RADIO TEST REPORT

Test Report No. 15058392M-A

Customer	**ALPS ALPINE CO., LTD.**
Description of EUT	**Head unit**
Model Number of EUT	**AH00ICB 4**
FCC ID	**A269ZUA171**
Test Regulation	**FCC Part 15 Subpart C**
Test Result	**Complied**
Issue Date	**June 25, 2024**
Remarks	**Wireless LAN (2.4 GHz band) and Bluetooth Low Energy part(s)** **Radiated Spurious Emission only**

Representative Test Engineer	**Approved By**
Hiromitsu Tanabe Engineer	Kenichi Suda Manager

CERTIFICATE 1266.01

☐ 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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REVISION HISTORY

Original Test Report No.: 15058392M-A

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15058392M-A	June 25, 2024	-

Reference: Abbreviations (Including words undescribed in this report)

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

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SECTION 1: Customer Information

Company Name	ALPS ALPINE CO., LTD.
Address	20-1 Yoshima Industrial park, Iwaki, Fukushima, Japan 970-1192
Telephone Number	+81-246-36-4111
Contact Person	Kenji Nagase

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	Head unit
Model Number	AH00ICB 4
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	January 23, 2024
Test Date	January 29 to February 23, 2024

2.2 Product Description

General Specification

Rating	DC 13.2 V
Operating temperature	-30 deg. C to +70 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 / Low Energy)

Equipment Type	Transceiver
Frequency of Operation	2402 MHz to 2480 MHz
Type of Modulation	BT: FHSS (GFSK, π/4 DQPSK, 8 DPSK) BT LE: GFSK
Antenna Type	Planar Inverted-F Antenna
Antenna Gain[a)]	-0.2 dBi

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

Equipment Type	Transceiver
Frequency of Operation	2412 MHz to 2462 MHz
Type of Modulation	DSSS, OFDM
Antenna Type	Planar Inverted-F Antenna
Antenna Gain[a)]	-0.78 dBi

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

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band	5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz
	40 MHz Band	5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5710 MHz 5755 MHz to 5795 MHz
	80 MHz Band	5210 MHz 5290 MHz 5530 MHz to 5690 MHz 5775 MHz
Type of Modulation	OFDM	
Antenna Type	Planar Inverted-F Antenna	
Antenna Gain[a)]	+2.71 dBi (Chain 1) +2.29 dBi (Chain 2)	

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

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

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	**FCC:** Section15.247(d)	1.3 dB 2483.500 MHz, AV, Vertical Mode: Tx 11n-20 2462 MHz	Complied	Radiated (above 30 MHz) *1)
	ISED: RSS-Gen 6.13	**ISED:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10			
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593. * In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred. *1) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6.					

FCC Part 15.31 (e)
The EUT provides stable voltage constantly to the RF Part regardless of input voltage. Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 Addition to Standard

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	Uncertainty (+/-)
3 m	9 kHz to 30 MHz	3.2 dB
	30 MHz to 200 MHz	6.2 dB
	200 MHz to 1000 MHz	6.3 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.1 dB
	18 GHz to 40 GHz	5.5 dB
1 m	1 GHz to 18 GHz	5.2 dB
	18 GHz to 40 GHz	5.6 dB
0.5 m	26.5 GHz to 40 GHz	5.8 dB

3.5 Test Location

UL Japan, Inc. Kashima EMC Lab.
1614 Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan
Telephone: +81-478-88-6500
A2LA Certificate Number: 1266.01 / FCC Test Firm Registration Number: 910230
ISED Lab Company Number: 4659A / CAB identifier: JP0006

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Open site	6.0 x 5.5 x 2.5	20 x 40	10 m
No.5 Open site	8.6 x 7.1 x 2.4	18 x 23	10 m
No.1 Shielded room	5.4 x 4.5 x 2.3	-	-
No.5 Shielded Room	4.2 x 3.1 x 2.5	-	-
No.9 Shielded Room	6.1 x 3.6 x 2.8	-	-
No.6 Semi-anechoic Chamber	8.5 x 5.5 x 5.2	-	3 m
No.10 Semi-anechoic Chamber	18.4 x 9.9 x 7.7	-	10 m
No.11 Semi-anechoic Chamber	9.0 x 6.5 x 5.2	-	3 m
No.1 Measurement room	5.0 x 3.7 x 2.6	-	-
No.2 Measurement room	4.3 x 4.4 x 2.7	-	-

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode	Remarks*
IEEE 802.11b (11b)	2 Mbps (Short), PN9
IEEE 802.11g (11g)	54 Mbps, PN9
IEEE 802.11n (11n-20)	MCS 7, PN9
Bluetooth Low Energy (BT LE)	Uncoded 1 M-PHY(1M-PHY), Maximum Packet Size, PRBS9
	Uncoded 2 M-PHY(2M-PHY), Maximum Packet Size, PRBS9

*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel) (Refer to the test report No.15058381S-A issued by UL Japan)

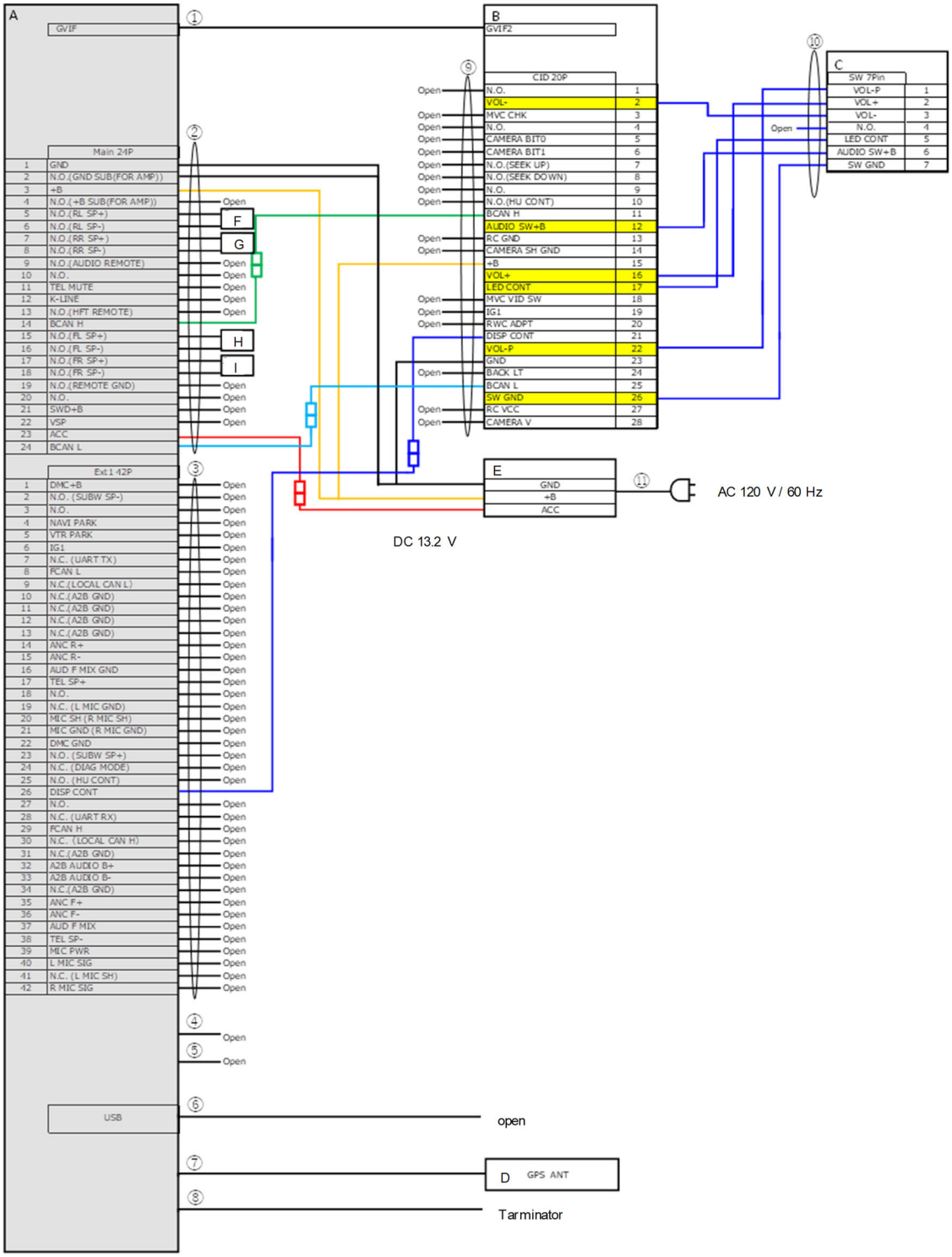
*Power of the EUT was set by the software as follows;
Power Setting: 11b: 14 dBm, 11g/n-20: 11 dBm
BT LE: 8 (setting value)
Software: QRCT (Qualcomm Radio Control Toolkit) Version: 4.0.00195.0
(Date: 2021.10.19, Storage location: Driven by connected PC)
*This setting of software is the worst case.
Any 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.

*The Details of Operating Mode(s)

Test Item	Operating Mode	Tested Antenna *2)	Tested Frequency
Radiated Spurious Emission (Below 1 GHz)	Tx 11n-20 Tx 11n-20 with Tx 11a 5180 MHz	Chain 1	2462 MHz *1)
	Tx BT LE, 2M-PHY Tx BT LE, 2M-PHY with Tx 11a 5180 MHz	Chain 2	2440 MHz *1)
Radiated Spurious Emission (Above 1 GHz)	Tx 11b Tx 11g Tx 11n-20	Chain 1	2412 MHz 2437 MHz 2462 MHz
	Tx BT LE, 1M-PHY Tx BT LE, 2M-PHY	Chain 2	2402 MHz 2440 MHz 2480 MHz
	Tx 11b with Tx 11a 5180 MHz Tx 11g with Tx 11a 5180 MHz	Chain 1	2412 MHz *3) 2462 MHz *3)
	Tx 11n-20 with Tx 11a 5180 MHz	Chain 1	2412 MHz *3) 2462 MHz
	Tx BT LE, 1M-PHY with Tx 11a 5180 MHz	Chain 2	2402 MHz *3) 2480 MHz *3)
	Tx BT LE, 2M-PHY with Tx 11a 5180 MHz	Chain 2	2402 MHz *3) 2440 MHz 2480 MHz *3)

*1) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*2) The test was performed with the antenna that had higher power as a representative.
Wireless LAN 2.4 GHz is transmitted with only Test antenna (Chain 1).
Bluetooth low energy is transmitted with only Test antenna (Chain 2).
*3) Band-edge only

4.2 Configuration and Peripherals



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

Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remarks
A	Head unit	AH00ICB 4	13	ALPS ALPINE CO., LTD.	EUT
B	Display	QH00274A	9	ALPS ALPINE CO., LTD.	-
C	Switch Unit	-	-	ALPS ALPINE CO., LTD.	-
D	GPS Antenna	8B550-T20-A111-M1	17430300	YOKOWO	-
E	DC Power Supply	GSV3000	60646742	DIAMOND ANTENNA	-
F	Speaker	KFC-RS101	-	JVC KENWOOD	-
G	Speaker	KFC-RS101	-	JVC KENWOOD	-
H	Speaker	KFC-RS101	-	JVC KENWOOD	-
I	Speaker	KFC-RS101	-	JVC KENWOOD	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	GVIF Cable	2.4	Shielded	Shielded	-
2	Main Harness	2.2	Unshielded	Unshielded	-
3	EXT1 Harness	2.1	Unshielded	Unshielded	-
4	Ethernet Cable	2.2	Unshielded	Unshielded	-
5	EXT2 Cable	2.1	Unshielded	Unshielded	-
6	USB Cable	2.2	Shielded	Shielded	-
7	GPS Antenna Cable	2.2 + 0.5	Shielded	Shielded	-
8	Tuner Cable (Main/Sub)	2.2	Shielded	Shielded	-
9	Display Harness	1.5	Unshielded	Unshielded	-
10	Switch Unit Harness	0.5 + 0.5	Unshielded	Unshielded	-
11	AC Power Cable	2.0	Unshielded	Unshielded	-

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, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane. Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

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

Test Antennas are used as below;

Frequency	30 MHz to 1 GHz	Above 1 GHz
Antenna Type	Hybrid	Horn

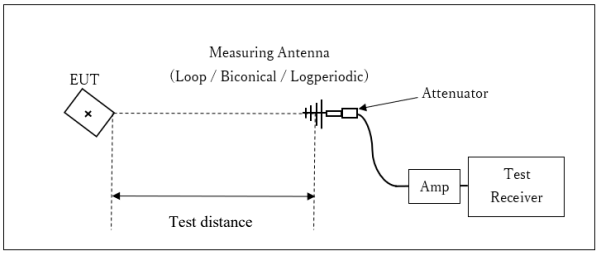
In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired 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	11.12.2.5.1 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces 11.12.2.5.2 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

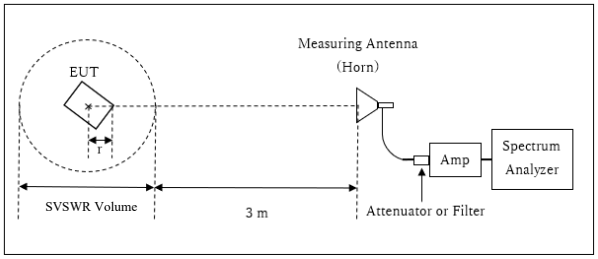
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

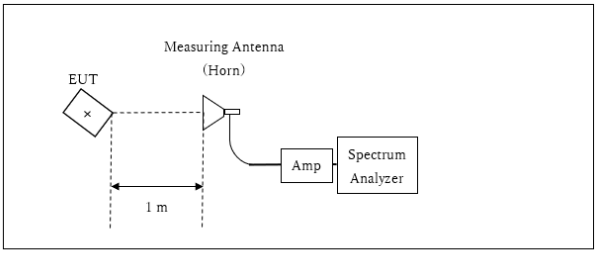


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.89 m / 3.0 m) = 2.26 dB
* Test Distance: (3 + SVSWR Volume /2) - r = 3.89 m

SVSWR Volume : 2.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r = 0.11 m

10 GHz to 26.5 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.54 dB
*Test Distance: 1 m

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

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

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

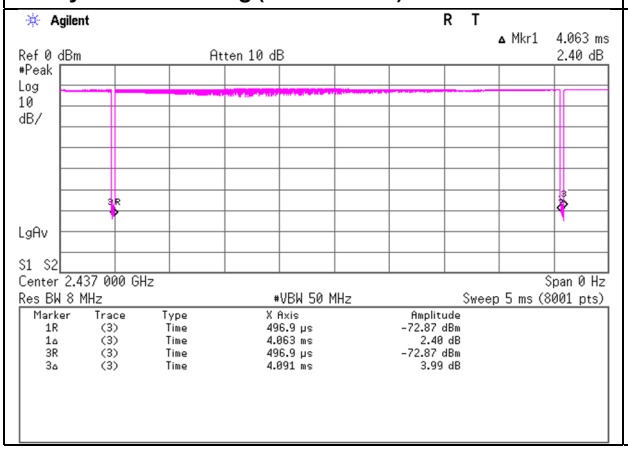
APPENDIX 1: Test Data

Burst rate confirmation

Test place	Kashima EMC Lab. No.2 Measurement Room
Date	January 29, 2024
Temperature / Humidity	20 deg. C / 38 % RH
Engineer	Kazuhiro Ando
Mode	Tx

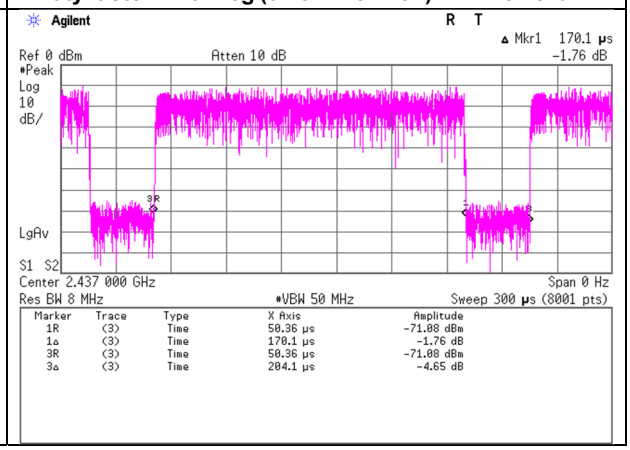
11b 2 Mbps

Tx on / (Tx on + Tx off) =	0.993
Tx on / (Tx on + Tx off) * 100 =	99.3 %
Duty factor = 10 * log (4.091 / 4.063) =	0.03 dB



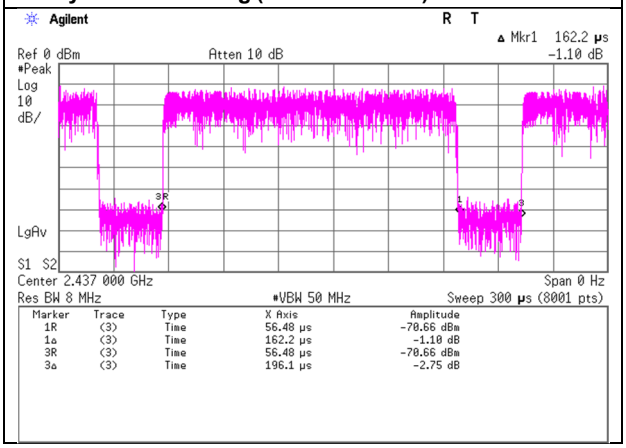
11g 54 Mbps

Tx on / (Tx on + Tx off) =	0.833
Tx on / (Tx on + Tx off) * 100 =	83.3 %
Duty factor = 10 * log (0.2041 / 0.1701) =	0.79 dB



11n-20 MCS 7

Tx on / (Tx on + Tx off) =	0.827
Tx on / (Tx on + Tx off) * 100 =	82.7 %
Duty factor = 10 * log (0.1961 / 0.1622) =	0.82 dB



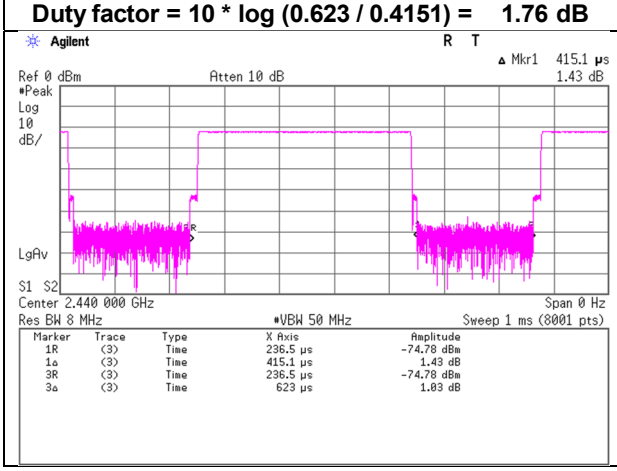
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Test place	Kashima EMC Lab. No.2 Measurement Room
Date	January 29, 2024
Temperature / Humidity	20 deg. C / 38 % RH
Engineer	Kazuhiro Ando
Mode	Tx

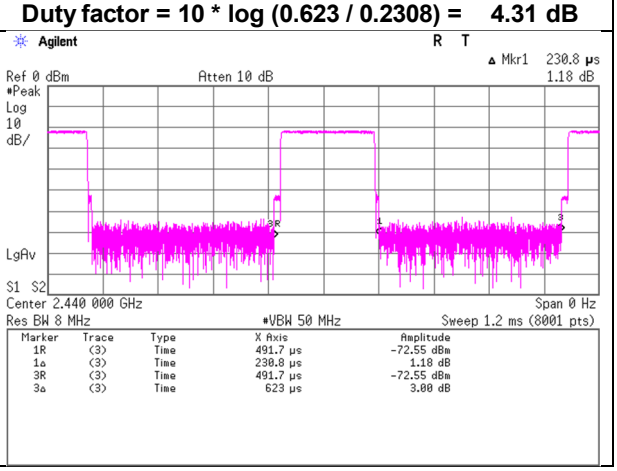
Tx BT LE, 1M-PHY

Tx on / (Tx on + Tx off) =	**0.666**
Tx on / (Tx on + Tx off) * 100 =	**66.6 %**
Duty factor = 10 * log (0.623 / 0.4151) =	**1.76 dB**



Tx BT LE, 2M-PHY

Tx on / (Tx on + Tx off) =	**0.370**
Tx on / (Tx on + Tx off) * 100 =	**37.0 %**
Duty factor = 10 * log (0.623 / 0.2308) =	**4.31 dB**



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

Radiated Spurious Emission

Test place	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11b 2412 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.	1481.760	PK	54.72	25.53	12.44	46.47	2.26	48.48	73.9	25.4	145	119	
Hori.	2390.000	PK	54.00	27.57	13.21	46.26	2.26	50.78	73.9	23.1	150	116	
Hori.	4824.000	PK	52.23	32.62	5.64	45.77	2.26	46.98	73.9	26.9	150	0	Floor noise
Hori.	7236.000	PK	50.07	37.22	6.98	44.78	2.26	51.75	73.9	22.1	150	0	Floor noise
Hori.	9648.000	PK	48.17	38.13	7.90	43.13	2.26	53.33	73.9	20.5	150	0	Floor noise
Hori.	1481.760	AV	46.86	25.53	12.44	46.47	2.26	40.62	53.9	13.2	145	119	
Hori.	2390.000	AV	45.15	27.57	13.21	46.26	2.26	41.93	53.9	11.9	150	116	
Hori.	4824.000	AV	43.66	32.62	5.64	45.77	2.26	38.41	53.9	15.4	150	0	Floor noise
Hori.	7236.000	AV	40.87	37.22	6.98	44.78	2.26	42.55	53.9	11.3	150	0	Floor noise
Hori.	9648.000	AV	38.93	38.13	7.90	43.13	2.26	44.09	53.9	9.8	150	0	Floor noise
Vert.	1481.760	PK	55.22	25.53	12.44	46.47	2.26	48.98	73.9	24.9	273	200	
Vert.	2390.000	PK	53.98	27.57	13.21	46.26	2.26	50.76	73.9	23.1	226	126	
Vert.	4824.000	PK	51.91	32.62	5.64	45.77	2.26	46.66	73.9	27.2	150	0	Floor noise
Vert.	7236.000	PK	49.43	37.22	6.98	44.78	2.26	51.11	73.9	22.7	150	0	Floor noise
Vert.	9648.000	PK	48.02	38.13	7.90	43.13	2.26	53.18	73.9	20.7	150	0	Floor noise
Vert.	1481.760	AV	46.87	25.53	12.44	46.47	2.26	40.63	53.9	13.2	273	200	
Vert.	2390.000	AV	45.24	27.57	13.21	46.26	2.26	42.02	53.9	11.8	226	126	
Vert.	4824.000	AV	43.49	32.62	5.64	45.77	2.26	38.24	53.9	15.6	150	0	Floor noise
Vert.	7236.000	AV	40.88	37.22	6.98	44.78	2.26	42.56	53.9	11.3	150	0	Floor noise
Vert.	9648.000	AV	38.98	38.13	7.90	43.13	2.26	44.14	53.9	**9.7**	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

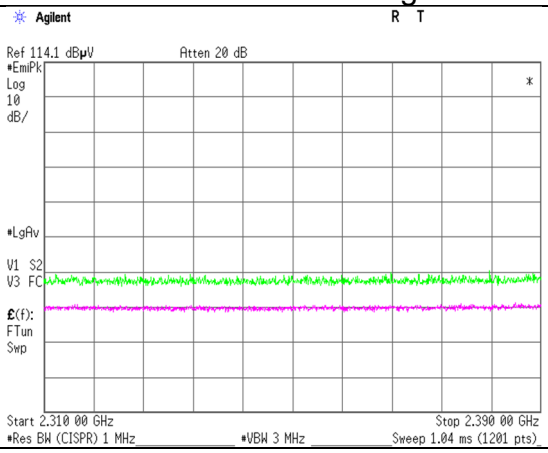
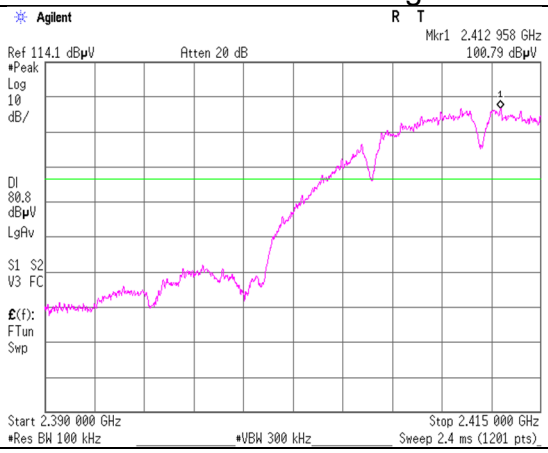
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

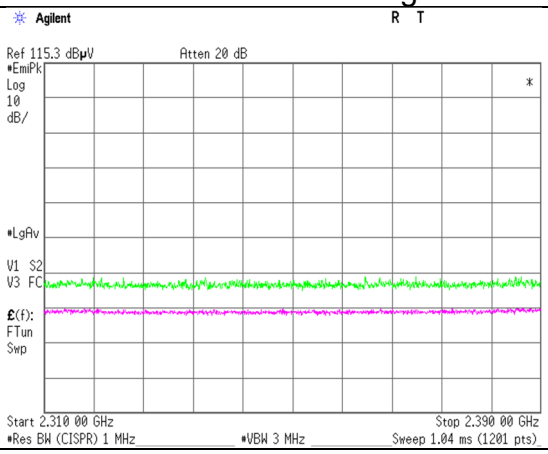
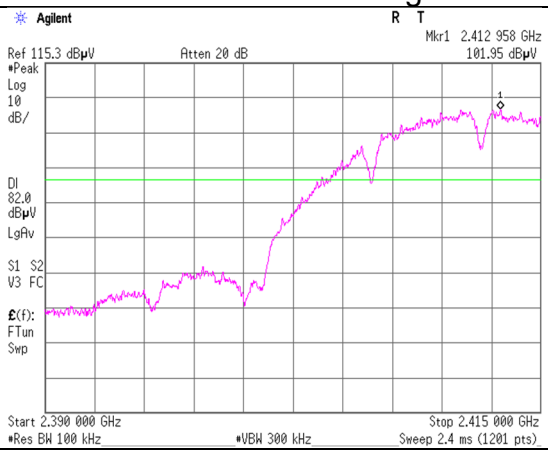
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	100.79	27.62	13.23	46.24	2.26	97.66	-	-	Carrier
Hori.	2397.950	PK	55.82	27.58	13.22	46.25	2.26	52.63	77.7	25.0	-
Hori.	2400.000	PK	52.94	27.58	13.22	46.25	2.26	49.75	77.7	27.9	-
Vert.	2412.000	PK	101.95	27.62	13.23	46.24	2.26	98.82	-	-	Carrier
Vert.	2398.175	PK	55.18	27.58	13.22	46.25	2.26	51.99	78.8	26.8	-
Vert.	2400.000	PK	53.90	27.58	13.22	46.25	2.26	50.71	78.8	28.1	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 29, 2024
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11b 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11b 2437 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.	1481.760	PK	55.20	25.53	12.44	46.47	2.26	48.96	73.9	24.9	190	123	
Hori.	4874.000	PK	51.93	32.65	5.67	45.76	2.26	46.75	73.9	27.1	150	0	Floor noise
Hori.	7311.000	PK	48.23	37.24	7.00	44.65	2.26	50.08	73.9	23.8	150	0	Floor noise
Hori.	9748.000	PK	46.97	38.22	7.95	43.11	2.26	52.29	73.9	21.6	150	0	Floor noise
Hori.	1481.760	AV	47.39	25.53	12.44	46.47	2.26	41.15	53.9	12.7	190	123	
Hori.	4874.000	AV	43.36	32.65	5.67	45.76	2.26	38.18	53.9	15.7	150	0	Floor noise
Hori.	7311.000	AV	40.14	37.24	7.00	44.65	2.26	41.99	53.9	11.9	150	0	Floor noise
Hori.	9748.000	AV	38.77	38.22	7.95	43.11	2.26	44.09	53.9	**9.8**	150	0	Floor noise
Vert.	1481.760	PK	55.36	25.53	12.44	46.47	2.26	49.12	73.9	24.7	270	196	
Vert.	4874.000	PK	51.84	32.65	5.67	45.76	2.26	46.66	73.9	27.2	150	0	Floor noise
Vert.	7311.000	PK	48.14	37.24	7.00	44.65	2.26	49.99	73.9	23.9	150	0	Floor noise
Vert.	9748.000	PK	46.69	38.22	7.95	43.11	2.26	52.01	73.9	21.8	150	0	Floor noise
Vert.	1481.760	AV	47.54	25.53	12.44	46.47	2.26	41.30	53.9	12.6	270	196	
Vert.	4874.000	AV	43.37	32.65	5.67	45.76	2.26	38.19	53.9	15.7	150	0	Floor noise
Vert.	7311.000	AV	40.15	37.24	7.00	44.65	2.26	42.00	53.9	11.9	150	0	Floor noise
Vert.	9748.000	AV	38.74	38.22	7.95	43.11	2.26	44.06	53.9	**9.8**	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 : 20log (3.89 m / 3.0 m) = 2.26 dB

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

Radiated Spurious Emission

Test place	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11b 2462 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.	1481.760	PK	55.19	25.53	12.44	46.47	2.26	48.95	73.9	24.9	100	214	
Hori.	2483.500	PK	54.97	27.99	13.29	46.16	2.26	52.35	73.9	21.5	204	117	
Hori.	4924.000	PK	51.20	32.65	5.70	45.75	2.26	46.06	73.9	27.8	150	0	Floor noise
Hori.	7386.000	PK	50.53	37.33	7.04	44.60	2.26	52.56	73.9	21.3	150	0	Floor noise
Hori.	9848.000	PK	48.62	38.36	7.99	43.18	2.26	54.05	73.9	19.8	150	0	Floor noise
Hori.	1481.760	AV	46.68	25.53	12.44	46.47	2.26	40.44	53.9	13.4	100	214	
Hori.	2483.500	AV	45.24	27.99	13.29	46.16	2.26	42.62	53.9	11.2	204	117	
Hori.	4924.000	AV	43.36	32.65	5.70	45.75	2.26	38.22	53.9	15.6	150	0	Floor noise
Hori.	7386.000	AV	41.27	37.33	7.04	44.60	2.26	43.30	53.9	10.6	150	0	Floor noise
Hori.	9848.000	AV	39.17	38.36	7.99	43.18	2.26	44.60	53.9	9.3	150	0	Floor noise
Vert.	1481.760	PK	55.13	25.53	12.44	46.47	2.26	48.89	73.9	25.0	267	198	
Vert.	2483.500	PK	55.14	27.99	13.29	46.16	2.26	52.52	73.9	21.3	374	262	
Vert.	4924.000	PK	51.43	32.65	5.70	45.75	2.26	46.29	73.9	27.6	150	0	Floor noise
Vert.	7386.000	PK	50.95	37.33	7.04	44.60	2.26	52.98	73.9	20.9	150	0	Floor noise
Vert.	9848.000	PK	48.32	38.36	7.99	43.18	2.26	53.75	73.9	20.1	150	0	Floor noise
Vert.	1481.760	AV	47.49	25.53	12.44	46.47	2.26	41.25	53.9	12.6	267	198	
Vert.	2483.500	AV	45.77	27.99	13.29	46.16	2.26	43.15	53.9	10.7	374	262	
Vert.	4924.000	AV	43.57	32.65	5.70	45.75	2.26	38.43	53.9	15.4	150	0	Floor noise
Vert.	7386.000	AV	41.16	37.33	7.04	44.60	2.26	43.19	53.9	10.7	150	0	Floor noise
Vert.	9848.000	AV	39.35	38.36	7.99	43.18	2.26	44.78	53.9	**9.1**	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 (3.89 m / 3.0 m) = 2.26 dB

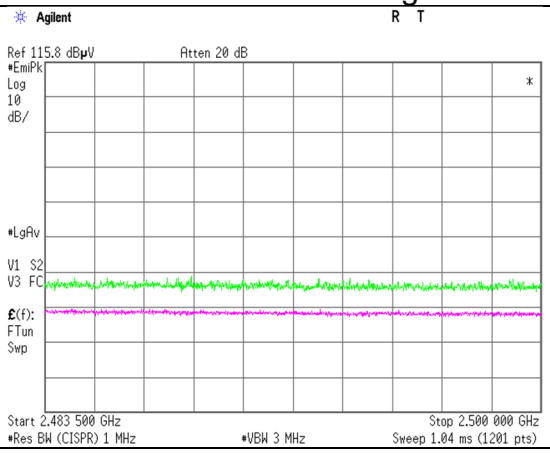
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 29, 2024
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11b 2462 MHz

Horizontal

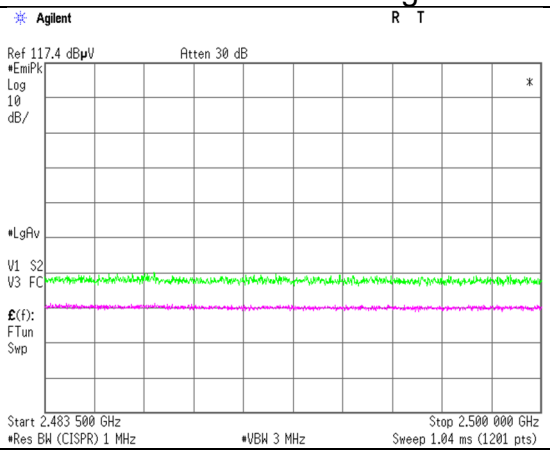
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11g 2412 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.	1481.760	PK	54.35	25.53	12.44	46.47	2.26	48.11	73.9	25.7	100	215	
Hori.	2390.000	PK	62.58	27.57	13.21	46.26	2.26	59.36	73.9	14.5	150	117	
Hori.	4824.000	PK	53.35	32.62	5.64	45.77	2.26	48.10	73.9	25.8	150	0	Floor noise
Hori.	7236.000	PK	49.85	37.22	6.98	44.78	2.26	51.53	73.9	22.3	150	0	Floor noise
Hori.	9648.000	PK	47.30	38.13	7.90	43.13	2.26	52.46	73.9	21.4	150	0	Floor noise
Hori.	1481.760	AV	46.88	25.53	12.44	46.47	2.26	40.64	53.9	13.2	100	215	
Hori.	4824.000	AV	43.56	32.62	5.64	45.77	2.26	38.31	53.9	15.5	150	0	Floor noise
Hori.	7236.000	AV	40.85	37.22	6.98	44.78	2.26	42.53	53.9	11.3	150	0	Floor noise
Hori.	9648.000	AV	39.08	38.13	7.90	43.13	2.26	44.24	53.9	9.6	150	0	Floor noise
Vert.	1481.760	PK	55.51	25.53	12.44	46.47	2.26	49.27	73.9	24.6	259	200	
Vert.	2390.000	PK	63.77	27.57	13.21	46.26	2.26	60.55	73.9	13.3	361	272	
Vert.	4824.000	PK	52.11	32.62	5.64	45.77	2.26	46.86	73.9	27.0	150	0	Floor noise
Vert.	7236.000	PK	49.14	37.22	6.98	44.78	2.26	50.82	73.9	23.0	150	0	Floor noise
Vert.	9648.000	PK	47.35	38.13	7.90	43.13	2.26	52.51	73.9	21.3	150	0	Floor noise
Vert.	1481.760	AV	47.26	25.53	12.44	46.47	2.26	41.02	53.9	12.8	259	200	
Vert.	4824.000	AV	43.78	32.62	5.64	45.77	2.26	38.53	53.9	15.3	150	0	Floor noise
Vert.	7236.000	AV	41.11	37.22	6.98	44.78	2.26	42.79	53.9	11.1	150	0	Floor noise
Vert.	9648.000	AV	38.93	38.13	7.90	43.13	2.26	44.09	53.9	9.8	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 : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	47.73	27.57	13.21	46.26	0.79	2.26	45.30	53.9	8.6	*1)
Vert.	2390.000	AV	49.13	27.57	13.21	46.26	0.79	2.26	46.70	53.9	**7.2**	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

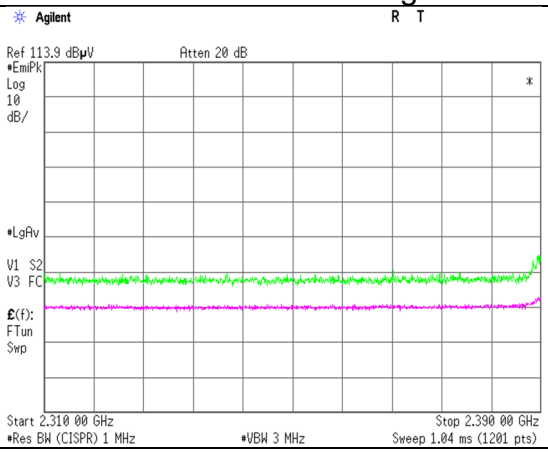
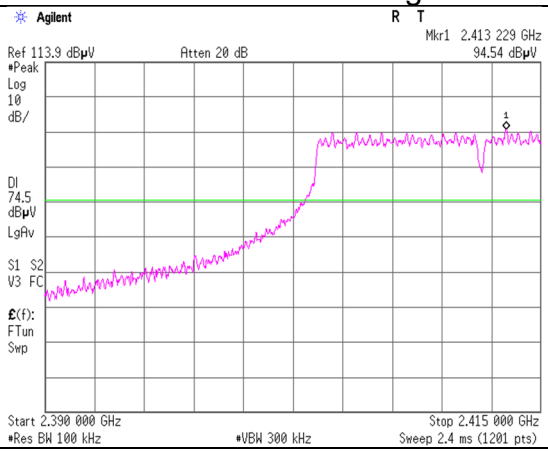
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

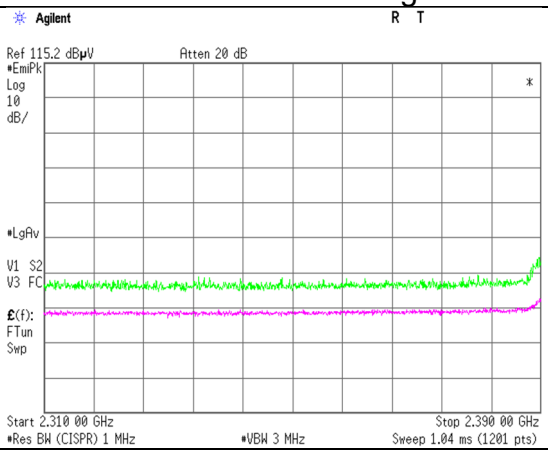
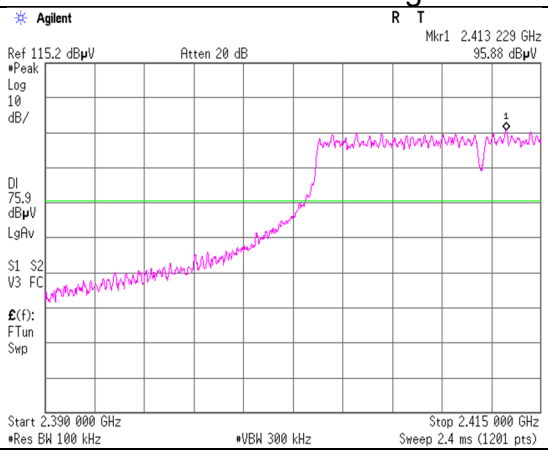
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.54	27.62	13.23	46.24	2.26	91.41	-	-	Carrier
Hori.	2400.000	PK	63.35	27.58	13.22	46.25	2.26	60.16	71.4	11.2	-
Vert.	2412.000	PK	95.88	27.62	13.23	46.24	2.26	92.75	-	-	Carrier
Vert.	2400.000	PK	63.76	27.58	13.22	46.25	2.26	60.57	72.8	12.1	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 29, 2024
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11g 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11g 2437 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.	1481.760	PK	55.03	25.53	12.44	46.47	2.26	48.79	73.9	25.1	100	214	
Hori.	4874.000	PK	52.31	32.65	5.67	45.76	2.26	47.13	73.9	26.7	150	0	Floor noise
Hori.	7311.000	PK	49.53	37.24	7.00	44.65	2.26	51.38	73.9	22.5	150	0	Floor noise
Hori.	9748.000	PK	47.86	38.22	7.95	43.11	2.26	53.18	73.9	20.7	150	0	Floor noise
Hori.	1481.760	AV	46.87	25.53	12.44	46.47	2.26	40.63	53.9	13.2	100	214	
Hori.	4874.000	AV	43.15	32.65	5.67	45.76	2.26	37.97	53.9	15.9	150	0	Floor noise
Hori.	7311.000	AV	40.17	37.24	7.00	44.65	2.26	42.02	53.9	11.8	150	0	Floor noise
Hori.	9748.000	AV	38.92	38.22	7.95	43.11	2.26	44.24	53.9	**9.6**	150	0	Floor noise
Vert.	1481.760	PK	55.50	25.53	12.44	46.47	2.26	49.26	73.9	24.6	260	199	
Vert.	4874.000	PK	51.37	32.65	5.67	45.76	2.26	46.19	73.9	27.7	150	0	Floor noise
Vert.	7311.000	PK	47.84	37.24	7.00	44.65	2.26	49.69	73.9	24.2	150	0	Floor noise
Vert.	9748.000	PK	47.13	38.22	7.95	43.11	2.26	52.45	73.9	21.4	150	0	Floor noise
Vert.	1481.760	AV	47.37	25.53	12.44	46.47	2.26	41.13	53.9	12.7	260	199	
Vert.	4874.000	AV	43.11	32.65	5.67	45.76	2.26	37.93	53.9	15.9	150	0	Floor noise
Vert.	7311.000	AV	40.08	37.24	7.00	44.65	2.26	41.93	53.9	11.9	150	0	Floor noise
Vert.	9748.000	AV	38.76	38.22	7.95	43.11	2.26	44.08	53.9	9.8	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 : 20log (3.89 m / 3.0 m) = 2.26 dB

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

Radiated Spurious Emission

Test place	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11g 2462 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.	1481.760	PK	54.34	25.53	12.44	46.47	2.26	48.10	73.9	25.8	100	215	
Hori.	2483.500	PK	67.81	27.99	13.29	46.16	2.26	65.19	73.9	8.7	234	307	
Hori.	4924.000	PK	51.96	32.65	5.70	45.75	2.26	46.82	73.9	27.0	150	0	Floor noise
Hori.	7386.000	PK	50.45	37.33	7.04	44.60	2.26	52.48	73.9	21.4	150	0	Floor noise
Hori.	9848.000	PK	47.50	38.36	7.99	43.18	2.26	52.93	73.9	20.9	150	0	Floor noise
Hori.	1481.760	AV	46.72	25.53	12.44	46.47	2.26	40.48	53.9	13.4	100	215	
Hori.	4924.000	AV	42.78	32.65	5.70	45.75	2.26	37.64	53.9	16.2	150	0	Floor noise
Hori.	7386.000	AV	41.33	37.33	7.04	44.60	2.26	43.36	53.9	10.5	150	0	Floor noise
Hori.	9848.000	AV	38.89	38.36	7.99	43.18	2.26	44.32	53.9	9.5	150	0	Floor noise
Vert.	1481.760	PK	55.21	25.53	12.44	46.47	2.26	48.97	73.9	24.9	264	194	
Vert.	2483.500	PK	69.31	27.99	13.29	46.16	2.26	66.69	73.9	7.2	351	269	
Vert.	4924.000	PK	50.85	32.65	5.70	45.75	2.26	45.71	73.9	28.1	150	0	Floor noise
Vert.	7386.000	PK	49.98	37.33	7.04	44.60	2.26	52.01	73.9	21.8	150	0	Floor noise
Vert.	9848.000	PK	47.18	38.36	7.99	43.18	2.26	52.61	73.9	21.2	150	0	Floor noise
Vert.	1481.760	AV	47.70	25.53	12.44	46.47	2.26	41.46	53.9	12.4	264	194	
Vert.	4924.000	AV	43.20	32.65	5.70	45.75	2.26	38.06	53.9	15.8	150	0	Floor noise
Vert.	7386.000	AV	41.04	37.33	7.04	44.60	2.26	43.07	53.9	10.8	150	0	Floor noise
Vert.	9848.000	AV	38.98	38.36	7.99	43.18	2.26	44.41	53.9	9.4	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	52.12	27.99	13.29	46.16	0.79	2.26	50.29	53.9	3.6	*1)
Vert.	2483.500	AV	52.86	27.99	13.29	46.16	0.79	2.26	51.03	53.9	**2.8**	*1)

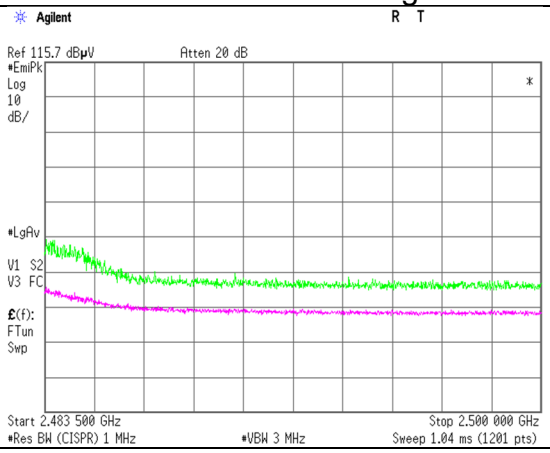
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 29, 2024
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11g 2462 MHz

Horizontal

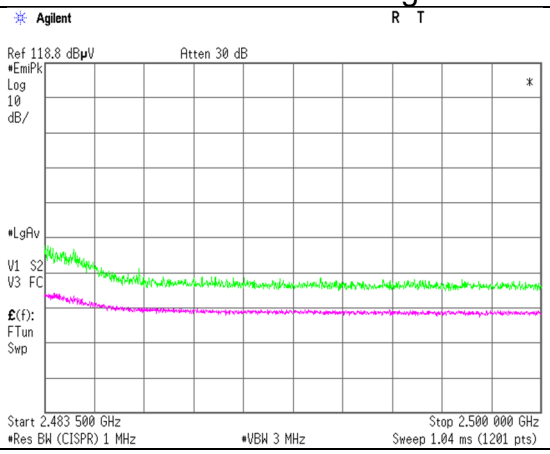
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11n-20 2412 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.	1481.760	PK	55.53	25.53	12.44	46.47	2.26	49.29	73.9	24.6	100	214	
Hori.	2390.000	PK	64.51	27.57	13.21	46.26	2.26	61.29	73.9	12.6	150	117	
Hori.	4824.000	PK	52.72	32.62	5.64	45.77	2.26	47.47	73.9	26.4	150	0	Floor noise
Hori.	7236.000	PK	49.68	37.22	6.98	44.78	2.26	51.36	73.9	22.5	150	0	Floor noise
Hori.	9648.000	PK	47.92	38.13	7.90	43.13	2.26	53.08	73.9	20.8	150	0	Floor noise
Hori.	1481.760	AV	46.62	25.53	12.44	46.47	2.26	40.38	53.9	13.5	100	214	
Hori.	4824.000	AV	43.62	32.62	5.64	45.77	2.26	38.37	53.9	15.5	150	0	Floor noise
Hori.	7236.000	AV	41.03	37.22	6.98	44.78	2.26	42.71	53.9	11.1	150	0	Floor noise
Hori.	9648.000	AV	38.82	38.13	7.90	43.13	2.26	43.98	53.9	9.9	150	0	Floor noise
Vert.	1481.760	PK	55.22	25.53	12.44	46.47	2.26	48.98	73.9	24.9	262	199	
Vert.	2390.000	PK	67.21	27.57	13.21	46.26	2.26	63.99	73.9	9.9	363	269	
Vert.	4824.000	PK	51.42	32.62	5.64	45.77	2.26	46.17	73.9	27.7	150	0	Floor noise
Vert.	7236.000	PK	49.67	37.22	6.98	44.78	2.26	51.35	73.9	22.5	150	0	Floor noise
Vert.	9648.000	PK	48.38	38.13	7.90	43.13	2.26	53.54	73.9	20.3	150	0	Floor noise
Vert.	1481.760	AV	47.45	25.53	12.44	46.47	2.26	41.21	53.9	12.6	262	199	
Vert.	4824.000	AV	43.44	32.62	5.64	45.77	2.26	38.19	53.9	15.7	150	0	Floor noise
Vert.	7236.000	AV	40.88	37.22	6.98	44.78	2.26	42.56	53.9	11.3	150	0	Floor noise
Vert.	9648.000	AV	38.61	38.13	7.90	43.13	2.26	43.77	53.9	10.1	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	49.85	27.57	13.21	46.26	0.82	2.26	47.45	53.9	6.4	*1)
Vert.	2390.000	AV	50.68	27.57	13.21	46.26	0.82	2.26	48.28	53.9	**5.6**	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

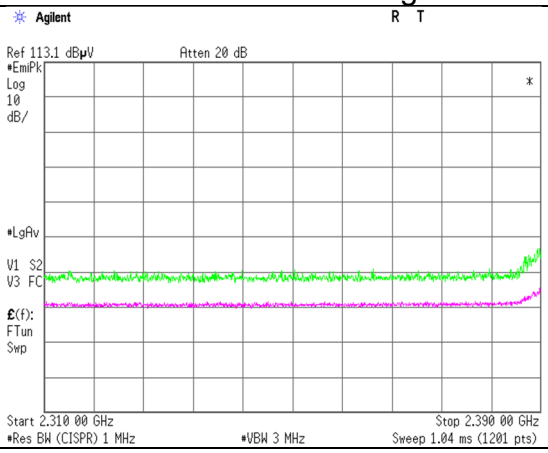
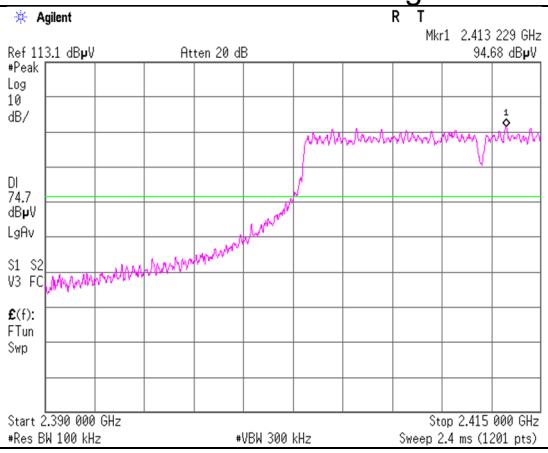
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

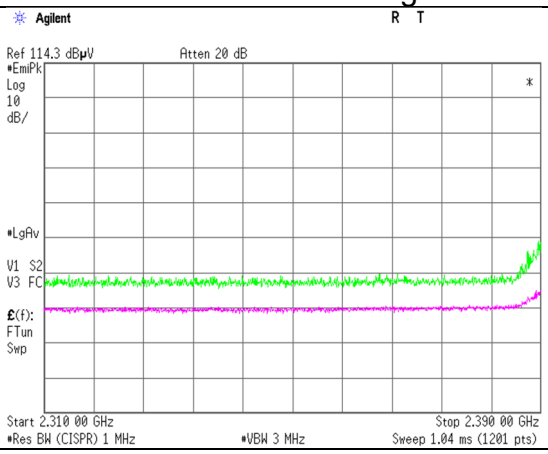
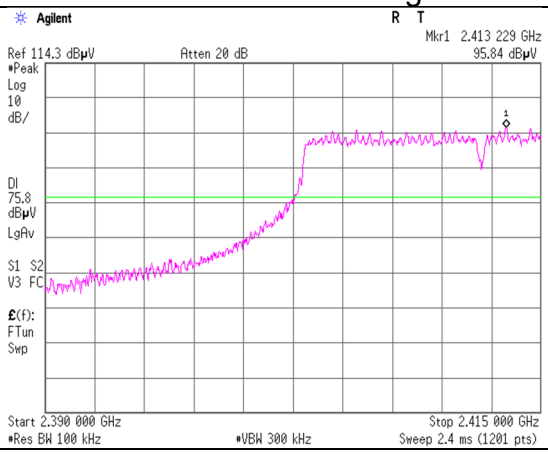
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	94.68	27.62	13.23	46.24	2.26	91.55	-	-	Carrier
Hori.	2400.000	PK	62.52	27.58	13.22	46.25	2.26	59.33	71.6	12.2	-
Vert.	2412.000	PK	95.84	27.62	13.23	46.24	2.26	92.71	-	-	Carrier
Vert.	2400.000	PK	63.75	27.58	13.22	46.25	2.26	60.56	72.7	12.1	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 29, 2024
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11n-20 2412 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11n-20 2437 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.	1481.760	PK	55.38	25.53	12.44	46.47	2.26	49.14	73.9	24.7	100	213	
Hori.	4874.000	PK	51.62	32.65	5.67	45.76	2.26	46.44	73.9	27.4	150	0	Floor noise
Hori.	7311.000	PK	48.15	37.24	7.00	44.65	2.26	50.00	73.9	23.9	150	0	Floor noise
Hori.	9748.000	PK	47.91	38.22	7.95	43.11	2.26	53.23	73.9	20.6	150	0	Floor noise
Hori.	1481.760	AV	46.91	25.53	12.44	46.47	2.26	40.67	53.9	13.2	100	213	
Hori.	4874.000	AV	43.30	32.65	5.67	45.76	2.26	38.12	53.9	15.7	150	0	Floor noise
Hori.	7311.000	AV	40.26	37.24	7.00	44.65	2.26	42.11	53.9	11.7	150	0	Floor noise
Hori.	9748.000	AV	39.08	38.22	7.95	43.11	2.26	44.40	53.9	**9.5**	150	0	Floor noise
Vert.	1481.760	PK	55.28	25.53	12.44	46.47	2.26	49.04	73.9	24.8	262	197	
Vert.	4874.000	PK	52.03	32.65	5.67	45.76	2.26	46.85	73.9	27.0	150	0	Floor noise
Vert.	7311.000	PK	48.54	37.24	7.00	44.65	2.26	50.39	73.9	23.5	150	0	Floor noise
Vert.	9748.000	PK	47.19	38.22	7.95	43.11	2.26	52.51	73.9	21.3	150	0	Floor noise
Vert.	1481.760	AV	47.66	25.53	12.44	46.47	2.26	41.42	53.9	12.4	262	197	
Vert.	4874.000	AV	43.21	32.65	5.67	45.76	2.26	38.03	53.9	15.8	150	0	Floor noise
Vert.	7311.000	AV	40.01	37.24	7.00	44.65	2.26	41.86	53.9	12.0	150	0	Floor noise
Vert.	9748.000	AV	38.98	38.22	7.95	43.11	2.26	44.30	53.9	9.6	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 (3.89 m / 3.0 m) = 2.26 dB

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

Radiated Spurious Emission

Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.11	No.11	No.11
Date	January 31, 2024	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz to 1 GHz)	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11n-20 2462 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.	313.636	QP	46.00	13.87	7.69	31.94	0.00	35.62	46.0	10.3	100	235	
Hori.	947.828	QP	32.70	23.96	10.06	30.96	0.00	35.76	46.0	10.2	143	215	
Hori.	1481.760	PK	55.46	25.53	12.44	46.47	2.26	49.22	73.9	24.6	175	119	
Hori.	2483.500	PK	67.69	27.99	13.29	46.16	2.26	65.07	73.9	8.8	220	307	
Hori.	4924.000	PK	51.43	32.65	5.70	45.75	2.26	46.29	73.9	27.6	150	0	Floor noise
Hori.	7386.000	PK	49.67	37.33	7.04	44.60	2.26	51.70	73.9	22.2	150	0	Floor noise
Hori.	9848.000	PK	47.42	38.36	7.99	43.18	2.26	52.85	73.9	21.0	150	0	Floor noise
Hori.	1481.760	AV	47.38	25.53	12.44	46.47	2.26	41.14	53.9	12.7	175	119	
Hori.	4924.000	AV	43.23	32.65	5.70	45.75	2.26	38.09	53.9	15.8	150	0	Floor noise
Hori.	7386.000	AV	41.06	37.33	7.04	44.60	2.26	43.09	53.9	10.8	150	0	Floor noise
Hori.	9848.000	AV	38.79	38.36	7.99	43.18	2.26	44.22	53.9	9.6	150	0	Floor noise
Vert.	30.243	QP	38.00	12.60	5.66	32.18	0.00	24.08	40.0	15.9	100	355	
Vert.	36.270	QP	45.20	12.91	5.74	32.17	0.00	31.68	40.0	8.3	100	280	
Vert.	170.000	QP	37.60	12.87	6.89	32.06	0.00	25.30	43.5	18.2	100	270	
Vert.	314.000	QP	45.00	13.88	7.69	31.94	0.00	34.63	46.0	11.3	100	102	
Vert.	816.000	QP	33.70	22.62	9.63	31.75	0.00	34.20	46.0	11.8	142	190	
Vert.	947.897	QP	28.30	23.96	10.06	30.96	0.00	31.36	46.0	14.6	141	311	
Vert.	1481.760	PK	55.53	25.53	12.44	46.47	2.26	49.29	73.9	24.6	263	195	
Vert.	2483.500	PK	69.88	27.99	13.29	46.16	2.26	67.26	73.9	6.6	377	266	
Vert.	4924.000	PK	51.00	32.65	5.70	45.75	2.26	45.86	73.9	28.0	150	0	Floor noise
Vert.	7386.000	PK	50.09	37.33	7.04	44.60	2.26	52.12	73.9	21.7	150	0	Floor noise
Vert.	9848.000	PK	47.96	38.36	7.99	43.18	2.26	53.39	73.9	20.5	150	0	Floor noise
Vert.	1481.760	AV	47.82	25.53	12.44	46.47	2.26	41.58	53.9	12.3	263	195	
Vert.	4924.000	AV	42.95	32.65	5.70	45.75	2.26	37.81	53.9	16.0	150	0	Floor noise
Vert.	7386.000	AV	41.37	37.33	7.04	44.60	2.26	43.40	53.9	10.5	150	0	Floor noise
Vert.	9848.000	AV	39.06	38.36	7.99	43.18	2.26	44.49	53.9	9.4	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	52.88	27.99	13.29	46.16	0.82	2.26	51.08	53.9	2.8	*1)
Vert.	2483.500	AV	54.36	27.99	13.29	46.16	0.82	2.26	52.56	53.9	**1.3**	*1)

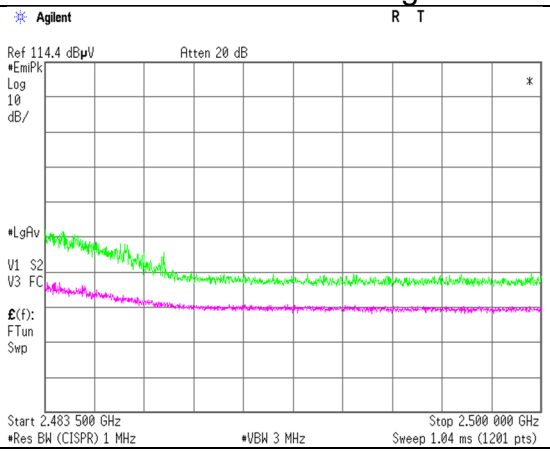
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 29, 2024
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11n-20 2462 MHz

Horizontal

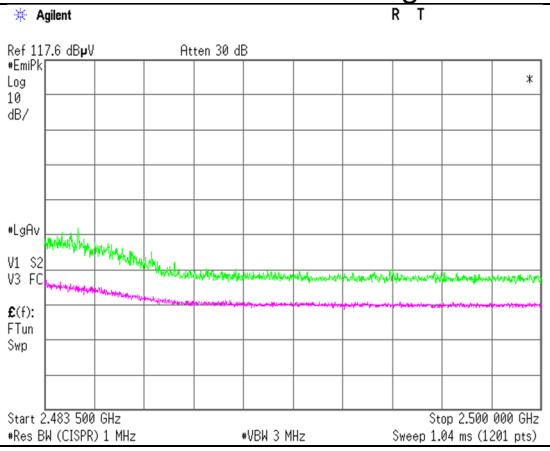
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

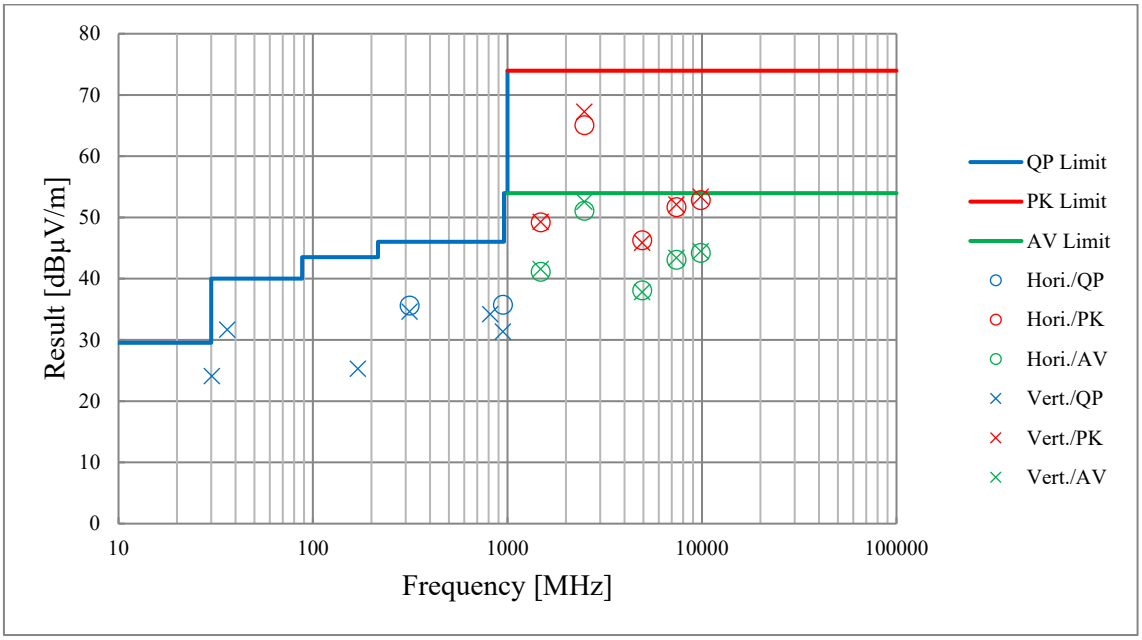


Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.11	No.11	No.11
Date	January 31, 2024	January 29, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	22 deg. C / 40 % RH	21 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz to 1 GHz)	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11n-20 2462 MHz			



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

Radiated Spurious Emission

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11b 2412 MHz with Tx 11a 5180 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	53.87	27.57	13.21	46.26	2.26	50.65	73.9	23.2	152	126	
Hori.	2390.000	AV	45.01	27.57	13.21	46.26	2.26	41.79	53.9	12.1	152	126	
Vert.	2390.000	PK	54.17	27.57	13.21	46.26	2.26	50.95	73.9	22.9	164	40	
Vert.	2390.000	AV	45.13	27.57	13.21	46.26	2.26	41.91	53.9	**11.9**	164	40	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

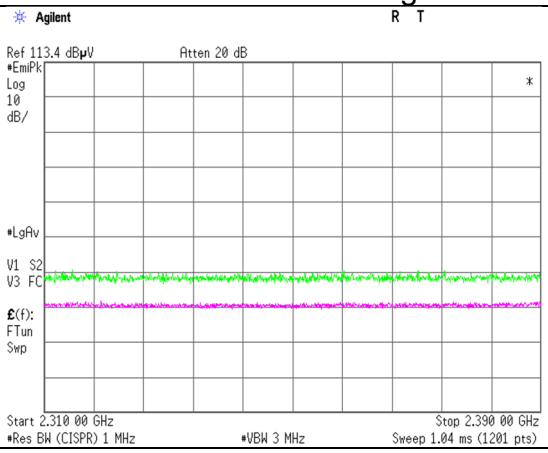
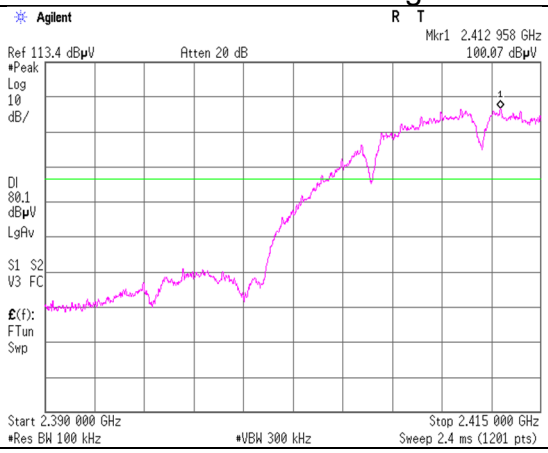
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

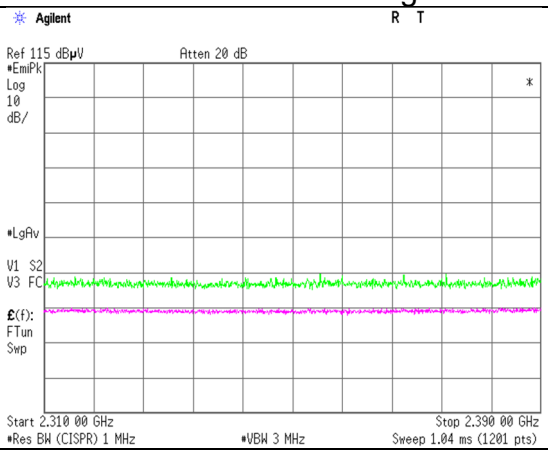
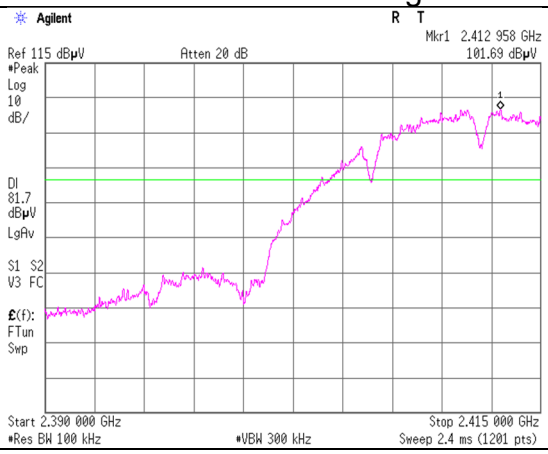
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	100.07	27.62	13.23	46.24	2.26	96.94	-	-	Carrier
Hori.	2398.317	PK	54.40	27.58	13.22	46.25	2.26	51.21	76.9	25.7	-
Hori.	2400.000	PK	52.27	27.58	13.22	46.25	2.26	49.08	76.9	27.8	-
Vert.	2412.000	PK	101.69	27.62	13.23	46.24	2.26	98.56	-	-	Carrier
Vert.	2397.525	PK	54.60	27.58	13.22	46.25	2.26	51.41	78.6	27.1	-
Vert.	2400.000	PK	52.95	27.58	13.22	46.25	2.26	49.76	78.6	28.8	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11b 2412 MHz with Tx 11a 5180 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11b 2462 MHz with Tx 11a 5180 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	54.22	27.99	13.29	46.16	2.26	51.60	73.9	22.3	168	307	
Hori.	2483.500	AV	45.44	27.99	13.29	46.16	2.26	42.82	53.9	11.0	168	307	
Vert.	2483.500	PK	54.15	27.99	13.29	46.16	2.26	51.53	73.9	22.3	156	45	
Vert.	2483.500	AV	45.54	27.99	13.29	46.16	2.26	42.92	53.9	**10.9**	156	45	

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

Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB

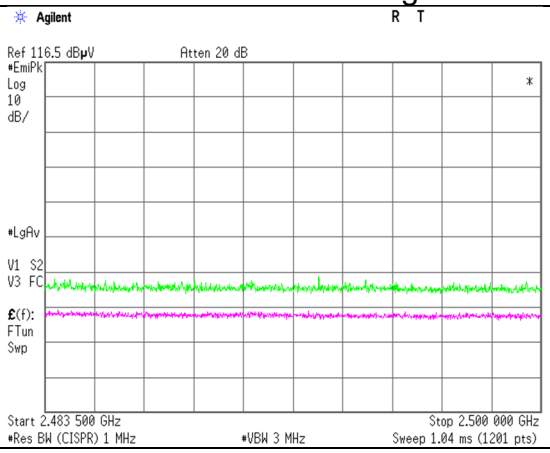
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11b 2462 MHz with Tx 11a 5180 MHz

Horizontal

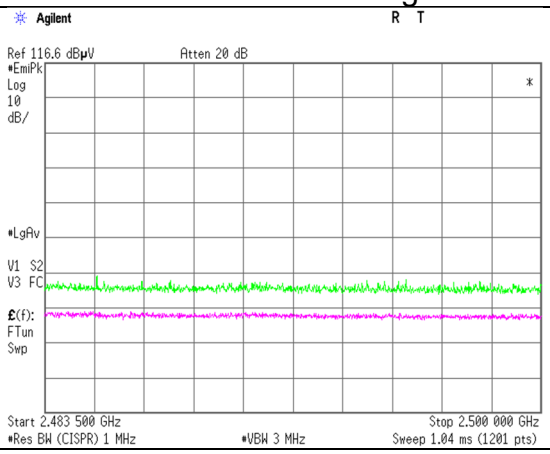
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11g 2412 MHz with Tx 11a 5180 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	60.53	27.57	13.21	46.26	2.26	57.31	73.9	16.5	169	302	
Vert.	2390.000	PK	61.89	27.57	13.21	46.26	2.26	58.67	73.9	15.2	166	45	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	46.22	27.57	13.21	46.26	0.79	2.26	43.79	53.9	10.1	*1)
Vert.	2390.000	AV	47.26	27.57	13.21	46.26	0.79	2.26	44.83	53.9	**9.0**	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

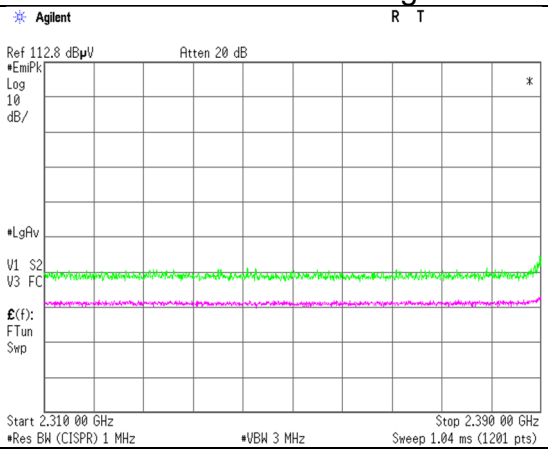
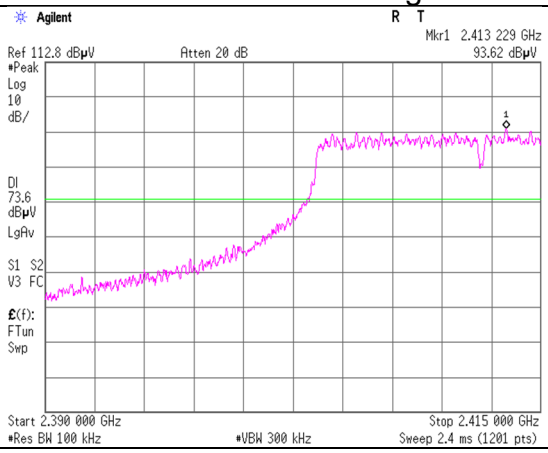
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

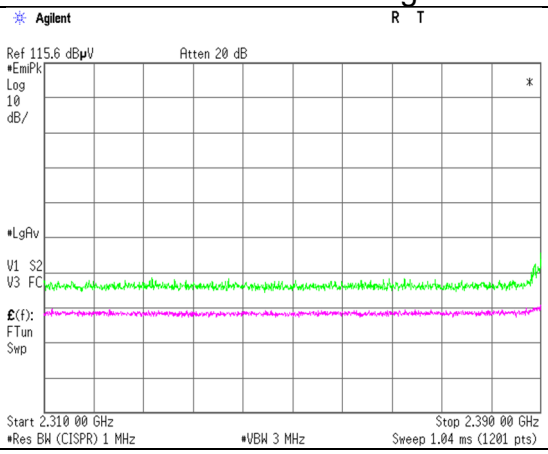
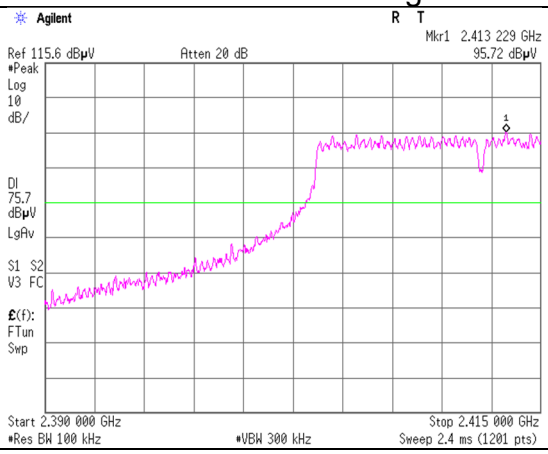
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	93.62	27.62	13.23	46.24	2.26	90.49	-	-	Carrier
Hori.	2400.000	PK	60.99	27.58	13.22	46.25	2.26	57.80	70.5	12.6	-
Vert.	2412.000	PK	95.72	27.62	13.23	46.24	2.26	92.59	-	-	Carrier
Vert.	2400.000	PK	62.88	27.58	13.22	46.25	2.26	59.69	72.6	12.9	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11g 2412 MHz with Tx 11a 5180 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11g 2462 MHz with Tx 11a 5180 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	66.01	27.99	13.29	46.16	2.26	63.39	73.9	10.5	168	302	
Vert.	2483.500	PK	67.09	27.99	13.29	46.16	2.26	64.47	73.9	9.4	171	51	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	51.59	27.99	13.29	46.16	0.79	2.26	49.76	53.9	**4.1**	*1)
Vert.	2483.500	AV	51.28	27.99	13.29	46.16	0.79	2.26	49.45	53.9	4.4	*1)

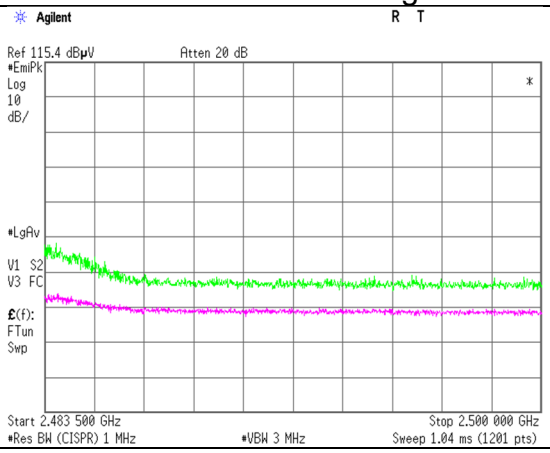
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11g 2462 MHz with Tx 11a 5180 MHz

Horizontal

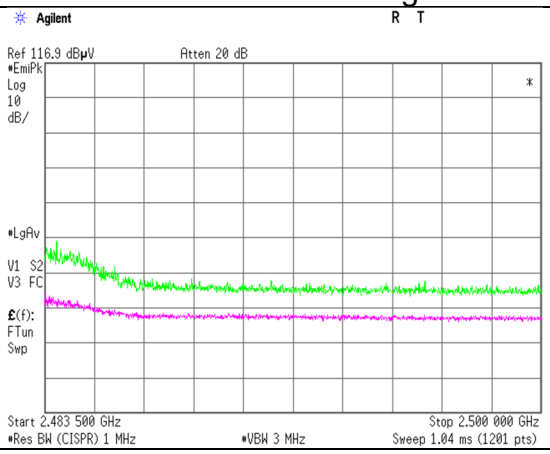
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11n-20 2412 MHz with Tx 11a 5180 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	61.78	27.57	13.21	46.26	2.26	58.56	73.9	15.3	177	305	
Vert.	2390.000	PK	63.93	27.57	13.21	46.26	2.26	60.71	73.9	13.1	170	45	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	47.37	27.57	13.21	46.26	0.82	2.26	44.97	53.9	8.9	*1)
Vert.	2390.000	AV	48.54	27.57	13.21	46.26	0.82	2.26	46.14	53.9	**7.7**	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

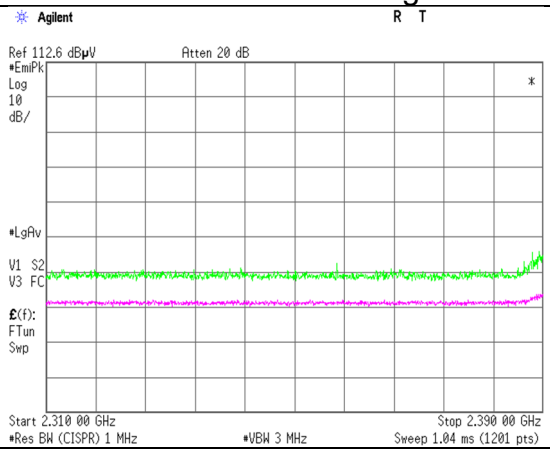
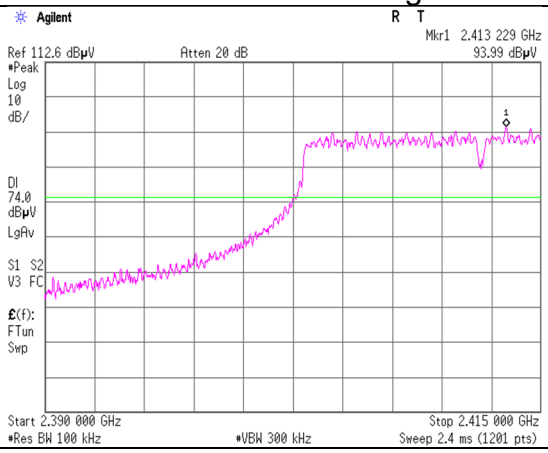
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

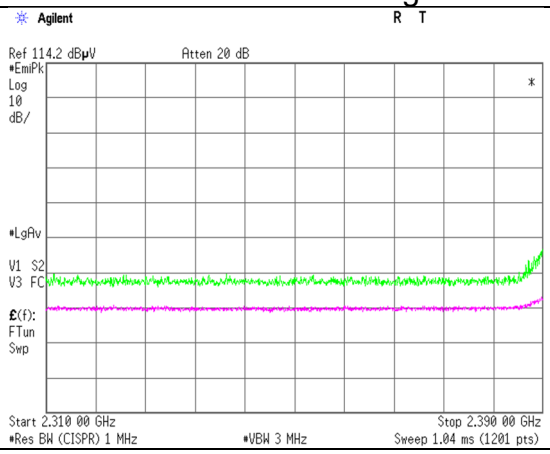
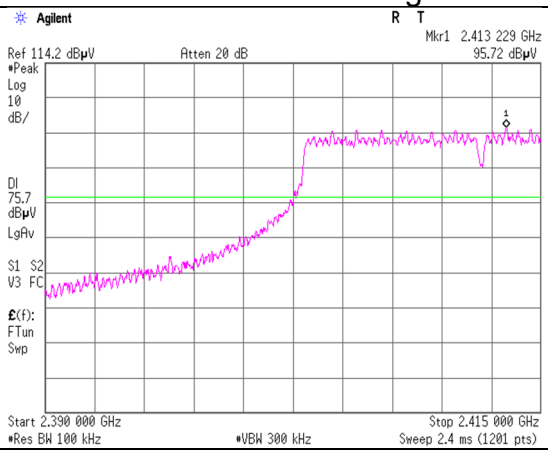
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2412.000	PK	93.99	27.62	13.23	46.24	2.26	90.86	-	-	Carrier
Hori.	2400.000	PK	62.52	27.58	13.22	46.25	2.26	59.33	70.9	11.5	-
Vert.	2412.000	PK	95.72	27.62	13.23	46.24	2.26	92.59	-	-	Carrier
Vert.	2400.000	PK	64.27	27.58	13.22	46.25	2.26	61.08	72.6	11.5	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11n-20 2412 MHz with Tx 11a 5180 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.11	No.11	No.11
Date	February 23, 2024	February 21, 2024	February 22, 2024	February 22, 2024
Temperature / Humidity	19 deg. C / 42 % RH	20 deg. C / 43 % RH	20 deg. C / 41 % RH	20 deg. C / 41 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz to 1 GHz)	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11n-20 2462 MHz with Tx 11a 5180 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.	318.294	QP	44.30	13.99	7.71	31.94	0.00	34.06	46.0	11.9	150	306	
Hori.	947.828	QP	30.00	23.96	10.06	30.96	0.00	33.06	46.0	12.9	150	213	
Hori.	1481.760	PK	55.33	25.53	12.44	46.47	2.26	49.09	73.9	24.8	158	156	
Hori.	2483.500	PK	68.37	27.99	13.29	46.16	2.26	65.75	73.9	8.1	168	303	
Hori.	4924.000	PK	57.94	32.65	5.70	45.75	2.26	52.80	73.9	21.1	280	10	
Hori.	7386.000	PK	51.19	37.33	7.04	44.60	2.26	53.22	73.9	20.6	150	0	Floor noise
Hori.	9848.000	PK	47.72	38.36	7.99	43.18	2.26	53.15	73.9	20.7	150	0	Floor noise
Hori.	1481.760	AV	47.08	25.53	12.44	46.47	2.26	40.84	53.9	13.0	158	156	
Hori.	7386.000	AV	41.48	37.33	7.04	44.60	2.26	43.51	53.9	10.3	150	0	Floor noise
Hori.	9848.000	AV	38.79	38.36	7.99	43.18	2.26	44.22	53.9	9.6	150	0	Floor noise
Vert.	31.827	QP	41.70	12.56	5.68	32.18	0.00	27.76	40.0	12.2	100	317	
Vert.	36.270	QP	46.00	12.91	5.74	32.17	0.00	32.48	40.0	7.5	100	261	
Vert.	170.000	QP	37.20	12.87	6.89	32.06	0.00	24.90	43.5	18.6	100	187	
Vert.	314.481	QP	41.30	13.90	7.69	31.94	0.00	30.95	46.0	15.0	100	165	
Vert.	816.000	QP	37.40	22.62	9.63	31.75	0.00	37.90	46.0	8.1	144	200	
Vert.	947.594	QP	29.40	23.95	10.06	30.96	0.00	32.45	46.0	13.5	158	307	
Vert.	1481.760	PK	54.52	25.53	12.44	46.47	2.26	48.28	73.9	25.6	153	118	
Vert.	2483.500	PK	70.38	27.99	13.29	46.16	2.26	67.76	73.9	6.1	170	54	
Vert.	4924.000	PK	59.28	32.65	5.70	45.75	2.26	54.14	73.9	19.7	221	353	
Vert.	7386.000	PK	51.23	37.33	7.04	44.60	2.26	53.26	73.9	20.6	150	0	Floor noise
Vert.	9848.000	PK	48.75	38.36	7.99	43.18	2.26	54.18	73.9	19.7	150	0	Floor noise
Vert.	1481.760	AV	46.78	25.53	12.44	46.47	2.26	40.54	53.9	13.3	153	118	
Vert.	7386.000	AV	41.43	37.33	7.04	44.60	2.26	43.46	53.9	10.4	150	0	Floor noise
Vert.	9848.000	AV	38.91	38.36	7.99	43.18	2.26	44.34	53.9	9.5	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	51.77	27.99	13.29	46.16	0.82	2.26	49.97	53.9	3.9	*1)
Hori.	4924.000	AV	53.82	32.65	5.70	45.75	0.82	2.26	49.50	53.9	4.4	
Vert.	2483.500	AV	53.58	27.99	13.29	46.16	0.82	2.26	51.78	53.9	**2.1**	*1)
Vert.	4924.000	AV	55.38	32.65	5.70	45.75	0.82	2.26	51.06	53.9	2.8	

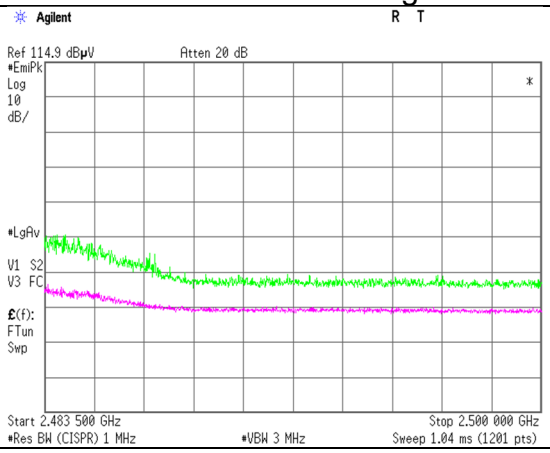
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	February 21, 2024
Temperature / Humidity	20 deg. C / 43 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx 11n-20 2462 MHz with Tx 11a 5180 MHz

Horizontal

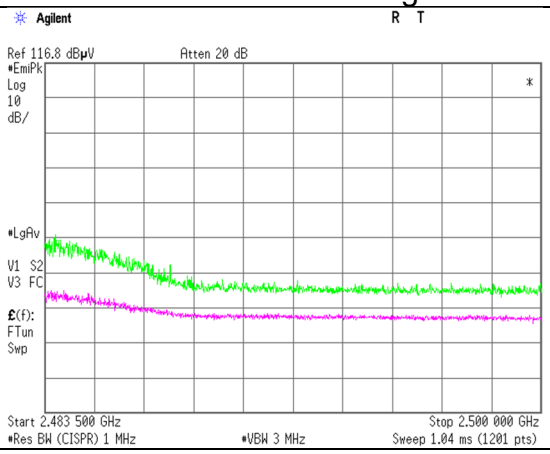
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

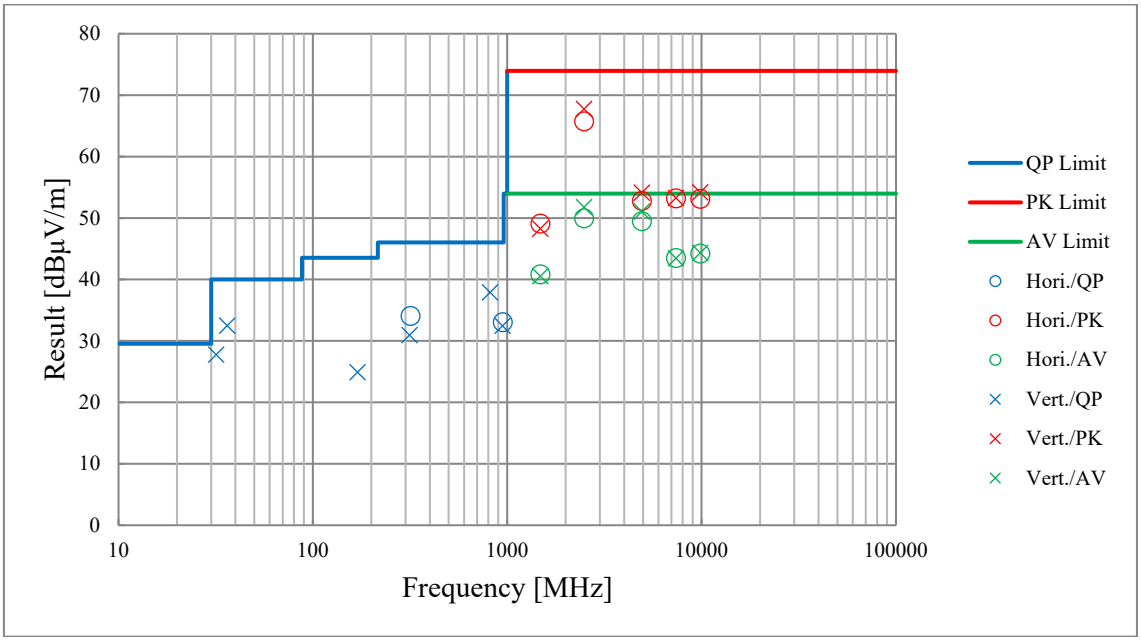


Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.11	No.11	No.11
Date	February 23, 2024	February 21, 2024	February 22, 2024	February 22, 2024
Temperature / Humidity	19 deg. C / 42 % RH	20 deg. C / 43 % RH	20 deg. C / 41 % RH	20 deg. C / 41 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz to 1 GHz)	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx 11n-20 2462 MHz with Tx 11a 5180 MHz			



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

Radiated Spurious Emission

Test place	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 30, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	20 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx BT LE, 1M-PHY 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.	1481.760	PK	55.44	25.53	12.44	46.47	2.26	49.20	73.9	24.7	193	127	
Hori.	2390.000	PK	53.49	27.57	13.21	46.26	2.26	50.27	73.9	23.6	246	51	
Hori.	4804.000	PK	52.93	32.62	5.63	45.77	2.26	47.67	73.9	26.2	150	0	Floor noise
Hori.	7206.000	PK	50.75	37.18	6.97	44.83	2.26	52.33	73.9	21.5	150	0	Floor noise
Hori.	9608.000	PK	46.80	38.33	7.89	43.17	2.26	52.11	73.9	21.7	150	0	Floor noise
Hori.	1481.760	AV	47.82	25.53	12.44	46.47	2.26	41.58	53.9	12.3	193	127	
Hori.	4804.000	AV	43.94	32.62	5.63	45.77	2.26	38.68	53.9	15.2	150	0	Floor noise
Hori.	7206.000	AV	41.18	37.18	6.97	44.83	2.26	42.76	53.9	11.1	150	0	Floor noise
Hori.	9608.000	AV	39.32	38.33	7.89	43.17	2.26	44.63	53.9	**9.2**	150	0	Floor noise
Vert.	1481.760	PK	55.12	25.53	12.44	46.47	2.26	48.88	73.9	25.0	264	196	
Vert.	2390.000	PK	53.48	27.57	13.21	46.26	2.26	50.26	73.9	23.6	144	303	
Vert.	4804.000	PK	52.44	32.62	5.63	45.77	2.26	47.18	73.9	26.7	150	0	Floor noise
Vert.	7206.000	PK	49.79	37.18	6.97	44.83	2.26	51.37	73.9	22.5	150	0	Floor noise
Vert.	9608.000	PK	47.49	38.33	7.89	43.17	2.26	52.80	73.9	21.1	150	0	Floor noise
Vert.	1481.760	AV	47.56	25.53	12.44	46.47	2.26	41.32	53.9	12.5	264	196	
Vert.	4804.000	AV	43.91	32.62	5.63	45.77	2.26	38.65	53.9	15.2	150	0	Floor noise
Vert.	7206.000	AV	41.24	37.18	6.97	44.83	2.26	42.82	53.9	11.0	150	0	Floor noise
Vert.	9608.000	AV	39.11	38.33	7.89	43.17	2.26	44.42	53.9	9.4	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	44.56	27.57	13.21	46.26	1.76	2.26	43.10	53.9	10.8	*1)
Vert.	2390.000	AV	44.73	27.57	13.21	46.26	1.76	2.26	43.27	53.9	10.6	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

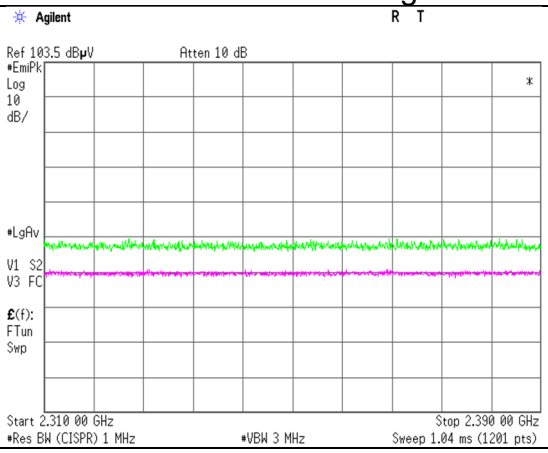
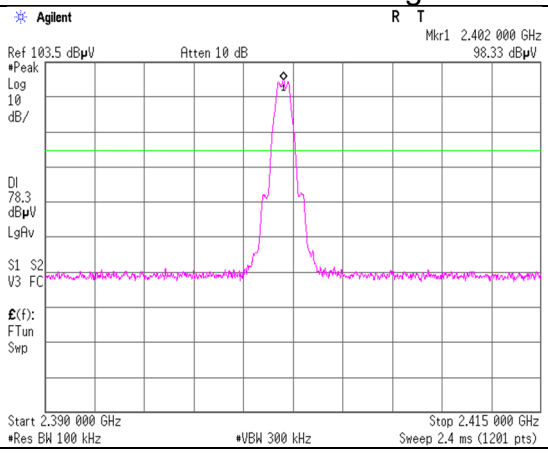
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

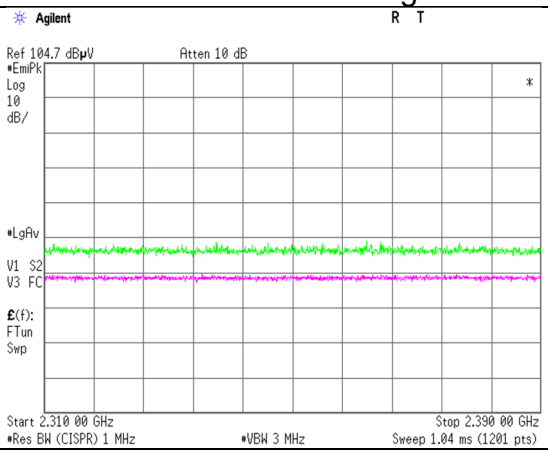
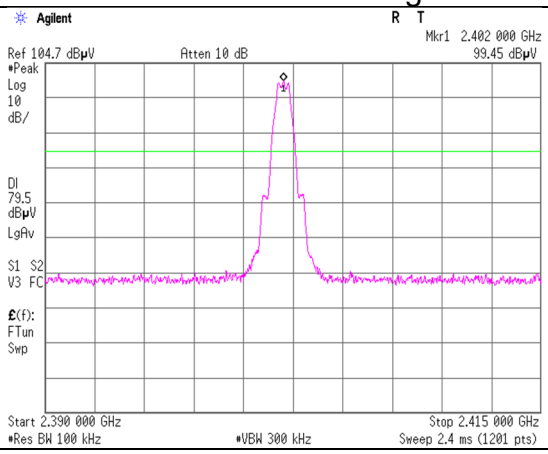
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	98.33	27.59	13.22	46.25	2.26	95.15	-	-	Carrier
Hori.	2400.000	PK	45.22	27.58	13.22	46.25	2.26	42.03	75.2	33.1	-
Vert.	2402.000	PK	99.45	27.59	13.22	46.25	2.26	96.27	-	-	Carrier
Vert.	2400.000	PK	44.37	27.58	13.22	46.25	2.26	41.18	76.3	35.0	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 30, 2024
Temperature / Humidity	20 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx BT LE, 1M-PHY 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 30, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	20 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx BT LE, 1M-PHY 2440 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.	1481.760	PK	55.70	25.53	12.44	46.47	2.26	49.46	73.9	24.4	186	131	
Hori.	4880.000	PK	51.88	32.66	5.68	45.76	2.26	46.72	73.9	27.1	150	0	Floor noise
Hori.	7320.000	PK	50.15	37.25	7.00	44.64	2.26	52.02	73.9	21.8	150	0	Floor noise
Hori.	9760.000	PK	48.12	38.24	7.95	43.11	2.26	53.46	73.9	20.4	150	0	Floor noise
Hori.	1481.760	AV	48.23	25.53	12.44	46.47	2.26	41.99	53.9	11.9	186	131	
Hori.	4880.000	AV	43.42	32.66	5.68	45.76	2.26	38.26	53.9	15.6	150	0	Floor noise
Hori.	7320.000	AV	40.54	37.25	7.00	44.64	2.26	42.41	53.9	11.4	150	0	Floor noise
Hori.	9760.000	AV	39.09	38.24	7.95	43.11	2.26	44.43	53.9	**9.4**	150	0	Floor noise
Vert.	1481.760	PK	55.74	25.53	12.44	46.47	2.26	49.50	73.9	24.4	262	206	
Vert.	4880.000	PK	51.70	32.66	5.68	45.76	2.26	46.54	73.9	27.3	150	0	Floor noise
Vert.	7320.000	PK	49.43	37.25	7.00	44.64	2.26	51.30	73.9	22.6	150	0	Floor noise
Vert.	9760.000	PK	48.40	38.24	7.95	43.11	2.26	53.74	73.9	20.1	150	0	Floor noise
Vert.	1481.760	AV	47.00	25.53	12.44	46.47	2.26	40.76	53.9	13.1	262	206	
Vert.	4880.000	AV	43.38	32.66	5.68	45.76	2.26	38.22	53.9	15.6	150	0	Floor noise
Vert.	7320.000	AV	40.48	37.25	7.00	44.64	2.26	42.35	53.9	11.5	150	0	Floor noise
Vert.	9760.000	AV	38.89	38.24	7.95	43.11	2.26	44.23	53.9	9.6	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 (3.89 m / 3.0 m) = 2.26 dB

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

Radiated Spurious Emission

Test place	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 30, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	20 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx BT LE, 1M-PHY 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.	1481.760	PK	55.30	25.53	12.44	46.47	2.26	49.06	73.9	24.8	192	126	
Hori.	2483.500	PK	53.41	27.99	13.29	46.16	2.26	50.79	73.9	23.1	158	51	
Hori.	4960.000	PK	52.12	32.60	5.72	45.75	2.26	46.95	73.9	26.9	150	0	Floor noise
Hori.	7440.000	PK	50.33	37.45	7.06	44.58	2.26	52.52	73.9	21.3	150	0	Floor noise
Hori.	9920.000	PK	47.66	38.33	8.03	43.21	2.26	53.07	73.9	20.8	150	0	Floor noise
Hori.	1481.760	AV	48.02	25.53	12.44	46.47	2.26	41.78	53.9	12.1	192	126	
Hori.	4960.000	AV	43.35	32.60	5.72	45.75	2.26	38.18	53.9	15.7	150	0	Florr noise
Hori.	7440.000	AV	41.45	37.45	7.06	44.58	2.26	43.64	53.9	10.2	150	0	Florr noise
Hori.	9920.000	AV	38.56	38.33	8.03	43.21	2.26	43.97	53.9	**9.9**	150	0	Florr noise
Vert.	1481.760	PK	55.29	25.53	12.44	46.47	2.26	49.05	73.9	24.8	267	201	
Vert.	2483.500	PK	53.75	27.99	13.29	46.16	2.26	51.13	73.9	22.7	149	303	
Vert.	4960.000	PK	52.13	32.60	5.72	45.75	2.26	46.96	73.9	26.9	150	0	Floor noise
Vert.	7440.000	PK	51.05	37.45	7.06	44.58	2.26	53.24	73.9	20.6	150	0	Floor noise
Vert.	9920.000	PK	47.47	38.33	8.03	43.21	2.26	52.88	73.9	21.0	150	0	Floor noise
Vert.	1481.760	AV	47.05	25.53	12.44	46.47	2.26	40.81	53.9	13.0	267	201	
Vert.	4960.000	AV	43.42	32.60	5.72	45.75	2.26	38.25	53.9	15.6	150	0	Florr noise
Vert.	7440.000	AV	41.58	37.45	7.06	44.58	2.26	43.77	53.9	10.1	150	0	Florr noise
Vert.	9920.000	AV	38.48	38.33	8.03	43.21	2.26	43.89	53.9	10.0	150	0	Florr noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	44.73	27.99	13.29	46.16	1.76	2.26	43.87	53.9	10.0	*1)
Vert.	2483.500	AV	44.65	27.99	13.29	46.16	1.76	2.26	43.79	53.9	10.1	*1)

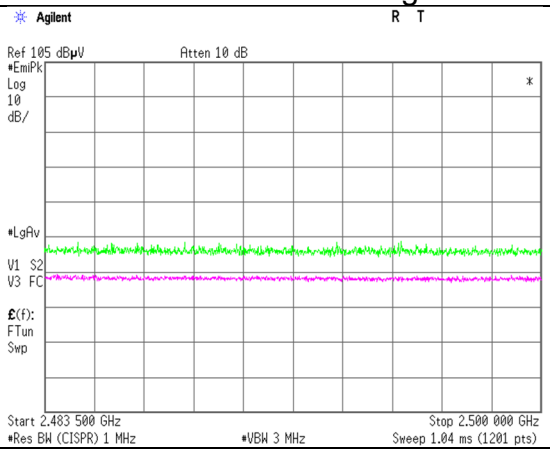
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 30, 2024
Temperature / Humidity	20 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx BT LE, 1M-PHY 2480 MHz

Horizontal

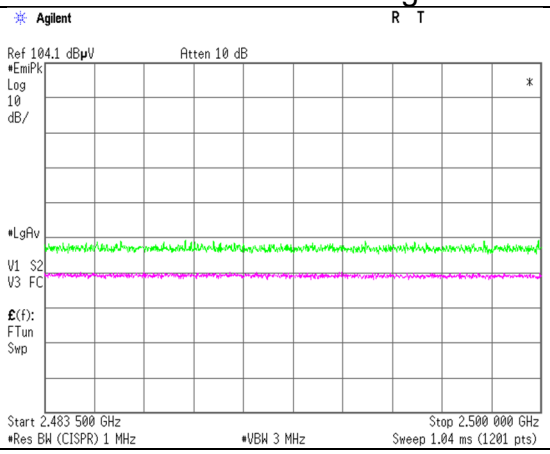
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

* 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	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 30, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	20 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx BT LE, 2M-PHY 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.	1481.760	PK	55.64	25.53	12.44	46.47	2.26	49.40	73.9	24.5	188	122	
Hori.	2390.000	PK	53.07	27.57	13.21	46.26	2.26	49.85	73.9	24.0	178	50	
Hori.	4804.000	PK	53.33	32.62	5.63	45.77	2.26	48.07	73.9	25.8	150	0	Floor noise
Hori.	7206.000	PK	49.93	37.18	6.97	44.83	2.26	51.51	73.9	22.3	150	0	Floor noise
Hori.	9608.000	PK	47.39	38.33	7.89	43.17	2.26	52.70	73.9	21.2	150	0	Floor noise
Hori.	1481.760	AV	47.82	25.53	12.44	46.47	2.26	41.58	53.9	12.3	188	122	
Hori.	4804.000	AV	43.71	32.62	5.63	45.77	2.26	38.45	53.9	15.4	150	0	Floor noise
Hori.	7206.000	AV	41.24	37.18	6.97	44.83	2.26	42.82	53.9	11.0	150	0	Floor noise
Hori.	9608.000	AV	39.10	38.33	7.89	43.17	2.26	44.41	53.9	9.4	150	0	Floor noise
Vert.	1481.760	PK	55.25	25.53	12.44	46.47	2.26	49.01	73.9	24.8	264	208	
Vert.	2390.000	PK	53.39	27.57	13.21	46.26	2.26	50.17	73.9	23.7	154	291	
Vert.	4804.000	PK	52.31	32.62	5.63	45.77	2.26	47.05	73.9	26.8	150	0	Floor noise
Vert.	7206.000	PK	49.78	37.18	6.97	44.83	2.26	51.36	73.9	22.5	150	0	Floor noise
Vert.	9608.000	PK	47.02	38.33	7.89	43.17	2.26	52.33	73.9	21.5	150	0	Floor noise
Vert.	1481.760	AV	46.77	25.53	12.44	46.47	2.26	40.53	53.9	13.3	264	208	
Vert.	4804.000	AV	43.56	32.62	5.63	45.77	2.26	38.30	53.9	15.6	150	0	Floor noise
Vert.	7206.000	AV	41.10	37.18	6.97	44.83	2.26	42.68	53.9	11.2	150	0	Floor noise
Vert.	9608.000	AV	39.13	38.33	7.89	43.17	2.26	44.44	53.9	9.4	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 (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	44.72	27.57	13.21	46.26	4.31	2.26	45.81	53.9	**8.0**	*1)
Vert.	2390.000	AV	44.68	27.57	13.21	46.26	4.31	2.26	45.77	53.9	8.1	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)

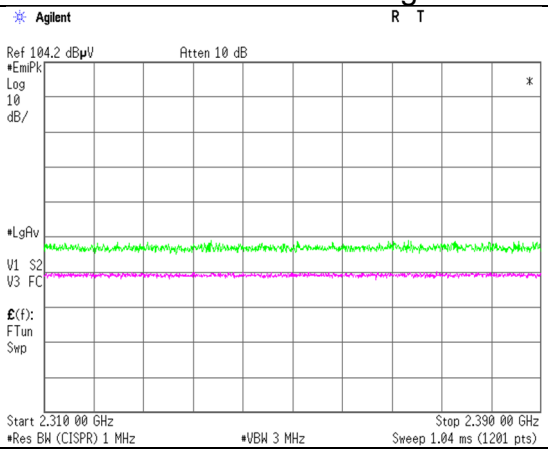
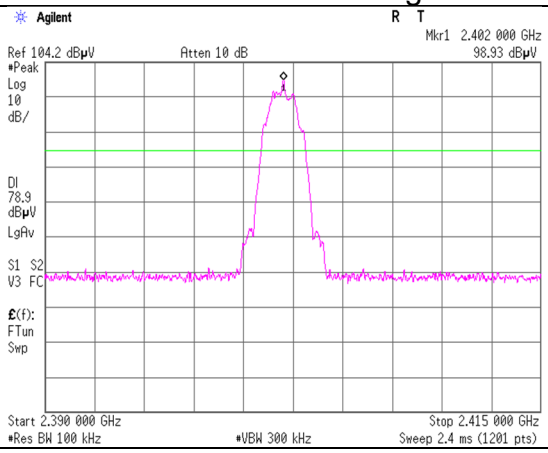
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

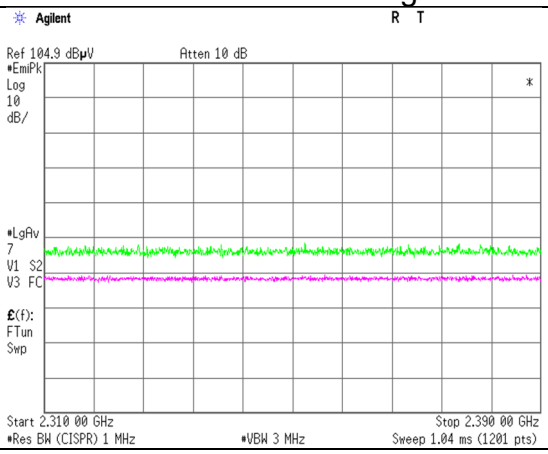
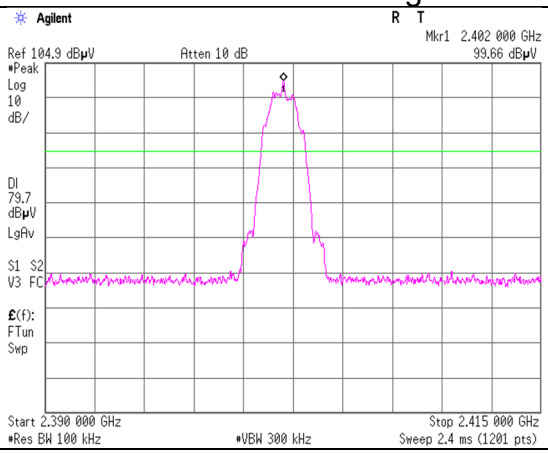
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	98.93	27.59	13.22	46.25	2.26	95.75	-	-	Carrier
Hori.	2400.000	PK	53.03	27.58	13.22	46.25	2.26	49.84	75.8	25.9	-
Vert.	2402.000	PK	99.66	27.59	13.22	46.25	2.26	96.48	-	-	Carrier
Vert.	2400.000	PK	53.34	27.58	13.22	46.25	2.26	50.15	76.5	26.3	-

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	January 30, 2024
Temperature / Humidity	20 deg. C / 38 % RH
Engineer	Hiromitsu Tanabe (1 GHz to 2.8 GHz)
Mode	Tx BT LE, 2M-PHY 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* 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	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.11	No.11	No.11
Date	January 31, 2024	January 30, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	22 deg. C / 40 % RH	20 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz to 1 GHz)	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx BT LE, 2M-PHY 2440 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.	327.055	QP	42.70	14.21	7.76	31.93	0.00	32.74	46.0	13.2	143	329	
Hori.	947.543	QP	33.50	23.95	10.06	30.96	0.00	36.55	46.0	9.4	146	215	
Hori.	1481.760	PK	55.54	25.53	12.44	46.47	2.26	49.30	73.9	24.6	181	127	
Hori.	4880.000	PK	52.24	32.66	5.68	45.76	2.26	47.08	73.9	26.8	150	0	Floor noise
Hori.	7320.000	PK	49.52	37.25	7.00	44.64	2.26	51.39	73.9	22.5	150	0	Floor noise
Hori.	9760.000	PK	48.10	38.24	7.95	43.11	2.26	53.44	73.9	20.4	150	0	Floor noise
Hori.	1481.760	AV	48.31	25.53	12.44	46.47	2.26	42.07	53.9	11.8	181	127	
Hori.	4880.000	AV	43.43	32.66	5.68	45.76	2.26	38.27	53.9	15.6	150	0	Floor noise
Hori.	7320.000	AV	40.36	37.25	7.00	44.64	2.26	42.23	53.9	11.6	150	0	Floor noise
Hori.	9760.000	AV	38.97	38.24	7.95	43.11	2.26	44.31	53.9	9.5	150	0	Floor noise
Vert.	30.243	QP	39.70	12.60	5.66	32.18	0.00	25.78	40.0	14.2	100	355	
Vert.	36.261	QP	45.00	12.91	5.74	32.17	0.00	31.48	40.0	**8.5**	100	278	
Vert.	170.000	QP	39.50	12.87	6.89	32.06	0.00	27.20	43.5	16.3	100	277	
Vert.	316.858	QP	44.00	13.97	7.70	31.94	0.00	33.73	46.0	12.2	100	80	
Vert.	816.000	QP	35.30	22.62	9.63	31.75	0.00	35.80	46.0	10.2	144	190	
Vert.	947.573	QP	28.30	23.95	10.06	30.96	0.00	31.35	46.0	14.6	149	308	
Vert.	1481.760	PK	54.84	25.53	12.44	46.47	2.26	48.60	73.9	25.3	263	200	
Vert.	4880.000	PK	52.47	32.66	5.68	45.76	2.26	47.31	73.9	26.5	150	0	Floor noise
Vert.	7320.000	PK	49.61	37.25	7.00	44.64	2.26	51.48	73.9	22.4	150	0	Floor noise
Vert.	9760.000	PK	47.32	38.24	7.95	43.11	2.26	52.66	73.9	21.2	150	0	Floor noise
Vert.	1481.760	AV	47.22	25.53	12.44	46.47	2.26	40.98	53.9	12.9	263	200	
Vert.	4880.000	AV	43.48	32.66	5.68	45.76	2.26	38.32	53.9	15.5	150	0	Floor noise
Vert.	7320.000	AV	40.65	37.25	7.00	44.64	2.26	42.52	53.9	11.3	150	0	Floor noise
Vert.	9760.000	AV	38.92	38.24	7.95	43.11	2.26	44.26	53.9	9.6	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 (3.89 m / 3.0 m) = 2.26 dB

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

Radiated Spurious Emission

Test place	Kashima EMC Lab.		
Semi Anechoic Chamber	No.11	No.11	No.11
Date	January 30, 2024	January 30, 2024	January 31, 2024
Temperature / Humidity	20 deg. C / 38 % RH	20 deg. C / 38 % RH	22 deg. C / 40 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(1 GHz to 2.8 GHz)	(2.8 GHz to 10 GHz)	(10 GHz to 26.5 GHz)
Mode	Tx BT LE, 2M-PHY 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.	1481.760	PK	56.08	25.53	12.44	46.47	2.26	49.84	73.9	24.0	194	126	
Hori.	2483.500	PK	53.98	27.99	13.29	46.16	2.26	51.36	73.9	22.5	198	48	
Hori.	4960.000	PK	52.30	32.60	5.72	45.75	2.26	47.13	73.9	26.7	150	0	Floor noise
Hori.	7440.000	PK	50.70	37.45	7.06	44.58	2.26	52.89	73.9	21.0	150	0	Floor noise
Hori.	9920.000	PK	47.01	38.33	8.03	43.21	2.26	52.42	73.9	21.4	150	0	Floor noise
Hori.	1481.760	AV	47.77	25.53	12.44	46.47	2.26	41.53	53.9	12.3	194	126	
Hori.	4960.000	AV	43.56	32.60	5.72	45.75	2.26	38.39	53.9	15.5	150	0	Floor noise
Hori.	7440.000	AV	41.46	37.45	7.06	44.58	2.26	43.65	53.9	10.2	150	0	Floor noise
Hori.	9920.000	AV	38.26	38.33	8.03	43.21	2.26	43.67	53.9	10.2	150	0	Floor noise
Vert.	1481.760	PK	55.72	25.53	12.44	46.47	2.26	49.48	73.9	24.4	264	195	
Vert.	2483.500	PK	54.00	27.99	13.29	46.16	2.26	51.38	73.9	22.5	154	303	
Vert.	4960.000	PK	52.16	32.60	5.72	45.75	2.26	46.99	73.9	26.9	150	0	Floor noise
Vert.	7440.000	PK	50.19	37.45	7.06	44.58	2.26	52.38	73.9	21.5	150	0	Floor noise
Vert.	9920.000	PK	47.11	38.33	8.03	43.21	2.26	52.52	73.9	21.3	150	0	Floor noise
Vert.	1481.760	AV	47.35	25.53	12.44	46.47	2.26	41.11	53.9	12.7	264	195	
Vert.	4960.000	AV	43.44	32.60	5.72	45.75	2.26	38.27	53.9	15.6	150	0	Floor noise
Vert.	7440.000	AV	41.65	37.45	7.06	44.58	2.26	43.84	53.9	10.0	150	0	Floor noise
Vert.	9920.000	AV	38.69	38.33	8.03	43.21	2.26	44.10	53.9	9.8	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 : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	44.59	27.99	13.29	46.16	4.31	2.26	46.28	53.9	**7.6**	*1)
Vert.	2483.500	AV	44.48	27.99	13.29	46.16	4.31	2.26	46.17	53.9	7.7	*1)

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.89 m / 3.0 m) = 2.26 dB
10 GHz - 40 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Burst rate confirmation" sheet.
*1) Not out of band emission (Leakage Power)