

RADIO TEST REPORT

Test Report No. 14781152S-A-R3

Customer	Canon Inc.
Description of EUT	Wireless Module
Model Number of EUT	ES205
FCC ID	AZD248
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	July 5, 2024
Remarks	Bluetooth (BR / EDR) parts

Representative Test EngineerYosuke Murakami
Engineer**Approved By**Toyokazu Imamura
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".

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- 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.: 14781152S-A

This report is a revised version of 14781152S-A-R2. 14781152S-A-R2 is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14781152S-A	June 7, 2024	-
1	14781152S-A-R1	June 13, 2024	Section 2 Added rating: DC 1.8 V
2	14781152S-A-R2	June 26, 2024	Cover page Corrected FCC ID: AZD 248 to AZD248 Section 2.2 Addition of the value of the Directional Gain. Section 3 Modification of FCC Part 15.31 (e) From: The RF Module has its own regulator. The RF Module is constantly provided voltage through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement. To: The module is constantly provided the stable voltage (DC 3.3 V / 1.8 V) from the host device regardless of input voltage. Therefore, this EUT complies with the requirement. P13 and 14 Modification of cable length for No.1, No.2: 0.01 => 0.02 P20 to 22 Correction of Limit2(AV) line. Appendix 1 Addition of Burst Rate Confirmation
3	14781152S-A-R3	July 5, 2024	Section 2.2 Adjusted table for the antenna gain

Reference: Abbreviations (Including words undescribed in this report)

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

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	15
SECTION 6: Radiated Spurious Emission.....	16
SECTION 7: Antenna Terminal Conducted Tests	19
APPENDIX 1: Test data.....	20
Conducted Emission	20
20 dB Bandwidth, 99 %Occupied Bandwidth and Carrier Frequency Separation	23
Number of Hopping Frequency	27
Dwell time	29
Maximum Peak Output Power.....	32
Radiated Spurious Emission	34
Conducted Spurious Emission	65
Conducted Emission Band Edge compliance	71
APPENDIX 2: Test Instruments.....	73
APPENDIX 3: Photographs of test setup	75
Conducted Emission	75
Radiated Spurious Emission	77
Pre-check of Worst Case Position.....	79
Antenna Terminal Conducted Tests	80

SECTION 1: Customer Information

Company Name	Canon Inc.
Address	30-2, Shimomaruko 3-chome, Ohta-ku, Tokyo 146-8501 Japan
Telephone Number	+81-3-5482-4941
Contact Person	Yasuhito Yukita

The information provided from 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 Module
Model Number	ES205
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	May 8, 2023
Test Date	June 5, 2023 to January 30, 2024

2.2 Product Description

General Specification

Rating	DC 3.3 V / DC 1.8 V
Operating temperature	-40 deg. C to +85 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.

Bluetooth (BR/EDR/BTLE)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	FHSS, GFSK / $\pi/4$ -DQPSK, 8DPSK / GFSK
Antenna Type	Monopole Antenna
Antenna Gain ^{a)}	2.67 dBi

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

Equipment Type	Transceiver
Frequency of Operation	2412 MHz to 2462 MHz
Type of Modulation	DSSS, OFDM OFDMA: (20 MHz band): 26/52/106/242-tone RU
Antenna Type	Monopole Antenna
Antenna Gain ^{a)}	Antenna Gain Directinal Gain *1) 2.67 dBi 5.69 dBi

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

Equipment Type	Transceiver		
Frequency of Operation	20 MHz Band:	5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5700 MHz 5745 MHz to 5825 MHz 5955 MHz to 6415 MHz 6435 MHz to 6515 MHz 6535 MHz to 6875 MHz (*6875 MHz:straddle ch) 6895 MHz to 7095 MHz	
	40 MHz Band	5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5670 MHz 5755 MHz to 5795 MHz 5965 MHz to 6405 MHz 6445 MHz to 6525 MHz (*6525 MHz:straddle ch) 6565 MHz to 6885 MHz (*6885 MHz:straddle ch) 6925 MHz to 7085 MHz	
	80 MHz band	5210 MHz 5290 MHz 5530 MHz to 5610 MHz 5775 MHz 5985 MHz to 6385 MHz 6465 MHz to 6545 MHz (*6545 MHz:straddle ch) 6625 MHz to 6865 MHz (*6865 MHz:straddle ch) 6945 MHz to 7025 MHz	
Type of Modulation	OFDM		
	OFDMA (IEEE802.11ax only)	(20 MHz band): 26/52/106/242-tone RU	
		(40 MHz band): 26/52/106/242/484-tone RU	
		(80 MHz band): 26/52/106/242/484/996-tone RU	
Antenna Type	Monopole Antenna		
Antenna Gain ^{a)}	Antenna Gain	Directinal Gain *1)	Band
	5.14 dBi	8.16 dBi	(WLAN UNII-1 and UNII-2A band)
	3.53 dBi	6.55 dBi	(WLAN UNII-2C band)
	3.05 dBi	6.07 dBi	(WLAN UNII-3 band)
	1.61 dBi	4.63 dBi	(WLAN UNII-5 and UNII-6 band)
	0.60 dBi	3.62 dBi	(WLAN UNII-7 and UNII-8 band)

*1) Directional Gain = Antenna Gain + Arry Gain

Arry Gain = $10 * \log (\text{Number of transmit Antennas} / \text{Number of spatial streams})$

Number of transmit Antennas = 2, Number of spatial streams = 1

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	27.0 dB 0.15000 MHz QP, N Mode: DH5 2441 MHz With Tx 11ax-40 (OFDM), 5510 MHz/ DH5 2441 MHz With Tx 11ax-40 (OFDM), 6445 MHz 0.17324 MHz QP, N Mode: DH5 2441 MHz With Tx 11ax-40 (OFDM), 5510 MHz	Complied	-
Carrier Frequency Separation	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section15.247(a)(1) ISED: RSS-247 5.1 (b)	See data.	Complied	Conducted
20 dB Bandwidth	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section15.247(a)(1) ISED: RSS-247 5.1 (a)		Complied	Conducted
Number of Hopping Frequency	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section15.247(a)(1)(iii) ISED: RSS-247 5.1 (d)		Complied	Conducted
Dwell time	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: -	FCC: Section15.247(a)(1)(iii) ISED: RSS-247 5.1 (d)		Complied	Conducted
Maximum Peak Output Power	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.12	FCC: Section15.247(b)(1) ISED: RSS-247 5.4 (b)		Complied	Conducted
Spurious Emission & Band Edge Compliance	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.13	FCC: Section15.247(d) ISED: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	6.3 dB 3202.667 MHz, AV, Vert., Mode: Tx, Hopping Off, 3DH5 2402 MHz	Complied	Conducted/ 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).

FCC Part 15.31 (e)

The module is constantly provided the stable voltage (DC 3.3 V / 1.8 V) from the host device regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

The EUT has a unique coupling/antenna connector (MHF-4L (IPEX)). Therefore the equipment complies with the requirement of 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	3.2 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.3 dB
	30 MHz to 200 MHz	4.9 dB
	200 MHz to 1 GHz	6.2 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 10 GHz	5.3 dB
Radiated Emission (Measurement distance: 1 m)	10 GHz to 18 GHz	5.6 dB
	18 GHz to 26.5 GHz	5.8 dB

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector) SPM-06	1.1 dB
Power Measurement above 1 GHz (Peak Detector) SPM-06	1.8 dB
Power Measurement above 1 GHz (Average Detector) SPM-07	1.0 dB
Power Measurement above 1 GHz (Peak Detector) SPM-07	1.2 dB
Power Measurement above 1 GHz (Average Detector) SPM-13	0.81 dB
Power Measurement above 1 GHz (Peak Detector) SPM-13	1.1 dB
Spurious Emission (Conducted) below 1 GHz	0.91 dB
Conducted Emissions Power Density Measurement 1 GHz to 3 GHz	1.3 dB
Conducted Emissions Power Density Measurement 3 GHz to 18 GHz	2.5 dB
Spurious Emission (Conducted) 18 GHz to 26.5 GHz	2.8 dB
Spurious Emission (Conducted) 26.5 GHz to 40 GHz	2.6 dB
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature_SCH-01	0.96 deg.C.
Humidity_SCH-01	4.0 %
Temperature_SCH-02	2.2 deg.C.
Voltage	0.74 %

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)

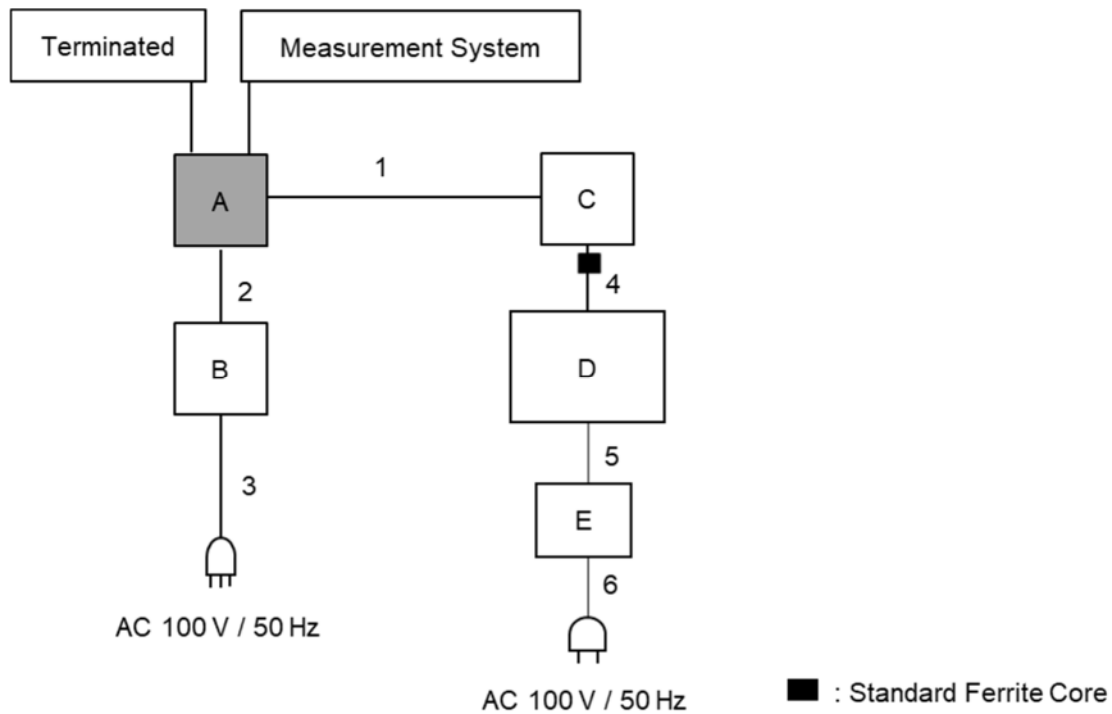
Mode	Remarks*
Bluetooth (BT)	BR / EDR, Payload: PRBS9
*EUT has the power settings by the software as follows; Power Setting: BR:6.0 dBm, EDR:3.0 dBm Software: 18.53 (For WLAN) 001.002.087.0186 (For Bluetooth) (Date: 2023.06.05, Storage location: Driven by connected PC) *This setting of software is the 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.	

Details of Operating Mode(s)

Test Item	Mode	Hopping	Tested Frequency
Conducted Emission	Tx DH5 *1)	Off	2441 MHz
Radiated Spurious Emission (Below 1 GHz)	Tx DH5 *1)	Off	2441 MHz
	Tx 3DH5	Off	2402 MHz 2441 MHz 2480 MHz
Radiated Spurious Emission (Above 1 GHz), Conducted Spurious Emission	Tx DH5 Tx 3DH5	Off	2402 MHz 2441 MHz 2480 MHz
Radiated Spurious Emission , Conducted Spurious Emission	Tx DH5 with Tx, 11ax-40 (OFDM), 5510 MHz	Off	2441 MHz
	Tx DH5 with Tx, 11ax-40 (OFDM), 6445 MHz		
Carrier Frequency Separation	Tx DH5 Tx 3DH5	On	-
20 dB Bandwidth	Tx DH5 Tx 3DH5	Off	2402 MHz 2441 MHz 2480 MHz
Number of Hopping Frequency	Tx DH5 Tx 3DH5	On	-
Dwell time	Tx DH1, DH3, DH5 Tx 3DH1, 3DH3, 3DH5	On	-
Maximum Peak Output Power	Tx DH5 Tx 2DH5 Tx 3DH5	Off	2402 MHz 2441 MHz 2480 MHz
Band Edge Compliance (Radiated)	Tx DH5 with Tx 11ax-40 (OFDM), 5510 MHz Tx 3DH5 with Tx 11ax-40 (OFDMA), 5510 MHz	Off	2402 MHz 2480 MHz
	Tx DH5 with Tx 11ax-40 (OFDM), 6445 MHz Tx 3DH5 with Tx 11ax-40 (OFDMA), 6445 MHz		
Band Edge Compliance (Conducted)	Tx DH5 Tx 3DH5	On Off	2402 MHz 2480 MHz
99 % Occupied Bandwidth	Tx DH5 Tx 3DH5	On	2402 MHz
		Off	2441 MHz 2480 MHz
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test)			
*2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative.			
*It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.			
*1) Conducted emissions and Spurious emissions for frequencies below 1 GHz were limited to the channel that had the highest power during the antenna terminal test, as preliminary testing indicated that changing the operating frequency had no significant impact on the emissions in those frequency bands.			

4.2 Configuration and Peripherals

<For Antenna Terminal Conducted Tests>



Description of EUT and Support Equipment

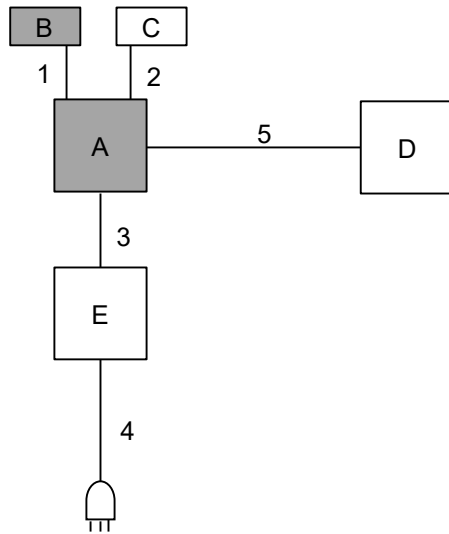
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B5	Canon Inc.	EUT *1)
B	Power Supply (DC)	PW16-5ADP	19100034	GW Instek	-
C	UART-USB converter board	-	BP001	Canon Inc.	-
D	Laptop PC	HP 250 G9/CT	JPH318LWC6	HP	-
E	AC Adapter	TPN-LA15	-	Lite-On Technology Corp.	-

*1) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	UART	0.1	Unshielded	Unshielded	-
2	DC	0.9	Unshielded	Unshielded	-
3	AC	2.0	Unshielded	Unshielded	-
4	USB	1.0	Shielded	Shielded	-
5	DC	1.7	Unshielded	Unshielded	-
6	AC	0.9	Unshielded	Unshielded	-

<For Radiated Emission tests and Conducted Emission tests>



AC 100 V / 50 Hz
AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

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

Description of EUT and Support Equipment

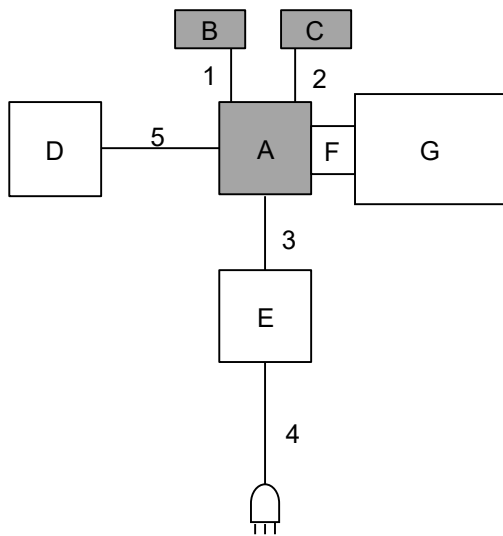
No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	- (Ant1)
D	UART-USB converter board	-	BP006	Canon Inc.	-
E	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-

*2) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	0.9	Unshielded	Unshielded	-
5	UART	0.1	Unshielded	Unshielded	-

< For Radiated Emission tests and Conducted Emission tests (Simultaneous transmission of BT and WLAN)>



AC 100 V / 50 Hz

AC 120 V / 60 Hz *1)

*1) Only Conducted emission tests

* 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	Wireless module	ES205	B4	Canon Inc.	EUT *2)
B	Antenna	19AA-10-tmp	1	Canon Inc.	EUT (Ant0)
C	Antenna	19AA-10-tmp	2	Canon Inc.	EUT (Ant1)
D	UART-USB converter board	-	BP006	Canon Inc.	-
E	Power Supply (DC)	PAN35-10A	DE001677	Kikusui Electronics Corp.	-
F	Interface board	WJIG2021_2	A15	Canon Inc.	-
G	Raspberry Pi board	600-90768-01 REV2.0	2-2	Infineon Technologies AG	-

*2) With Jig board

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Antenna	0.02	Shielded	Shielded	-
2	Antenna	0.02	Shielded	Shielded	-
3	DC	0.9 + 1.0	Unshielded	Unshielded	-
4	AC	0.9	Unshielded	Unshielded	-
5	UART	0.1	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and Conditions

EUT was placed on a urethane platform of nominal size, 1.0 m by .2.0 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.

For the tests on EUT with other peripherals (as a whole system)

I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane.

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

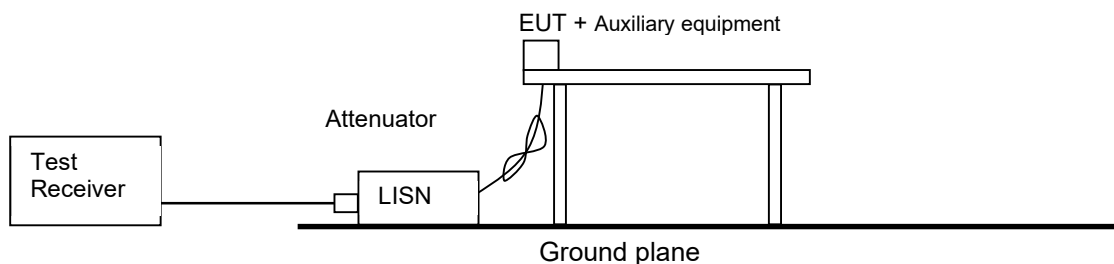
The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, 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

[For below 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 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,

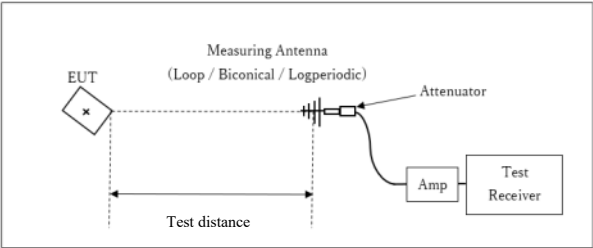
the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

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 *1)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak	RBW: 100 kHz VBW: 300 kHz

Figure 2: Test Setup

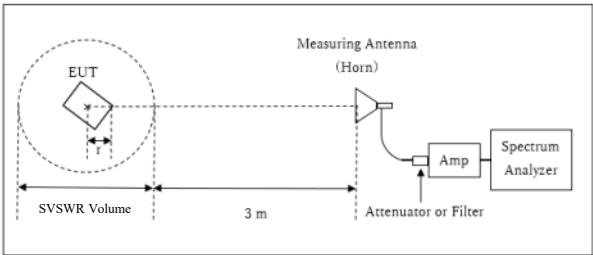
Below 1 GHz



x : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz



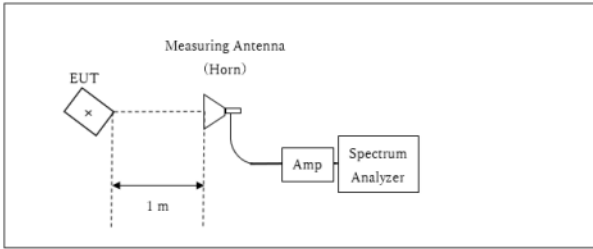
r : Radius of an outer periphery of EUT
x : Center of turn table

Distance Factor: $20 \times \log (3.995 \text{ m} / 3.0 \text{ m}) = 2.49 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.995 \text{ m}$

SVSWR Volume : 2.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
 $r = 0.005 \text{ m}$

* The test was performed with $r = 0.0 \text{ m}$ since EUT is small and it was the rather conservative condition.

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 and Antenna 0, Antenna 1 to see the position of maximum noise, and the test was made at the position that has the maximum noise.

EUT

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	Z	X	X
Vertical	X	X	X	X

Antenna 0 (ANT 0)

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	X	X	X
Vertical	X	Y	X	X

Antenna 1 (ANT 1)

	Below 1 GHz	1 to 10 GHz	10 to 18 GHz	Above 18 GHz
Horizontal	X	X	X	X
Vertical	X	Y	X	X

The test results and limit are rounded off to one decimal place, 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
20 dB Bandwidth	3 MHz	30 kHz	91 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 *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak Average *2)	-	Power Meter (Sensor: 160 MHz BW)
Carrier Frequency Separation	3 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30 MHz	300 kHz	1 MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100 kHz, 1 MHz	300 kHz, 3 MHz	As necessary capture the entire dwell time per hopping channel	Peak	Clear Write	Spectrum Analyzer
Conducted Spurious Emission *3) *4)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				
	30 MHz to 25 GHz	100 kHz	300 kHz				
Conducted Spurious Emission Band Edge compliance	10 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer

*1) Peak hold was applied as Worst-case measurement.

*2) Reference data

*3) 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)

*4) 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.

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

Test Data : APPENDIX

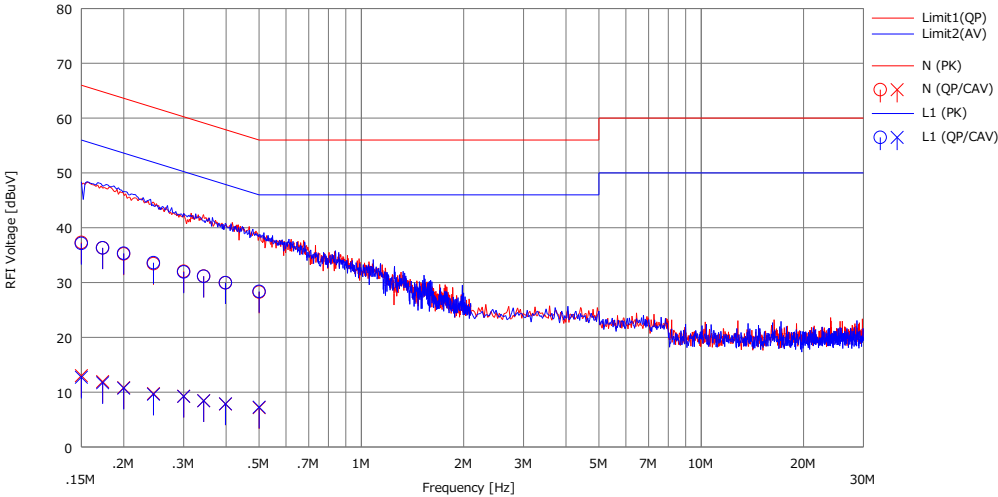
Test Result : Pass

APPENDIX 1: Test data

Conducted Emission

Test place Shonan EMC Lab. No.3 Shielded Room
Date January 30, 2024
Temperature / Humidity 22 deg. C / 27 % RH
Engineer Makoto Hosaka
Mode Tx, Hopping Off, DH5 2441 MHz

Limit: FCC Part 15 Subpart C (15.207)



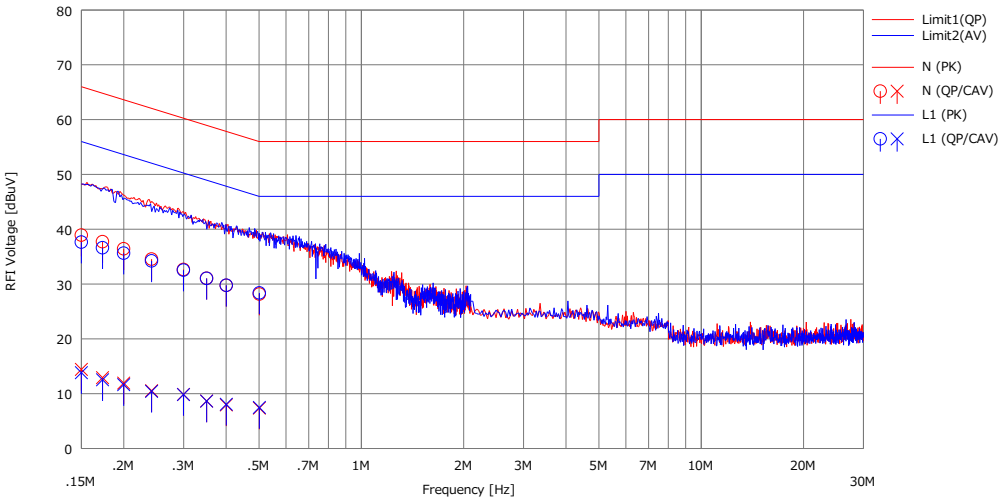
No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<CAV>		<QP>	<CAV>	<QP>	<AV>	<QP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	24.90	0.60	12.42	37.32	13.02	66.00	56.00	28.6	42.9	N	
2	0.17325	23.90	-0.50	12.42	36.32	11.92	64.80	54.80	28.4	42.8	N	
3	0.19993	22.80	-1.60	12.42	35.22	10.82	63.61	53.61	28.3	42.7	N	
4	0.24454	21.00	-2.70	12.44	33.44	9.74	61.94	51.94	28.5	42.2	N	
5	0.30011	19.60	-3.20	12.45	32.05	9.25	60.24	50.24	28.1	40.9	N	
6	0.34371	18.70	-4.00	12.45	31.15	8.45	59.11	49.11	27.9	40.6	N	
7	0.39832	17.50	-4.60	12.45	29.95	7.85	57.89	47.89	27.9	40.0	N	
8	0.50050	15.80	-5.30	12.46	28.26	7.16	56.00	46.00	27.7	38.8	N	
9	0.15000	24.70	0.30	12.43	37.13	12.73	66.00	56.00	28.8	43.2	L1	
10	0.17325	23.90	-0.70	12.42	36.32	11.72	64.80	54.80	28.4	43.0	L1	
11	0.19993	22.90	-1.70	12.43	35.33	10.73	63.61	53.61	28.2	42.8	L1	
12	0.24454	21.20	-2.80	12.42	33.62	9.62	61.94	51.94	28.3	42.3	L1	
13	0.30011	19.50	-3.20	12.44	31.94	9.24	60.24	50.24	28.3	41.0	L1	
14	0.34371	18.70	-4.00	12.43	31.13	8.43	59.11	49.11	27.9	40.6	L1	
15	0.39832	17.50	-4.60	12.46	29.96	7.86	57.89	47.89	27.9	40.0	L1	
16	0.50050	15.90	-5.20	12.47	28.37	7.27	56.00	46.00	27.6	38.7	L1	

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

Conducted Emission

Test place Shonan EMC Lab. No.3 Shielded Room
Date January 29, 2024
Temperature / Humidity 20 deg. C / 27 % RH
Engineer Yusuke Tanikawara
Mode Tx, Hopping Off, DH5 2441 MHz
with Tx, 11ax-40 (OFDM), 5510 MHz

Limit: FCC Part 15 Subpart C (15.207)



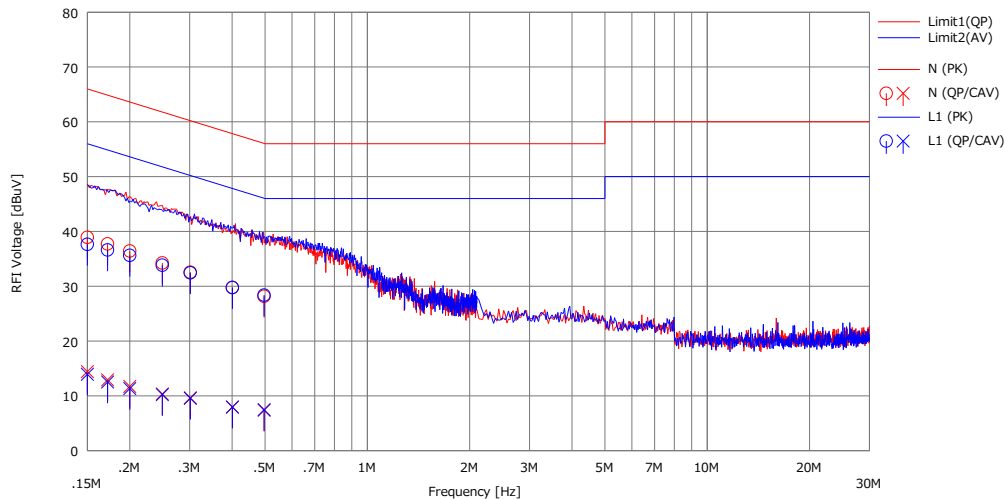
No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP>	<CAV>		<QP>	<CAV>	<QP>	<AV>	<QP>	<AV>		
		[dBuV]	[dBuV]		[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]		
1	0.15000	26.50	2.00	12.42	38.92	14.42	66.00	56.00	27.0	41.5	N	
2	0.17324	25.30	0.50	12.42	37.72	12.92	64.80	54.80	27.0	41.8	N	
3	0.19992	24.00	-0.50	12.42	36.42	11.92	63.61	53.61	27.1	41.6	N	
4	0.24137	22.10	-1.90	12.44	34.54	10.54	62.05	52.05	27.5	41.5	N	
5	0.29959	20.20	-2.60	12.45	32.65	9.85	60.25	50.25	27.6	40.4	N	
6	0.35068	18.60	-3.80	12.45	31.05	8.65	58.95	48.95	27.9	40.3	N	
7	0.40063	17.30	-4.50	12.45	29.75	7.95	57.84	47.84	28.0	39.8	N	
8	0.50103	15.70	-5.10	12.46	28.16	7.36	56.00	46.00	27.8	38.6	N	
9	0.15000	25.20	1.40	12.43	37.63	13.83	66.00	56.00	28.3	42.1	L1	
10	0.17324	24.20	0.10	12.42	36.62	12.52	64.80	54.80	28.1	42.2	L1	
11	0.19992	23.20	-0.80	12.43	35.63	11.63	63.61	53.61	27.9	41.9	L1	
12	0.24137	21.80	-2.00	12.42	34.22	10.42	62.05	52.05	27.8	41.6	L1	
13	0.29959	20.10	-2.60	12.44	32.54	9.84	60.25	50.25	27.7	40.4	L1	
14	0.35068	18.60	-3.80	12.43	31.03	8.63	58.95	48.95	27.9	40.3	L1	
15	0.40063	17.30	-4.40	12.46	29.76	8.06	57.84	47.84	28.0	39.7	L1	
16	0.50103	15.90	-5.00	12.47	28.37	7.47	56.00	46.00	27.6	38.5	L1	

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

Conducted Emission

Test place Shonan EMC Lab. No.3 Shielded Room
Date January 29, 2024
Temperature / Humidity 20 deg. C / 27 % RH
Engineer Yusuke Tanikawara
Mode Tx, Hopping Off, DH5 2441 MHz
with Tx, 11ax-40 (OFDM), 6445 MHz

Limit: FCC Part 15 Subpart C (15.207)



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	0.15000	26.50	2.00	12.42	38.92	14.42	66.00	56.00	27.0	41.5	N	
2	0.17201	25.30	0.50	12.42	37.72	12.92	64.86	54.86	27.1	41.9	N	
3	0.20003	24.00	-0.70	12.42	36.42	11.72	63.61	53.61	27.1	41.8	N	
4	0.24931	21.80	-2.10	12.44	34.24	10.34	61.78	51.78	27.5	41.4	N	
5	0.30134	20.10	-2.80	12.45	32.55	9.65	60.21	50.21	27.6	40.5	N	
6	0.40079	17.30	-4.50	12.45	29.75	7.95	57.84	47.84	28.0	39.8	N	
7	0.49692	15.70	-5.10	12.46	28.16	7.36	56.05	46.05	27.8	38.6	N	
8	0.15000	25.20	1.50	12.43	37.63	13.93	66.00	56.00	28.3	42.0	L1	
9	0.17201	24.20	0.10	12.42	36.62	12.52	64.86	54.86	28.2	42.3	L1	
10	0.20003	23.20	-1.10	12.43	35.63	11.33	63.61	53.61	27.9	42.2	L1	
11	0.24931	21.40	-2.20	12.42	33.82	10.22	61.78	51.78	27.9	41.5	L1	
12	0.30134	20.00	-2.90	12.44	32.44	9.54	60.21	50.21	27.7	40.6	L1	
13	0.40079	17.30	-4.50	12.46	29.76	7.96	57.84	47.84	28.0	39.8	L1	
14	0.49692	15.90	-5.00	12.47	28.37	7.47	56.05	46.05	27.6	38.5	L1	

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

20 dB Bandwidth, 99 %Occupied Bandwidth and Carrier Frequency Separation

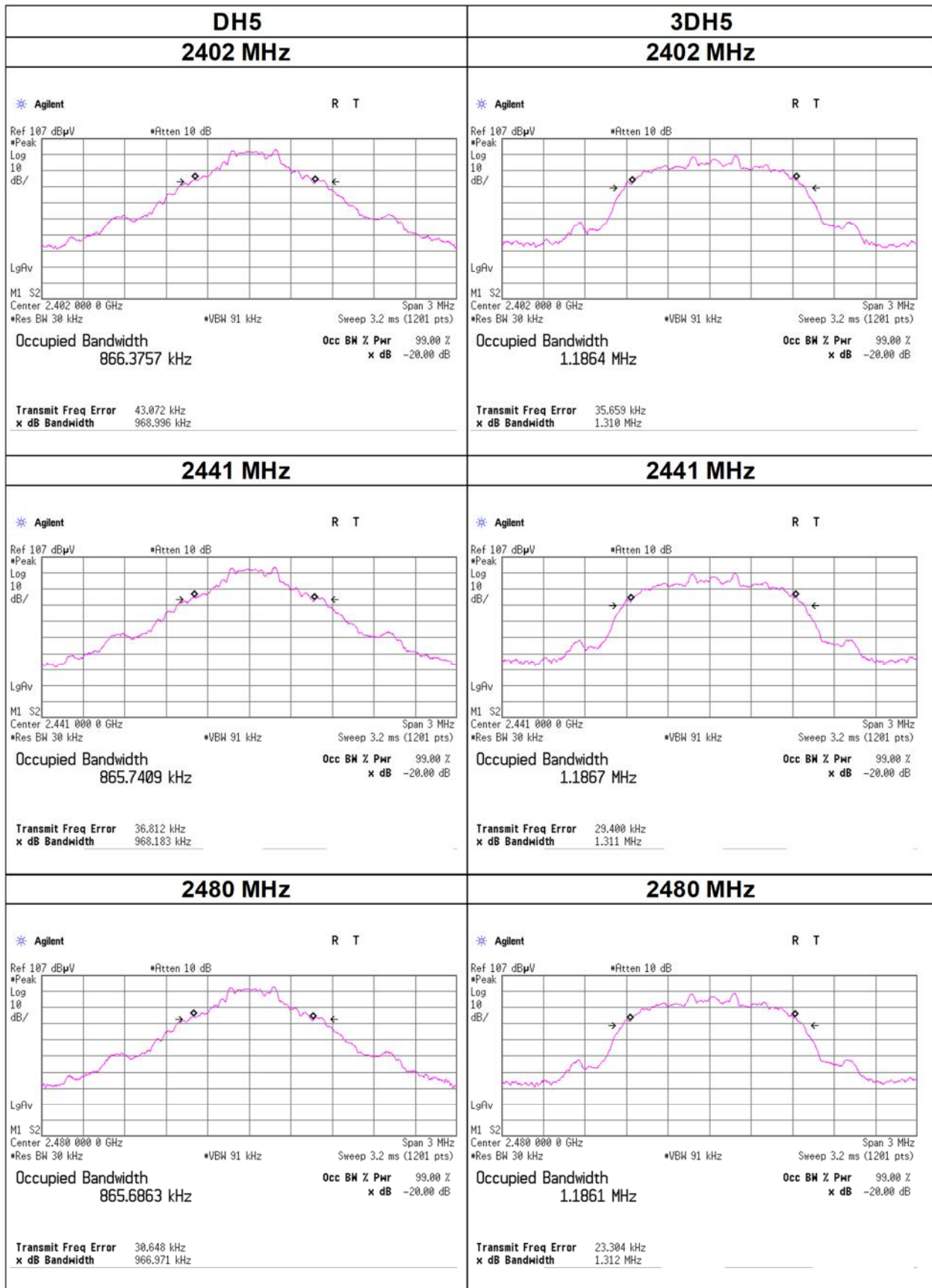
Test place	Shonan EMC Lab. No.5 Shielded Room	
Date	June 5, 2023	June 6, 2023
Temperature / Humidity	26 deg. C / 46 % RH	26 deg. C / 40 % RH
Engineer	Yosuke Murakami	
Mode	Tx, Hopping Off, Tx, Hopping On	

Mode	Freq. [MHz]	20 dB Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.969	866.4	1.000	>= 0.646
DH5	2441.0	0.968	865.7	1.000	>= 0.645
DH5	2480.0	0.967	865.7	1.000	>= 0.645
DH5	Hopping On	-	78622.7	-	-
3DH5	2402.0	1.310	1186.4	1.000	>= 0.873
3DH5	2441.0	1.311	1186.7	1.000	>= 0.874
3DH5	2480.0	1.312	1186.1	1.000	>= 0.875
3DH5	Hopping On	-	78706.8	-	-

Limit: Two-thirds of 20 dB Bandwidth or 25 kHz (whichever is greater).

No limit applies to 20 dB Bandwidth.

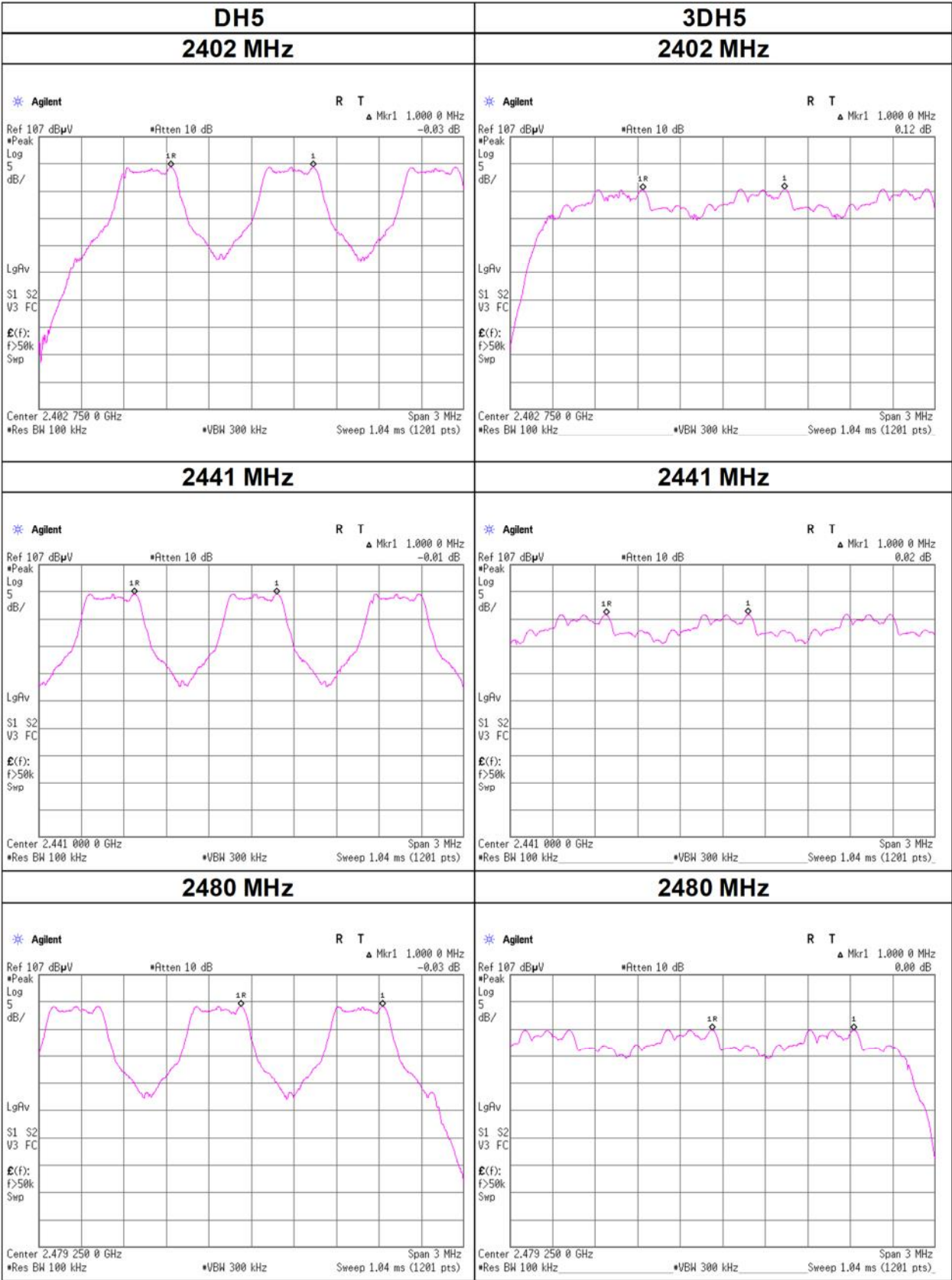
20 dB Bandwidth and 99 % Occupied Bandwidth



20 dB Bandwidth and 99 % Occupied Bandwidth



Carrier Frequency Separation



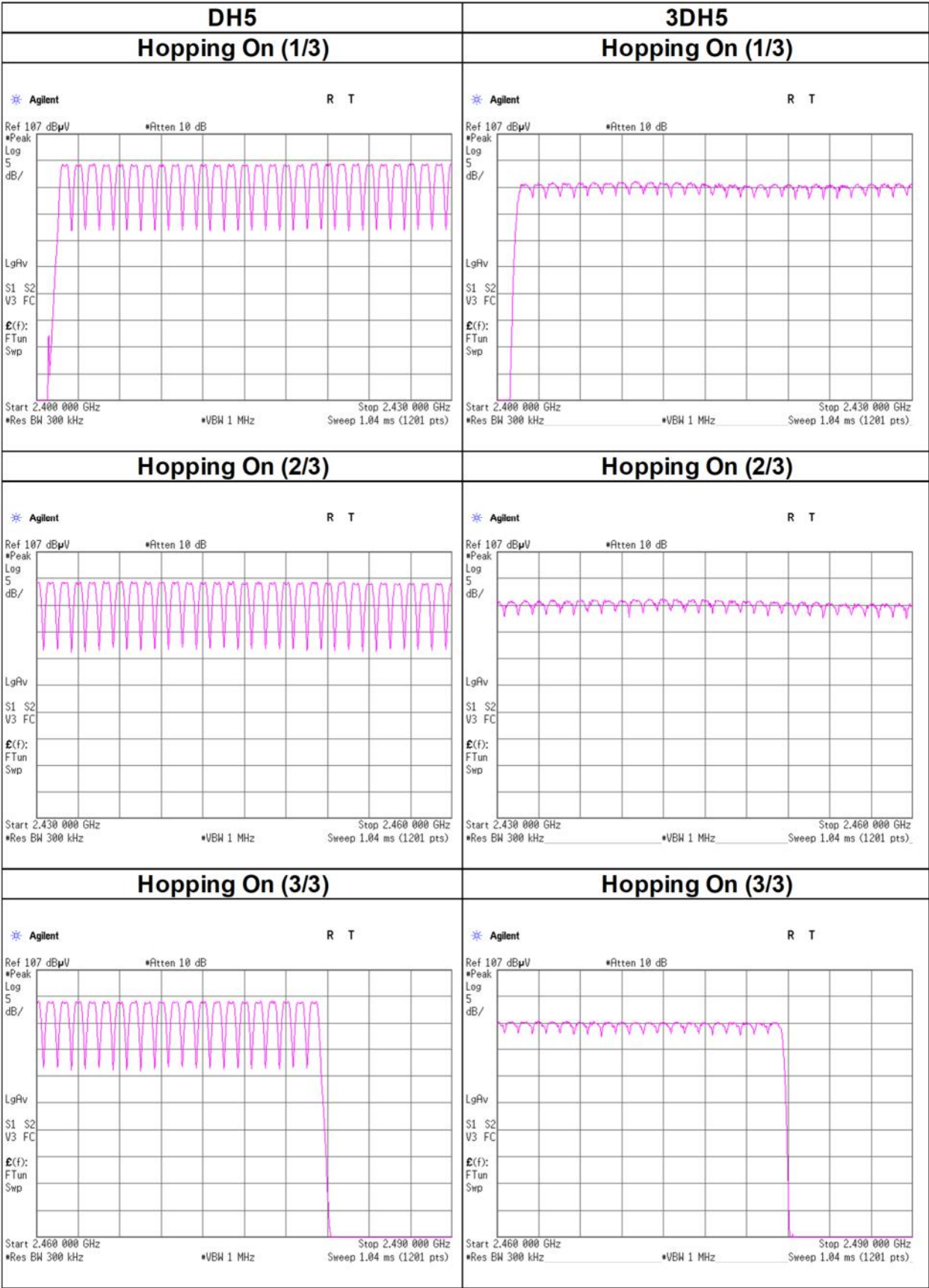
Number of Hopping Frequency

Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 6, 2023
Temperature / Humidity	26 deg. C / 40 % RH
Engineer	Yosuke Murakami
Mode	Tx, Hopping On

Mode	Number of channel [channels]	Limit [channels]
DH5	79	>= 15
3DH5	79	>= 15

Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.

Number of Hopping Frequency



Dwell time

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 6, 2023
Temperature / Humidity 26 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping On

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4)	Length of transmission [ms]	Result [ms]	Limit [ms]
DH1	51.6 times / 5 s x 31.6 s = 327 times	0.387	126	400
DH3	26.2 times / 5 s x 31.6 s = 166 times	1.644	273	400
DH5	19.6 times / 5 s x 31.6 s = 124 times	2.891	358	400
3DH1	51.4 times / 5 s x 31.6 s = 325 times	0.393	128	400
3DH3	26.6 times / 5 s x 31.6 s = 169 times	1.645	278	400
3DH5	21.0 times / 5 s x 31.6 s = 133 times	2.897	385	400

Sample Calculation

Result = Number of transmission x Length of transmission

*Average data of 5 tests.

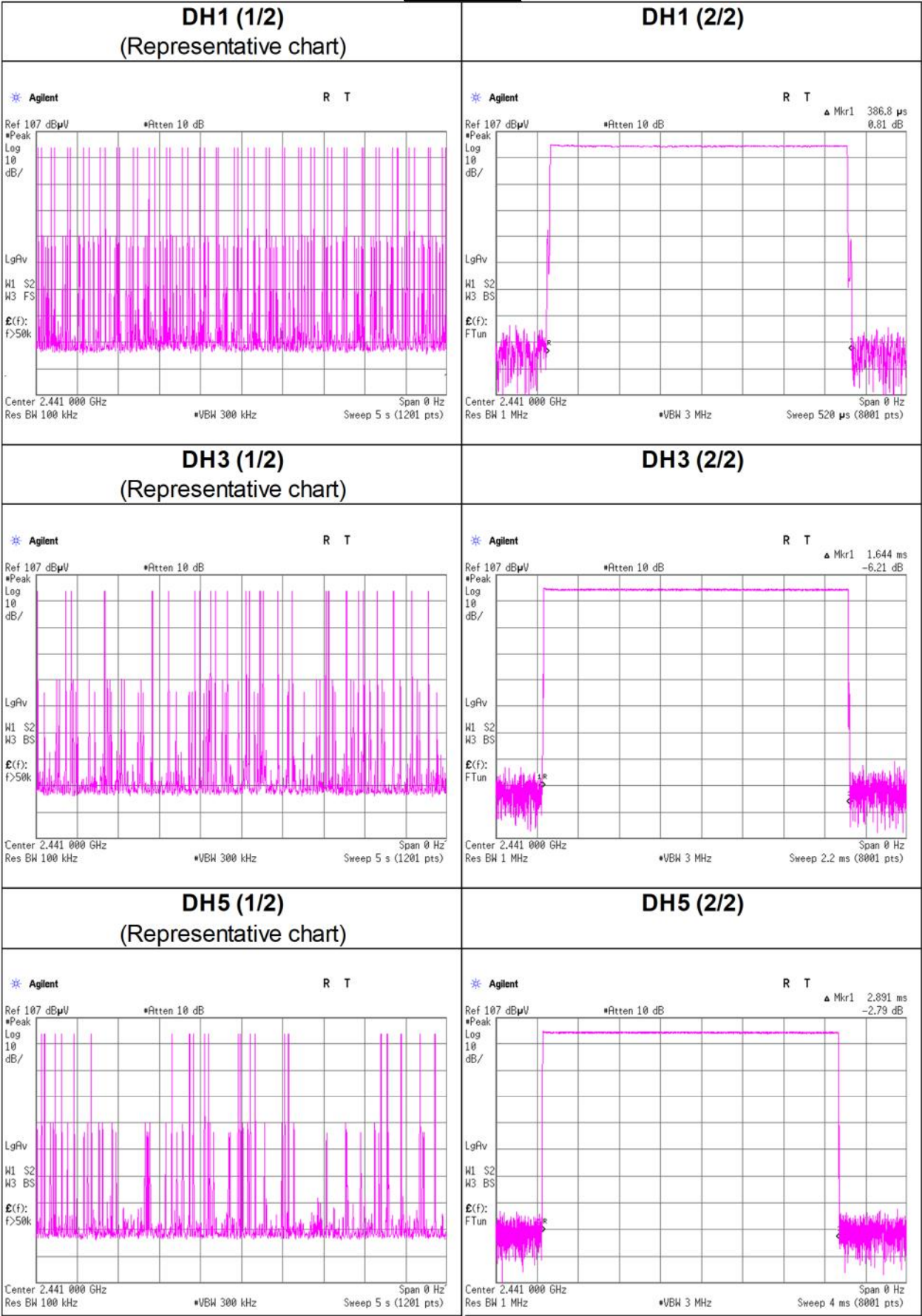
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	52	51	52	51	52	51.6
DH3	26	27	27	26	25	26.2
DH5	21	19	18	22	18	19.6
3DH1	52	51	51	51	52	51.4
3DH3	28	27	25	26	27	26.6
3DH5	22	20	20	20	22	21

Sample Calculation

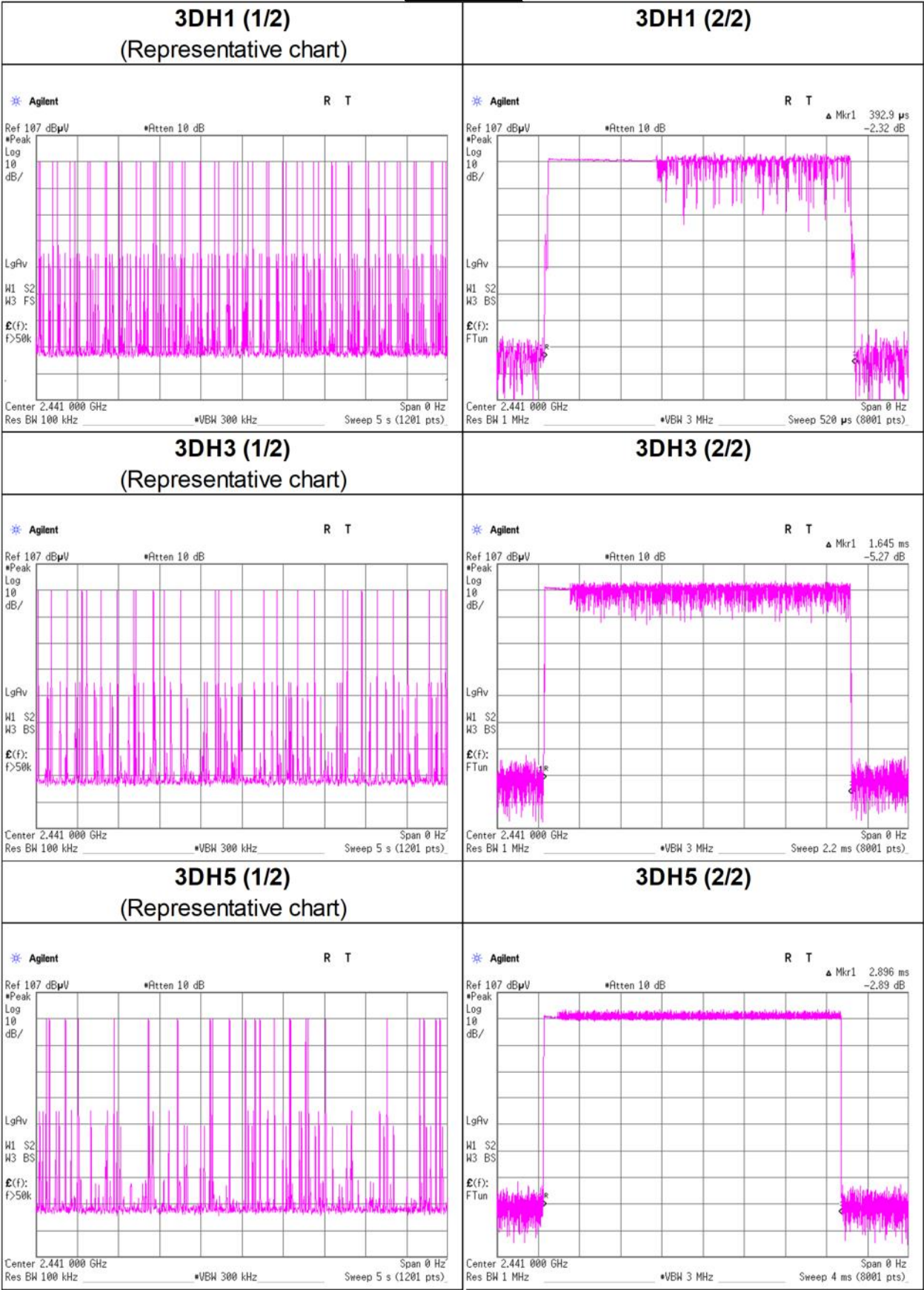
Average = Summation (Sampling 1 to 5) / 5

This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in $N \times 0.4$ s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4 s regardless of packet size. This is confirmed in the test report for N = 79.

Dwell time



Dwell time



Maximum Peak Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 46 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off

Maximum peak output power

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Conducted Power					e.i.r.p. for RSS-247					
					Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
DH5	2402	-5.23	1.51	9.82	6.10	4.07	20.97	125	14.87	2.67	8.77	7.53	36.02	4000	27.25
DH5	2441	-5.06	1.53	9.82	6.29	4.26	20.97	125	14.68	2.67	8.96	7.87	36.02	4000	27.06
DH5	2480	-5.32	1.54	9.82	6.04	4.02	20.97	125	14.93	2.67	8.71	7.43	36.02	4000	27.31
2DH5	2402	-6.94	1.51	9.82	4.39	2.75	20.97	125	16.58	2.67	7.06	5.08	36.02	4000	28.96
2DH5	2441	-6.59	1.53	9.82	4.76	2.99	20.97	125	16.21	2.67	7.43	5.53	36.02	4000	28.59
2DH5	2480	-7.50	1.54	9.82	3.86	2.43	20.97	125	17.11	2.67	6.53	4.50	36.02	4000	29.49
3DH5	2402	-6.18	1.51	9.82	5.15	3.27	20.97	125	15.82	2.67	7.82	6.05	36.02	4000	28.20
3DH5	2441	-6.06	1.53	9.82	5.29	3.38	20.97	125	15.68	2.67	7.96	6.25	36.02	4000	28.06
3DH5	2480	-7.07	1.54	9.82	4.29	2.69	20.97	125	16.68	2.67	6.96	4.97	36.02	4000	29.06

Sample Calculation:

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

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

*The equipment and cables were not used for factor 0 dB of the data sheets.

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

Test was not performed at AFH mode, because the decrease of number of channel (min: 20 ch) at AFH mode does not influence on the output power and bandwidth of the EUT.
As this device had AFH mode and frequency separation could not meet the requirement of over 20 dB BW without 2/3 relaxation, 125 mW power limit was applied to it.

Average power (Reference data for RF Exposure)

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
DH5	2402	-7.04	1.51	9.82	4.29	2.69	1.13	5.42	3.48
DH5	2441	-6.80	1.53	9.82	4.55	2.85	1.13	5.68	3.70
DH5	2480	-7.10	1.54	9.82	4.26	2.67	1.13	5.39	3.46
2DH5	2402	-10.70	1.51	9.82	0.63	1.16	1.12	1.75	1.50
2DH5	2441	-10.36	1.53	9.82	0.99	1.26	1.12	2.11	1.63
2DH5	2480	-11.38	1.54	9.82	-0.02	1.00	1.12	1.10	1.29
3DH5	2402	-10.40	1.51	9.82	0.93	1.24	1.12	2.05	1.60
3DH5	2441	-10.25	1.53	9.82	1.10	1.29	1.12	2.22	1.67
3DH5	2480	-11.38	1.54	9.82	-0.02	1.00	1.12	1.10	1.29

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

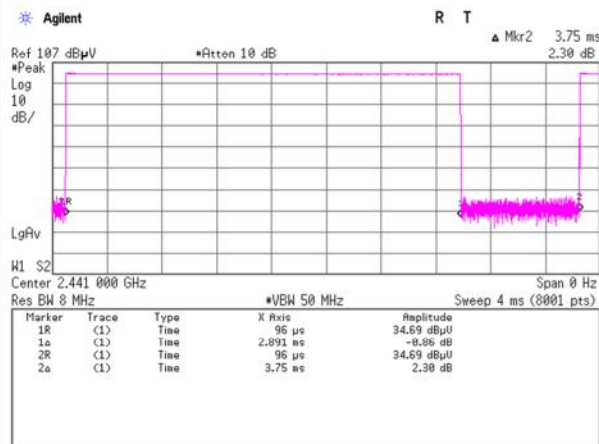
*The equipment and cables were not used for factor 0 dB of the data sheets.

Burst Rate Confirmation

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 46 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off

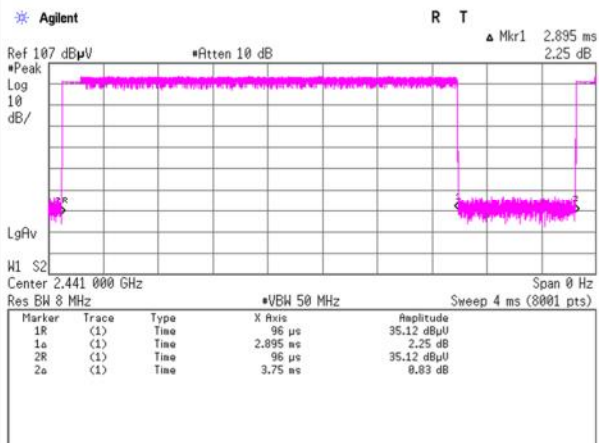
DH5

Tx on / (Tx on + Tx off) = **0.771**
Tx on / (Tx on + Tx off) * 100 = **77.1 %**
Duty factor = 10 * log (3.75 / 2.891) = **1.13 dB**
VBW: 1 / on time = 345.9 Hz < **360.00 Hz**



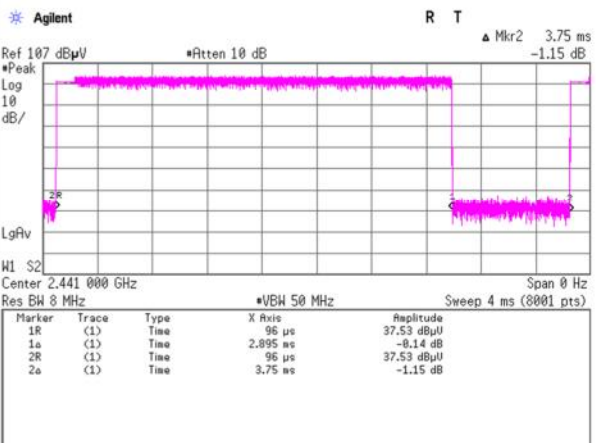
2DH5

Tx on / (Tx on + Tx off) = **0.772**
Tx on / (Tx on + Tx off) * 100 = **77.2 %**
Duty factor = 10 * log (3.75 / 2.895) = **1.12 dB**
VBW: 1 / on time = 345.42 Hz < **360.00 Hz**



3DH5

Tx on / (Tx on + Tx off) = **0.772**
Tx on / (Tx on + Tx off) * 100 = **77.2 %**
Duty factor = 10 * log (3.75 / 2.895) = **1.12 dB**
VBW: 1 / on time = 345.42 Hz < **360.00 Hz**



Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Hiromasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	48.02	27.98	14.48	41.61	2.49	51.36	73.9	22.5	224	271	-
Hori.	3202.667	PK	53.75	28.86	6.55	41.91	2.49	49.74	73.9	24.1	241	279	-
Hori.	4804.000	PK	51.51	31.39	7.39	42.87	2.49	49.91	73.9	23.9	314	139	-
Hori.	7206.000	PK	51.31	37.12	8.73	43.34	2.49	56.31	73.9	17.5	204	161	-
Hori.	9608.000	PK	48.43	38.58	9.90	43.12	2.49	56.28	73.9	17.6	150	0	-
Hori.	2390.000	AV	35.41	27.98	14.48	41.61	2.49	38.75	53.9	15.1	224	271	VBW:360 Hz
Hori.	3202.667	AV	47.85	28.86	6.55	41.91	2.49	43.84	53.9	10.0	241	279	VBW:360 Hz
Hori.	4804.000	AV	42.49	31.39	7.39	42.87	2.49	40.89	53.9	13.0	314	139	VBW:360 Hz
Hori.	7206.000	AV	41.20	37.12	8.73	43.34	2.49	46.20	53.9	7.7	204	161	VBW:360 Hz
Hori.	9608.000	AV	36.65	38.58	9.90	43.12	2.49	44.50	53.9	9.4	150	0	Floor noise
Vert.	2390.000	PK	47.67	27.98	14.48	41.61	2.49	51.01	73.9	22.8	118	251	-
Vert.	3202.667	PK	54.28	28.86	6.55	41.91	2.49	50.27	73.9	23.6	284	319	-
Vert.	4804.000	PK	49.64	31.39	7.39	42.87	2.49	48.04	73.9	25.8	158	262	-
Vert.	7206.000	PK	50.07	37.12	8.73	43.34	2.49	55.07	73.9	18.8	237	291	-
Vert.	9608.000	PK	48.17	38.58	9.90	43.12	2.49	56.02	73.9	17.8	150	0	-
Vert.	2390.000	AV	35.28	27.98	14.48	41.61	2.49	38.62	53.9	15.2	118	251	VBW:360 Hz
Vert.	3202.667	AV	48.96	28.86	6.55	41.91	2.49	44.95	53.9	8.9	284	319	VBW:360 Hz
Vert.	4804.000	AV	38.39	31.39	7.39	42.87	2.49	36.79	53.9	17.1	158	262	VBW:360 Hz
Vert.	7206.000	AV	38.43	37.12	8.73	43.34	2.49	43.43	53.9	10.4	237	291	VBW:360 Hz
Vert.	9608.000	AV	37.11	38.58	9.90	43.12	2.49	44.96	53.9	8.9	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

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 Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	99.65	27.97	14.49	41.61	2.49	102.99	-	-	Carrier
Hori.	2400.000	PK	40.16	27.97	14.49	41.61	2.49	43.50	82.9	39.4	-
Vert.	2402.000	PK	96.05	27.97	14.49	41.61	2.49	99.39	-	-	Carrier
Vert.	2400.000	PK	39.33	27.97	14.49	41.61	2.49	42.67	79.3	36.6	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

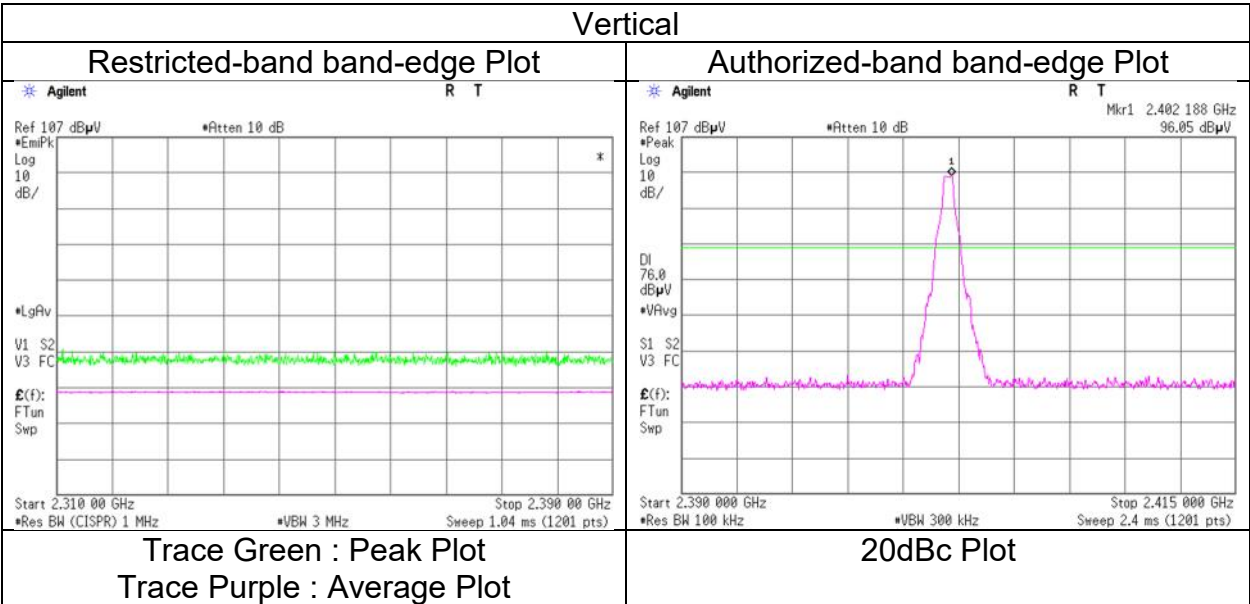
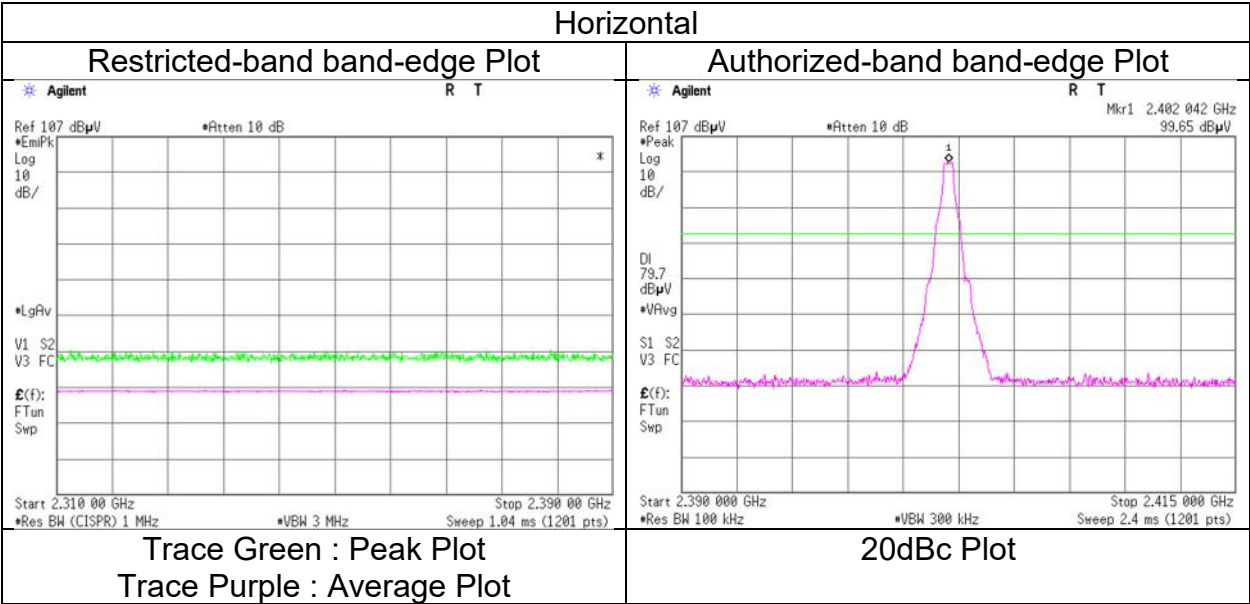
Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
June 27, 2023
23 deg.C, 51 %RH
Hiromasa Sato
Tx, Hopping Off, DH5 2402 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	June 30, 2023	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	20 deg.C, 54 %RH	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Yasumasa Owaki	Hirumasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	30.421	QP	23.60	18.86	6.61	32.20	0.00	16.87	40.0	23.1	314	329	-
Hori.	591.900	QP	23.00	19.19	9.87	31.95	0.00	20.11	46.0	25.8	100	168	-
Hori.	864.355	QP	22.60	21.93	10.84	31.27	0.00	24.10	46.0	21.9	225	276	-
Hori.	941.960	QP	22.40	22.04	11.09	30.78	0.00	24.75	46.0	21.2	146	146	-
Hori.	3254.667	PK	52.39	28.67	6.59	41.96	2.49	48.18	73.9	25.7	294	193	-
Hori.	4882.000	PK	50.52	31.52	7.43	42.88	2.49	49.08	73.9	24.8	316	173	-
Hori.	7323.000	PK	49.47	37.26	8.80	43.42	2.49	54.60	73.9	19.3	312	161	-
Hori.	9764.000	PK	49.43	39.02	10.00	43.00	2.49	57.94	73.9	15.9	150	0	-
Hori.	3254.667	AV	46.22	28.67	6.59	41.96	2.49	42.01	53.9	11.8	294	193	VBW:360 Hz
Hori.	4882.000	AV	40.86	31.52	7.43	42.88	2.49	39.42	53.9	14.4	316	173	VBW:360 Hz
Hori.	7323.000	AV	37.67	37.26	8.80	43.42	2.49	42.80	53.9	11.1	312	161	VBW:360 Hz
Hori.	9764.000	AV	36.62	39.02	10.00	43.00	2.49	45.13	53.9	8.7	150	0	Floor noise
Vert.	30.064	QP	22.70	18.99	6.61	32.20	0.00	16.10	40.0	23.9	172	312	-
Vert.	497.208	QP	22.80	17.86	9.47	31.93	0.00	18.20	46.0	27.8	165	333	-
Vert.	807.297	QP	22.70	20.83	10.65	31.62	0.00	22.56	46.0	23.4	110	4	-
Vert.	935.446	QP	22.50	22.07	11.07	30.83	0.00	24.81	46.0	21.1	100	350	-
Vert.	3254.667	PK	54.31	28.67	6.59	41.96	2.49	50.10	73.9	23.8	143	317	-
Vert.	4882.000	PK	50.63	31.52	7.43	42.88	2.49	49.19	73.9	24.7	166	272	-
Vert.	7323.000	PK	48.93	37.26	8.80	43.42	2.49	54.06	73.9	19.8	314	303	-
Vert.	9764.000	PK	49.39	39.02	10.00	43.00	2.49	57.90	73.9	16.0	150	0	-
Vert.	3254.667	AV	47.69	28.67	6.59	41.96	2.49	43.48	53.9	10.4	143	317	VBW:360 Hz
Vert.	4882.000	AV	39.55	31.52	7.43	42.88	2.49	38.11	53.9	15.7	166	272	VBW:360 Hz
Vert.	7323.000	AV	37.64	37.26	8.80	43.42	2.49	42.77	53.9	11.1	314	303	VBW:360 Hz
Vert.	9764.000	AV	37.06	39.02	10.00	43.00	2.49	45.57	53.9	8.3	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz: $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission

Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3
Date	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Hiromasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	48.76	27.89	14.59	41.64	2.49	52.09	73.9	21.8	118	269	-
Hori.	3306.667	PK	51.93	28.51	6.63	42.00	2.49	47.56	73.9	26.3	251	289	-
Hori.	4960.000	PK	50.14	31.73	7.49	42.89	2.49	48.96	73.9	24.9	286	151	-
Hori.	7440.000	PK	48.60	37.42	8.87	43.50	2.49	53.88	73.9	20.0	150	0	-
Hori.	9920.000	PK	48.85	38.95	10.09	42.89	2.49	57.49	73.9	16.4	150	0	-
Hori.	2483.500	AV	36.21	27.89	14.59	41.64	2.49	39.54	53.9	14.3	118	269	-
Hori.	3306.667	AV	44.97	28.51	6.63	42.00	2.49	40.60	53.9	13.3	251	289	VBW:360 Hz
Hori.	4960.000	AV	39.06	31.73	7.49	42.89	2.49	37.88	53.9	16.0	286	151	VBW:360 Hz
Hori.	7440.000	AV	37.01	37.42	8.87	43.50	2.49	42.29	53.9	11.6	150	0	Floor noise
Hori.	9920.000	AV	36.80	38.95	10.09	42.89	2.49	45.44	53.9	8.4	150	0	Floor noise
Vert.	2483.500	PK	47.67	27.89	14.59	41.64	2.49	51.00	73.9	22.9	159	247	-
Vert.	3306.667	PK	53.33	28.51	6.63	42.00	2.49	48.96	73.9	24.9	141	313	-
Vert.	4960.000	PK	50.78	31.73	7.49	42.89	2.49	49.60	73.9	24.3	181	265	-
Vert.	7440.000	PK	49.59	37.42	8.87	43.50	2.49	54.87	73.9	19.0	238	78	-
Vert.	9920.000	PK	48.94	38.95	10.09	42.89	2.49	57.58	73.9	16.3	150	0	-
Vert.	2483.500	AV	35.76	27.89	14.59	41.64	2.49	39.09	53.9	14.8	159	247	-
Vert.	3306.667	AV	46.98	28.51	6.63	42.00	2.49	42.61	53.9	11.2	141	313	VBW:360 Hz
Vert.	4960.000	AV	39.35	31.73	7.49	42.89	2.49	38.17	53.9	15.7	181	265	VBW:360 Hz
Vert.	7440.000	AV	39.65	37.42	8.87	43.50	2.49	44.93	53.9	8.9	238	78	VBW:360 Hz
Vert.	9920.000	AV	36.22	38.95	10.09	42.89	2.49	44.86	53.9	9.0	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

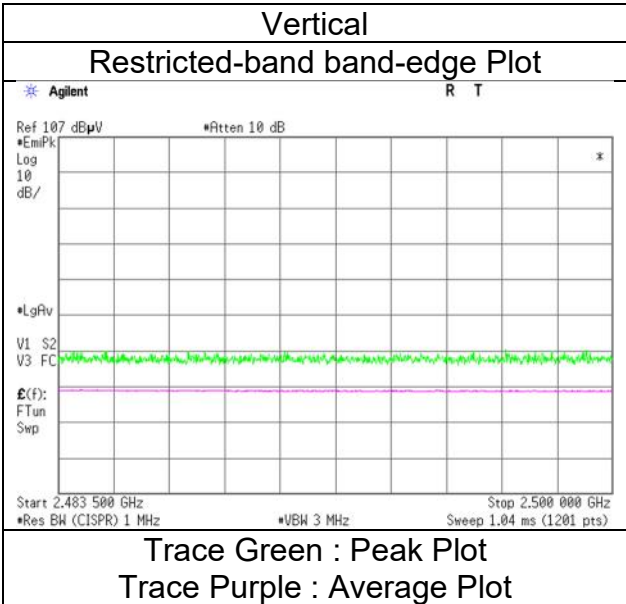
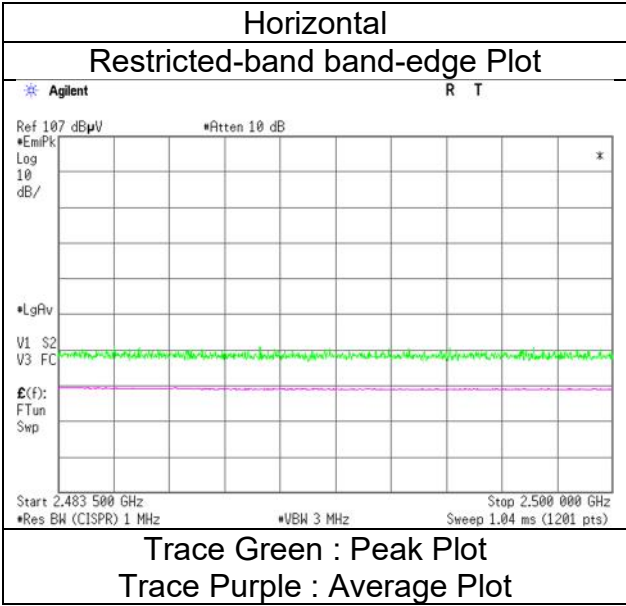
10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission
(Reference Plot for bandto edge)

Test place
Semi Anechoic Chamber
Date
Temperature / Humidity
Engineer
Mode

Shonan EMC Lab.
SAC 3
June 27, 2023
23 deg.C, 51 %RH
Hiromasa Sato
Tx, Hopping Off, DH5 2480 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	June 30, 2023	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	20 deg.C, 54 %RH	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Yasumasa Owaki	Hiromasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	47.65	27.98	14.48	41.61	2.49	50.99	73.9	22.9	250	255	-
Hori.	3202.667	PK	53.95	28.86	6.55	41.91	2.49	49.94	73.9	23.9	169	270	-
Hori.	4804.000	PK	49.05	31.39	7.39	42.87	2.49	47.45	73.9	26.4	150	0	-
Hori.	7206.000	PK	48.66	37.12	8.73	43.34	2.49	53.66	73.9	20.2	150	0	-
Hori.	9608.000	PK	48.44	38.58	9.90	43.12	2.49	56.29	73.9	17.6	150	0	-
Hori.	2390.000	AV	35.49	27.98	14.48	41.61	2.49	38.83	53.9	15.0	250	255	-
Hori.	3202.667	AV	48.37	28.86	6.55	41.91	2.49	44.36	53.9	9.5	169	270	VBW:360 Hz
Hori.	4804.000	AV	36.62	31.39	7.39	42.87	2.49	35.02	53.9	18.8	150	0	Floor noise
Hori.	7206.000	AV	36.47	37.12	8.73	43.34	2.49	41.47	53.9	12.4	150	0	Floor noise
Hori.	9608.000	AV	36.60	38.58	9.90	43.12	2.49	44.45	53.9	9.4	150	0	Floor noise
Vert.	2390.000	PK	46.92	27.98	14.48	41.61	2.49	50.26	73.9	23.6	136	271	-
Vert.	3202.667	PK	55.89	28.86	6.55	41.91	2.49	51.88	73.9	22.0	198	318	-
Vert.	4804.000	PK	48.04	31.39	7.39	42.87	2.49	46.44	73.9	27.4	150	0	-
Vert.	7206.000	PK	48.29	37.12	8.73	43.34	2.49	53.29	73.9	20.6	150	0	-
Vert.	9608.000	PK	48.13	38.58	9.90	43.12	2.49	55.98	73.9	17.9	150	0	-
Vert.	2390.000	AV	35.45	27.98	14.48	41.61	2.49	38.79	53.9	15.1	136	271	-
Vert.	3202.667	AV	51.59	28.86	6.55	41.91	2.49	47.58	53.9	6.3	198	318	VBW:360 Hz
Vert.	4804.000	AV	37.00	31.39	7.39	42.87	2.49	35.40	53.9	18.5	150	0	Floor noise
Vert.	7206.000	AV	36.81	37.12	8.73	43.34	2.49	41.81	53.9	12.0	150	0	Floor noise
Vert.	9608.000	AV	37.25	38.58	9.90	43.12	2.49	45.10	53.9	8.8	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

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 Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	95.29	27.97	14.49	41.61	2.49	98.63	-	-	Carrier
Hori.	2400.000	PK	39.83	27.97	14.49	41.61	2.49	43.17	78.6	35.4	-
Vert.	2402.000	PK	94.96	27.97	14.49	41.61	2.49	98.30	-	-	Carrier
Vert.	2400.000	PK	39.55	27.97	14.49	41.61	2.49	42.89	78.3	35.4	-

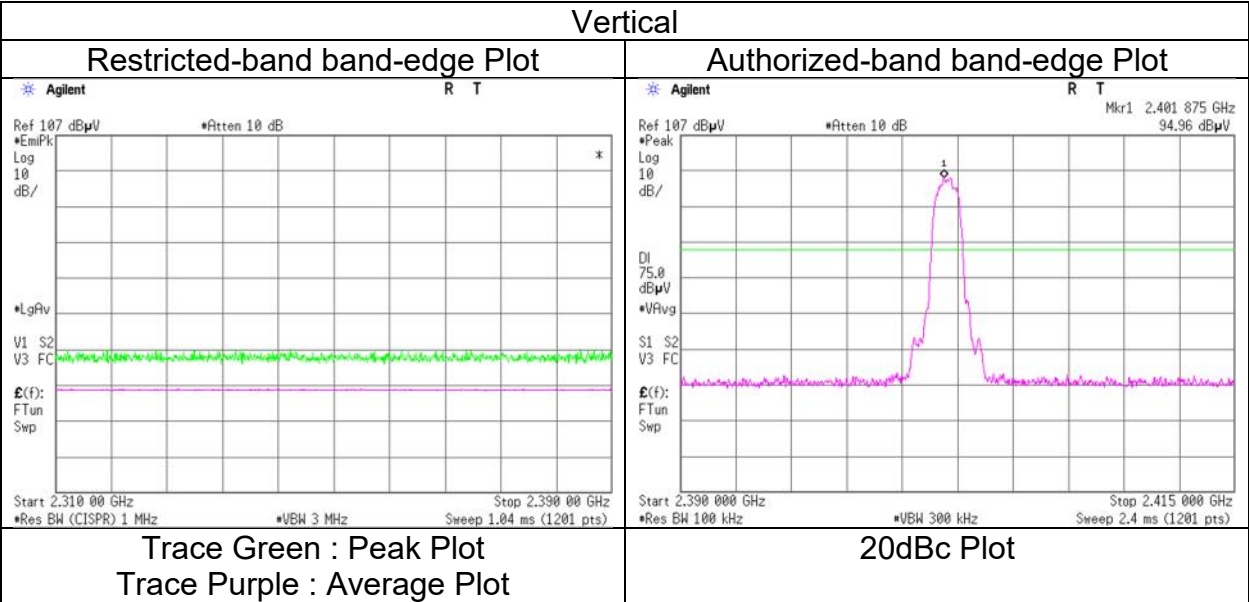
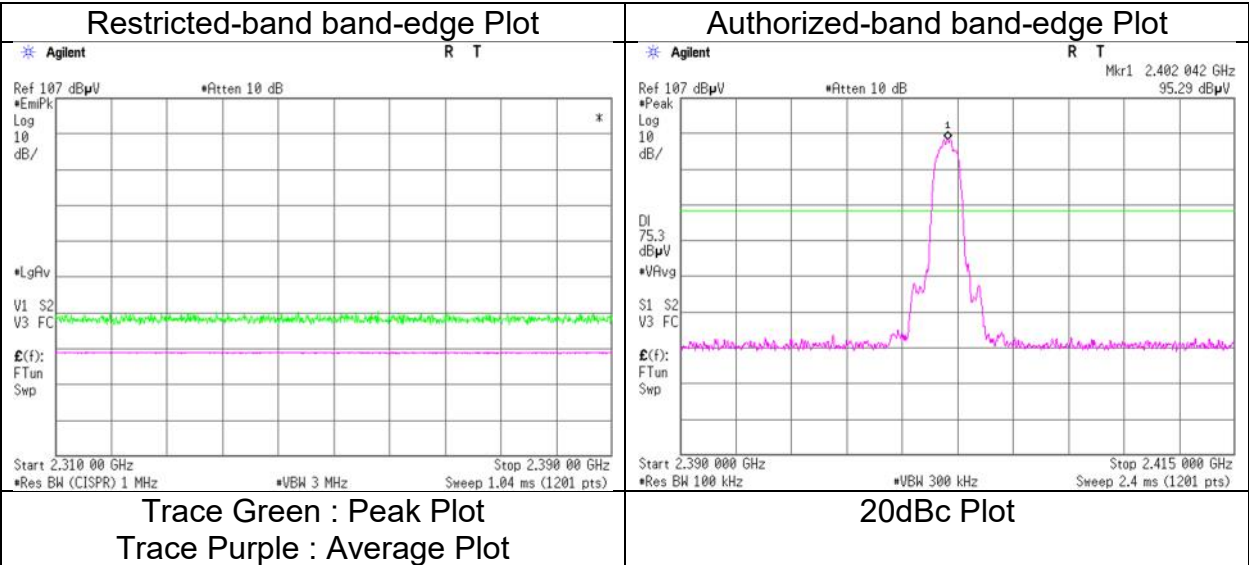
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 27, 2023
Temperature / Humidity	23 deg.C, 51 %RH
Engineer	Hiromasa Sato
Mode	Tx, Hopping Off, 3DH5 2402 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	June 30, 2023	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	20 deg.C, 54 %RH	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Yasumasa Owaki	Hiomasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	3254.667	PK	51.48	28.67	6.59	41.96	2.49	47.27	73.9	26.6	160	353	-
Hori.	4882.000	PK	48.34	31.52	7.43	42.88	2.49	46.90	73.9	27.0	150	0	-
Hori.	7323.000	PK	48.11	37.26	8.80	43.42	2.49	53.24	73.9	20.6	150	0	-
Hori.	9764.000	PK	49.26	39.02	10.00	43.00	2.49	57.77	73.9	16.1	150	0	-
Hori.	3254.667	AV	44.36	28.67	6.59	41.96	2.49	40.15	53.9	13.7	160	353	VBW:360 Hz
Hori.	4882.000	AV	36.45	31.52	7.43	42.88	2.49	35.01	53.9	18.8	150	0	Floor noise
Hori.	7323.000	AV	36.28	37.26	8.80	43.42	2.49	41.41	53.9	12.4	150	0	Floor noise
Hori.	9764.000	AV	36.47	39.02	10.00	43.00	2.49	44.98	53.9	8.9	150	0	Floor noise
Vert.	3254.667	PK	54.64	28.67	6.59	41.96	2.49	50.43	73.9	23.4	186	300	-
Vert.	4882.000	PK	48.83	31.52	7.43	42.88	2.49	47.39	73.9	26.5	150	0	-
Vert.	7323.000	PK	48.15	37.26	8.80	43.42	2.49	53.28	73.9	20.6	150	0	-
Vert.	9764.000	PK	49.08	39.02	10.00	43.00	2.49	57.59	73.9	16.3	150	0	-
Vert.	3254.667	AV	50.36	28.67	6.59	41.96	2.49	46.15	53.9	7.7	186	300	VBW:360 Hz
Vert.	4882.000	AV	36.49	31.52	7.43	42.88	2.49	35.05	53.9	18.8	150	0	Floor noise
Vert.	7323.000	AV	36.50	37.26	8.80	43.42	2.49	41.63	53.9	12.2	150	0	Floor noise
Vert.	9764.000	AV	36.39	39.02	10.00	43.00	2.49	44.90	53.9	9.0	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission

Test place	Shonan EMC Lab.			
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3
Date	June 30, 2023	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	20 deg.C, 54 %RH	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Yasumasa Owaki	Hiromasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	48.97	27.89	14.59	41.64	2.49	52.30	73.9	21.6	152	283	-
Hori.	3306.667	PK	52.37	28.51	6.63	42.00	2.49	48.00	73.9	25.9	245	354	-
Hori.	4960.000	PK	47.73	31.73	7.49	42.89	2.49	46.55	73.9	27.3	150	0	-
Hori.	7440.000	PK	48.42	37.42	8.87	43.50	2.49	53.70	73.9	20.2	150	0	-
Hori.	9920.000	PK	47.61	38.95	10.09	42.89	2.49	56.25	73.9	17.6	150	0	-
Hori.	2483.500	AV	35.63	27.89	14.59	41.64	2.49	38.96	53.9	14.9	152	283	-
Hori.	3306.667	AV	43.23	28.51	6.63	42.00	2.49	38.86	53.9	15.0	245	354	VBW:360 Hz
Hori.	4960.000	AV	36.77	31.73	7.49	42.89	2.49	35.59	53.9	18.3	150	0	Floor noise
Hori.	7440.000	AV	37.27	37.42	8.87	43.50	2.49	42.55	53.9	11.3	150	0	Floor noise
Hori.	9920.000	AV	36.52	38.95	10.09	42.89	2.49	45.16	53.9	8.7	150	0	Floor noise
Vert.	2483.500	PK	47.98	27.89	14.59	41.64	2.49	51.31	73.9	22.5	154	250	-
Vert.	3306.667	PK	56.35	28.51	6.63	42.00	2.49	51.98	73.9	21.9	229	313	-
Vert.	4960.000	PK	48.53	31.73	7.49	42.89	2.49	47.35	73.9	26.5	150	0	-
Vert.	7440.000	PK	47.69	37.42	8.87	43.50	2.49	52.97	73.9	20.9	150	0	-
Vert.	9920.000	PK	47.44	38.95	10.09	42.89	2.49	56.08	73.9	17.8	150	0	-
Vert.	2483.500	AV	35.51	27.89	14.59	41.64	2.49	38.84	53.9	15.0	154	250	-
Vert.	3306.667	AV	51.33	28.51	6.63	42.00	2.49	46.96	53.9	6.9	229	313	VBW:360 Hz
Vert.	4960.000	AV	36.78	31.73	7.49	42.89	2.49	35.60	53.9	18.3	150	0	Floor noise
Vert.	7440.000	AV	37.14	37.42	8.87	43.50	2.49	42.42	53.9	11.4	150	0	Floor noise
Vert.	9920.000	AV	36.47	38.95	10.09	42.89	2.49	45.11	53.9	8.7	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

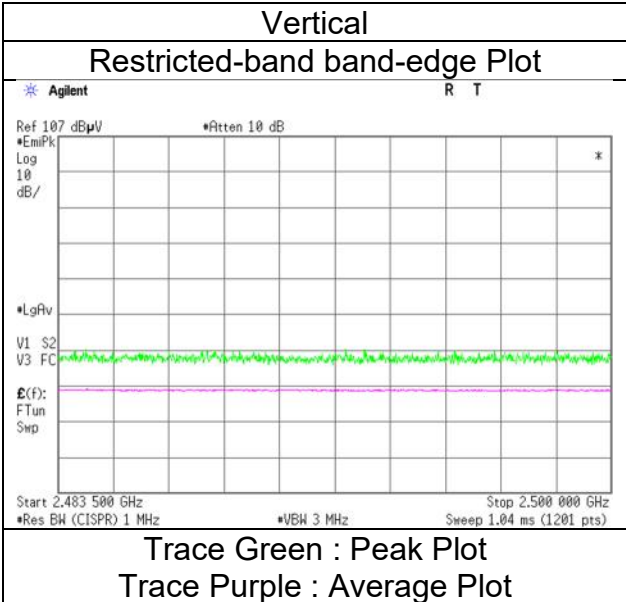
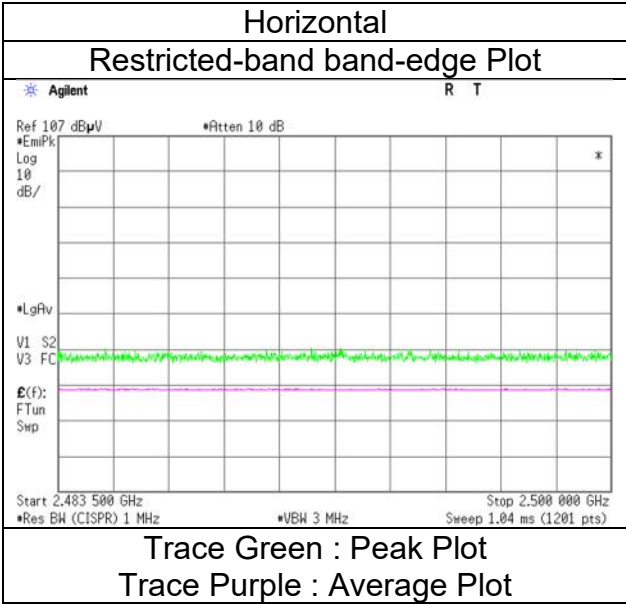
Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission
(Reference Plot for band-edge)

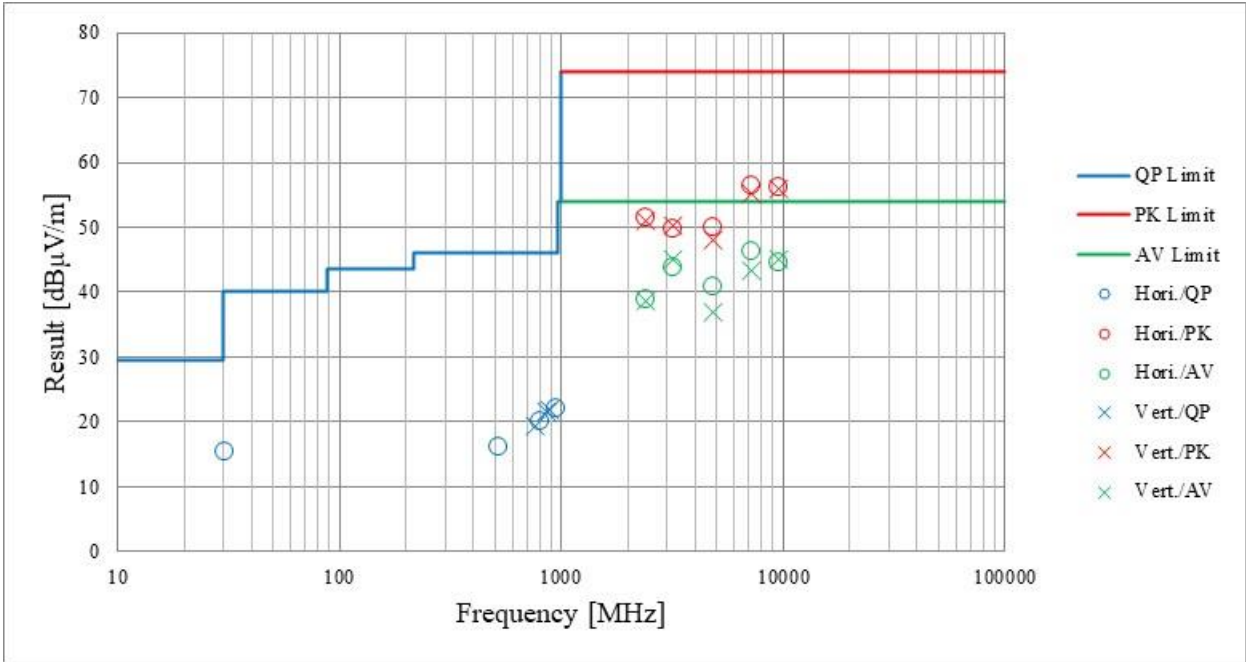
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	June 27, 2023
Temperature / Humidity	23 deg.C, 51 %RH
Engineer	Hiromasa Sato
Mode	Tx, Hopping Off, 3DH5 2480 MHz



* 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
Date	June 27, 2023	June 28, 2023	June 29, 2023
Temperature / Humidity	23 deg.C, 51 %RH	22 deg.C, 45 %RH	20 deg.C, 54 %RH
Engineer	Hiromasa Sato	Shiro Kobayashi	Yasumasa Owaki
	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz		



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

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz - 2.8 GHz)
Mode Tx Hopping off DH5 2402 MHz With Tx 11ax-40 (OFDM), 5510 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	47.02	27.98	14.41	41.61	2.49	50.29	73.9	23.6	129	28	-
Hori.	2390.000	AV	34.03	27.98	14.41	41.61	2.49	37.30	53.9	16.6	129	28	VBW:360 Hz
Vert.	2390.000	PK	49.56	27.98	14.41	41.61	2.49	52.83	73.9	21.0	114	154	-
Vert.	2390.000	AV	36.42	27.98	14.41	41.61	2.49	39.69	53.9	14.2	114	154	VBW:360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

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 Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	99.37	27.97	14.42	41.61	2.49	102.64	-	-	Carrier
Hori.	2400.000	PK	39.41	27.97	14.41	41.61	2.49	42.67	82.6	39.9	-
Vert.	2402.000	PK	98.70	27.97	14.42	41.61	2.49	101.97	-	-	Carrier
Vert.	2400.000	PK	40.09	27.97	14.41	41.61	2.49	43.35	81.9	38.5	-

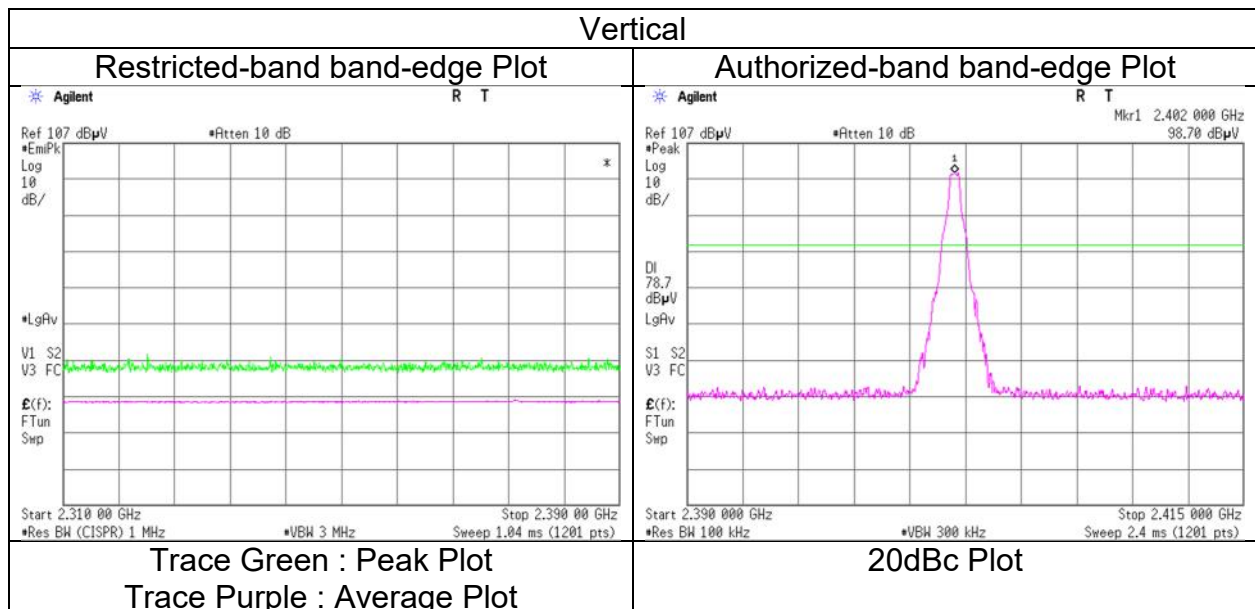
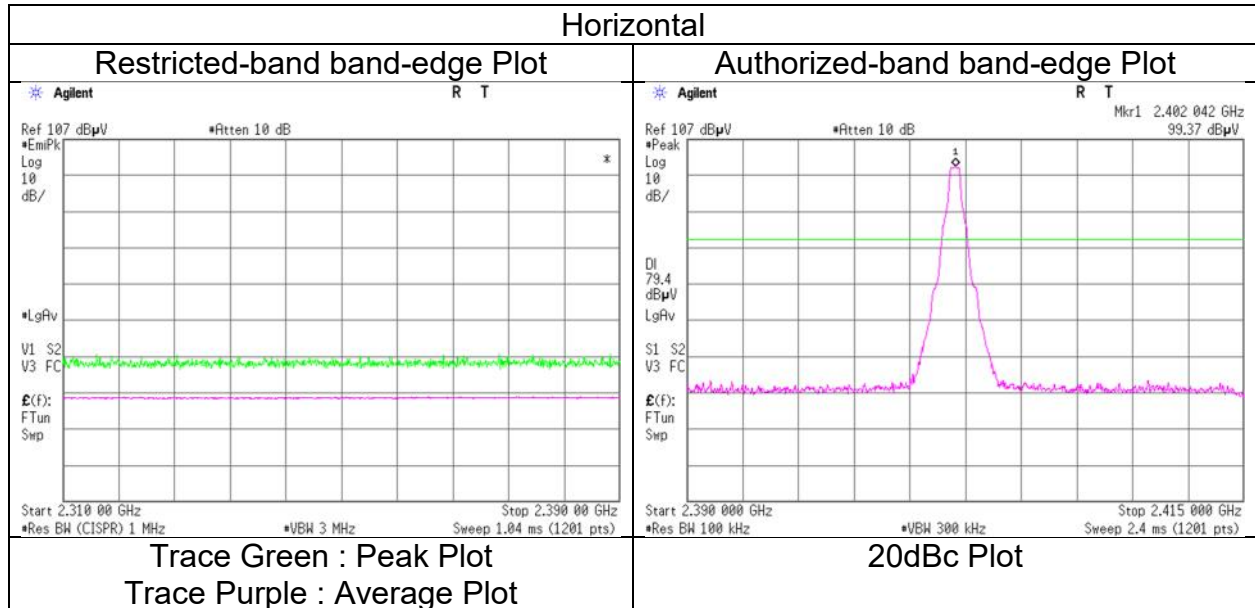
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	Tx Hopping off DH5 2402 MHz With Tx 11ax-40 (OFDM), 5510 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	SAC 3
Date	January 24, 2024	December 2, 2024	January 18, 2024	January 10, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	20 deg.C, 39 %RH	23 deg.C, 27 %RH	23 deg.C, 24 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takahiro Suzuki	Yosuke Murakami	Takayuki Kobayashi	Kouki Yamada
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx Hopping off DH5 2441 MHz With Tx 11ax-40 (OFDM), 5510 MHz				

(* PK: Peak, AV: Average, QP: Quasi-Peak)													
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	30.297	QP	22.50	18.90	6.48	32.20	0.00	15.68	40.0	24.3	100	0	-
Hori.	33.995	QP	21.60	17.52	6.56	32.20	0.00	13.48	40.0	26.5	100	0	-
Hori.	856.099	QP	21.10	21.76	10.82	31.32	0.00	22.36	46.0	23.6	100	0	-
Hori.	894.699	QP	20.70	21.97	10.94	31.09	0.00	22.52	46.0	23.4	100	0	-
Hori.	931.606	QP	20.40	22.08	11.06	30.85	0.00	22.69	46.0	23.3	100	0	-
Hori.	3254.666	PK	51.64	28.67	6.23	41.96	2.49	47.07	71.4	24.3	131	358	-
Hori.	4882.000	PK	49.22	31.52	7.02	42.88	2.49	47.37	71.4	24.0	202	180	-
Hori.	7323.000	PK	48.79	37.26	8.55	43.42	2.49	53.67	71.4	17.7	333	254	-
Hori.	9764.000	PK	48.78	39.02	9.77	43.00	2.49	57.06	71.4	14.3	150	0	-
Hori.	3254.666	AV	44.35	28.67	6.23	41.96	2.49	39.78	51.4	11.6	131	358	VBW:360 Hz
Hori.	4882.000	AV	38.34	31.52	7.02	42.88	2.49	36.49	51.4	14.9	202	180	VBW:360 Hz
Hori.	7323.000	AV	37.07	37.26	8.55	43.42	2.49	41.95	51.4	9.4	333	254	VBW:360 Hz
Hori.	9764.000	AV	36.25	39.02	9.77	43.00	2.49	44.53	51.4	6.8	150	0	VBW:360 Hz, Floor noise
Vert.	31.297	QP	22.40	18.54	6.50	32.20	0.00	15.24	40.0	24.7	100	0	-
Vert.	880.016	QP	20.90	22.01	10.90	31.18	0.00	22.63	46.0	23.3	100	0	-
Vert.	928.714	QP	20.60	22.11	11.05	30.87	0.00	22.89	46.0	23.1	100	0	-
Vert.	3254.666	PK	52.57	28.67	6.23	41.96	2.49	48.00	71.4	23.4	111	350	-
Vert.	4882.000	PK	50.68	31.52	7.02	42.88	2.49	48.83	71.4	22.5	380	293	-
Vert.	7323.000	PK	50.46	37.26	8.55	43.42	2.49	55.34	71.4	16.0	213	295	-
Vert.	9764.000	PK	48.88	39.02	9.77	43.00	2.49	57.16	71.4	14.2	150	0	-
Vert.	3254.666	AV	46.80	28.67	6.23	41.96	2.49	42.23	51.4	9.1	111	350	VBW: 360 Hz
Vert.	4882.000	AV	41.61	31.52	7.02	42.88	2.49	39.76	51.4	11.6	380	293	VBW: 360 Hz
Vert.	7323.000	AV	39.06	37.26	8.55	43.42	2.49	43.94	51.4	7.4	213	295	VBW: 360 Hz
Vert.	9764.000	AV	36.32	39.02	9.77	43.00	2.49	44.60	51.4	6.8	150	0	VBW: 360 Hz, Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz: 20log (3.995 m / 3.0 m) = 2.49 dB
10 GHz - 40 GHz: 20log (1.0 m / 3.0 m) = -9.54 dB

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission

Test place Shonan EMC Lab.
Semi Anechoic Chamber SAC 3
Date December 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz - 2.8 GHz)
Mode Tx Hopping off DH5 2480 MHz With Tx 11ax-40 (OFDM), 5510 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	48.28	27.89	14.51	41.64	2.49	51.53	73.9	22.3	131	150	-
Hori.	2483.500	AV	38.14	27.89	14.51	41.64	2.49	41.39	53.9	12.5	131	150	VBW:360 Hz
Vert.	2483.500	PK	47.67	27.89	14.51	41.64	2.49	50.92	73.9	22.9	119	157	-
Vert.	2483.500	AV	34.12	27.89	14.51	41.64	2.49	37.37	53.9	16.5	119	157	VBW:360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier) + Distance factor

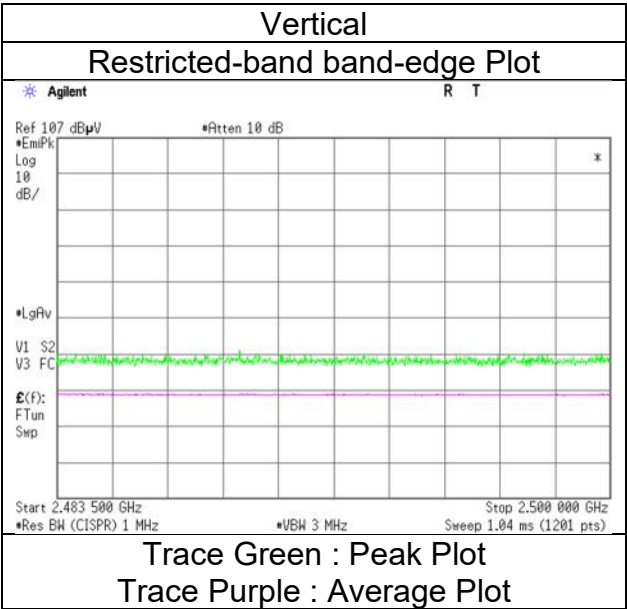
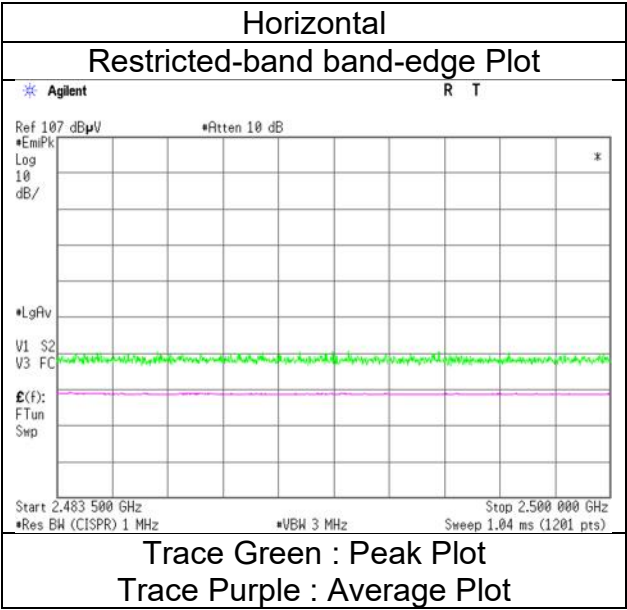
Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission
(Reference Plot for bandto edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	Tx Hopping off DH5 2480 MHz With Tx 11ax-40 (OFDM), 5510 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 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz - 2.8 GHz)
Mode Tx Hopping off 3DH5 2402 MHz With Tx 11ax-40 (OFDM), 5510 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	47.17	27.98	14.41	41.61	2.49	50.44	73.9	23.4	131	23	-
Hori.	2390.000	AV	37.97	27.98	14.41	41.61	2.49	41.24	53.9	12.6	131	23	VBW:360 Hz
Vert.	2390.000	PK	47.19	27.98	14.41	41.61	2.49	50.46	73.9	23.4	116	157	-
Vert.	2390.000	AV	34.08	27.98	14.41	41.61	2.49	37.35	53.9	16.5	116	157	VBW:360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

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 Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	95.46	27.97	14.42	41.61	2.49	98.73	-	-	Carrier
Hori.	2400.000	PK	39.11	27.97	14.41	41.61	2.49	42.37	78.7	36.3	-
Vert.	2402.000	PK	94.83	27.97	14.42	41.61	2.49	98.10	-	-	Carrier
Vert.	2400.000	PK	39.06	27.97	14.41	41.61	2.49	42.32	78.1	35.7	-

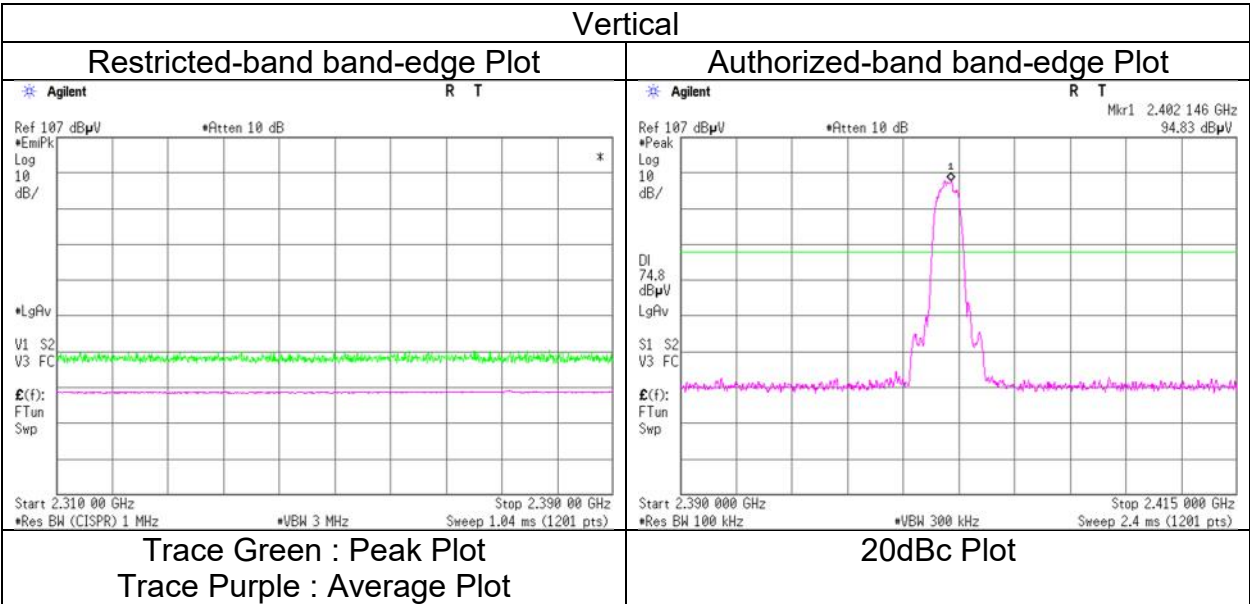
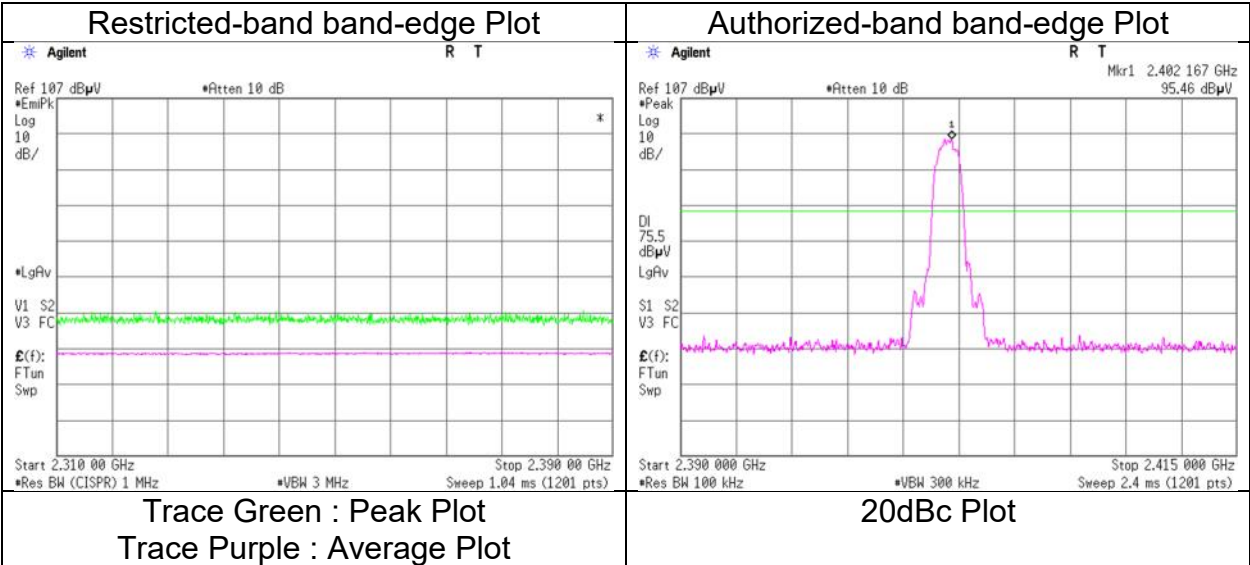
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	Tx Hopping off 3DH5 2402 MHz With Tx 11ax-40 (OFDM), 5510 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 2, 2023
Temperature / Humidity 20 deg.C, 39 %RH
Engineer Takahiro Suzuki
(1 GHz - 2.8 GHz)
Mode Tx Hopping off 3DH5 2480 MHz With Tx 11ax-40 (OFDM), 5510 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	48.32	27.89	14.51	41.64	2.49	51.57	73.9	22.3	129	135	-
Hori.	2483.500	AV	37.95	27.89	14.51	41.64	2.49	41.20	53.9	12.7	129	135	VBW:360 Hz
Vert.	2483.500	PK	46.54	27.89	14.51	41.64	2.49	49.79	73.9	24.1	132	158	-
Vert.	2483.500	AV	35.39	27.89	14.51	41.64	2.49	38.64	53.9	15.2	132	158	VBW:360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

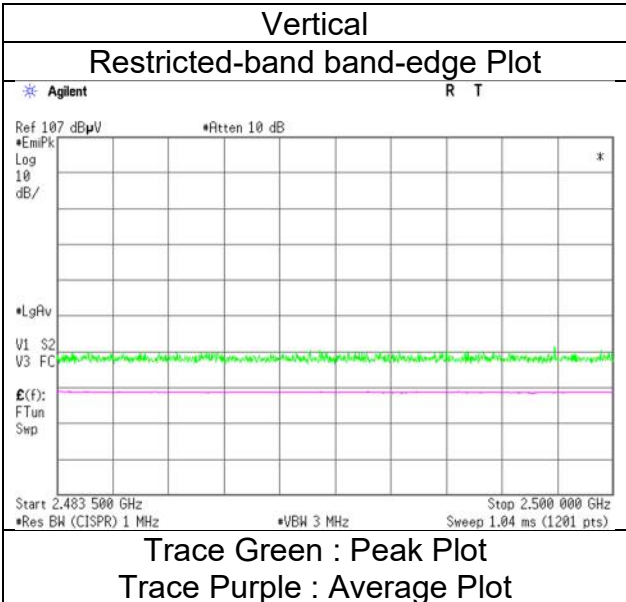
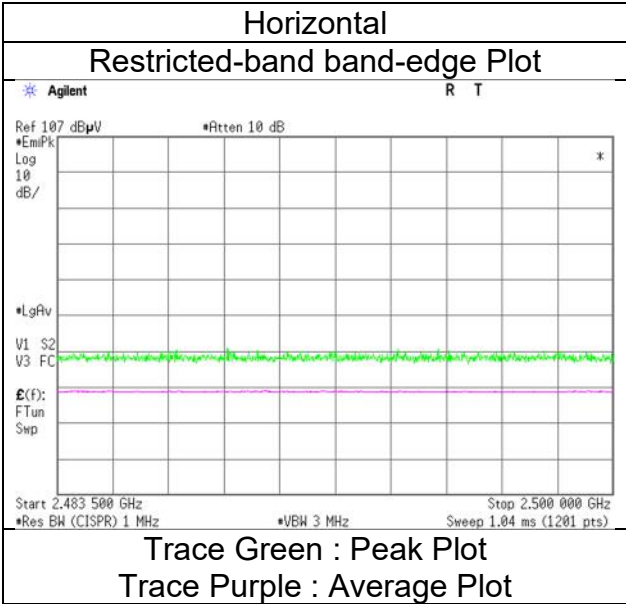
Distance factor : 1 GHz - 10 GHz : $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	December 2, 2023
Temperature / Humidity	20 deg.C, 39 %RH
Engineer	Takahiro Suzuki
Mode	Tx Hopping off 3DH5 2480 MHz With Tx 11ax-40 (OFDM), 5510 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 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi (1 GHz -2.8 GHz)
Mode	Tx Hopping off DH5 2402 MHz With Tx 11ax-40 (OFDM), 6445 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	47.17	27.98	14.32	41.61	2.49	50.35	73.9	23.5	152	242	-
Hori.	2390.000	AV	35.44	27.98	14.32	41.61	2.49	38.62	53.9	15.2	152	242	VBW: 360 Hz
Vert.	2390.000	PK	47.36	27.98	14.32	41.61	2.49	50.54	73.9	23.3	187	236	-
Vert.	2390.000	AV	36.38	27.98	14.32	41.61	2.49	39.56	53.9	14.3	187	236	VBW: 360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: $20\log (3.995 \text{ m} / 3.0 \text{ m}) = 2.49 \text{ dB}$

$$10 \text{ GHz} - 40 \text{ GHz}: 20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$$

*These results have sufficient margin without taking account Duty cycle correction factor.

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 Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	100.91	27.97	14.34	41.61	2.49	104.10	-	-	Carrier
Hori.	2400.000	PK	39.52	27.97	14.33	41.61	2.49	42.70	84.1	41.4	-
Vert.	2402.000	PK	101.27	27.97	14.34	41.61	2.49	104.46	-	-	Carrier
Vert.	2400.000	PK	40.69	27.97	14.33	41.61	2.49	43.87	84.4	40.5	-

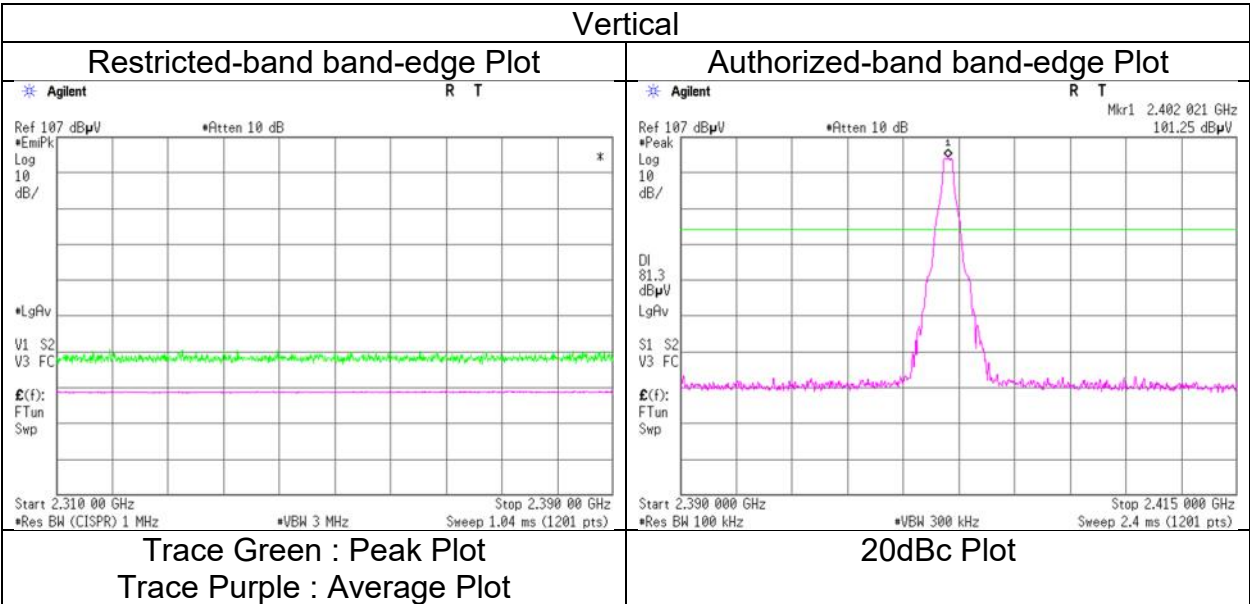
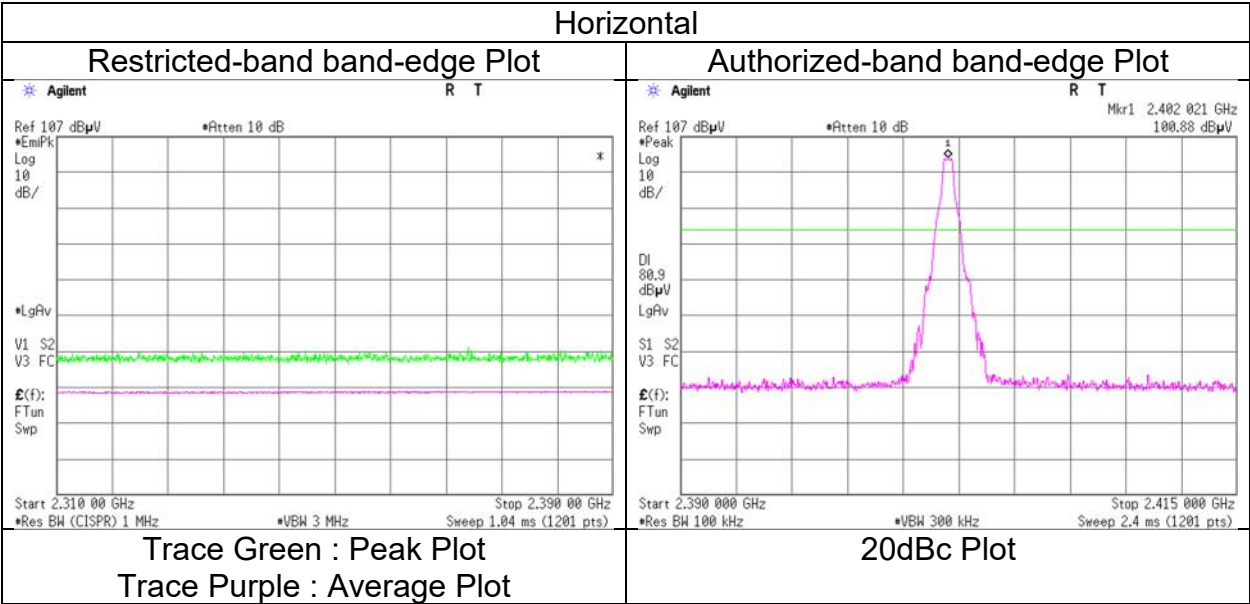
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz- 10 GHz: $20\log (3.995 \text{ m} / 3.0 \text{ m}) = 2.49 \text{ dB}$

10 GHz - 40 GHz: $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi
Mode	Tx Hopping off DH5 2402 MHz With Tx 11ax-40 (OFDM), 6445 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 24, 2024 January 17, 2024 January 18, 2024 January 23, 2024
Temperature / Humidity 21 deg.C, 24 %RH 24 deg.C, 30 %RH 23 deg.C, 27 %RH 23 deg.C, 30 %RH
Engineer Yosuke Murakami Takayuki Kobayashi Yosuke Murakami Kouki Yamada
 (30 MHz -1 GHz) (1 GHz -2.8 GHz) (2.8 GHz -10 GHz) (10 GHz -26.5 GHz)
Mode Tx Hopping off DH5 2441 MHz With Tx 11ax-40 (OFDM), 6445 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	31.573	QP	22.40	18.43	6.51	32.20	0.00	15.14	40.0	24.8	100	0	-
Hori.	848.701	QP	21.20	21.53	10.80	31.37	0.00	22.16	46.0	23.8	100	0	-
Hori.	872.440	QP	20.90	22.00	10.87	31.23	0.00	22.54	46.0	23.4	100	0	-
Hori.	911.585	QP	20.70	22.00	11.00	30.98	0.00	22.72	46.0	23.2	100	0	-
Hori.	3254.666	PK	52.10	28.67	6.23	41.96	2.49	47.53	73.9	26.3	123	359	-
Hori.	4882.000	PK	50.24	31.52	7.02	42.88	2.49	48.39	73.9	25.5	197	184	-
Hori.	7323.000	PK	49.00	37.26	8.55	43.42	2.49	53.88	73.9	20.0	346	257	-
Hori.	9764.000	PK	47.97	39.02	9.77	43.00	2.49	56.25	73.9	17.6	150	0	-
Hori.	3254.666	AV	44.71	28.67	6.23	41.96	2.49	40.14	53.9	13.7	123	359	VBW:360 Hz
Hori.	4882.000	AV	37.91	31.52	7.02	42.88	2.49	36.06	53.9	17.8	197	184	VBW:360 Hz
Hori.	7323.000	AV	37.08	37.26	8.55	43.42	2.49	41.96	53.9	11.9	346	257	VBW:360 Hz
Hori.	9764.000	AV	36.37	39.02	9.77	43.00	2.49	44.65	53.9	9.2	150	0	Floor noise
Vert.	30.913	QP	22.50	18.68	6.50	32.20	0.00	15.48	40.0	24.5	100	0	-
Vert.	873.898	QP	20.90	22.01	10.87	31.22	0.00	22.56	46.0	23.4	100	0	-
Vert.	886.887	QP	20.80	22.00	10.92	31.14	0.00	22.58	46.0	23.4	100	0	-
Vert.	943.300	QP	20.40	22.04	11.10	30.77	0.00	22.77	46.0	23.2	100	0	-
Vert.	3254.666	PK	52.22	28.67	6.23	41.96	2.49	47.65	73.9	26.2	113	355	-
Vert.	4882.000	PK	50.50	31.52	7.02	42.88	2.49	48.65	73.9	25.2	383	295	-
Vert.	7323.000	PK	49.93	37.26	8.55	43.42	2.49	54.81	73.9	19.0	203	296	-
Vert.	9764.000	PK	48.10	39.02	9.77	43.00	2.49	56.38	73.9	17.5	150	0	-
Vert.	3254.666	AV	46.61	28.67	6.23	41.96	2.49	42.04	53.9	11.8	113	355	VBW: 360 Hz
Vert.	4882.000	AV	41.08	31.52	7.02	42.88	2.49	39.23	53.9	14.6	383	295	VBW: 360 Hz
Vert.	7323.000	AV	39.05	37.26	8.55	43.42	2.49	43.93	53.9	9.9	203	296	VBW: 360 Hz
Vert.	9764.000	AV	38.91	39.02	9.77	43.00	2.49	47.19	53.9	6.7	150	0	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : 20log (3.995 m / 3.0 m) = 2.49 dB

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

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi (1 GHz -2.8 GHz)
Mode	Tx Hopping off DH5 2480 MHz With Tx 11ax-40 (OFDM), 6445 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	51.16	27.89	14.42	41.64	2.49	54.32	73.9	19.5	334	359	-
Hori.	2483.500	AV	38.31	27.89	14.42	41.64	2.49	41.47	53.9	12.4	334	359	VBW: 360 Hz
Vert.	2483.500	PK	48.51	27.89	14.42	41.64	2.49	51.67	73.9	22.2	135	236	-
Vert.	2483.500	AV	35.89	27.89	14.42	41.64	2.49	39.05	53.9	14.8	135	236	VBW: 360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

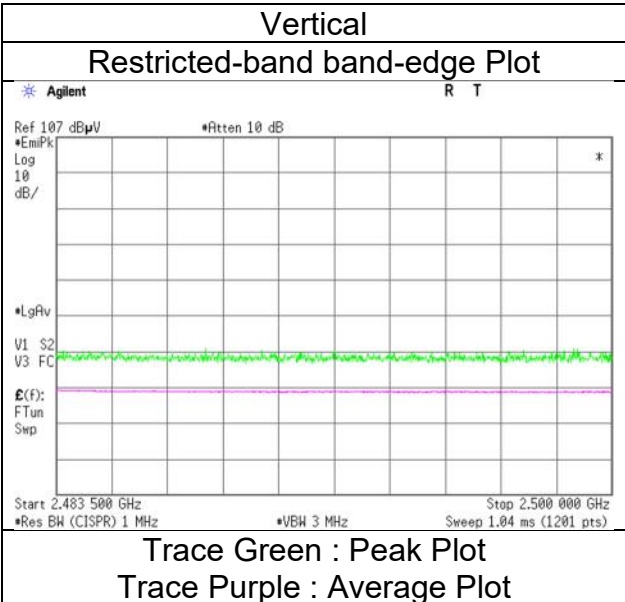
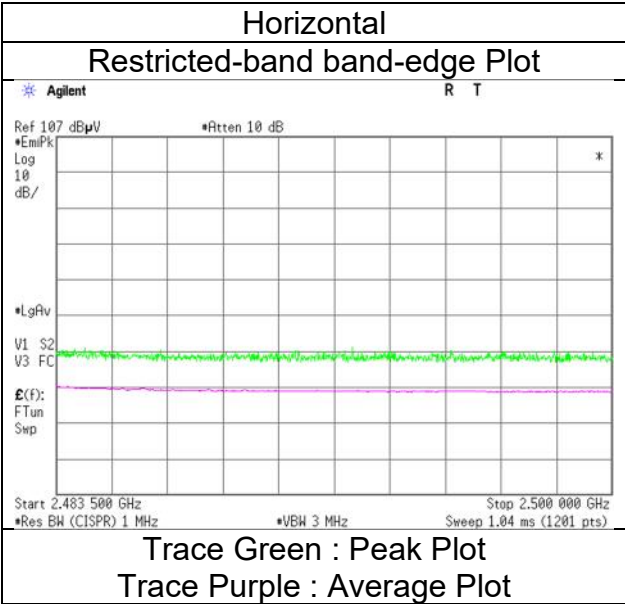
Distance factor : 1 GHz - 10 GHz: $20\log (3.995 \text{ m} / 3.0 \text{ m}) = 2.49 \text{ dB}$

10 GHz- 40 GHz: $20\log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission
(Reference Plot for bandto edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi
Mode	Tx Hopping off DH5 2480 MHz With Tx 11ax-40 (OFDM), 6445 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 17, 2024
Temperature / Humidity 24 deg.C, 30 %RH
Engineer Takayuki Kobayashi
(1 GHz -2.8 GHz)
Mode Tx Hopping off 3DH5 2402 MHz With Tx 11ax-40 (OFDM), 6445 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	48.41	27.98	14.32	41.61	2.49	51.59	73.9	22.3	341	4	-
Hori.	2390.000	AV	35.60	27.98	14.32	41.61	2.49	38.78	53.9	15.1	341	4	VBW: 360 Hz
Vert.	2390.000	PK	47.50	27.98	14.32	41.61	2.49	50.68	73.9	23.2	185	237	-
Vert.	2390.000	AV	36.16	27.98	14.32	41.61	2.49	39.34	53.9	14.5	185	237	VBW: 360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz: $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

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 Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	97.41	27.97	14.34	41.61	2.49	100.60	-	-	Carrier
Hori.	2400.000	PK	39.67	27.97	14.33	41.61	2.49	42.85	80.6	37.7	-
Vert.	2402.000	PK	98.29	27.97	14.34	41.61	2.49	101.48	-	-	Carrier
Vert.	2400.000	PK	40.99	27.97	14.33	41.61	2.49	44.17	81.4	37.2	-

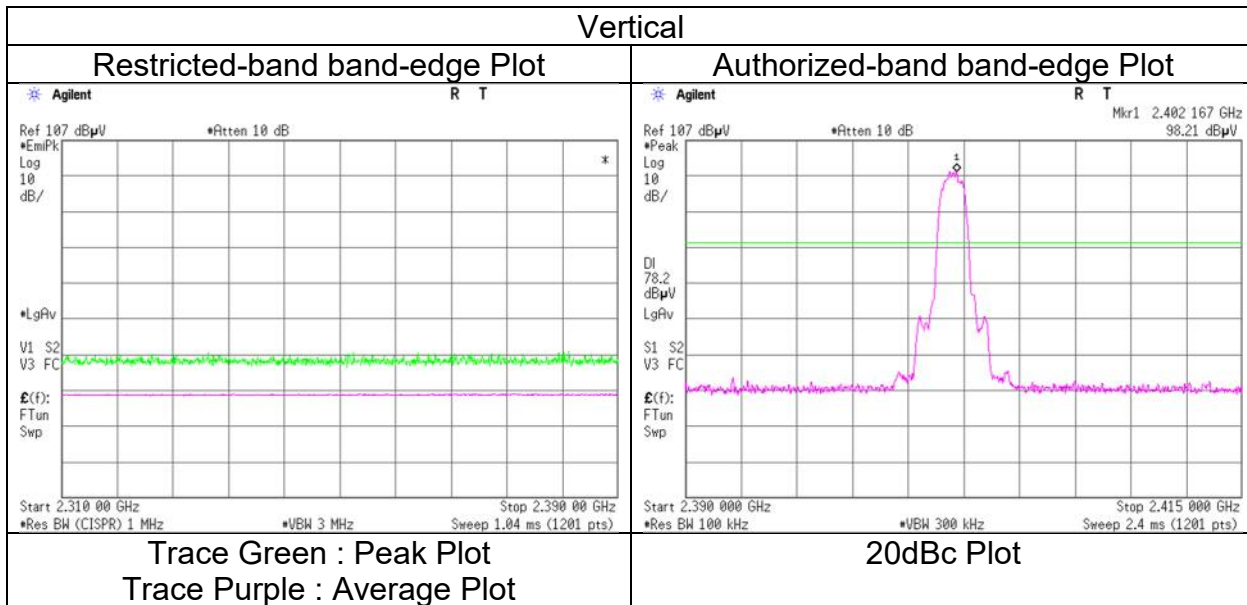
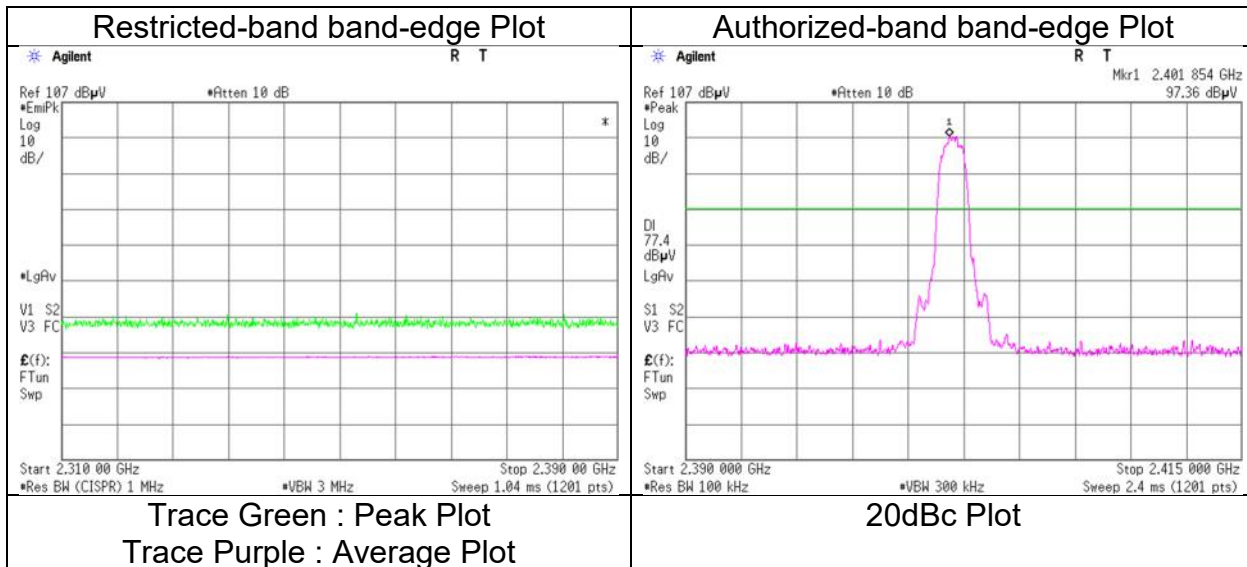
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz: $20\log(3.995\text{ m} / 3.0\text{ m}) = 2.49\text{ dB}$

10 GHz - 40 GHz: $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi
Mode	Tx Hopping off 3DH5 2402 MHz With Tx 11ax-40 (OFDM), 6445 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 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi (1 GHz - 2.8 GHz)
Mode	Tx Hopping off 3DH5 2480 MHz With Tx 11ax-40 (OFDM), 6445 MHz

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	47.29	27.89	14.42	41.64	2.49	50.45	73.9	23.4	340	358	-
Hori.	2483.500	AV	36.15	27.89	14.42	41.64	2.49	39.31	53.9	14.5	340	358	VBW: 360 Hz
Vert.	2483.500	PK	47.40	27.89	14.42	41.64	2.49	50.56	73.9	23.3	180	238	-
Vert.	2483.500	AV	35.81	27.89	14.42	41.64	2.49	38.97	53.9	14.9	180	238	VBW: 360 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

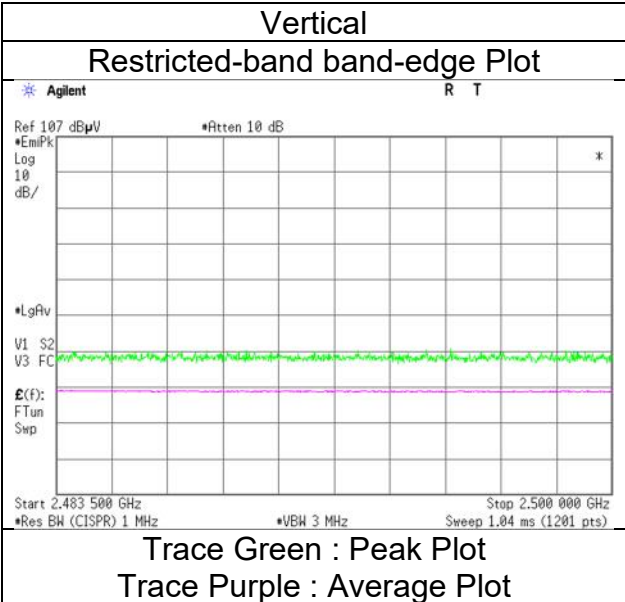
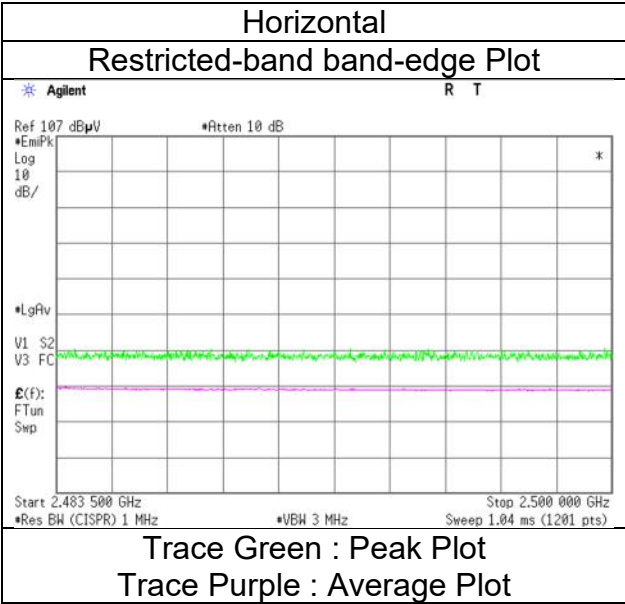
Distance factor : 1 GHz- 10 GHz: $20 \log (3.995 \text{ m} / 3.0 \text{ m}) = 2.49 \text{ dB}$

10 GHz - 40 GHz: $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

*These results have sufficient margin without taking account Duty cycle correction factor.

Radiated Spurious Emission
(Reference Plot for band-edge)

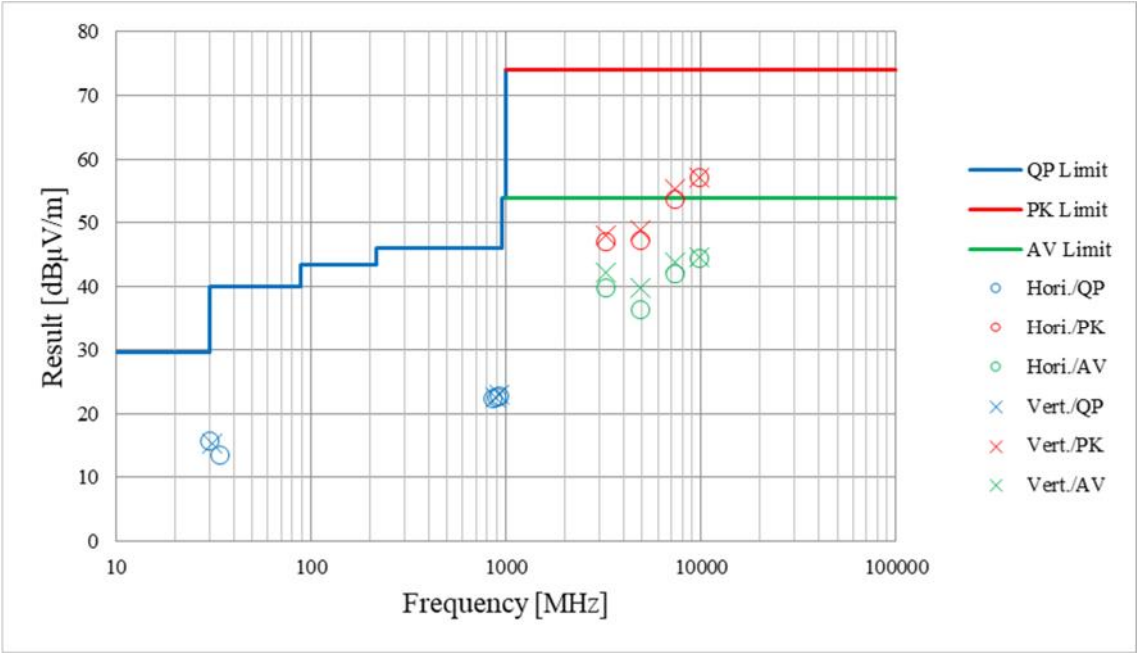
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	SAC 3
Date	January 17, 2024
Temperature / Humidity	24 deg.C, 30 %RH
Engineer	Takayuki Kobayashi
Mode	Tx Hopping off 3DH5 2480 MHz With Tx 11ax-40 (OFDM), 6445 MHz



* 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)

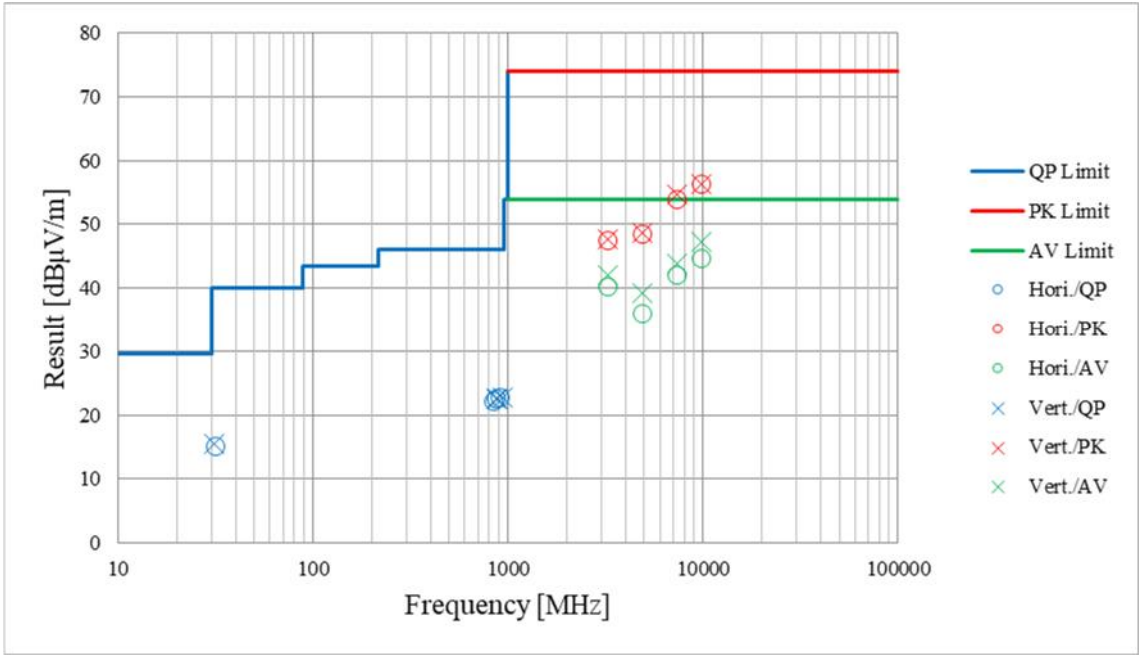
Test place	Shonan EMC Lab.				
Semi Anechoic Chamber	SAC 3	SAC 3	SAC 3	SAC 3	SAC 3
Date	January 24, 2024	December 2, 2024	January 18, 2024	January 10, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	20 deg.C, 39 %RH	23 deg.C, 27 %RH	23 deg.C, 24 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takahiro Suzuki	Yosuke Murakami	Takayuki Kobayashi	Kouki Yamada
Mode	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
	Tx Hopping off DH5 2441 MHz With Tx 11ax-40 (OFDM), 5510 MHz				



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

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
Date	January 24, 2024	January 17, 2024	January 18, 2024	January 23, 2024
Temperature / Humidity	21 deg.C, 24 %RH	24 deg.C, 30 %RH	23 deg.C, 27 %RH	23 deg.C, 30 %RH
Engineer	Yosuke Murakami	Takayuki Kobayashi	Yosuke Murakami	Kouki Yamada
	(30 MHz -1 GHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -26.5 GHz)
Mode	Tx Hopping off DH5 2441 MHz With Tx 11ax-40 (OFDM), 6445 MHz			

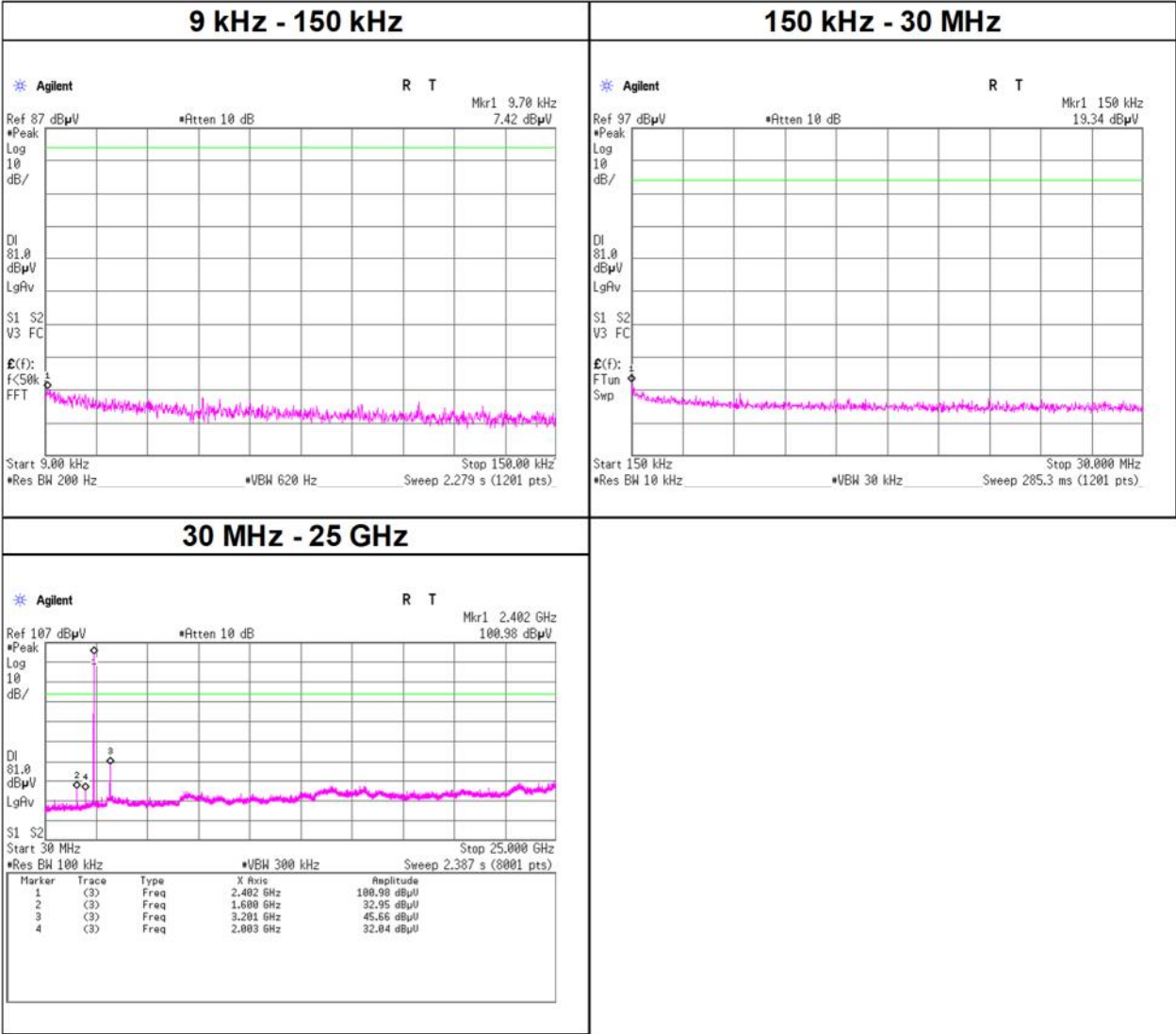


*These plots data contain sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 46 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off, DH5

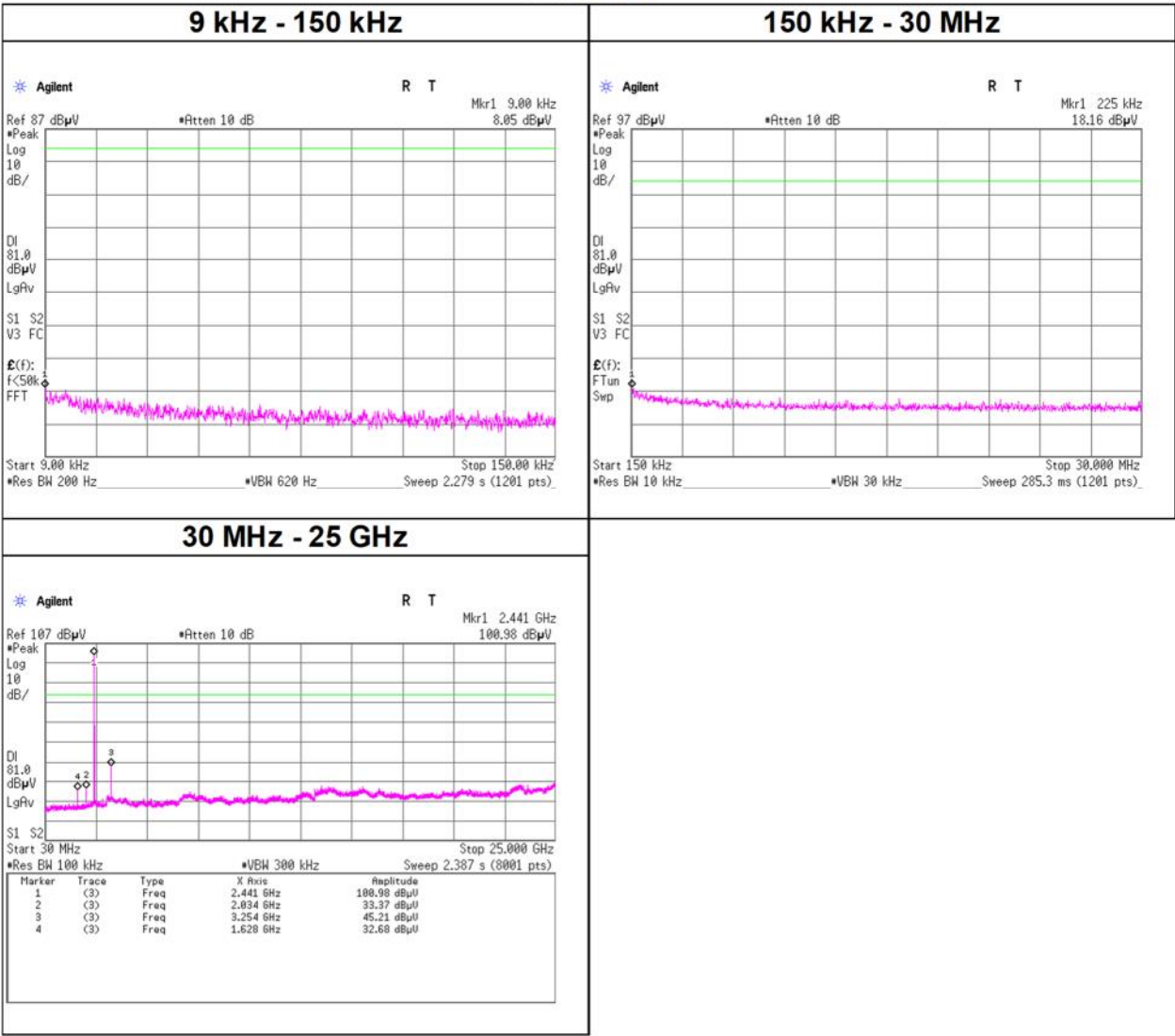
2402 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 46 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off, DH5

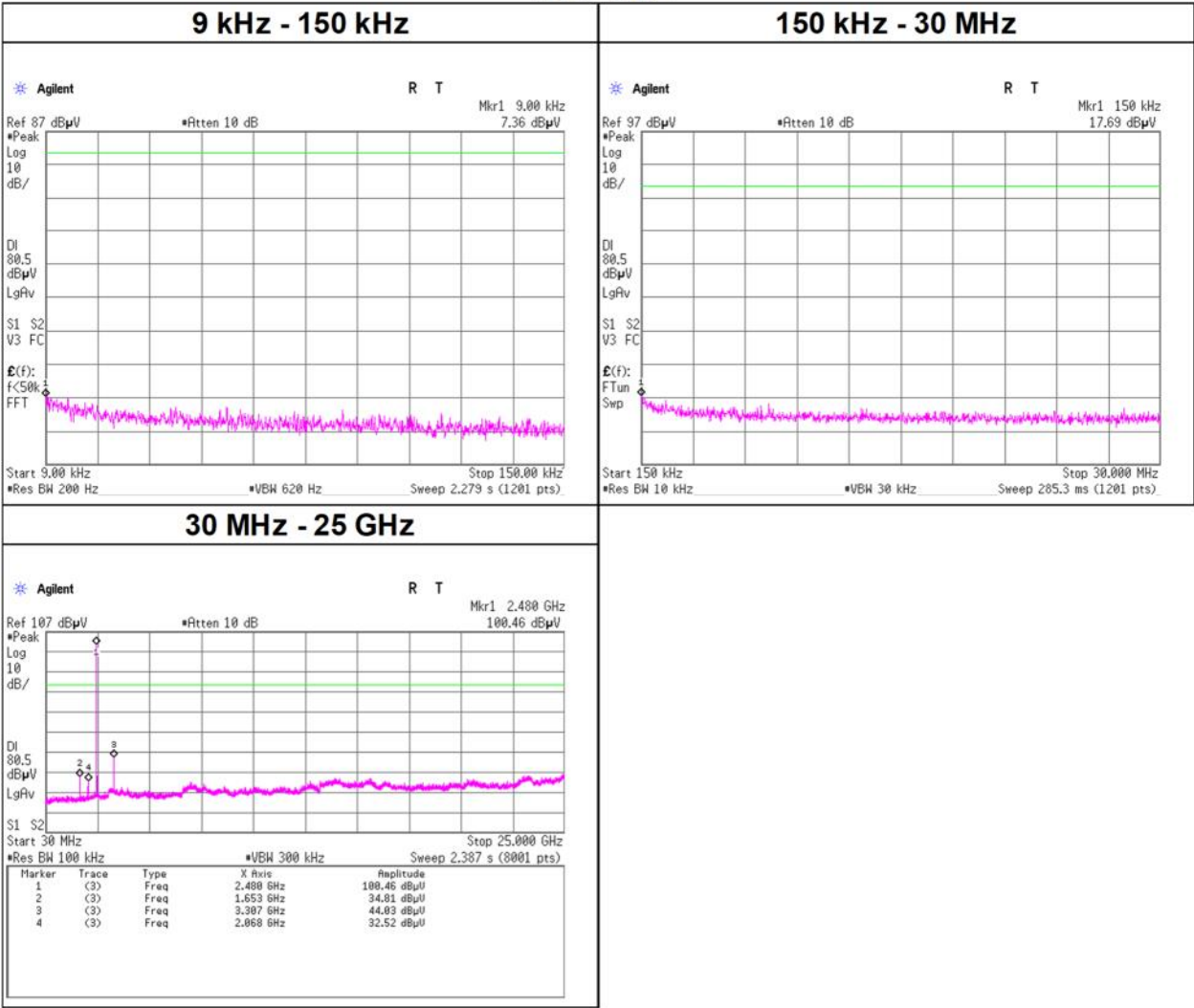
2441 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023
Temperature / Humidity 26 deg. C / 46 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off, DH5

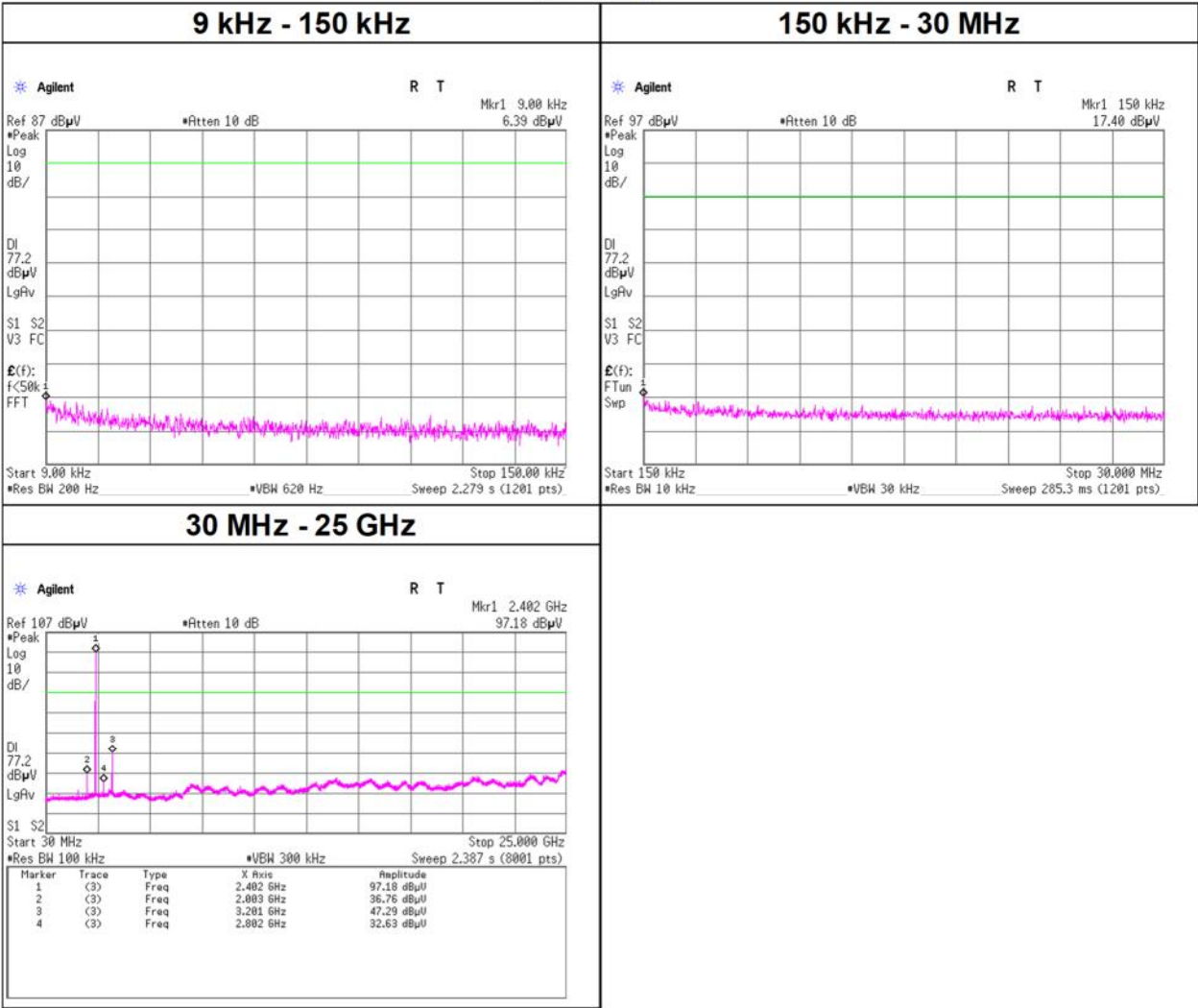
2480 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 6, 2023
Temperature / Humidity 26 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off, 3DH5

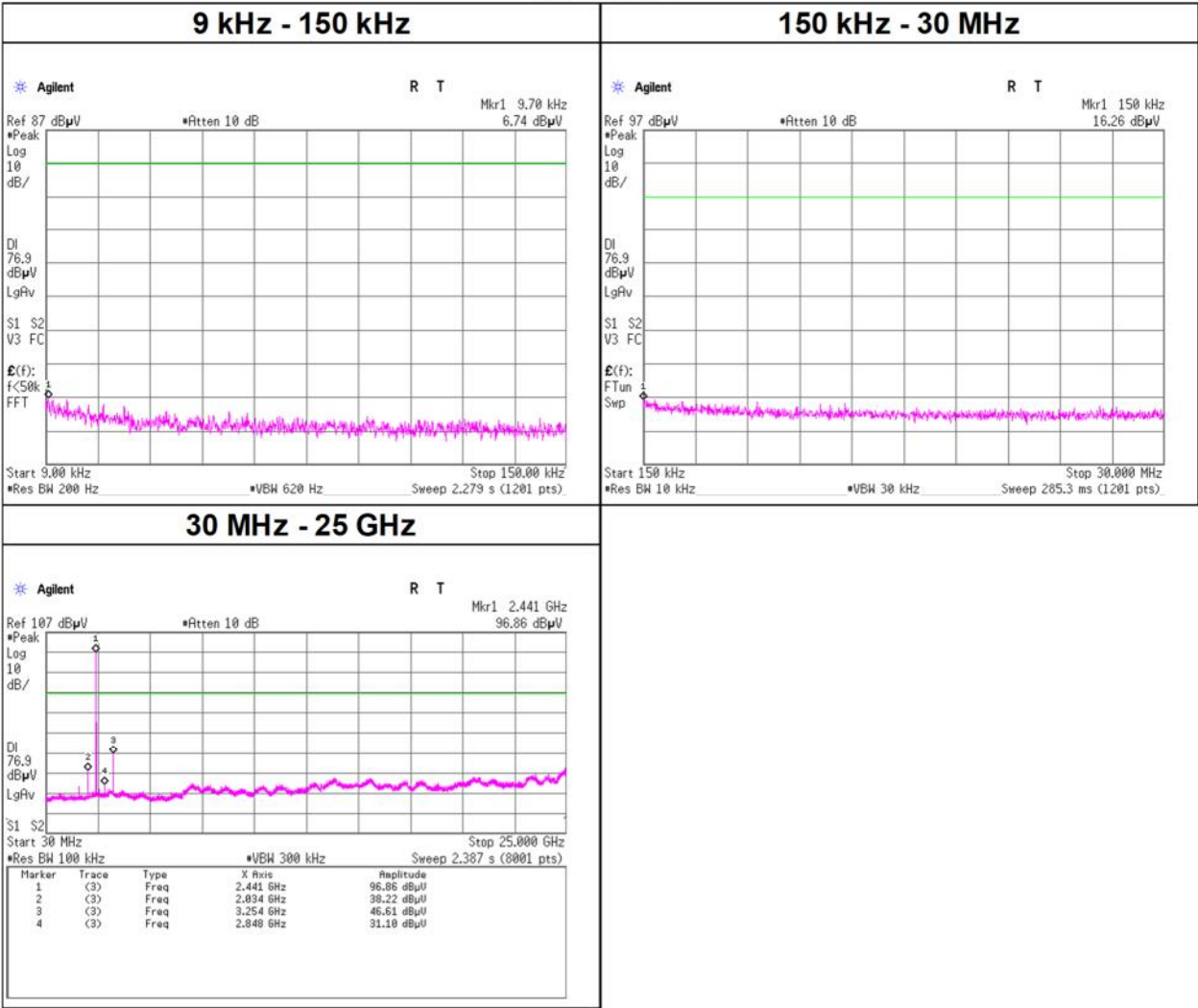
2402 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 6, 2023
Temperature / Humidity 26 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off, 3DH5

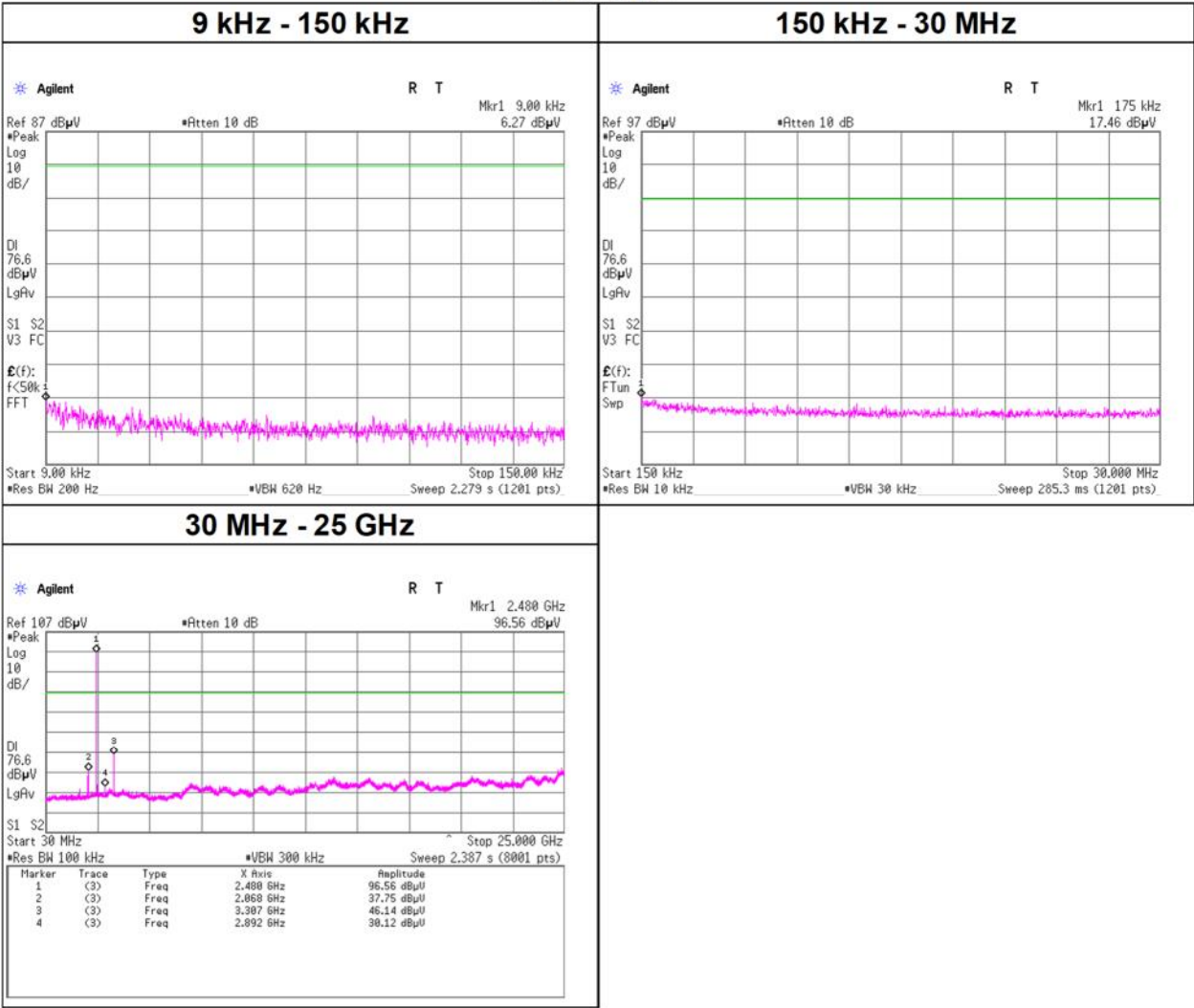
2441 MHz



Conducted Spurious Emission

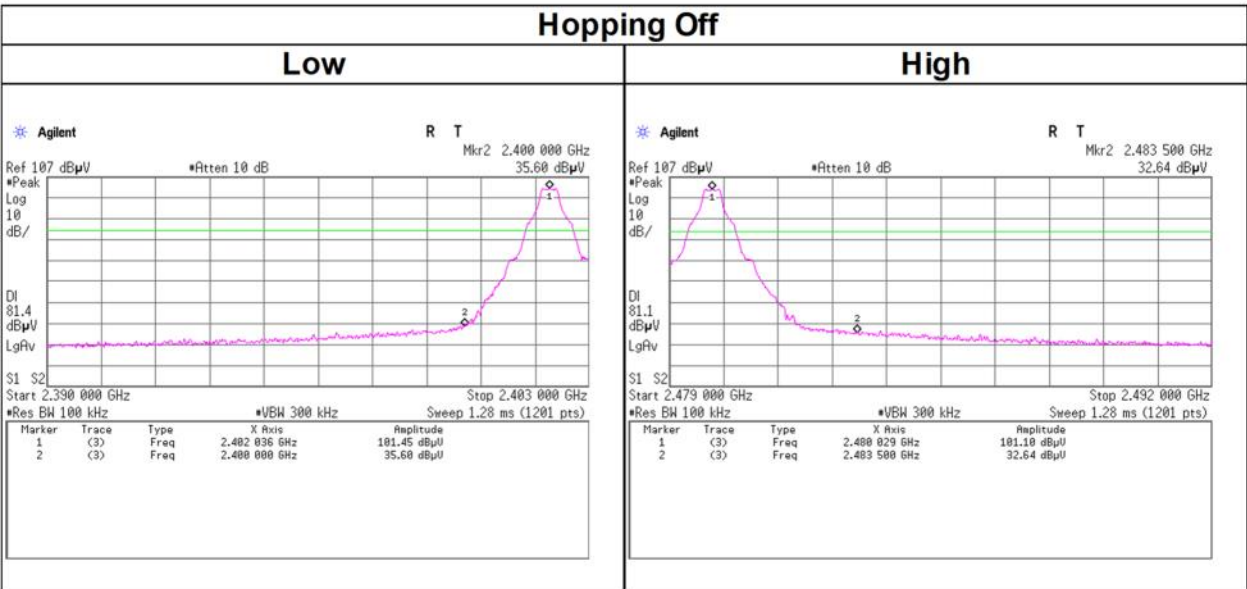
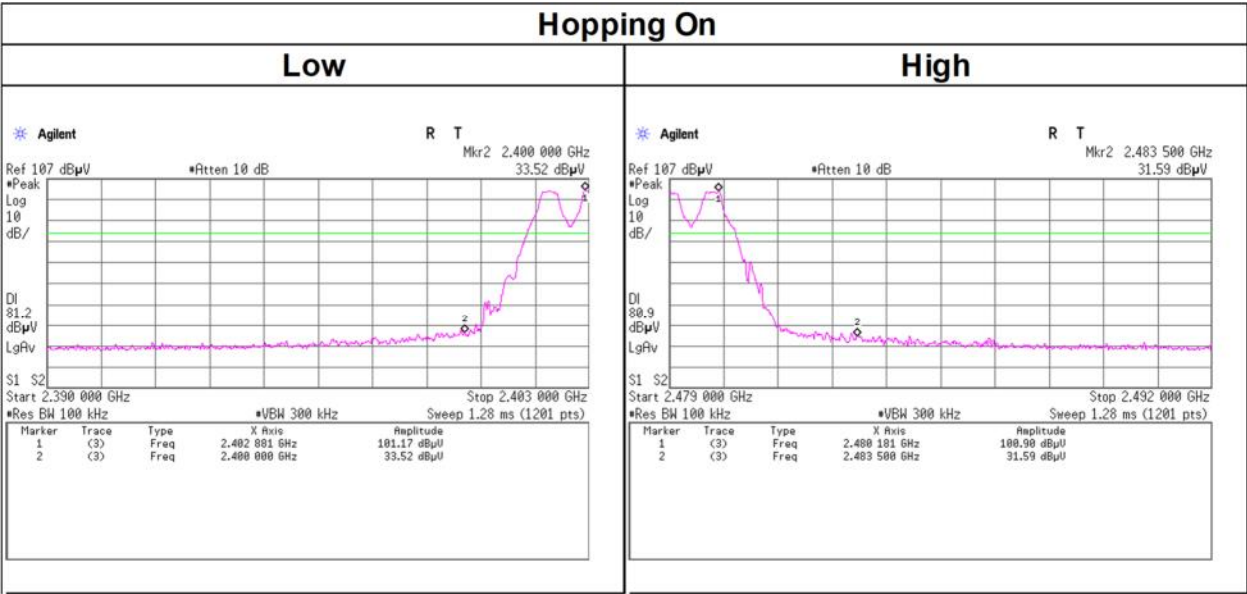
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 6, 2023
Temperature / Humidity 26 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx, Hopping Off, 3DH5

2480 MHz



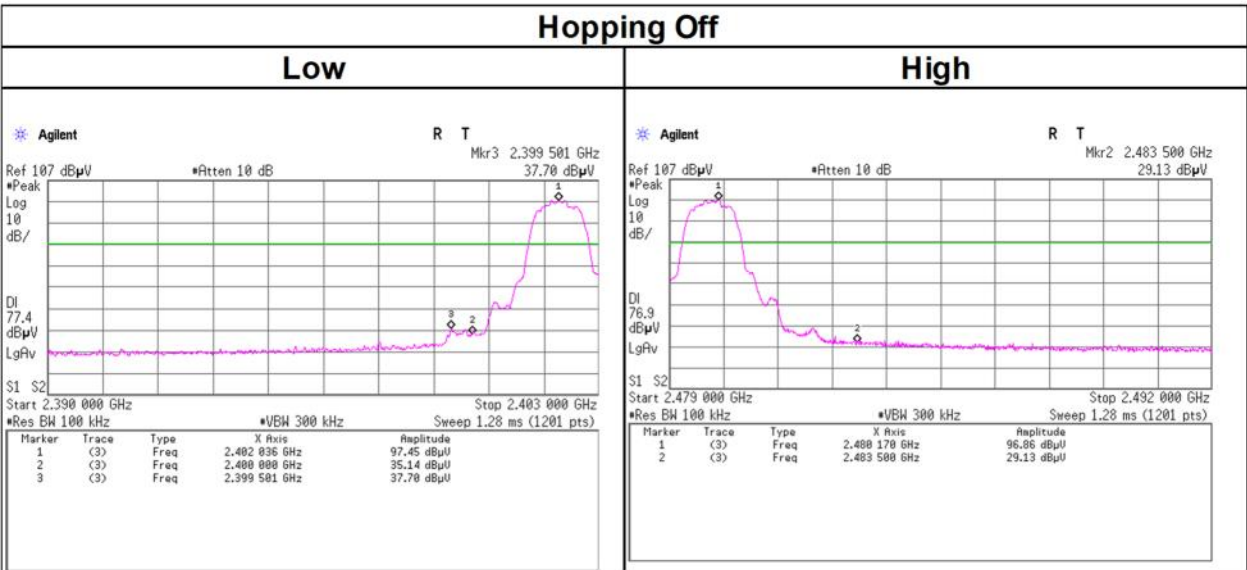
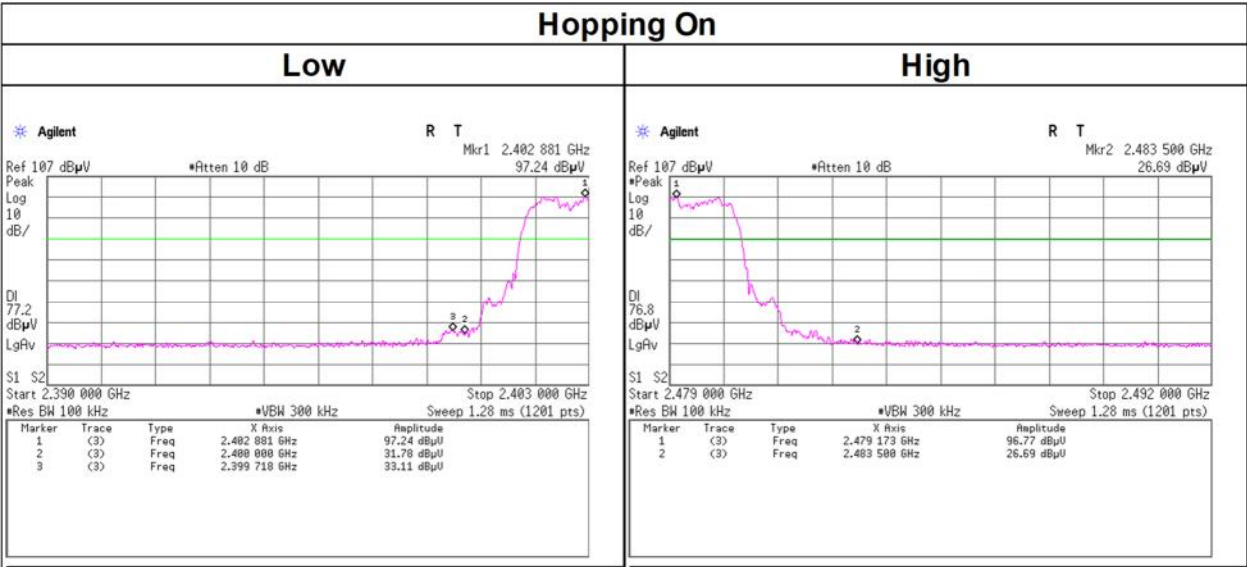
Conducted Emission Band Edge compliance

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 5, 2023 June 6, 2023
Temperature / Humidity 26 deg. C / 46 % RH 26 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx DH5



Conducted Emission Band Edge compliance

Test place Shonan EMC Lab. No.5 Shielded Room
Date June 6, 2023
Temperature / Humidity 26 deg. C / 40 % RH
Engineer Yosuke Murakami
Mode Tx 3DH5



APPENDIX 2: Test Instruments

Test Equipment (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	145005	Pre Amplifier	Toyo Corporation	TPA0118-36	2046104	2024/02/16	12
RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2024/03/05	12
RE	145023	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	BBA9106	91032666	2023/05/16	12
RE	145126	Pre Amplifier	SONOMA	310N	290213	2024/02/07	12
RE	145136	Attenuator	Keysight Technologies Inc	8493C-010	74864	2023/10/12	12
RE	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	2024/04/01	12
RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2023/08/23	12
RE	145301	Highpass Filter	Micro-Tronics	HPM50111	51	2023/10/13	12
RE	145377	Highpass Filter	Micro-Tronics	HPM50112	28	2023/10/11	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	2023/06/12	12
RE	145514	Horn Antenna	ETS-Lindgren	3160-10	00092383	2023/06/12	12
RE	145529	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	196	2023/05/16	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	2023/05/14	12
RE	145800	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250106	2024/03/25	12
RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2023/08/25	12
RE	156380	Coaxial Cable	Huber+Suhner	SUCOFLEX_104_E	SN MY 13406/4E	2023/05/19	12
RE	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2024/01/10	12
RE	167094	Attenuator	JFW	50HF-006N	-	2024/02/13	12
RE	168300	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	800375/4A	2022/11/10	12 *1)
RE	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2024/03/05	12
RE	191840	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2023/08/03	12
RE	194685	Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	711	2024/03/20	12
RE	196945	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	803414/2	2024/03/12	12
RE	200010	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	575618/4	2023/06/06	12
RE	202959	Highpass Filter	Micro-Tronics	HPM50107	G077	2023/10/11	12
RE	213530	Test Receiver	Rohde & Schwarz	ESW44	103068	2024/02/22	12
RE	236869	Coaxial Cable	Huber+Suhner	SUCOFLEX 104	200084/4A	2023/06/06	12

Test Equipment (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	145089	Spectrum Analyzer	Keysight Technologies Inc	E4446A	MY46180525	2023/12/13	12
AT	145166	Coaxial Cable	Suhner	SUCOFLEX 102	31599/2	2022/12/01	12 *1)
AT	146207	Terminator	JFW	50T-128	-	2023/11/22	12
AT	146212	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997828	2023/09/25	12
AT	146247	Power Meter	Keysight Technologies Inc	8990B	MY51000272	2023/05/29	12
AT	146268	Power Meter	Raditeq (Formerly DARE!! Instruments)	RPR3006W	15100041SNO73	2023/05/30	12
AT	146310	Power sensor	Keysight Technologies Inc	N1923A	MY5326009	2023/05/29	12
AT	154591	Attenuator	Weinschel Corp.	54A-10	81595	2024/04/10	12
AT	171615	Terminator	Weinschel - API Technologies Corp	M1459A	88997	2023/05/11	12
AT	179108	Coaxial Cable	Junkosha	MWX241-03000KMSKMS/B	1901Q033-R	2024/04/09	12
AT	191845	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2023/08/07	12
AT	204925	Attenuator	Weinschel Corp.	54A-10	109970	2024/02/14	12
AT,RE	145801	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY48250152	2024/02/27	12
CE	144960	Attenuator	JFW	50HF-003N	-	2023/08/22	12
CE	145036	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS4906	-/0901-271(RF Selector)	2024/04/01	12
CE	145542	LISN	Rohde & Schwarz	ENV216	100516	2024/02/06	12
CE,RE	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2023/09/22	12
CE,RE	146210	Digital Hitester	HIOKI E.E. CORPORATION	3805-50	80997823	2023/09/25	12
CE,RE	146432	Tape Measure	TAJIMA	GL19-55	-	-	-
CE,RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	-	-	-

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

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

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

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

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

Test item:

AT: Antenna Terminal Conducted test

CE: Conducted Emission

RE: Radiated Emission