9.03	0.18	-	-	-	-7.37	0.18	-	-	-	-	-	-	
	3	1.66	-9.03	0.18	-	-	-	-7.37	0.18	-	-	-	-	-	-	
	4	1.66	-9.65	0.16	-	-	-	-7.99	0.16	-	-	-	-	-	-	
	5	1.66	-9.49	0.16	-	-	-	-7.83	0.16	-	-	-	-	-	-	
	6	1.66	-9.49	0.16	-	-	-	-7.83	0.16	-	-	-	-	-	-	
	7	1.66	-9.58	0.16	-	-	-	-7.92	0.16	-	-	-	-	-	-	
	8	1.66	-9.45	0.17	-	-	-	-7.79	0.17	-	-	-	-	-	-	
	0	-	-	-	-	4.04	-11.88	0.16	-7.84	0.16	-	-	-	-	-	
	1	-	-	-	-	4.04	-11.77	0.17	-7.73	0.17	-	-	-	-	-	
	2	-	-	-	-	4.04	-10.85	0.21	-6.81	0.21	-	-	-	-	-	
	3	-	-	-	-	4.04	-10.83	0.21	-6.79	0.21	-	-	-	-	-	
	4	-	-	-	-	4.04	-11.33	0.19	-7.29	0.19	-	-	-	-	-	
	5	-	-	-	-	4.04	-11.20	0.19	-7.16	0.19	-	-	-	-	-	
	6	-	-	-	-	4.04	-11.18	0.19	-7.14	0.19	-	-	-	-	-	
7	-	-	-	-	4.04	-11.30	0.19	-7.26	0.19	-	-	-	-	-		
8	-	-	-	-	4.04	-11.24	0.19	-7.20	0.19	-	-	-	-	-		
MIMO	0	1.66	-10.46	0.13	4.04	-11.79	0.17	-5.23	0.30	-	-	-	-	-	-	
	1	1.66	-10.26	0.14	4.04	-11.98	0.16	-5.25	0.30	-	-	-	-	-	-	
	2	1.66	-9.41	0.17	4.04	-10.88	0.21	-4.26	0.37	-	-	-	-	-	-	
	3	1.66	-8.88	0.19	4.04	-10.94	0.20	-4.05	0.39	-9.31	0.17	-10.99	0.20	-4.28	0.37	* Long GI
	4	1.66	-10.20	0.14	4.04	-11.42	0.18	-4.91	0.32	-	-	-	-	-	-	
	5	1.66	-9.74	0.16	4.04	-11.56	0.18	-4.78	0.33	-	-	-	-	-	-	
	6	1.66	-10.07	0.14	4.04	-11.24	0.19	-4.75	0.33	-	-	-	-	-	-	
	7	1.66	-9.79	0.15	4.04	-11.48	0.18	-4.76	0.33	-	-	-	-	-	-	
	8	1.66	-9.98	0.15	4.04	-11.36	0.19	-4.78	0.33	-	-	-	-	-	-	

*Worst MCS

All comparison were carried out on same frequency and measurement factors. The test was conducted by the use of gate function

Maximum Conducted Output Power (Rate Check)

Test place	Ise EMC Lab. No.4 Semi Anechoic Chamber
Date	March 26, 2024
Temperature / Humidity	24 deg. C / 33 % RH
Engineer	Tomoya Sone
Mode	Tx 11n-40

5230 MHz

2230 MHz

Tx	Rate	Antenna Gain [dB]	Antenna 0 (Burst Average)		Antenna Gain [dB]	Antenna 1 (Burst Average)		Long GI Total Power(Burst Average)		Antenna 0 (Burst Average)		Antenna 1 (Burst Average)		Short GI Total Power(Burst Average)		Remark
	MCS		[dBm]	[mW]		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
SISO	0	1.66	-7.31	0.27	-	-	-	-5.65	0.27	-	-	-	-	-	-	
	1	1.66	-7.22	0.28	-	-	-	-5.56	0.28	-	-	-	-	-	-	
	2	1.66	-7.15	0.28	-	-	-	-5.49	0.28	-	-	-	-	-	-	
	3	1.66	-7.23	0.28	-	-	-	-5.57	0.28	-	-	-	-	-	-	
	4	1.66	-7.42	0.27	-	-	-	-5.76	0.27	-	-	-	-	-	-	
	5	1.66	-7.30	0.27	-	-	-	-5.64	0.27	-	-	-	-	-	-	
	6	1.66	-7.41	0.27	-	-	-	-5.75	0.27	-	-	-	-	-	-	
	7	1.66	-7.50	0.26	-	-	-	-5.84	0.26	-	-	-	-	-	-	
	0	-	-	-	4.04	-8.26	0.38	-4.22	0.38	-	-	-	-	-	-	
	1	-	-	-	4.04	-8.25	0.38	-4.21	0.38	-	-	-	-	-	-	
	2	-	-	-	4.04	-8.10	0.39	-4.06	0.39	-	-	-	-	-	-	
	3	-	-	-	4.04	-8.13	0.39	-4.09	0.39	-	-	-	-	-	-	
	4	-	-	-	4.04	-8.11	0.39	-4.07	0.39	-	-	-	-	-	-	
	5	-	-	-	4.04	-8.00	0.40	-3.96	0.40	-	-	-	-	-	-	
6	-	-	-	4.04	-8.16	0.39	-4.12	0.39	-	-	-	-	-	-		
7	-	-	-	4.04	-8.30	0.38	-4.26	0.38	-	-	-	-	-	-		
MIMO	0	1.66	-7.19	0.28	4.04	-8.40	0.37	-1.89	0.65	-	-	-	-	-	-	
	1	1.66	-7.10	0.29	4.04	-8.27	0.38	-1.78	0.66	-	-	-	-	-	-	
	2	1.66	-7.10	0.29	4.04	-8.19	0.39	-1.73	0.67	-	-	-	-	-	-	
	3	1.66	-7.09	0.29	4.04	-8.20	0.38	-1.74	0.67	-	-	-	-	-	-	
	4	1.66	-7.19	0.28	4.04	-8.25	0.38	-1.81	0.66	-	-	-	-	-	-	
	5	1.66	-7.08	0.29	4.04	-8.12	0.39	-1.69	0.68	-	-	-	-	-	-	
	6	1.66	-7.21	0.28	4.04	-8.25	0.38	-1.82	0.66	-	-	-	-	-	-	
	7	1.66	-7.22	0.28	4.04	-8.38	0.37	-1.89	0.65	-	-	-	-	-	-	
	8	1.66	-6.91	0.30	4.04	-8.15	0.39	-1.63	0.69	-	-	-	-	-	-	
	9	1.66	-6.92	0.30	4.04	-8.25	0.38	-1.69	0.68	-	-	-	-	-	-	
	10	1.66	-6.89	0.30	4.04	-8.13	0.39	-1.61	0.69	-	-	-	-	-	-	
	11	1.66	-6.90	0.30	4.04	-8.07	0.40	-1.58	0.69	-7.10	0.29	-8.31	0.37	-1.81	0.66	* Long GI
	12	1.66	-7.12	0.28	4.04	-8.39	0.37	-1.86	0.65	-	-	-	-	-	-	
	13	1.66	-7.24	0.28	4.04	-8.23	0.38	-1.82	0.66	-	-	-	-	-	-	
	14	1.66	-7.10	0.29	4.04	-8.27	0.38	-1.78	0.66	-	-	-	-	-	-	
15	1.66	-7.16	0.28	4.04	-8.24	0.38	-1.79	0.66	-	-	-	-	-	-		

*Worst MCS

All comparison were carried out on same frequency and measurement factors. The test was conducted by the use of gate function

Maximum Conducted Output Power (Rate Check)

Test place
Date
Temperature / Humidity
Engineer
Mode

Use EMC Lab. No.4 Semi Anechoic Chamber
March 26, 2024
24 deg. C / 33 % RH
Tomoya Sone
Tx 11ac-40

5230 MHz

5230 MHz																	
Tx	Rate	Antenna	Antenna 0		Antenna	Antenna 1		Long GI Total		Antenna 0		Antenna 1		Short GI Total		Remark	
	MCS	Gain [dB]	(Burst Average) [dBm]	[mW]	Gain [dB]	(Burst Average) [dBm]	[mW]	Power(Burst Average) [dBm]	[mW]	(Burst Average) [dBm]	[mW]	(Burst Average) [dBm]	[mW]	Power(Burst Average) [dBm]	[mW]		
SISO	0	1.66	-9.20	0.18	-	-	-	-7.54	0.18	-	-	-	-	-	-		
	1	1.66	-9.01	0.18	-	-	-	-7.35	0.18	-	-	-	-	-	-		
	2	1.66	-8.94	0.19	-	-	-	-7.28	0.19	-	-	-	-	-	-		
	3	1.66	-9.04	0.18	-	-	-	-7.38	0.18	-	-	-	-	-	-		
	4	1.66	-9.13	0.18	-	-	-	-7.47	0.18	-	-	-	-	-	-		
	5	1.66	-9.08	0.18	-	-	-	-7.42	0.18	-	-	-	-	-	-		
	6	1.66	-9.29	0.17	-	-	-	-7.63	0.17	-	-	-	-	-	-		
	7	1.66	-9.36	0.17	-	-	-	-7.70	0.17	-	-	-	-	-	-		
	8	1.66	-9.12	0.18	-	-	-	-7.46	0.18	-	-	-	-	-	-		
	9	1.66	-9.19	0.18	-	-	-	-7.53	0.18	-	-	-	-	-	-		
	0	-	-	-	-	4.04	-10.74	0.21	-6.70	0.21	-	-	-	-	-	-	
	1	-	-	-	-	4.04	-10.65	0.22	-6.61	0.22	-	-	-	-	-	-	
	2	-	-	-	-	4.04	-10.56	0.22	-6.52	0.22	-	-	-	-	-	-	
	3	-	-	-	-	4.04	-10.59	0.22	-6.55	0.22	-	-	-	-	-	-	
	4	-	-	-	-	4.04	-10.68	0.22	-6.64	0.22	-	-	-	-	-	-	
	5	-	-	-	-	4.04	-10.57	0.22	-6.53	0.22	-	-	-	-	-	-	
	6	-	-	-	-	4.04	-10.72	0.22	-6.68	0.22	-	-	-	-	-	-	
	7	-	-	-	-	4.04	-10.77	0.21	-6.73	0.21	-	-	-	-	-	-	
8	-	-	-	-	4.04	-10.65	0.22	-6.61	0.22	-	-	-	-	-	-		
9	-	-	-	-	4.04	-10.54	0.22	-6.50	0.22	-	-	-	-	-	-		
MIMO	0	1.66	-8.92	0.19	4.04	-10.57	0.22	-3.87	0.41	-	-	-	-	-	-	-	
	1	1.66	-8.95	0.19	4.04	-10.56	0.22	-3.88	0.41	-	-	-	-	-	-	-	
	2	1.66	-7.13	0.28	4.04	-10.37	0.23	-2.87	0.52	-7.14	0.28	-10.38	0.23	-2.88	0.52	* Long GI	
	3	1.66	-8.85	0.19	4.04	-10.52	0.23	-3.81	0.42	-	-	-	-	-	-	-	
	4	1.66	-9.08	0.18	4.04	-10.62	0.22	-3.97	0.40	-	-	-	-	-	-	-	
	5	1.66	-9.16	0.18	4.04	-10.53	0.22	-3.95	0.40	-	-	-	-	-	-	-	
	6	1.66	-9.15	0.18	4.04	-10.62	0.22	-4.00	0.40	-	-	-	-	-	-	-	
	7	1.66	-9.07	0.18	4.04	-10.59	0.22	-3.95	0.40	-	-	-	-	-	-	-	
	8	1.66	-9.12	0.18	4.04	-10.52	0.23	-3.93	0.40	-	-	-	-	-	-	-	
	9	1.66	-9.03	0.18	4.04	-10.64	0.22	-3.96	0.40	-	-	-	-	-	-	-	

*Worst MCS

All comparison were carried out on same frequency and measurement factors. The test was conducted by the use of gate function

Maximum Conducted Output Power (Rate Check)

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.4 Semi Anechoic Chamber
March 26, 2024
24 deg. C / 33 % RH
Tomoya Sone
Tx 11ac-80

5210 MHz

3210 MHz

Tx	Rate	Antenna Gain [dB]	Antenna 0 (Burst Average)		Antenna Gain [dB]	Antenna 1 (Burst Average)		Long GI Total Power(Burst Average)		Antenna 0 (Burst Average)		Antenna 1 (Burst Average)		Short GI Total Power(Burst Average)		Remark
	MCS		[dBm]	[mW]		[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	[dBm]	[mW]	
SISO	0	1.66	-9.31	0.17	-	-	-	-7.65	0.17	-	-	-	-	-	-	
	1	1.66	-9.15	0.18	-	-	-	-7.49	0.18	-	-	-	-	-	-	
	2	1.66	-9.16	0.18	-	-	-	-7.50	0.18	-	-	-	-	-	-	
	3	1.66	-9.07	0.18	-	-	-	-7.41	0.18	-	-	-	-	-	-	
	4	1.66	-9.02	0.18	-	-	-	-7.36	0.18	-	-	-	-	-	-	
	5	1.66	-8.74	0.20	-	-	-	-7.08	0.20	-	-	-	-	-	-	
	6	1.66	-8.93	0.19	-	-	-	-7.27	0.19	-	-	-	-	-	-	
	7	1.66	-8.94	0.19	-	-	-	-7.28	0.19	-	-	-	-	-	-	
	8	1.66	-8.90	0.19	-	-	-	-7.24	0.19	-	-	-	-	-	-	
	9	1.66	-8.89	0.19	-	-	-	-7.23	0.19	-	-	-	-	-	-	
	0	-	-	-	4.04	-10.16	0.24	-6.12	0.24	-	-	-	-	-	-	
	1	-	-	-	4.04	-10.02	0.25	-5.98	0.25	-	-	-	-	-	-	
	2	-	-	-	4.04	-9.85	0.26	-5.81	0.26	-	-	-	-	-	-	
	3	-	-	-	4.04	-9.84	0.26	-5.80	0.26	-	-	-	-	-	-	
	4	-	-	-	4.04	-9.82	0.26	-5.78	0.26	-	-	-	-	-	-	
	5	-	-	-	4.04	-9.61	0.28	-5.57	0.28	-	-	-	-	-	-	
	6	-	-	-	4.04	-9.66	0.27	-5.62	0.27	-	-	-	-	-	-	
	7	-	-	-	4.04	-9.65	0.28	-5.61	0.28	-	-	-	-	-	-	
8	-	-	-	4.04	-9.61	0.28	-5.57	0.28	-	-	-	-	-	-		
9	-	-	-	4.04	-9.59	0.28	-5.55	0.28	-	-	-	-	-	-		
MIMO	0	1.66	-9.02	0.18	4.04	-10.52	0.23	-3.89	0.41	-	-	-	-	-	-	
	1	1.66	-9.00	0.18	4.04	-10.44	0.23	-3.83	0.41	-	-	-	-	-	-	
	2	1.66	-8.93	0.19	4.04	-10.14	0.25	-3.63	0.43	-	-	-	-	-	-	
	3	1.66	-8.92	0.19	4.04	-10.11	0.25	-3.61	0.44	-	-	-	-	-	-	
	4	1.66	-8.88	0.19	4.04	-9.99	0.25	-3.53	0.44	-	-	-	-	-	-	
	5	1.66	-8.69	0.20	4.04	-9.99	0.25	-3.44	0.45	-	-	-	-	-	-	
	6	1.66	-8.80	0.19	4.04	-9.85	0.26	-3.41	0.46	-	-	-	-	-	-	
	7	1.66	-8.66	0.20	4.04	-9.90	0.26	-3.38	0.46	-	-	-	-	-	-	
	8	1.66	-8.63	0.20	4.04	-9.77	0.27	-3.29	0.47	-	-	-	-	-	-	
	9	1.66	-8.61	0.20	4.04	-9.73	0.27	-3.26	0.47	-8.65	0.20	-9.77	0.27	-3.30	0.47	* Long GI

*Worst MCS

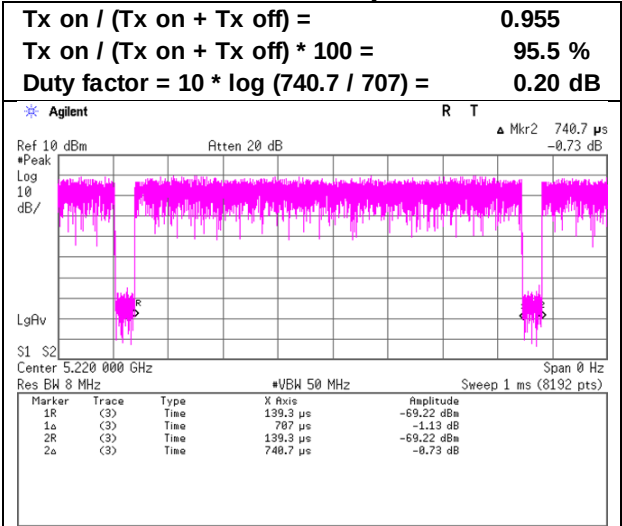
All comparison were carried out on same frequency and measurement factors. The test was conducted by the use of gate function

Burst rate confirmation

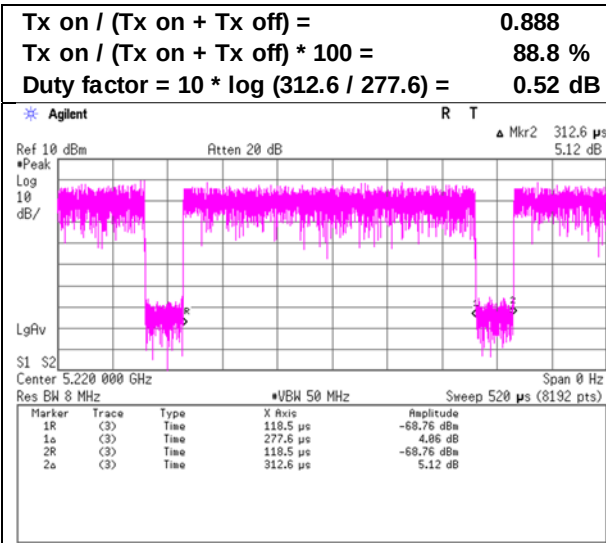
Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.4 Semi Anechoic Chamber
March 26, 2024
24 deg. C / 33 % RH
Tomoya Sone
Tx

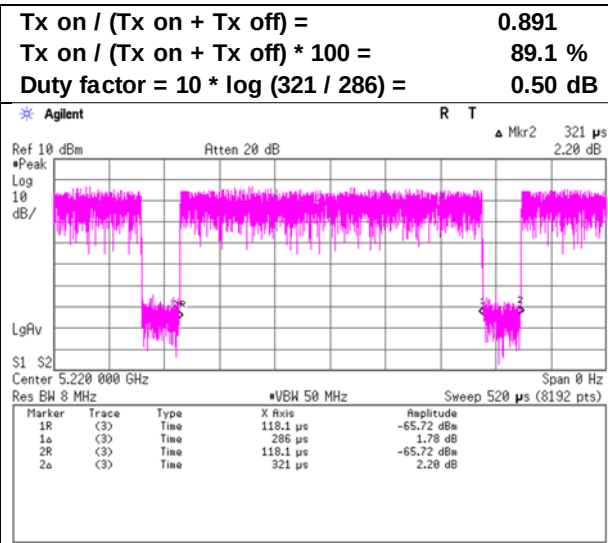
11a 18 Mbps



11n-20 MCS 11



11ac-20 MCS 3



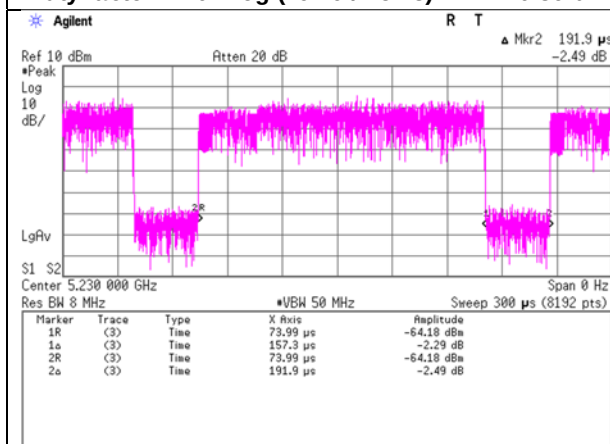
Burst rate confirmation

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.4 Semi Anechoic Chamber
March 26, 2024
24 deg. C / 33 % RH
Tomoya Sone
Tx

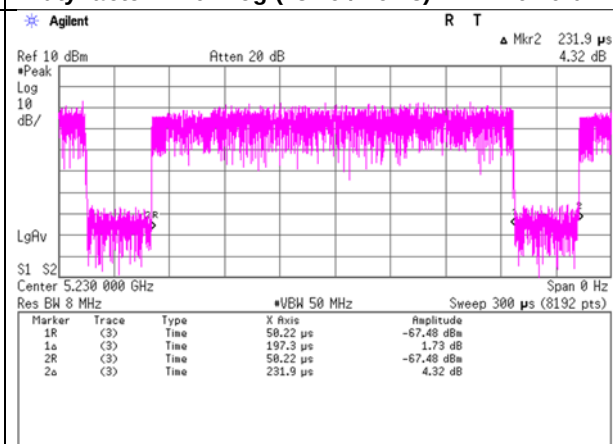
11n-40 MCS 11

Tx on / (Tx on + Tx off) =	0.820
Tx on / (Tx on + Tx off) * 100 =	82.0
Duty factor = 10 * log (191.9 / 157.3) =	0.86



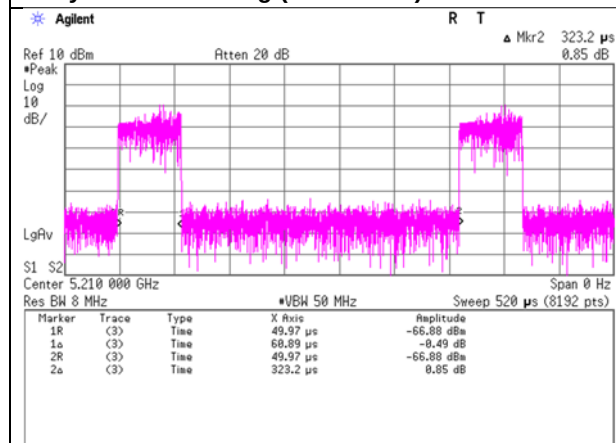
11ac-40 MCS 2

Tx on / (Tx on + Tx off) =	0.851
Tx on / (Tx on + Tx off) * 100 =	85.1 %
Duty factor = 10 * log (231.9 / 197.3) =	0.70 dB



11ac-80 MCS 9

$Tx\ on / (Tx\ on + Tx\ off) =$	0.188
$Tx\ on / (Tx\ on + Tx\ off) * 100 =$	18.8 %
$Duty\ factor = 10 * \log (323.2 / 60.9) =$	7.25 dB



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.4 Measurement Room
Date	May 28, 2024
Temperature / Humidity	20 deg. C / 50 % RH
Engineer	Junki Nagatomi
Mode	Tx 11a Antenna 1

Applied limit: 15.407, mobile and portable client device

Tested Frequency	PSD Reading	Cable Loss	Atten. Loss	Duty Factor	Antenna Gain	RBW Correction Factor	PSD (Conducted)			PSD (e.i.r.p.)		
							Result	Limit	Margin	Result	Limit	Margin
[MHz]	[dBm/MHz]	[dB]	[dB]	[dB]	[dBi]	[dB]	[dBm/MHz]	[dBm/MHz]	[dB]	[dBm/MHz]	[dBm/MHz]	[dB]
5180	-19.11	2.85	10.16	0.20	4.04	0.00	-5.90	11.00	16.90	-1.86	17.00	18.86
5220	-19.37	2.86	10.16	0.20	4.04	0.00	-6.15	11.00	17.15	-2.11	17.00	19.11
5240	-19.28	2.86	10.16	0.20	4.04	0.00	-6.06	11.00	17.06	-2.02	17.00	19.02
5745	-21.26	2.96	10.18	0.20	4.04	0.27	-7.65	30.00	37.65	-3.61	36.00	39.61
5785	-22.17	2.97	10.18	0.20	4.04	0.27	-8.55	30.00	38.55	-4.51	36.00	40.51
5825	-21.85	2.98	10.18	0.20	4.04	0.27	-8.21	30.00	38.21	-4.17	36.00	40.17

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

$$\text{RBW Correction Factor} = 10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$$
$$\text{PSD Result (Conducted)} = \text{Reading} + \text{Cable Loss (including the cable(s) customer supplied)} + \text{Atten. Loss} + \text{Duty Factor} + \text{RBW Correction Factor}$$
$$\text{PSD Result (e.i.r.p.)} = \text{Conducted PSD Result} + \text{Antenna Gain}$$

Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 1, 2024
23 deg. C / 37 % RH
Tomoya Sone
Tx 11n-20

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
[MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5180	0.34	0.22	0.57	-2.48	11.00	13.48	0.50	0.56	1.06	0.27	17.00	16.73
5220	0.30	0.23	0.52	-2.82	11.00	13.82	0.44	0.57	1.01	0.03	17.00	16.97
5240	0.31	0.24	0.55	-2.60	11.00	13.60	0.45	0.62	1.07	0.27	17.00	16.73
5745	0.19	0.16	0.35	-4.60	30.00	34.60	0.28	0.40	0.68	-1.70	36.00	37.70
5785	0.18	0.14	0.32	-4.91	30.00	34.91	0.27	0.36	0.62	-2.06	36.00	38.06
5825	0.17	0.14	0.31	-5.04	30.00	35.04	0.25	0.36	0.61	-2.14	36.00	38.14

			Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dB]	[dBm/MHz]	e.i.r.p.	[dBm/MHz]	[dB]	[dB]	[dB]	[dBm/MHz]	e.i.r.p.
5180	0.52	0.00	-18.15	2.84	10.16	1.66	-4.63	-2.97	-20.05	2.81	10.16	4.04	-6.55	-2.51
5220	0.52	0.00	-18.79	2.85	10.16	1.66	-5.27	-3.61	-19.98	2.82	10.16	4.04	-6.48	-2.44
5240	0.52	0.00	-18.66	2.85	10.16	1.66	-5.13	-3.47	-19.65	2.82	10.16	4.04	-6.15	-2.11
5745	0.52	0.27	-21.16	2.96	10.18	1.66	-7.23	-5.57	-21.92	2.93	10.18	4.04	-8.02	-3.98
5785	0.52	0.27	-21.32	2.97	10.18	1.66	-7.39	-5.73	-22.45	2.94	10.18	4.04	-8.54	-4.50
5825	0.52	0.27	-21.59	2.98	10.18	1.66	-7.64	-5.98	-22.42	2.95	10.18	4.04	-8.49	-4.45

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

$$\text{RBW Correction Factor} = 10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$$
$$\text{PSD Result (Conducted)} = \text{Reading} + \text{Cable Loss (including the cable(s) customer supplied)} + \text{Atten. Loss} + \text{Duty Factor} + \text{RBW Correction Factor}$$
$$\text{PSD Result (e.i.r.p.)} = \text{Conducted PSD Result} + \text{Antenna Gain}$$

Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 2, 2024
24 deg. C / 52 % RH
Hiroki Numata
Tx 11ac-20

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
[MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5180	0.22	0.15	0.37	-4.36	11.00	15.36	0.32	0.37	0.69	-1.58	17.00	18.58
5220	0.23	0.14	0.37	-4.29	11.00	15.29	0.34	0.36	0.70	-1.57	17.00	18.57
5240	0.20	0.15	0.35	-4.57	11.00	15.57	0.29	0.37	0.67	-1.74	17.00	18.74
5745	0.13	0.10	0.23	-6.38	30.00	36.38	0.20	0.24	0.44	-3.57	36.00	39.57
5785	0.12	0.08	0.20	-7.05	30.00	37.05	0.17	0.20	0.37	-4.29	36.00	40.29
5825	0.10	0.08	0.18	-7.35	30.00	37.35	0.15	0.21	0.36	-4.45	36.00	40.45

			Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
							Cond.	e.i.r.p.					Cond.	e.i.r.p.
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5180	0.50	0.00	-20.10	2.84	10.16	1.66	-6.60	-4.94	-21.78	2.81	10.16	4.04	-8.31	-4.27
5220	0.50	0.00	-19.88	2.85	10.16	1.66	-6.37	-4.71	-21.97	2.82	10.16	4.04	-8.49	-4.45
5240	0.50	0.00	-20.47	2.85	10.16	1.66	-6.96	-5.30	-21.79	2.82	10.16	4.04	-8.31	-4.27
5745	0.50	0.27	-22.62	2.96	10.18	1.66	-8.71	-7.05	-24.07	2.93	10.18	4.04	-10.19	-6.15
5785	0.50	0.27	-23.18	2.97	10.18	1.66	-9.26	-7.60	-24.94	2.94	10.18	4.04	-11.05	-7.01
5825	0.50	0.27	-23.89	2.98	10.18	1.66	-9.96	-8.30	-24.70	2.95	10.18	4.04	-10.80	-6.76

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

$$\text{RBW Correction Factor} = 10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$$
$$\text{PSD Result (Conducted)} = \text{Reading} + \text{Cable Loss (including the cable(s) customer supplied)} + \text{Atten. Loss} + \text{Duty Factor} + \text{RBW Correction Factor}$$
$$\text{PSD Result (e.i.r.p.)} = \text{Conducted PSD Result} + \text{Antenna Gain}$$

Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 2, 2024
24 deg. C / 52 % RH
Hiroki Numata
Tx 11n-40

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

PSD (Conducted)							PSD (e.i.r.p.)					
Tested Frequency	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
[MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5190	0.13	0.10	0.23	-6.39	11.00	17.39	0.19	0.25	0.44	-3.55	17.00	20.55
5230	0.13	0.10	0.22	-6.48	11.00	17.48	0.19	0.25	0.43	-3.63	17.00	20.63
5755	0.06	0.07	0.14	-8.61	30.00	38.61	0.09	0.19	0.28	-5.52	36.00	41.52
5795	0.06	0.07	0.13	-8.78	30.00	38.78	0.09	0.17	0.27	-5.74	36.00	41.74

			Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
							Cond.	e.i.r.p.					Cond.	e.i.r.p.
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5190	0.86	0.00	-22.69	2.84	10.16	1.66	-8.83	-7.17	-23.89	2.81	10.16	4.04	-10.06	-6.02
5230	0.86	0.00	-22.82	2.85	10.16	1.66	-8.95	-7.29	-23.95	2.82	10.16	4.04	-10.11	-6.07
5755	0.86	0.27	-26.22	2.96	10.18	1.66	-11.95	-10.29	-25.56	2.93	10.18	4.04	-11.32	-7.28
5795	0.86	0.27	-26.20	2.97	10.18	1.66	-11.92	-10.26	-25.92	2.94	10.18	4.04	-11.67	-7.63

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

$$\text{RBW Correction Factor} = 10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$$
$$\text{PSD Result (Conducted)} = \text{Reading} + \text{Cable Loss (including the cable(s) customer supplied)} + \text{Atten. Loss} + \text{Duty Factor} + \text{RBW Correction Factor}$$
$$\text{PSD Result (e.i.r.p.)} = \text{Conducted PSD Result} + \text{Antenna Gain}$$

Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 2, 2024
24 deg. C / 52 % RH
Hiroki Numata
Tx 11ac-40

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency		PSD (Conducted)						PSD (e.i.r.p.)						
Frequency	0	Antenna		Sum	Result	Limit	Margin	0	Antenna		Sum	Result	Limit	Margin
[MHz]	[mW/MHz]	1		[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	1		[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5190	0.08	0.06		0.14	-8.41	11.00	19.41	0.12	0.15		0.28	-5.60	17.00	22.60
5230	0.08	0.06		0.14	-8.68	11.00	19.68	0.12	0.14		0.26	-5.86	17.00	22.86
5755	0.05	0.04		0.09	-10.69	30.00	40.69	0.07	0.10		0.17	-7.80	36.00	43.80
5795	0.04	0.04		0.08	-10.94	30.00	40.94	0.06	0.09		0.16	-8.02	36.00	44.02

			Antenna 0						Antenna 1					
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
							Cond.	e.i.r.p.					Cond.	e.i.r.p.
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dBi]	[dBm/MHz]	[dBm/MHz]
5190	0.70	0.00	-24.42	2.84	10.16	1.66	-10.72	-9.06	-25.92	2.81	10.16	4.04	-12.25	-8.21
5230	0.70	0.00	-24.74	2.85	10.16	1.66	-11.03	-9.37	-26.14	2.82	10.16	4.04	-12.46	-8.42
5755	0.70	0.27	-27.38	2.96	10.18	1.66	-13.27	-11.61	-28.25	2.93	10.18	4.04	-14.17	-10.13
5795	0.70	0.27	-27.76	2.97	10.18	1.66	-13.64	-11.98	-28.38	2.94	10.18	4.04	-14.29	-10.25

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

$$\text{RBW Correction Factor} = 10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$$

PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

$$\text{PSD Result (e.i.r.p.)} = \text{Conducted PSD Result} + \text{Antenna Gain}$$

Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6Measurement Room
Date	April 2, 2024
Temperature / Humidity	20 deg. C / 42 % RH
Engineer	Junki Nagatomi
Mode	Tx 11ac-80

Antenna 0+1

Applied limit: 15.407, mobile and portable client device

Tested Frequency	PSD (Conducted)						PSD (e.i.r.p.)					
	Antenna			Result	Limit	Margin	Antenna			Result	Limit	Margin
	0	1	Sum				0	1	Sum			
[MHz]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[mW/MHz]	[mW/MHz]	[mW/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]
5210	0.06	0.04	0.10	-10.06	11.00	21.06	0.09	0.09	0.18	-7.35	17.00	24.35
5775	0.03	0.03	0.07	-11.86	30.00	41.86	0.05	0.08	0.13	-8.87	36.00	44.87

Antenna 0							Antenna 1							
Tested Frequency	Duty Factor	RBW Correction Factor	PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result		PSD Reading	Cable Loss	Atten. Loss	Antenna Gain	PSD Result	
							Cond.	e.i.r.p.					Cond.	e.i.r.p.
[MHz]	[dB]	[dB]	[dBm/MHz]	[dB]	[dB]	[dB]	[dBm/MHz]	[dBm/MHz]	[dBm/MHz]	[dB]	[dB]	[dB]	[dBm/MHz]	[dBm/MHz]
5210	7.25	0.00	-32.33	2.84	10.16	1.66	-12.08	-10.42	-34.57	2.81	10.16	4.04	-14.35	-10.31
5775	7.25	0.27	-35.47	2.96	10.18	1.66	-14.82	-13.16	-35.57	2.93	10.18	4.04	-14.93	-10.89

Sample Calculation:

PSD: Power Spectral Density

The PSD within 5725 MHz to 5825 MHz are based on any 500 kHz band.

$$\text{RBW Correction Factor} = 10 * \log (\text{Specified bandwidth} / \text{Measured bandwidth})$$

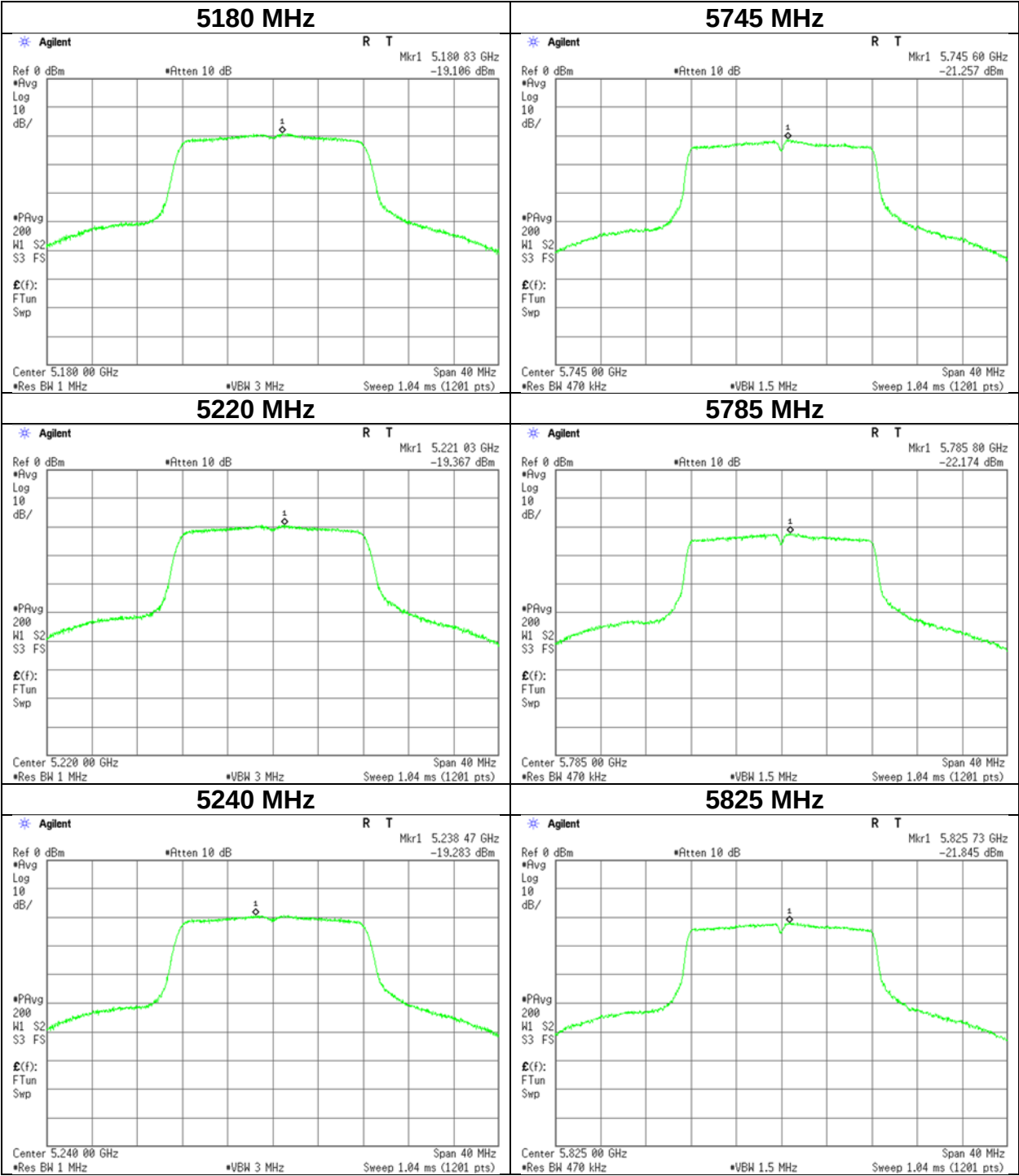
PSD Result (Conducted) = Reading + Cable Loss (including the cable(s) customer supplied) + Atten. Loss + Duty Factor + RBW Correction Factor

$$\text{PSD Result (e.i.r.p.)} = \text{Conducted PSD Result} + \text{Antenna Gain}$$

Maximum Power Spectral Density

Test place	Ise EMC Lab. No.4 Measurement Room
Date	May 28, 2024
Temperature / Humidity	20 deg. C / 50 % RH
Engineer	Junki Nagatomi
Mode	Tx 11a

11a, Antenna 1

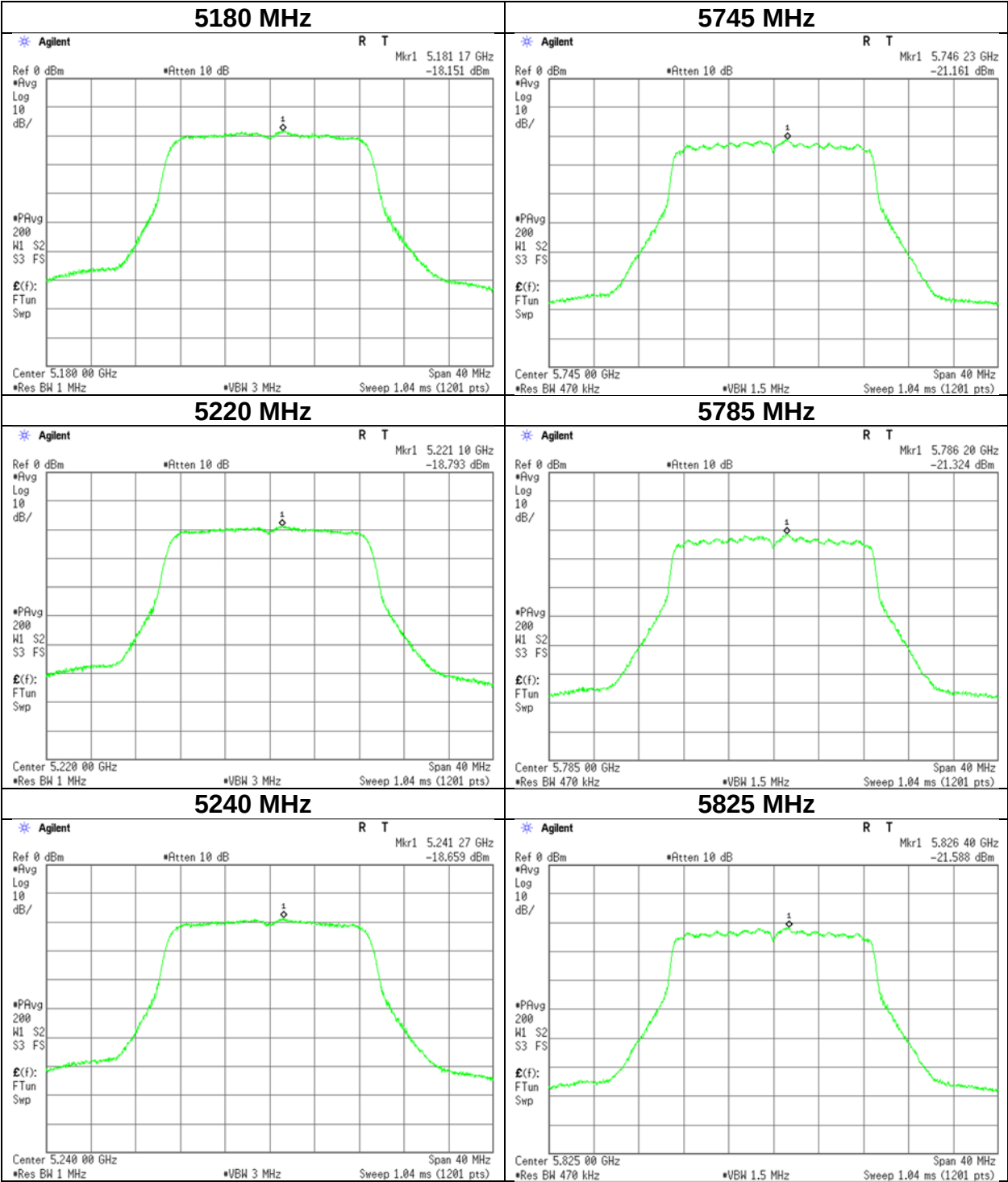


Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 1, 2024
23 deg. C / 37 % RH
Tomoya Sone
Tx 11n-20

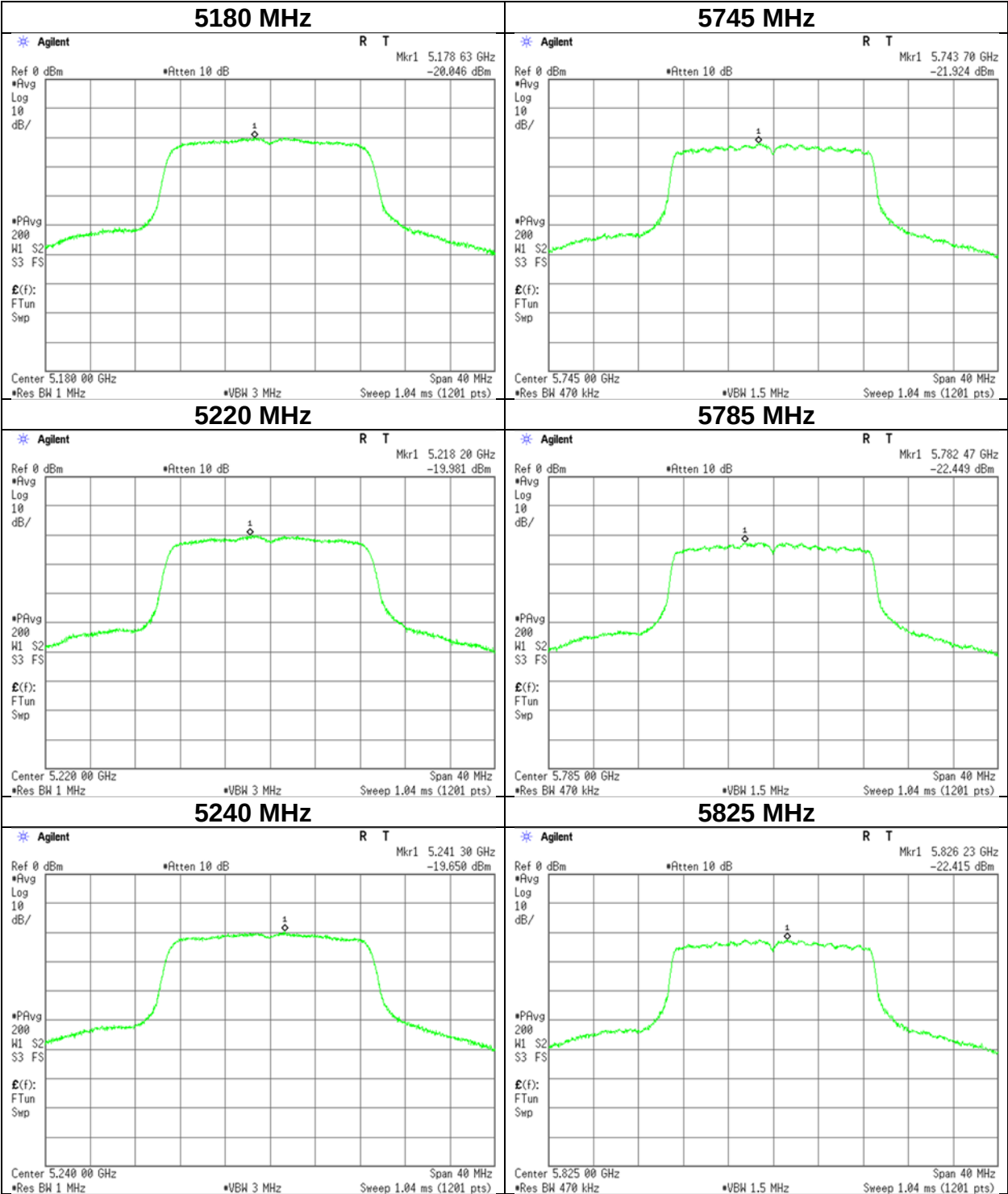
11n-20, Antenna 0



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room
Date	April 1, 2024
Temperature / Humidity	23 deg. C / 37 % RH
Engineer	Tomoya Sone
Mode	Tx 11n-20

11n-20, Antenna 1

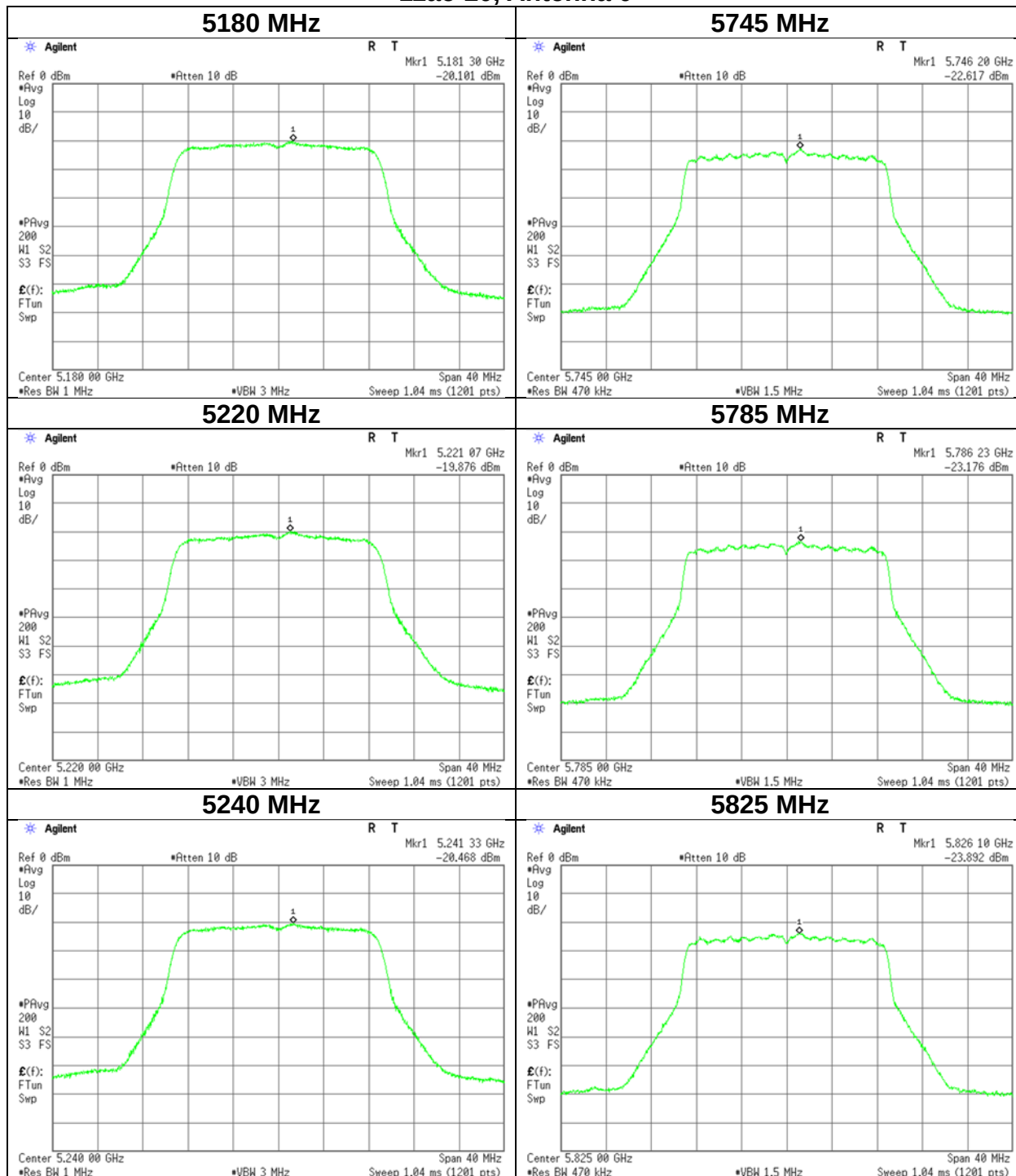


Maximum Power Spectral Density

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6 Measurement Room
April 2, 2024
24 deg. C / 52 % RH
Hiroki Numata
Tx 11ac-20

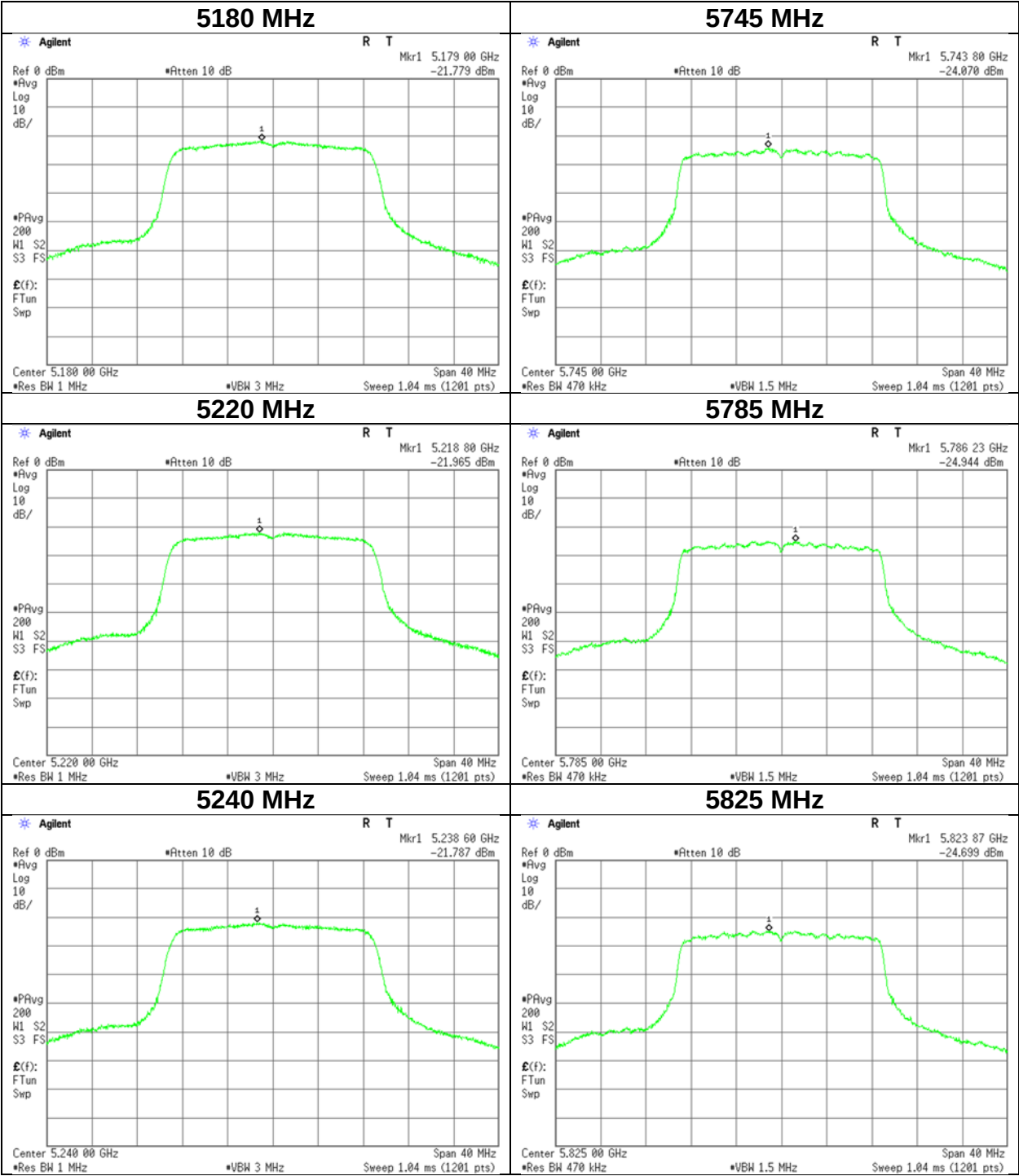
11ac-20, Antenna 0



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room
Date	April 2, 2024
Temperature / Humidity	24 deg. C / 52 % RH
Engineer	Hiroki Numata
Mode	Tx 11ac-20

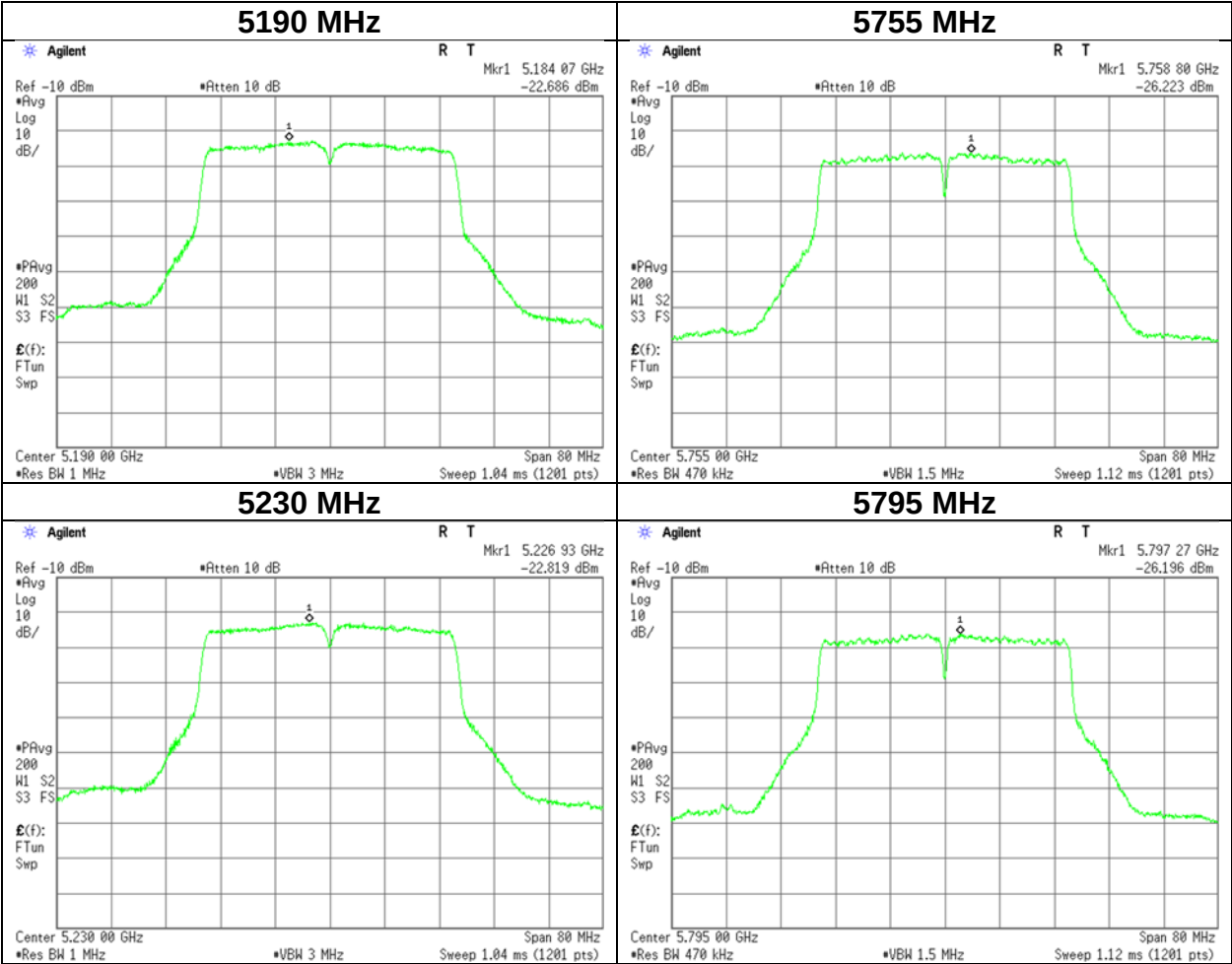
11ac-20, Antenna 1



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room
Date	April 2, 2024
Temperature / Humidity	24 deg. C / 52 % RH
Engineer	Hiroki Numata
Mode	Tx 11n-40

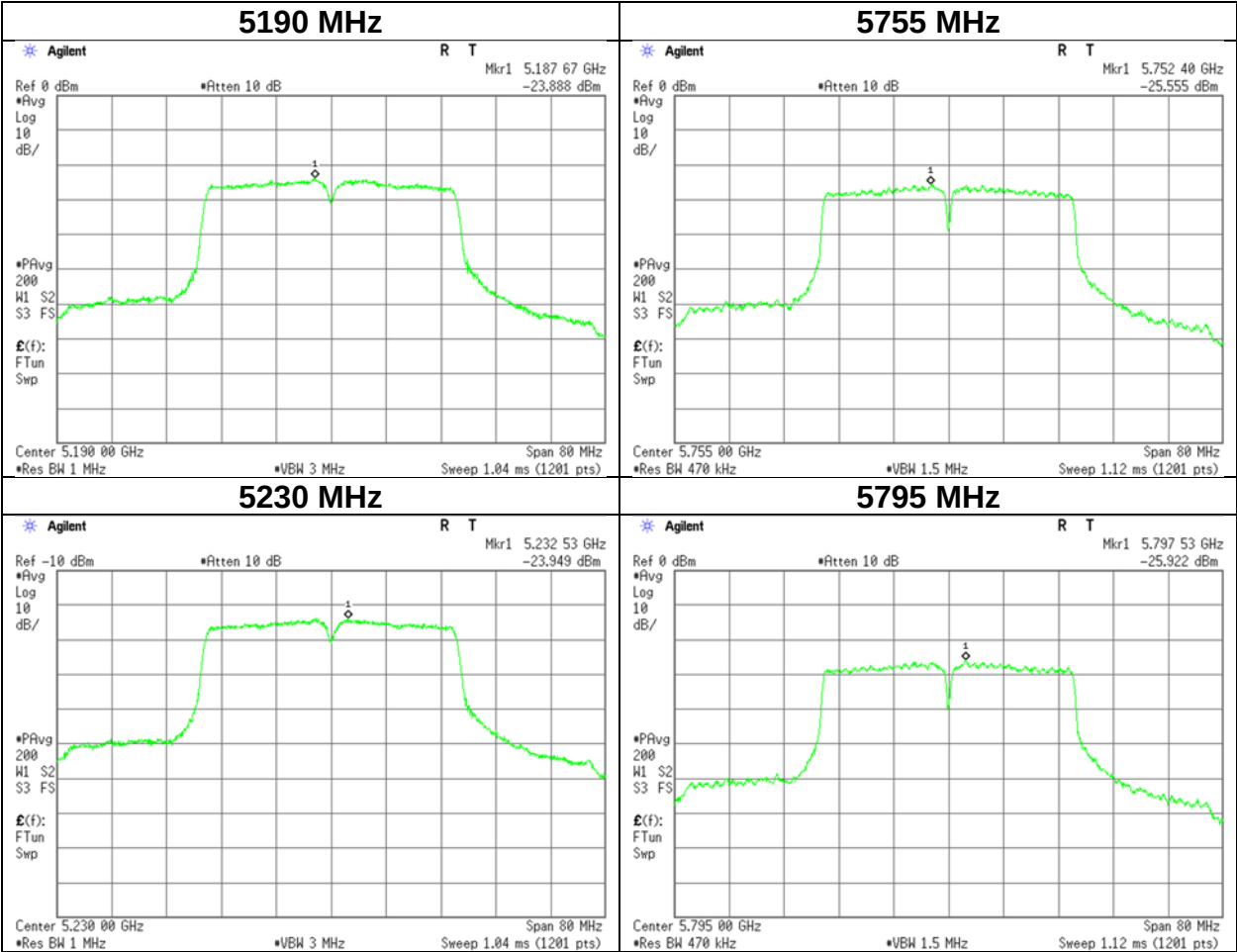
11n-40, Antenna 0



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room
Date	April 2, 2024
Temperature / Humidity	24 deg. C / 52 % RH
Engineer	Hiroki Numata
Mode	Tx 11n-40

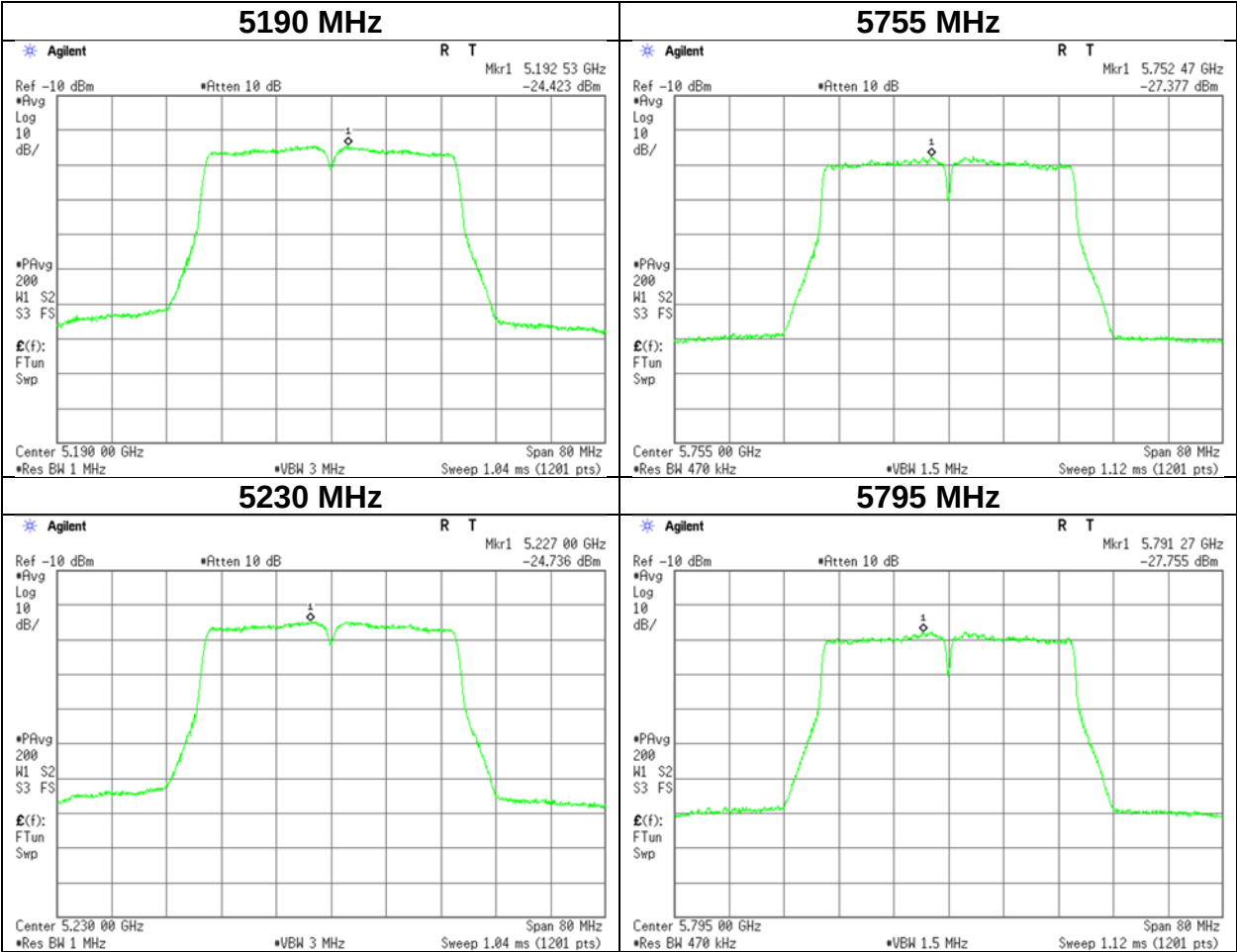
11n-40, Antenna 1



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room
Date	April 2, 2024
Temperature / Humidity	24 deg. C / 52 % RH
Engineer	Hiroki Numata
Mode	Tx 11ac-40

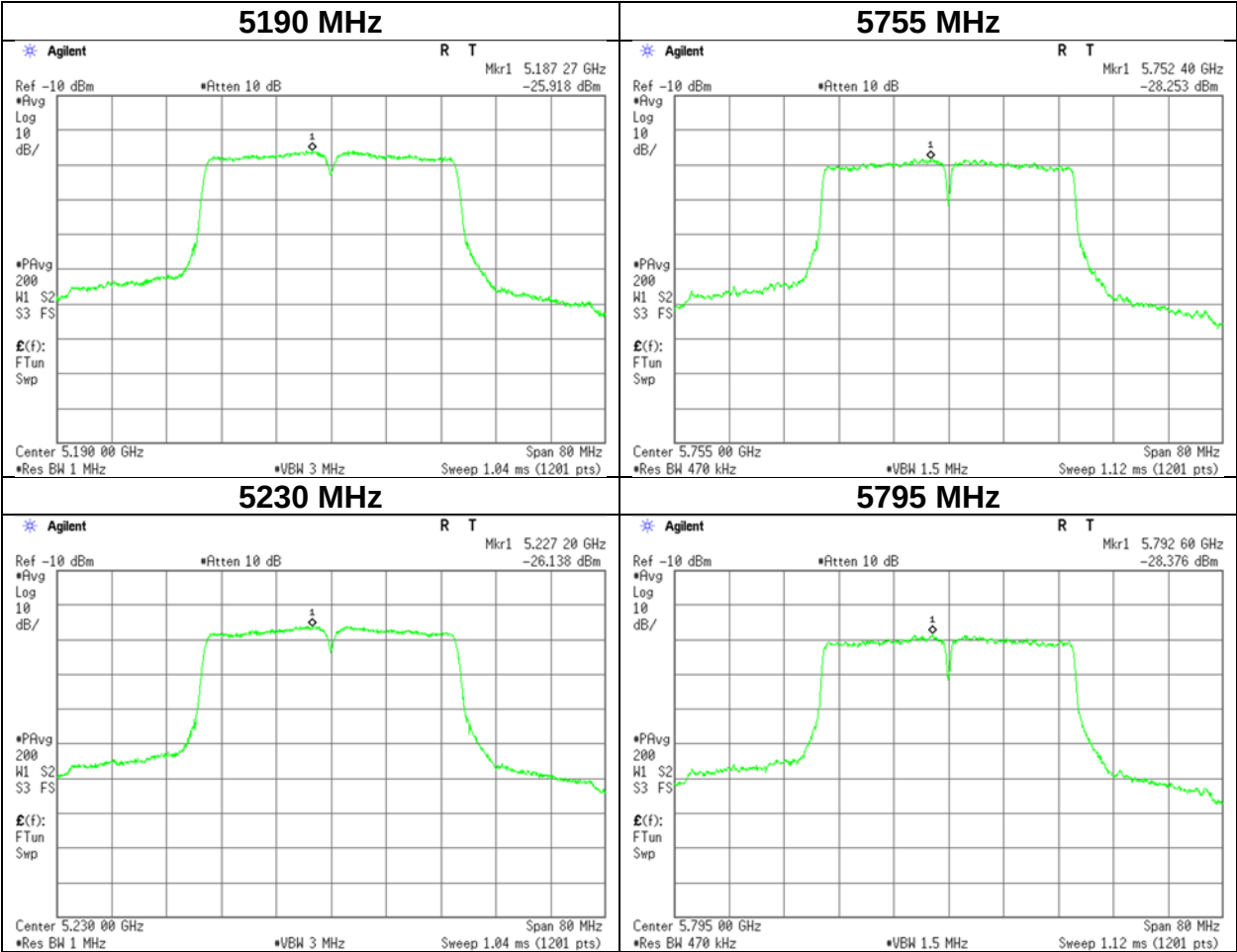
11ac-40, Antenna 0



Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6 Measurement Room
Date	April 2, 2024
Temperature / Humidity	24 deg. C / 52 % RH
Engineer	Hiroki Numata
Mode	Tx 11ac-40

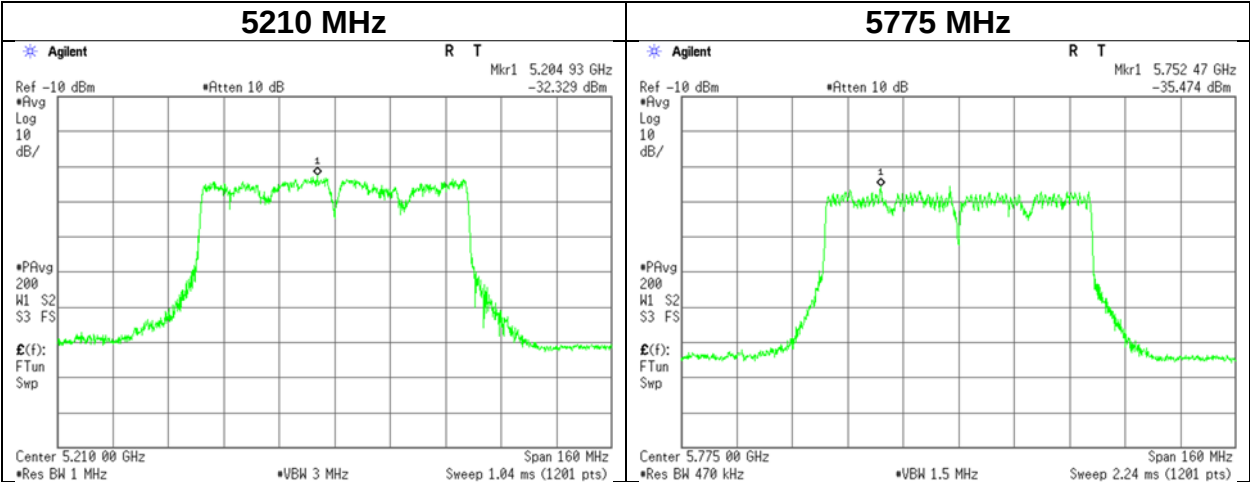
11ac-40, Antenna 1



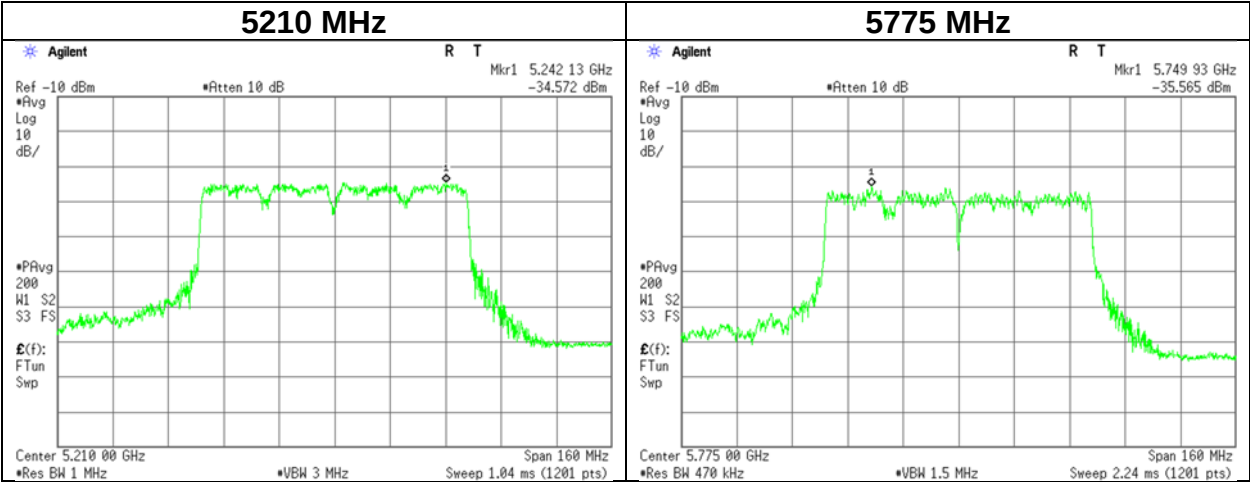
Maximum Power Spectral Density

Test place	Ise EMC Lab. No.6easurement Room
Date	April 2, 2024
Temperature / Humidity	20 deg. C / 42 % RH
Engineer	Junki Nagatomi
Mode	Tx 11ac-80

11ac-80, Antenna 0



11ac-80, Antenna 1



Radiated Spurious Emission

Test place	Ise EMC Lab.	No.4
Semi Anechoic Chamber	No.4	No.4
Date	May 27, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 52 % RH	20 deg. C / 52 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(1 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11a 5180 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	43.5	33.4	30.1	5.6	31.0	-	48.2	38.1	73.9	53.9	25.7	15.8	
Hori.	5150.0	41.9	32.1	32.1	6.0	30.9	0.2	49.2	39.6	73.9	53.9	24.7	14.4	*1)
Hori.	10360.0	43.2	-	35.9	-1.7	32.6	-	44.8	-	68.2	-	23.4	-	Floor noise
Hori.	15540.0	44.6	35.3	39.3	-0.2	32.2	-	51.4	42.1	73.9	53.9	22.5	11.8	Floor noise
Vert.	4177.8	43.3	32.6	30.1	5.6	31.0	-	48.0	37.3	73.9	53.9	25.9	16.6	
Vert.	5150.0	40.8	31.7	32.1	6.0	30.9	0.2	48.1	39.2	73.9	53.9	25.8	14.8	*1)
Vert.	10360.0	43.2	-	35.9	-1.7	32.6	-	44.9	-	68.2	-	23.3	-	Floor noise
Vert.	15540.0	44.6	35.3	39.3	-0.2	32.2	-	51.4	42.1	73.9	53.9	22.5	11.8	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

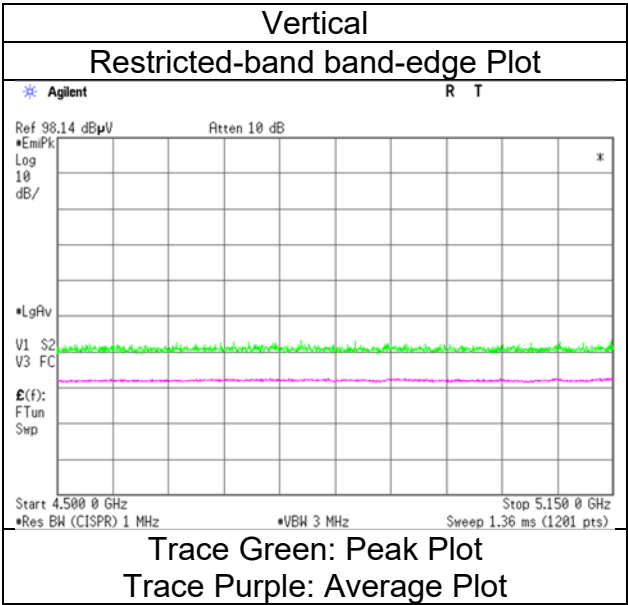
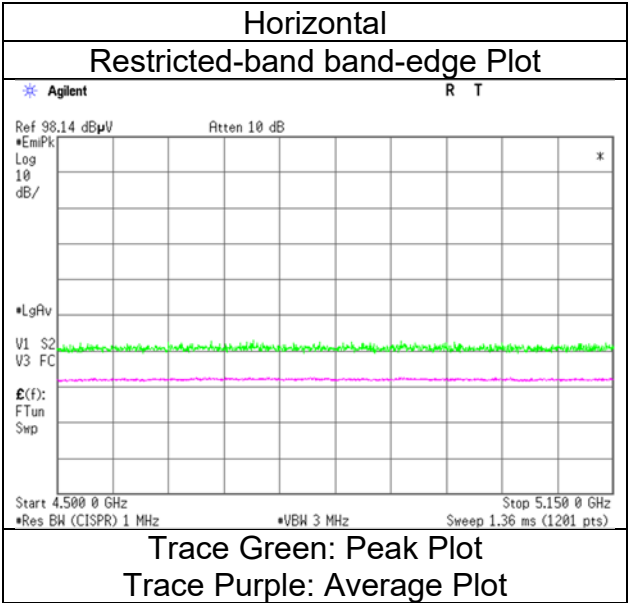
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
May 27, 2024
22 deg. C / 52 % RH
Junki Nagatomi
(1 GHz to 10 GHz)
Tx 11a 5180 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.	No.4
Semi Anechoic Chamber	No.4	No.4
Date	May 27, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 52 % RH	20 deg. C / 52 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(1 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11a 5220 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	43.5	33.3	30.1	5.6	31.0	-	48.2	38.0	73.9	53.9	25.7	15.9	
Hori.	10440.0	42.0	-	36.0	-1.7	32.6	-	43.7	-	68.2	-	24.5	-	Floor noise
Hori.	15660.0	43.9	34.8	39.4	-0.2	32.2	-	50.9	41.8	73.9	53.9	23.0	12.1	Floor noise
Vert.	4177.8	43.4	32.7	30.1	5.6	31.0	-	48.1	37.4	73.9	53.9	25.8	16.5	
Vert.	10440.0	42.1	-	36.0	-1.7	32.6	-	43.8	-	68.2	-	24.4	-	Floor noise
Vert.	15660.0	44.2	34.8	39.4	-0.2	32.2	-	51.2	41.8	73.9	53.9	22.7	12.1	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	May 27, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 52 % RH	20 deg. C / 52 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(1 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11a 5240 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	43.7	33.3	30.1	5.6	31.0	-	48.4	38.1	73.9	53.9	25.5	15.9	
Hori.	5350.0	40.5	31.6	31.8	6.1	30.9	0.2	47.5	38.8	73.9	53.9	26.4	15.1	*1)
Hori.	10480.0	42.3	-	36.1	-1.6	32.6	-	44.0	-	68.2	-	24.2	-	Floor noise
Hori.	15720.0	44.2	34.8	39.5	-0.2	32.2	-	51.3	41.9	73.9	53.9	22.6	12.0	Floor noise
Vert.	4177.8	43.5	32.8	30.1	5.6	31.0	-	48.2	37.5	73.9	53.9	25.7	16.4	
Vert.	5350.0	40.9	31.8	31.8	6.1	30.9	0.2	47.9	39.0	73.9	53.9	26.0	14.9	*1)
Vert.	10480.0	42.5	-	36.1	-1.6	32.6	-	44.3	-	68.2	-	23.9	-	Floor noise
Vert.	15720.0	44.1	34.8	39.5	-0.2	32.2	-	51.2	41.9	73.9	53.9	22.7	12.0	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz
*1) Not Out of Band emission(Leakage Power)

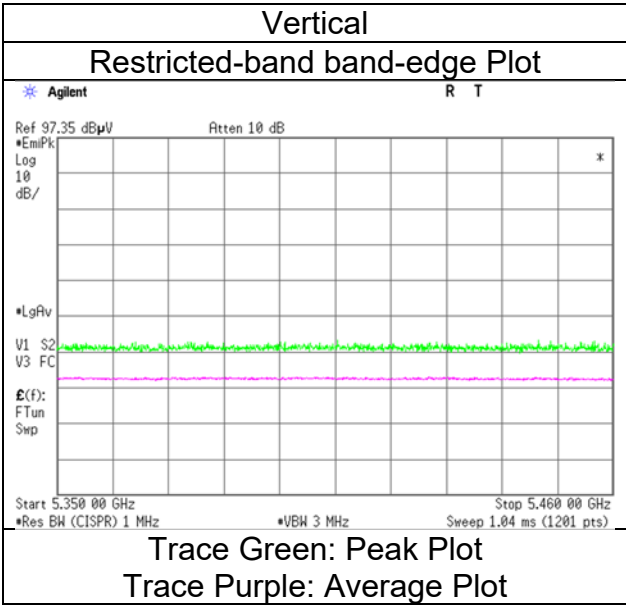
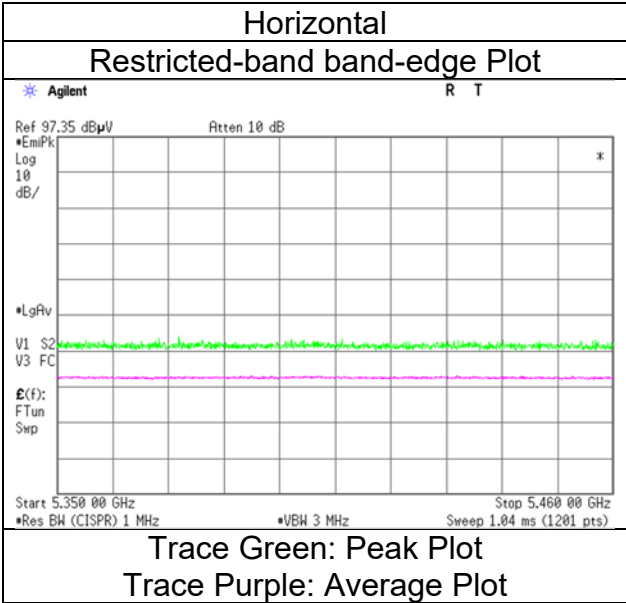
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
May 27, 2024
22 deg. C / 52 % RH
Junki Nagatomi
(1 GHz to 10 GHz)
Tx 11a 5240 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	May 27, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 52 % RH	20 deg. C / 52 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(1 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11a 5745 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	43.5	33.4	30.1	5.6	31.0	-	48.2	38.1	73.9	53.9	25.7	15.8	
Hori.	5650.0	40.6	-	32.2	6.3	31.0	-	48.1	-	68.2	-	20.1	-	
Hori.	5700.0	40.2	-	32.3	6.3	31.0	-	47.7	-	105.2	-	57.5	-	
Hori.	5720.0	40.1	-	32.3	6.3	31.0	-	47.7	-	110.8	-	63.1	-	
Hori.	5725.0	51.0	-	32.4	6.3	31.0	-	58.7	-	122.2	-	63.5	-	
Hori.	11490.0	42.4	33.6	37.7	-1.5	32.7	-	45.9	37.1	73.9	53.9	28.0	16.8	Floor noise
Hori.	17235.0	43.8	-	39.8	0.0	32.4	-	51.3	-	68.2	-	16.9	-	Floor noise
Vert.	4177.8	43.7	33.2	30.1	5.6	31.0	-	48.4	37.9	73.9	53.9	25.5	16.0	
Vert.	5650.0	40.2	-	32.2	6.3	31.0	-	47.6	-	68.2	-	20.6	-	
Vert.	5700.0	40.0	-	32.3	6.3	31.0	-	47.5	-	105.2	-	57.7	-	
Vert.	5720.0	41.0	-	32.3	6.3	31.0	-	48.6	-	110.8	-	62.2	-	
Vert.	5725.0	54.6	-	32.4	6.3	31.0	-	62.2	-	122.2	-	60.0	-	
Vert.	11490.0	42.0	33.6	37.7	-1.5	32.7	-	45.6	37.1	73.9	53.9	28.4	16.8	Floor noise
Vert.	17235.0	43.5	-	39.8	0.0	32.4	-	51.0	-	68.2	-	17.2	-	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.

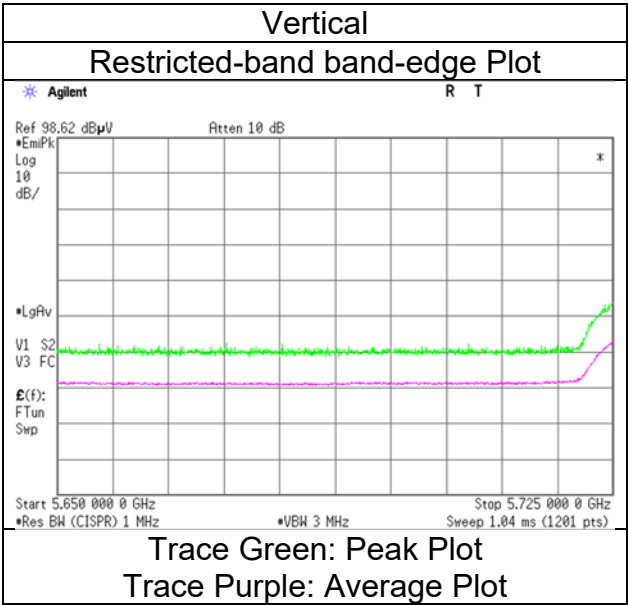
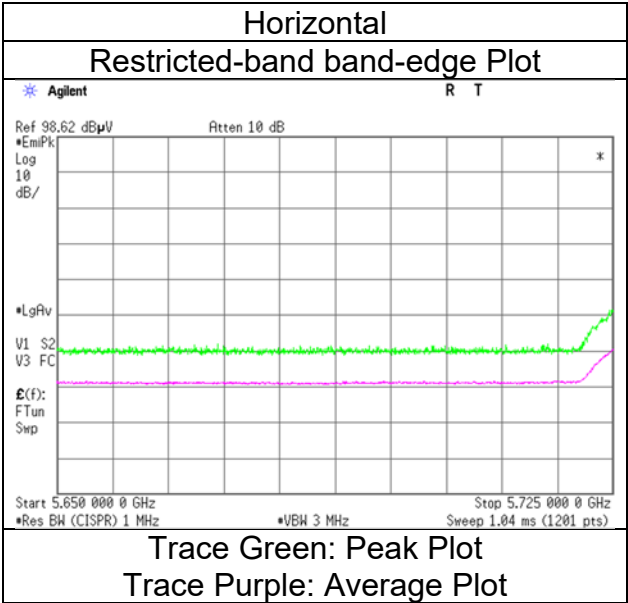
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
May 27, 2024
22 deg. C / 52 % RH
Junki Nagatomi
(1 GHz to 10 GHz)
Tx 11a 5745 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	May 27, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 52 % RH	20 deg. C / 52 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(1 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11a 5785 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	43.7	33.2	30.1	5.6	31.0	-	48.4	37.9	73.9	53.9	25.5	16.0	
Hori.	11570.0	42.7	33.5	37.7	-1.5	32.7	-	46.3	37.1	73.9	53.9	27.7	16.8	Floor noise
Hori.	17355.0	43.6	-	39.9	0.1	32.4	-	51.2	-	68.2	-	17.0	-	Floor noise
Vert.	4177.8	43.2	32.8	30.1	5.6	31.0	-	47.9	37.5	73.9	53.9	26.0	16.4	
Vert.	11570.0	42.2	33.5	37.7	-1.5	32.7	-	45.8	37.1	73.9	53.9	28.1	16.8	Floor noise
Vert.	17355.0	43.6	-	39.9	0.1	32.4	-	51.2	-	68.2	-	17.0	-	Floor noise

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

Result (AV)= 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).

*QP detector was used up to 1GHz.

Distance factor:	1 GHz - 6 GHz	20log (3.8 m / 3.0 m) = 2.06 dB
	6 GHz - 10 GHz	20log (4.8 m / 3.0 m) = 4.09 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	May 27, 2024	May 28, 2024
Temperature / Humidity	22 deg. C / 52 % RH	20 deg. C / 52 % RH
Engineer	Junki Nagatomi	Junki Nagatomi
	(1 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11a 5825 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	43.5	33.2	30.1	5.6	31.0	-	48.2	37.9	73.9	53.9	25.7	16.0	
Hori.	5850.0	40.3	-	32.7	6.3	31.1	-	48.2	-	122.2	-	74.0	-	
Hori.	5855.0	41.4	-	32.7	6.3	31.1	-	49.3	-	110.8	-	61.5	-	
Hori.	5875.0	40.8	-	32.7	6.3	31.1	-	48.8	-	105.2	-	56.4	-	
Hori.	5925.0	41.3	-	32.8	6.4	31.1	-	49.3	-	68.2	-	18.9	-	*1)
Hori.	11650.0	42.5	33.9	37.7	-1.5	32.6	-	46.1	37.5	73.9	53.9	27.8	16.4	Floor noise
Hori.	17475.0	43.6	-	40.0	0.1	32.4	-	51.4	-	68.2	-	16.8	-	Floor noise
Vert.	4177.8	43.1	32.8	30.1	5.6	31.0	-	47.9	37.5	73.9	53.9	26.1	16.4	
Vert.	5850.0	40.9	-	32.7	6.3	31.1	-	48.8	-	122.2	-	73.4	-	
Vert.	5855.0	41.1	-	32.7	6.3	31.1	-	49.1	-	110.8	-	61.7	-	
Vert.	5875.0	41.1	-	32.7	6.3	31.1	-	49.0	-	105.2	-	56.2	-	
Vert.	5925.0	41.1	-	32.8	6.4	31.1	-	49.1	-	68.2	-	19.1	-	*1)
Vert.	11650.0	42.2	33.9	37.7	-1.5	32.6	-	45.8	37.5	73.9	53.9	28.1	16.4	Floor noise
Vert.	17475.0	43.4	-	40.0	0.1	32.4	-	51.2	-	68.2	-	17.0	-	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz
*1) Not Out of Band emission(Leakage Power)

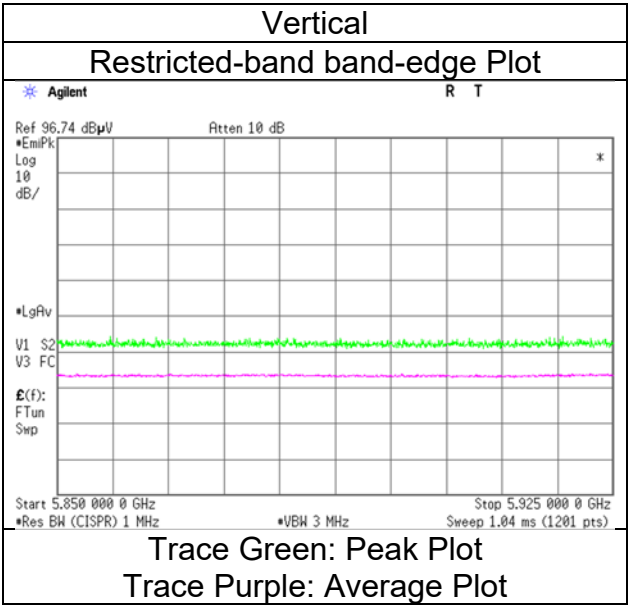
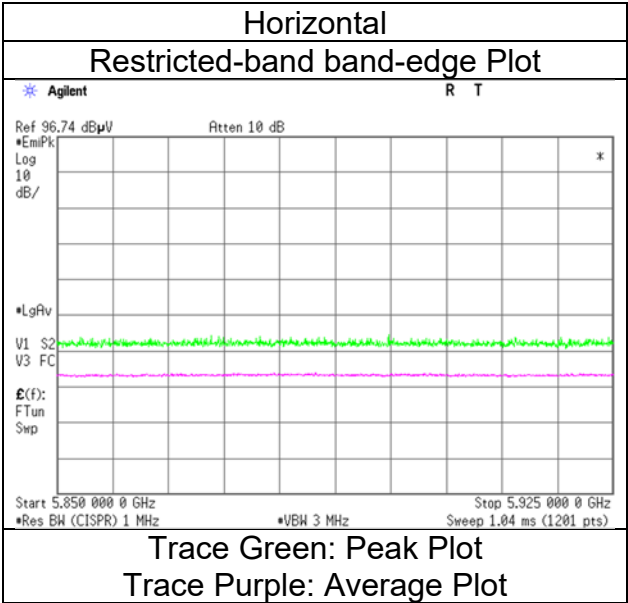
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
May 27, 2024
22 deg. C / 52 % RH
Junki Nagatomi
(1 GHz to 10 GHz)
Tx 11a 5825 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024	March 31, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)	(Below 1 GHz)
Mode	Tx 11n-20 5180 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	48.5	22.1	-	11.7	7.3	32.1	-	9.0	-	40.0	-	31.0	-	
Hori.	73.6	30.8	-	6.4	7.6	32.1	-	12.7	-	40.0	-	27.3	-	
Hori.	99.0	28.1	-	10.2	7.8	32.0	-	14.0	-	43.5	-	29.5	-	
Hori.	295.9	37.3	-	13.6	9.5	32.0	-	28.5	-	46.0	-	17.5	-	
Hori.	358.9	27.2	-	15.1	9.9	32.1	-	20.1	-	46.0	-	25.9	-	
Hori.	624.4	20.6	-	19.4	11.4	32.3	-	19.1	-	46.0	-	26.9	-	
Hori.	4177.8	42.9	35.1	30.1	5.6	31.0	-	47.6	39.8	73.9	53.9	26.3	14.1	
Hori.	5150.0	40.4	29.7	32.1	6.0	30.9	0.5	47.7	37.6	73.9	53.9	26.2	16.4	*1)
Hori.	10360.0	41.2	-	36.1	-1.7	32.6	-	42.9	-	68.2	-	25.3	-	Floor noise
Hori.	15540.0	42.4	33.9	39.4	-0.2	32.2	-	49.4	40.9	73.9	53.9	24.5	13.0	Floor noise
Vert.	48.5	29.0	-	11.7	7.3	32.1	-	15.9	-	40.0	-	24.1	-	
Vert.	73.6	33.9	-	6.4	7.6	32.1	-	15.8	-	40.0	-	24.2	-	
Vert.	99.0	32.7	-	10.2	7.8	32.0	-	18.6	-	43.5	-	24.9	-	
Vert.	295.9	29.1	-	13.6	9.5	32.0	-	20.3	-	46.0	-	25.7	-	
Vert.	358.9	26.9	-	15.1	9.9	32.1	-	19.8	-	46.0	-	26.2	-	
Vert.	624.4	20.4	-	19.4	11.4	32.3	-	18.9	-	46.0	-	27.1	-	
Vert.	4177.8	43.4	36.0	30.1	5.6	31.0	-	48.2	40.7	73.9	53.9	25.8	13.2	
Vert.	5150.0	41.5	29.9	32.1	6.0	30.9	0.5	48.8	37.7	73.9	53.9	25.1	16.2	*1)
Vert.	10360.0	41.2	-	36.1	-1.7	32.6	-	42.9	-	68.2	-	25.3	-	Floor noise
Vert.	15540.0	42.4	33.9	39.4	-0.2	32.2	-	49.4	40.9	73.9	53.9	24.5	13.0	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

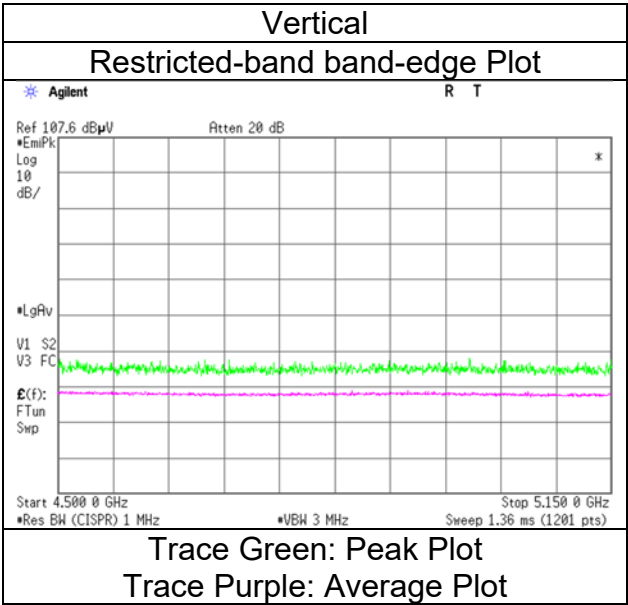
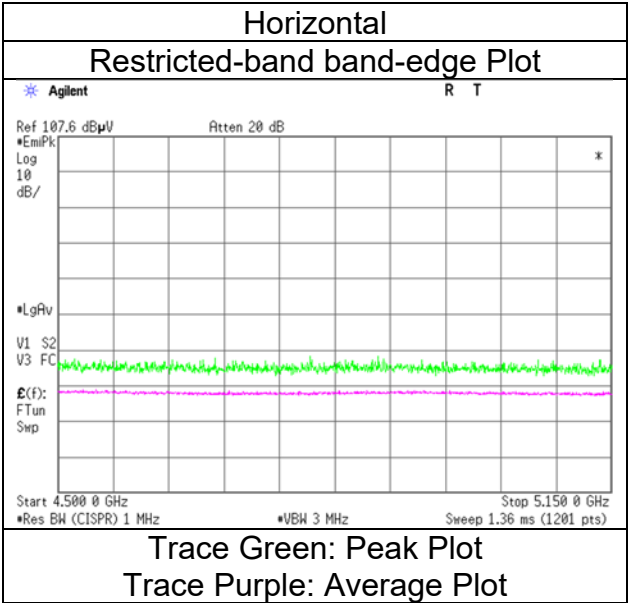
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11n-20 5180 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11n-20 5220 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.9	35.1	30.1	5.6	31.0	-	47.6	39.8	73.9	53.9	26.3	14.1	
Hori.	10440.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.9	-	Floor noise
Hori.	15660.0	40.8	34.1	39.6	-0.2	32.2	-	47.9	41.2	73.9	53.9	26.0	12.7	Floor noise
Vert.	4177.8	43.4	35.9	30.1	5.6	31.0	-	48.1	40.7	73.9	53.9	25.8	13.3	
Vert.	10440.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.9	-	Floor noise
Vert.	15660.0	40.8	34.1	39.6	-0.2	32.2	-	47.9	41.2	73.9	53.9	26.0	12.7	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11n-20 5240 MHz

No.4
March 28, 2024
23 deg. C / 37 % RH
Shousei Hamaguchi
(10 GHz to 26.5 GHz)

No.4
March 29, 2024
22 deg. C / 41 % RH
Shousei Hamaguchi
(26.5 GHz to 40 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.7	35.0	30.1	5.6	31.0	-	47.4	39.7	73.9	53.9	26.5	14.2	
Hori.	5350.0	40.4	29.8	31.8	6.1	30.9	0.5	47.3	37.3	73.9	53.9	26.6	16.6	*1)
Hori.	10480.0	40.5	-	36.1	-1.6	32.6	-	42.3	-	68.2	-	25.9	-	Floor noise
Hori.	15720.0	41.8	33.7	39.6	-0.2	32.2	-	49.0	40.9	73.9	53.9	24.9	13.0	Floor noise
Vert.	4177.8	43.2	35.8	30.1	5.6	31.0	-	47.9	40.5	73.9	53.9	26.0	13.4	
Vert.	5350.0	41.1	30.0	31.8	6.1	30.9	0.5	48.0	37.4	73.9	53.9	25.9	16.5	*1)
Vert.	10480.0	40.5	-	36.1	-1.6	32.6	-	42.3	-	68.2	-	25.9	-	Floor noise
Vert.	15720.0	41.8	33.7	39.6	-0.2	32.2	-	49.0	40.9	73.9	53.9	24.9	13.0	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

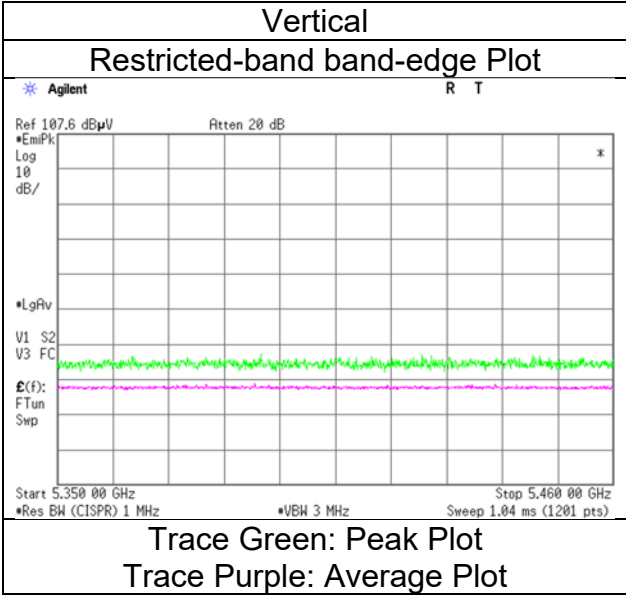
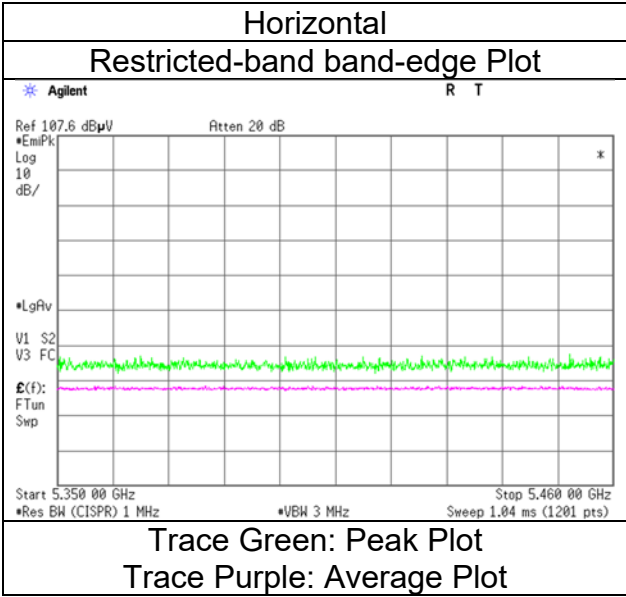
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11n-20 5240 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date March 27, 2024
Temperature / Humidity 18 deg. C / 38 % RH
Engineer Shousei Hamaguchi
Mode Tx 11n-20 5745 MHz

No.4
March 27, 2024
18 deg. C / 38 % RH
Tomoya Sone
(6 GHz to 10 GHz)

No.4
March 28, 2024
23 deg. C / 37 % RH
Shousei Hamaguchi
(10 GHz to 26.5 GHz)

No.4
March 29, 2024
22 deg. C / 41 % RH
Shousei Hamaguchi
(26.5 GHz to 40 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.7	35.0	30.1	5.6	31.0	-	47.5	39.8	73.9	53.9	26.5	14.2	
Hori.	5650.0	40.1	-	32.2	6.3	31.0	-	47.5	-	68.2	-	20.7	-	
Hori.	5700.0	41.0	-	32.3	6.3	31.0	-	48.5	-	105.2	-	56.7	-	
Hori.	5720.0	45.4	-	32.3	6.3	31.0	-	53.0	-	110.8	-	57.8	-	
Hori.	5725.0	52.2	-	32.4	6.3	31.0	-	59.8	-	122.2	-	62.4	-	
Hori.	11490.0	40.5	33.1	37.7	-1.5	32.7	-	44.0	36.6	73.9	53.9	29.9	17.3	Floor noise
Hori.	17235.0	41.6	-	39.9	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise
Vert.	4177.8	43.2	36.0	30.1	5.6	31.0	-	47.9	40.7	73.9	53.9	26.0	13.2	
Vert.	5650.0	40.5	-	32.2	6.3	31.0	-	47.9	-	68.2	-	20.3	-	
Vert.	5700.0	41.0	-	32.3	6.3	31.0	-	48.6	-	105.2	-	56.7	-	
Vert.	5720.0	45.6	-	32.3	6.3	31.0	-	53.1	-	110.8	-	57.7	-	
Vert.	5725.0	53.2	-	32.4	6.3	31.0	-	60.8	-	122.2	-	61.4	-	
Vert.	11490.0	40.5	33.1	37.7	-1.5	32.7	-	44.0	36.6	73.9	53.9	29.9	17.3	Floor noise
Vert.	17235.0	41.6	-	39.9	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise

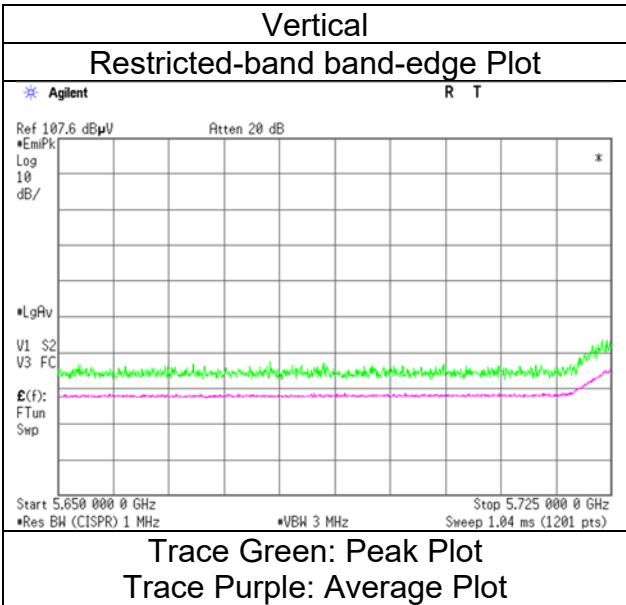
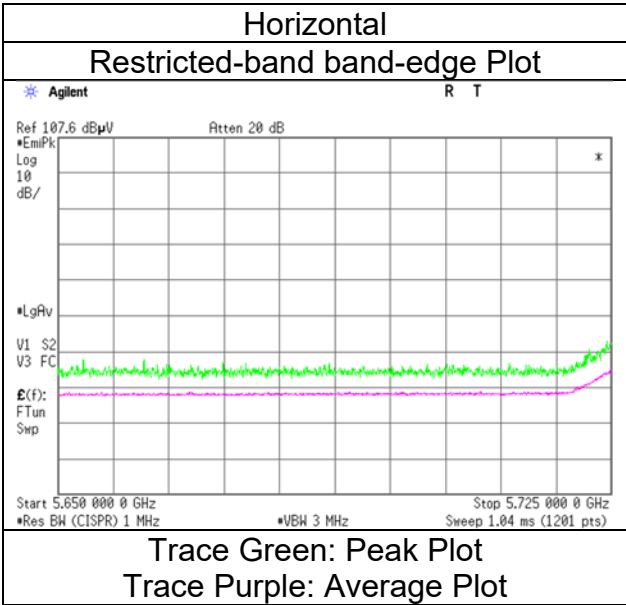
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not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

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11n-20 5745 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	March 27, 2024	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	18 deg. C / 38 % RH	18 deg. C / 38 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Shousei Hamaguchi	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11n-20 5785 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.6	35.2	30.1	5.6	31.0	-	47.3	39.9	73.9	53.9	26.6	14.0	
Hori.	11570.0	40.6	33.1	37.8	-1.5	32.7	-	44.2	36.7	73.9	53.9	29.7	17.2	Floor noise
Hori.	17355.0	41.8	-	40.1	0.1	32.4	-	49.6	-	68.2	-	18.7	-	Floor noise
Vert.	4177.8	43.7	36.0	30.1	5.6	31.0	-	48.4	40.7	73.9	53.9	25.5	13.2	
Vert.	11570.0	40.6	33.1	37.8	-1.5	32.7	-	44.2	36.7	73.9	53.9	29.7	17.2	Floor noise
Vert.	17355.0	41.8	-	40.1	0.1	32.4	-	49.6	-	68.2	-	18.7	-	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.

Distance factor:	1 GHz - 6 GHz	20log (3.8 m / 3.0 m) = 2.06 dB
	6 GHz - 10 GHz	20log (4.8 m / 3.0 m) = 4.09 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	March 27, 2024	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	18 deg. C / 38 % RH	18 deg. C / 38 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Shousei Hamaguchi	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11n-20 5825 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.6	35.1	30.1	5.6	31.0	-	47.4	39.9	73.9	53.9	26.6	14.1	
Hori.	5850.0	41.0	-	32.7	6.3	31.1	-	48.9	-	122.2	-	73.3	-	
Hori.	5855.0	41.0	-	32.7	6.3	31.1	-	48.9	-	110.8	-	61.9	-	
Hori.	5875.0	40.9	-	32.7	6.3	31.1	-	48.8	-	105.2	-	56.4	-	
Hori.	5925.0	40.5	-	32.8	6.4	31.1	-	48.5	-	68.2	-	19.7	-	*1)
Hori.	11650.0	41.0	33.4	37.8	-1.5	32.6	-	44.7	37.0	73.9	53.9	29.2	16.9	Floor noise
Hori.	17475.0	42.0	-	40.2	0.1	32.4	-	50.0	-	68.2	-	18.2	-	Floor noise
Vert.	4177.8	43.3	35.9	30.1	5.6	31.0	-	48.0	40.6	73.9	53.9	25.9	13.3	
Vert.	5850.0	41.5	-	32.7	6.3	31.1	-	49.4	-	122.2	-	72.8	-	
Vert.	5855.0	41.2	-	32.7	6.3	31.1	-	49.1	-	110.8	-	61.7	-	
Vert.	5875.0	40.4	-	32.7	6.3	31.1	-	48.4	-	105.2	-	56.9	-	
Vert.	5925.0	40.0	-	32.8	6.4	31.1	-	48.0	-	68.2	-	20.2	-	*1)
Vert.	11650.0	41.0	33.4	37.8	-1.5	32.6	-	44.7	37.0	73.9	53.9	29.2	16.9	Floor noise
Vert.	17475.0	42.0	-	40.2	0.1	32.4	-	50.0	-	68.2	-	18.2	-	Floor noise

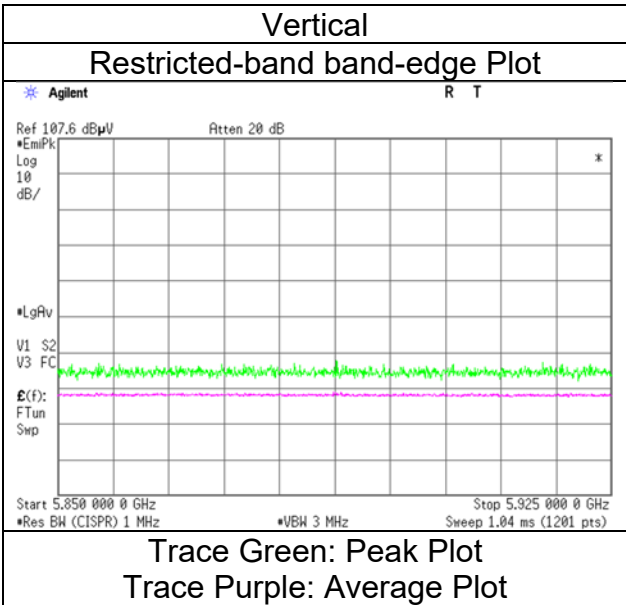
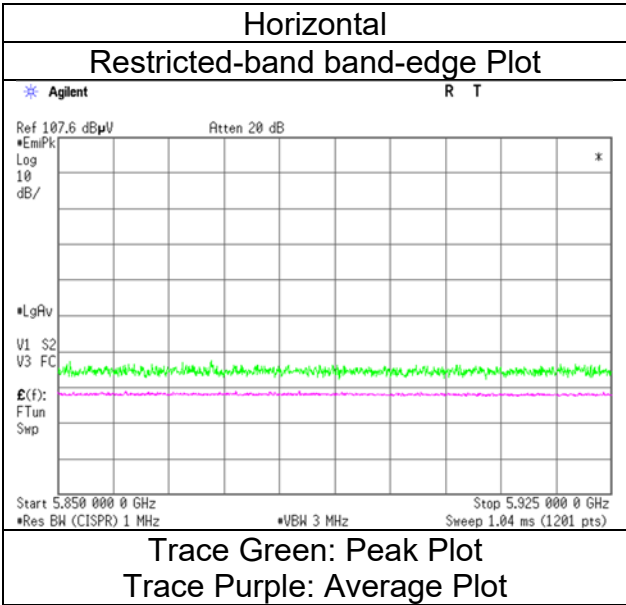
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11n-20 5825 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11ac-20 5180 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.8	35.1	30.1	5.6	31.0	-	47.5	39.8	73.9	53.9	26.4	14.1	
Hori.	5150.0	40.2	29.7	32.1	6.0	30.9	0.5	47.5	37.5	73.9	53.9	26.5	16.4	*1)
Hori.	10360.0	41.2	-	36.1	-1.7	32.6	-	42.9	-	68.2	-	25.3	-	Floor noise
Hori.	15540.0	42.4	33.9	39.4	-0.2	32.2	-	49.4	40.9	73.9	53.9	24.5	13.0	Floor noise
Vert.	4177.8	43.4	35.9	30.1	5.6	31.0	-	48.1	40.6	73.9	53.9	25.8	13.3	
Vert.	5150.0	40.2	30.0	32.1	6.0	30.9	0.5	47.5	37.8	73.9	53.9	26.4	16.1	*1)
Vert.	10360.0	41.2	-	36.1	-1.7	32.6	-	42.9	-	68.2	-	25.3	-	Floor noise
Vert.	15540.0	42.4	33.9	39.4	-0.2	32.2	-	49.4	40.9	73.9	53.9	24.5	13.0	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

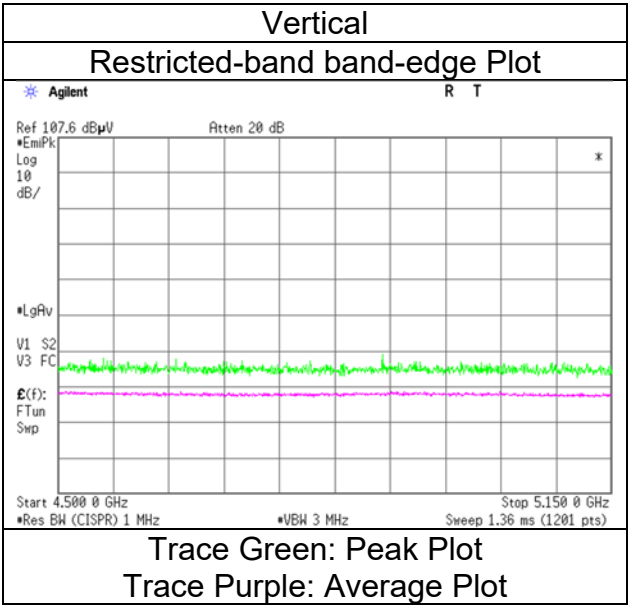
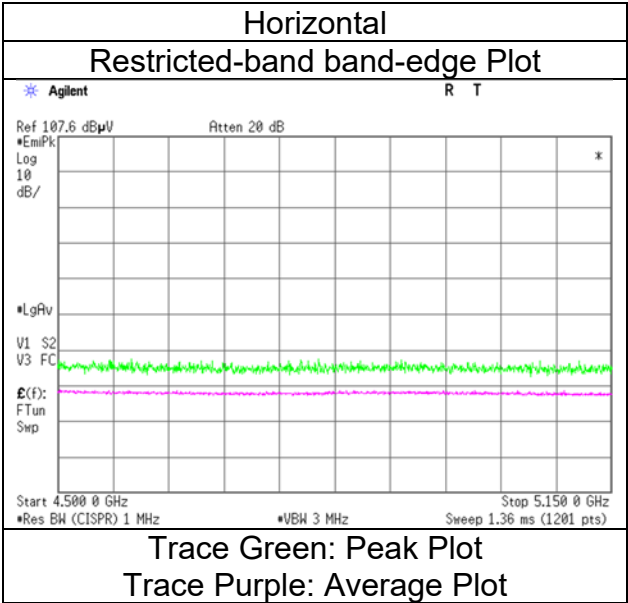
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11ac-20 5180 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11ac-20 5220 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.8	34.9	30.1	5.6	31.0	-	47.5	39.6	73.9	53.9	26.4	14.3	
Hori.	10440.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.9	-	Floor noise
Hori.	15660.0	40.8	34.1	39.6	-0.2	32.2	-	47.9	41.2	73.9	53.9	26.0	12.7	Floor noise
Vert.	4177.8	43.3	35.9	30.1	5.6	31.0	-	48.0	40.6	73.9	53.9	25.9	13.3	
Vert.	10440.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.9	-	Floor noise
Vert.	15660.0	40.8	34.1	39.6	-0.2	32.2	-	47.9	41.2	73.9	53.9	26.0	12.7	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11ac-20 5240 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.6	34.9	30.1	5.6	31.0	-	47.3	39.6	73.9	53.9	26.6	14.3	
Hori.	5350.0	40.6	29.8	31.8	6.1	30.9	0.5	47.6	37.3	73.9	53.9	26.3	16.6	*1)
Hori.	10480.0	40.5	-	36.1	-1.6	32.6	-	42.3	-	68.2	-	25.9	-	Floor noise
Hori.	15720.0	41.8	33.7	39.6	-0.2	32.2	-	49.0	40.9	73.9	53.9	24.9	13.0	Floor noise
Vert.	4177.8	43.1	35.7	30.1	5.6	31.0	-	47.9	40.4	73.9	53.9	26.1	13.5	
Vert.	5350.0	40.4	29.9	31.8	6.1	30.9	0.5	47.4	37.3	73.9	53.9	26.5	16.6	*1)
Vert.	10480.0	40.5	-	36.1	-1.6	32.6	-	42.3	-	68.2	-	25.9	-	Floor noise
Vert.	15720.0	41.8	33.7	39.6	-0.2	32.2	-	49.0	40.9	73.9	53.9	24.9	13.0	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

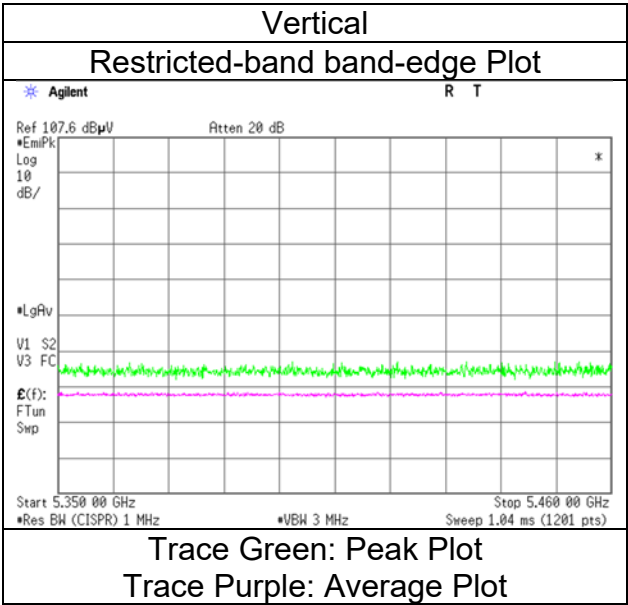
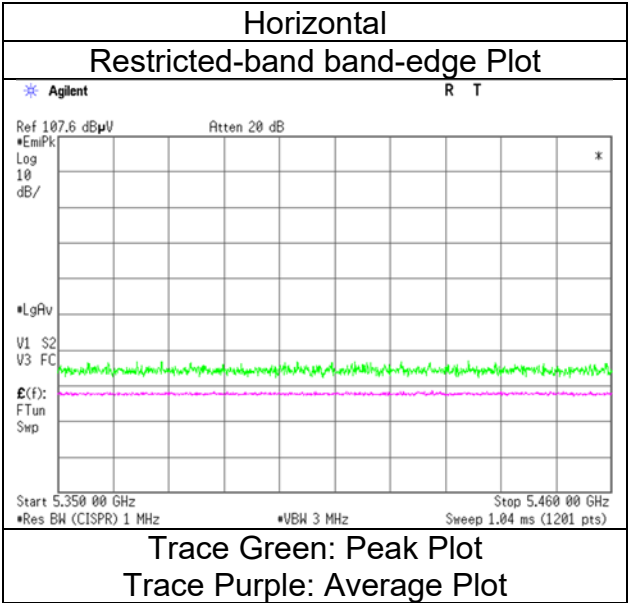
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11ac-20 5240 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4 No.4 No.4 No.4
Date March 27, 2024 March 27, 2024 March 28, 2024 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11ac-20 5745 MHz

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.8	35.1	30.1	5.6	31.0	-	47.5	39.8	73.9	53.9	26.4	14.1	
Hori.	5650.0	39.8	-	32.2	6.3	31.0	-	47.2	-	68.2	-	21.0	-	
Hori.	5700.0	40.0	-	32.3	6.3	31.0	-	47.6	-	105.2	-	57.6	-	
Hori.	5720.0	41.2	-	32.3	6.3	31.0	-	48.8	-	110.8	-	62.0	-	
Hori.	5725.0	47.8	-	32.4	6.3	31.0	-	55.4	-	122.2	-	66.8	-	
Hori.	11490.0	40.5	33.1	37.7	-1.5	32.7	-	44.0	36.6	73.9	53.9	29.9	17.3	Floor noise
Hori.	17235.0	41.6	-	39.9	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise
Vert.	4177.8	43.2	35.8	30.1	5.6	31.0	-	48.0	40.6	73.9	53.9	26.0	13.4	
Vert.	5650.0	40.3	-	32.2	6.3	31.0	-	47.7	-	68.2	-	20.5	-	
Vert.	5700.0	40.7	-	32.3	6.3	31.0	-	48.2	-	105.2	-	57.0	-	
Vert.	5720.0	42.2	-	32.3	6.3	31.0	-	49.8	-	110.8	-	61.0	-	
Vert.	5725.0	48.0	-	32.4	6.3	31.0	-	55.6	-	122.2	-	66.6	-	
Vert.	11490.0	40.5	33.1	37.7	-1.5	32.7	-	44.0	36.6	73.9	53.9	29.9	17.3	Floor noise
Vert.	17235.0	41.6	-	39.9	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise

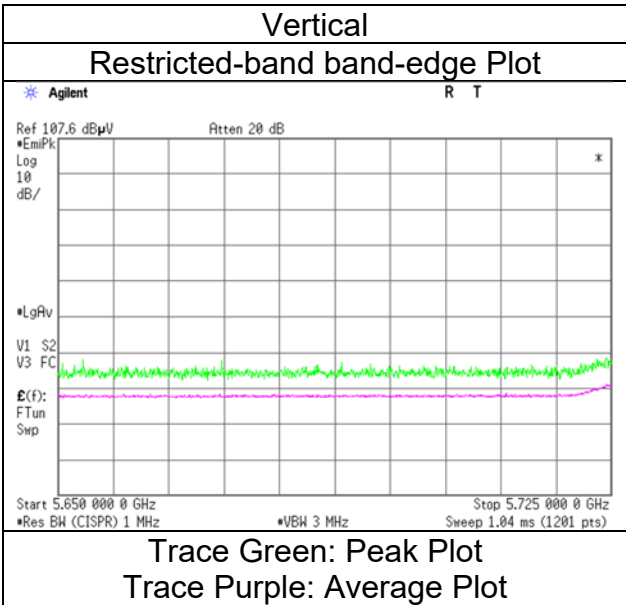
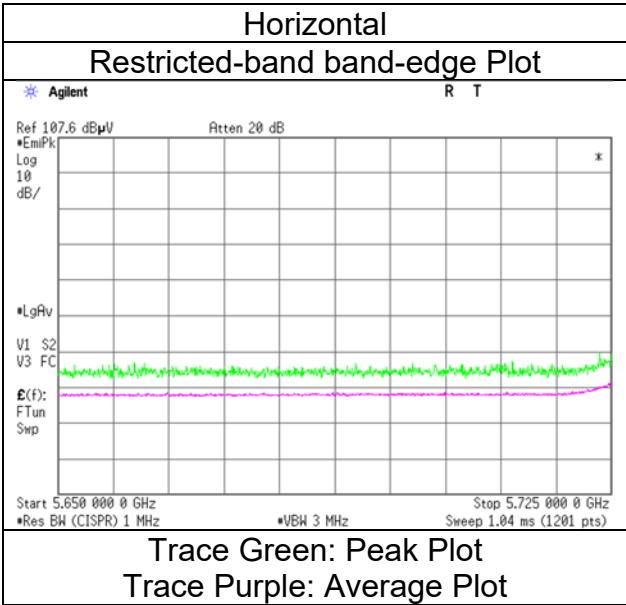
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not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

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11ac-20 5745 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	March 27, 2024	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	18 deg. C / 38 % RH	18 deg. C / 38 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Shousei Hamaguchi	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11ac-20 5785 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.9	35.1	30.1	5.6	31.0	-	47.6	39.8	73.9	53.9	26.3	14.1	
Hori.	11570.0	40.6	33.1	37.8	-1.5	32.7	-	44.2	36.7	73.9	53.9	29.7	17.2	Floor noise
Hori.	17355.0	41.8	-	40.1	0.1	32.4	-	49.6	-	68.2	-	18.7	-	Floor noise
Vert.	4177.8	43.4	35.9	30.1	5.6	31.0	-	48.1	40.6	73.9	53.9	25.8	13.3	
Vert.	11570.0	40.6	33.1	37.8	-1.5	32.7	-	44.2	36.7	73.9	53.9	29.7	17.2	Floor noise
Vert.	17355.0	41.8	-	40.1	0.1	32.4	-	49.6	-	68.2	-	18.7	-	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.

Distance factor:	1 GHz - 6 GHz	20log (3.8 m / 3.0 m) = 2.06 dB
	6 GHz - 10 GHz	20log (4.8 m / 3.0 m) = 4.09 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date March 27, 2024 No.4 March 27, 2024 No.4 March 28, 2024 No.4 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11ac-20 5825 MHz

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.7	35.3	30.1	5.6	31.0	-	47.4	40.0	73.9	53.9	26.5	13.9	
Hori.	5850.0	41.2	-	32.7	6.3	31.1	-	49.1	-	122.2	-	73.1	-	
Hori.	5855.0	41.0	-	32.7	6.3	31.1	-	48.9	-	110.8	-	61.9	-	
Hori.	5875.0	40.7	-	32.7	6.3	31.1	-	48.7	-	105.2	-	56.5	-	
Hori.	5925.0	40.4	-	32.8	6.4	31.1	-	48.4	-	68.2	-	19.8	-	*1)
Hori.	11650.0	41.0	33.4	37.8	-1.5	32.6	-	44.7	37.0	73.9	53.9	29.2	16.9	Floor noise
Hori.	17475.0	42.0	-	40.2	0.1	32.4	-	50.0	-	68.2	-	18.2	-	Floor noise
Vert.	4177.8	43.7	35.7	30.1	5.6	31.0	-	48.4	40.5	73.9	53.9	25.5	13.5	
Vert.	5850.0	40.9	-	32.7	6.3	31.1	-	48.8	-	122.2	-	73.4	-	
Vert.	5855.0	40.9	-	32.7	6.3	31.1	-	48.8	-	110.8	-	62.0	-	
Vert.	5875.0	40.4	-	32.7	6.3	31.1	-	48.4	-	105.2	-	56.8	-	
Vert.	5925.0	40.0	-	32.8	6.4	31.1	-	48.1	-	68.2	-	20.1	-	*1)
Vert.	11650.0	41.0	33.4	37.8	-1.5	32.6	-	44.7	37.0	73.9	53.9	29.2	16.9	Floor noise
Vert.	17475.0	42.0	-	40.2	0.1	32.4	-	50.0	-	68.2	-	18.2	-	Floor noise

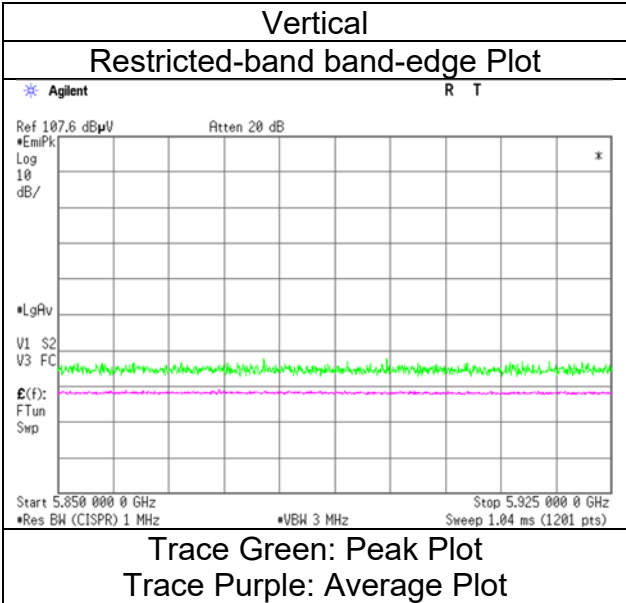
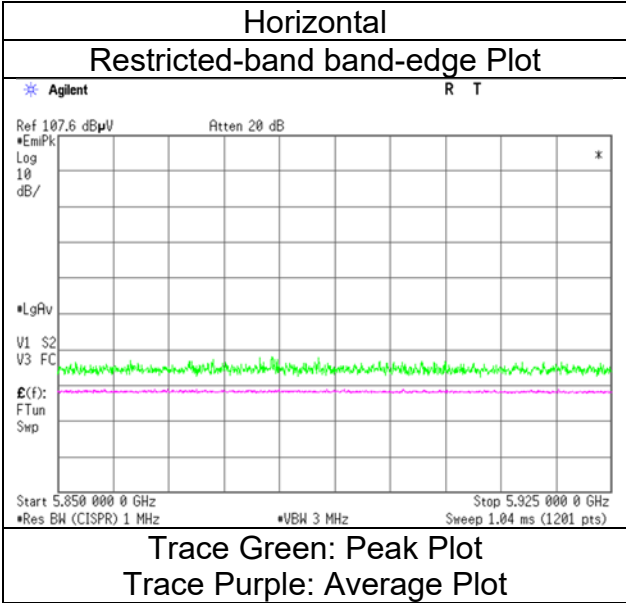
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11ac-20 5825 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11n-40 5190 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.8	34.9	30.1	5.6	31.0	-	47.5	39.6	73.9	53.9	26.4	14.3	
Hori.	5150.0	45.5	33.0	32.1	6.0	30.9	0.9	52.8	41.1	73.9	53.9	21.1	12.8	*1)
Hori.	10380.0	40.6	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Hori.	15570.0	41.3	33.7	39.4	-0.2	32.2	-	48.3	40.7	73.9	53.9	25.6	13.2	Floor noise
Vert.	4177.8	43.3	35.9	30.1	5.6	31.0	-	48.0	40.6	73.9	53.9	25.9	13.3	
Vert.	5150.0	49.0	34.3	32.1	6.0	30.9	0.9	56.3	42.5	73.9	53.9	17.6	11.4	*1)
Vert.	10380.0	40.6	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Vert.	15570.0	41.3	33.7	39.4	-0.2	32.2	-	48.3	40.7	73.9	53.9	25.6	13.2	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

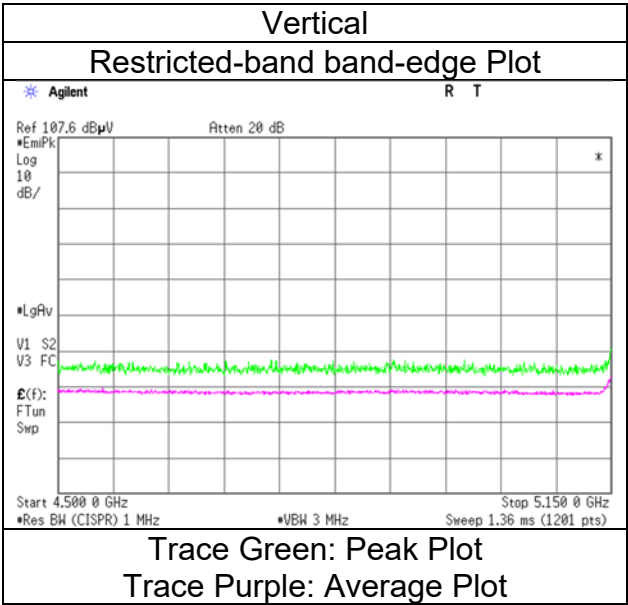
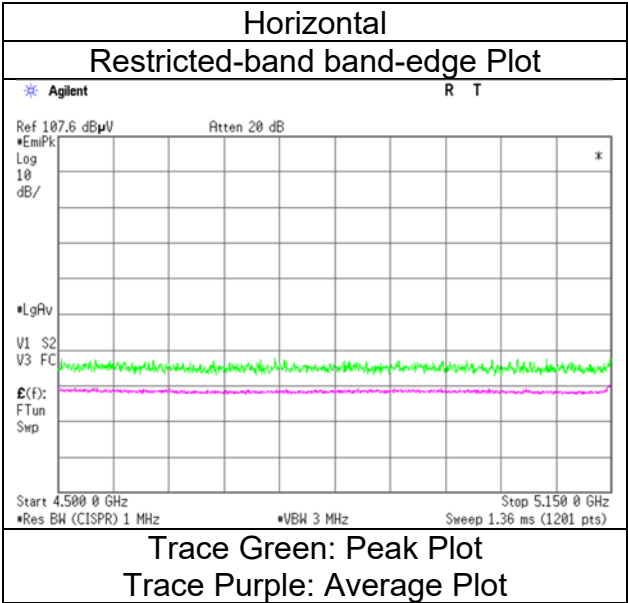
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11n-40 5190 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11n-40 5230 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.6	34.8	30.1	5.6	31.0	-	47.3	39.5	73.9	53.9	26.6	14.4	
Hori.	5350.0	40.2	29.7	31.8	6.1	30.9	0.9	47.2	37.5	73.9	53.9	26.8	16.4	*1)
Hori.	10460.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Hori.	15690.0	41.6	34.0	39.6	-0.2	32.2	-	48.7	41.1	73.9	53.9	25.2	12.8	Floor noise
Vert.	4177.8	43.1	35.8	30.1	5.6	31.0	-	47.8	40.5	73.9	53.9	26.1	13.4	
Vert.	5350.0	40.9	30.1	31.8	6.1	30.9	0.9	47.9	37.9	73.9	53.9	26.0	16.0	*1)
Vert.	10460.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Vert.	15690.0	41.6	34.0	39.6	-0.2	32.2	-	48.7	41.1	73.9	53.9	25.2	12.8	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

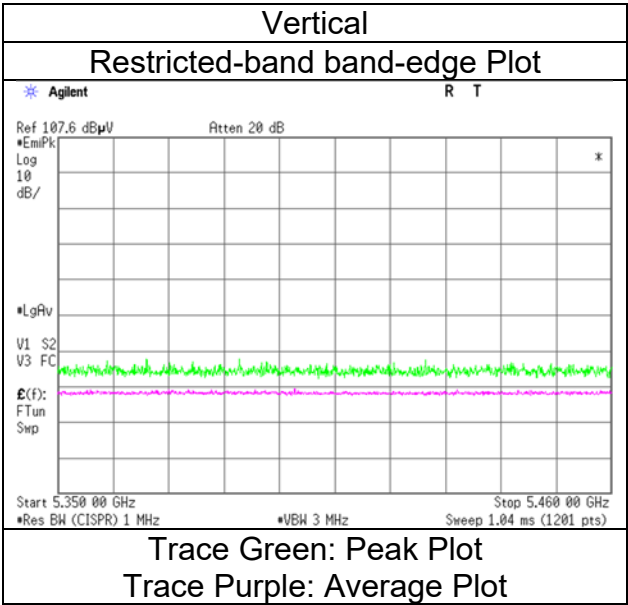
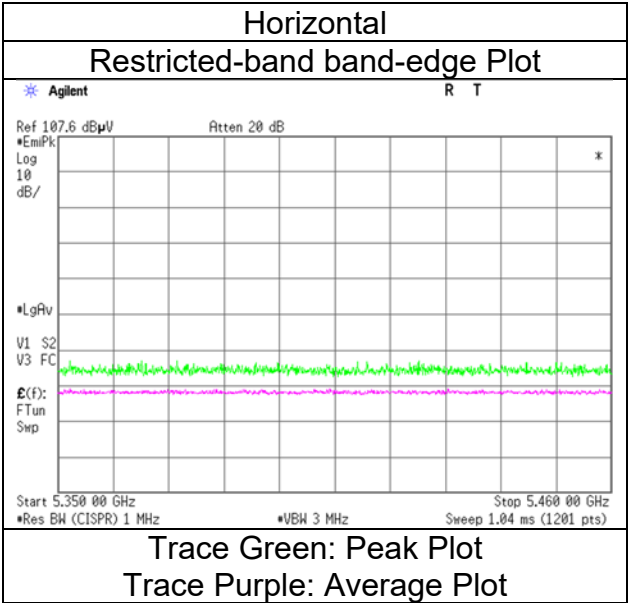
Distance factor:	1 GHz - 6 GHz	20log (3.8 m / 3.0 m) = 2.06 dB
	6 GHz - 10 GHz	20log (4.8 m / 3.0 m) = 4.09 dB
	10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11n-40 5230 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date March 27, 2024 No.4 March 27, 2024 No.4 March 28, 2024 No.4 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11n-40 5755 MHz

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.7	35.0	30.1	5.6	31.0	-	47.5	39.7	73.9	53.9	26.5	14.2	
Hori.	5650.0	39.7	-	32.2	6.3	31.0	-	47.1	-	68.2	-	21.1	-	
Hori.	5700.0	40.6	-	32.3	6.3	31.0	-	48.1	-	105.2	-	57.1	-	
Hori.	5720.0	49.7	-	32.3	6.3	31.0	-	57.2	-	110.8	-	53.6	-	
Hori.	5725.0	49.7	-	32.4	6.3	31.0	-	57.3	-	122.2	-	64.9	-	
Hori.	11510.0	40.4	33.0	37.7	-1.5	32.7	-	43.9	36.6	73.9	53.9	30.0	17.3	Floor noise
Hori.	17265.0	41.6	-	40.0	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise
Vert.	4177.8	43.1	35.9	30.1	5.6	31.0	-	47.8	40.6	73.9	53.9	26.1	13.3	
Vert.	5650.0	40.0	-	32.2	6.3	31.0	-	47.5	-	68.2	-	20.7	-	
Vert.	5700.0	40.2	-	32.3	6.3	31.0	-	47.7	-	105.2	-	57.5	-	
Vert.	5720.0	50.0	-	32.3	6.3	31.0	-	57.6	-	110.8	-	53.2	-	
Vert.	5725.0	50.1	-	32.4	6.3	31.0	-	57.7	-	122.2	-	64.5	-	
Vert.	11510.0	40.4	33.0	37.7	-1.5	32.7	-	43.9	36.6	73.9	53.9	30.0	17.3	Floor noise
Vert.	17265.0	41.6	-	40.0	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise

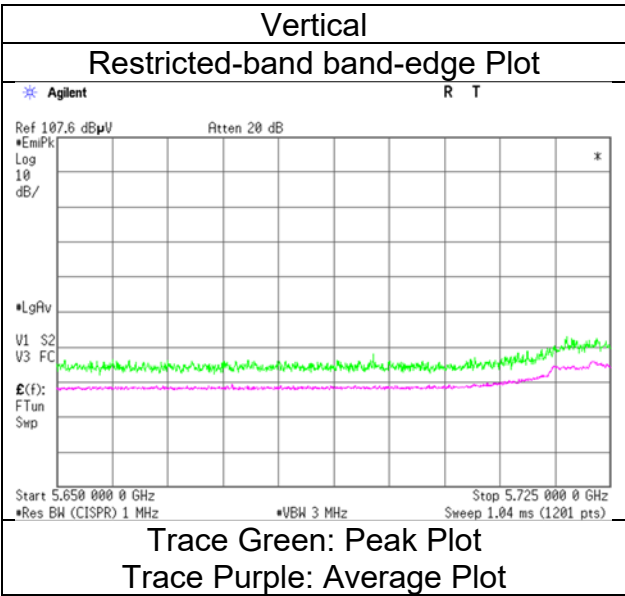
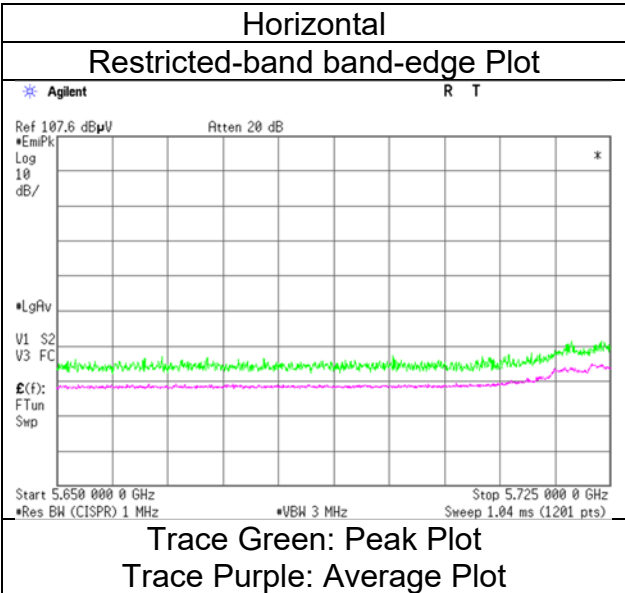
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not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

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11n-40 5755 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4 No.4 No.4 No.4
Date March 27, 2024 March 27, 2024 March 28, 2024 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11n-40 5795 MHz

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.6	35.3	30.1	5.6	31.0	-	47.3	40.0	73.9	53.9	26.6	13.9	
Hori.	5850.0	41.3	-	32.7	6.3	31.1	-	49.2	-	122.2	-	73.0	-	
Hori.	5855.0	40.9	-	32.7	6.3	31.1	-	48.8	-	110.8	-	62.0	-	
Hori.	5875.0	40.7	-	32.7	6.3	31.1	-	48.7	-	105.2	-	56.5	-	
Hori.	5925.0	40.0	-	32.8	6.4	31.1	-	48.1	-	68.2	-	20.1	-	*1)
Hori.	11590.0	40.2	33.1	37.8	-1.5	32.7	-	43.8	36.7	73.9	53.9	30.1	17.2	Floor noise
Hori.	17385.0	32.1	-	40.1	0.1	32.4	-	40.0	-	68.2	-	28.2	-	Floor noise
Vert.	4177.8	43.5	36.0	30.1	5.6	31.0	-	48.2	40.7	73.9	53.9	25.7	13.2	
Vert.	5850.0	41.0	-	32.7	6.3	31.1	-	48.9	-	122.2	-	73.3	-	
Vert.	5855.0	40.7	-	32.7	6.3	31.1	-	48.6	-	110.8	-	62.2	-	
Vert.	5875.0	40.3	-	32.7	6.3	31.1	-	48.3	-	105.2	-	56.9	-	
Vert.	5925.0	40.1	-	32.8	6.4	31.1	-	48.1	-	68.2	-	20.1	-	*1)
Vert.	11590.0	40.2	33.1	37.8	-1.5	32.7	-	43.8	36.7	73.9	53.9	30.1	17.2	Floor noise
Vert.	17385.0	32.1	-	40.1	0.1	32.4	-	40.0	-	68.2	-	28.2	-	Floor noise

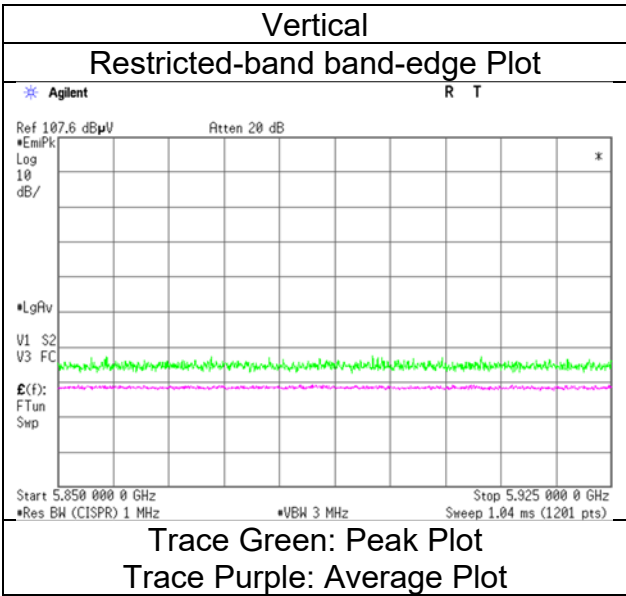
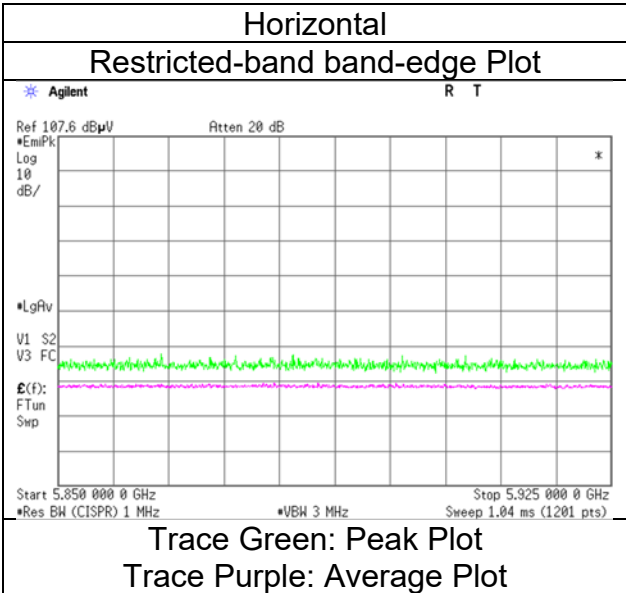
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11n-40 5795 MHz



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

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11ac-40 5190 MHz

No.4
March 28, 2024
23 deg. C / 37 % RH
Shousei Hamaguchi
(10 GHz to 26.5 GHz)

No.4
March 29, 2024
22 deg. C / 41 % RH
Shousei Hamaguchi
(26.5 GHz to 40 GHz)

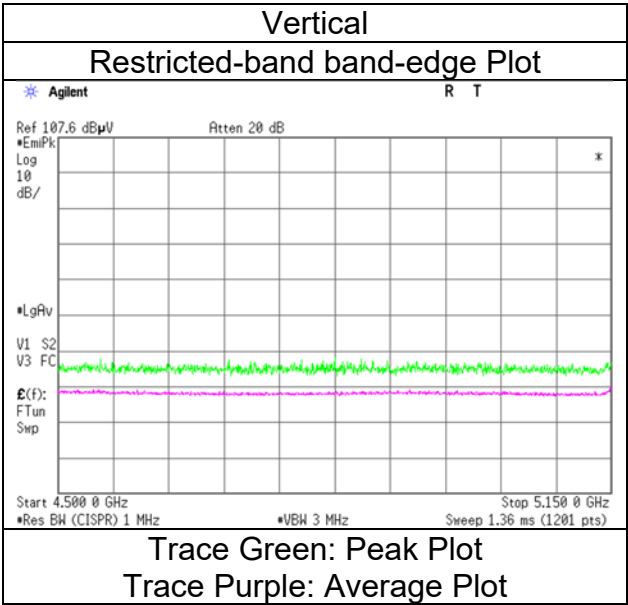
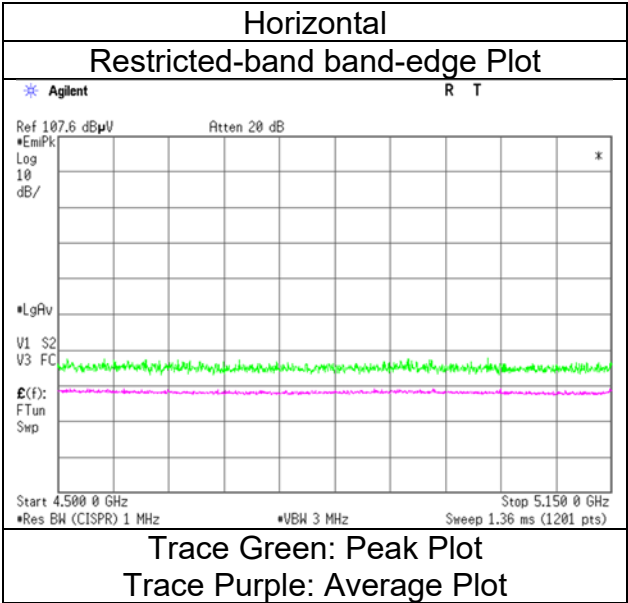
Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.9	35.1	30.1	5.6	31.0	-	47.6	39.8	73.9	53.9	26.3	14.1	
Hori.	5150.0	43.2	31.4	32.1	6.0	30.9	0.7	50.5	39.4	73.9	53.9	23.5	14.5	*1)
Hori.	10380.0	40.6	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Hori.	15570.0	41.3	33.7	39.4	-0.2	32.2	-	48.3	40.7	73.9	53.9	25.6	13.2	Floor noise
Vert.	4177.8	43.4	36.0	30.1	5.6	31.0	-	48.1	40.7	73.9	53.9	25.8	13.2	
Vert.	5150.0	44.8	33.2	32.1	6.0	30.9	0.7	52.1	41.2	73.9	53.9	21.8	12.7	*1)
Vert.	10380.0	40.6	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Vert.	15570.0	41.3	33.7	39.4	-0.2	32.2	-	48.3	40.7	73.9	53.9	25.6	13.2	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	March 27, 2024
Temperature / Humidity	23 deg. C / 37 % RH
Engineer	Tomoya Sone
	(1 GHz to 10 GHz)
Mode	Tx 11ac-40 5190 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11ac-40 5230 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.8	34.9	30.1	5.6	31.0	-	47.5	39.6	73.9	53.9	26.4	14.3	
Hori.	5350.0	39.8	29.6	31.8	6.1	30.9	0.7	46.8	37.3	73.9	53.9	27.2	16.6	*1)
Hori.	10460.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Hori.	15690.0	41.6	34.0	39.6	-0.2	32.2	-	48.7	41.1	73.9	53.9	25.2	12.8	Floor noise
Vert.	4177.8	43.2	35.8	30.1	5.6	31.0	-	47.9	40.5	73.9	53.9	26.0	13.4	
Vert.	5350.0	40.5	30.0	31.8	6.1	30.9	0.7	47.5	37.7	73.9	53.9	26.4	16.3	*1)
Vert.	10460.0	40.5	-	36.1	-1.7	32.6	-	42.4	-	68.2	-	25.8	-	Floor noise
Vert.	15690.0	41.6	34.0	39.6	-0.2	32.2	-	48.7	41.1	73.9	53.9	25.2	12.8	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

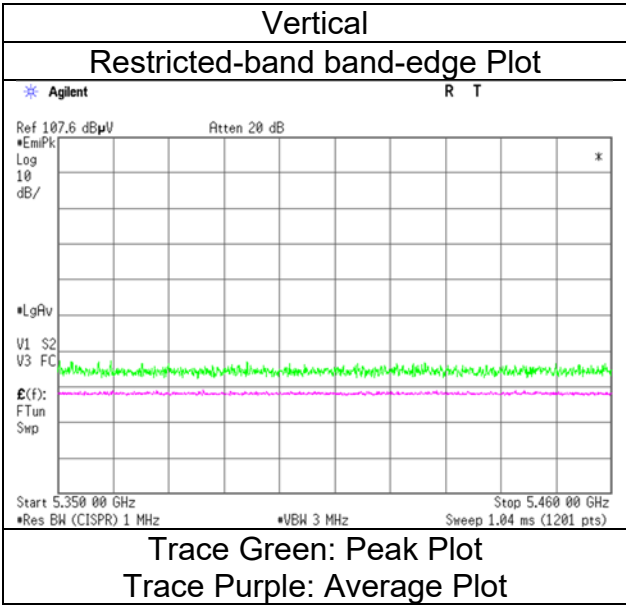
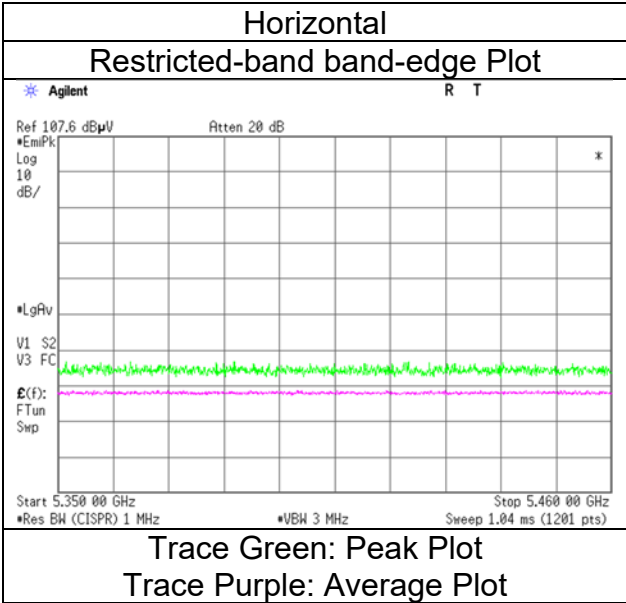
Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Ise EMC Lab.
No.4
March 27, 2024
23 deg. C / 37 % RH
Tomoya Sone
(1 GHz to 10 GHz)
Tx 11ac-40 5230 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4 No.4 No.4 No.4
Date March 27, 2024 March 27, 2024 March 28, 2024 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11ac-40 5755 MHz

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.6	35.0	30.1	5.6	31.0	-	47.3	39.7	73.9	53.9	26.6	14.2	
Hori.	5650.0	40.3	-	32.2	6.3	31.0	-	47.7	-	68.2	-	20.5	-	
Hori.	5700.0	40.6	-	32.3	6.3	31.0	-	48.1	-	105.2	-	57.1	-	
Hori.	5720.0	42.8	-	32.3	6.3	31.0	-	50.4	-	110.8	-	60.4	-	
Hori.	5725.0	44.2	-	32.4	6.3	31.0	-	51.9	-	122.2	-	70.3	-	
Hori.	11510.0	40.4	33.0	37.7	-1.5	32.7	-	43.9	36.6	73.9	53.9	30.0	17.3	Floor noise
Hori.	17265.0	41.6	-	40.0	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise
Vert.	4177.8	43.3	35.7	30.1	5.6	31.0	-	48.0	40.4	73.9	53.9	25.9	13.5	
Vert.	5650.0	39.7	-	32.2	6.3	31.0	-	47.1	-	68.2	-	21.1	-	
Vert.	5700.0	40.3	-	32.3	6.3	31.0	-	47.8	-	105.2	-	57.4	-	
Vert.	5720.0	44.1	-	32.3	6.3	31.0	-	51.7	-	110.8	-	59.1	-	
Vert.	5725.0	45.4	-	32.4	6.3	31.0	-	53.0	-	122.2	-	69.2	-	
Vert.	11510.0	40.4	33.0	37.7	-1.5	32.7	-	43.9	36.6	73.9	53.9	30.0	17.3	Floor noise
Vert.	17265.0	41.6	-	40.0	0.0	32.4	-	49.3	-	68.2	-	18.9	-	Floor noise

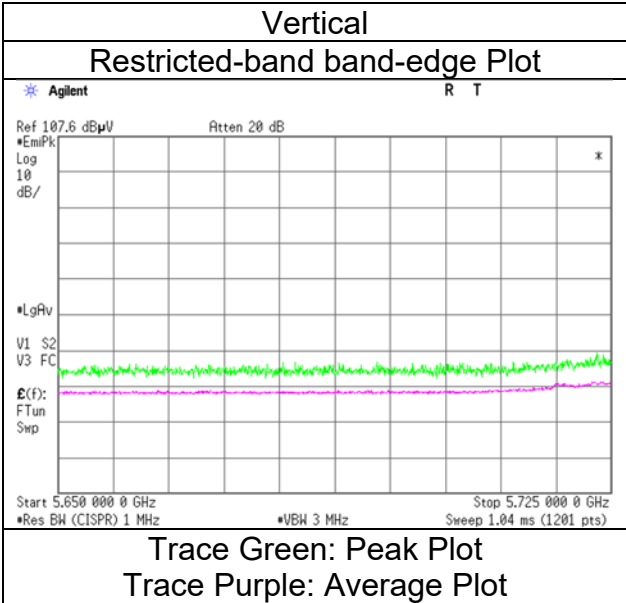
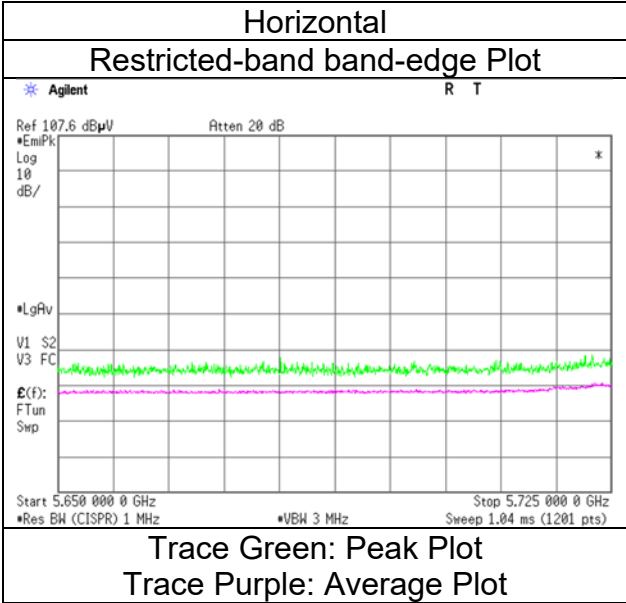
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not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

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11ac-40 5755 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4 No.4 No.4 No.4
Date March 27, 2024 March 27, 2024 March 28, 2024 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11ac-40 5795 MHz

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.7	35.2	30.1	5.6	31.0	-	47.4	40.0	73.9	53.9	26.5	14.0	
Hori.	5850.0	41.1	-	32.7	6.3	31.1	-	49.1	-	122.2	-	73.1	-	
Hori.	5855.0	41.1	-	32.7	6.3	31.1	-	49.0	-	110.8	-	61.8	-	
Hori.	5875.0	40.6	-	32.7	6.3	31.1	-	48.6	-	105.2	-	56.6	-	
Hori.	5925.0	40.5	-	32.8	6.4	31.1	-	48.5	-	68.2	-	19.7	-	*1)
Hori.	11590.0	40.2	33.1	37.8	-1.5	32.7	-	43.8	36.7	73.9	53.9	30.1	17.2	Floor noise
Hori.	17385.0	32.1	-	40.1	0.1	32.4	-	40.0	-	68.2	-	28.2	-	Floor noise
Vert.	4177.8	43.3	35.8	30.1	5.6	31.0	-	48.0	40.5	73.9	53.9	25.9	13.4	
Vert.	5850.0	40.9	-	32.7	6.3	31.1	-	48.8	-	122.2	-	73.4	-	
Vert.	5855.0	40.7	-	32.7	6.3	31.1	-	48.6	-	110.8	-	62.2	-	
Vert.	5875.0	40.4	-	32.7	6.3	31.1	-	48.4	-	105.2	-	56.8	-	
Vert.	5925.0	40.2	-	32.8	6.4	31.1	-	48.3	-	68.2	-	19.9	-	*1)
Vert.	11590.0	40.2	33.1	37.8	-1.5	32.7	-	43.8	36.7	73.9	53.9	30.1	17.2	Floor noise
Vert.	17385.0	32.1	-	40.1	0.1	32.4	-	40.0	-	68.2	-	28.2	-	Floor noise

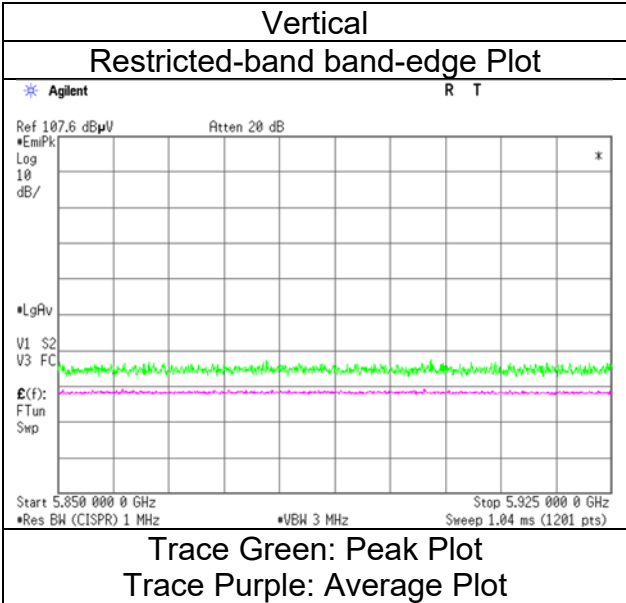
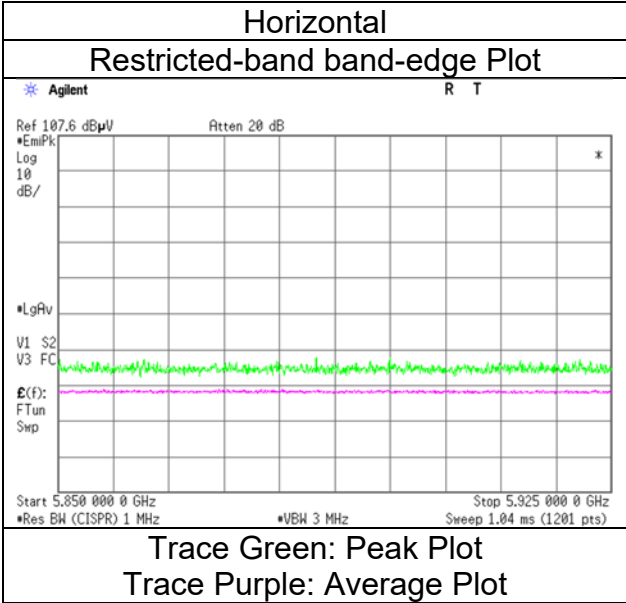
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab.
No.4
March 27, 2024
18 deg. C / 38 % RH
Shousei Hamaguchi
Tx 11ac-40 5795 MHz



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

Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)
Mode	Tx 11ac-80 5210 MHz		

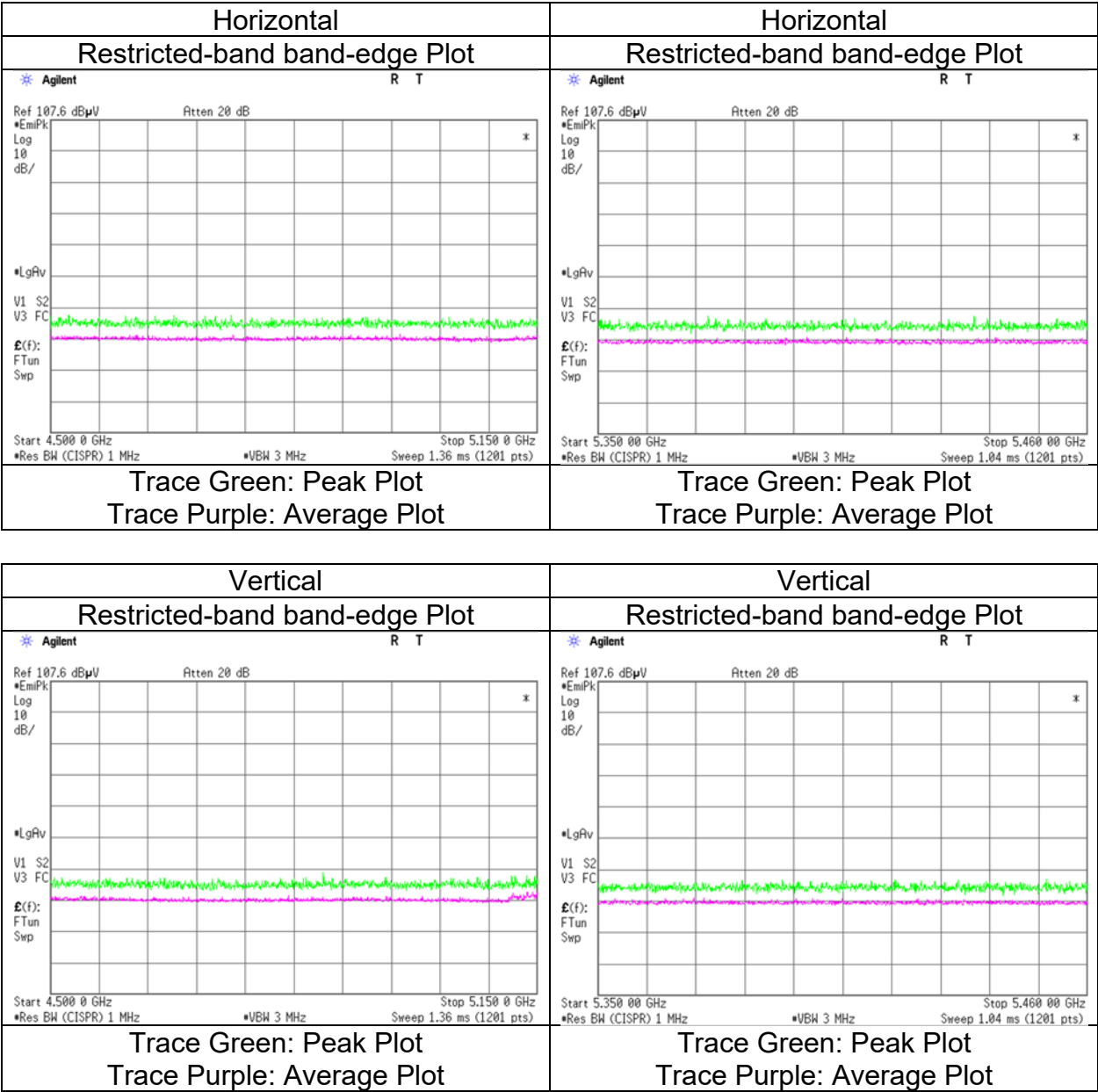
Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.8	34.8	30.1	5.6	31.0	-	47.5	39.5	73.9	53.9	26.4	14.4	
Hori.	5150.0	43.7	29.8	32.1	6.0	30.9	7.3	51.0	44.3	73.9	53.9	23.0	9.6	*1)
Hori.	5350.0	40.3	30.1	31.8	6.1	30.9	7.3	47.2	44.3	73.9	53.9	26.7	9.6	*1)
Hori.	10420.0	40.4	-	36.1	-1.7	32.6	-	42.2	-	68.2	-	26.0	-	Floor noise
Hori.	15630.0	42.2	34.0	39.5	-0.2	32.2	-	49.3	41.1	73.9	53.9	24.6	12.8	Floor noise
Vert.	4177.8	43.2	35.8	30.1	5.6	31.0	-	47.9	40.5	73.9	53.9	26.0	13.4	
Vert.	5150.0	44.8	30.5	32.1	6.0	30.9	7.3	52.1	45.1	73.9	53.9	21.8	8.8	*1)
Vert.	5350.0	40.4	30.1	31.8	6.1	30.9	7.3	47.4	44.3	73.9	53.9	26.5	9.6	*1)
Vert.	10420.0	40.4	-	36.1	-1.7	32.6	-	42.2	-	68.2	-	26.0	-	Floor noise
Vert.	15630.0	42.2	34.0	39.5	-0.2	32.2	-	49.3	41.1	73.9	53.9	24.6	12.8	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	March 27, 2024
Temperature / Humidity	23 deg. C / 37 % RH
Engineer	Tomoya Sone
	(1 GHz to 10 GHz)
Mode	Tx 11ac-80 5210 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4 No.4 No.4 No.4
Date March 27, 2024 March 27, 2024 March 28, 2024 March 29, 2024
Temperature / Humidity 18 deg. C / 38 % RH 18 deg. C / 38 % RH 23 deg. C / 37 % RH 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi Tomoya Sone Shousei Hamaguchi Shousei Hamaguchi
 (1 GHz to 6 GHz) (6 GHz to 10 GHz) (10 GHz to 26.5 GHz) (26.5 GHz to 40 GHz)
Mode Tx 11ac-80 5775 MHz

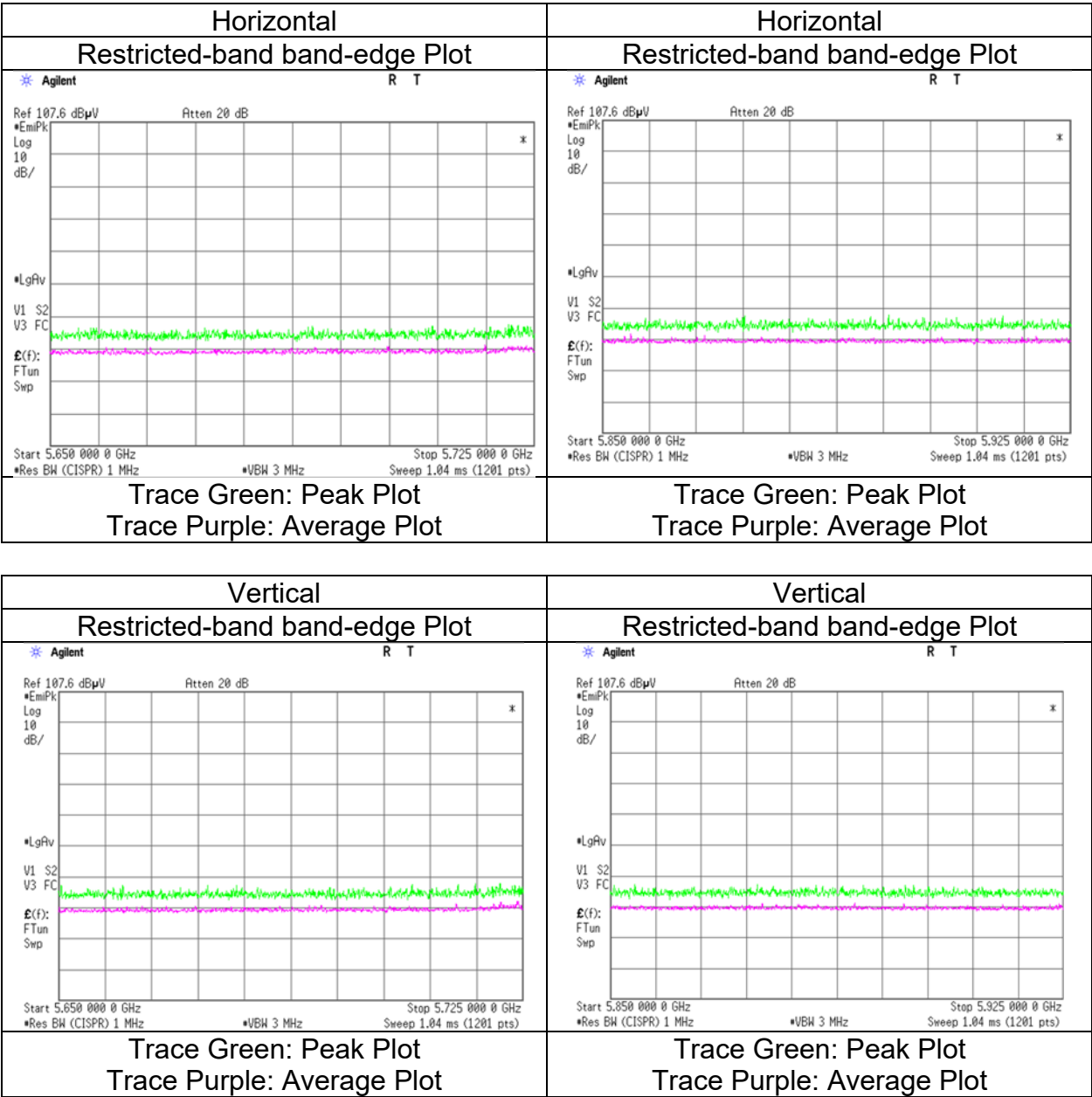
Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4177.8	42.5	35.3	30.1	5.6	31.0	-	47.2	40.0	73.9	53.9	26.7	13.9	
Hori.	5650.0	40.3	-	32.2	6.3	31.0	-	47.7	-	68.2	-	20.5	-	
Hori.	5700.0	40.5	-	32.3	6.3	31.0	-	48.1	-	105.2	-	57.1	-	
Hori.	5720.0	44.2	-	32.3	6.3	31.0	-	51.8	-	110.8	-	59.0	-	
Hori.	5725.0	46.5	-	32.4	6.3	31.0	-	54.1	-	122.2	-	68.1	-	
Hori.	5850.0	40.9	-	32.7	6.3	31.1	-	48.8	-	122.2	-	73.4	-	
Hori.	5855.0	40.5	-	32.7	6.3	31.1	-	48.4	-	110.8	-	62.4	-	
Hori.	5875.0	40.4	-	32.7	6.3	31.1	-	48.3	-	105.2	-	56.9	-	
Hori.	5925.0	40.2	-	32.8	6.4	31.1	-	48.3	-	68.2	-	19.9	-	*1)
Hori.	11550.0	40.0	32.8	37.7	-1.5	32.7	-	43.5	36.4	73.9	53.9	30.4	17.5	Floor noise
Hori.	17325.0	42.1	-	40.0	0.1	32.4	-	49.9	-	68.2	-	18.3	-	Floor noise
Vert.	4177.8	43.3	35.5	30.1	5.6	31.0	-	48.1	40.3	73.9	53.9	25.9	13.7	
Vert.	5650.0	39.9	-	32.2	6.3	31.0	-	47.3	-	68.2	-	20.9	-	
Vert.	5700.0	40.5	-	32.3	6.3	31.0	-	48.1	-	105.2	-	57.1	-	
Vert.	5720.0	43.0	-	32.3	6.3	31.0	-	50.6	-	110.8	-	60.2	-	
Vert.	5725.0	46.4	-	32.4	6.3	31.0	-	54.0	-	122.2	-	68.2	-	
Vert.	5850.0	40.7	-	32.7	6.3	31.1	-	48.6	-	122.2	-	73.6	-	
Vert.	5855.0	40.5	-	32.7	6.3	31.1	-	48.4	-	110.8	-	62.4	-	
Vert.	5875.0	40.2	-	32.7	6.3	31.1	-	48.1	-	105.2	-	57.1	-	
Vert.	5925.0	39.9	-	32.8	6.4	31.1	-	47.9	-	68.2	-	20.3	-	*1)
Vert.	11550.0	40.0	32.8	37.7	-1.5	32.7	-	43.5	36.4	73.9	53.9	30.4	17.5	Floor noise
Vert.	17325.0	42.1	-	40.0	0.1	32.4	-	49.9	-	68.2	-	18.3	-	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	March 27, 2024
Temperature / Humidity	18 deg. C / 38 % RH
Engineer	Shousei Hamaguchi
Mode	Tx 11ac-80 5775 MHz



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

Radiated Spurious Emission

Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date May 31, 2024
Temperature / Humidity 22 deg. C / 41 % RH
Engineer Shousei Hamaguchi
 (Above 1 GHz),
 (Below 1 GHz)
Mode Tx 11ac-80 5210 MHz + Tx BT 3DH5 Hopping On

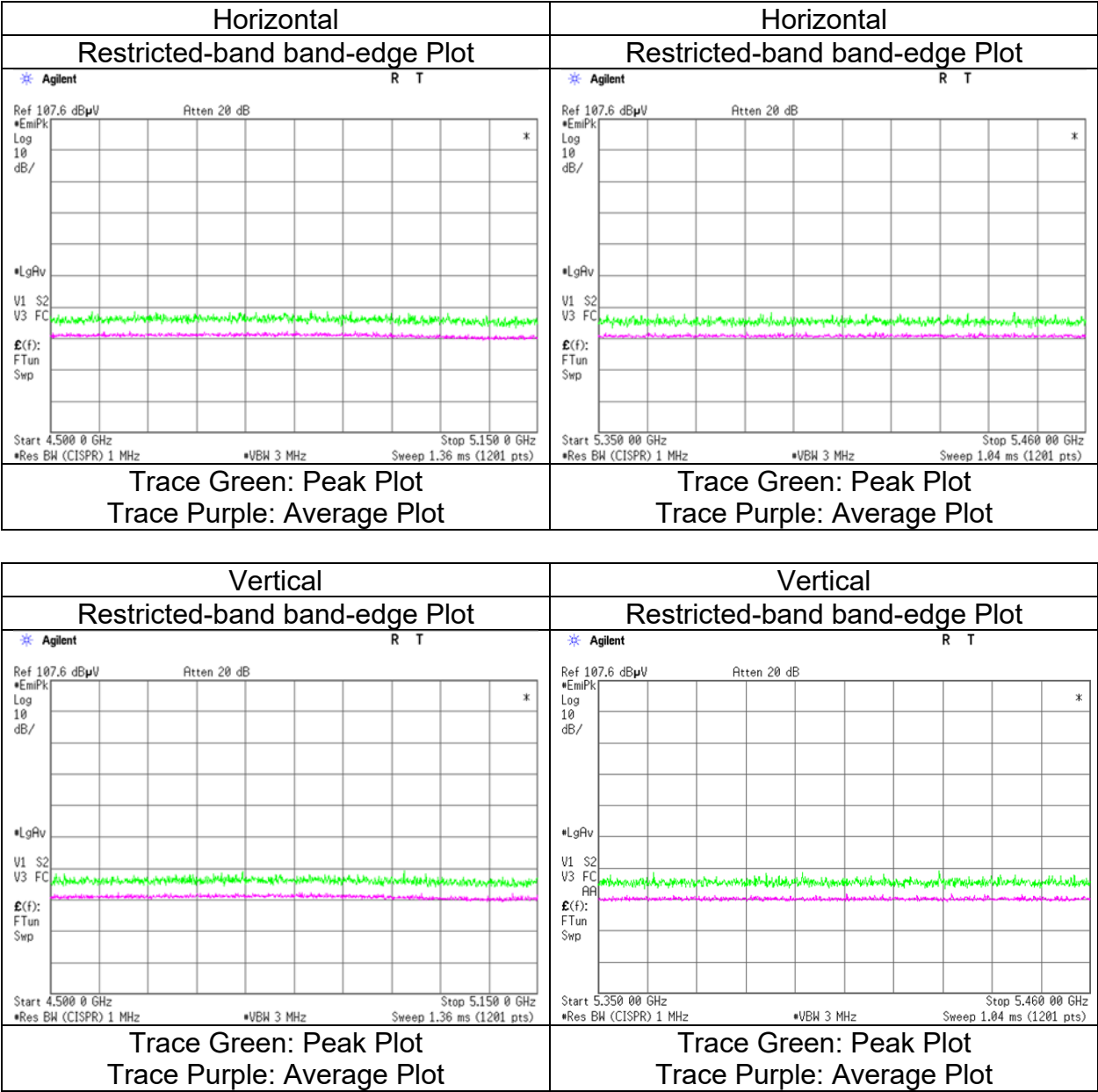
Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	57.3	38.8	-	8.7	7.4	32.1	-	22.7	-	40.0	-	17.3	-	
Hori.	62.8	35.9	-	7.2	7.4	32.1	-	18.5	-	40.0	-	21.5	-	
Hori.	83.7	32.5	-	7.4	7.7	32.1	-	15.5	-	40.0	-	24.5	-	
Hori.	214.1	38.8	-	11.2	8.9	32.0	-	26.9	-	43.5	-	16.6	-	
Hori.	241.7	31.3	-	11.6	9.1	32.0	-	20.0	-	46.0	-	26.0	-	
Hori.	720.0	35.7	-	20.1	11.7	32.2	-	35.3	-	46.0	-	10.7	-	
Hori.	4177.8	40.6	32.7	30.3	7.5	31.0	-	47.4	39.5	73.9	53.9	26.5	14.4	
Hori.	5150.0	41.7	32.2	31.9	7.8	30.9	7.3	50.5	48.3	73.9	53.9	23.4	5.6	*1)
Hori.	5350.0	40.7	32.2	31.7	7.9	30.9	7.3	49.3	48.1	73.9	53.9	24.6	5.8	*1)
Hori.	10420.0	40.4	-	35.9	-1.7	32.6	-	42.1	-	68.2	-	26.1	-	
Hori.	15630.0	42.2	34.0	39.4	-0.2	32.2	-	49.1	40.9	73.9	53.9	24.8	13.1	
Vert.	57.3	37.4	-	8.7	7.4	32.1	-	21.3	-	40.0	-	18.7	-	
Vert.	62.8	36.1	-	7.2	7.4	32.1	-	18.7	-	40.0	-	21.3	-	
Vert.	83.7	35.2	-	7.4	7.7	32.1	-	18.2	-	40.0	-	21.8	-	
Vert.	214.1	32.1	-	11.2	8.9	32.0	-	20.2	-	43.5	-	23.3	-	
Vert.	241.7	25.6	-	11.6	9.1	32.0	-	14.3	-	46.0	-	31.7	-	
Vert.	720.0	29.0	-	20.1	11.7	32.2	-	28.6	-	46.0	-	17.4	-	
Vert.	4177.8	40.9	33.5	30.3	7.5	31.0	-	47.7	40.3	73.9	53.9	26.2	13.6	
Vert.	5150.0	43.0	32.2	31.9	7.8	30.9	7.3	51.8	48.3	73.9	53.9	22.1	5.6	*1)
Vert.	5350.0	42.0	32.3	31.7	7.9	30.9	7.3	50.6	48.2	73.9	53.9	23.3	5.7	*1)
Vert.	10420.0	40.4	-	35.9	-1.7	32.6	-	42.1	-	68.2	-	26.1	-	
Vert.	15630.0	42.2	34.0	39.4	-0.2	32.2	-	49.1	40.9	73.9	53.9	24.8	13.1	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= 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).
*QP detector was used up to 1GHz.
*1) Not Out of Band emission(Leakage Power)

Distance factor: 1 GHz - 6 GHz 20log (3.8 m / 3.0 m) = 2.06 dB
 6 GHz - 10 GHz 20log (4.8 m / 3.0 m) = 4.09 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission

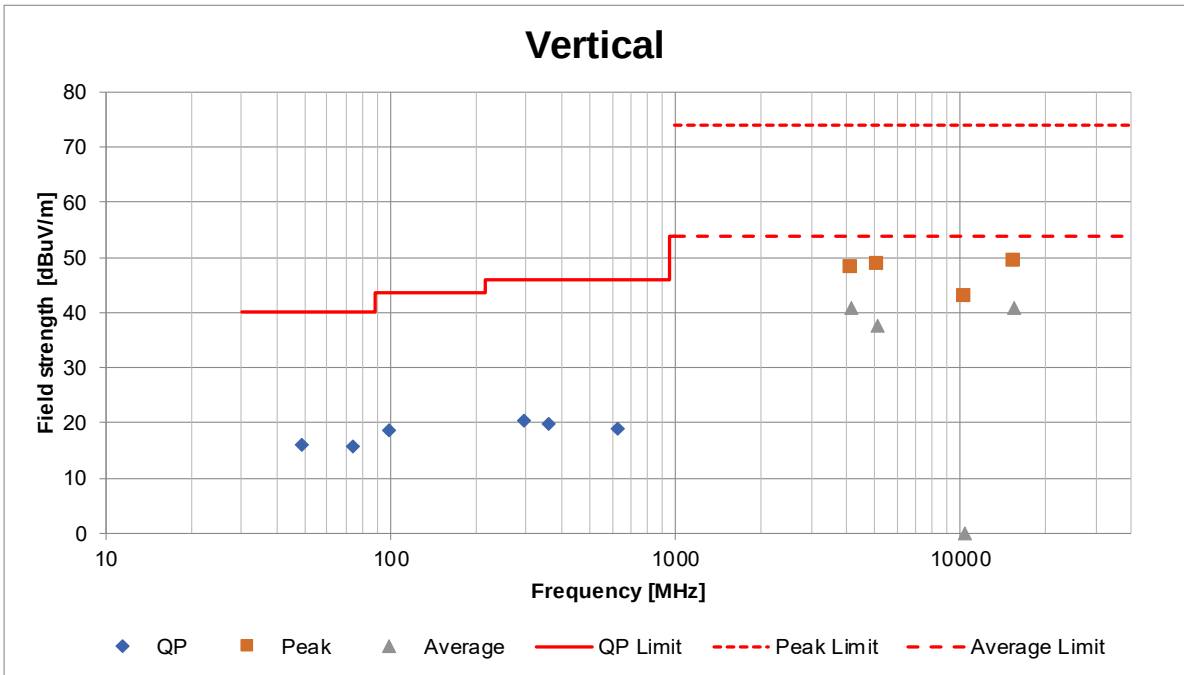
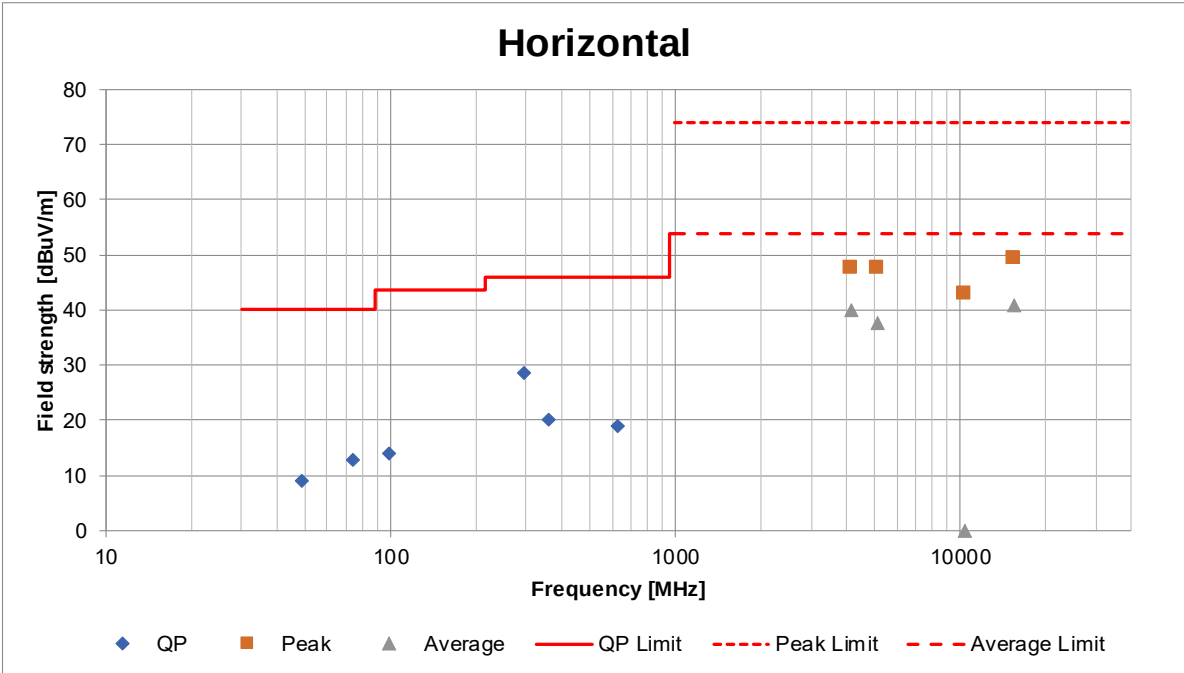
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	May 31, 2024
Temperature / Humidity	22 deg. C / 41 % RH
Engineer	Shousei Hamaguchi
Mode	Tx 11ac-80 5210 MHz + Tx BT 3DH5 Hopping On



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

Radiated Spurious Emission
(Plot data, Worst case mode for Maximum Conducted Output Power)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	March 27, 2024	March 28, 2024	March 29, 2024	March 31, 2024
Temperature / Humidity	23 deg. C / 37 % RH	23 deg. C / 37 % RH	22 deg. C / 41 % RH	22 deg. C / 41 % RH
Engineer	Tomoya Sone	Shousei Hamaguchi	Shousei Hamaguchi	Shousei Hamaguchi
	(1 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(26.5 GHz to 40 GHz)	(Below 1 GHz)
Mode	Tx 11n-20 5180 MHz			

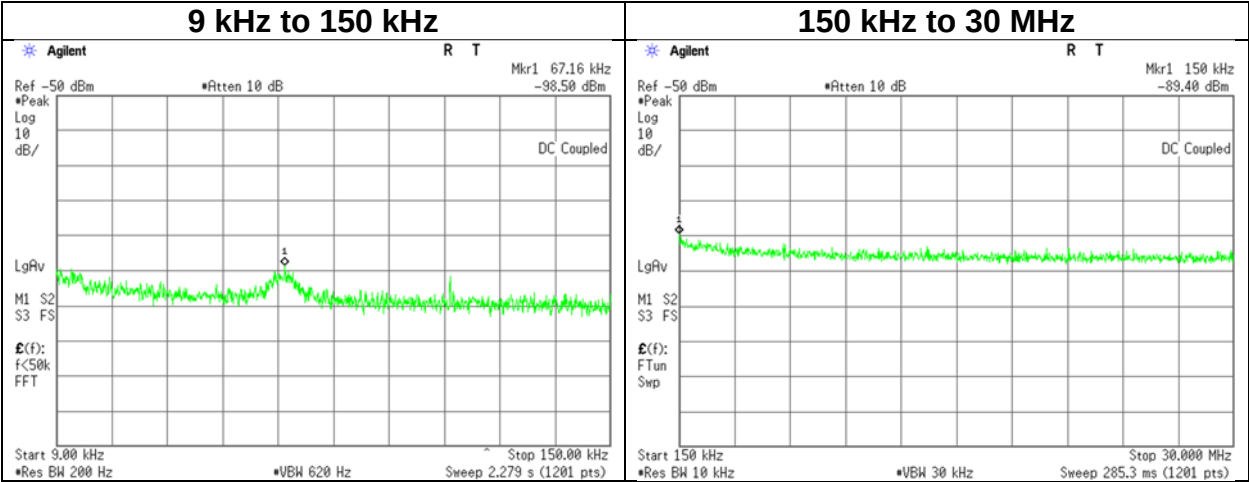


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Test place
Date
Temperature / Humidity
Engineer
Mode

Ise EMC Lab. No.6Measurement Room
April 2, 2024
20 deg. C / 42 % RH
Junki Nagatomi
Tx 11n-20 5180 MHz



Frequency	Reading	Cable Loss	Attenuator	Antenna Gain	N	EIRP	Distance	Ground bounce	E	Limit	Margin	Remark
[kHz]	[dBm]	[dB]	[dB]	[dBi]	(Number of Output)	[dBm]	[m]	[dB]	(field strength) [dBuV/m]	[dBuV/m]	[dB]	
67.16	-98.5	0.82	9.7	4.04	2	-80.9	300	6.0	-19.7	31.0	50.7	
150.00	-89.4	0.82	9.7	4.04	2	-71.8	300	6.0	-10.6	24.0	34.6	

$E \text{ [dBuV/m]} = EIRP \text{ [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$
 $EIRP[dBm] = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$
N: Number of output

APPENDIX 2: Test Instruments

Test Equipment (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	141173	Attenuator(10dB) (above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-110	-	12/11/2023	12
AT	141244	Attenuator(10dB)	Weinschel - API Technologies Corp	WA8-10-34	A198	02/17/2024	12
AT	141329	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28635/2	04/08/2024	12
AT	141338	Attenuator	Weinschel Associates	WA1-20-33	100130	04/03/2024	12
AT	141532	DIGITAL HiTESTER	HIOKI E.E. CORPORATION	3805	051201197	01/31/2024	12
AT	141545	DIGITAL HiTESTER	HIOKI E.E. CORPORATION	3805	51201148	02/01/2024	12
AT	141558	Digital Tester(TRUE RMS MULTIMETER)	Fluke Corporation	115	17930030	05/17/2024	12
AT	141809	Power Meter	Anritsu Corporation	ML2495A	825002	05/22/2024	12
AT	141814	Power Meter	Raditeq (Formerly DARE!! Instruments)	RPR3006W	14100048SNO082	10/04/2023	12
AT	141830	Power sensor	Anritsu Corporation	MA2411B	738285	05/22/2024	12
AT	141884	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY44020357	05/09/2024	12
AT	141900	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46185823	06/16/2023	12
AT	141901	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY48250080	01/26/2024	12
AT	141903	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46186390	01/26/2024	12
AT	142011	AC4 Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/13/2023	24
AT	196430	Microwave Cable	Huber+Suhner	SF102D/11PC24/11PC24/1000mm	537059/126EA	02/26/2024	12
AT	197219	Microwave cable	Huber+Suhner	SF126E/11PC35/11PC35/2000MM	536999/126E	03/19/2024	12
AT	244709	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202103	01/25/2024	12
AT	244710	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202104	01/25/2024	12
AT	244712	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202106	01/25/2024	12
RE	141227	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S305	03/04/2024	12
RE	141267	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-192	09/21/2023	12
RE	141279	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S303	03/04/2024	12
RE	141294	High Pass Filter 7-20GHz	TOKIMEC	TF37NCCC	603	02/15/2024	12
RE	141296	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	002	09/01/2023	12
RE	141331	Attenuator(6dB)	TME	UFA-01	-	02/17/2024	12
RE	141397	Coaxial Cable	UL Japan	-	-	11/22/2023	12
RE	141425	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+BBA9106	VHA 91031302	08/10/2023	12
RE	141506	Horn Antenna 15-40GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9170	BBHA9170307	08/09/2023	12
RE	141508	Horn Antenna 1-18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	557	05/17/2023	12
RE	141512	Horn Antenna 1-18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	254	10/17/2023	12
RE	141517	Horn Antenna 26.5-40GHz	ETS-Lindgren	3160-10	152399	11/20/2023	12
RE	141545	DIGITAL HiTESTER	HIOKI E.E. CORPORATION	3805	51201148	02/01/2024	12
RE	141581	MicroWave System Amplifier	Keysight Technologies Inc	83017A	00650	10/05/2023	12
RE	141583	Pre Amplifier	SONOMA INSTRUMENT	310	260833	04/04/2024	12
RE	141588	Pre Amplifier	L3 Narda-MITEQ	AMF-6F-2600400-33-8P / AMF-4F-2600400-33-8P	1871355 / 1871328	01/22/2024	12

Test Equipment (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141901	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY48250080	01/26/2024	12
RE	141904	Spectrum Analyzer	Keysight Technologies Inc	N9030A	US51350215	11/08/2023	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	04/10/2023 *1)	12
RE	142011	AC4_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/13/2023	24
RE	142017	AC4_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	10/11/2023	12
RE	142230	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	197219	Microwave cable	Huber+Suhner	SF126E/11PC35/11PC35/2000MM	536999/126E	03/19/2024	12
RE	234602	Microwave Cable	Huber+Suhner	SF126E/11PC35/11PC35/1000M,5000M	537063/126E / 537074/126E	03/08/2024	12
RE	238713	Double Ridge Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	688	08/10/2023	12
RE	244710	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202104	01/25/2024	12
RE	245788	Double Ridge Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	690	03/06/2024	12

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

The expiration date of the calibration is the end of the expired month.

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

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

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

AT: Antenna Terminal Conducted test

RE: Radiated Emission