

RADIO TEST REPORT

Test Report No. 15654367S-A-R1

Customer	Canon Inc.
Description of EUT	Wireless LAN Module
Model Number of EUT	K30387
FCC ID	AZDK30387-2
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	April 22, 2025
Remarks	Wireless LAN (2.4 GHz band) part

Representative Test EngineerYuta Shiba
Engineer**Approved By**Shinichi Takano
Engineer

CERTIFICATE 1266.03

- ☐ 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# 24.0

ANNOUNCEMENT

- This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
- The results in this report apply only to the sample tested. (Laboratory was not involved in sampling.)
- This sample tested is in compliance with the limits of the above regulation.
- The test results in this test report are traceable to the national or international standards.
- This test report must not be used by the customer to claim product certification, approval, or endorsement by the A2LA accreditation body.
- This test report covers Radio technical requirements.
It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
- The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
- The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan, Inc. has been accredited.
- The information provided by the customer for this report is identified in SECTION 1.
- The laboratory is not responsible for information provided by the customer which can impact the validity of the results.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

REVISION HISTORY

Original Test Report No. 15654367S-A

This report is a revised version of 15654367S-A. 15654367S-A is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15654367S-A	March 26, 2025	-
1	15654367S-A-R1	April 22, 2025	All page: Correction of Report No. From: 156544367S-A To: 15654367S-A 2.1 Correction of test date. From: "December 6, 2024 to" To: "November 21, 2024 to" 4.1 Operating Mode(s) -Deletion of "dBm" of Power settings -Correction of Software: From: Tera Team Version 4.87 (SVN#5897) To: 1.28b RC0.0 WIO: Oct 29 2024 00:17:19 version 13.10.246.356 (39f8a82 CY WLTEST) FWID 01-5ee0685e (Storage location: Driven by connected PC) APPENDIX 1 -P23 Addition of data "**Pre-Check of worst case voltage" -P25 Correction of worst rate of 11n-20. From: MCS 2 To: MCS 5 -P28 Addition of data for 11n-20(SISO), MCS 0 of Burst rate confirmation.

Reference: Abbreviations (Including words undescribed in this report)

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

CONTENTS	PAGE
SECTION 1: Customer Information	5
SECTION 2: Equipment Under Test (EUT).....	5
SECTION 3: Test Specification, Procedures & Results	7
SECTION 4: Operation of EUT during testing	10
SECTION 5: Conducted Emission.....	13
SECTION 6: Radiated Spurious Emission.....	14
SECTION 7: Antenna Terminal Conducted Tests	16
APPENDIX 1: Test Data	17
Conducted Emission	17
99 % Occupied Bandwidth and 6 dB Bandwidth.....	18
Maximum Peak Output Power	23
Average Output Power.....	25
Radiated Spurious Emission.....	29
Conducted Spurious Emission.....	69
Power Density	70
APPENDIX 2: Test Instruments	73
APPENDIX 3: Photographs of Test Setup	75
Conducted Emission	75
Radiated Spurious Emission.....	76
Pre-check of Worst Case Position	77
Antenna Terminal Conducted Tests	78

SECTION 1: Customer Information

Company Name	Canon Inc.
Address	451, Tsukagoshi 3-chome, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8530, Japan
Telephone Number	+81-3-3758-2111
Contact Person	Hiroyuki Saito

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	Wireless LAN Module
Model Number	K30387
Serial Number	Refer to SECTION 4.2
Condition	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	December 4, 2024 January 14, 2025
Test Date	November 21, 2024 to March 12, 2025

2.2 Product Description

General Specification

Rating	DC 3.3 V
Operating temperature	0 deg. C to +45 deg. C

Radio Specification

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.

	IEEE802.11b	IEEE802.11g	IEEE802.11n (20 MHz band)	IEEE802.11n (40 MHz band)
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz, 5180 MHz - 5240 MHz, 5260 MHz - 5320 MHz, 5500 MHz - 5700 MHz, 5745 MHz - 5825 MHz	2422 MHz - 2452 MHz, 5190 MHz - 5230 MHz, 5270 MHz - 5310 MHz, 5510 MHz - 5670 MHz, 5755 MHz - 5795 MHz
Channel spacing	5 MHz		2.4 GHz band: 5 MHz 5 GHz band: 20 MHz	2.4 GHz band: 5 MHz 5 GHz band: 40 MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	
	IEEE802.11a	IEEE802.11ac (20 MHz band)	IEEE802.11ac (40 MHz band)	IEEE802.11ac (80 MHz band)
Frequency of operation	5180 MHz - 5240 MHz, 5260 MHz - 5320 MHz, 5500 MHz - 5700 MHz, 5745 MHz - 5825 MHz	5180 MHz - 5240 MHz, 5260 MHz - 5320 MHz, 5500 MHz - 5700 MHz, 5745 MHz - 5825 MHz	5190 MHz - 5230 MHz, 5270 MHz - 5310 MHz, 5510 MHz - 5670 MHz, 5755 MHz - 5795 MHz	5210 MHz, 5290 MHz, 5530 MHz, 5610 MHz, 5775 MHz
Channel spacing	20 MHz		40 MHz	80 MHz
Modulation	OFDM (64QAM, 16QAM, QPSK, BPSK)	OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)		
Antenna type	Inverted-L antenna			
Antenna Gain ^{a)}	2.4 GHz	1.8 dBi		
	U-NII-1, U-NII-2A	2.1 dBi		
	U-NII-2C	2.1 dBi		
	U-NII-3	2.1 dBi		
Master / Slave	2.4 GHz	Master and Client		
	U-NII-1	Master and Client		
	U-NII-2A	Client		
	U-NII-2C	Client		
	U-NII-3	Master and Client		

SECTION 3: Test Specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart C The latest version on the first day of the testing period
Title	FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 6. Standard test methods ISED: RSS-Gen 8.8	FCC: Section 15.207 ISED: RSS-Gen 8.8	11.7dB 12.45725, AV, N	Complied	-
6 dB Bandwidth	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section 15.247(a)(2) ISED: RSS-247 5.2(a)	See data.	Complied	Conducted
Maximum Peak Output Power	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.12	FCC: Section 15.247(b)(3) ISED: RSS-247 5.4(d)		Complied	Conducted
Power Density	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section 15.247(e) ISED: RSS-247 5.2(b)		Complied	Conducted
Spurious Emission Restricted Band Edges	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.13	FCC: Section 15.247(d) ISED: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	2.6 dB 2390.000 MHz, PK, Vertical Tx 11g 2417 MHz	Complied	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *1)

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) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6.

FCC Part 15.31 (e)

The host device provides stable voltage constantly to RF Module regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to Standard

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
99 % Occupied Bandwidth	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 $k = 2$.

Item	Frequency range	Uncertainty (+/-)
Conducted Emission (AC Mains) LISN	150 kHz to 30 MHz	3.0 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.3 dB
	30 MHz to 200 MHz	4.8 dB
	200 MHz to 1 GHz	6.1 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.3 dB
	18 GHz to 40 GHz	5.5 dB
Radiated Emission (Measurement distance: 1 m)	1 GHz to 18 GHz	5.6 dB
	18 GHz to 40 GHz	5.8 dB

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)	1.3 dB
Power Measurement above 1 GHz (Peak Detector)	1.5 dB
Spurious Emission (Conducted) below 1 GHz	0.93 dB
Conducted Emissions Power Density Measurement 1 GHz to 3 GHz	0.93 dB
Conducted Emissions Power Density Measurement 3 GHz to 18 GHz	3.0 dB
Spurious Emission (Conducted) 18 GHz to 26.5 GHz	2.8 dB
Spurious Emission (Conducted) 26.5 GHz to 40 GHz	2.3 dB
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature	2.2 deg.C.
Humidity	3.4 %
Voltage	0.92 %

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.

1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan

Telephone: +81-463-50-6400

A2LA Certificate Number: 1266.03

(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

Test room	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber (SAC1)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber (SAC2)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber (SAC3)	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber (SAC4)	8.1 x 5.1 x 3.55	8.1 x 5.1	-
Wireless anechoic chamber 1 (WAC1)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
Wireless anechoic chamber 2 (WAC2)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
No.1 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 Shielded room	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	2.55 x 4.1 x 2.5	-	-
No.2 Measurement room	4.5 x 3.5 x 2.5	-	-
Wireless shielded room 1	3.0 x 4.5 x 2.7	3.0 x 4.5	-
Wireless shielded room 2	3.0 x 4.5 x 2.7	3.0 x 4.5	-

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 802.11b (11b)	1 Mbps, PN9
IEEE 802.11g (11g)	6 Mbps, PN9
IEEE 802.11n SISO 20 MHz BW (11n-20)	MCS 0, PN9 *Radiated Spurious Emission(Band edge) only MCS 5, PN9 *Other than above
IEEE 802.11n SISO 40 MHz BW (11n-40)	MCS 7, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows;	
Power settings:	11b(1 Mbps): 15.5 11b(2 Mbps, 5.5 Mbps, 11 Mbps): 15 11g, 11n-20: 12 (2422 MHz to 2452 MHz), 9 (2417 MHz, 2457 MHz), 7 (2412 MHz, 2462 MHz) 11n-40: 8 (2427 MHz to 2447 MHz), 5 (2422 MHz, 2452 MHz)
Software:	1.28b RC0.0 WIO: Oct 29 2024 00:17:19 version 13.10.246.356 (39f8a82 CY WLTEST) FWID 01-5ee0685e (Storage location: Driven by connected PC)
*This setting of software is the worst case.	
Any conditions under the normal use do not exceed the condition of setting.	
In addition, end users cannot change the settings of the output power of the product.	

*The Details of Operating Mode(s)

The Details of Operating Mode(s)		
Test Item	Operating Mode	Tested Frequency
Conducted Emission, Radiated Spurious Emission (Below 1 GHz) Conducted Spurious Emission	Tx 11n-20 *1)	2437 MHz
6 dB Bandwidth, Maximum Peak Output Power, Power Density, 99 % Occupied Bandwidth	Tx 11b	2412 MHz
	Tx 11g	2437 MHz
	Tx 11n-20	2462 MHz
	Tx 11n-40	2422 MHz
		2437 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx 11b	2452 MHz
		2412 MHz
		2437 MHz
	Tx 11g *2) Tx 11n-20 *3)	2462 MHz
		2412 MHz
		2417 MHz
		2422 MHz
		2437 MHz
		2452 MHz
		2457 MHz
		2462 MHz
	Tx 11n-40 *4)	2422 MHz
		2427 MHz
		2437 MHz
		2447 MHz
		2452 MHz

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

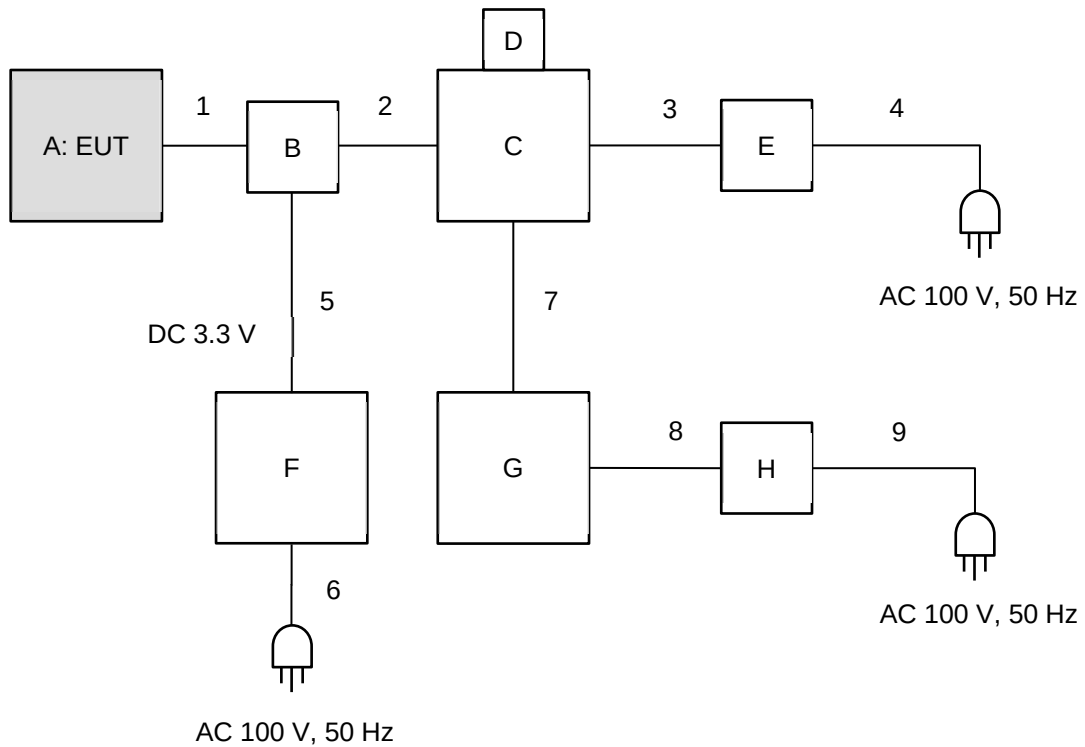
*2) For all frequencies, the test had been conducted only in band-edge.

*3) For those frequencies in 2417 / 2422 / 2452 / 2457 MHz, the test had been conducted only in band-edge.

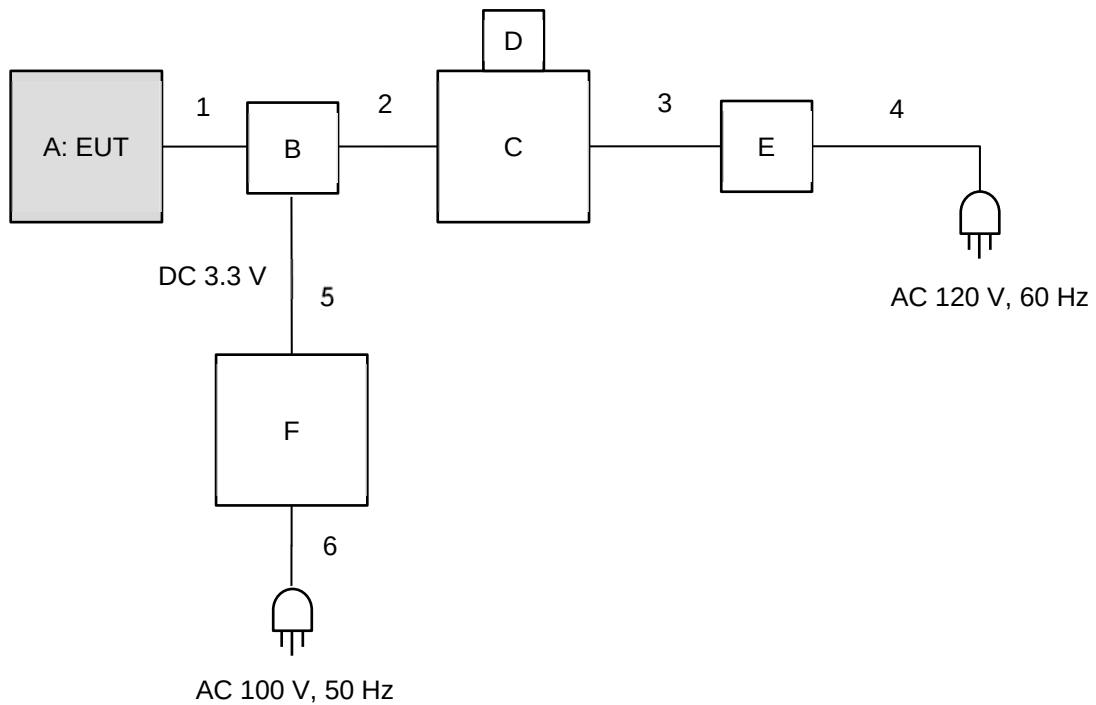
*4) For those frequencies in 2427 / 2447 MHz, the test had been conducted only in band-edge.

4.2 Configuration and Peripherals

<For Antenna Terminal Conducted test>



<For Radiated Emission test and Conducted 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	WLAN Module	K30387	C300	Canon	EUT
B	WLAN JOINT PCB	-	-	Canon	-
C	Smart Devices Board	MCIMX6SX-SDB-ND	TR19051240	NXP	-
D	SD Card	SDS/16GB	-	Kingston	-
E	AC Adaptor	ATS036T-A050	400-75956	SCEPTRE	-
F	Power Supply(DC)	PW16-5ADP PNA16-10A PAN35-10A	19100034 ER001085 BP002287	GW Instek Kikusui Electronics Corp. Kikusui Electronics Corp.	*1) *2) *3)
G	Laptop Computer	E1Q57PA#ABJ	5CB3310KHW	HP	-
H	AC Adapter	PPP009L-E	3453442403	HP	-

*1) Used for Antenna Terminal Conducted test

*2) Used for Radiated Emission

*3) Used for Conducted Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	FLAT	0.075	Unshielded	Unshielded	-
2	USB	1.0	Shielded	Shielded	-
3	DC	1.0	Unshielded	Unshielded	-
4	AC	1.8	Unshielded	Unshielded	-
5	DC	0.25 *4) 0.25 + 1.8 *5)	Unshielded	Unshielded	-
6	AC	1.7	Unshielded	Unshielded	-
7	LAN	1.0	Unshielded	Unshielded	-
8	DC	1.7	Unshielded	Unshielded	-
9	AC	0.9	Unshielded	Unshielded	-

*4) Used for Radiated Emission(Below 1 GHz) and Conducted Emission test

*5) Used for Other tests

SECTION 5: Conducted Emission

Test Procedure and Conditions

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 rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

All unused 50 ohm connectors of the LISN (AMN) were resistivity terminated in 50 ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Shielded room.

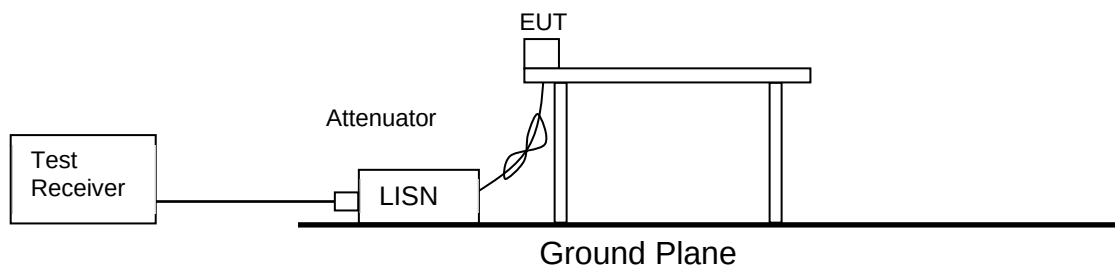
The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

Detector	: QP and CISPR AV
Measurement Range	: 0.15 MHz to 30 MHz
Test Data	: APPENDIX
Test Result	: Pass

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission

Test Procedure

It was measured based on "8.5 and 8.6 of KDB 558074 D01 15.247 Meas Guidance v05r02".

[For 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.

[For above 1 GHz]

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

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

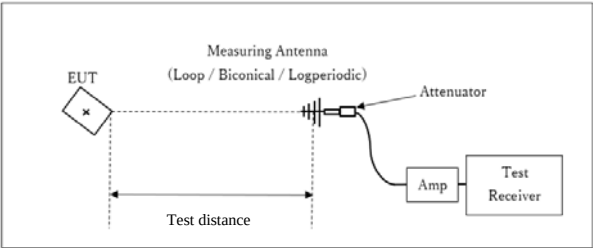
In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired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

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

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument Used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	<u>11.12.2.5.2</u> RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (Linear voltage) Trace: 100 traces	RBW: 100 kHz VBW: 300 kHz

Figure 2: Test Setup

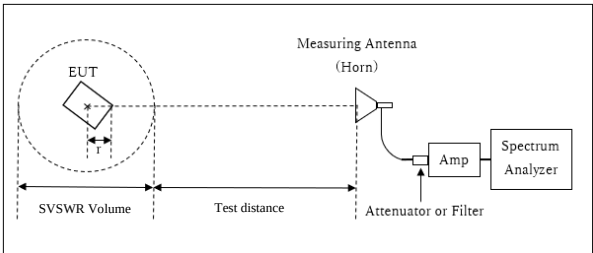
Below 1 GHz



x : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

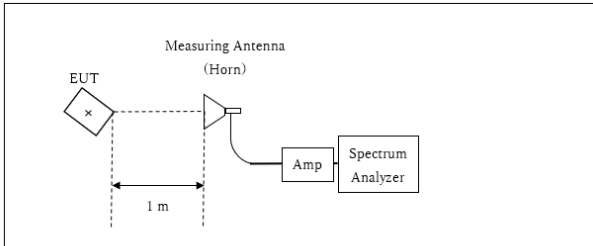


r : Radius of an outer periphery of EUT
x : Center of turn table

Distance Factor: $20 \times \log (3.98 \text{ m}^* / 3.0 \text{ m}) = 2.46 \text{ dB}$
*(Test Distance + SVSWR Volume / 2) - r = 3.98 m

Test Distance: 3 m
SVSWR Volume: 2.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r: 0.02 m

10 GHz to 26.5 GHz



x : Center of turn table

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

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

Antenna polarization	Carrier	Spurious (30 MHz - 1 GHz)	Spurious (1 GHz - 2.8 GHz)	Spurious (2.8 GHz - 10 GHz)	Spurious (10 GHz - 18 GHz)	Spurious (18 GHz - 26.5 GHz)
Horizontal	Y	X	Y	Y	X	X
Vertical	Z	X	Z	Z	X	X

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

Measurement Range : 30 MHz to 26.5 GHz
Test Data : APPENDIX
Test Result : Pass

SECTION 7: Antenna Terminal Conducted Tests

Test Procedure

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

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument Used
6 dB Bandwidth	50 MHz / 100 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak/ Average *2)	-	Power Meter (Sensor: 50 MHz BW)
Peak Power Density	1.5 times the 6 dB Bandwidth	3 kHz	9.1 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *4) *5)	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) Reference data

*3) Section 11.10.2 Method PKPSD (peak PSD) of "ANSI C63.10-2013".

*4) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.
Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.
(9 kHz - 150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz)

*5) The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to $45.5 - 51.5 = -6.0$ dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

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

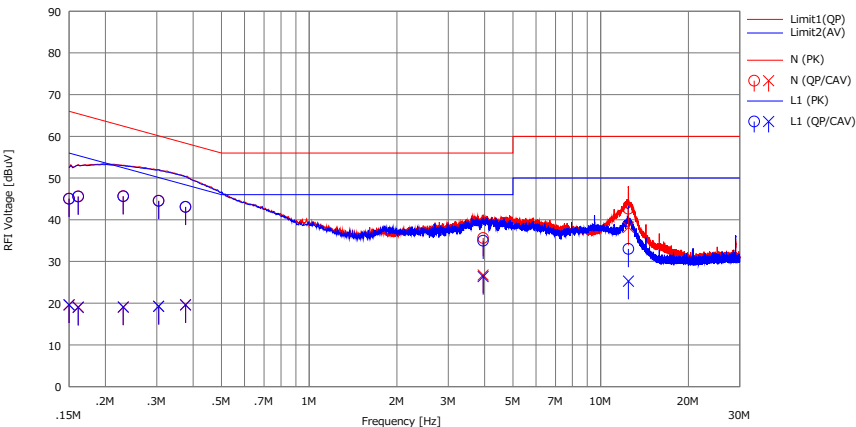
Conducted Emission

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room
Date : 2025/03/12

Mode : Tx 11n-20 2437 MHz
Power : AC 120 V / 60 Hz
Temp./Humi. : 22 deg.C / 28 %RH

Limit : FCC_Part 15 Subpart C(15.207)

Engineer : Yuta Shiba



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		(QP)	(CAV)		(QP)	(CAV)	(QP)	(AV)	(QP)	(AV)		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15001	29.69	4.25	15.37	45.06	19.62	66.00	56.00	20.9	36.3	N	
2	0.16124	30.24	3.69	15.38	45.62	19.07	65.40	55.40	19.7	36.3	N	
3	0.23020	30.27	3.64	15.41	45.68	19.05	62.44	52.44	16.7	33.3	N	
4	0.30439	29.14	3.85	15.42	44.56	19.27	60.12	50.12	15.5	30.8	N	
5	0.37647	27.66	4.21	15.44	43.10	19.65	58.36	48.36	15.2	28.7	N	
6	3.95172	19.97	11.11	15.65	35.62	26.76	56.00	46.00	20.3	19.2	N	
7	12.45725	26.64	22.19	16.02	42.66	38.21	60.00	50.00	17.3	11.7	N	
8	0.15001	29.61	4.21	15.40	45.01	19.61	66.00	56.00	20.9	36.3	L1	
9	0.16124	30.14	3.60	15.40	45.54	19.00	65.40	55.40	19.8	36.4	L1	
10	0.23020	30.19	3.68	15.41	45.60	19.09	62.44	52.44	16.8	33.3	L1	
11	0.30439	29.07	3.81	15.42	44.49	19.23	60.12	50.12	15.6	30.8	L1	
12	0.37647	27.63	4.17	15.44	43.07	19.61	58.36	48.36	15.2	28.7	L1	
13	3.95172	19.34	10.77	15.63	34.97	26.40	56.00	46.00	21.0	19.6	L1	
14	12.45725	17.07	9.36	15.93	33.00	25.29	60.00	50.00	27.0	24.7	L1	

Calculation: Result[dBuV]=Reading[dBuV]+C.Fac(LISN(AMN)+Cable+ATT)[dB]
LISN(AMN): 145542

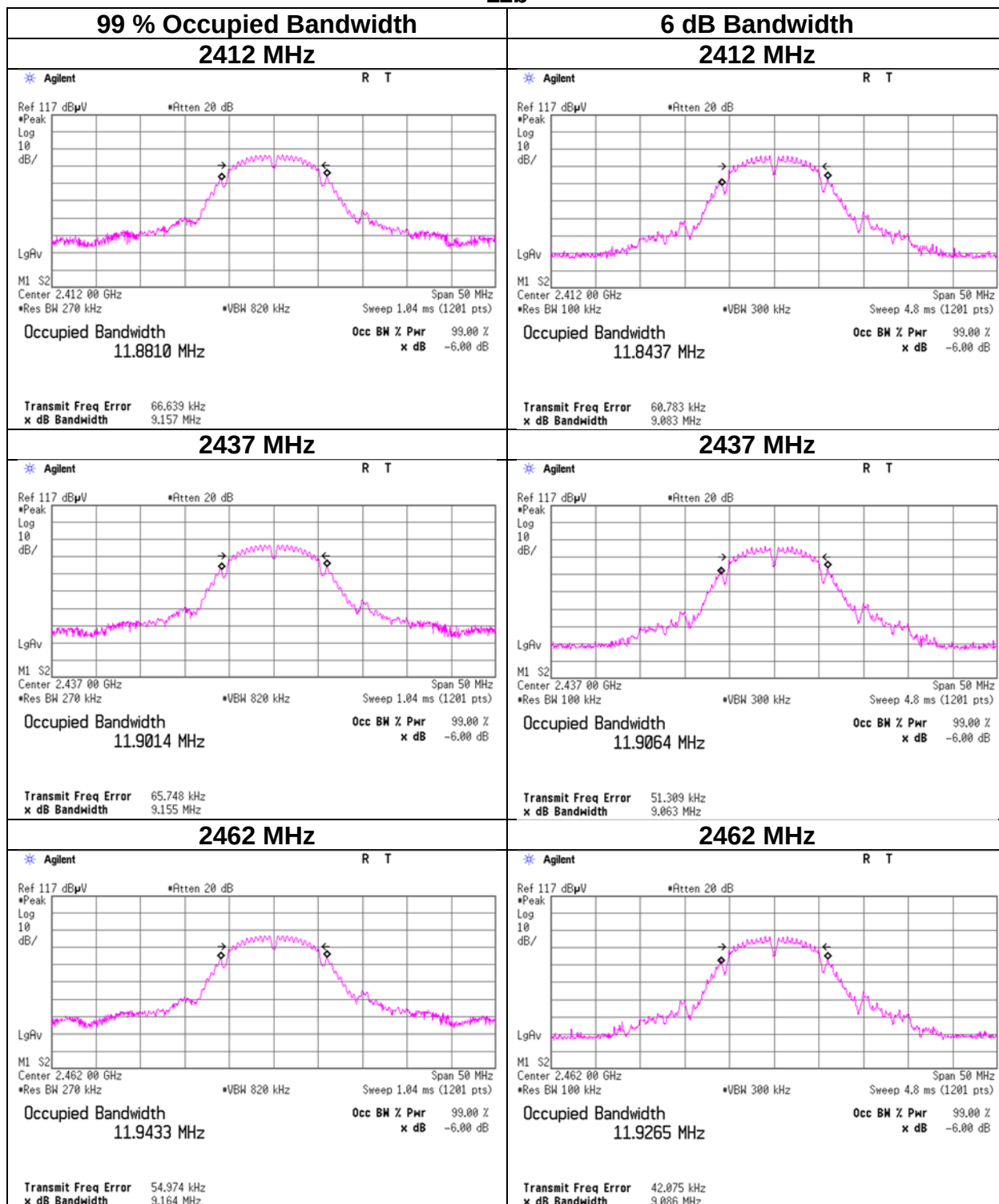
99 % Occupied Bandwidth and 6 dB Bandwidth

Test place Shonan EMC Lab. No.8 Shielded Room
Date February 9, 2025
Temperature / Humidity 21 deg. C / 23 % RH
Engineer Yuta Shiba
Mode Tx

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
11b	2412	11881.0	9.083	> 0.5000
	2437	11901.4	9.063	> 0.5000
	2462	11943.3	9.086	> 0.5000
11g	2412	17575.7	16.358	> 0.5000
	2437	17859.0	16.365	> 0.5000
	2462	17572.0	16.369	> 0.5000
11n-20	2412	18225.6	17.709	> 0.5000
	2437	18352.5	17.687	> 0.5000
	2462	18241.2	17.743	> 0.5000
11n-40	2422	36723.7	36.536	> 0.5000
	2437	36810.7	36.517	> 0.5000
	2452	36709.2	36.539	> 0.5000

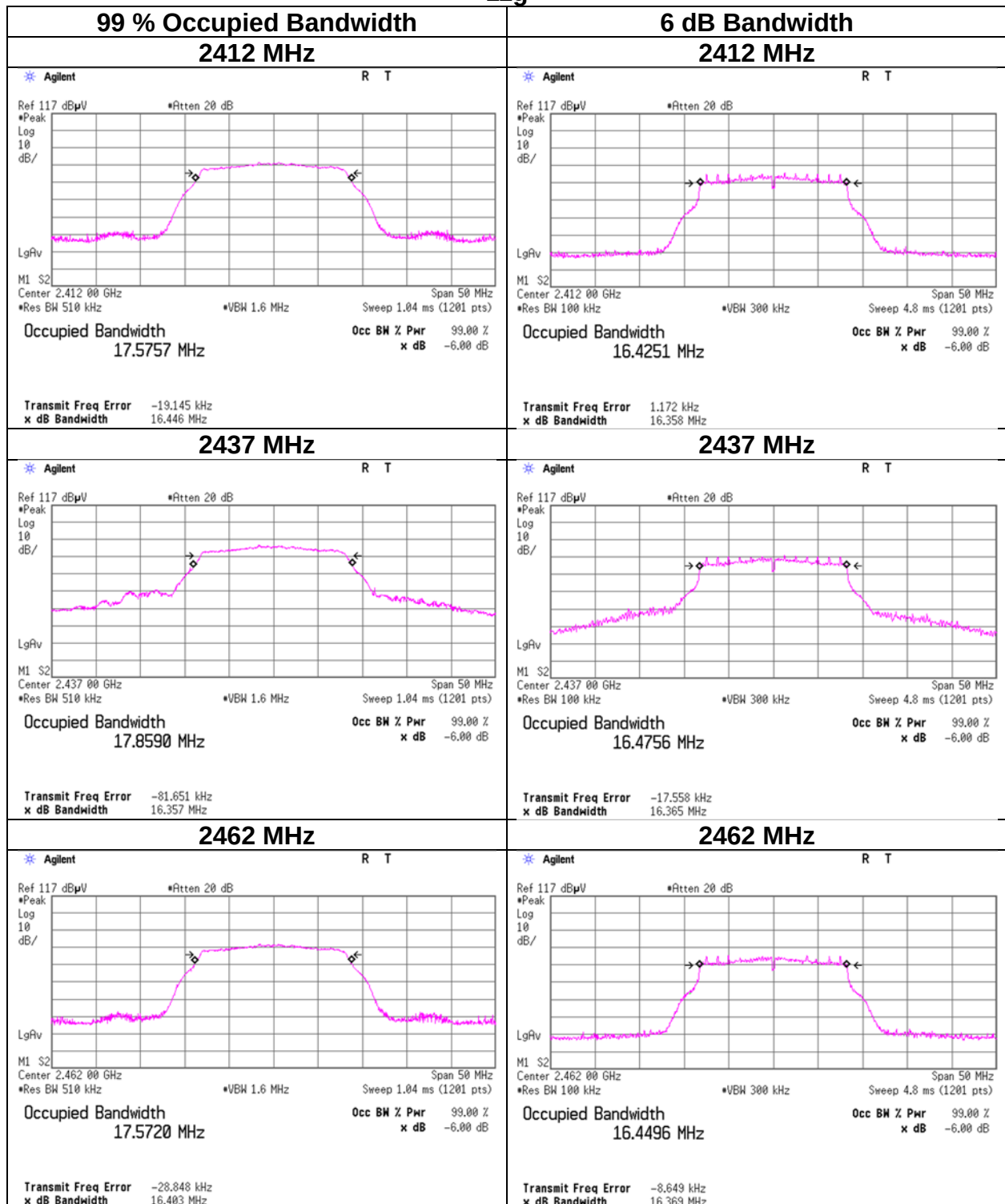
99 % Occupied Bandwidth and 6 dB Bandwidth

11b



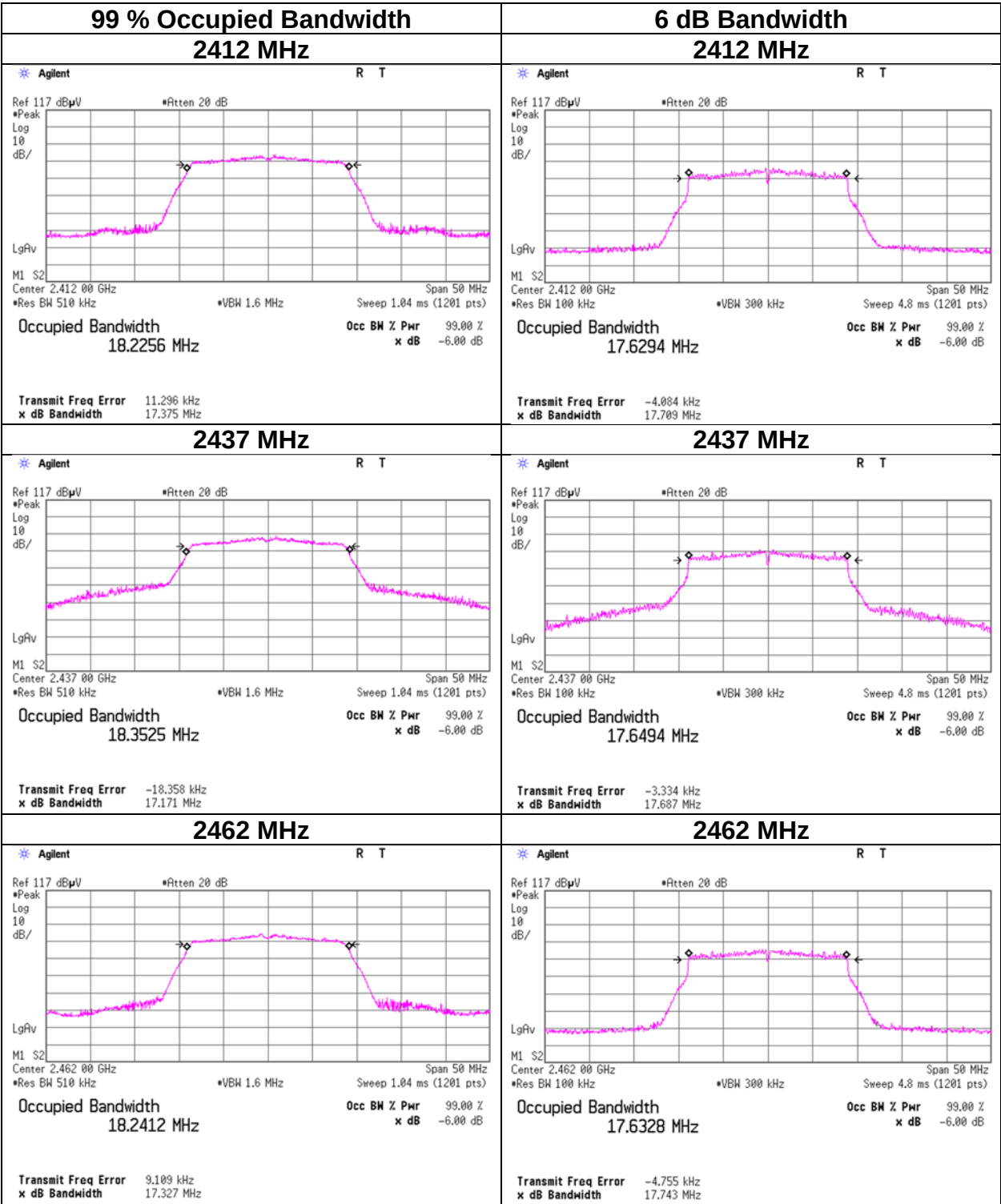
99 % Occupied Bandwidth and 6 dB Bandwidth

11g



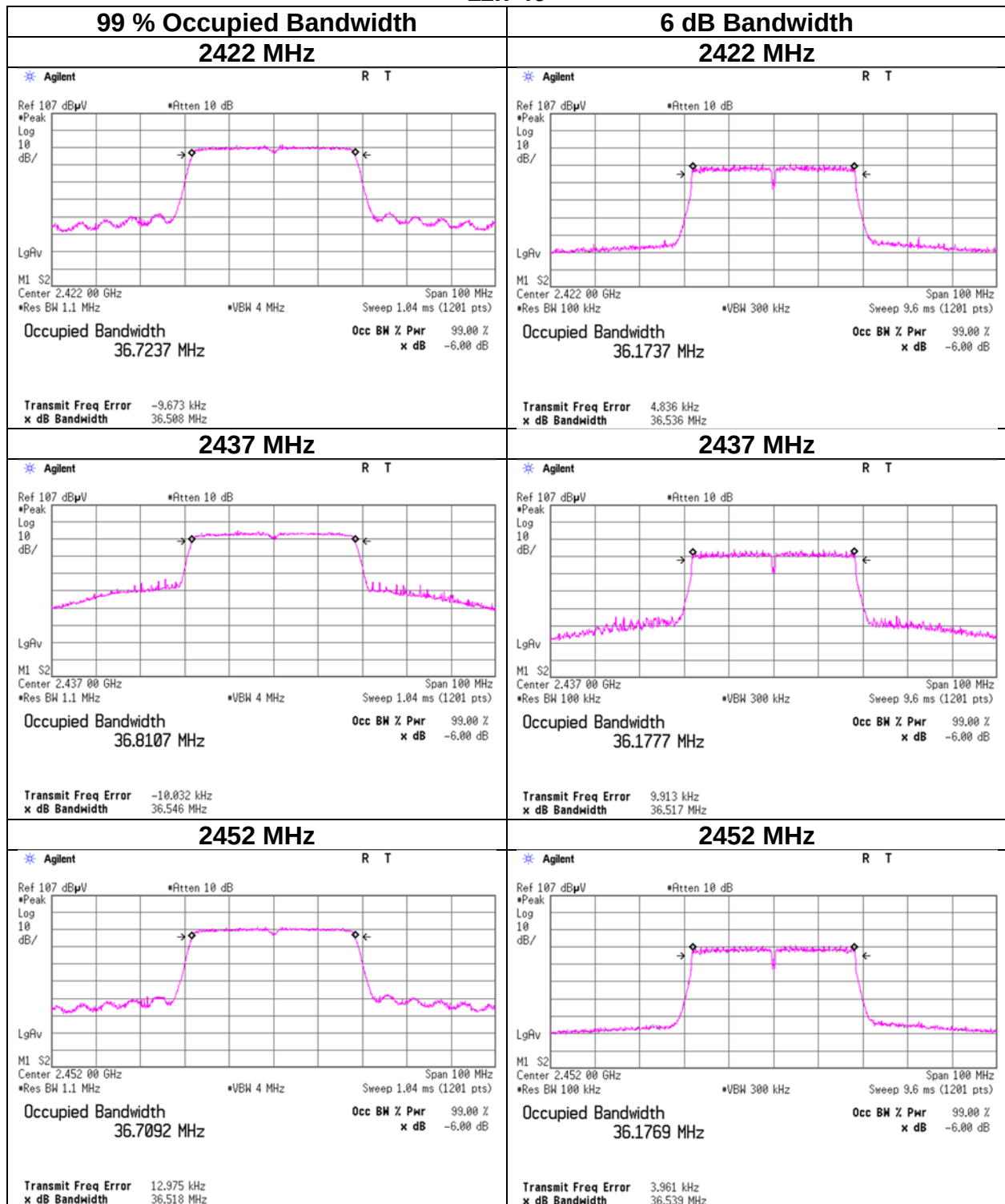
99 % Occupied Bandwidth and 6 dB Bandwidth

11n-20



99 % Occupied Bandwidth and 6 dB Bandwidth

11n-40



Maximum Peak Output Power

Test place Shonan EMC Lab. No.8 Shielded Room
Date February 5, 2025 February 6, 2025
Temperature / Humidity 23 deg. C / 46 % RH 20 deg. C / 50 % RH
Engineer Yuta Shiba Hiromasa Sato
Mode Tx

11b

Maximum peak output power

1 Mbps (worst)

				Conducted Power					e.i.r.p. for RSS-247						
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
2412	8.16	0.88	9.88	18.92	77.98	30.00	1000	11.08	1.80	20.72	118.03	36.02	4000	15.30	
2437	8.28	0.88	9.88	19.04	80.17	30.00	1000	10.96	1.80	20.84	121.34	36.02	4000	15.18	
2462	8.30	0.89	9.88	19.07	80.72	30.00	1000	10.93	1.80	20.87	122.18	36.02	4000	15.15	

11g

Maximum peak output power

6 Mbps (worst)

				Conducted Power					e.i.r.p. for RSS-247						
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
2412	8.82	0.88	9.88	19.58	90.78	30.00	1000	10.42	1.80	21.38	137.40	36.02	4000	14.64	
2437	12.67	0.88	9.88	23.43	220.29	30.00	1000	6.57	1.80	25.23	333.43	36.02	4000	10.79	
2462	8.73	0.89	9.88	19.50	89.13	30.00	1000	10.50	1.80	21.30	134.90	36.02	4000	14.72	

11n-20 (SISO)

Maximum peak output power

MCS 5 (worst)

				Conducted Power					e.i.r.p. for RSS-247						
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]	
2412	9.32	0.88	9.88	20.08	101.86	30.00	1000	9.92	1.80	21.88	154.17	36.02	4000	14.14	
2437	13.05	0.88	9.88	23.81	240.44	30.00	1000	6.19	1.80	25.61	363.92	36.02	4000	10.41	
2462	9.75	0.89	9.88	20.52	112.72	30.00	1000	9.48	1.80	22.32	170.61	36.02	4000	13.70	

11n-40 (SISO)

Maximum peak output power

MCS 7 (worst)

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2422	6.62	0.88	9.88	17.38	54.70	30.00	1000	12.62	1.80	19.18	82.79	36.02	4000	16.84
2437	10.65	0.88	9.88	21.41	138.36	30.00	1000	8.59	1.80	23.21	209.41	36.02	4000	12.81
2452	6.85	0.88	9.88	17.61	57.68	30.00	1000	12.39	1.80	19.41	87.30	36.02	4000	16.61

Sample Calculation:

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

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

*Pre-Check of worst case voltage

11n-20 (SISO) 2437 MHz

Maximum peak output power

MCS 5 (worst)

2437 MHz				Conducted Power					e.i.r.p. for RSS-247					
Voltage	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
				[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
Vnom	13.05	0.88	9.88	23.81	240.44	30.00	1000	6.19	1.80	25.61	363.92	36.02	4000	10.41
Vmin	12.91	0.88	9.88	23.67	232.81	30.00	1000	6.33	1.80	25.47	352.37	36.02	4000	10.55
Vmax	12.70	0.88	9.88	23.46	221.82	30.00	1000	6.54	1.80	25.26	335.74	36.02	4000	10.76

Sample Calculation:

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

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

Voltage	Vnom: DC 3.3 V Vmin: DC 2.97 V Vmax: DC 3.63 V
---------	--

Maximum Peak Output Power

Test place Shonan EMC Lab. No.8 Shielded Room
Date February 5, 2025 February 6, 2025
Temperature / Humidity 23 deg. C / 46 % RH 20 deg. C / 50 % RH
Engineer Yuta Shiba Hiromasa Sato
Mode Tx

(Peak)

11b 2437 MHz		
Rate	Reading	Remark
[Mbps]	[dBm]	
1	8.28	*
2	8.21	
5.5	8.04	
11	8.24	

*: Worst Rate

11g 2437 MHz		
Rate	Reading	Remark
[Mbps]	[dBm]	
6	12.67	*
9	12.62	
12	12.58	
18	12.23	
24	12.07	
36	12.20	
48	12.51	
54	11.92	

*: Worst Rate

11n-20 (SISO) 2437 MHz		
MCS	Reading	Remark
	[dBm]	
0	12.90	*
1	12.88	
2	12.94	
3	12.77	
4	12.85	
5	13.05	
6	12.80	
7	12.89	

*: Worst Rate

11n-40 (SISO) 2437 MHz		
MCS	Reading	Remark
	[dBm]	
0	10.08	
1	10.35	
2	10.34	
3	10.05	
4	10.40	
5	10.49	
6	10.54	
7	10.65	

*: Worst Rate

* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.
* All comparisons were carried out on same frequency and measurement factors.
* This result value is not the final data and does not include cable attenuation or attenuation of attenuators.

Average Output Power (Reference data for RF Exposure)

Test place	Shonan EMC Lab. No.8 Shielded Room	
Date	February 5, 2025	February 6, 2025
Temperature / Humidity	23 deg. C / 46 % RH	20 deg. C / 50 % RH
Engineer	Yuta Shiba	Hiromasa Sato
Mode	Tx	

11b

Average power 1 Mbps (worst)

(*)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	5.07	0.88	9.88	15.83	38.28	0.00	15.83	38.28
2437	5.14	0.88	9.88	15.90	38.90	0.00	15.90	38.90
2462	5.18	0.89	9.88	15.95	39.36	0.00	15.95	39.36

11g

Average power 0 Mbps (worst)

(*)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-2.24	0.88	9.88	8.52	7.11	0.00	8.52	7.11
2437	2.33	0.88	9.88	13.09	20.37	0.00	13.09	20.37
2462	-2.42	0.89	9.88	8.35	6.84	0.00	8.35	6.84

11n-20 (SISO)

Average power MCS 5 (worst)

(*)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2412	-2.41	0.88	9.88	8.35	6.84	0.00	8.35	6.84
2437	2.34	0.88	9.88	13.10	20.42	0.00	13.10	20.42
2462	-2.43	0.89	9.88	8.34	6.82	0.00	8.34	6.82

11n-40 (SISO)

Average power MCS 7 (worst)

(*)

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2422	-4.48	0.88	9.88	6.28	4.25	0.00	6.28	4.25
2437	-1.40	0.88	9.88	9.36	8.63	0.00	9.36	8.63
2452	-4.21	0.88	9.88	6.55	4.52	0.00	6.55	4.52

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

Result (Burst power average) = Result (Time average) + Duty factor

(*) Power was measured with using the gate function of power meter.

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

Average Output Power (Reference data for RF Exposure)

Test place Shonan EMC Lab. No.8 Shielded Room
Date December 6, 2024 February 5, 2025
Temperature / Humidity 23 deg. C / 26 % RH 23 deg. C / 46 % RH
Engineer Yuta Shiba Yuta Shiba
Mode Tx

(Average)

11b 2437 MHz

*1)

Rate [Mbps]	Reading [dBm]	Duty Factor [dB]	Result [dBm]	Remark
1	5.14	0.00	5.14	*
2	5.09	0.00	5.09	
5.5	5.08	0.00	5.08	
11	5.13	0.00	5.13	

*: Worst Rate

11g 2437 MHz

*1)

Rate [Mbps]	Reading [dBm]	Duty Factor [dB]	Result [dBm]	Remark
6	2.33	0.00	2.33	*
9	2.32	0.00	2.32	
12	2.25	0.00	2.25	
18	2.17	0.00	2.17	
24	2.29	0.00	2.29	
36	2.09	0.00	2.09	
48	2.19	0.00	2.19	
54	2.17	0.00	2.17	

*: Worst Rate

11n-20 (SISO) 2437 MHz

*1)

MCS	Reading [dBm]	Duty Factor [dB]	Result [dBm]	Remark
0	2.18	0.00	2.18	*
1	2.27	0.00	2.27	
2	2.00	0.00	2.00	
3	2.00	0.00	2.00	
4	2.01	0.00	2.01	
5	2.34	0.00	2.34	
6	1.86	0.00	1.86	
7	2.01	0.00	2.01	

*: Worst Rate

11n-40 (SISO) 2437 MHz

*1)

MCS	Reading [dBm]	Duty Factor [dB]	Result [dBm]	Remark
0	-1.60	0.00	-1.60	*
1	-1.55	0.00	-1.55	
2	-1.55	0.00	-1.55	
3	-1.41	0.00	-1.41	
4	-1.42	0.00	-1.42	
5	-1.42	0.00	-1.42	
6	-1.53	0.00	-1.53	
7	-1.40	0.00	-1.40	

*: Worst Rate

Sample Calculation: Result [dBm] = Reading [dBm] + Duty Factor [dB]

* All comparisons were carried out on same frequency and measurement factors.

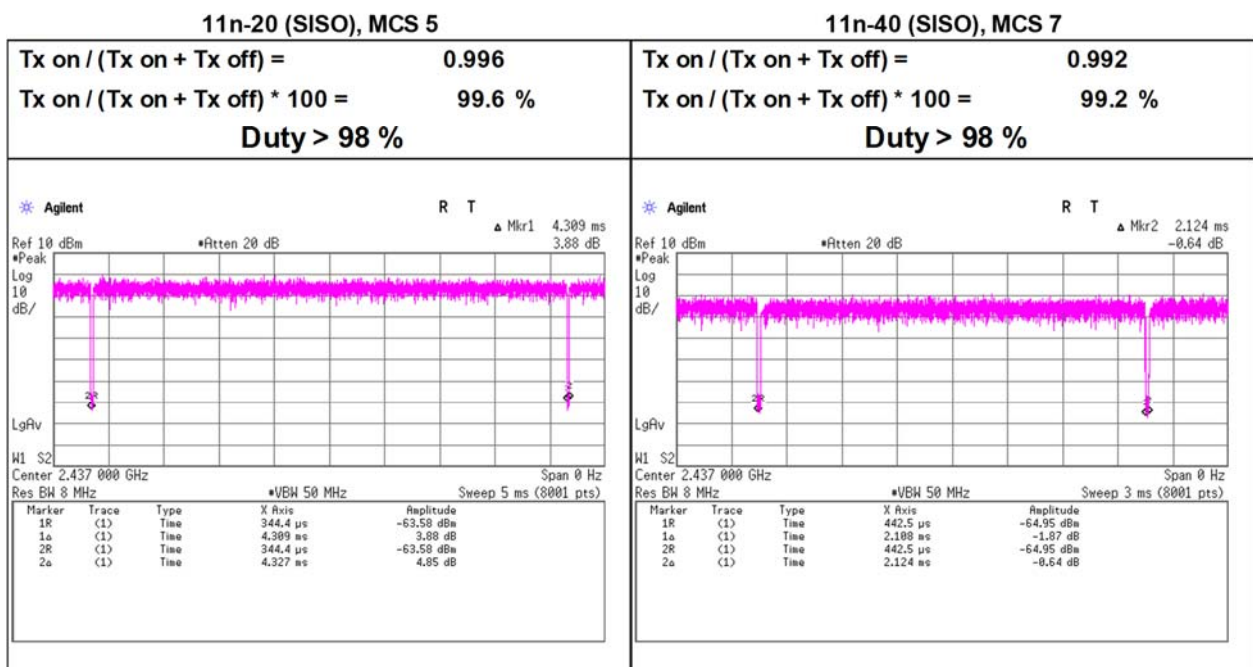
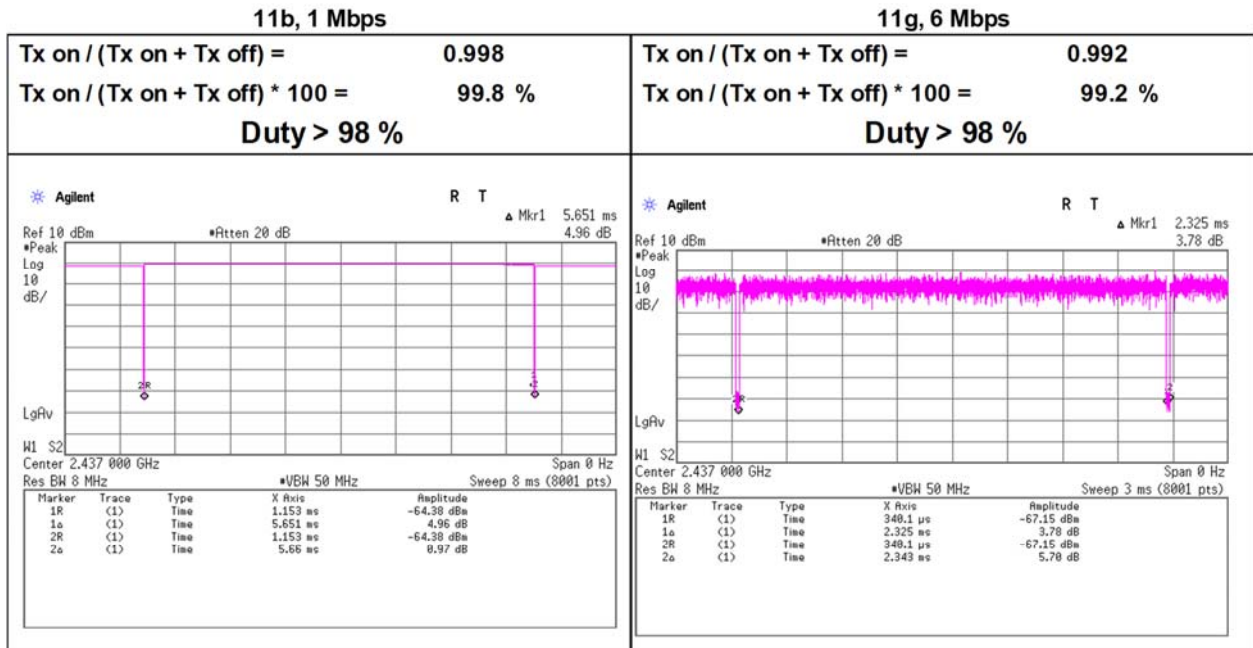
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

* This result value is not the final data and does not include cable attenuation or attenuation of attenuators.

(*1) Power was measured with using the gate function of power meter.

Burst rate confirmation

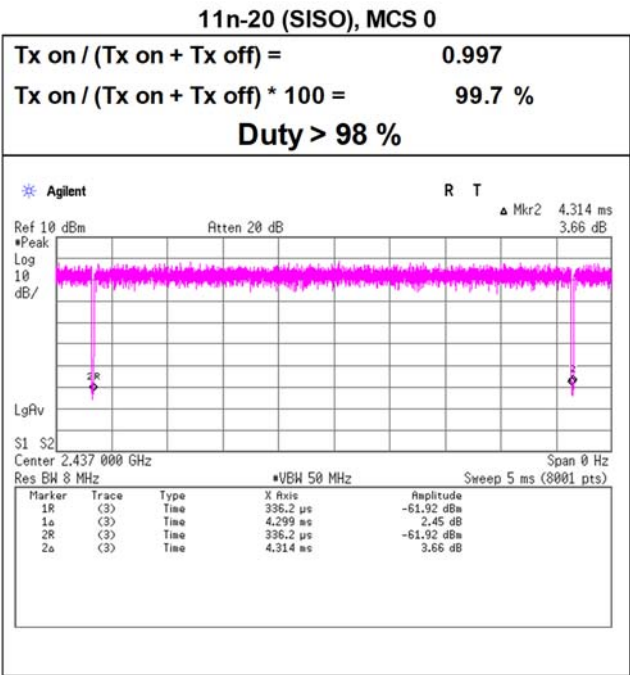
Test place Shonan EMC Lab. No.8 Shielded Room
Date February 10, 2025
Temperature / Humidity 22 deg. C / 24 % RH
Engineer Yuta Shiba
Mode Tx



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Test place Shonan EMC Lab. No.8 Shielded Room
Date February 10, 2025
Temperature / Humidity 22 deg. C / 24 % RH
Engineer Yuta Shiba
Mode Tx



*Radiated Spurious Emission(Band edge) only

Radiated Spurious Emission

Test place	Shonan EMC Lab.	SAC 3	SAC 3
Semi Anechoic Chamber	SAC 3	March 2, 2025	February 25, 2025
Date	January 17, 2025	22 deg. C / 25 % RH	23 deg. C / 30 % RH
Temperature / Humidity	23 deg. C / 23 % RH	Shiro Kobayashi	Miku Ikudome
Engineer	Takayuki Kobayashi	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	(1 GHz to 10 GHz)		
	Tx 11b 2412 MHz		

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2390.000	PK	60.28	27.79	14.35	41.55	2.46	63.33	73.9	10.5	135	127	-
Hori.	4824.000	PK	55.27	31.28	6.86	42.82	2.46	53.05	73.9	20.8	258	121	-
Hori.	7236.000	PK	49.11	36.93	8.32	43.29	2.46	53.53	73.9	20.3	150	0	Floor Noise
Hori.	9648.000	PK	49.77	38.63	9.47	43.01	2.46	57.32	73.9	16.5	150	0	Floor Noise
Hori.	19296.000	PK	42.10	40.30	13.92	47.94	-9.54	38.84	73.9	35.0	135	55	-
Hori.	21708.000	PK	45.39	40.20	14.92	47.15	-9.54	43.82	73.9	30.0	135	328	-
Hori.	24120.000	PK	42.01	40.07	15.76	46.75	-9.54	41.55	73.9	32.3	150	0	Floor Noise
Hori.	2390.000	AV	40.41	27.79	14.35	41.55	2.46	43.46	53.9	10.4	135	127	-
Hori.	4824.000	AV	50.05	31.28	6.86	42.82	2.46	47.83	53.9	6.0	258	121	-
Hori.	7236.000	AV	37.60	36.93	8.32	43.29	2.46	42.02	53.9	11.8	150	0	Floor Noise
Hori.	9648.000	AV	38.45	38.63	9.47	43.01	2.46	46.00	53.9	7.9	150	0	Floor Noise
Hori.	19296.000	AV	31.64	40.30	13.92	47.94	-9.54	28.38	53.9	25.5	135	55	-
Hori.	21708.000	AV	34.41	40.20	14.92	47.15	-9.54	32.84	53.9	21.0	135	328	-
Hori.	24120.000	AV	31.12	40.07	15.76	46.75	-9.54	30.66	53.9	23.2	150	0	Floor Noise
Vert.	2390.000	PK	60.29	27.79	14.35	41.55	2.46	63.34	73.9	10.5	149	188	-
Vert.	4824.000	PK	56.49	31.28	6.86	42.82	2.46	54.27	73.9	19.6	102	81	-
Vert.	7236.000	PK	49.33	36.93	8.32	43.29	2.46	53.75	73.9	20.1	150	0	Floor Noise
Vert.	9648.000	PK	50.04	38.63	9.47	43.01	2.46	57.59	73.9	16.3	150	0	Floor Noise
Vert.	19296.000	PK	42.45	40.30	13.92	47.94	-9.54	39.19	73.9	34.7	134	1	-
Vert.	21708.000	PK	45.36	40.20	14.92	47.15	-9.54	43.79	73.9	30.1	147	357	-
Vert.	24120.000	PK	41.83	40.07	15.76	46.75	-9.54	41.37	73.9	32.5	150	0	Floor Noise
Vert.	2390.000	AV	39.88	27.79	14.35	41.55	2.46	42.93	53.9	10.9	149	188	-
Vert.	4824.000	AV	51.96	31.28	6.86	42.82	2.46	49.74	53.9	4.1	102	81	-
Vert.	7236.000	AV	37.43	36.93	8.32	43.29	2.46	41.85	53.9	12.0	150	0	Floor Noise
Vert.	9648.000	AV	38.27	38.63	9.47	43.01	2.46	45.82	53.9	8.0	150	0	Floor Noise
Vert.	19296.000	AV	32.38	40.30	13.92	47.94	-9.54	29.12	53.9	24.7	134	1	-
Vert.	21708.000	AV	34.87	40.20	14.92	47.15	-9.54	33.30	53.9	20.6	147	357	-
Vert.	24120.000	AV	31.26	40.07	15.76	46.75	-9.54	30.80	53.9	23.1	150	0	Floor Noise

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98\text{ [m]} / 3.0\text{ [m]}) = 2.46\text{ [dB]}$

10 GHz to 40 GHz : $20\log(1.00\text{ [m]} / 3.0\text{ [m]}) = -9.54\text{ [dB]}$

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2412.000	PK	100.70	27.76	14.37	41.56	2.46	103.73	-	-	Carrier
Hori.	2400.000	PK	53.90	27.77	14.37	41.56	2.46	56.94	83.7	26.7	-
Vert.	2412.000	PK	100.60	27.76	14.37	41.56	2.46	103.63	-	-	Carrier
Vert.	2400.000	PK	53.64	27.77	14.37	41.56	2.46	56.68	83.6	26.9	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

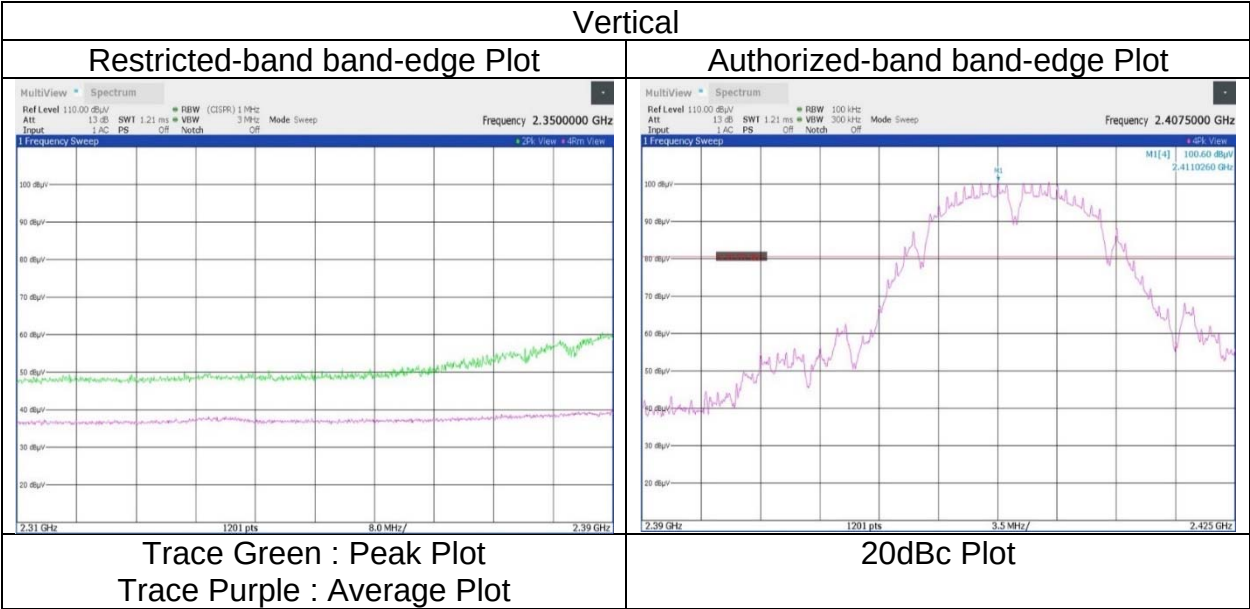
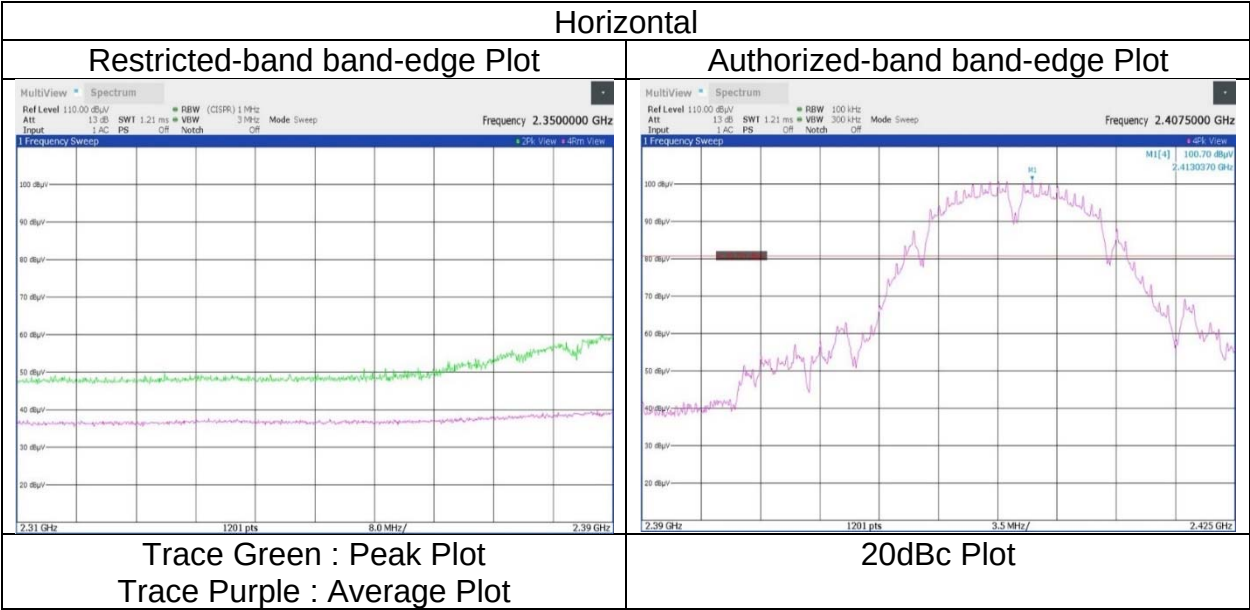
Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98\text{ [m]} / 3.0\text{ [m]}) = 2.46\text{ [dB]}$

10 GHz to 40 GHz : $20\log(1.00\text{ [m]} / 3.0\text{ [m]}) = -9.54\text{ [dB]}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
January 17, 2025
23 deg. C / 23 % RH
Takayuki Kobayashi
Tx 11b 2412 MHz



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

Radiated Spurious Emission

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer

Mode

Shonan EMC Lab.
SAC 3
January 17, 2025
23 deg. C / 23 % RH
Takayuki Kobayashi
(1 GHz to 10 GHz)
Tx 11b 2437 MHz

SAC 3
March 2, 2025
22 deg. C / 25 % RH
Shiro Kobayashi
(10 GHz to 18 GHz)

SAC 3
February 25, 2025
23 deg. C / 30 % RH
Miku Ikudome
(18 GHz to 26.5 GHz)

(* PK: Peak, AV: Average, QP: Quasi-Peak)														
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark	
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]		
Hori.	4874.000	PK	54.57	31.34	6.88	42.82	2.46	52.43	73.9	21.4	235	105	-	
Hori.	7311.000	PK	49.71	37.02	8.38	43.34	2.46	54.23	73.9	19.6	150	0	Floor Noise	
Hori.	9748.000	PK	49.86	38.86	9.52	42.94	2.46	57.76	73.9	16.1	150	0	Floor Noise	
Hori.	21933.000	PK	46.44	40.24	15.01	47.28	-9.54	44.87	73.9	29.0	156	241	-	
Hori.	4874.000	AV	49.03	31.34	6.88	42.82	2.46	46.89	53.9	7.0	235	105	-	
Hori.	7311.000	AV	37.41	37.02	8.38	43.34	2.46	41.93	53.9	11.9	150	0	Floor Noise	
Hori.	9748.000	AV	37.82	38.86	9.52	42.94	2.46	45.72	53.9	8.1	150	0	Floor Noise	
Hori.	21933.000	AV	35.94	40.24	15.01	47.28	-9.54	34.37	53.9	19.5	156	241	-	
Vert.	4874.000	PK	55.41	31.34	6.88	42.82	2.46	53.27	73.9	20.6	103	225	-	
Vert.	7311.000	PK	49.19	37.02	8.38	43.34	2.46	53.71	73.9	20.1	150	0	Floor Noise	
Vert.	9748.000	PK	49.28	38.86	9.52	42.94	2.46	57.18	73.9	16.7	150	0	Floor Noise	
Vert.	21933.000	PK	46.21	40.24	15.01	47.28	-9.54	44.64	73.9	29.2	144	265	-	
Vert.	4874.000	AV	50.08	31.34	6.88	42.82	2.46	47.94	53.9	5.9	103	225	-	
Vert.	7311.000	AV	37.55	37.02	8.38	43.34	2.46	42.07	53.9	11.8	150	0	Floor Noise	
Vert.	9748.000	AV	37.87	38.86	9.52	42.94	2.46	45.77	53.9	8.1	150	0	Floor Noise	
Vert.	21933.000	AV	36.07	40.24	15.01	47.28	-9.54	34.50	53.9	19.4	144	265	-	

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac.: 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	January 17, 2025	March 2, 2025	February 25, 2025
Temperature / Humidity	23 deg. C / 23 % RH	22 deg. C / 25 % RH	23 deg. C / 30 % RH
Engineer	Takayuki Kobayashi	Shiro Kobayashi	Miku Ikudome
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11b 2462 MHz		

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	59.79	27.67	14.45	41.58	2.46	62.79	73.9	11.1	160	136	-
Hori.	2485.375	PK	61.65	27.67	14.45	41.59	2.46	64.64	73.9	9.2	156	144	-
Hori.	4924.000	PK	54.12	31.43	6.91	42.82	2.46	52.10	73.9	21.8	128	104	-
Hori.	7386.000	PK	49.10	37.12	8.43	43.39	2.46	53.72	73.9	20.1	150	0	Floor Noise
Hori.	9848.000	PK	49.15	38.88	9.57	42.88	2.46	57.18	73.9	16.7	150	0	Floor Noise
Hori.	22158.000	PK	46.91	40.27	15.07	47.32	-9.54	45.39	73.9	28.5	144	241	-
Hori.	2483.500	AV	38.84	27.67	14.45	41.58	2.46	41.84	53.9	12.0	160	136	-
Hori.	2485.375	AV	37.75	27.67	14.45	41.59	2.46	40.74	53.9	13.1	156	144	-
Hori.	4924.000	AV	44.90	31.43	6.91	42.82	2.46	42.88	53.9	11.0	128	104	-
Hori.	7386.000	AV	37.11	37.12	8.43	43.39	2.46	41.73	53.9	12.1	150	0	Floor Noise
Hori.	9848.000	AV	37.34	38.88	9.57	42.88	2.46	45.37	53.9	8.5	150	0	Floor Noise
Hori.	22158.000	AV	35.49	40.27	15.07	47.32	-9.54	33.97	53.9	19.9	144	241	-
Vert.	2483.500	PK	59.61	27.67	14.45	41.58	2.46	62.61	73.9	11.2	123	162	-
Vert.	2485.595	PK	61.69	27.67	14.45	41.59	2.46	64.68	73.9	9.2	118	165	-
Vert.	4924.000	PK	54.03	31.43	6.91	42.82	2.46	52.01	73.9	21.8	153	91	-
Vert.	7386.000	PK	48.66	37.12	8.43	43.39	2.46	53.28	73.9	20.6	150	0	Floor Noise
Vert.	9848.000	PK	49.67	38.88	9.57	42.88	2.46	57.70	73.9	16.2	150	0	Floor Noise
Vert.	22158.000	PK	46.15	40.27	15.07	47.32	-9.54	44.63	73.9	29.2	100	0	-
Vert.	2483.500	AV	38.13	27.67	14.45	41.58	2.46	41.13	53.9	12.7	123	162	-
Vert.	2485.595	AV	37.89	27.67	14.45	41.59	2.46	40.88	53.9	13.0	118	165	-
Vert.	4924.000	AV	44.92	31.43	6.91	42.82	2.46	42.90	53.9	11.0	153	91	-
Vert.	7386.000	AV	37.09	37.12	8.43	43.39	2.46	41.71	53.9	12.1	150	0	Floor Noise
Vert.	9848.000	AV	37.41	38.88	9.57	42.88	2.46	45.44	53.9	8.4	150	0	Floor Noise
Vert.	22158.000	AV	35.52	40.27	15.07	47.32	-9.54	34.00	53.9	19.9	100	0	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

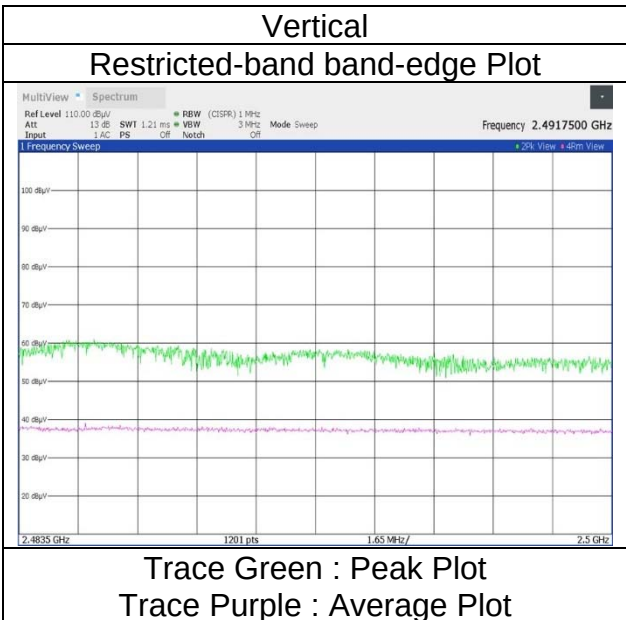
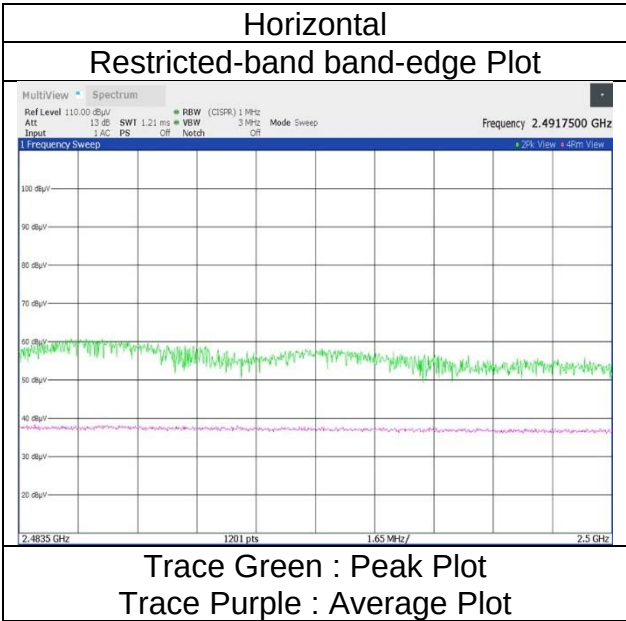
Distance Fac.: 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
January 17, 2025
23 deg. C / 23 % RH
Takayuki Kobayashi
Tx 11b 2462 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 Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date January 21, 2025
Temperature / Humidity 22 deg. C / 25 % RH
Engineer Takayuki Kobayashi
(1 GHz to 2.8 GHz)
Mode Tx 11g 2412 MHz

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2387.369	PK	59.23	27.80	14.35	41.55	2.46	62.29	73.9	11.6	171	136	-
Hori.	2390.000	PK	61.99	27.79	14.35	41.55	2.46	65.04	73.9	8.8	171	136	-
Hori.	2387.369	AV	39.85	27.80	14.35	41.55	2.46	42.91	53.9	10.9	171	136	-
Hori.	2390.000	AV	39.78	27.79	14.35	41.55	2.46	42.83	53.9	11.0	171	136	-
Vert.	2386.630	PK	55.73	27.80	14.35	41.55	2.46	58.79	73.9	15.1	148	188	-
Vert.	2390.000	PK	58.63	27.79	14.35	41.55	2.46	61.68	73.9	12.2	148	188	-
Vert.	2386.630	AV	38.89	27.80	14.35	41.55	2.46	41.95	53.9	11.9	148	188	-
Vert.	2390.000	AV	39.15	27.79	14.35	41.55	2.46	42.20	53.9	11.7	148	188	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2412.000	PK	90.92	27.76	14.37	41.56	2.46	93.95	-	-	Carrier
Hori.	2400.000	PK	58.42	27.77	14.37	41.56	2.46	61.46	73.9	12.4	-
Vert.	2412.000	PK	89.61	27.76	14.37	41.56	2.46	92.64	-	-	Carrier
Vert.	2400.000	PK	58.49	27.77	14.37	41.56	2.46	61.53	72.6	11.0	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

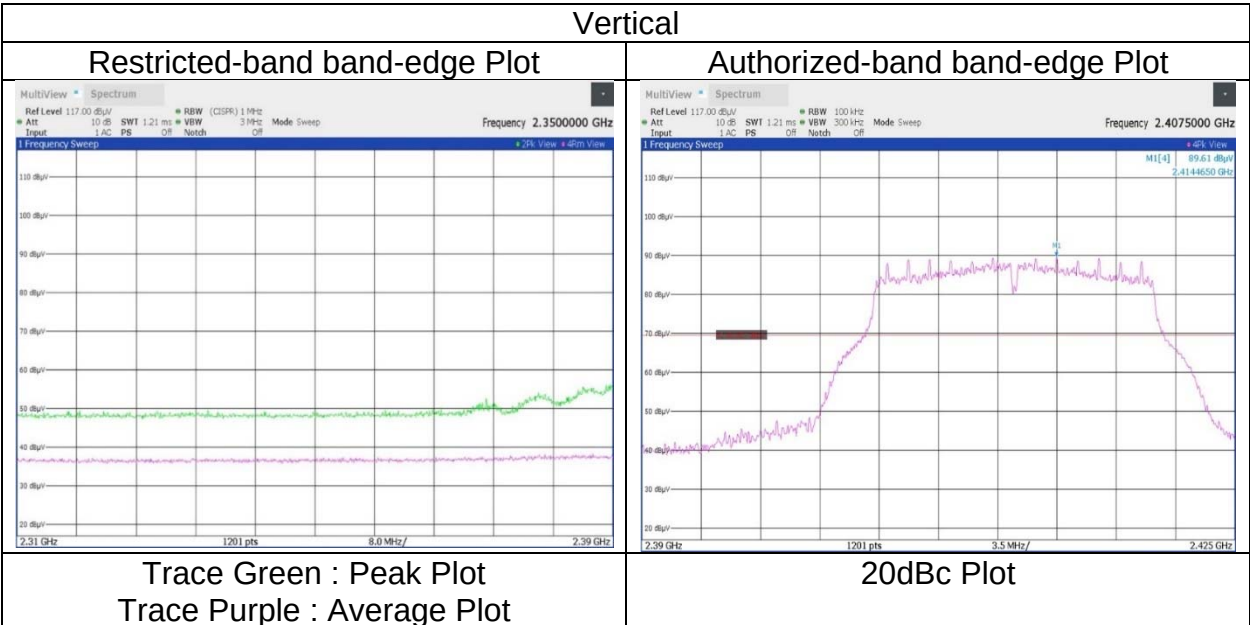
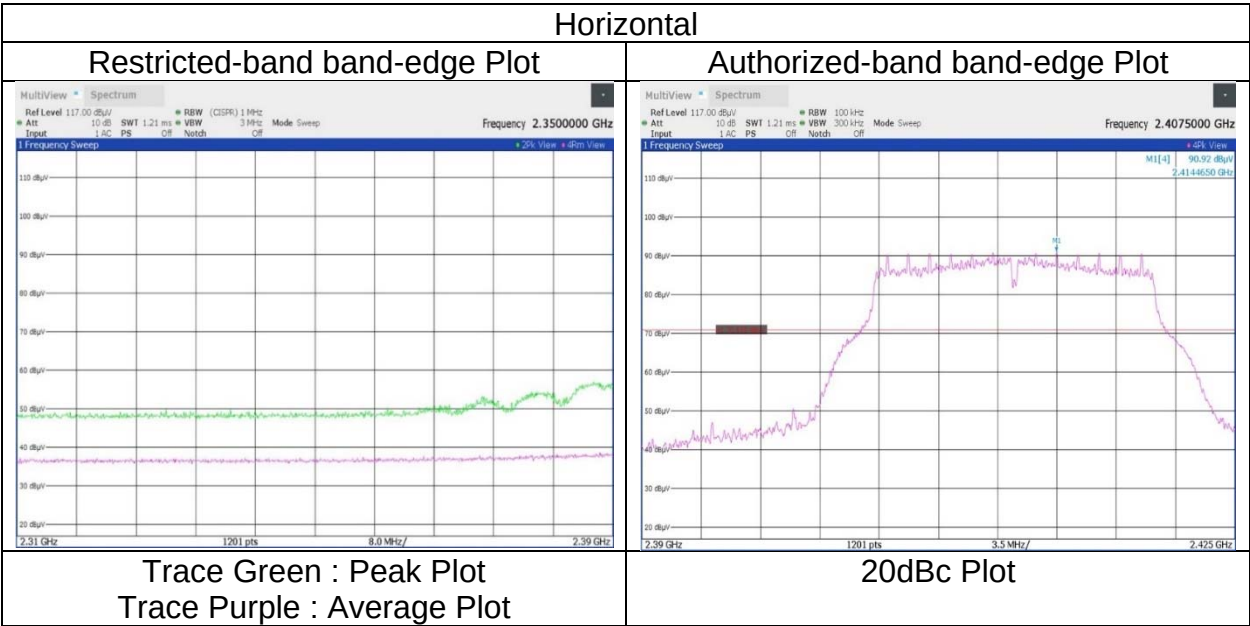
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
January 21, 2025
22 deg. C / 25 % RH
Takayuki Kobayashi
Tx 11g 2412 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 9, 2024
Temperature / Humidity 20 deg. C / 30 % RH
Engineer Masahide Ozaki
 (1 GHz to 2.8 GHz)
Mode Tx 11g 2417 MHz

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2389.367	PK	66.25	27.79	14.30	41.55	2.46	69.25	73.9	4.6	323	248	-
Hori.	2390.000	PK	67.27	27.79	14.30	41.55	2.46	70.27	73.9	3.6	323	248	-
Hori.	2389.367	AV	41.12	27.79	14.30	41.55	2.46	44.12	53.9	9.7	323	248	-
Hori.	2390.000	AV	41.16	27.79	14.30	41.55	2.46	44.16	53.9	9.7	323	248	-
Vert.	2389.463	PK	67.41	27.79	14.30	41.55	2.46	70.41	73.9	3.4	123	24	-
Vert.	2390.000	PK	68.24	27.79	14.30	41.55	2.46	71.24	73.9	2.6	123	24	-
Vert.	2389.463	AV	43.63	27.79	14.30	41.55	2.46	46.63	53.9	7.2	123	24	-
Vert.	2390.000	AV	44.59	27.79	14.30	41.55	2.46	47.59	53.9	6.3	123	24	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

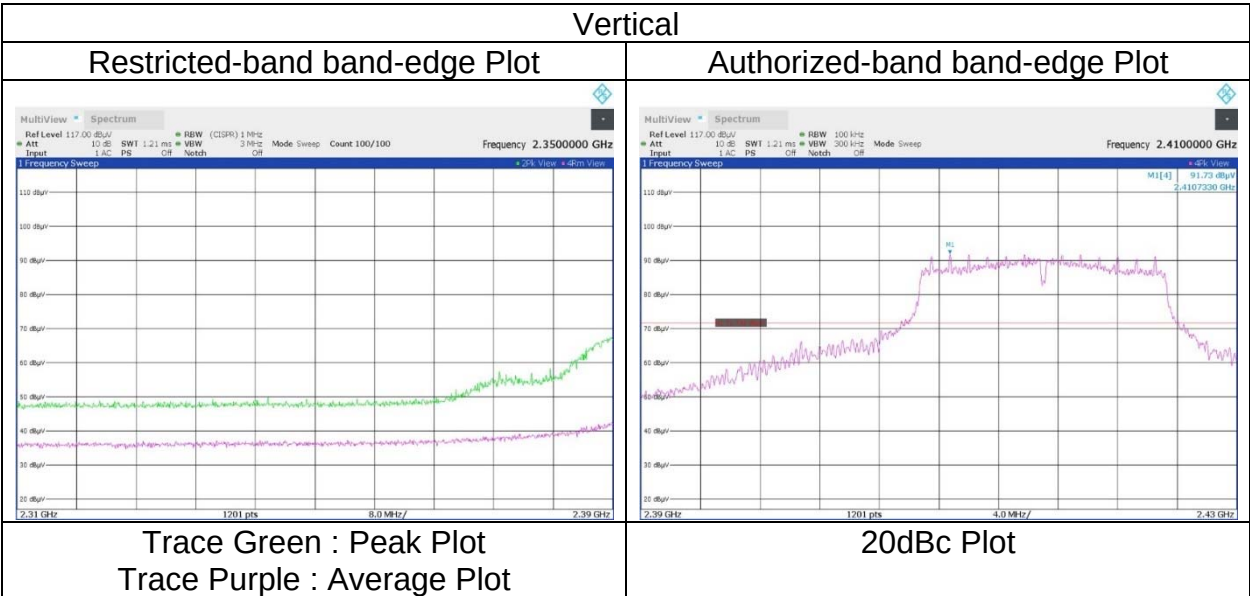
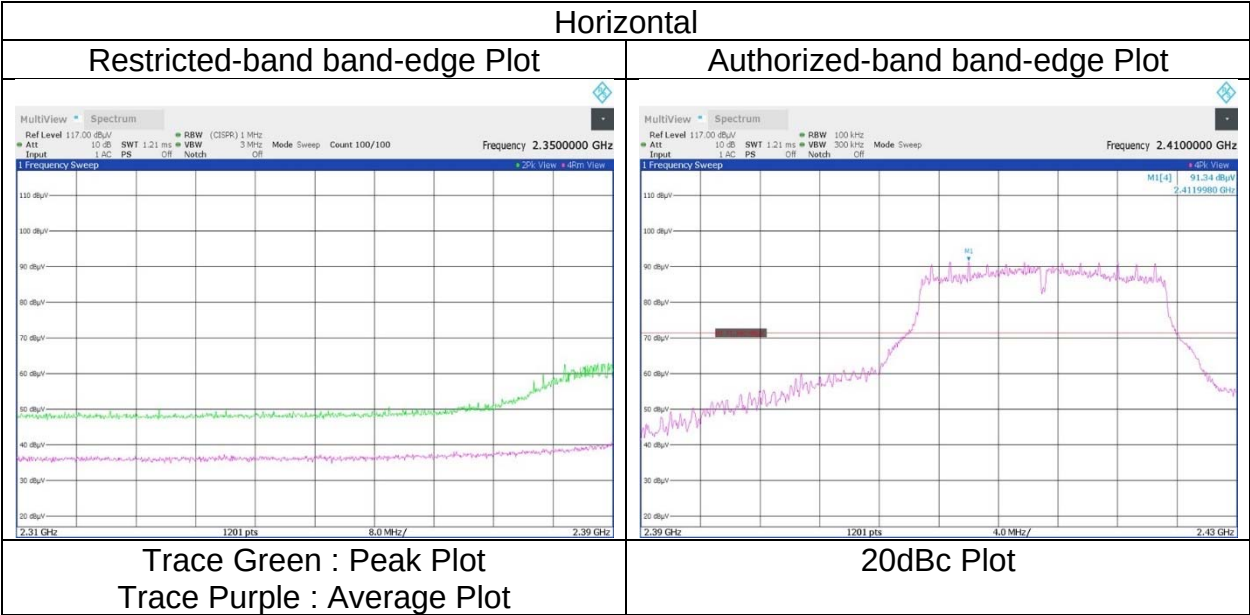
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2417.000	PK	91.46	27.75	14.32	41.56	2.46	94.43	-	-	Carrier
Hori.	2397.500	PK	57.88	27.78	14.31	41.56	2.46	60.87	74.4	13.5	-
Hori.	2400.000	PK	57.94	27.77	14.31	41.56	2.46	60.92	74.4	13.4	-
Vert.	2417.000	PK	91.76	27.75	14.32	41.56	2.46	94.73	-	-	Carrier
Vert.	2398.886	PK	62.69	27.77	14.31	41.56	2.46	65.67	74.7	9.0	-
Vert.	2400.000	PK	61.80	27.77	14.31	41.56	2.46	64.78	74.7	9.9	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 9, 2024
20 deg. C / 30 % RH
Masahide Ozaki
Tx 11g 2417 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date February 28, 2025
Temperature / Humidity 23 deg. C / 23 % RH
Engineer Miku Ikudome
 (1 GHz to 2.8 GHz)
Mode Tx 11g 2422 MHz

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2390.000	PK	62.95	27.79	13.94	41.73	2.46	65.41	73.9	8.4	145	233	-
Hori.	2390.000	AV	43.60	27.79	13.94	41.73	2.46	46.06	53.9	7.8	145	233	-
Vert.	2390.000	PK	65.56	27.79	13.94	41.73	2.46	68.02	73.9	5.8	148	184	-
Vert.	2390.000	AV	45.09	27.79	13.94	41.73	2.46	47.55	53.9	6.3	148	184	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98\text{ [m]} / 3.0\text{ [m]}) = 2.46\text{ [dB]}$

10 GHz to 40 GHz : $20\log(1.00\text{ [m]} / 3.0\text{ [m]}) = -9.54\text{ [dB]}$

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2422.000	PK	96.00	27.75	13.98	41.74	2.46	98.45	-	-	Carrier
Hori.	2400.000	PK	58.63	27.77	13.96	41.74	2.46	61.08	78.4	17.3	-
Vert.	2422.000	PK	94.50	27.75	13.98	41.74	2.46	96.95	-	-	Carrier
Vert.	2400.000	PK	57.44	27.77	13.96	41.74	2.46	59.89	76.9	17.0	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

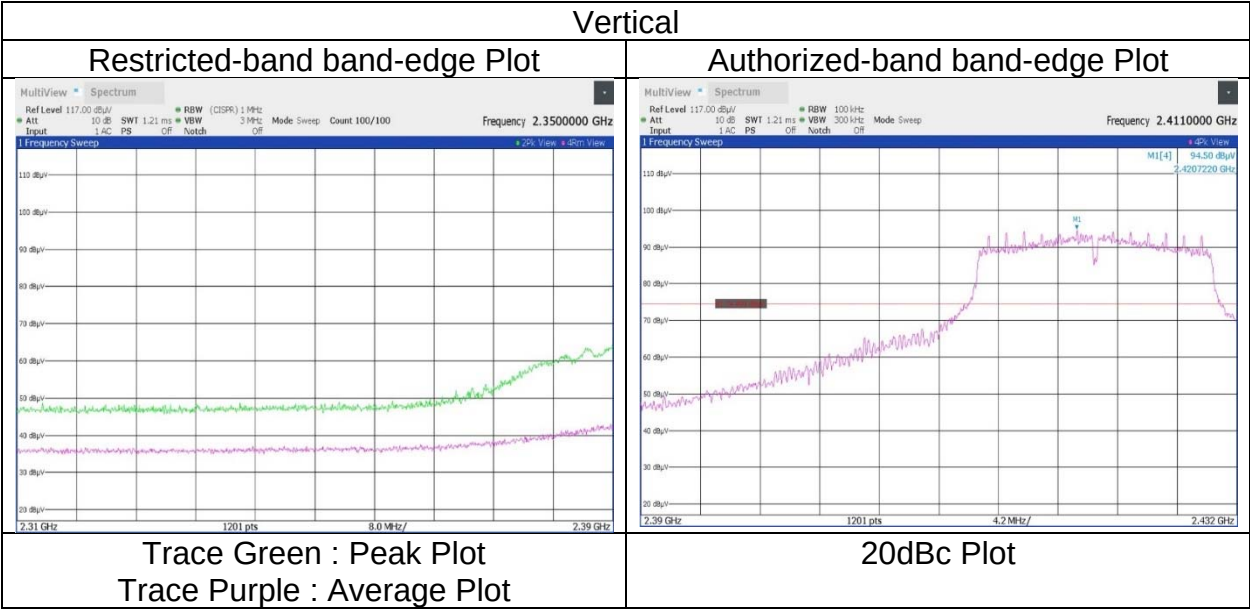
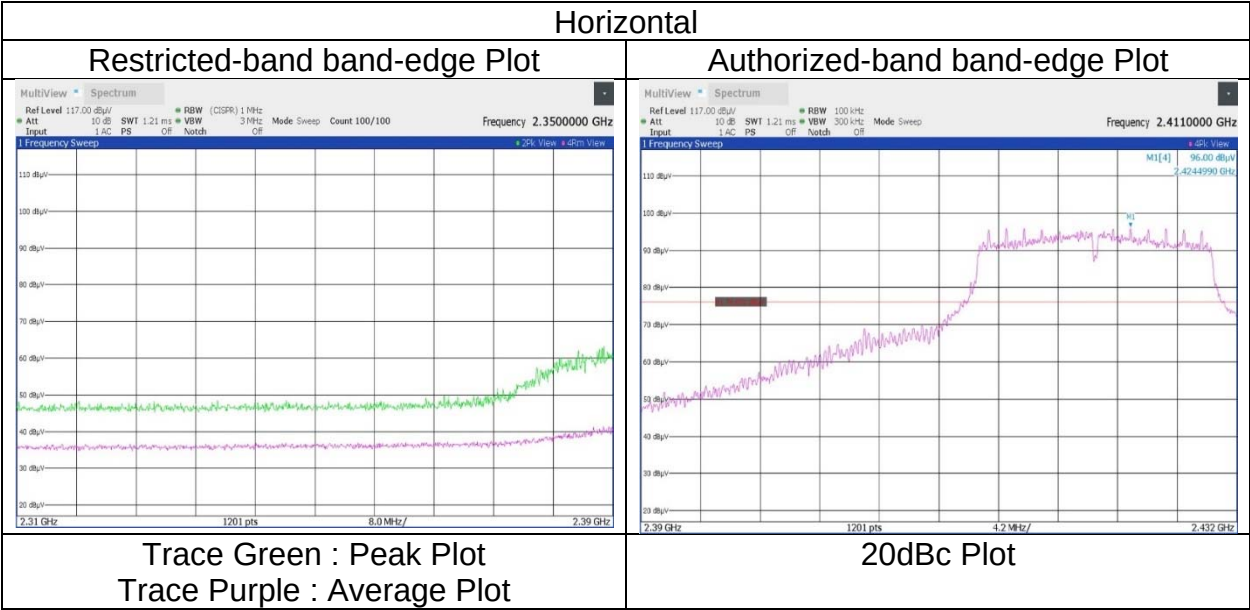
Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98\text{ [m]} / 3.0\text{ [m]}) = 2.46\text{ [dB]}$

10 GHz to 40 GHz : $20\log(1.00\text{ [m]} / 3.0\text{ [m]}) = -9.54\text{ [dB]}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
February 28, 2025
23 deg. C / 23 % RH
Miku Ikudome
Tx 11g 2422 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date February 28, 2025
Temperature / Humidity 23 deg. C / 23 % RH
Engineer Miku Ikudome
(1 GHz to 2.8 GHz)
Mode Tx 11g 2452 MHz

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

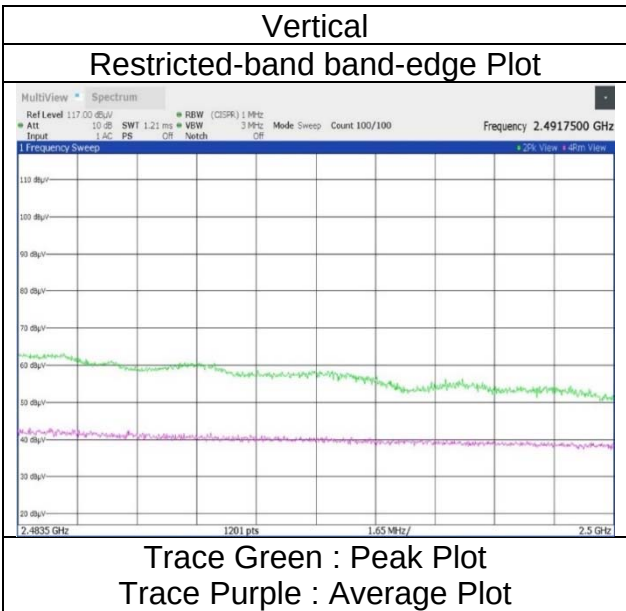
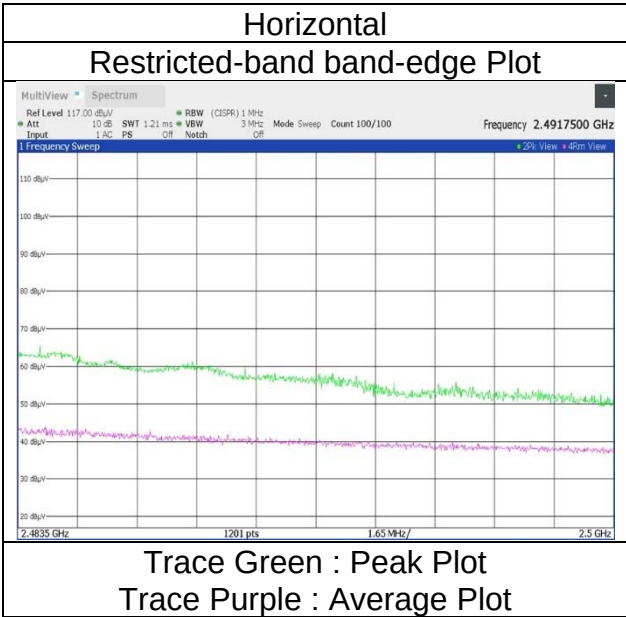
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	65.69	27.67	14.04	41.76	2.46	68.10	73.9	5.8	144	236	-
Hori.	2483.500	AV	46.91	27.67	14.04	41.76	2.46	49.32	53.9	4.5	144	236	-
Vert.	2483.500	PK	66.03	27.67	14.04	41.76	2.46	68.44	73.9	5.4	156	155	-
Vert.	2483.500	AV	46.78	27.67	14.04	41.76	2.46	49.19	53.9	4.7	156	155	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
February 28, 2025
23 deg. C / 23 % RH
Miku Ikudome
Tx 11g 2452 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 Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 12, 2024
Temperature / Humidity 24 deg. C / 25 % RH
Engineer Hiromasa Sato
 (1 GHz to 2.8 GHz)
Mode Tx 11g 2457 MHz

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

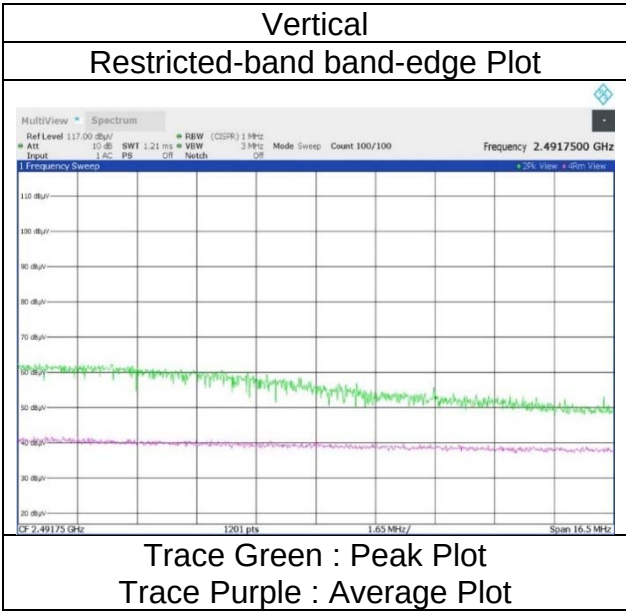
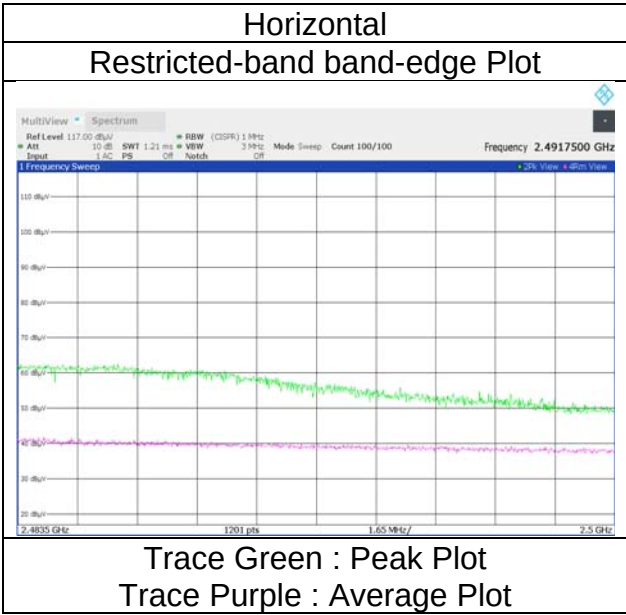
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	65.80	27.67	14.39	41.58	2.46	68.74	73.9	5.1	305	240	-
Hori.	2483.500	AV	41.55	27.67	14.39	41.58	2.46	44.49	53.9	9.4	305	240	-
Vert.	2483.500	PK	65.65	27.67	14.39	41.58	2.46	68.59	73.9	5.3	115	32	-
Vert.	2483.500	AV	42.71	27.67	14.39	41.58	2.46	45.65	53.9	8.2	115	32	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 12, 2024
24 deg. C / 25 % RH
Hiromasa Sato
Tx 11g 2457 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 Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 12, 2024
Temperature / Humidity 24 deg. C / 25 % RH
Engineer Hiromasa Sato
(1 GHz to 2.8 GHz)
Mode Tx 11g 2462 MHz

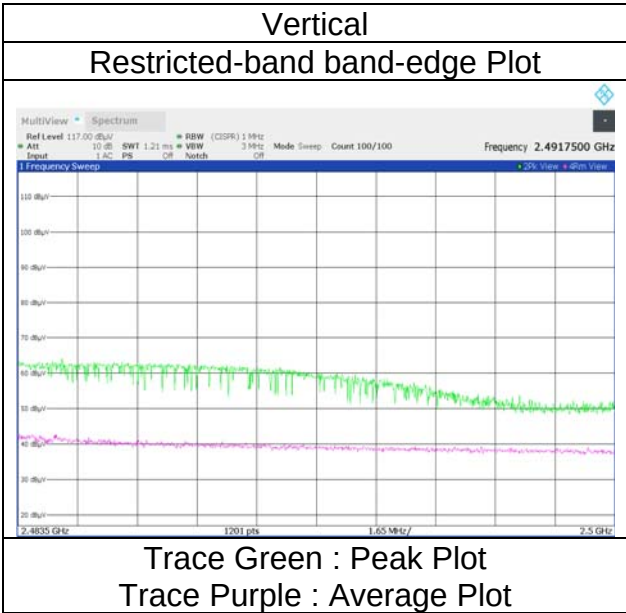
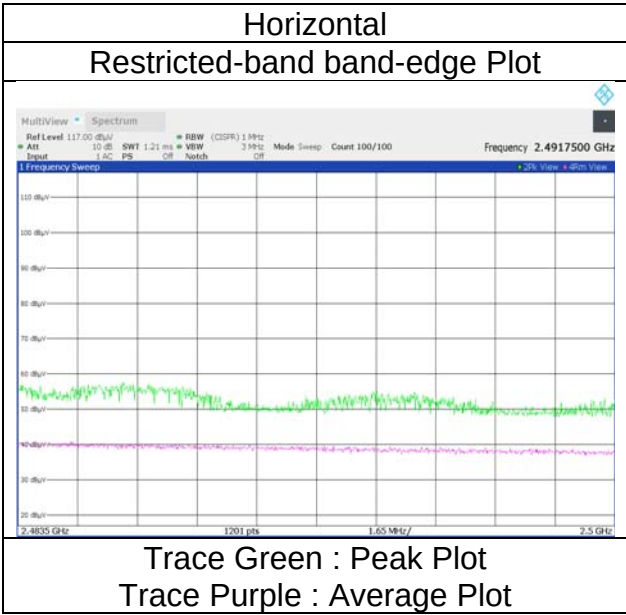
(* PK: Peak, AV: Average, QP: Quasi-Peak)													
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	66.36	27.67	14.39	41.58	2.46	69.30	73.9	4.6	304	242	-
Hori.	2483.500	AV	40.25	27.67	14.39	41.58	2.46	43.19	53.9	10.7	304	242	-
Vert.	2483.500	PK	67.86	27.67	14.39	41.58	2.46	70.80	73.9	3.1	115	31	-
Vert.	2483.500	AV	44.24	27.67	14.39	41.58	2.46	47.18	53.9	6.7	115	31	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 12, 2024
24 deg. C / 25 % RH
Hiromasa Sato
Tx 11g 2462 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	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 21, 2025	January 20, 2025	March 2, 2025	February 25, 2025
Temperature / Humidity	22 deg. C / 25 % RH	21 deg. C / 23 % RH	22 deg. C / 25 % RH	23 deg. C / 30 % RH
Engineer	Takayuki Kobayashi	Takayuki Kobayashi	Shiro Kobayashi	Miku Ikudome
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2412 MHz			

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2389.500	PK	59.17	27.79	14.35	41.55	2.46	62.22	73.9	11.6	172	135	-
Hori.	2390.000	PK	59.55	27.79	14.35	41.55	2.46	62.60	73.9	11.3	172	135	-
Hori.	4824.000	PK	50.22	31.28	6.17	42.82	2.46	47.31	73.9	26.5	238	247	-
Hori.	7236.000	PK	48.77	36.93	7.51	43.29	2.46	52.38	73.9	21.5	150	0	Floor Noise
Hori.	9648.000	PK	49.59	38.63	8.70	43.01	2.46	56.37	73.9	17.5	150	0	Floor Noise
Hori.	21708.000	PK	45.89	40.20	14.92	47.15	-9.54	44.32	73.9	29.5	148	221	-
Hori.	2389.500	AV	39.62	27.79	14.35	41.55	2.46	42.67	53.9	11.2	172	135	-
Hori.	2390.000	AV	39.81	27.79	14.35	41.55	2.46	42.86	53.9	11.0	172	135	-
Hori.	4824.000	AV	38.76	31.28	6.17	42.82	2.46	35.85	53.9	18.0	238	247	-
Hori.	7236.000	AV	37.65	36.93	7.51	43.29	2.46	41.26	53.9	12.6	150	0	Floor Noise
Hori.	9648.000	AV	38.52	38.63	8.70	43.01	2.46	45.30	53.9	8.6	150	0	Floor Noise
Hori.	21708.000	AV	35.38	40.20	14.92	47.15	-9.54	33.81	53.9	20.0	148	221	-
Vert.	2390.000	PK	59.39	27.79	14.35	41.55	2.46	62.44	73.9	11.4	141	172	-
Vert.	4824.000	PK	50.39	31.28	6.17	42.82	2.46	47.48	73.9	26.4	100	67	-
Vert.	7236.000	PK	49.14	36.93	7.51	43.29	2.46	52.75	73.9	21.1	150	0	Floor Noise
Vert.	9648.000	PK	49.77	38.63	8.70	43.01	2.46	56.55	73.9	17.3	150	0	Floor Noise
Vert.	21708.000	PK	46.32	40.20	14.92	47.15	-9.54	44.75	73.9	29.1	151	242	-
Vert.	2390.000	AV	39.26	27.79	14.35	41.55	2.46	42.31	53.9	11.5	141	172	-
Vert.	4824.000	AV	37.91	31.28	6.17	42.82	2.46	35.00	53.9	18.9	100	67	-
Vert.	7236.000	AV	37.51	36.93	7.51	43.29	2.46	41.12	53.9	12.7	150	0	Floor Noise
Vert.	9648.000	AV	38.40	38.63	8.70	43.01	2.46	45.18	53.9	8.7	150	0	Floor Noise
Vert.	21708.000	AV	35.42	40.20	14.92	47.15	-9.54	33.85	53.9	20.0	151	242	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2412.000	PK	91.12	27.76	14.37	41.56	2.46	94.15	-	-	Carrier
Hori.	2400.000	PK	54.20	27.77	14.37	41.56	2.46	57.24	74.1	16.8	-
Vert.	2412.000	PK	91.05	27.76	14.37	41.56	2.46	94.08	-	-	Carrier
Vert.	2400.000	PK	53.89	27.77	14.37	41.56	2.46	56.93	74.0	17.0	-

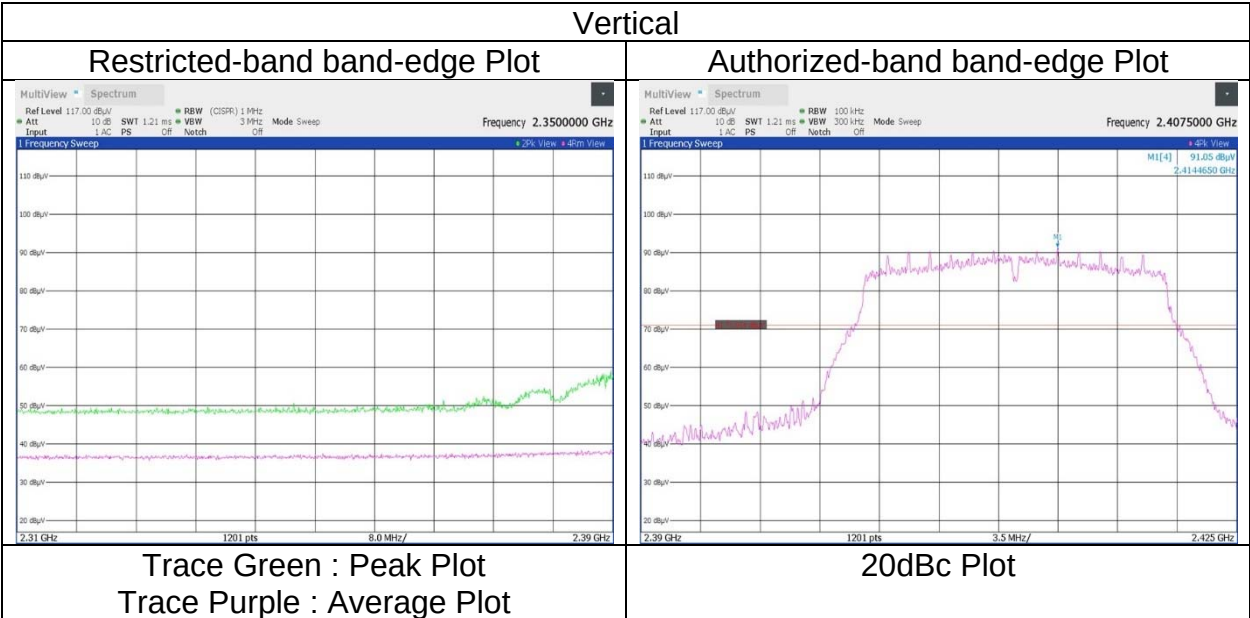
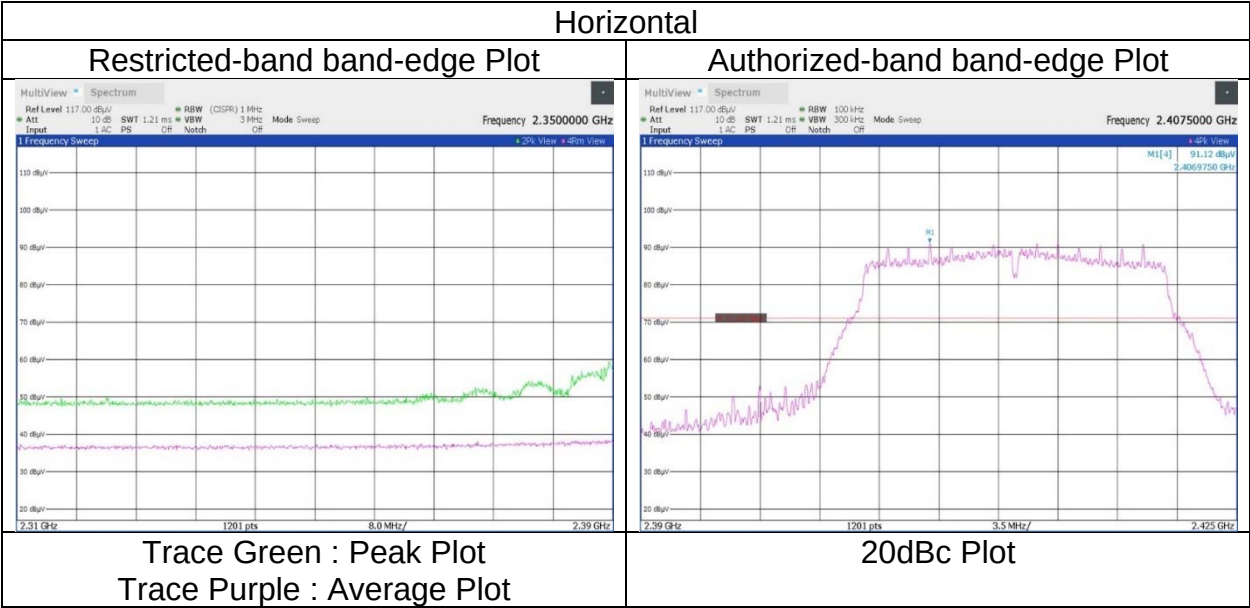
Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	January 21, 2025
Temperature / Humidity	22 deg. C / 25 % RH
Engineer	Takayuki Kobayashi
Mode	Tx 11n-20 2412 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 13, 2024
Temperature / Humidity 26 deg. C / 26 % RH
Engineer Yosuke Murakami
 (1 GHz to 2.8 GHz)
Mode Tx 11n-20 2417 MHz

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2390.000	PK	65.20	27.79	14.35	41.55	2.46	68.25	73.9	5.6	238	135	-
Hori.	2390.000	AV	40.17	27.79	14.35	41.55	2.46	43.22	53.9	10.6	238	135	-
Vert.	2390.000	PK	67.10	27.79	14.35	41.55	2.46	70.15	73.9	3.7	122	30	-
Vert.	2390.000	AV	42.83	27.79	14.35	41.55	2.46	45.88	53.9	8.0	122	30	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98\text{ [m]} / 3.0\text{ [m]}) = 2.46\text{ [dB]}$

10 GHz to 40 GHz : $20\log(1.00\text{ [m]} / 3.0\text{ [m]}) = -9.54\text{ [dB]}$

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2417.000	PK	91.29	27.75	14.38	41.56	2.46	94.32	-	-	Carrier
Hori.	2398.897	PK	58.14	27.77	14.37	41.56	2.46	61.18	74.3	13.1	-
Hori.	2400.000	PK	55.11	27.77	14.37	41.56	2.46	58.15	74.3	16.1	-
Vert.	2417.000	PK	91.79	27.75	14.38	41.56	2.46	94.82	-	-	Carrier
Vert.	2399.538	PK	63.34	27.77	14.37	41.56	2.46	66.38	74.8	8.4	-
Vert.	2400.000	PK	61.24	27.77	14.37	41.56	2.46	64.28	74.8	10.5	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

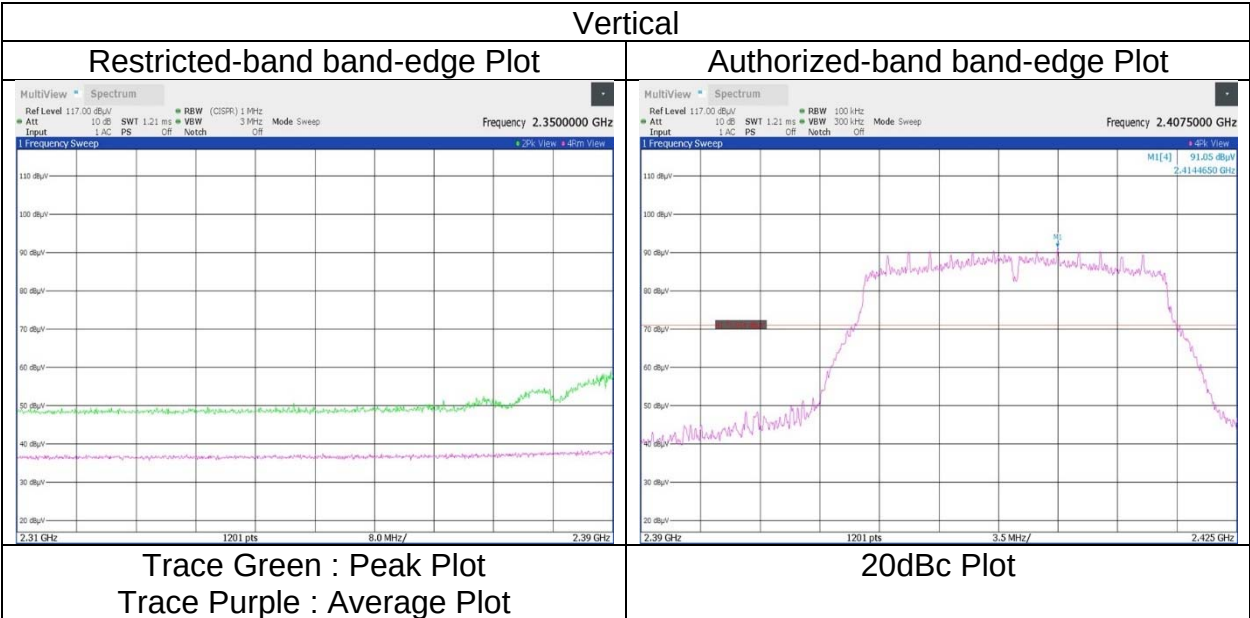
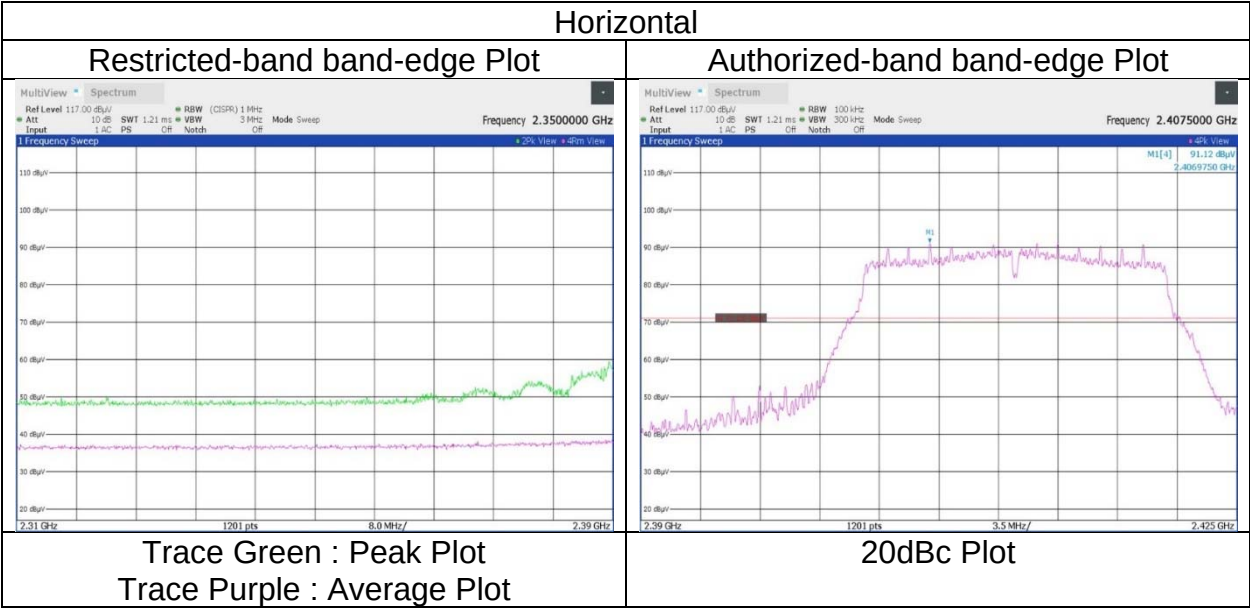
Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98\text{ [m]} / 3.0\text{ [m]}) = 2.46\text{ [dB]}$

10 GHz to 40 GHz : $20\log(1.00\text{ [m]} / 3.0\text{ [m]}) = -9.54\text{ [dB]}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 13, 2024
26 deg. C / 26 % RH
Yosuke Murakami
Tx 11n-20 2417 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 13, 2024
Temperature / Humidity 26 deg. C / 26 % RH
Engineer Yosuke Murakami
(1 GHz to 2.8 GHz)
Mode Tx 11n-20 2422 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	2390.000	PK	61.89	27.79	14.35	41.55	2.46	64.94	73.9	8.9	236	133	-
Hori.	2390.000	AV	38.24	27.79	14.35	41.55	2.46	41.29	53.9	12.6	236	133	-
Vert.	2390.000	PK	63.99	27.79	14.35	41.55	2.46	67.04	73.9	6.8	119	29	-
Vert.	2390.000	AV	38.58	27.79	14.35	41.55	2.46	41.63	53.9	12.2	119	29	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98 [m] / 3.0 [m]) = 2.46 [dB]$

10 GHz to 40 GHz : $20\log(1.00 [m] / 3.0 [m]) = -9.54 [dB]$

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Fac. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2422.000	PK	91.62	27.75	14.38	41.57	2.46	94.64	-	-	Carrier
Hori.	2400.000	PK	52.44	27.77	14.37	41.56	2.46	55.48	74.6	19.1	-
Vert.	2422.000	PK	91.81	27.75	14.38	41.57	2.46	94.83	-	-	Carrier
Vert.	2400.000	PK	54.68	27.77	14.37	41.56	2.46	57.72	74.8	17.0	-

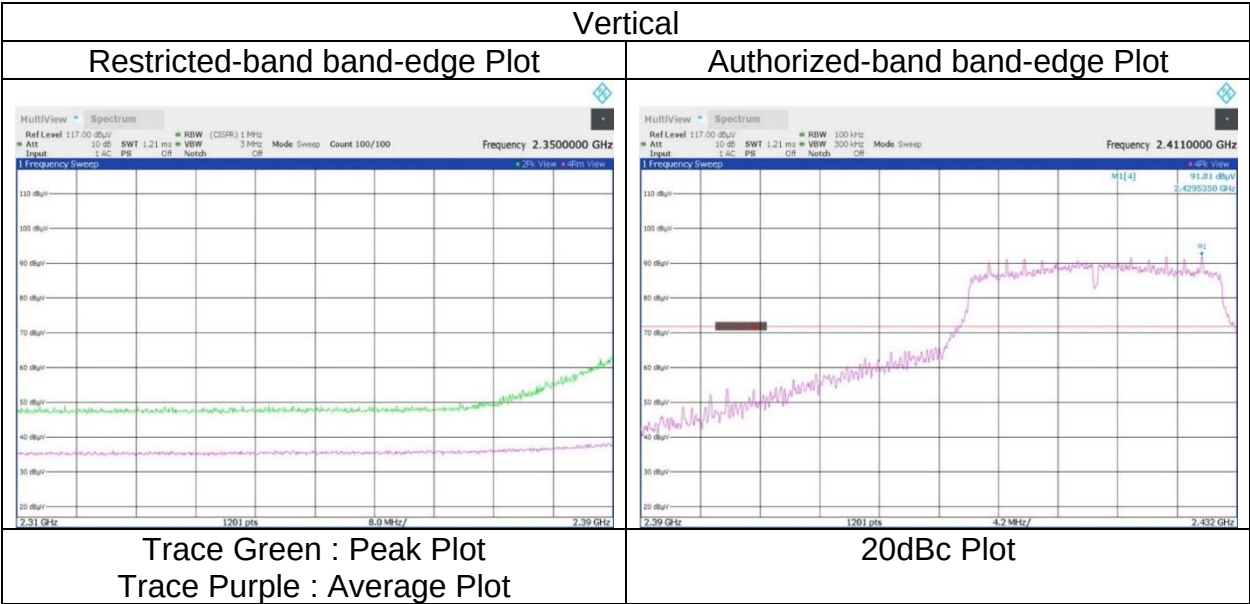
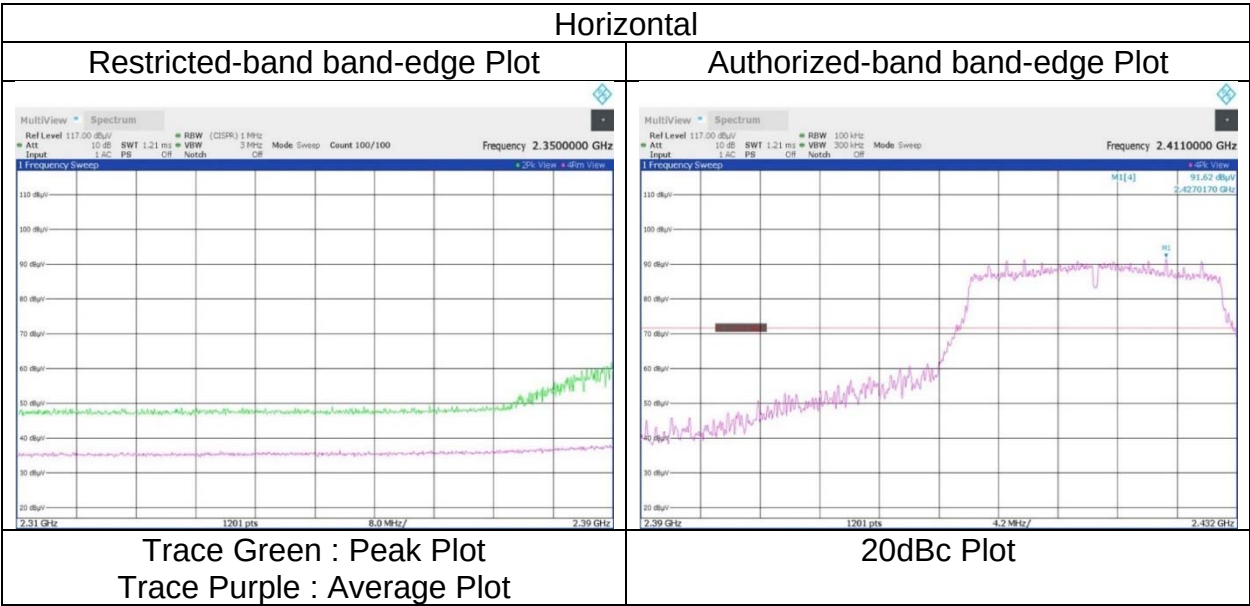
Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

Distance Fac. : 1 GHz to 10 GHz : $20\log(3.98 [m] / 3.0 [m]) = 2.46 [dB]$

10 GHz to 40 GHz : $20\log(1.00 [m] / 3.0 [m]) = -9.54 [dB]$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	December 13, 2024
Temperature / Humidity	26 deg. C / 26 % RH
Engineer	Yosuke Murakami
Mode	Tx 11n-20 2422 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date March 12, 2025
Temperature / Humidity 22 deg. C / 28 % RH
Engineer Yuta Shiba
Mode Tx 11n-20 2437 MHz

SAC 3
December 12, 2024
22 deg. C / 26 % RH
Yosuke Murakami
(1 GHz to 2.8 GHz)

SAC 3
December 16, 2024
26 deg. C / 24 % RH
Yuta Shiba
(2.8 GHz to 10 GHz)

SAC 3
December 8, 2024
20 deg. C / 30 % RH
Yasumasa Owaki
(10 GHz to 18 GHz)

SAC 3
December 17, 2024
25 deg. C / 24 % RH
Yuta Shiba
(18 GHz to 26.5 GHz)

(* PK: Peak, AV: Average, QP: Quasi-Peak)														
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark	
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]		
Hori.	66.240	QP	40.90	6.99	6.55	32.17	0.00	22.27	40.0	17.7	292	156	-	
Hori.	70.385	QP	48.30	6.52	6.81	32.16	0.00	29.47	40.0	10.5	256	174	-	
Hori.	74.551	QP	43.10	6.27	7.17	32.16	0.00	24.38	40.0	15.6	246	178	-	
Hori.	82.819	QP	41.10	6.83	7.60	32.15	0.00	23.38	40.0	16.6	212	182	-	
Hori.	107.691	QP	41.20	11.49	7.31	32.14	0.00	27.86	43.5	15.6	298	178	-	
Hori.	191.985	QP	37.00	16.39	7.94	32.06	0.00	29.27	43.5	14.2	161	34	-	
Hori.	4874.000	PK	52.26	31.34	6.88	42.82	2.46	50.12	73.9	23.7	376	99	-	
Hori.	7311.000	PK	48.88	37.02	8.38	43.34	2.46	53.40	73.9	20.5	322	126	-	
Hori.	9748.000	PK	48.61	38.86	9.52	42.94	2.46	56.51	73.9	17.3	150	0	Floor Noise	
Hori.	19496.000	PK	44.86	40.27	14.03	47.84	-9.54	41.78	73.9	32.1	131	351	-	
Hori.	21933.000	PK	42.00	40.24	15.01	47.28	-9.54	40.43	73.9	33.4	142	10	-	
Hori.	4874.000	AV	40.52	31.34	6.88	42.82	2.46	38.38	53.9	15.5	376	99	-	
Hori.	7311.000	AV	37.21	37.02	8.38	43.34	2.46	41.73	53.9	12.1	322	126	-	
Hori.	9748.000	AV	37.18	38.86	9.52	42.94	2.46	45.08	53.9	8.8	150	0	Floor Noise	
Hori.	19496.000	AV	36.75	40.27	14.03	47.84	-9.54	33.67	53.9	20.2	131	351	-	
Hori.	21933.000	AV	31.78	40.24	15.01	47.28	-9.54	30.21	53.9	23.6	142	10	-	
Vert.	66.270	QP	48.50	6.99	6.55	32.17	0.00	29.87	40.0	10.1	100	135	-	
Vert.	70.651	QP	46.30	6.49	6.83	32.16	0.00	27.46	40.0	12.5	100	108	-	
Vert.	74.571	QP	44.80	6.27	7.18	32.16	0.00	26.09	40.0	13.9	100	72	-	
Vert.	82.842	QP	40.50	6.83	7.60	32.15	0.00	22.78	40.0	17.2	100	92	-	
Vert.	91.435	QP	42.30	8.46	7.55	32.15	0.00	26.16	43.5	17.3	100	1	-	
Vert.	4874.000	PK	52.31	31.34	6.88	42.82	2.46	50.17	73.9	23.7	100	108	-	
Vert.	7311.000	PK	48.88	37.02	8.38	43.34	2.46	53.40	73.9	20.5	398	123	-	
Vert.	9748.000	PK	48.73	38.86	9.52	42.94	2.46	56.63	73.9	17.2	150	0	Floor Noise	
Vert.	19496.000	PK	45.04	40.27	14.03	47.84	-9.54	41.96	73.9	31.9	142	350	-	
Vert.	21933.000	PK	45.70	40.24	15.01	47.28	-9.54	44.13	73.9	29.7	144	347	-	
Vert.	4874.000	AV	39.97	31.34	6.88	42.82	2.46	37.83	53.9	16.0	100	108	-	
Vert.	7311.000	AV	37.32	37.02	8.38	43.34	2.46	41.84	53.9	12.0	398	123	-	
Vert.	9748.000	AV	37.21	38.86	9.52	42.94	2.46	45.11	53.9	8.7	150	0	Floor Noise	
Vert.	19496.000	AV	37.45	40.27	14.03	47.84	-9.54	34.37	53.9	19.5	142	350	-	
Vert.	21933.000	AV	37.37	40.24	15.01	47.28	-9.54	35.80	53.9	18.1	144	347	-	

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac.: 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 13, 2024
Temperature / Humidity 23 deg. C / 25 % RH
Engineer Yosuke Murakami
(1 GHz to 2.8 GHz)
Mode Tx 11n-20 2452 MHz

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

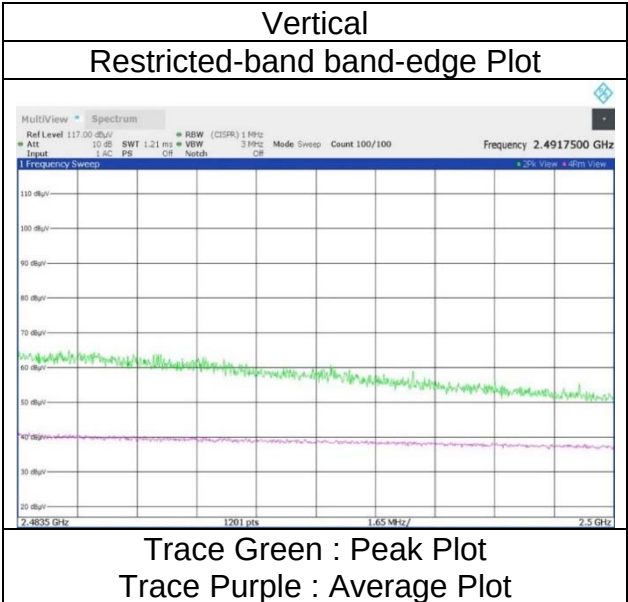
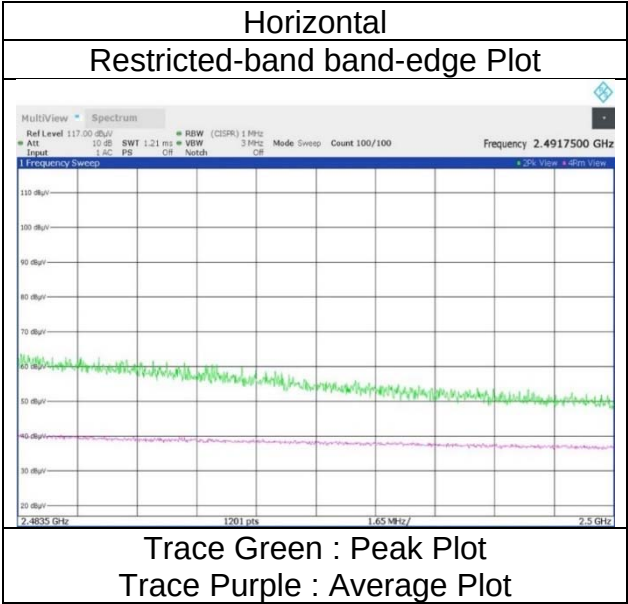
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	63.58	27.67	14.39	41.58	2.46	66.52	73.9	7.3	137	242	-
Hori.	2483.500	AV	41.49	27.67	14.39	41.58	2.46	44.43	53.9	9.4	137	242	-
Vert.	2483.500	PK	65.62	27.67	14.39	41.58	2.46	68.56	73.9	5.3	108	61	-
Vert.	2483.500	AV	42.85	27.67	14.39	41.58	2.46	45.79	53.9	8.1	108	61	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 13, 2024
23 deg. C / 25 % RH
Yosuke Murakami
Tx 11n-20 2452 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 Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 13, 2024
Temperature / Humidity 23 deg. C / 25 % RH
Engineer Yosuke Murakami
(1 GHz to 2.8 GHz)
Mode Tx 11n-20 2457 MHz

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

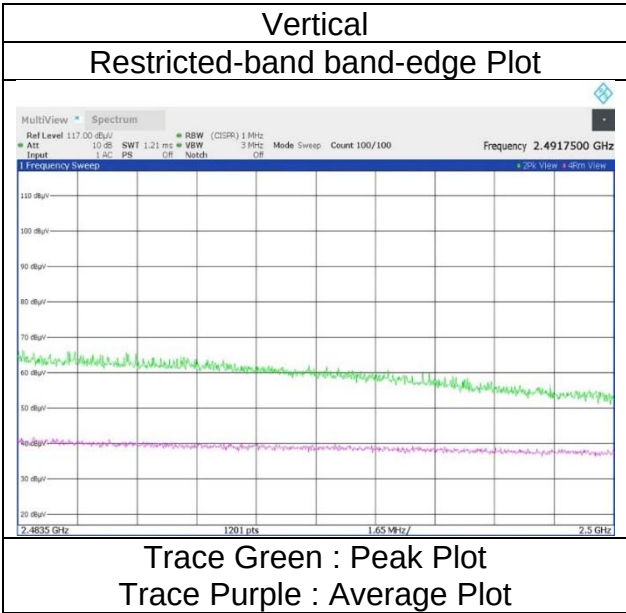
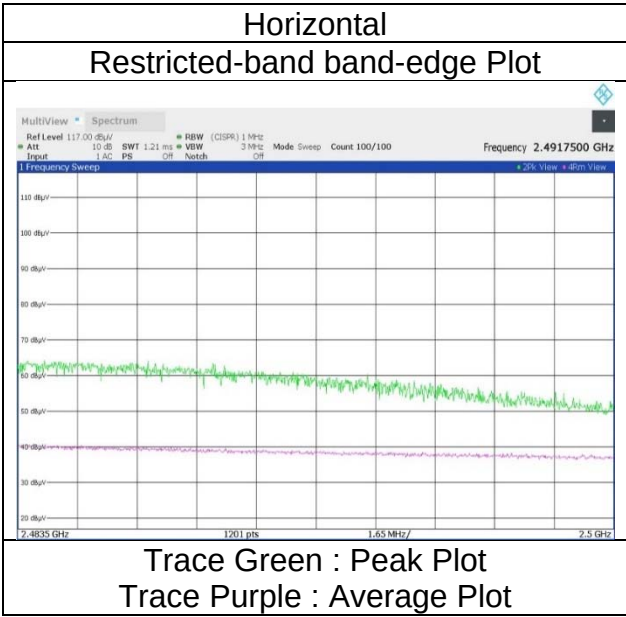
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	64.59	27.67	14.45	41.58	2.46	67.59	73.9	6.3	150	140	-
Hori.	2483.500	AV	40.99	27.67	14.45	41.58	2.46	43.99	53.9	9.9	150	140	-
Vert.	2483.500	PK	66.35	27.67	14.45	41.58	2.46	69.35	73.9	4.5	115	43	-
Vert.	2483.500	AV	41.57	27.67	14.45	41.58	2.46	44.57	53.9	9.3	115	43	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 13, 2024
23 deg. C / 25 % RH
Yosuke Murakami
Tx 11n-20 2457 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	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	December 13, 2024	November 21, 2024	March 2, 2025	February 25, 2025
Temperature / Humidity	23 deg. C / 25 % RH	22 deg. C / 25 % RH	22 deg. C / 25 % RH	23 deg. C / 30 % RH
Engineer	Yosuke Murakami	Takayuki Kobayashi	Shiro Kobayashi	Miku Ikudome
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2462 MHz			

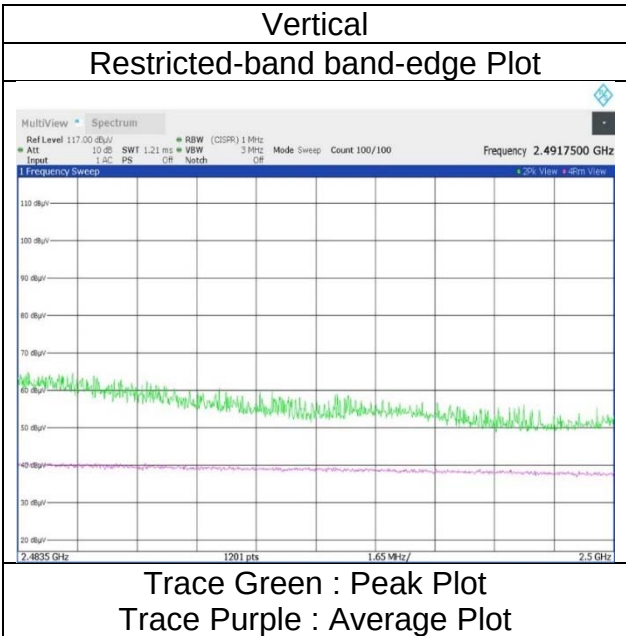
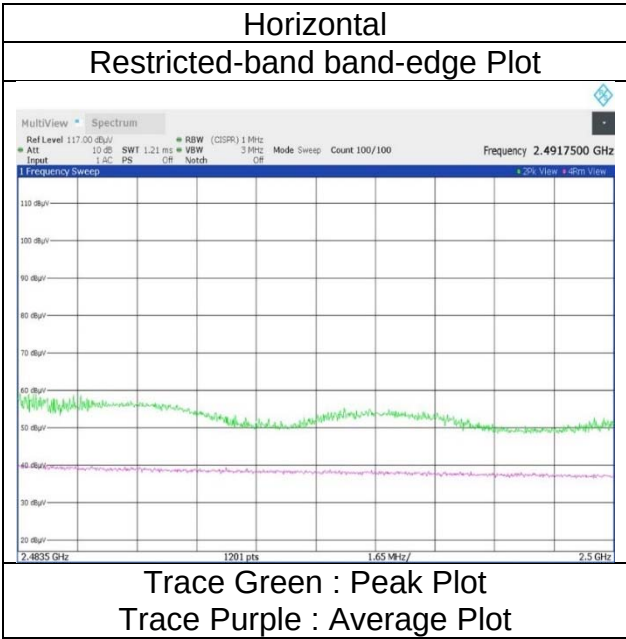
(* PK: Peak, AV: Average, QP: Quasi-Peak)													
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	60.29	27.67	14.45	41.58	2.46	63.29	73.9	10.6	147	135	-
Hori.	4924.000	PK	50.03	31.43	6.91	42.82	2.46	48.01	73.9	25.8	166	320	-
Hori.	7386.000	PK	49.41	37.12	7.60	43.39	2.46	53.20	73.9	20.7	150	0	Floor Noise
Hori.	9848.000	PK	49.69	38.88	8.78	42.88	2.46	56.93	73.9	16.9	150	0	Floor Noise
Hori.	22158.000	PK	46.23	40.27	15.07	47.32	-9.54	44.71	73.9	29.1	155	238	-
Hori.	2483.500	AV	40.12	27.67	14.45	41.58	2.46	43.12	53.9	10.7	147	135	-
Hori.	4924.000	AV	38.41	31.43	6.91	42.82	2.46	36.39	53.9	17.5	166	320	-
Hori.	7386.000	AV	37.52	37.12	7.60	43.39	2.46	41.31	53.9	12.5	150	0	Floor Noise
Hori.	9848.000	AV	37.91	38.88	8.78	42.88	2.46	45.15	53.9	8.7	150	0	Floor Noise
Hori.	22158.000	AV	35.39	40.27	15.07	47.32	-9.54	33.87	53.9	20.0	155	238	-
Vert.	2483.500	PK	64.71	27.67	14.45	41.58	2.46	67.71	73.9	6.1	116	28	-
Vert.	4924.000	PK	50.34	31.43	6.91	42.82	2.46	48.32	73.9	25.5	100	71	-
Vert.	7386.000	PK	49.19	37.12	7.60	43.39	2.46	52.98	73.9	20.9	150	0	Floor Noise
Vert.	9848.000	PK	49.39	38.88	8.78	42.88	2.46	56.63	73.9	17.2	150	0	Floor Noise
Vert.	22158.000	PK	46.37	40.27	15.07	47.32	-9.54	44.85	73.9	29.0	131	329	-
Vert.	2483.500	AV	40.94	27.67	14.45	41.58	2.46	43.94	53.9	9.9	116	28	-
Vert.	4924.000	AV	39.71	31.43	6.91	42.82	2.46	37.69	53.9	16.2	100	71	-
Vert.	7386.000	AV	37.86	37.12	7.60	43.39	2.46	41.65	53.9	12.2	150	0	Floor Noise
Vert.	9848.000	AV	37.99	38.88	8.78	42.88	2.46	45.23	53.9	8.6	150	0	Floor Noise
Vert.	22158.000	AV	35.51	40.27	15.07	47.32	-9.54	33.99	53.9	19.9	131	329	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac.: 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 13, 2024
23 deg. C / 25 % RH
Yosuke Murakami
Tx 11n-20 2462 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	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	December 14, 2024	December 17, 2024	December 8, 2024	December 17, 2024
Temperature / Humidity	23 deg. C / 33 % RH	23 deg. C / 25 % RH	20 deg. C / 30 % RH	27 deg. C / 23 % RH
Engineer	Miku Ikudome	Takayuki Kobayashi	Yasumasa Owaki	Yuta Shiba
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-40 2422 MHz			

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2390.000	PK	53.35	27.79	14.35	41.55	2.46	56.40	73.9	17.5	288	240	-
Hori.	4844.000	PK	50.14	31.31	6.87	42.82	2.46	47.96	73.9	25.9	376	107	-
Hori.	7266.000	PK	49.24	36.96	8.35	43.31	2.46	53.70	73.9	20.2	149	290	-
Hori.	9688.000	PK	49.20	38.72	9.50	42.98	2.46	56.90	73.9	17.0	150	0	Floor Noise
Hori.	19376.000	PK	44.46	40.33	13.96	47.90	-9.54	41.31	73.9	32.5	132	350	-
Hori.	21798.000	PK	42.59	40.23	14.96	47.20	-9.54	41.04	73.9	32.8	136	11	-
Hori.	2390.000	AV	39.32	27.79	14.35	41.55	2.46	42.37	53.9	11.5	288	240	-
Hori.	4844.000	AV	39.51	31.31	6.87	42.82	2.46	37.33	53.9	16.5	376	107	-
Hori.	7266.000	AV	37.93	36.96	8.35	43.31	2.46	42.39	53.9	11.5	149	290	-
Hori.	9688.000	AV	38.45	38.72	9.50	42.98	2.46	46.15	53.9	7.7	150	0	Floor Noise
Hori.	19376.000	AV	36.08	40.33	13.96	47.90	-9.54	32.93	53.9	20.9	132	350	-
Hori.	21798.000	AV	31.44	40.23	14.96	47.20	-9.54	29.89	53.9	24.0	136	11	-
Vert.	2390.000	PK	62.06	27.79	14.35	41.55	2.46	65.11	73.9	8.7	384	46	-
Vert.	4844.000	PK	49.10	31.31	6.87	42.82	2.46	46.92	73.9	26.9	298	87	-
Vert.	7266.000	PK	48.26	36.96	8.35	43.31	2.46	52.72	73.9	21.1	343	93	-
Vert.	9688.000	PK	48.33	38.72	9.50	42.98	2.46	56.03	73.9	17.8	150	0	Floor Noise
Vert.	19376.000	PK	45.80	40.33	13.96	47.90	-9.54	42.65	73.9	31.2	143	354	-
Vert.	21798.000	PK	45.59	40.23	14.96	47.20	-9.54	44.04	73.9	29.8	142	347	-
Vert.	2390.000	AV	40.35	27.79	14.35	41.55	2.46	43.40	53.9	10.5	384	46	-
Vert.	4844.000	AV	36.45	31.31	6.87	42.82	2.46	34.27	53.9	19.6	298	87	-
Vert.	7266.000	AV	36.05	36.96	8.35	43.31	2.46	40.51	53.9	13.3	343	93	-
Vert.	9688.000	AV	38.06	38.72	9.50	42.98	2.46	45.76	53.9	8.1	150	0	Floor Noise
Vert.	19376.000	AV	38.73	40.33	13.96	47.90	-9.54	35.58	53.9	18.3	143	354	-
Vert.	21798.000	AV	35.86	40.23	14.96	47.20	-9.54	34.31	53.9	19.5	142	347	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2422.000	PK	84.88	27.75	14.38	41.57	2.46	87.90	-	-	Carrier
Hori.	2400.000	PK	42.66	27.77	14.37	41.56	2.46	45.70	67.9	22.2	-
Vert.	2422.000	PK	83.63	27.75	14.38	41.57	2.46	86.65	-	-	Carrier
Vert.	2398.597	PK	50.18	27.77	14.36	41.56	2.46	53.21	66.6	13.3	-
Vert.	2400.000	PK	45.81	27.77	14.37	41.56	2.46	48.85	66.6	17.7	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

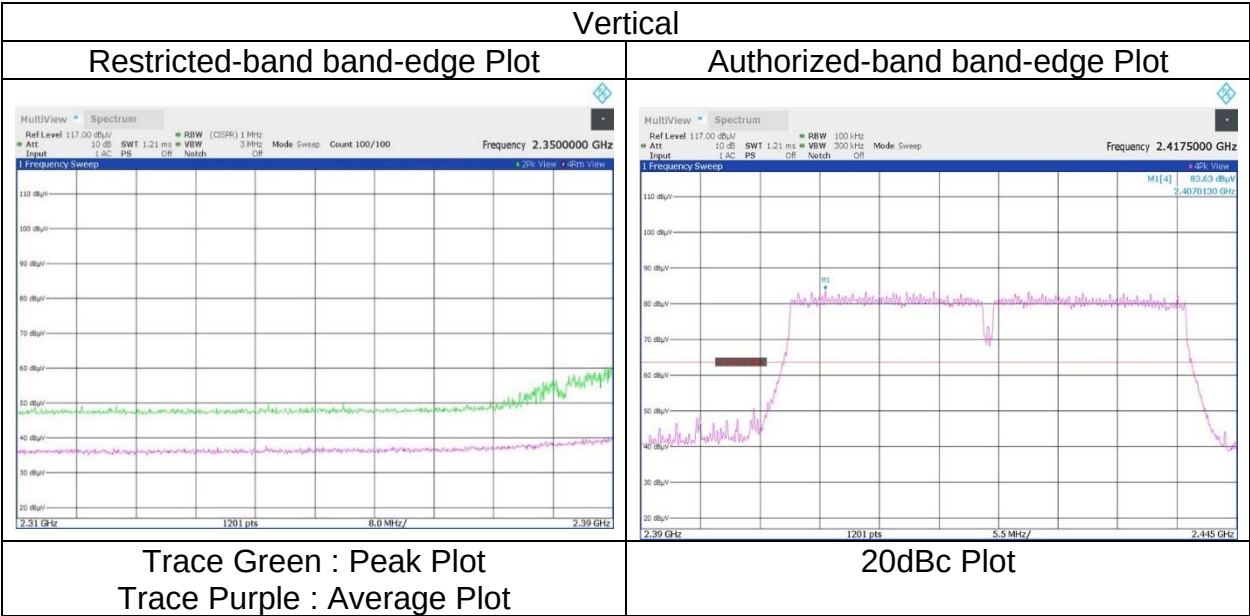
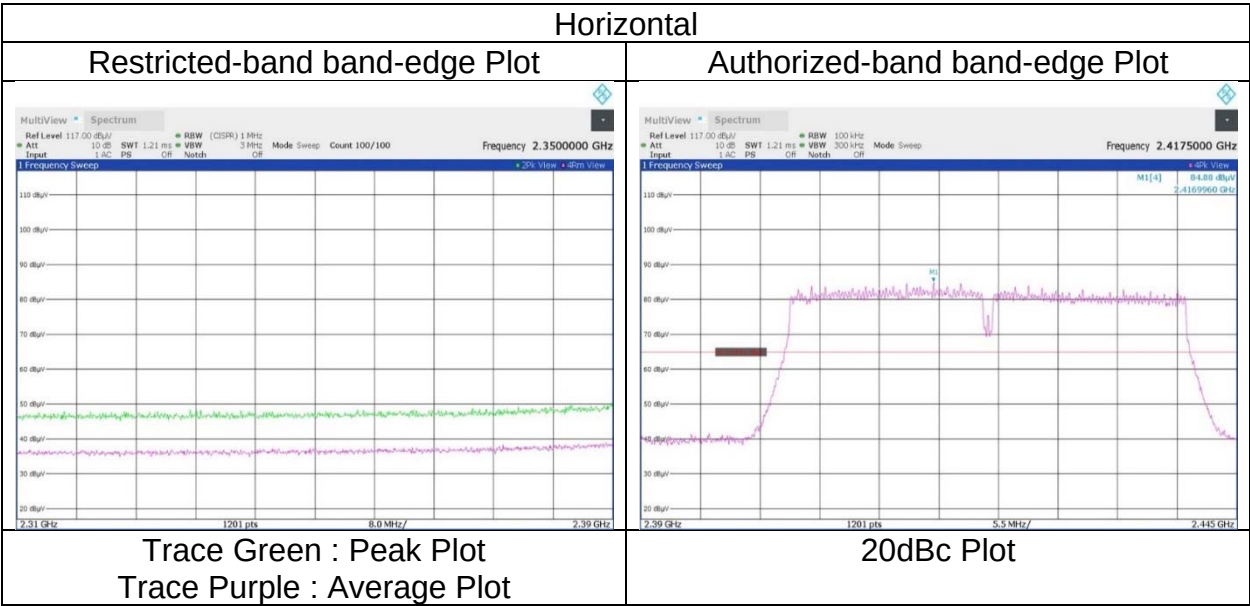
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 14, 2024
23 deg. C / 33 % RH
Miku Ikudome
Tx 11n-40 2422 MHz



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date January 21, 2025
Temperature / Humidity 22 deg. C / 25 % RH
Engineer Takayuki Kobayashi
 (1 GHz to 2.8 GHz)
Mode Tx 11n-40 2427 MHz

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

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2390.000	PK	66.26	27.79	14.35	41.55	2.46	69.31	73.9	4.5	152	140	-
Hori.	2390.000	AV	46.89	27.79	14.35	41.55	2.46	49.94	53.9	3.9	152	140	-
Vert.	2390.000	PK	64.92	27.79	14.35	41.55	2.46	67.97	73.9	5.9	100	157	-
Vert.	2390.000	AV	44.62	27.79	14.35	41.55	2.46	47.67	53.9	6.2	100	157	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2427.000	PK	89.57	27.74	14.39	41.57	2.46	92.59	-	-	Carrier
Hori.	2400.000	PK	56.50	27.77	14.37	41.56	2.46	59.54	72.5	12.9	-
Vert.	2427.000	PK	89.26	27.74	14.39	41.57	2.46	92.28	-	-	Carrier
Vert.	2400.000	PK	53.85	27.77	14.37	41.56	2.46	56.89	72.2	15.3	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

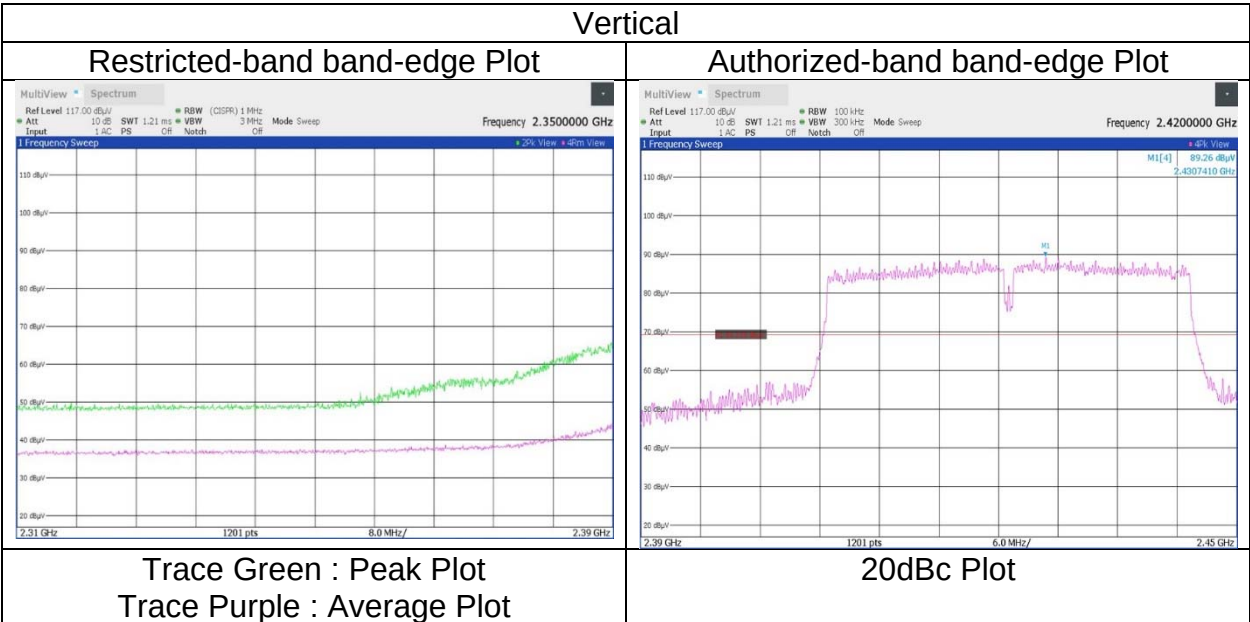
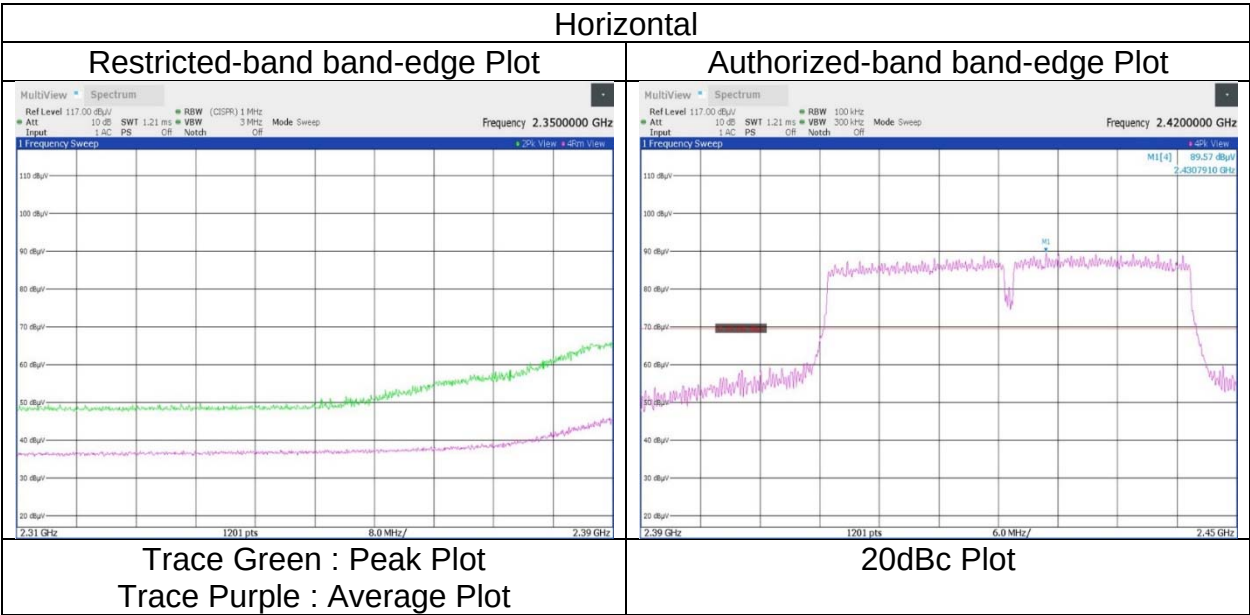
Distance Fac. : 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
January 21, 2025
22 deg. C / 25 % RH
Takayuki Kobayashi
Tx 11n-40 2427 MHz



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

Radiated Spurious Emission

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 21, 2025	March 2, 2025	March 2, 2025	February 25, 2025
Temperature / Humidity	22 deg. C / 25 % RH	22 deg. C / 25 % RH	22 deg. C / 25 % RH	23 deg. C / 30 % RH
Engineer	Takayuki Kobayashi	Shiro Kobayashi	Shiro Kobayashi	Miku Ikudome
	(1 GHz to 10 GHz)	(10 GHz to 18 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-40 2437 MHz			

(* PK: Peak, AV: Average, QP: Quasi-Peak)														
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark	
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]		
Hori.	4874.000	PK	50.21	31.34	6.88	42.82	2.46	48.07	73.9	25.8	156	115	-	
Hori.	7311.000	PK	49.33	37.02	7.56	43.34	2.46	53.03	73.9	20.8	150	0	Floor Noise	
Hori.	9748.000	PK	50.32	38.86	8.74	42.94	2.46	57.44	73.9	16.4	150	0	Floor Noise	
Hori.	21933.000	PK	46.74	40.24	15.01	47.28	-9.54	45.17	73.9	28.7	145	241	-	
Hori.	4874.000	AV	38.66	31.34	6.88	42.82	2.46	36.52	53.9	17.3	156	115	-	
Hori.	7311.000	AV	37.81	37.02	7.56	43.34	2.46	41.51	53.9	12.3	150	0	Floor Noise	
Hori.	9748.000	AV	38.35	38.86	8.74	42.94	2.46	45.47	53.9	8.4	150	0	Floor Noise	
Hori.	21933.000	AV	35.72	40.24	15.01	47.28	-9.54	34.15	53.9	19.7	145	241	-	
Vert.	4874.000	PK	50.39	31.34	6.88	42.82	2.46	48.25	73.9	25.6	151	109	-	
Vert.	7311.000	PK	49.44	37.02	7.56	43.34	2.46	53.14	73.9	20.7	100	0	Floor Noise	
Vert.	9748.000	PK	50.15	38.86	8.74	42.94	2.46	57.27	73.9	16.6	100	0	Floor Noise	
Vert.	21933.000	PK	46.28	40.24	15.01	47.28	-9.54	44.71	73.9	29.1	131	346	-	
Vert.	4874.000	AV	39.03	31.34	6.88	42.82	2.46	36.89	53.9	17.0	151	109	-	
Vert.	7311.000	AV	37.69	37.02	7.56	43.34	2.46	41.39	53.9	12.5	100	0	Floor Noise	
Vert.	9748.000	AV	38.31	38.86	8.74	42.94	2.46	45.43	53.9	8.4	100	0	Floor Noise	
Vert.	21933.000	AV	35.99	40.24	15.01	47.28	-9.54	34.42	53.9	19.4	131	346	-	

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.
*Other frequency noises omitted in this report were not seen or have enough margin (more than 20 dB).
Distance Fac.: 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]
10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 14, 2024
Temperature / Humidity 23 deg. C / 33 % RH
Engineer Miku Ikudome
(1 GHz to 2.8 GHz)
Mode Tx 11n-40 2447 MHz

(* PK: Peak, AV: Average, QP: Quasi-Peak)													
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	63.62	27.67	14.45	41.58	2.46	66.62	73.9	7.2	100	248	-
Hori.	2483.624	PK	63.79	27.67	14.45	41.58	2.46	66.79	73.9	7.1	100	248	-
Hori.	2483.500	AV	43.41	27.67	14.45	41.58	2.46	46.41	53.9	7.4	100	248	-
Hori.	2483.624	AV	43.85	27.67	14.45	41.58	2.46	46.85	53.9	7.0	100	248	-
Vert.	2483.500	PK	65.92	27.67	14.45	41.58	2.46	68.92	73.9	4.9	400	10	-
Vert.	2483.817	PK	66.39	27.67	14.45	41.58	2.46	69.39	73.9	4.5	400	10	-
Vert.	2483.500	AV	46.65	27.67	14.45	41.58	2.46	49.65	53.9	4.2	400	10	-
Vert.	2483.817	AV	46.84	27.67	14.45	41.58	2.46	49.84	53.9	4.0	400	10	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

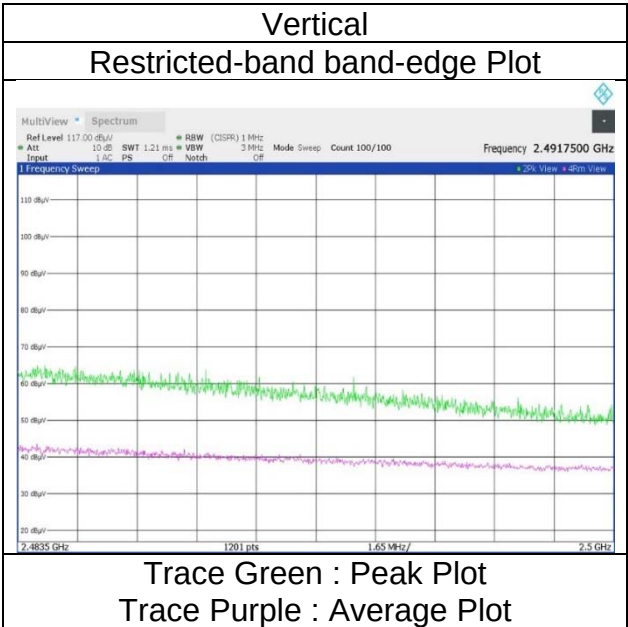
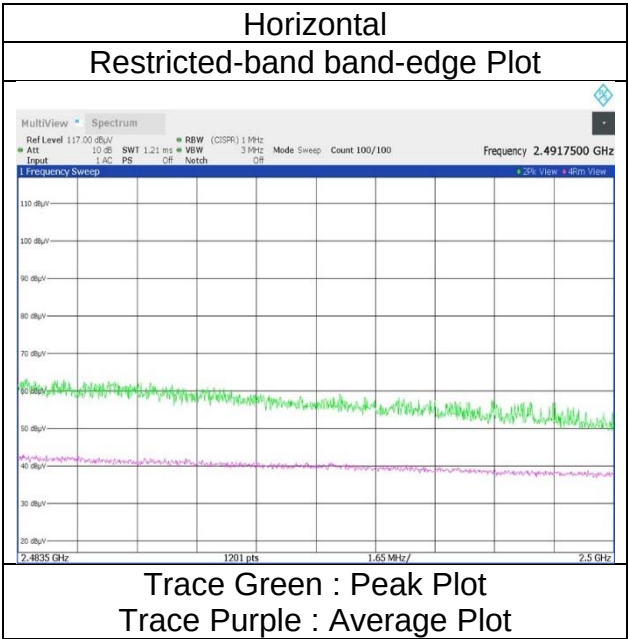
Distance Fac. : 1 GHz to 10 GHz : $20\log (3.98 [m] / 3.0 [m]) = 2.46 [dB]$

10 GHz to 40 GHz : $20\log (1.00 [m] / 3.0 [m]) = -9.54 [dB]$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
December 14, 2024
23 deg. C / 33 % RH
Miku Ikudome
Tx 11n-40 2447 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	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	December 15, 2024	December 17, 2024	December 8, 2024	December 17, 2024
Temperature / Humidity	25 deg. C / 23 % RH	23 deg. C / 25 % RH	20 deg. C / 30 % RH	27 deg. C / 23 % RH
Engineer	Hiromasa Sato	Takayuki Kobayashi	Yasumasa Owaki	Yuta Shiba
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-40 2452 MHz			

(* PK: Peak, AV: Average, QP: Quasi-Peak)													
Polarity	Frequency	Detector	Reading	Ant.Fac.	Loss	Gain	Distance	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	Fac. [dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[deg.]	
Hori.	2483.500	PK	55.93	27.67	14.45	41.58	2.46	58.93	73.9	14.9	268	251	-
Hori.	4904.000	PK	48.48	31.37	6.90	42.82	2.46	46.39	73.9	27.5	143	151	-
Hori.	7356.000	PK	47.96	37.09	8.41	43.37	2.46	52.55	73.9	21.3	153	137	-
Hori.	9808.000	PK	49.07	38.90	9.55	42.90	2.46	57.08	73.9	16.8	150	0	Floor Noise
Hori.	19616.000	PK	44.82	40.24	14.06	47.66	-9.54	41.92	73.9	31.9	134	351	-
Hori.	22068.000	PK	43.17	40.25	15.05	47.32	-9.54	41.61	73.9	32.2	138	11	-
Hori.	2483.500	AV	39.90	27.67	14.45	41.58	2.46	42.90	53.9	11.0	268	251	-
Hori.	4904.000	AV	36.59	31.37	6.90	42.82	2.46	34.50	53.9	19.4	143	151	-
Hori.	7356.000	AV	36.15	37.09	8.41	43.37	2.46	40.74	53.9	13.1	153	137	-
Hori.	9808.000	AV	37.76	38.90	9.55	42.90	2.46	45.77	53.9	8.1	150	0	Floor Noise
Hori.	19616.000	AV	37.00	40.24	14.06	47.66	-9.54	34.10	53.9	19.8	134	351	-
Hori.	22068.000	AV	32.08	40.25	15.05	47.32	-9.54	30.52	53.9	23.3	138	11	-
Vert.	2483.500	PK	58.95	27.67	14.45	41.58	2.46	61.95	73.9	11.9	149	36	-
Vert.	4904.000	PK	48.57	31.37	6.90	42.82	2.46	46.48	73.9	27.4	100	219	-
Vert.	7356.000	PK	48.28	37.09	8.41	43.37	2.46	52.87	73.9	21.0	200	229	-
Vert.	9808.000	PK	48.70	38.90	9.55	42.90	2.46	56.71	73.9	17.1	150	0	Floor Noise
Vert.	19616.000	PK	44.31	40.24	14.06	47.66	-9.54	41.41	73.9	32.4	141	350	-
Vert.	22068.000	PK	45.94	40.25	15.05	47.32	-9.54	44.38	73.9	29.5	143	346	-
Vert.	2483.500	AV	39.96	27.67	14.45	41.58	2.46	42.96	53.9	10.9	149	36	-
Vert.	4904.000	AV	37.07	31.37	6.90	42.82	2.46	34.98	53.9	18.9	100	219	-
Vert.	7356.000	AV	36.33	37.09	8.41	43.37	2.46	40.92	53.9	12.9	200	229	-
Vert.	9808.000	AV	37.06	38.90	9.55	42.90	2.46	45.07	53.9	8.8	150	0	Floor Noise
Vert.	19616.000	AV	34.71	40.24	14.06	47.66	-9.54	31.81	53.9	22.0	141	350	-
Vert.	22068.000	AV	38.05	40.25	15.05	47.32	-9.54	36.49	53.9	17.4	143	346	-

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz)) - Gain(Amp) + Distance Fac.

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

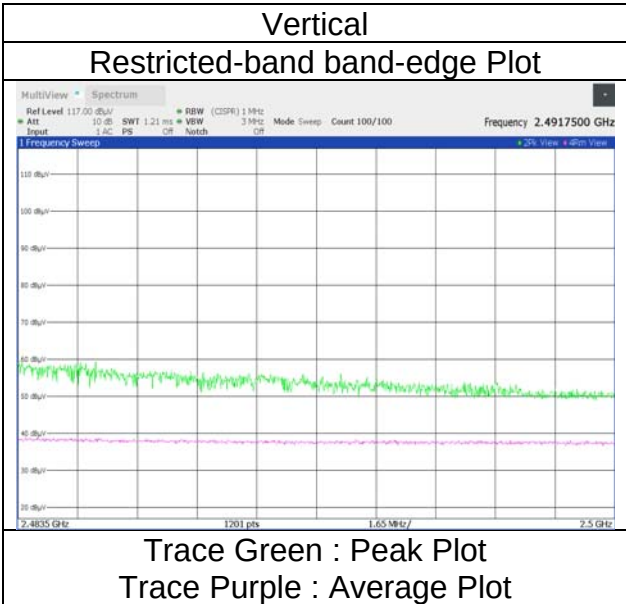
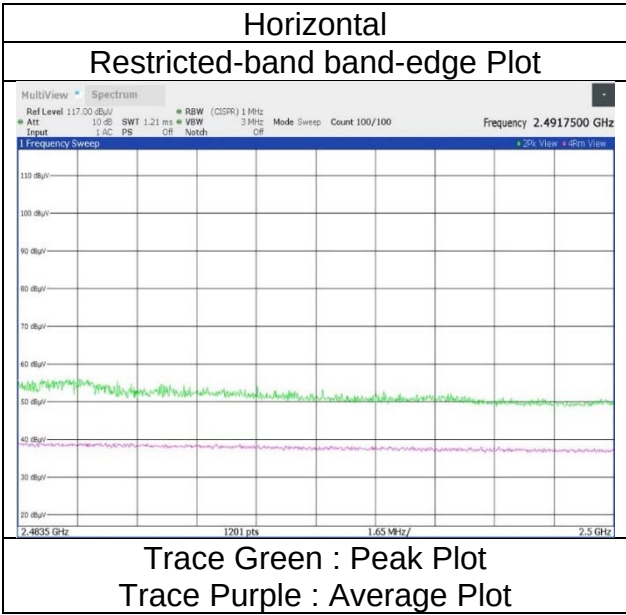
Distance Fac.: 1 GHz to 10 GHz : 20log (3.98 [m] / 3.0 [m]) = 2.46 [dB]

10 GHz to 40 GHz : 20log (1.00 [m] / 3.0 [m]) = -9.54 [dB]

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

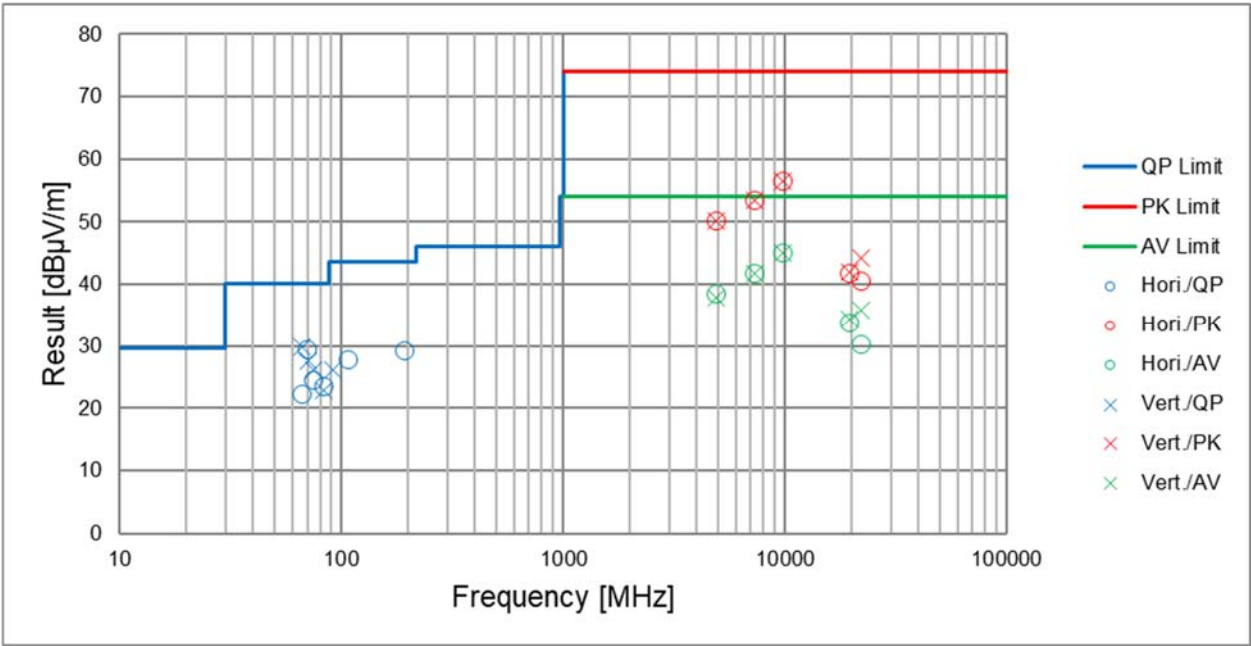
Shonan EMC Lab.
SAC 3
December 15, 2024
25 deg. C / 23 % RH
Hiromasa Sato
Tx 11n-40 2452 MHz



* 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
(Plot data, Worst case mode for Maximum Peak Output Power)

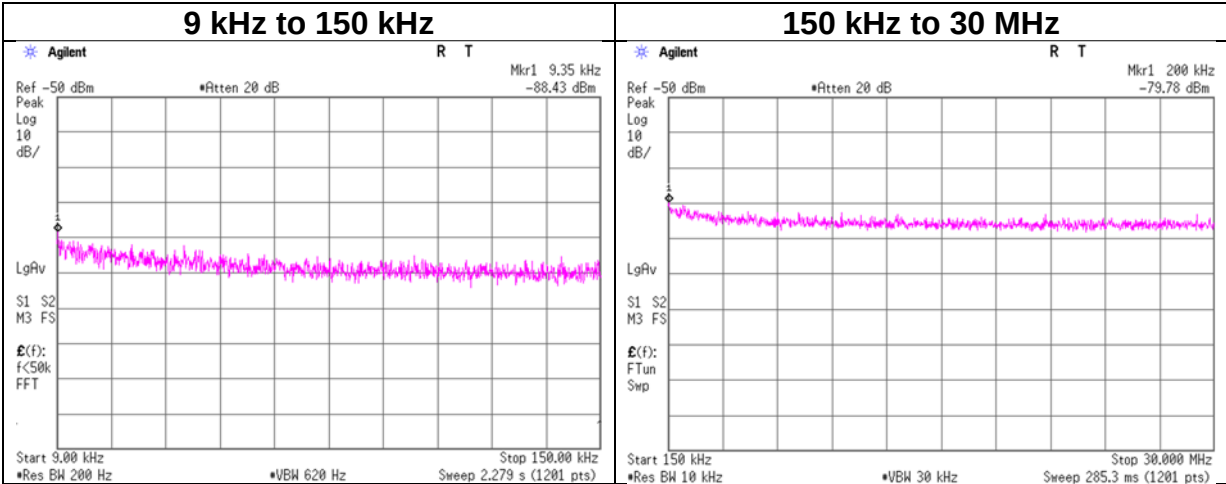
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3	SAC 3
Date	March 12, 2025	December 12, 2024	December 16, 2024	December 8, 2024	December 17, 2024
Temperature / Humidity	22 deg. C / 28 % RH	22 deg. C / 26 % RH	26 deg. C / 24 % RH	20 deg. C / 30 % RH	25 deg. C / 24 % RH
Engineer	Yuta Shiba	Yosuke Murakami	Yuta Shiba	Yasumasa Owaki	Yuta Shiba
	(30 MHz to 1000 MHz)	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 18 GHz)	(18 GHz to 26.5 GHz)
Mode	Tx 11n-20 2437 MHz				



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

Conducted Spurious Emission

Test place Shonan EMC Lab. No.8 Shielded Room
Date February 9, 2025
Temperature / Humidity 21 deg. C / 23 % RH
Engineer Yuta Shiba
Mode Tx 11n-20 2437 MHz



Frequency	Reading	Cable	Attenuator	Antenna	N	EIRP	Distance	Ground	E	Limit	Margin	Remark
[kHz]	[dBm]	Loss	Loss	Gain *	(Number	[dBm]	[m]	bounce	(field strength)			
		[dB]	[dB]	[dBi]	of Output)			[dB]	[dBuV/m]	[dBuV/m]	[dB]	
9.35	-88.4	0.0	20.1	2.0	1.0	-66.3	300	6.0	-5.1	48.1	53.2	-
200.00	-79.8	0.0	20.1	2.0	1.0	-57.7	300	6.0	3.6	21.5	17.9	-

$E \text{ [dBuV/m]} = EIRP \text{ [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$
 $EIRP \text{ [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$
N: Number of output
*2.0 dBi was applied to the test result based on ANSI C63.10 since antenna gain was less than 2.0 dBi.

Power Density

Test place	Shonan EMC Lab. No.8 Shielded Room
Date	February 9, 2025
Temperature / Humidity	21 deg. C / 23 % RH
Engineer	Yuta Shiba
Mode	Tx

11b

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	2410.493	-28.18	0.88	20.15	-7.15	8.00	15.15
2437	2438.587	-27.98	0.88	20.15	-6.95	8.00	14.95
2462	2462.499	-27.71	0.89	20.15	-6.67	8.00	14.67

11g

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	2413.866	-36.98	0.88	20.15	-15.95	8.00	23.95
2437	2437.308	-32.03	0.88	20.15	-11.00	8.00	19.00
2462	2462.348	-36.82	0.89	20.15	-15.78	8.00	23.78

11n-20 (SISO)

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2412	2413.574	-38.09	0.88	20.15	-17.06	8.00	25.06
2437	2436.668	-33.28	0.88	20.15	-12.25	8.00	20.25
2462	2463.219	-36.53	0.89	20.15	-15.49	8.00	23.49

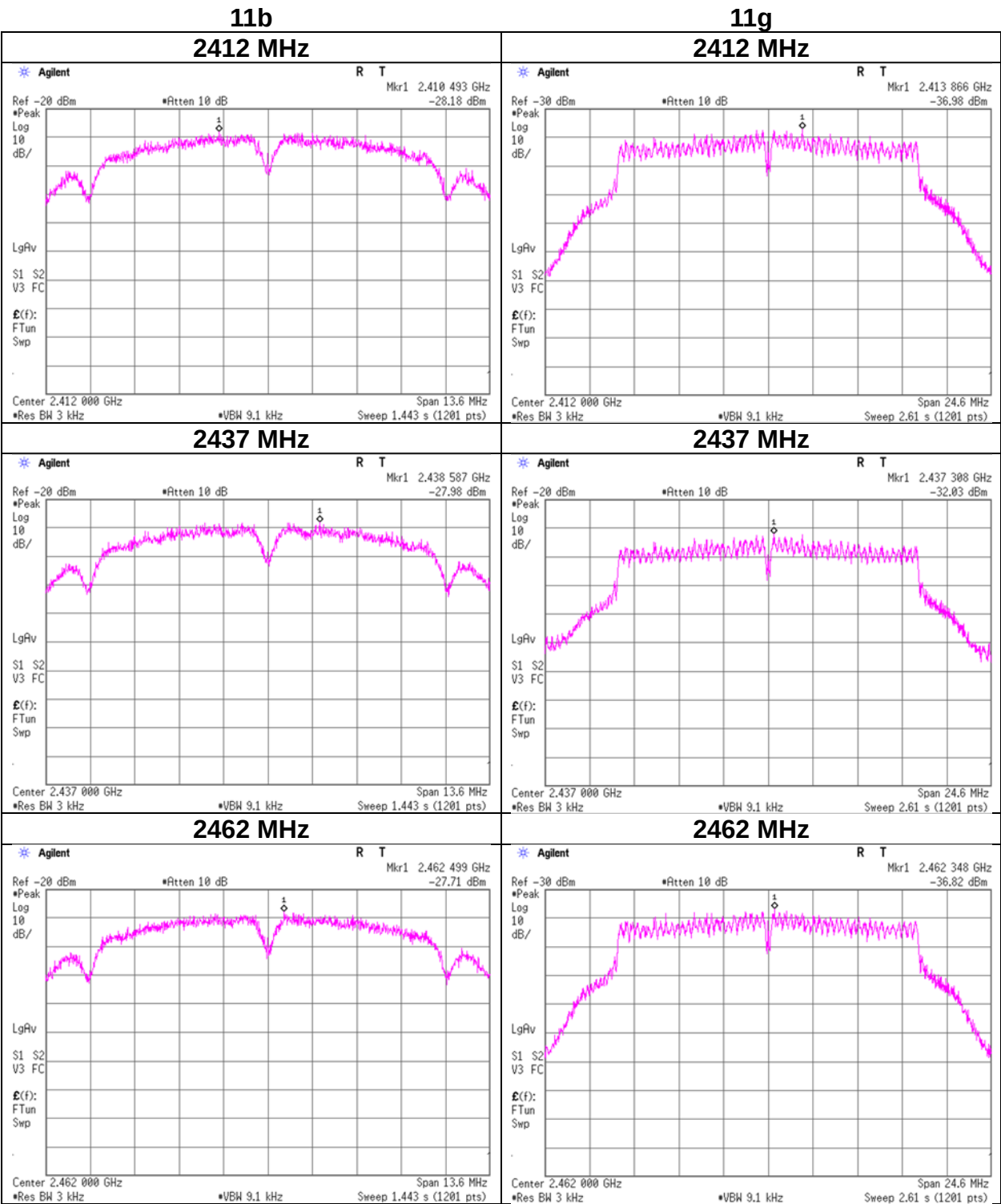
11n-40 (SISO)

Frequency [MHz]	Measured Frequency [MHz]	Reading [dBm/3 kHz]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm/3 kHz]	Limit [dBm/3 kHz]	Margin [dB]
2422	2422.000	-41.86	0.88	20.15	-20.83	8.00	28.83
2437	2443.800	-40.42	0.88	20.15	-19.39	8.00	27.39
2452	2447.020	-42.16	0.88	20.15	-21.13	8.00	29.13

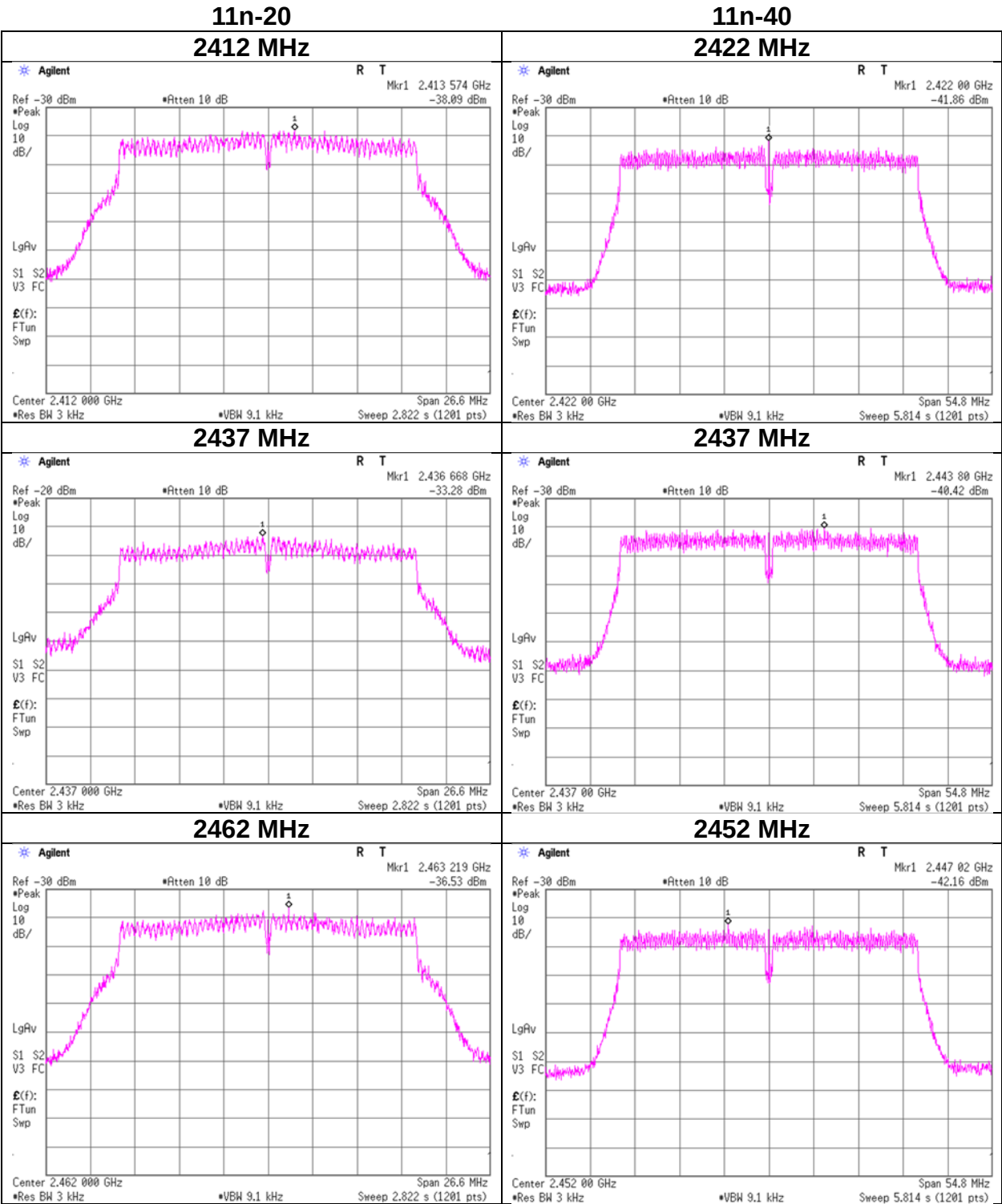
Sample Calculation:

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

Power Density



Power Density



APPENDIX 2: Test Instruments

Test Equipment (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	160494	Attenuator	Weinschel Corp.	54A-10	83420	2024/12/03	12
AT	239653	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	2001221/2	2024/08/20	12
AT	169910	Power Meter	Keysight Technologies Inc	8990B	MY51000448	2024/09/11	12
AT	169911	Power sensor	Keysight Technologies Inc	N1923A	MY57270004	2024/09/11	12
AT	191847	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2024/08/12	12
CE	199786	Attenuator	JFW	50HF-006N	-	2024/06/14	12
CE	145036	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	2024/04/01	12
CE	145538	LISN	Rohde & Schwarz	ENV216	100511	2025/02/01	12
CE	145542	LISN	Rohde & Schwarz	ENV216	100516	2025/02/01	12
CE	145745	Terminator	TME	CT-01 BP	-	2024/11/21	12
CE,RE	146210	Digital Hitester	HIOKI E. E. CORPORATION	3805-50	80997823	2024/09/24	12
CE,RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	Ver 3.1.0546	-	-
CE,RE	146432	Tape Measure	TAJIMA	GL19-55	-	-	-
CE,RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2024/08/06	12
CE,RE	191840	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2024/08/12	12
AT	160494	Attenuator	Weinschel Corp.	54A-10	83420	2024/12/03	12
AT	239653	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	2001221/2	2024/08/20	12
AT	169910	Power Meter	Keysight Technologies Inc	8990B	MY51000448	2024/09/11	12
AT	169911	Power sensor	Keysight Technologies Inc	N1923A	MY57270004	2024/09/11	12
AT	191847	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2024/08/12	12
CE	199786	Attenuator	JFW	50HF-006N	-	2024/06/14	12
CE	145036	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	2024/04/01	12
CE	145538	LISN	Rohde & Schwarz	ENV216	100511	2025/02/01	12
CE	145542	LISN	Rohde & Schwarz	ENV216	100516	2025/02/01	12
CE	145745	Terminator	TME	CT-01 BP	-	2024/11/21	12
CE,RE	146210	Digital Hitester	HIOKI E. E. CORPORATION	3805-50	80997823	2024/09/24	12
CE,RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	Ver 3.1.0546	-	-
CE,RE	146432	Tape Measure	TAJIMA	GL19-55	-	-	-
CE,RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2024/08/06	12
CE,RE	191840	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2024/08/12	12
AT	160494	Attenuator	Weinschel Corp.	54A-10	83420	2024/12/03	12
AT	239653	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	2001221/2	2024/08/20	12
AT	169910	Power Meter	Keysight Technologies Inc	8990B	MY51000448	2024/09/11	12
AT	169911	Power sensor	Keysight Technologies Inc	N1923A	MY57270004	2024/09/11	12
AT	191847	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2024/08/12	12
CE	199786	Attenuator	JFW	50HF-006N	-	2024/06/14	12

Test Equipment (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	145136	Attenuator	Keysight Technologies Inc	8493C-010	74864	2024/10/10	12
RE	248303	Attenuator	JFW	50HFFA-006-2/18N	-	2024/05/06	12
RE	145023	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	BBA9106	91032666	2024/05/10	12
RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2024/08/21	12
RE	156380	Coaxial Cable	Huber+Suhner	SUCOFLEX 104 E	SN MY 13406/4E	-	-
RE	178572	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	800288 /4A	2025/02/28	12
RE	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2024/03/05	12
RE	236869	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	200084/4A	2024/12/05	12
RE	249679	Coaxial Cable	Hayashi-Repic co., Ltd.	SMS13-13A26-NMS13-0.5m	50736-01-01	2024/06/12	12
RE	255496	Coaxial Cable	Hayashi-Repic co., Ltd.	SFS13-13A26-SMS13-1.0m	51221-01-01	2024/12/05	12
RE	255497	Coaxial Cable	Hayashi-Repic co., Ltd.	SFS13-13A26-NMS13-1.0m	51221-02-01	2024/12/05	12
RE	253628	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	5D2W/12DSFA/141PE/141PE/141PE/141PE/N S4906	-/0901-271(RF Selector)	2024/10/16	12
RE	145301	Highpass Filter	Micro-Tronics	HPM50111	51	2024/10/10	12
RE	145501	Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	9120D-739	2024/03/20	12
RE	145512	Horn Antenna	ETS-Lindgren	3160-09	00094868	2024/06/20	12
RE	194685	Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	711	2024/03/20	12
RE	145529	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	196	2024/05/10	12
RE	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	2046104	2025/02/25	12
RE	145126	Pre Amplifier	SONOMA	310N	290213	2025/02/19	12
RE	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2024/05/08	12
RE	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2024/04/03	12
RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2024/05/23	12
RE	213530	Test Receiver	Rohde & Schwarz	ESW44	103068	2025/02/12	12
RE	145136	Attenuator	Keysight Technologies Inc	8493C-010	74864	2024/10/10	12
RE	248303	Attenuator	JFW	50HFFA-006-2/18N	-	2024/05/06	12
RE	145023	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	BBA9106	91032666	2024/05/10	12
RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2024/08/21	12
RE	156380	Coaxial Cable	Huber+Suhner	SUCOFLEX 104 E	SN MY 13406/4E	-	-
RE	178572	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	800288 /4A	2025/02/28	12
RE	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2024/03/05	12
RE	236869	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	200084/4A	2024/12/05	12
RE	249679	Coaxial Cable	Hayashi-Repic co., Ltd.	SMS13-13A26-NMS13-0.5m	50736-01-01	2024/06/12	12
RE	255496	Coaxial Cable	Hayashi-Repic co., Ltd.	SFS13-13A26-SMS13-1.0m	51221-01-01	2024/12/05	12
RE	255497	Coaxial Cable	Hayashi-Repic co., Ltd.	SFS13-13A26-NMS13-1.0m	51221-02-01	2024/12/05	12
RE	253628	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	5D2W/12DSFA/141PE/141PE/141PE/141PE/N S4906	-/0901-271(RF Selector)	2024/10/16	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.

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

CE: Conducted Emission

RE: Radiated Emission