

# RADIO TEST REPORT

## Test Report No. 15370547H-A-R1

Customer	Sony Interactive Entertainment Inc.
Description of EUT	Wireless communication module
Model Number of EUT	J20H104
FCC ID	AK8M21DFD1
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	September 6, 2024
Remarks	- Wireless LAN (2.4 GHz band) and Bluetooth Low Energy part(s) - For Permissive Change - Radiated Spurious Emission only

### Representative Test Engineer



Takumi Nishida  
Engineer

### Approved By



Takayuki Shimada  
Leader



CERTIFICATE 5107.02

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

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

## REVISION HISTORY

### Original Test Report No.: 15370547H-A

This report is a revised version of 15370547H-A. 15370547H-A is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15370547H-A	August 30, 2024	-
1	15370547H-A-R1	September 6, 2024	<b>APPENDIX 4: Configuration and Peripherals</b> - Corrected information of Shield (Cable / Connector) for No. 1 to 4 cables in List of Cables Used: Unshielded → Shielded

**Reference: Abbreviations (Including words undescribed in this report)**

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

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## **SECTION 1: Customer Information**

Company Name	Sony Interactive Entertainment Inc.
Brand Name	SONY
Address	1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan
Telephone Number	+81-50-3807-5639
Contact Person	Miho Nakamura

The information provided by the customer is as follows;

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

## **SECTION 2: Equipment Under Test (EUT)**

### **2.1 Identification of EUT**

Description	Wireless communication module
Model Number	J20H104
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	July 16, 2024
Test Date	July 17 to 29, 2024

### **2.2 Product Description**

#### **General Specification**

Rating	DC 3.3 V
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**Radio Specification**

**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 (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU
Antenna Type	IFA	
Antenna Gain: G <sub>ANT</sub>	Antenna 1: 4.0 dBi Antenna 2: 3.5 dBi	
Directional Gain *1)	6.76 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 M Band: 5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz	
	40 M Band: 5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5710 MHz 5755 MHz to 5795 MHz	
	80 M Band: 5210 MHz 5290 MHz 5530 MHz to 5690 MHz 5775 MHz	
Type of Modulation	OFDM	
	OFDMA (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU
		40 MHz: 26/52/106/242/484-tone RU 80 MHz: 26/52/106/242/484/996-tone RU
Antenna Type	IFA	
Antenna Gain: G <sub>ANT</sub>	Antenna 1: 6.4 dBi Antenna 3: 3.5 dBi	
Directional Gain *1)	8.08 dBi	

**BT1: Bluetooth (BR / EDR / Low Energy)**

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	BT: FHSS (GFSK, π/4DQPSK, 8DPSK) BT LE: GFSK
Antenna Type	IFA
Antenna Gain	Antenna 3: 4.0 dBi

**BT2: Bluetooth (BR / EDR / Low Energy)**

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	BT: FHSS (GFSK, π/4DQPSK, 8DPSK) BT LE: GFSK
Antenna Type	IFA
Antenna Gain	Antenna 4: 4.0 dBi

\*1) Directional antenna gain =  $10 \log \left( \left( 10^{\frac{Gain(Ant1)}{20}} + 10^{\frac{Gain(Ant2 \text{ or } Ant3)}{20}} \right)^2 / 2 \right)$

## **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
Spurious Emission Restricted Band Edges	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	5.5 dB 2390.0 MHz Vertical, AV	Complied	Radiated (above 30 MHz) *1)
<p>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.</p> <p>*1) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6.</p>					

#### **FCC Part 15.31 (e)**

The stable voltage will be supplied by the end product, which will be required to have a power supply regulator. Therefore, the EUT complies with the requirement.

#### **FCC Part 15.203/212 Antenna requirement**

The EUT has unique coupling/antenna connector (U.FL).  
Therefore, the equipment complies with the antenna requirement of Section 15.203/212.

### **3.3 Addition to Standard**

No addition, exclusion nor deviation has been made from the standard.

### 3.4 Uncertainty

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

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

#### Radiated emission

Measurement distance	Frequency range		Unit	Calculated Uncertainty (+/-)
3 m	9 kHz to 30 MHz		dB	3.3
10 m			dB	3.1
3 m	30 MHz to 200 MHz	Horizontal	dB	4.7
		Vertical	dB	4.7
	200 MHz to 1000 MHz	Horizontal	dB	4.8
		Vertical	dB	6.0
10 m	30 MHz to 200 MHz	Horizontal	dB	5.2
		Vertical	dB	5.1
	200 MHz to 1000 MHz	Horizontal	dB	5.2
		Vertical	dB	5.2
3 m	1 GHz to 6 GHz		dB	5.1
	6 GHz to 18 GHz		dB	5.4
1 m	10 GHz to 18 GHz		dB	5.4
	18 GHz to 26.5 GHz		dB	5.3
	26.5 GHz to 40 GHz		dB	4.8
0.5 m	26.5 GHz to 40 GHz		dB	5.0



### 3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

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

Telephone: +81-596-24-8999

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

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

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room	2.6 x 3.4 x 2.5	N/A	-	-
Large Chamber	16.9 x 22.1 x 10.17	16.9 x 22.1	-	10 m
Small Chamber	5.3 x 6.69 x 3.59	5.3 x 6.69	-	-

### 3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

## SECTION 4: Operation of EUT during testing

### 4.1 Operating Mode(s)

[WLAN]

Mode	Remarks*
IEEE 802.11b (11b)	11 Mbps (Long preamble), PN9
IEEE 802.11ax MIMO 20 MHz BW (11ax-20)	MCS 3 (1TX), PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows; Power Setting: OFDM: 16 OFDMA: -1 (26-tone RU), 5 (52-tone RU) 10 (106-tone RU), 16 (242-tone RU) Software: autotest for-ULJ.sh (Date: December 13, 2022 / 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.	
Test operating mode was determined as follows according to "Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - " of TCB Council Workshop October 2009 and also was judged the necessity of 802.11ax mode by the pre-test.	

\*The Details of Operating Mode(s)

Test Item	Operating Mode	Tested Antenna	Tested Frequency
Radiated Spurious Emission (Below 1 GHz)	Tx 11ax-20 [OFDM] *1)	Antenna 1 + 2	2412 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx 11b Tx 11ax-20 [OFDM] *2) Tx 11ax-20 [OFDMA] *3)	Antenna 1 + 2	2412 MHz 2437 MHz 2462 MHz
*1) The test was conducted on representative mode, because it had the highest power at antenna terminal test. *2) Since 11g, 11n-20, and 11ax-20 have the same modulation method and no differences in transmitting specification, test was conducted on the representative mode that had the highest output power. *3) OFDMA configuration tests were conducted only at the band edge since preliminary testing indicated that the other spurious emission was lower than OFDM.			

[BT LE]

Mode	Remarks*
Bluetooth Low Energy (BT LE)	Uncoded 1M-PHY (1M), Maximum Packet Size, PRBS9
Bluetooth Low Energy (BT LE)	Uncoded 2M-PHY (2M), Maximum Packet Size, PRBS9
<p>*Power of the EUT was set by the software as follows;            Power Setting: 2 dBm            Software: MT_TEST_Tool_Ver10.0            (Date: December 13, 2022 / Storage location: Driven by connected PC)</p> <p>*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.</p>	

\*The Details of Operating Mode(s)

Test Item	Operating Mode	Tested Antenna	Tested Frequency
Radiated Spurious Emission (Below 1 GHz)	Tx BT LE 2M *1)	Antenna 3 (BT1)	2440 MHz
		Antenna 4 (BT2)	2440 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx BT LE 1M Tx BT LE 2M	Antenna 3 (BT1)	2402 MHz
		Antenna 4 (BT2)	2440 MHz
			2480 MHz
<p>*1) 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.</p>			

Simultaneous transmission

(Only Antenna 3 simultaneously transmits BT1 and WLAN 5 GHz on a signal antenna.)

Test Item	Mode *1)	Antenna type
Radiated Spurious Emission	Tx BT LE 2M 2402 MHz + 11ax-20 [OFDM] 5500 MHz	Antenna 3 (BT1)
<p>*1) The test was conducted on representative mode, the worst mode of GHz band at Spurious emission test for BT1 and the mode had the highest power at Antenna terminal conducted test for WLAN 5 GHz band.</p>		

#### 4.2 Configuration and Peripherals

This clause has been submitted for separate exhibit (refer to APPENDIX 4).

## **SECTION 5: Radiated Spurious Emission**

### **Test Procedure**

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

[For below 1 GHz]

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

[For above 1 GHz]

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

The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

### **Test Antennas are used as below;**

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

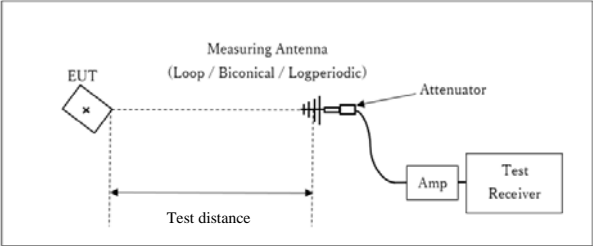
In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired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

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

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument Used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	<u>11.12.2.5.1</u> RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces <u>11.12.2.5.2</u> The duty cycle was less than 98% for detected noise, a duty factor was added to the 11.12.2.5.1 results.	RBW: 100 kHz VBW: 300 kHz

**Figure 2: Test Setup**

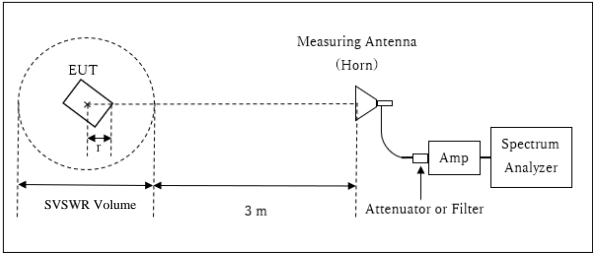
Below 1 GHz



\* : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz



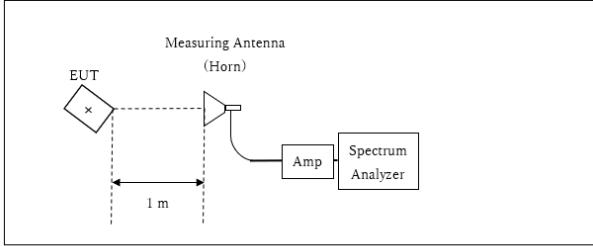
r : Radius of an outer periphery of EUT  
 \* : Center of turn table

[1 GHz to 6 GHz]  
 Distance Factor:  $20 \times \log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$   
 Test Distance:  $(3 + \text{SVSWR Volume} / 2) - r = 3.95 \text{ m}$   
 SVSWR Volume : 2.0 m

[6 GHz to 10 GHz]  
 Distance Factor:  $20 \times \log(4.95 \text{ m} / 3.0 \text{ m}) = 4.35 \text{ dB}$   
 Test Distance:  $(4.3 + \text{SVSWR Volume} / 2) - r = 4.95 \text{ m}$   
 SVSWR Volume : 1.4 m

r = 0.05 m

10 GHz to 26.5 GHz



\* : Center of turn table

Distance Factor:  $20 \times \log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$   
 \*Test Distance: 1 m

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

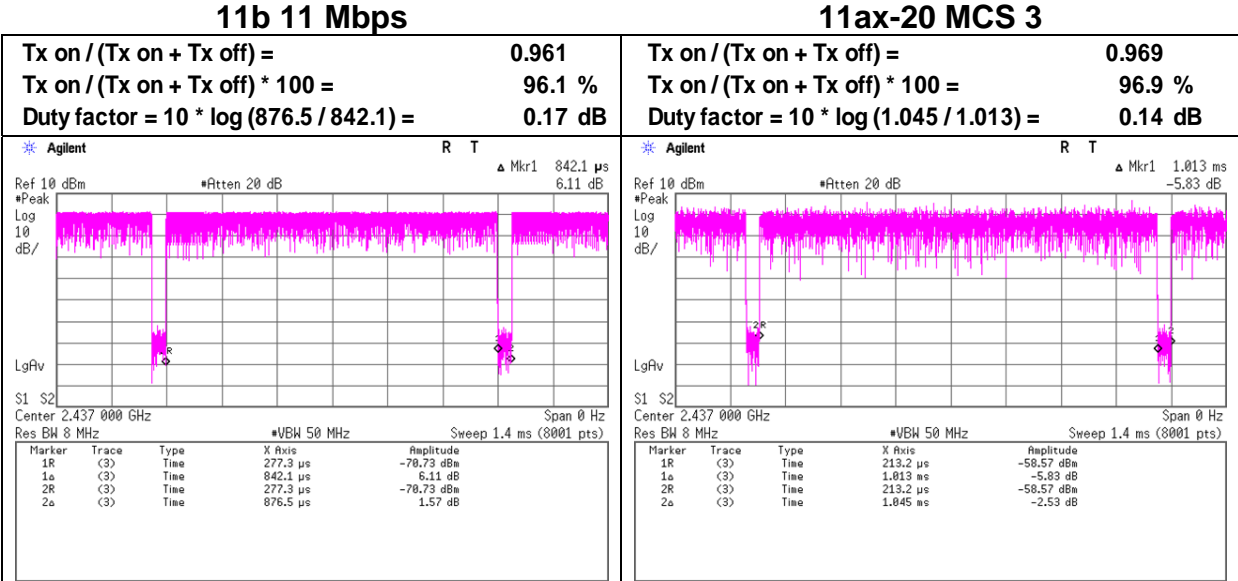
Test results are rounded off and limit are rounded down, so some differences might be observed.

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

**APPENDIX 1: Test Data**

**Burst rate confirmation**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Kiyoshiro Okazaki
Mode	Tx



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

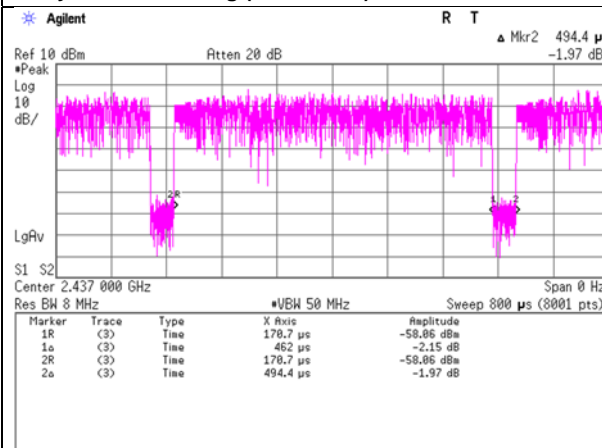
**Burst rate confirmation**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Takafumi Noguchi
Mode	Tx

**11ax-20 MCS 3**

**26-tone RU**

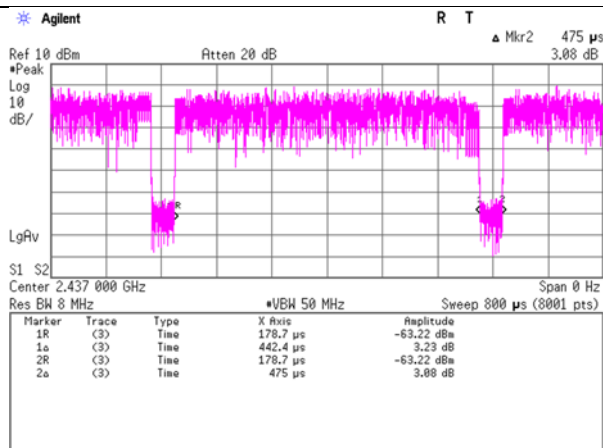
Tx on / (Tx on + Tx off) = **0.934**  
 Tx on / (Tx on + Tx off) \* 100 = **93.4 %**  
 Duty factor = 10 \* log (494.4 / 462) = **0.29 dB**



**11ax-20 MCS 3**

**52-tone RU**

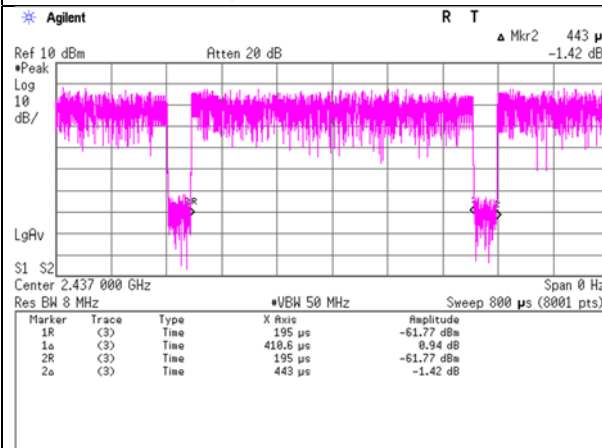
Tx on / (Tx on + Tx off) = **0.931**  
 Tx on / (Tx on + Tx off) \* 100 = **93.1 %**  
 Duty factor = 10 \* log (475 / 442.4) = **0.31 dB**



**11ax-20 MCS 3**

**106-tone RU**

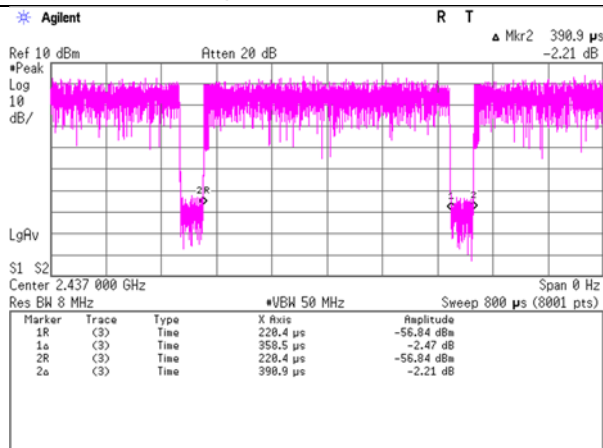
Tx on / (Tx on + Tx off) = **0.927**  
 Tx on / (Tx on + Tx off) \* 100 = **92.7 %**  
 Duty factor = 10 \* log (443 / 410.6) = **0.33 dB**



**11ax-20 MCS 3**

**242-tone RU**

Tx on / (Tx on + Tx off) = **0.917**  
 Tx on / (Tx on + Tx off) \* 100 = **91.7 %**  
 Duty factor = 10 \* log (390.9 / 358.5) = **0.38 dB**



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

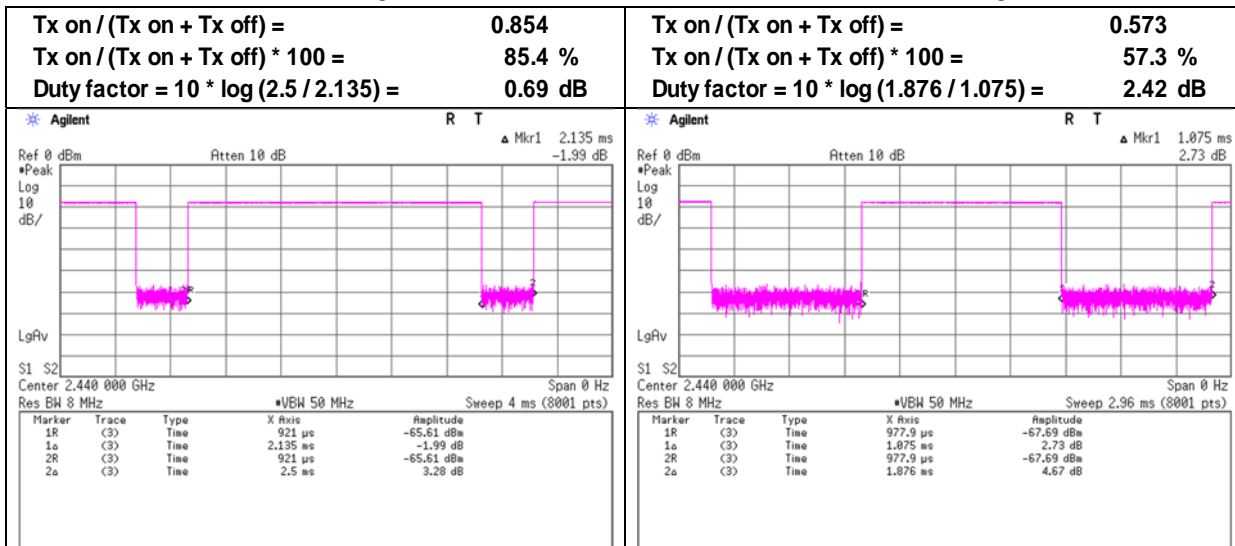
**Burst rate confirmation**

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	July 18, 2024	July 17, 2024
Temperature / Humidity	22 deg. C / 52 % RH	21 deg. C / 55 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi
Mode	Tx	

**BT1**

**BT LE 1M 2440 MHz**

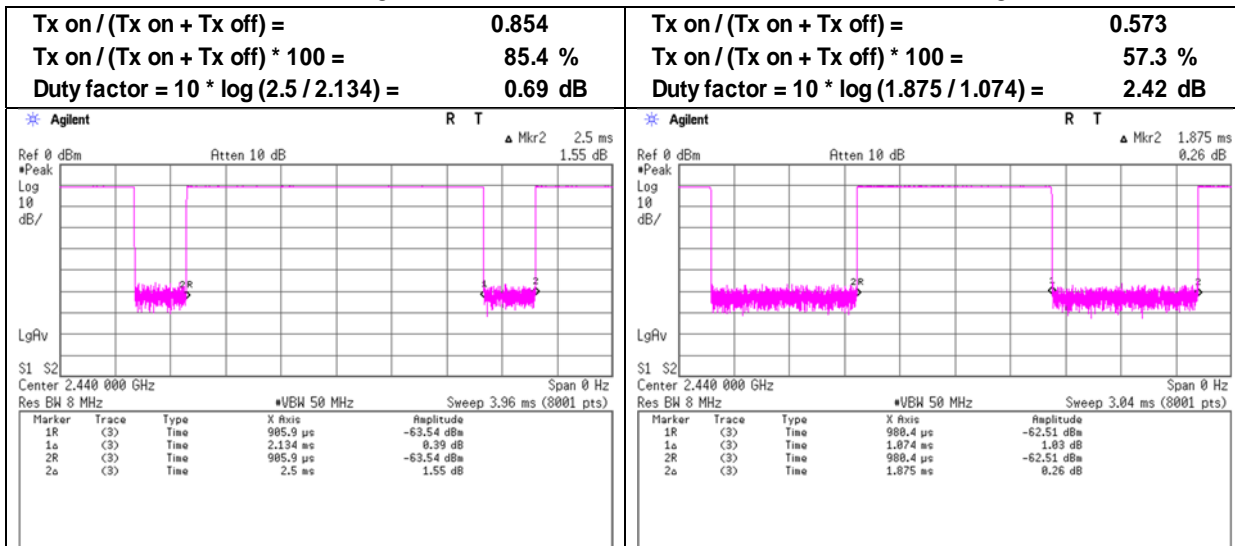
**BT LE 2M 2440 MHz**



**BT2**

**BT LE 1M 2440 MHz**

**BT LE 2M 2440 MHz**



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



## Radiated Spurious Emission

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	July 18, 2024	July 24, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)
Mode	Tx 11b 2412 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2385.0	46.3	35.5	27.8	5.0	31.8	0.2	47.3	36.7	73.9	53.9	26.7	17.2	*2)
Hori.	2390.0	46.4	37.9	27.8	5.0	31.8	0.2	47.4	39.0	73.9	53.9	26.5	14.9	*1)
Hori.	4824.0	40.8	33.0	31.5	7.6	30.8	-	49.1	41.3	73.9	53.9	24.9	12.6	Floor noise
Hori.	7236.0	41.5	32.7	35.6	9.4	32.1	-	54.4	45.6	73.9	53.9	19.5	8.3	Floor noise
Hori.	9648.0	43.6	33.8	35.8	10.6	32.3	-	57.6	47.8	73.9	53.9	16.3	6.1	Floor noise
Vert.	2385.0	45.6	33.9	27.8	5.0	31.8	0.2	46.6	35.1	73.9	53.9	27.3	18.8	*2)
Vert.	2390.0	49.9	36.7	27.8	5.0	31.8	0.2	50.9	37.9	73.9	53.9	23.0	16.1	*1)
Vert.	4824.0	40.8	33.0	31.5	7.6	30.8	-	49.1	41.3	73.9	53.9	24.9	12.6	Floor noise
Vert.	7236.0	41.5	32.7	35.6	9.4	32.1	-	54.4	45.6	73.9	53.9	19.5	8.3	Floor noise
Vert.	9648.0	43.6	33.8	35.8	10.6	32.3	-	57.6	47.8	73.9	53.9	16.3	6.1	Floor noise

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)  
 Result (AV) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor  
 \*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).  
 \*QP detector was used up to 1 GHz.  
 \*1) Not Out of Band emission(Leakage Power)  
 \*2) Noise synchronized with duty of carrier frequency

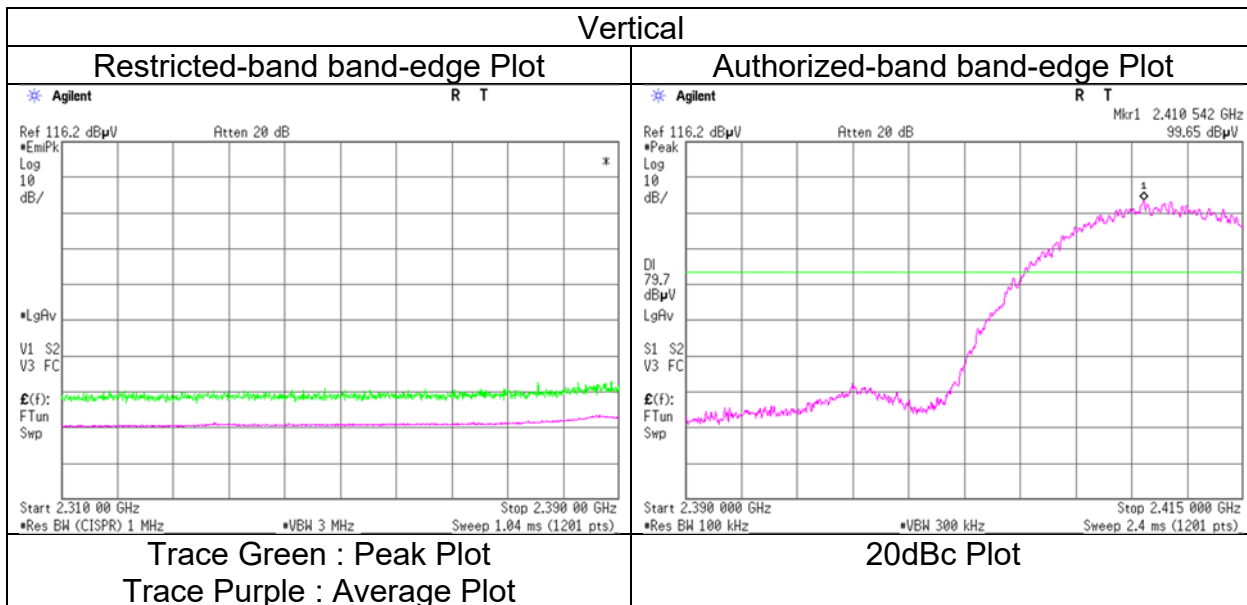
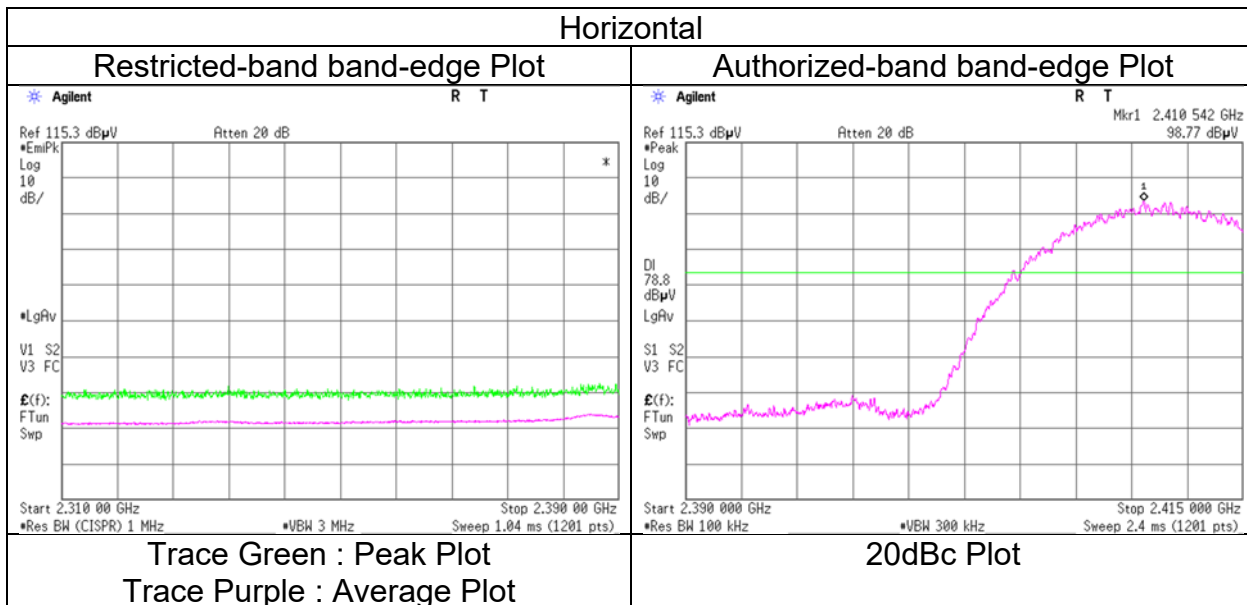
### 20dBc Data Sheet

Polarity	Frequency	Reading (PK)	Ant. Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2412.0	98.8	27.7	5.0	31.8	99.7	-	-	Carrier
Hori.	2400.0	51.0	27.8	5.0	31.8	52.0	79.7	27.8	
Vert.	2412.0	99.7	27.7	5.0	31.8	100.6	-	-	Carrier
Vert.	2400.0	49.4	27.8	5.0	31.8	50.4	80.6	30.2	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)  
 Distance factor:  
 1 GHz - 6 GHz      20log (3.95 m / 3.0 m) = 2.39 dB  
 6 GHz - 10 GHz    20log (4.95 m / 3.0 m) = 4.35 dB  
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Kiyoshiro Okazaki
Mode	Tx 11b 2412 MHz



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

## Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx 11b 2437 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4874.0	40.8	32.7	31.5	6.2	30.8	-	47.8	39.6	73.9	53.9	26.1	14.3	Floor noise
Hori.	7311.0	42.0	32.7	35.5	9.5	32.1	-	54.9	45.6	73.9	53.9	19.0	8.3	Floor noise
Hori.	9748.0	43.2	33.5	36.0	10.6	32.4	-	57.4	47.7	73.9	53.9	16.5	6.2	Floor noise
Vert.	4874.0	40.8	32.7	31.5	6.2	30.8	-	47.8	39.6	73.9	53.9	26.1	14.3	Floor noise
Vert.	7311.0	42.0	32.6	35.5	9.5	32.1	-	54.9	45.5	73.9	53.9	19.0	8.4	Floor noise
Vert.	9748.0	43.2	33.5	36.0	10.6	32.4	-	57.4	47.7	73.9	53.9	16.5	6.2	Floor noise

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

Distance factor:      1 GHz - 6 GHz              20log (3.95 m / 3.0 m) = 2.39 dB  
                                  6 GHz - 10 GHz            20log (4.95 m / 3.0 m) = 4.35 dB  
                                  10 GHz - 26.5 GHz        20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx 11b 2462 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2483.5	45.3	37.0	27.7	5.1	31.7	0.2	46.4	38.2	73.9	53.9	27.5	15.7	*1)
Hori.	4924.0	40.3	32.9	31.6	7.7	30.8	-	48.8	41.4	73.9	53.9	25.1	12.5	Floor noise
Hori.	7386.0	41.1	32.0	35.5	9.5	32.1	-	53.9	44.8	73.9	53.9	20.0	9.1	Floor noise
Hori.	9848.0	43.3	33.6	36.1	10.7	32.4	-	57.7	48.0	73.9	53.9	16.3	6.0	Floor noise
Vert.	2483.5	45.4	36.7	27.7	5.1	31.7	0.2	46.4	37.9	73.9	53.9	27.5	16.0	*1)
Vert.	4924.0	40.3	32.9	31.6	7.7	30.8	-	48.8	41.4	73.9	53.9	25.1	12.5	Floor noise
Vert.	7386.0	41.2	32.0	35.5	9.5	32.1	-	54.0	44.8	73.9	53.9	19.9	9.1	Floor noise
Vert.	9848.0	43.2	33.5	36.1	10.7	32.4	-	57.6	47.9	73.9	53.9	16.4	6.1	Floor noise

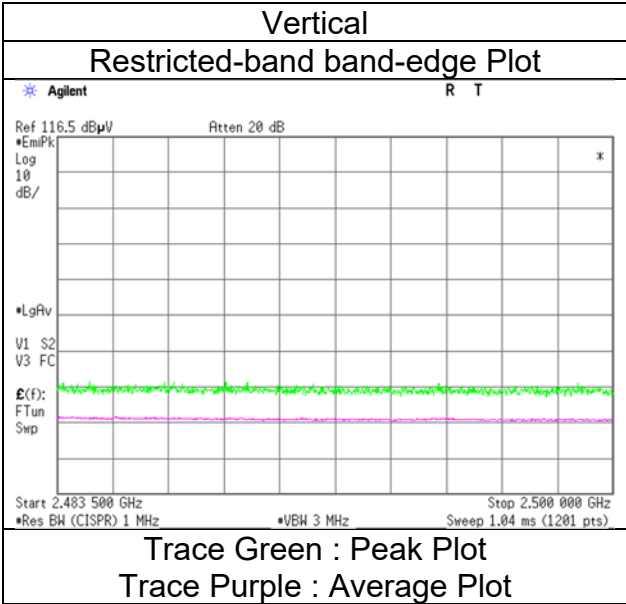
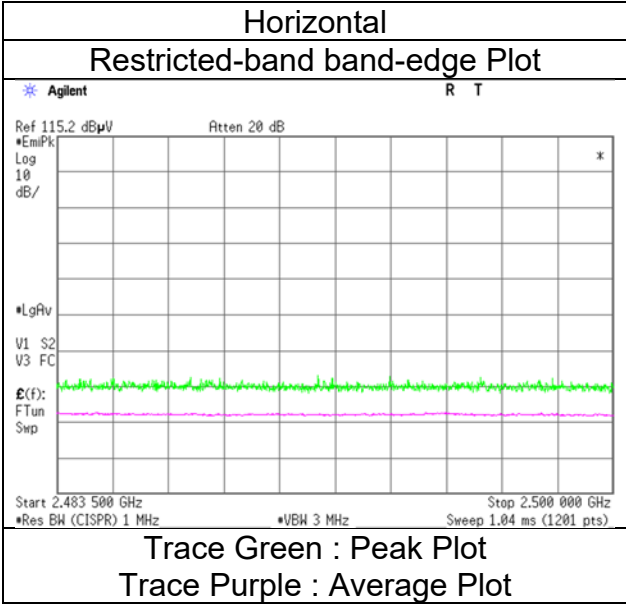
Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)  
 Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor  
 \*Other frequency noises omitted in this report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

Distance factor:      1 GHz - 6 GHz      20log (3.95 m / 3.0 m) = 2.39 dB  
                              6 GHz - 10 GHz      20log (4.95 m / 3.0 m) = 4.35 dB  
                              10 GHz - 26.5 GHz      20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)**

Test place  
 Semi Anechoic Chamber  
 Date  
 Temperature / Humidity  
 Engineer  
 Mode

Ise EMC Lab.  
 No.4  
 July 18, 2024  
 22 deg. C / 52 % RH  
 Kiyoshiro Okazaki  
 Tx 11b 2462 MHz



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

## Radiated Spurious Emission

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024	July 29, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH	21 deg. C / 54 % RH
Engineer	Kiyoshiro Okazaki (1 GHz to 6 GHz)	Takafumi Noguchi (6 GHz to 10 GHz)	Takafumi Noguchi (10 GHz to 26.5 GHz)	Takumi Nishida (Below 1 GHz)
Mode	Tx 11ax-20 [OFDM] 2412 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	106.6	42.0	-	11.3	7.9	32.1	-	29.1	-	43.5	-	14.4	-	
Hori.	117.2	40.7	-	12.7	8.0	32.1	-	29.3	-	43.5	-	14.2	-	
Hori.	170.4	35.2	-	15.9	8.5	32.0	-	27.6	-	43.5	-	15.9	-	
Hori.	328.7	41.9	-	14.5	9.7	32.0	-	34.0	-	46.0	-	12.0	-	
Hori.	598.4	39.0	-	19.3	11.3	32.2	-	37.3	-	46.0	-	8.7	-	
Hori.	928.0	31.3	-	22.0	12.4	31.0	-	34.8	-	46.0	-	11.2	-	
Hori.	2390.0	56.9	45.5	27.8	5.0	31.8	0.1	57.9	46.7	73.9	53.9	16.0	7.2	*1)
Hori.	4824.0	40.8	33.0	31.5	7.6	30.8	-	49.1	41.3	73.9	53.9	24.9	12.6	Floor noise
Hori.	7236.0	41.6	32.7	35.6	9.4	32.1	-	54.5	45.6	73.9	53.9	19.4	8.3	Floor noise
Hori.	9648.0	43.6	33.8	35.8	10.6	32.3	-	57.6	47.8	73.9	53.9	16.3	6.1	Floor noise
Vert.	36.1	41.5	-	16.3	7.1	32.1	-	32.8	-	40.0	-	7.2	-	
Vert.	106.6	42.1	-	11.3	7.9	32.1	-	29.3	-	43.5	-	14.2	-	
Vert.	170.4	37.2	-	15.9	8.5	32.0	-	29.6	-	43.5	-	13.9	-	
Vert.	328.7	42.9	-	14.5	9.7	32.0	-	35.1	-	46.0	-	10.9	-	
Vert.	598.4	39.9	-	19.3	11.3	32.2	-	38.1	-	46.0	-	7.9	-	
Vert.	928.0	34.0	-	22.0	12.4	31.0	-	37.4	-	46.0	-	8.6	-	
Vert.	2390.0	58.4	47.1	27.8	5.0	31.8	0.1	59.4	48.2	73.9	53.9	14.5	5.7	*1)
Vert.	4824.0	40.8	33.0	31.5	7.6	30.8	-	49.1	41.3	73.9	53.9	24.9	12.6	Floor noise
Vert.	7236.0	41.6	32.8	35.6	9.4	32.1	-	54.5	45.7	73.9	53.9	19.4	8.2	Floor noise
Vert.	9648.0	43.6	33.8	35.8	10.6	32.3	-	57.6	47.8	73.9	53.9	16.3	6.1	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

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

### 20dBc Data Sheet

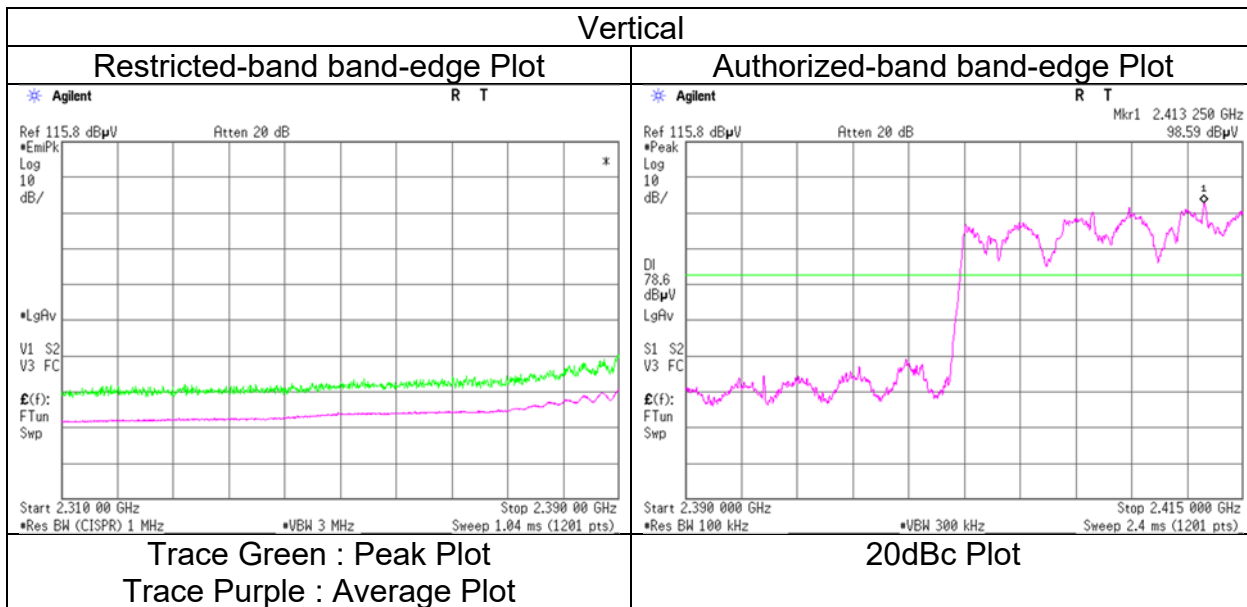
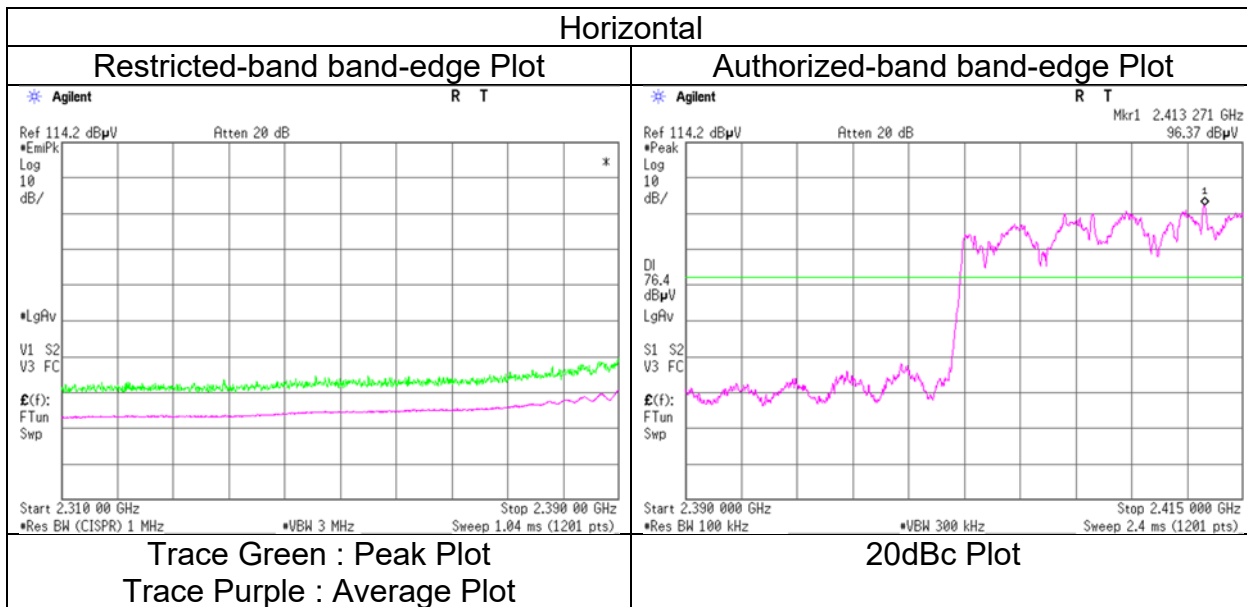
Polarity	Frequency	Reading (PK)	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2412.0	96.4	27.7	5.0	31.8	97.3	-	-	Carrier
Hori.	2400.0	52.9	27.8	5.0	31.8	53.9	77.3	23.4	
Vert.	2412.0	98.6	27.7	5.0	31.8	99.5	-	-	Carrier
Vert.	2400.0	54.8	27.8	5.0	31.8	55.8	79.5	23.7	

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

Distance factor:  
 1 GHz - 6 GHz      20log (3.95 m / 3.0 m) = 2.39 dB  
 6 GHz - 10 GHz    20log (4.95 m / 3.0 m) = 4.35 dB  
 10 GHz - 26.5 GHz   20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Kiyoshiro Okazaki
Mode	Tx 11ax-20 [OFDM] 2412 MHz



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

## Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx 11ax-20 [OFDM] 2437 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4874.0	40.8	32.7	31.5	6.2	30.8	-	47.8	39.6	73.9	53.9	26.1	14.3	Floor noise
Hori.	7311.0	41.9	32.6	35.5	9.5	32.1	-	54.8	45.5	73.9	53.9	19.1	8.4	Floor noise
Hori.	9748.0	43.2	33.5	36.0	10.6	32.4	-	57.4	47.7	73.9	53.9	16.5	6.2	Floor noise
Vert.	4874.0	40.8	32.7	31.5	6.2	30.8	-	47.8	39.6	73.9	53.9	26.1	14.3	Floor noise
Vert.	7311.0	42.0	32.6	35.5	9.5	32.1	-	54.9	45.5	73.9	53.9	19.0	8.4	Floor noise
Vert.	9748.0	43.2	33.5	36.0	10.6	32.4	-	57.4	47.7	73.9	53.9	16.5	6.2	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB



## Radiated Spurious Emission

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11ax-20 [OFDM] 2462 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2483.5	53.3	40.8	27.7	5.1	31.7	0.1	54.3	42.0	73.9	53.9	19.6	11.9	*1)
Hori.	4924.0	40.3	32.9	31.6	7.7	30.8	-	48.8	41.4	73.9	53.9	25.1	12.5	Floor noise
Hori.	7386.0	41.2	32.1	35.5	9.5	32.1	-	54.0	44.9	73.9	53.9	19.9	9.0	Floor noise
Hori.	9848.0	43.3	33.5	36.1	10.7	32.4	-	57.7	47.9	73.9	53.9	16.3	6.1	Floor noise
Vert.	2483.5	54.2	43.2	27.7	5.1	31.7	0.1	55.2	44.4	73.9	53.9	18.7	9.5	*1)
Vert.	4924.0	40.3	32.9	31.6	7.7	30.8	-	48.8	41.4	73.9	53.9	25.1	12.5	Floor noise
Vert.	7386.0	41.1	32.0	35.5	9.5	32.1	-	53.9	44.8	73.9	53.9	20.0	9.1	Floor noise
Vert.	9848.0	43.3	33.5	36.1	10.7	32.4	-	57.7	47.9	73.9	53.9	16.3	6.1	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

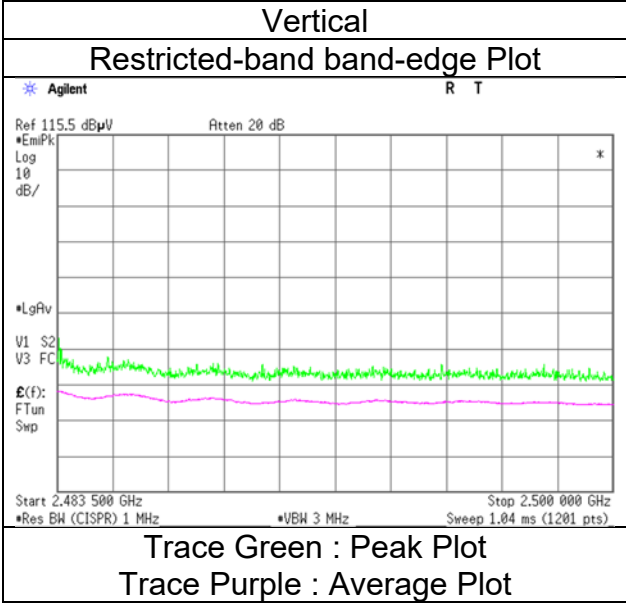
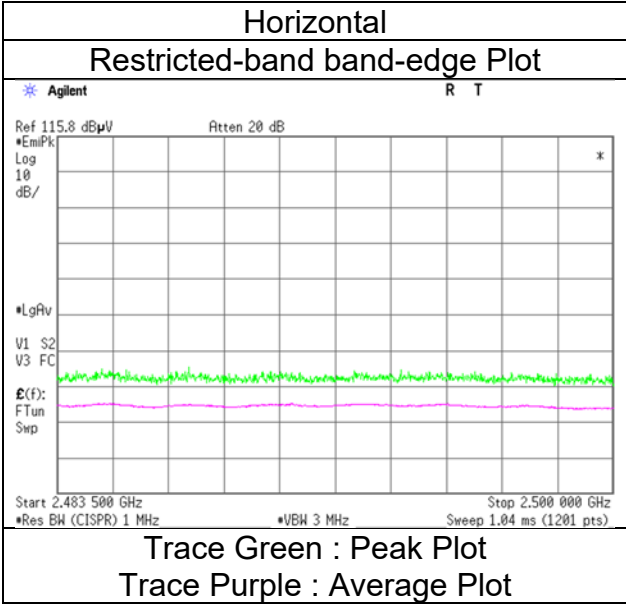
\*1) Not Out of Band emission(Leakage Power)

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)**

Test place  
 Semi Anechoic Chamber  
 Date  
 Temperature / Humidity  
 Engineer  
 Mode

Ise EMC Lab.  
 No.4  
 July 18, 2024  
 22 deg. C / 52 % RH  
 Kiyoshiro Okazaki  
 Tx 11ax-20 [OFDM] 2462 MHz

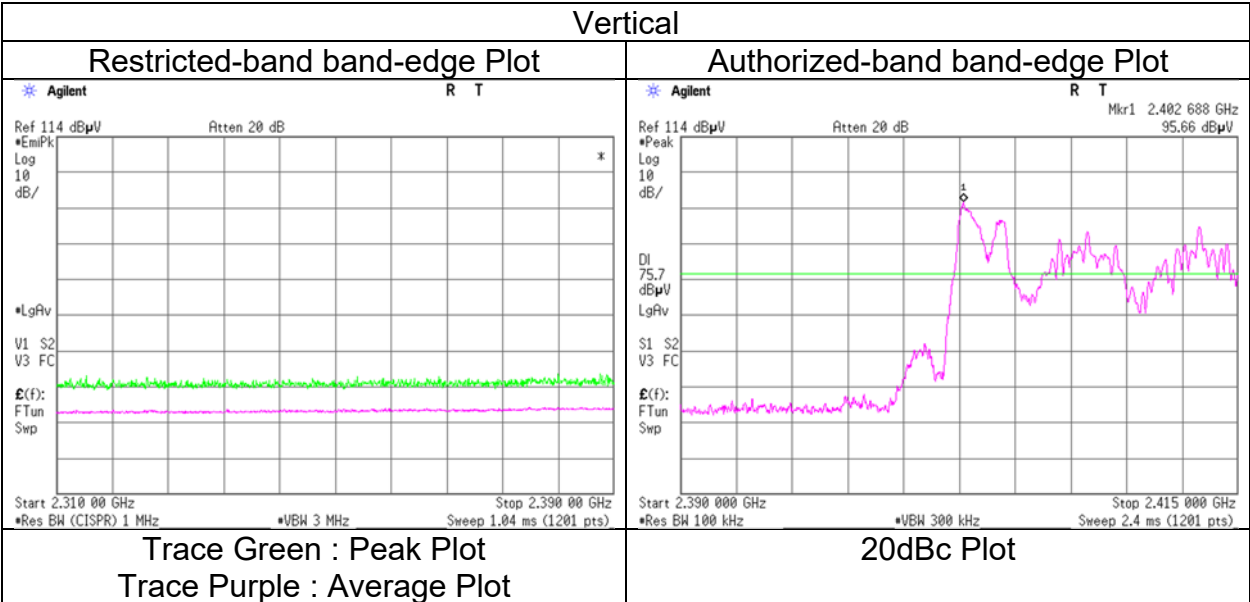
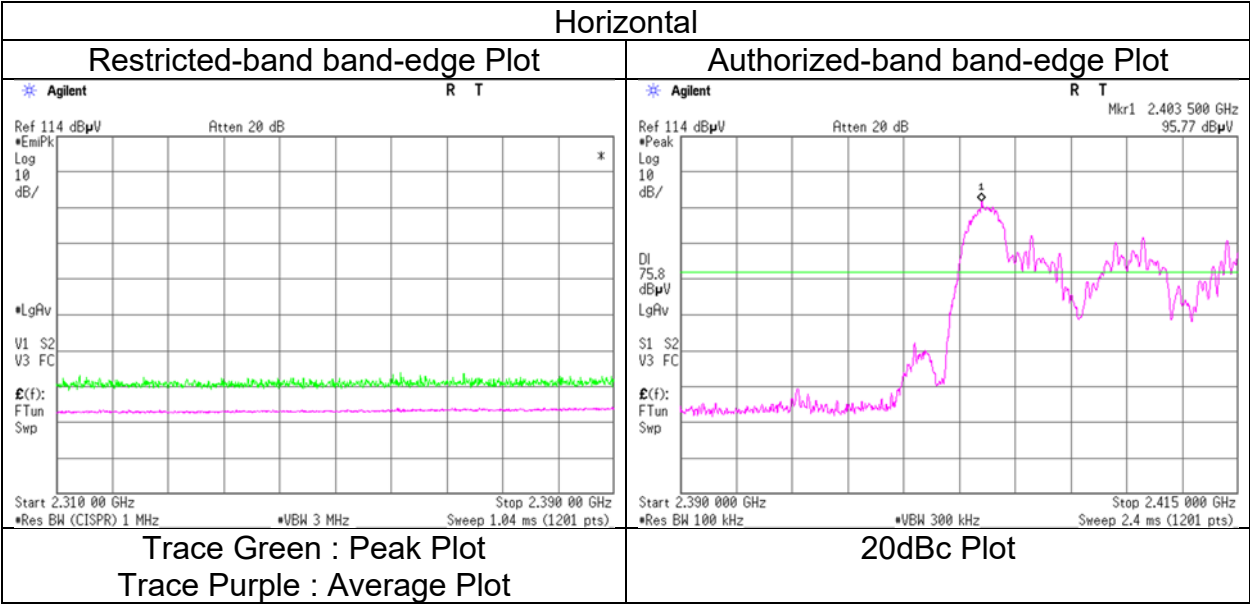


\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
 Final result of restricted band edge was shown in tabular data.



**Radiated Spurious Emission  
 (Reference Plot for band-edge)**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 [26-tone RU/Index 0] 2412 MHz



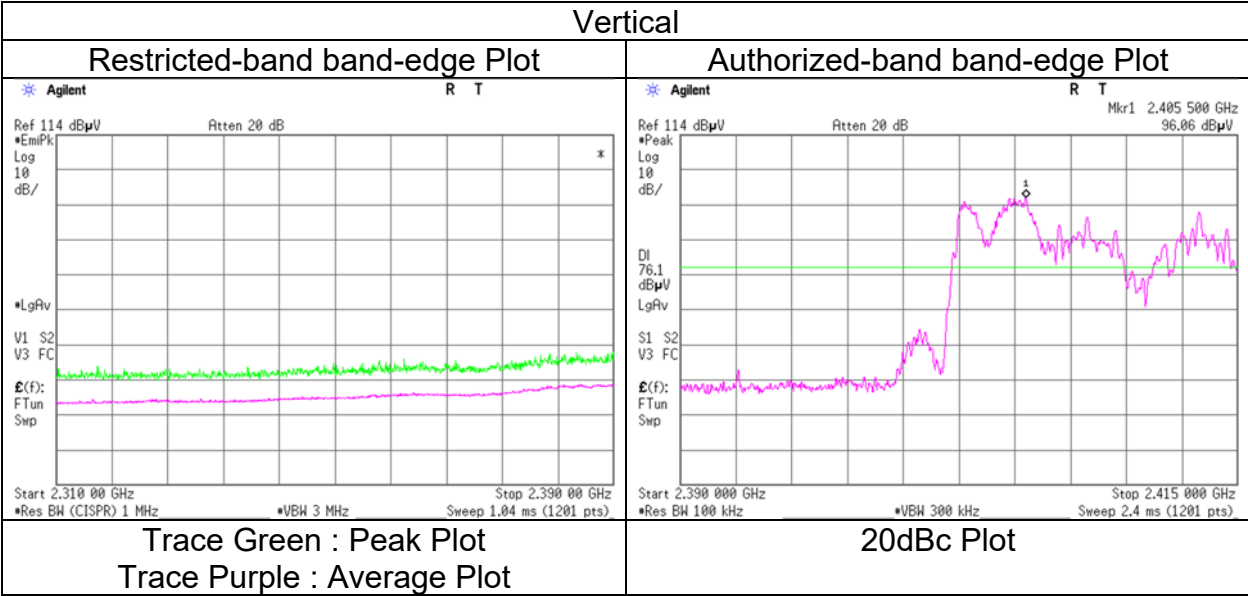
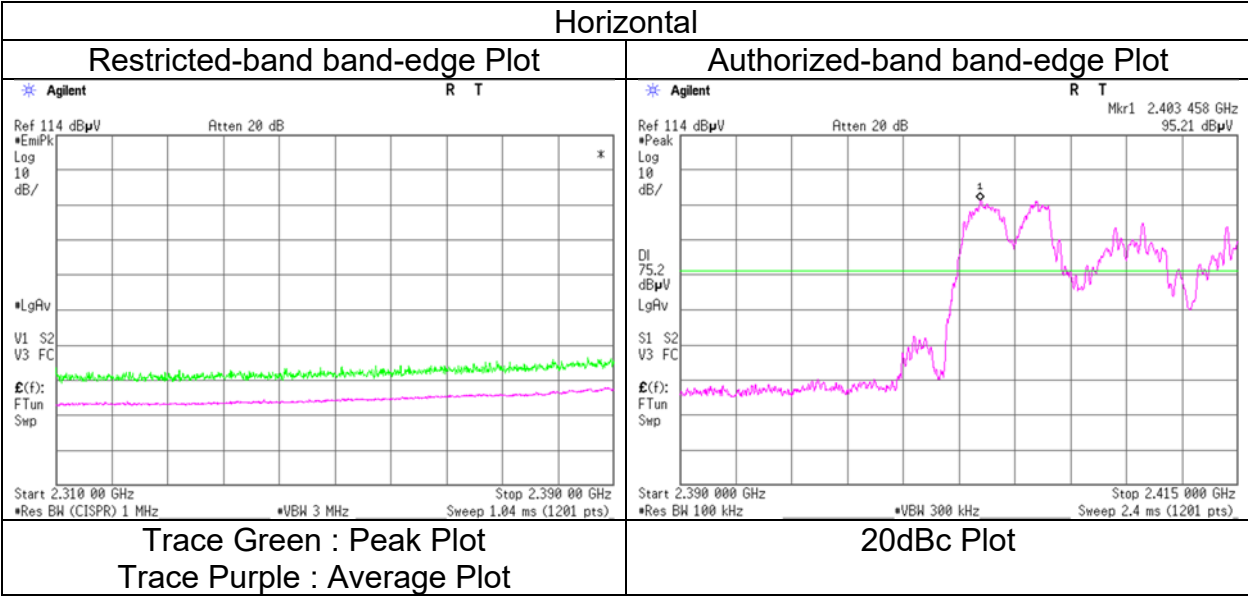
\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
 Final result of restricted band edge and authorized band edge were shown in tabular data.



**Radiated Spurious Emission  
 (Reference Plot for band-edge)**

Test place  
 Semi Anechoic Chamber  
 Date  
 Temperature / Humidity  
 Engineer  
 Mode

Ise EMC Lab.  
 No.4  
 July 18, 2024  
 22 deg. C / 52 % RH  
 Takafumi Noguchi  
 Tx 11ax-20 [52-tone RU/Index 37] 2412 MHz



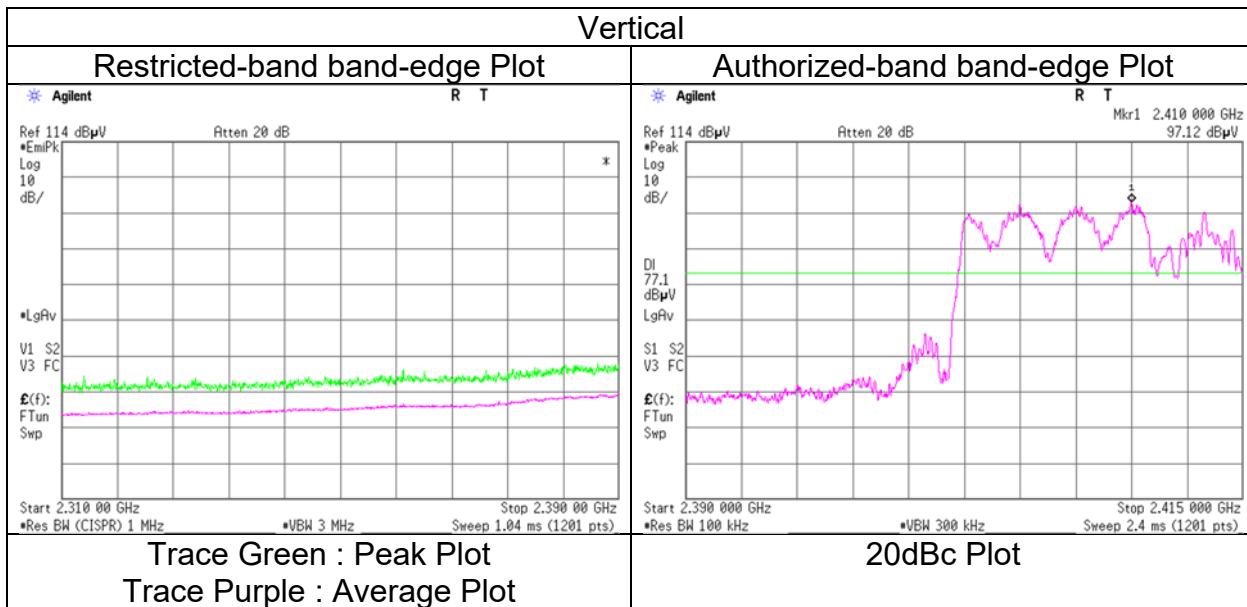
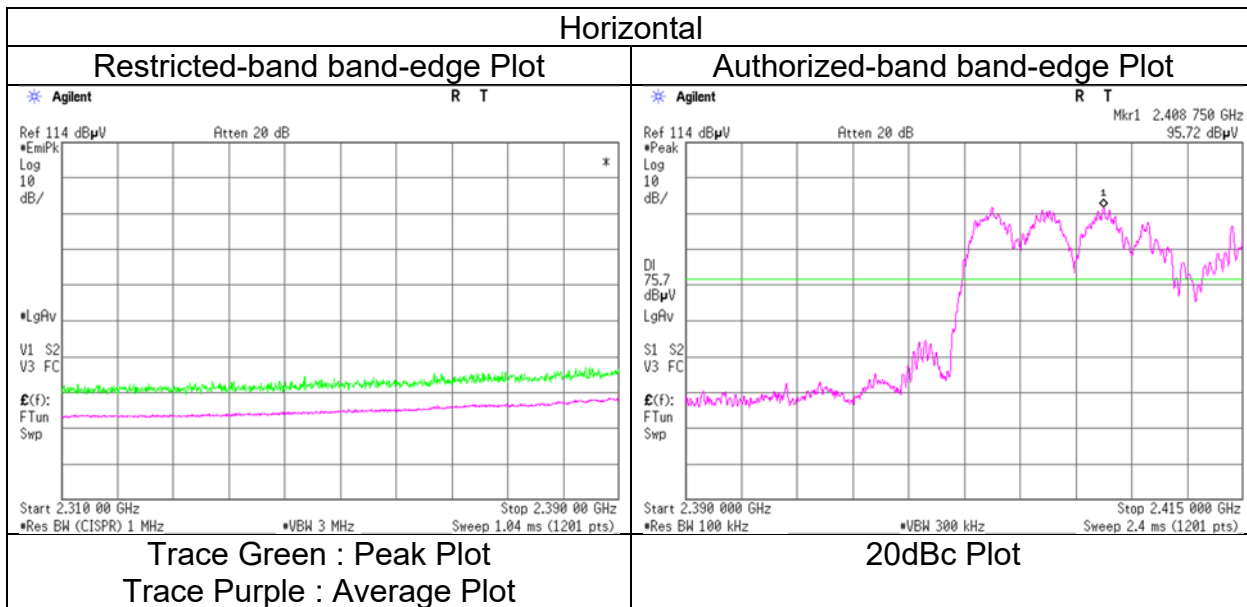
\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
 Final result of restricted band edge and authorized band edge were shown in tabular data.



## Radiated Spurious Emission (Reference Plot for band-edge)

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Ise EMC Lab.  
No.4  
July 18, 2024  
22 deg. C / 52 % RH  
Takafumi Noguchi  
Tx 11ax-20 [106-tone RU/Index 53] 2412 MHz



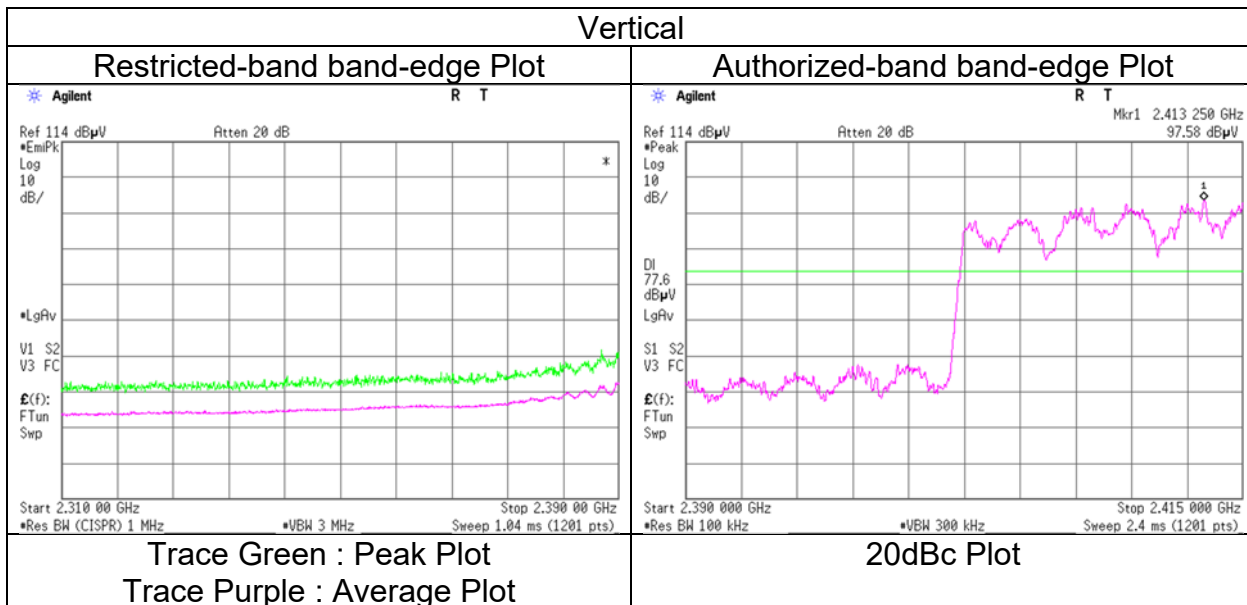
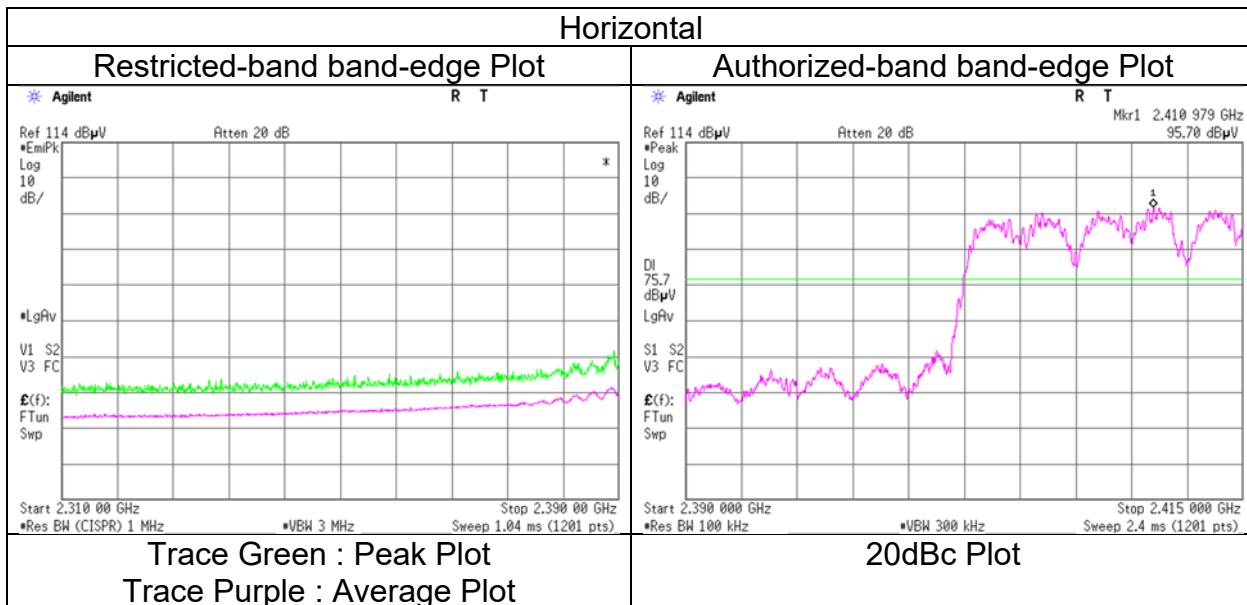
\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
Final result of restricted band edge and authorized band edge were shown in tabular data.





## Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Takafumi Noguchi
Mode	Tx 11ax-20 [242-tone RU/Index 61] 2412 MHz



\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.

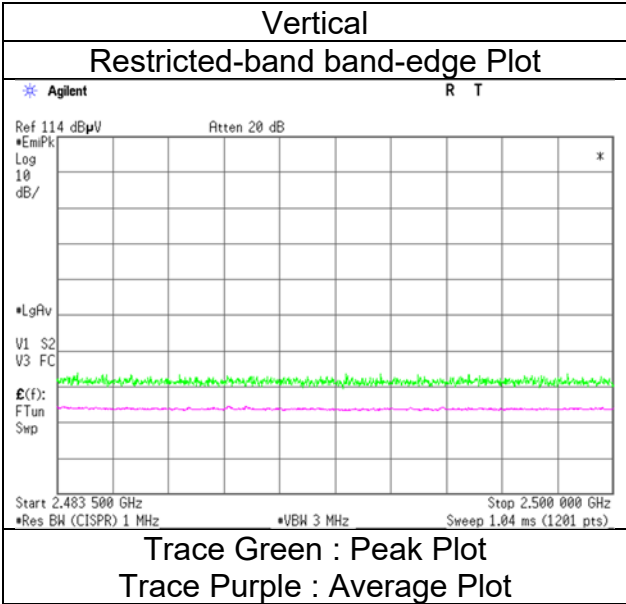
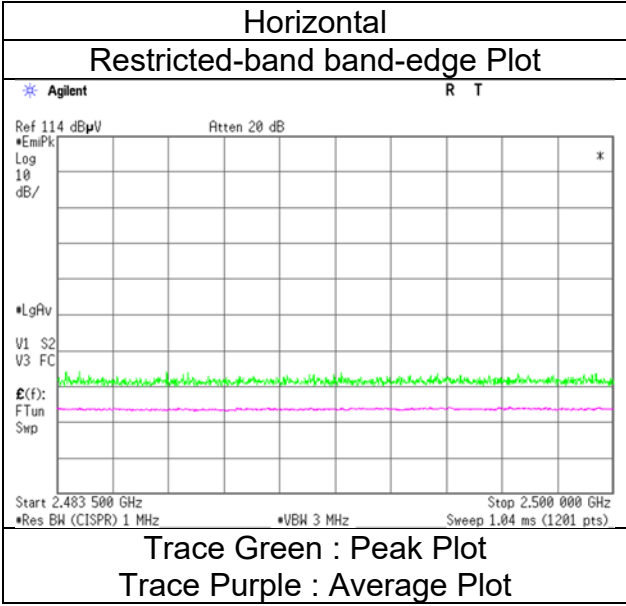
Final result of restricted band edge and authorized band edge were shown in tabular data.



**Radiated Spurious Emission  
(Reference Plot for band-edge)**

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Ise EMC Lab.  
No.4  
July 18, 2024  
22 deg. C / 52 % RH  
Takafumi Noguchi  
Tx 11ax-20 [26-tone RU/Index 8] 2462 MHz



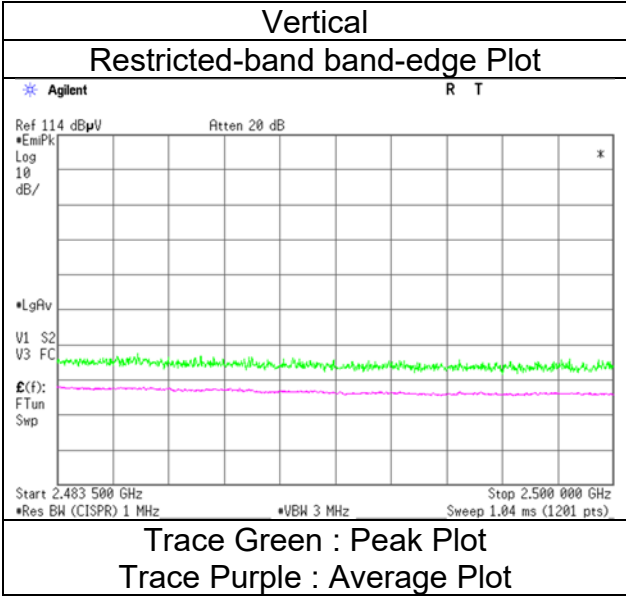
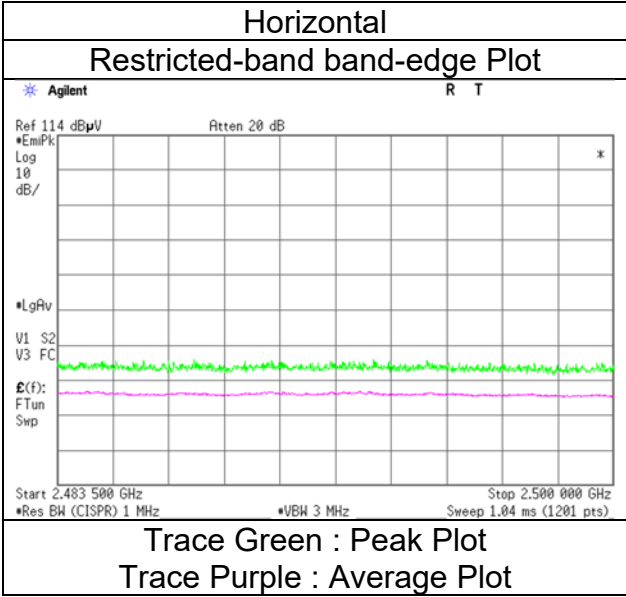
\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
Final result of restricted band edge was shown in tabular data.



**Radiated Spurious Emission  
(Reference Plot for band-edge)**

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Ise EMC Lab.  
No.4  
July 18, 2024  
22 deg. C / 52 % RH  
Takafumi Noguchi  
Tx 11ax-20 [52-tone RU/Index 40] 2462 MHz



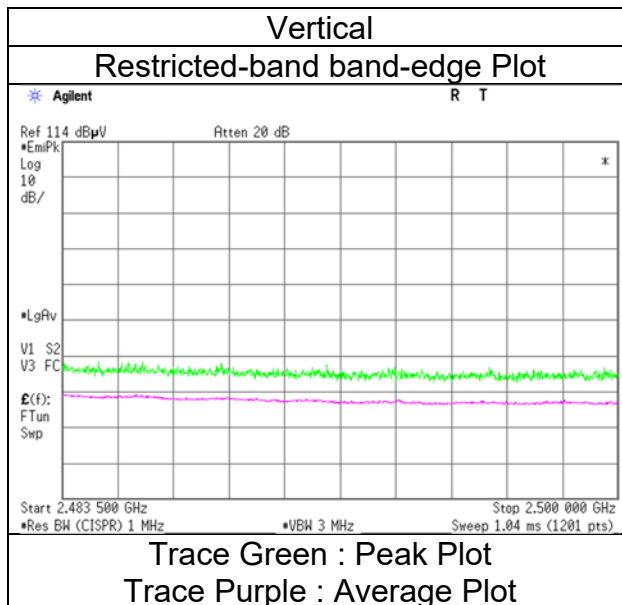
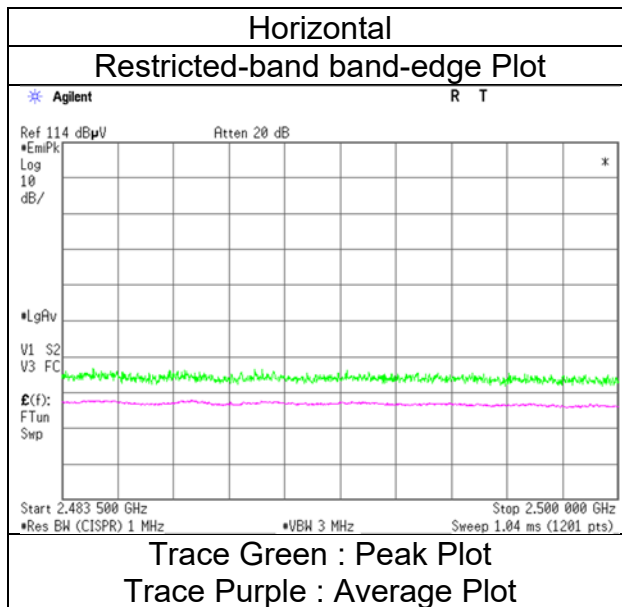
\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
Final result of restricted band edge was shown in tabular data.



## Radiated Spurious Emission (Reference Plot for band-edge)

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Ise EMC Lab.  
No.4  
July 18, 2024  
22 deg. C / 52 % RH  
Takafumi Noguchi  
Tx 11ax-20 [106-tone RU/Index 54] 2462 MHz



\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.

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

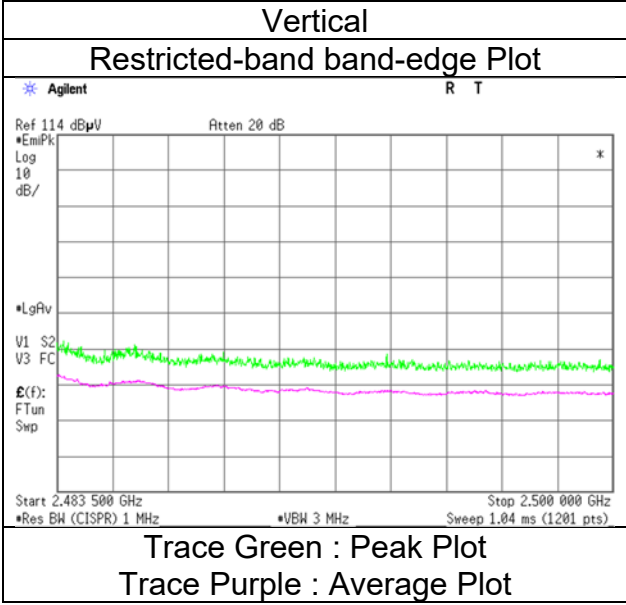
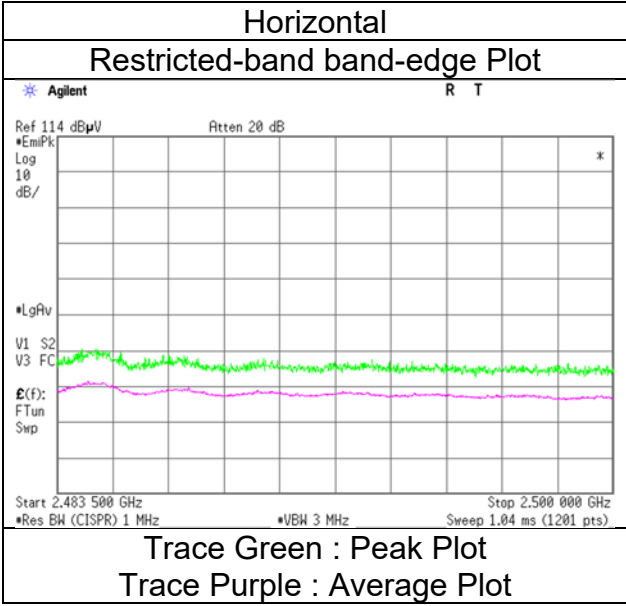




**Radiated Spurious Emission  
 (Reference Plot for band-edge)**

Test place  
 Semi Anechoic Chamber  
 Date  
 Temperature / Humidity  
 Engineer  
 Mode

Ise EMC Lab.  
 No.4  
 July 18, 2024  
 22 deg. C / 52 % RH  
 Takafumi Noguchi  
 Tx 11ax-20 [242-tone RU/Index 61] 2462 MHz



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

## Radiated Spurious Emission (BT1)

Test place	Ise EMC Lab.	No.4
Semi Anechoic Chamber	No.4	No.4
Date	July 18, 2024	July 24, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi
Mode	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)
	Tx BT LE 1M 2402 MHz	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2390.0	43.2	33.6	27.8	5.0	31.8	0.7	44.2	35.3	73.9	53.9	29.7	18.6	*1)
Hori.	4804.0	41.5	29.3	31.5	7.6	30.9	-	49.8	37.5	73.9	53.9	24.2	16.4	Floor noise
Hori.	7206.0	42.8	33.2	35.5	9.4	32.0	-	55.7	46.1	73.9	53.9	18.2	7.8	Floor noise
Hori.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise
Vert.	2390.0	42.9	33.9	27.8	5.0	31.8	0.7	43.9	35.6	73.9	53.9	30.0	18.3	*1)
Vert.	4804.0	41.5	29.3	31.5	7.6	30.9	-	49.8	37.5	73.9	53.9	24.2	16.4	Floor noise
Vert.	7206.0	42.8	33.2	35.5	9.4	32.0	-	55.7	46.1	73.9	53.9	18.2	7.8	Floor noise
Vert.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise

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

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

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

\*QP detector was used up to 1GHz

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

### 20dBc Data Sheet

Polarity	Frequency	Reading (PK)	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2402.0	95.9	27.7	5.0	31.8	96.9	-	-	Carrier
Hori.	2400.0	36.2	27.8	5.0	31.8	37.2	76.9	39.7	
Vert.	2402.0	95.4	27.7	5.0	31.8	96.4	-	-	Carrier
Vert.	2400.0	36.7	27.8	5.0	31.8	37.7	76.4	38.6	

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

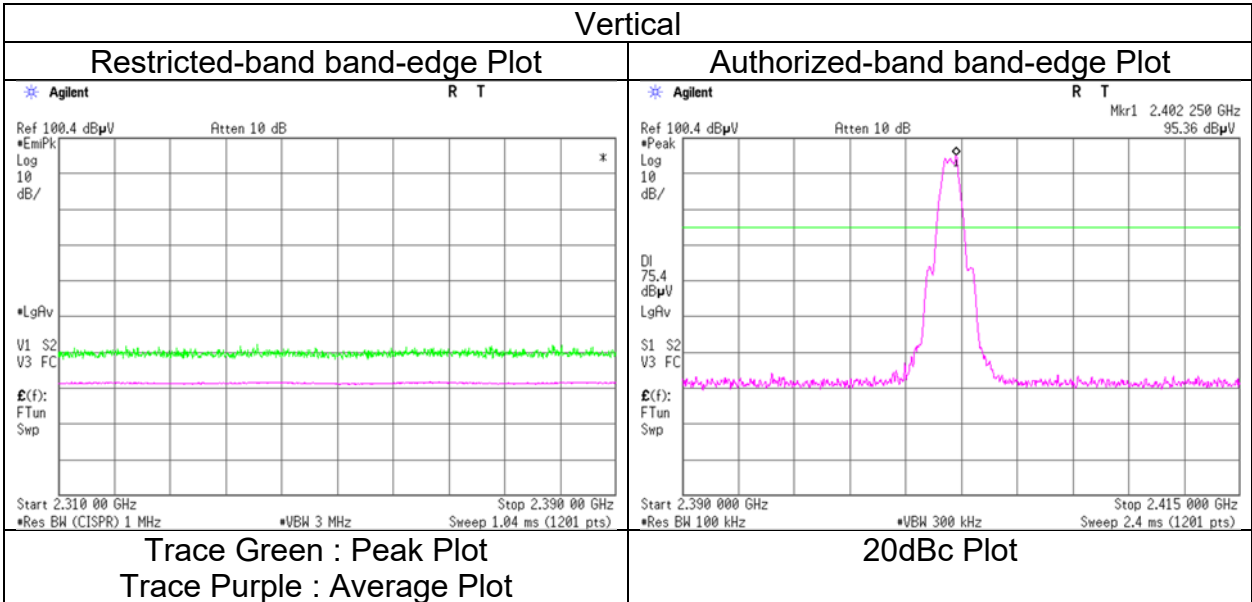
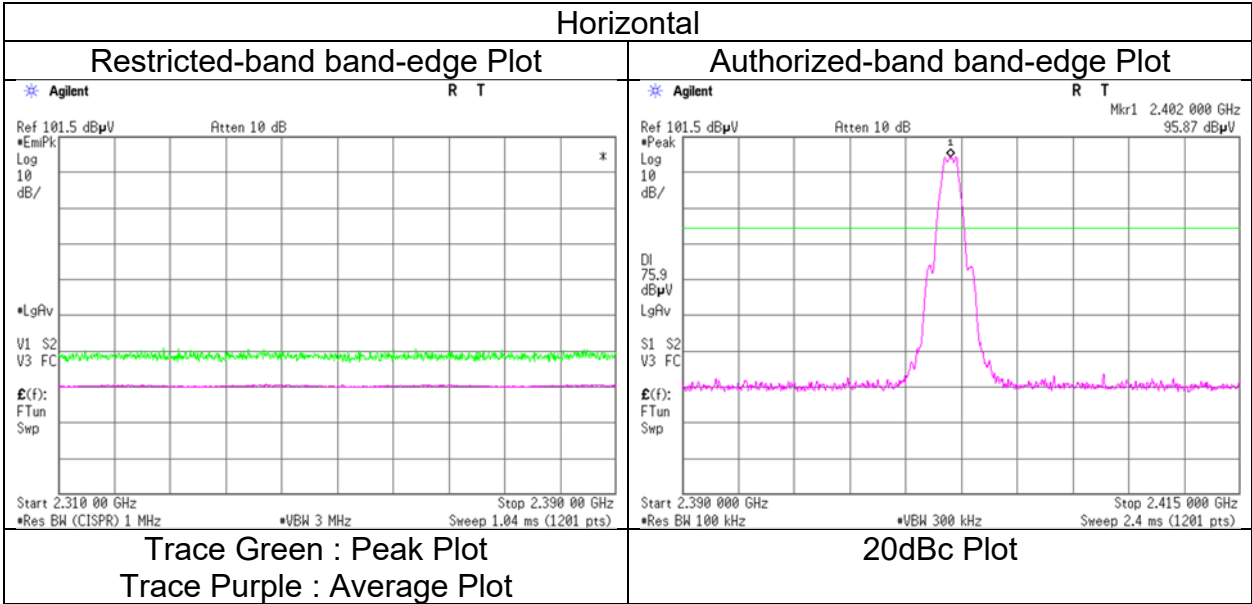
Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB

6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB

10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT1)**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Kiyoshiro Okazaki
Mode	Tx BT LE 1M 2402 MHz



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

## Radiated Spurious Emission (BT1)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx BT LE 1M 2440 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4880.0	39.2	32.4	31.6	7.7	30.8	-	47.6	40.8	73.9	53.9	26.3	13.1	Floor noise
Hori.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Hori.	9760.0	43.4	33.6	36.0	10.7	32.4	-	57.6	47.8	73.9	53.9	16.3	6.1	Floor noise
Vert.	4880.0	39.2	32.4	31.6	7.7	30.8	-	47.6	40.8	73.9	53.9	26.3	13.1	Floor noise
Vert.	7320.0	40.8	32.2	35.5	9.5	32.1	-	53.7	45.1	73.9	53.9	20.2	8.8	Floor noise
Vert.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission (BT1)

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	July 18, 2024	July 24, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)
Mode	Tx BT LE 1M 2480 MHz	
		No.4
		July 25, 2024
		23 deg. C / 66 % RH
		Takafumi Noguchi
		(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2483.5	43.0	34.2	27.7	5.1	31.7	0.7	44.1	35.9	73.9	53.9	29.8	18.0	*1)
Hori.	4960.0	40.1	32.8	31.7	7.7	30.8	-	48.7	41.3	73.9	53.9	25.2	12.6	Floor noise
Hori.	7440.0	41.2	32.1	35.4	9.6	32.2	-	54.0	44.9	73.9	53.9	19.9	9.0	Floor noise
Hori.	9920.0	43.3	33.3	36.1	10.7	32.5	-	57.7	47.7	73.9	53.9	16.2	6.2	Floor noise
Vert.	2483.5	42.8	34.1	27.7	5.1	31.7	0.7	43.8	35.9	73.9	53.9	30.1	18.0	*1)
Vert.	4960.0	40.1	32.8	31.7	7.7	30.8	-	48.7	41.3	73.9	53.9	25.2	12.6	Floor noise
Vert.	7440.0	41.3	32.1	35.4	9.6	32.2	-	54.1	44.9	73.9	53.9	19.8	9.0	Floor noise
Vert.	9920.0	43.3	33.3	36.1	10.7	32.5	-	57.7	47.7	73.9	53.9	16.2	6.2	Floor noise

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

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

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

\*QP detector was used up to 1 GHz.

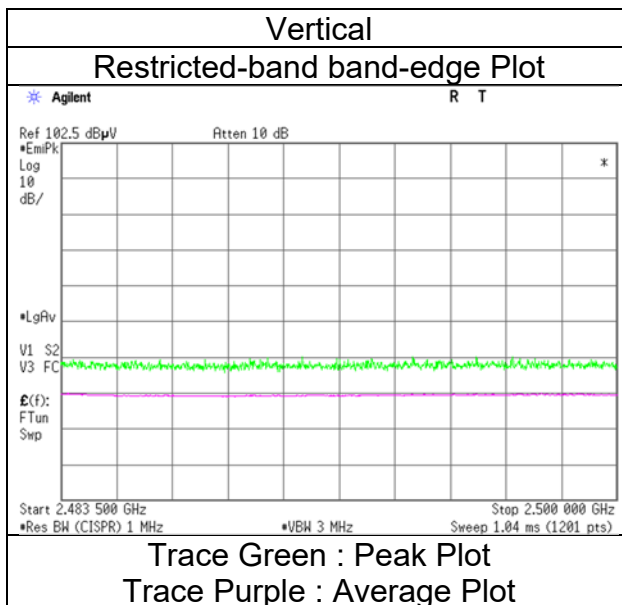
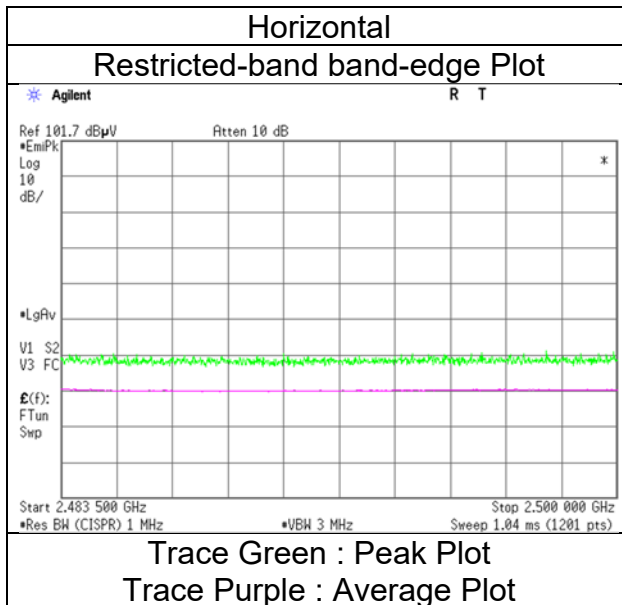
\*1) Not Out of Band emission(Leakage Power)

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
(Reference Plot for band-edge)  
(BT1)**

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Ise EMC Lab.  
No.4  
July 18, 2024  
22 deg. C / 52 % RH  
Kiyoshiro Okazaki  
Tx BT LE 1M 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 (BT1)

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	July 18, 2024	July 24, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi
	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)
Mode	Tx BT LE 2M 2402 MHz	
		No.4
		July 25, 2024
		23 deg. C / 66 % RH
		Takafumi Noguchi
		(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2390.0	43.0	33.9	27.8	5.0	31.8	2.4	43.9	37.3	73.9	53.9	30.0	16.6	*1)
Hori.	4804.0	41.5	29.3	31.5	7.6	30.9	-	49.8	37.5	73.9	53.9	24.2	16.4	Floor noise
Hori.	7206.0	42.8	33.2	35.5	9.4	32.0	-	55.7	46.1	73.9	53.9	18.2	7.8	Floor noise
Hori.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise
Vert.	2390.0	42.9	33.9	27.8	5.0	31.8	2.4	43.9	37.3	73.9	53.9	30.0	16.6	*1)
Vert.	4804.0	41.5	29.3	31.5	7.6	30.9	-	49.8	37.5	73.9	53.9	24.2	16.4	Floor noise
Vert.	7206.0	42.8	33.2	35.5	9.4	32.0	-	55.7	46.1	73.9	53.9	18.2	7.8	Floor noise
Vert.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise

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

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

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

\*QP detector was used up to 1GHz

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

### 20dBc Data Sheet

Polarity	Frequency	Reading (PK)	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2402.0	95.5	27.7	5.0	31.8	96.5	-	-	Carrier
Hori.	2400.0	63.9	27.8	5.0	31.8	64.9	76.5	11.6	
Vert.	2402.0	95.4	27.7	5.0	31.8	96.4	-	-	Carrier
Vert.	2400.0	63.5	27.8	5.0	31.8	64.4	76.4	11.9	

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

Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB

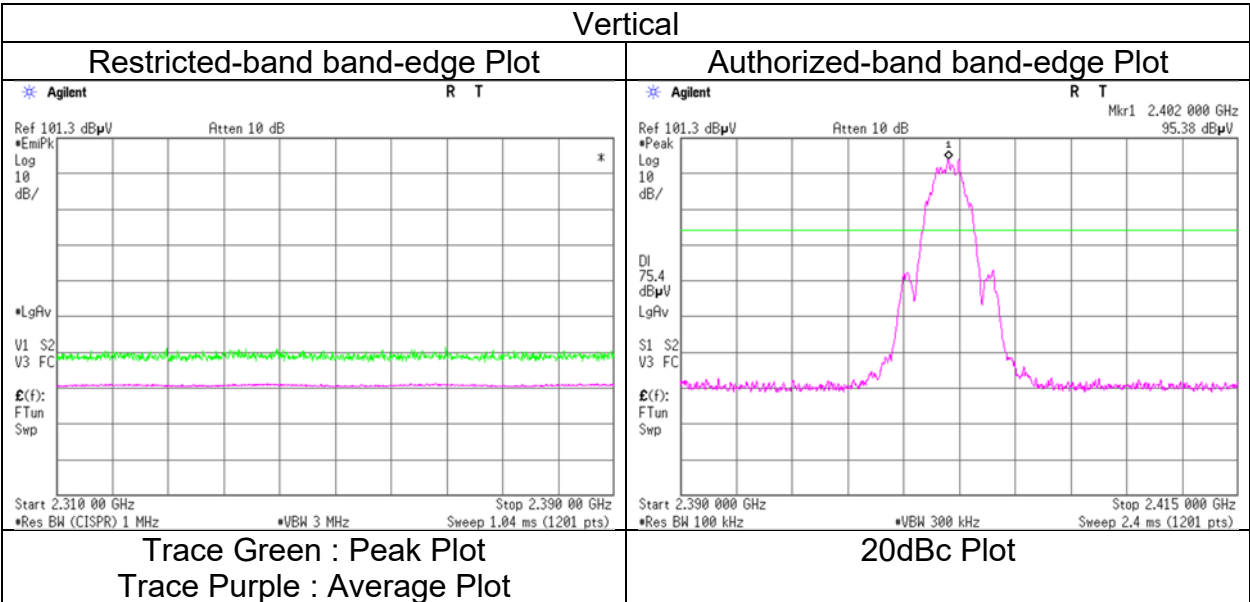
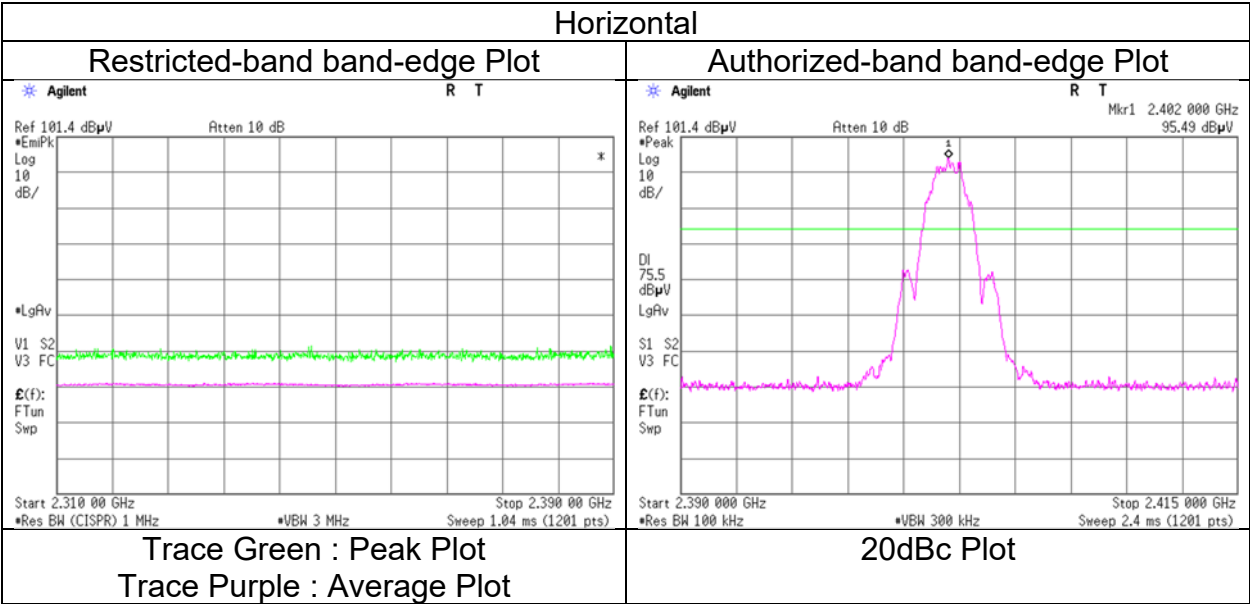
6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB

10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB



**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT1)**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 18, 2024
Temperature / Humidity	22 deg. C / 52 % RH
Engineer	Kiyoshiro Okazaki
Mode	Tx BT LE 2M 2402 MHz



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

## Radiated Spurious Emission (BT1)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024	July 29, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH	21 deg. C / 54 % RH
Engineer	Kiyoshiro Okazaki (1 GHz to 6 GHz)	Takafumi Noguchi (6 GHz to 10 GHz)	Takafumi Noguchi (10 GHz to 26.5 GHz)	Takumi Nishida (Below 1 GHz)
Mode	Tx BT LE 2M 2440 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	36.4	26.8	-	16.2	7.1	32.1	-	18.0	-	40.0	-	22.0	-	
Hori.	58.5	26.5	-	8.3	7.4	32.1	-	10.1	-	40.0	-	29.9	-	
Hori.	108.9	25.7	-	11.7	7.9	32.1	-	13.2	-	43.5	-	30.3	-	
Hori.	252.7	27.6	-	11.9	9.2	32.0	-	16.7	-	46.0	-	29.3	-	
Hori.	330.7	26.6	-	14.6	9.7	32.1	-	18.9	-	46.0	-	27.2	-	
Hori.	591.7	26.5	-	19.1	11.2	32.2	-	24.6	-	46.0	-	21.4	-	
Hori.	4880.0	39.2	32.4	31.6	7.7	30.8	-	47.6	40.8	73.9	53.9	26.3	13.1	Floor noise
Hori.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Hori.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise
Vert.	36.4	28.1	-	16.2	7.1	32.1	-	19.3	-	40.0	-	20.7	-	
Vert.	58.5	28.0	-	8.3	7.4	32.1	-	11.6	-	40.0	-	28.4	-	
Vert.	108.9	26.0	-	11.7	7.9	32.1	-	13.5	-	43.5	-	30.0	-	
Vert.	330.7	27.3	-	14.6	9.7	32.1	-	19.6	-	46.0	-	26.5	-	
Vert.	411.2	25.9	-	15.9	10.2	32.1	-	19.9	-	46.0	-	26.2	-	
Vert.	591.7	27.1	-	19.1	11.2	32.2	-	25.2	-	46.0	-	20.8	-	
Vert.	4880.0	39.2	32.4	31.6	7.7	30.8	-	47.6	40.8	73.9	53.9	26.3	13.1	Floor noise
Vert.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Vert.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise

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

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission (BT1)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Kiyoshiro Okazaki (1 GHz to 6 GHz)	Takafumi Noguchi (6 GHz to 10 GHz)	Takafumi Noguchi (10 GHz to 26.5 GHz)
Mode	Tx BT LE 2M 2480 MHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2483.5	45.4	37.4	27.7	5.1	31.7	2.4	46.4	40.8	73.9	53.9	27.5	13.1	*1)
Hori.	4960.0	40.1	32.8	31.7	7.7	30.8	-	48.7	41.3	73.9	53.9	25.2	12.6	Floor noise
Hori.	7440.0	41.2	32.1	35.4	9.6	32.2	-	54.0	44.9	73.9	53.9	19.9	9.0	Floor noise
Hori.	9920.0	43.3	33.3	36.1	10.7	32.5	-	57.7	47.7	73.9	53.9	16.2	6.2	Floor noise
Vert.	2483.5	45.8	37.9	27.7	5.1	31.7	2.4	46.8	41.4	73.9	53.9	27.1	12.5	*1)
Vert.	4960.0	40.1	32.8	31.7	7.7	30.8	-	48.7	41.3	73.9	53.9	25.2	12.6	Floor noise
Vert.	7440.0	41.2	32.1	35.4	9.6	32.2	-	54.0	44.9	73.9	53.9	19.9	9.0	Floor noise
Vert.	9920.0	43.3	33.3	36.1	10.7	32.5	-	57.7	47.7	73.9	53.9	16.2	6.2	Floor noise

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

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

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

\*QP detector was used up to 1 GHz.

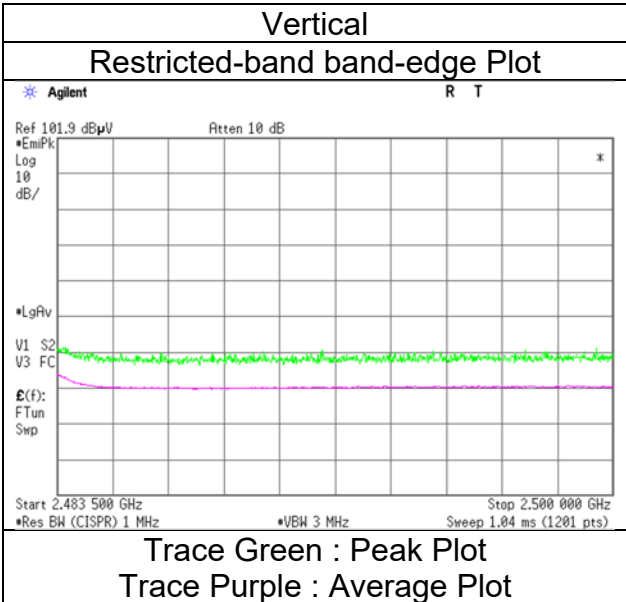
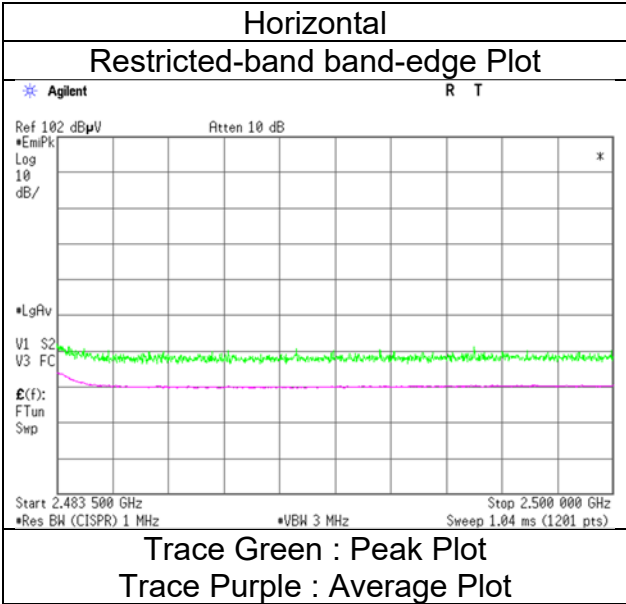
\*1) Not Out of Band emission(Leakage Power)

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT1)**

Test place  
 Semi Anechoic Chamber  
 Date  
 Temperature / Humidity  
 Engineer  
 Mode

Ise EMC Lab.  
 No.2  
 January 30, 2024  
 24 deg. C / 40 % RH  
 Takafumi Noguchi  
 Tx BT LE 2M 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 (BT2)

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	July 17, 2024	July 24, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH
Engineer	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)
	Tx BT LE 1M 2402 MHz	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2390.0	43.1	33.7	27.8	5.0	31.8	0.7	44.1	35.4	73.9	53.9	29.8	18.5	*1)
Hori.	4804.0	42.5	32.6	31.5	7.6	30.9	-	50.7	40.8	73.9	53.9	23.2	13.1	Floor noise
Hori.	7206.0	42.7	33.2	35.5	9.4	32.0	-	55.6	46.1	73.9	53.9	18.3	7.8	Floor noise
Hori.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise
Vert.	2390.0	43.0	33.7	27.8	5.0	31.8	0.7	44.0	35.4	73.9	53.9	29.9	18.5	*1)
Vert.	4804.0	42.5	32.6	31.5	7.6	30.9	-	50.7	40.8	73.9	53.9	23.2	13.1	Floor noise
Vert.	7206.0	42.8	33.2	35.5	9.4	32.0	-	55.7	46.1	73.9	53.9	18.2	7.8	Floor noise
Vert.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

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

### 20dBc Data Sheet

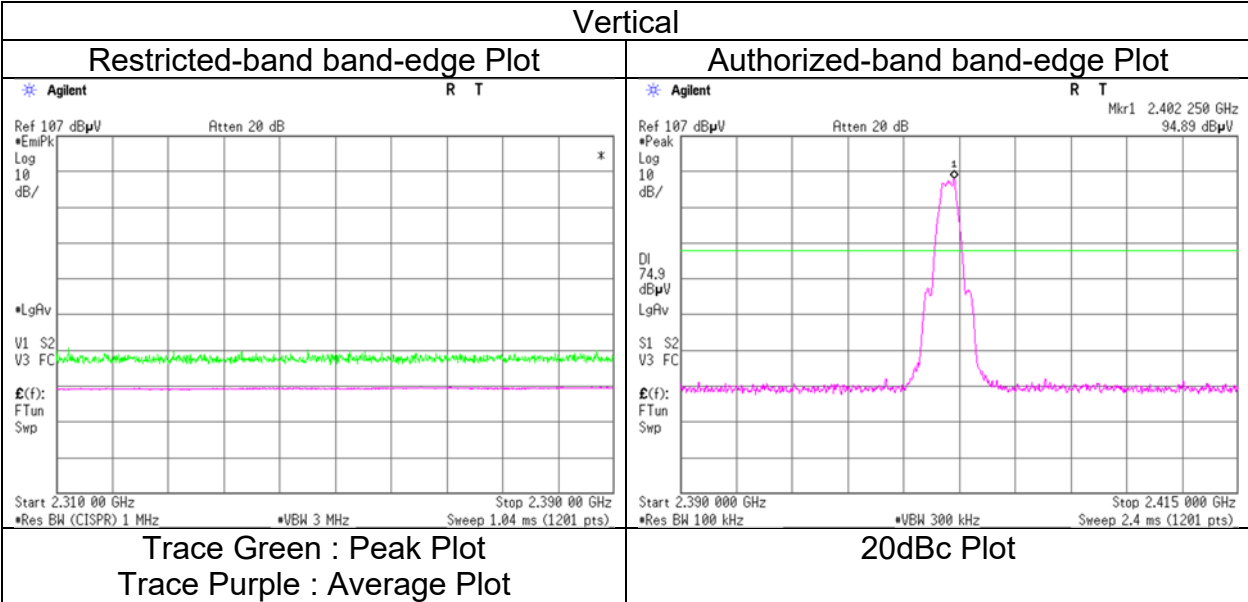
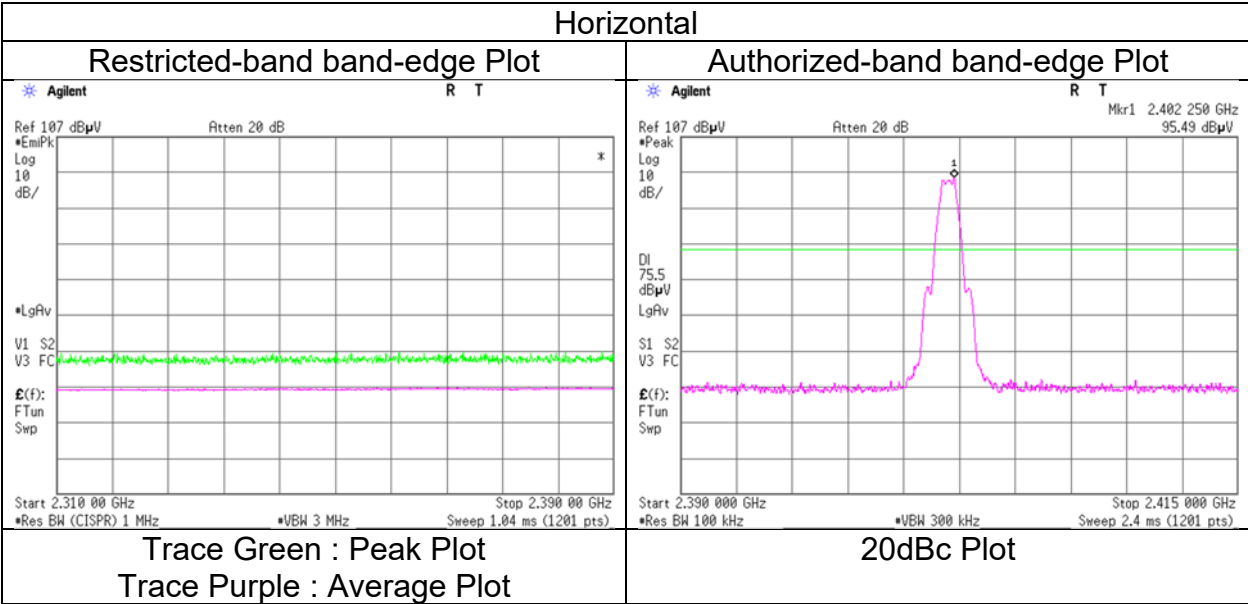
Polarity	Frequency	Reading (PK)	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2402.0	95.5	27.7	5.0	31.8	96.5	-	-	Carrier
Hori.	2400.0	37.3	27.8	5.0	31.8	38.3	76.5	38.2	
Vert.	2402.0	94.9	27.7	5.0	31.8	95.9	-	-	Carrier
Vert.	2400.0	36.8	27.8	5.0	31.8	37.8	75.9	38.1	

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

Distance factor:  
 1 GHz - 6 GHz      20log (3.95 m / 3.0 m) = 2.39 dB  
 6 GHz - 10 GHz    20log (4.95 m / 3.0 m) = 4.35 dB  
 10 GHz - 26.5 GHz    20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT2)**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 17, 2024
Temperature / Humidity	21 deg. C / 55 % RH
Engineer	Takafumi Noguchi
Mode	Tx BT LE 1M 2402 MHz



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

## Radiated Spurious Emission (BT2)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	July 17, 2024	July 24, 2024	July 25, 2024	July 29, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH	21 deg. C / 54 % RH
Engineer	Takafumi Noguchi (1 GHz to 6 GHz)	Takafumi Noguchi (6 GHz to 10 GHz)	Takafumi Noguchi (10 GHz to 26.5 GHz)	Takumi Nishida (Below 1 GHz)
Mode	Tx BT LE 1M 2440 MHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	36.5	26.6	-	16.2	7.1	32.1	-	17.8	-	40.0	-	22.2	-	
Hori.	58.5	26.4	-	8.3	7.4	32.1	-	10.0	-	40.0	-	30.0	-	
Hori.	109.0	25.8	-	11.7	7.9	32.1	-	13.4	-	43.5	-	30.2	-	
Hori.	252.8	27.5	-	11.9	9.2	32.0	-	16.5	-	46.0	-	29.5	-	
Hori.	330.7	26.7	-	14.6	9.7	32.1	-	18.9	-	46.0	-	27.1	-	
Hori.	591.6	26.5	-	19.1	11.2	32.2	-	24.6	-	46.0	-	21.4	-	
Hori.	4880.0	42.5	32.6	31.6	7.7	30.8	-	50.9	41.0	73.9	53.9	23.0	12.9	Floor noise
Hori.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Hori.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise
Vert.	36.5	28.3	-	16.2	7.1	32.1	-	19.6	-	40.0	-	20.5	-	
Vert.	58.5	28.0	-	8.3	7.4	32.1	-	11.6	-	40.0	-	28.4	-	
Vert.	109.0	25.8	-	11.7	7.9	32.1	-	13.3	-	43.5	-	30.2	-	
Vert.	330.7	27.5	-	14.6	9.7	32.1	-	19.7	-	46.0	-	26.3	-	
Vert.	411.2	25.8	-	15.9	10.2	32.1	-	19.8	-	46.0	-	26.2	-	
Vert.	591.6	27.3	-	19.1	11.2	32.2	-	25.4	-	46.0	-	20.6	-	
Vert.	4880.0	42.5	32.6	31.6	7.7	30.8	-	50.9	41.0	73.9	53.9	23.0	12.9	Floor noise
Vert.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Vert.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission (BT2)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 17, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Takafumi Noguchi	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx BT LE 1M 2480 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2483.5	44.1	34.4	27.7	5.1	31.7	0.7	45.1	36.1	73.9	53.9	28.8	17.8	*1)
Hori.	4960.0	42.5	32.6	31.7	7.7	30.8	-	51.1	41.2	73.9	53.9	22.8	12.7	Floor noise
Hori.	7440.0	41.3	32.2	35.4	9.6	32.2	-	54.1	45.0	73.9	53.9	19.8	8.9	Floor noise
Hori.	9920.0	43.4	33.4	36.1	10.7	32.5	-	57.8	47.8	73.9	53.9	16.1	6.1	Floor noise
Vert.	2483.5	44.0	34.3	27.7	5.1	31.7	0.7	45.0	36.0	73.9	53.9	28.9	17.9	*1)
Vert.	4960.0	42.5	32.6	31.7	7.7	30.8	-	51.1	41.2	73.9	53.9	22.8	12.7	Floor noise
Vert.	7440.0	41.2	32.1	35.4	9.6	32.2	-	54.0	44.9	73.9	53.9	19.9	9.0	Floor noise
Vert.	9920.0	43.3	33.4	36.1	10.7	32.5	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

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

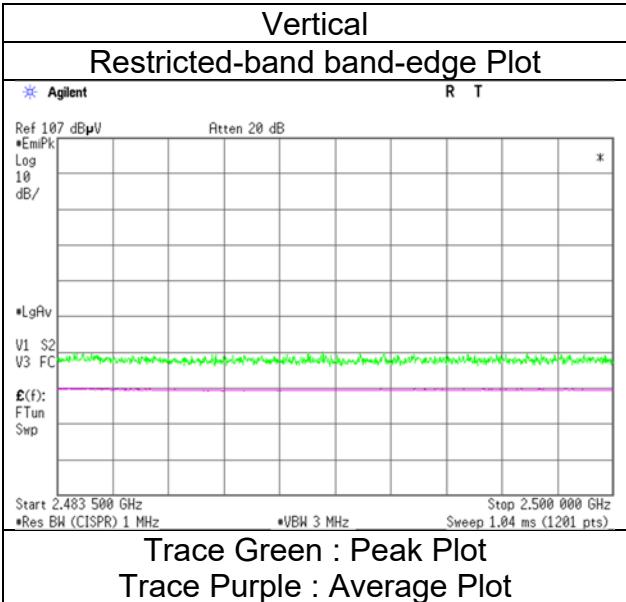
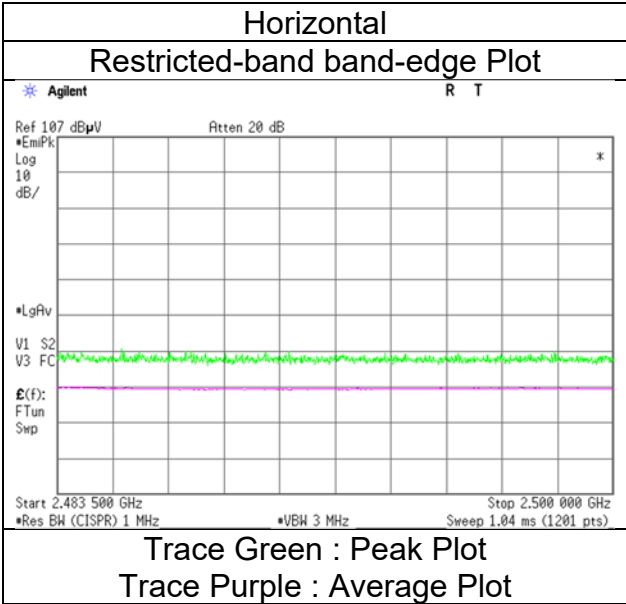
Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB



**Radiated Spurious Emission  
(Reference Plot for band-edge)  
(BT2)**

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Ise EMC Lab.  
No.4  
July 17, 2024  
21 deg. C / 55 % RH  
Takafumi Noguchi  
Tx BT LE 1M 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 (BT2)

Test place	Ise EMC Lab.	
Semi Anechoic Chamber	No.4	No.4
Date	July 17, 2024	July 24, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH
Engineer	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)
	Tx BT LE 2M 2402 MHz	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2390.0	43.2	33.7	27.8	5.0	31.8	2.4	44.2	37.1	73.9	53.9	29.7	16.8	*1)
Hori.	4804.0	42.5	32.6	31.5	7.6	30.9	-	50.7	40.8	73.9	53.9	23.2	13.1	Floor noise
Hori.	7206.0	42.7	33.2	35.5	9.4	32.0	-	55.6	46.1	73.9	53.9	18.3	7.8	Floor noise
Hori.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise
Vert.	2390.0	43.2	33.7	27.8	5.0	31.8	2.4	44.2	37.1	73.9	53.9	29.7	16.8	*1)
Vert.	4804.0	42.5	32.6	31.5	7.6	30.9	-	50.7	40.8	73.9	53.9	23.2	13.1	Floor noise
Vert.	7206.0	42.7	33.2	35.5	9.4	32.0	-	55.6	46.1	73.9	53.9	18.3	7.8	Floor noise
Vert.	9608.0	43.3	33.8	35.7	10.6	32.3	-	57.3	47.8	73.9	53.9	16.7	6.2	Floor noise

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

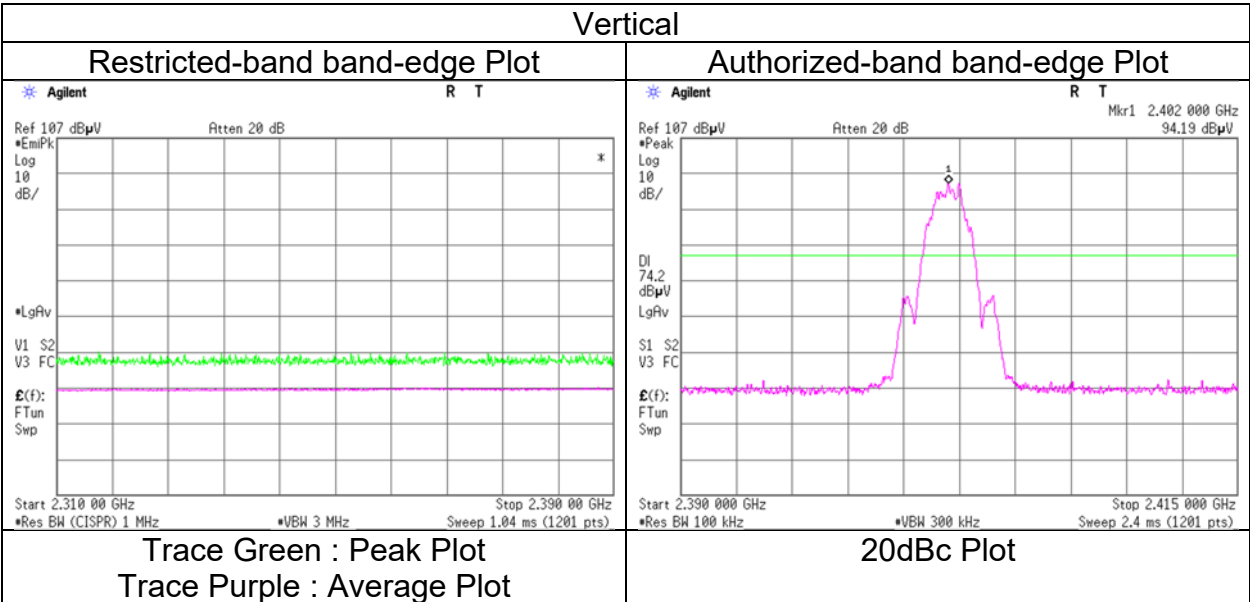
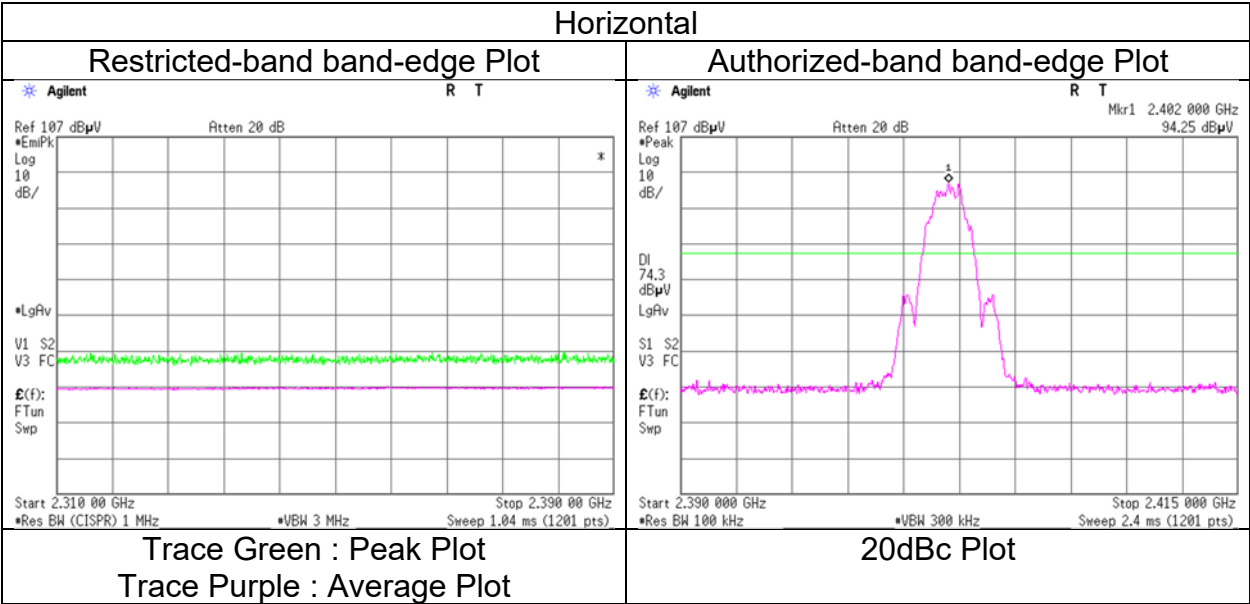
### 20dBc Data Sheet

Polarity	Frequency	Reading (PK)	Ant. Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2402.0	94.3	27.7	5.0	31.8	95.2	-	-	Carrier
Hori.	2400.0	63.2	27.8	5.0	31.8	64.2	75.2	11.1	
Vert.	2402.0	94.2	27.7	5.0	31.8	95.2	-	-	Carrier
Vert.	2400.0	62.9	27.8	5.0	31.8	63.9	75.2	11.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)  
 Distance factor:  
 1 GHz - 6 GHz      20log (3.95 m / 3.0 m) = 2.39 dB  
 6 GHz - 10 GHz    20log (4.95 m / 3.0 m) = 4.35 dB  
 10 GHz - 26.5 GHz    20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT2)**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 17, 2024
Temperature / Humidity	21 deg. C / 55 % RH
Engineer	Takafumi Noguchi
Mode	Tx BT LE 2M 2402 MHz



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

## Radiated Spurious Emission (BT2)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 17, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Takafumi Noguchi	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx BT LE 2M 2440 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	4880.0	42.5	32.6	31.6	7.7	30.8	-	50.9	41.0	73.9	53.9	23.0	12.9	Floor noise
Hori.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Hori.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise
Vert.	4880.0	42.5	32.6	31.6	7.7	30.8	-	50.9	41.0	73.9	53.9	23.0	12.9	Floor noise
Vert.	7320.0	40.9	32.2	35.5	9.5	32.1	-	53.8	45.1	73.9	53.9	20.1	8.8	Floor noise
Vert.	9760.0	43.5	33.6	36.0	10.7	32.4	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise

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

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission (BT2)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No.4	No.4	No.4
Date	July 17, 2024	July 24, 2024	July 25, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH
Engineer	Takafumi Noguchi	Takafumi Noguchi	Takafumi Noguchi
Mode	(1 GHz to 6 GHz) Tx BT LE 2M 2480 MHz	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	2483.5	46.5	37.2	27.7	5.1	31.7	2.4	47.5	40.7	73.9	53.9	26.4	13.3	*1)
Hori.	4960.0	42.5	32.6	31.7	7.7	30.8	-	51.1	41.2	73.9	53.9	22.8	12.7	Floor noise
Hori.	7440.0	41.3	32.2	35.4	9.6	32.2	-	54.1	45.0	73.9	53.9	19.8	8.9	Floor noise
Hori.	9920.0	43.4	33.4	36.1	10.7	32.5	-	57.8	47.8	73.9	53.9	16.1	6.1	Floor noise
Vert.	2483.5	46.4	36.9	27.7	5.1	31.7	2.4	47.4	40.4	73.9	53.9	26.5	13.6	*1)
Vert.	4960.0	42.5	32.6	31.7	7.7	30.8	-	51.1	41.2	73.9	53.9	22.8	12.7	Floor noise
Vert.	7440.0	41.3	32.1	35.4	9.6	32.2	-	54.1	44.9	73.9	53.9	19.8	9.0	Floor noise
Vert.	9920.0	43.3	33.4	36.1	10.7	32.5	-	57.7	47.8	73.9	53.9	16.2	6.1	Floor noise

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

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

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

\*QP detector was used up to 1GHz.

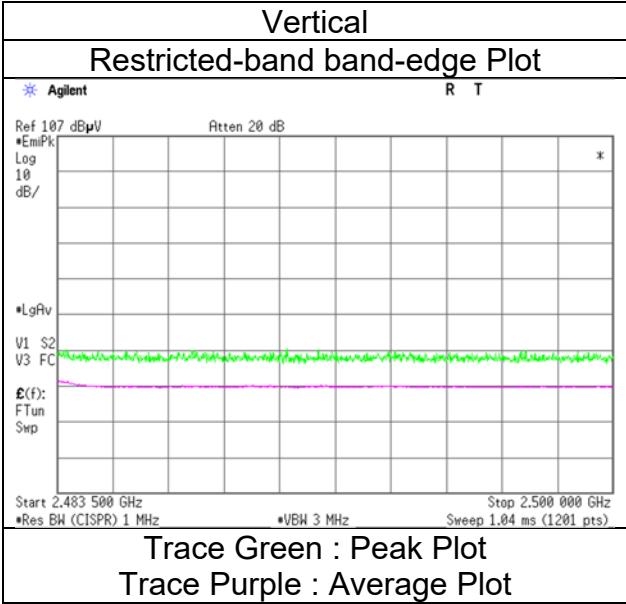
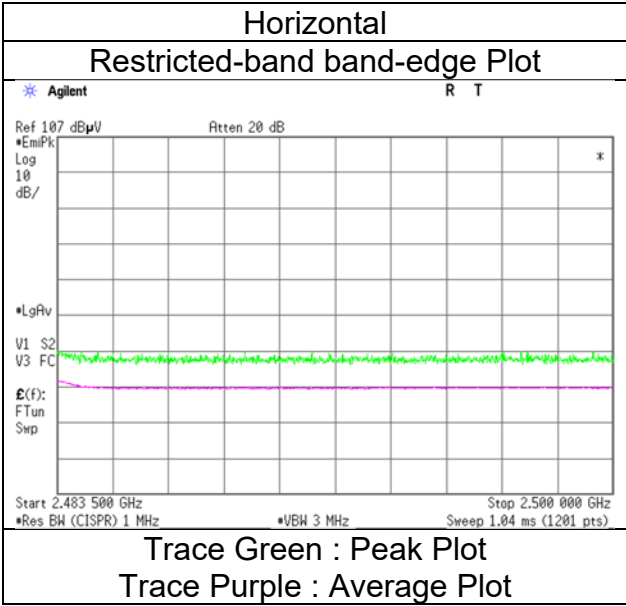
\*1) Not Out of Band emission(Leakage Power)

Distance factor:	1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
	6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
	10 GHz - 26.5 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT2)**

Test place  
 Semi Anechoic Chamber  
 Date  
 Temperature / Humidity  
 Engineer  
 Mode

Ise EMC Lab.  
 No.4  
 July 17, 2024  
 21 deg. C / 55 % RH  
 Takafumi Noguchi  
 Tx BT LE 2M 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 (BT1)

Test place	Ise EMC Lab.	No.4
Semi Anechoic Chamber	No.4	No.4
Date	July 28, 2024	July 29, 2024
Temperature / Humidity	22 deg. C / 55 % RH	21 deg. C / 54 % RH
Engineer	Takumi Nishida	Takumi Nishida
	(Above 1 GHz)	(Below 1 GHz)
Mode	Tx BT LE 2M 2402 MHz + 11ax 20 [OFDM] 5500 MHz	

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	111.1	45.5	-	11.9	8.0	32.1	-	33.3	-	43.5	-	10.2	-	
Hori.	113.4	45.3	-	12.2	8.0	32.1	-	33.4	-	43.5	-	10.1	-	
Hori.	171.1	40.3	-	15.9	8.5	32.0	-	32.7	-	43.5	-	10.8	-	
Hori.	329.2	41.5	-	14.5	9.7	32.0	-	33.7	-	46.0	-	12.3	-	
Hori.	590.1	38.6	-	19.1	11.2	32.2	-	36.6	-	46.0	-	9.4	-	
Hori.	927.7	30.9	-	22.0	12.4	31.0	-	34.4	-	46.0	-	11.6	-	
Hori.	2390.0	42.4	33.6	27.8	5.7	31.8	2.4	44.1	37.7	73.9	53.9	29.9	16.2	*1)
Hori.	4804.0	42.2	32.3	31.5	8.0	30.9	-	50.8	40.9	73.9	53.9	23.1	13.0	Floor noise
Hori.	7206.0	42.9	32.4	35.5	11.2	32.0	-	57.6	47.1	73.9	53.9	16.3	6.8	Floor noise
Hori.	9608.0	43.1	31.9	35.7	12.3	32.3	-	58.8	47.6	73.9	53.9	15.1	6.3	Floor noise
Vert.	36.3	44.5	-	16.3	7.1	32.1	-	35.7	-	40.0	-	4.3	-	
Vert.	109.2	46.2	-	11.7	7.9	32.1	-	33.8	-	43.5	-	9.7	-	
Vert.	171.1	43.3	-	15.9	8.5	32.0	-	35.7	-	43.5	-	7.8	-	
Vert.	329.2	43.5	-	14.5	9.7	32.0	-	35.7	-	46.0	-	10.3	-	
Vert.	590.1	39.7	-	19.1	11.2	32.2	-	37.7	-	46.0	-	8.3	-	
Vert.	854.2	33.7	-	21.6	12.1	31.4	-	36.0	-	46.0	-	10.0	-	
Vert.	2390.0	42.6	33.8	27.8	5.7	31.8	2.4	44.2	37.9	73.9	53.9	29.7	16.0	*1)
Vert.	4804.0	42.1	32.2	31.5	8.0	30.9	-	50.7	40.8	73.9	53.9	23.2	13.1	Floor noise
Vert.	7206.0	42.8	32.4	35.5	11.2	32.0	-	57.5	47.1	73.9	53.9	16.4	6.8	Floor noise
Vert.	9608.0	43.2	32.0	35.7	12.3	32.3	-	58.9	47.7	73.9	53.9	15.0	6.2	Floor noise

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

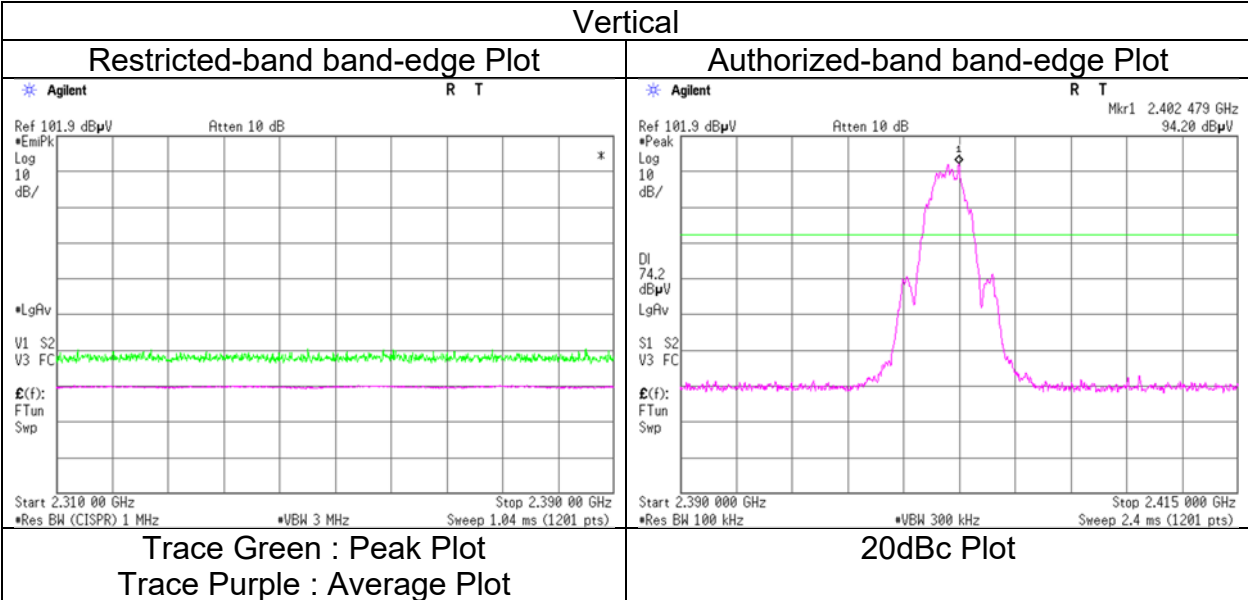
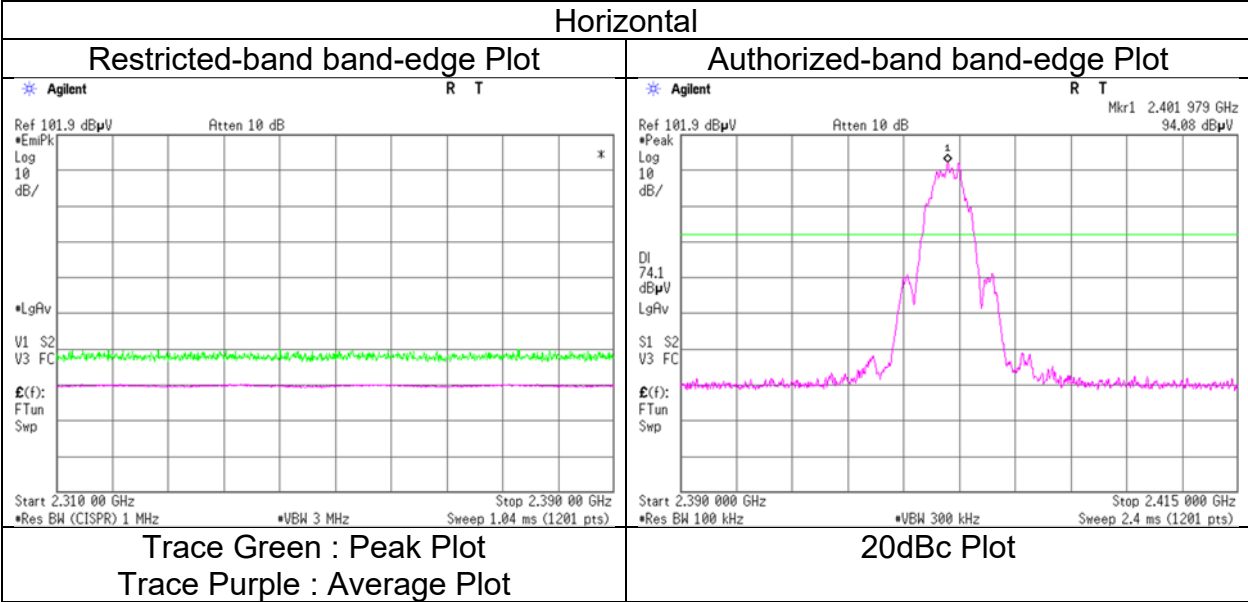
### 20dBc Data Sheet

Polarity	Frequency	Reading (PK)	Ant Factor	Loss	Gain	Result	Limit	Margin	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
Hori.	2402.0	94.1	27.7	5.7	31.8	95.7	-	-	Carrier
Hori.	2400.0	61.9	27.8	5.7	31.8	63.5	75.7	12.2	
Vert.	2402.0	94.2	27.7	5.7	31.8	95.9	-	-	Carrier
Vert.	2400.0	61.9	27.8	5.7	31.8	63.6	75.9	12.3	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)  
 Distance factor:  
 1 GHz - 6 GHz      20log (3.95 m / 3.0 m) = 2.39 dB  
 6 GHz - 10 GHz    20log (4.95 m / 3.0 m) = 4.35 dB  
 10 GHz - 26.5 GHz    20log (1.0 m / 3.0 m) = -9.5 dB

**Radiated Spurious Emission  
 (Reference Plot for band-edge)  
 (BT1)**

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.4
Date	July 28, 2024
Temperature / Humidity	22 deg. C / 55 % RH
Engineer	Takumi Nishida
Mode	Tx BT LE 2M 2402 MHz + 11ax 20 [OFDM] 5500 MHz

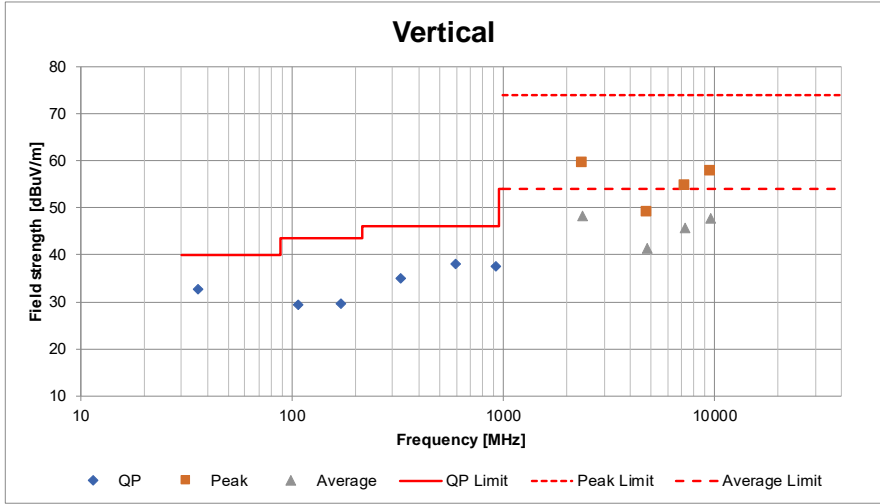
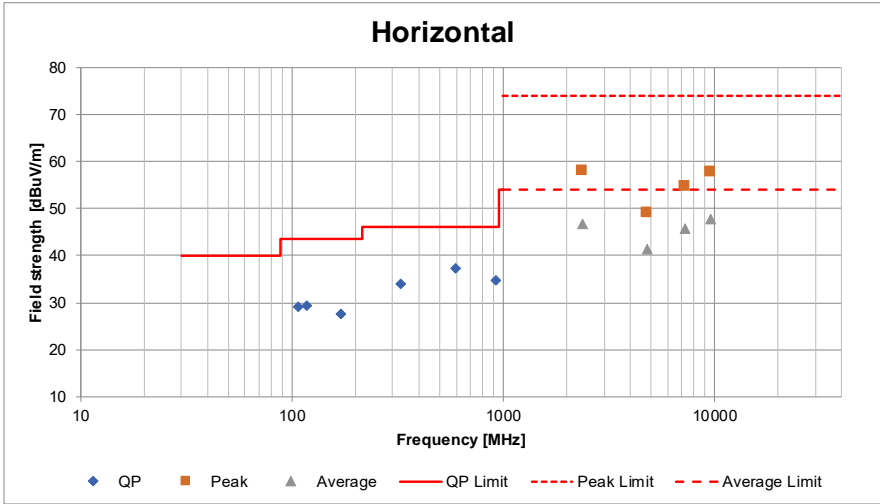


\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
 Final result of restricted band edge and authorized band edge were shown in tabular data.



**Radiated Spurious Emission**  
**(Plot data, Worst case mode for Maximum Peak Output Power)**  
**(WLAN)**

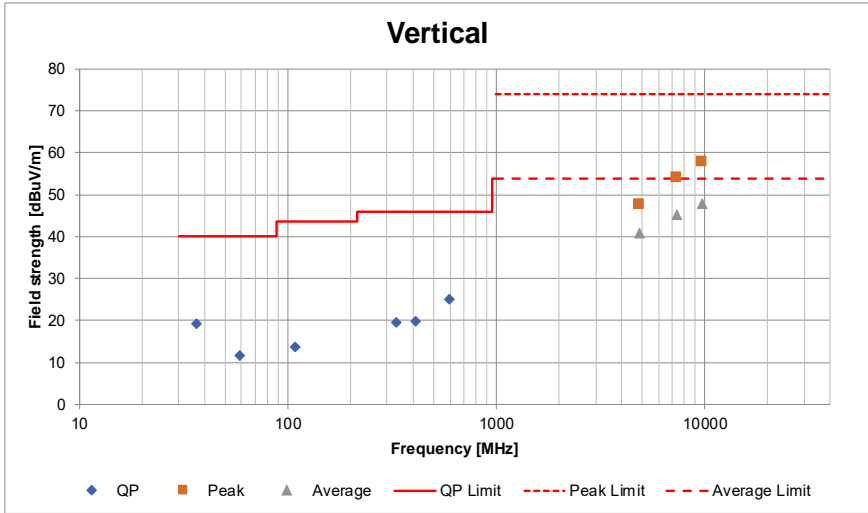
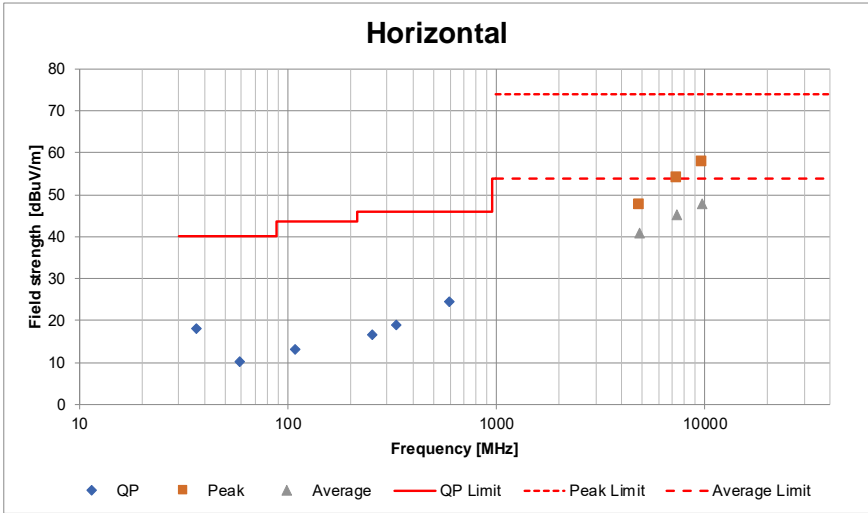
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024	July 29, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH	21 deg. C / 54 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi	Takumi Nishida
Mode	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(Below 1 GHz)
	Tx 11ax-20 [OFDM] 2412 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)**  
**(BT1)**

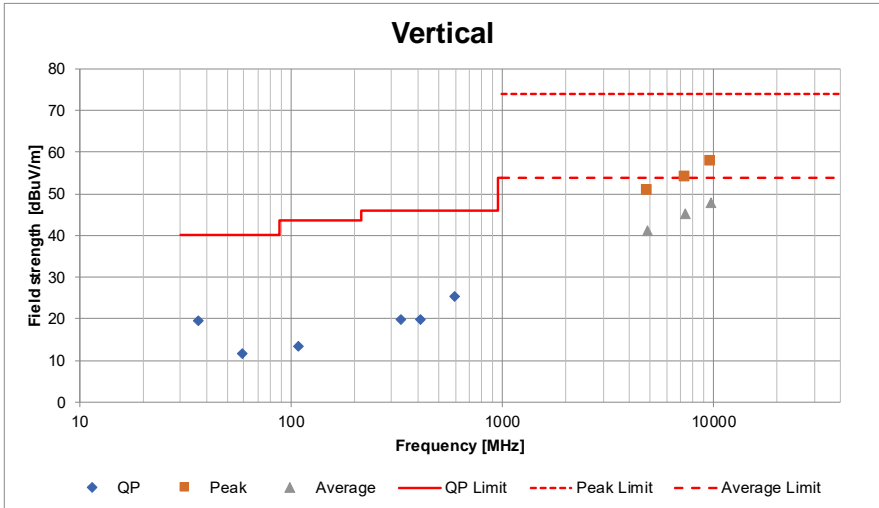
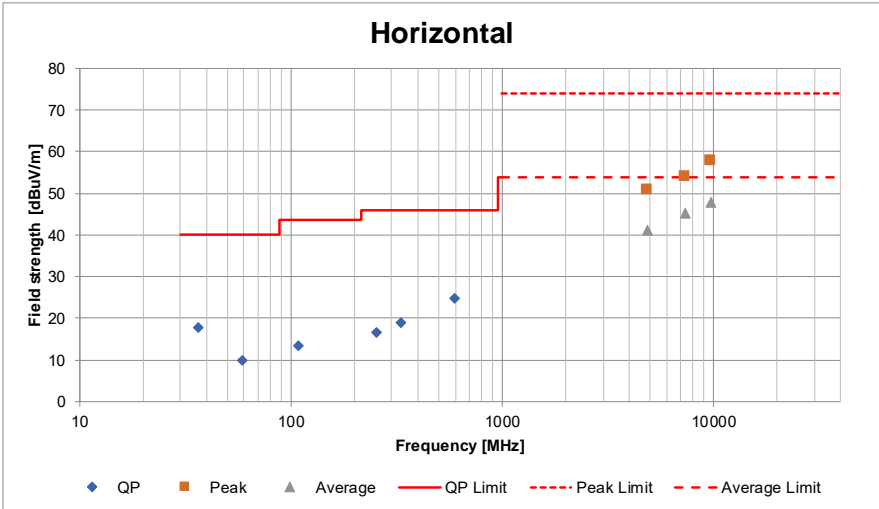
Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	July 18, 2024	July 24, 2024	July 25, 2024	July 29, 2024
Temperature / Humidity	22 deg. C / 52 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH	21 deg. C / 54 % RH
Engineer	Kiyoshiro Okazaki	Takafumi Noguchi	Takafumi Noguchi	Takumi Nishida
Mode	(1 GHz to 6 GHz)	(6 GHz to 10 GHz)	(10 GHz to 26.5 GHz)	(Below 1 GHz)
	Tx BT LE 2M 2440 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)**  
**(BT2)**

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No.4	No.4	No.4	No.4
Date	July 17, 2024	July 24, 2024	July 25, 2024	July 29, 2024
Temperature / Humidity	21 deg. C / 55 % RH	23 deg. C / 62 % RH	23 deg. C / 66 % RH	21 deg. C / 54 % RH
Engineer	Takafumi Noguchi	Takafumi Noguchi	Takafumi Noguchi	Takumi Nishida
Mode	Tx BT LE 1M 2440 MHz			



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

## APPENDIX 2: Test Instruments

### Test Equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141267	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-192	09/21/2023	12
RE	141279	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S303	03/04/2024	12
RE	141331	Attenuator(6dB)	TME	UFA-01	-	02/17/2024	12
RE	141397	Coaxial Cable	UL Japan	-	-	11/22/2023	12
RE	141404	High Pass Filter 3.5-24GHz	TOKIMEC	TF323DCA	601	05/23/2024	12
RE	141408	High Pass Filter 3.5-18.0GHz	TOKIMEC	TF323DCA	7002	09/01/2023	12
RE	141425	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+BBA9106	VHA 91031302	08/10/2023	12
RE	141506	Horn Antenna 15-40GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9170	BBHA9170307	08/09/2023	12
RE	141508	Horn Antenna 1-18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	557	05/17/2024	12
RE	141545	DIGITAL HiTESTER	HIOKI E.E. CORPORATION	3805	51201148	02/01/2024	12
RE	141581	MicroWave System Amplifier	Keysight Technologies Inc	83017A	00650	10/05/2023	12
RE	141583	Pre Amplifier	SONOMA INSTRUMENT	310	260833	04/04/2024	12
RE	141885	Spectrum Analyzer	Keysight Technologies Inc	E4448A	US44300523	11/29/2023	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	05/17/2024	12
RE	142017	AC4_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/14/2023	24
RE	142230	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	225532	High Pass Filter 8-24.5GHz	TSJ (Techno Science Japan)	SCHPF-8000/T4125-O/O	1504C	11/20/2023	12
RE	234602	Microwave Cable	Huber+Suhner	SF126E/11PC35/11 PC35/1000M,5000M	537063/126E / 537074/126E	03/08/2024	12
RE	244710	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202104	01/25/2024	12
RE	245788	Double Ridge Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	690	03/06/2024	12
RE	142011	AC4_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/13/2023	24

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

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

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

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

Test item:

RE: Radiated Emission