



RADIO TEST REPORT

Test Report No. 14219577M-B-R1

Customer	PIONEER CORPORATION
Description of EUT	Display Audio
Model Number of EUT	AVH-0239ZT
FCC ID	AJDK120
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied (Refer to SECTION 3)
Issue Date	July 1, 2022
Remarks	Bluetooth (BR / EDR) part(s) Radiated Spurious Emission only

Representative Test Engineer

Hiromitsu Tanabe
Engineer

Approved By

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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- The information provided from the applicant for this report is identified in Section 1.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

REVISION HISTORY

Original Test Report No.: 14219577M-C

This report is a revised version of 14219577M-C. 14219577M-C is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14219577M-C	June 15, 2022	-
1	14219577M-C-R1	July 1, 2022	<u>Radio Specification in Clause 2.2</u> Deleted note about transmit simultaneously: * WLAN and Bluetooth do not transmit simultaneously.
1	14219577M-C-R1	July 1, 2022	<u>Clause 3.2</u> - Corrected the Worst Margin and Mode: Worst Margin: 1.6 dB → 9.5 dB Mode: Tx 11n-40 5190 MHz → Tx 11n-40 5755 MHz - Corrected Results: Complied# → Complied

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	PIONEER CORPORATION
Address	25-1 Yamada, Kawagoe-shi, Saitama-ken 350-8555, Japan
Telephone Number	+81-49-228-7787
Contact Person	Shigeru Yoshida

The information provided from the customer is as follows;

- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
 - Operating/Test Mode(s) (Mode(s)) on all the relevant pages
 - SECTION 1: Customer Information
 - SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
 - SECTION 4: Operation of EUT during testing
- * The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Display Audio
Model Number	AVH-0239ZT
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	February 28, 2022
Test Date	May 11 to 25, 2022

2.2 Product Description

The EUT has following similar models.

Product description	Model number	Feature							
		Bluetooth	WiFi	GNSS	steering position of vehicle	type of vehicle	voice recognition	premium sound	destination
Display Audio*	AVH-0239ZT	A	A	A	Left	B	A	NA	South America
Display Audio	AVH-0039ZT	A	A	A	Left	B	A	NA	Southeast Asia
Display Audio	AVH-0139ZT	A	A	A	Right	B	A	NA	Southeast Asia
Display Audio	AVH-0339ZT	A	A	A	Right	B	NA	NA	Malaysia
Display Audio	AVH-0439ZT	A	A	A	Right	B	A	NA	South America
Display Audio	AVH-0539ZT	A	A	A	Right	B	A	NA	Indonesia
Display Audio	AVH-0639ZT	A	A	A	Right	B	A	A	Thailand
Display Audio	AVH-0639ZT	A	A	A	Right	B	A	A	Thailand
Display Audio	AVH-0739ZT	A	A	A	Left	B	A	A	Southeast Asia
Display Audio	AVH-0939ZY	A	A	A	Right	B	NA	NA	Southeast Asia
Display Audio	AVH-1039ZY	A	A	A	Right	B	NA	NA	Asia
Display Audio	AVH-1139ZY	A	A	A	Left	B	NA	NA	South America
Display Audio	AVH-1239ZY	A	A	A	Right	B	NA	NA	Southeast Asia
Display Audio	AVH-0539ZY	A	A	A	Right	C	NA	NA	Southeast Asia
Display Audio	AVH-0639ZY	A	A	A	Left	C	NA	NA	Southeast Asia
Display Audio	AVH-0739ZY	A	A	A	Left	C	NA	NA	South America
Display Audio	AVH-0839ZY	A	A	A	Right	C	NA	NA	South America

* Tested model, A: Applicable, NA: Not Applicable

General Specification

Rating	DC 13.2 V (DC 10.5 V to 16 V)
Operating temperature	-20 deg. C to +65 deg. C

Radio Specification

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

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band:	5745 MHz
	40 MHz Band:	5755 MHz
	80 MHz Band:	5775 MHz
Type of Modulation	DSSS, OFDM	
Antenna Type	Internal Antenna	
Antenna Gain: G _{ANT}	-3.77 dBi	

Bluetooth (BR / EDR)

Equipment Type	Transceiver	
Frequency of Operation	2402 MHz to 2480 MHz	
Type of Modulation	GFSK, $\pi/4$ - DQPSK , 8DPSK	
Antenna Type	Internal Antenna	
Antenna Gain	-3.60 dBi	

SECTION 3: Test Specification, Procedures & Results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart C FCC Part 15 final revised on April 1, 2022 and effective May 2, 2022
Title	FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

*The customer has declared that the EUT has complies with FCC Part 15 Subpart B as SDoC.

3.2 Procedures and Results

Item	Test Procedure	Specification	Worst Margin	Results	Remarks
Spurious Emission & Band Edge Compliance	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ISED: RSS-Gen 6.13	FCC: Section15.247(d) ----- ISED: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	13.2 dB 958.465 MHz, QP, Vertical Mode: Tx, Hopping Off, 3DH5 2480 MHz	Complied a)	Radiated (above 30 MHz) *1)
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593. * In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.					
*1) Radiated test was selected over 30 MHz based on section 15.247(d).					
a) Refer to APPENDIX 1 (data of Radiated Spurious Emission)					
Symbols: Complied The data of this test item has enough margin, more than the measurement uncertainty. Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration					

FCC Part 15.31 (e)

The EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage, therefore the EUT complies with the requirement. Instead of a new battery, DC power supply was used for the test. That does not affect the test result.

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

There is no applicable rule of uncertainty in this applied standard. Therefore, the results are derived depending on whether or not laboratory uncertainty is applied.

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	Required Uncertainty (+/-)	Uncertainty (+/-)
3 m	9 kHz to 30 MHz	Not Defined	2.9 dB
	30 MHz to 200 MHz	6.3 dB	6.1 dB
	200 MHz to 1000 MHz		6.2 dB
	1 GHz to 6 GHz	5.2 dB	5.0 dB
	6 GHz to 18 GHz	5.5 dB	5.4 dB
	18 GHz to 40 GHz	Not Defined	5.5 dB
1 m	1 GHz to 18 GHz	Not Defined	5.4 dB
	18 GHz to 40 GHz		5.6 dB
0.5 m	26.5 GHz to 40 GHz	Not Defined	5.9 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, Facsimile: +81 478 82 3373
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	-	-
No.3 Measurement room	4.5 x 5.3 x 2.7	-	-

3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

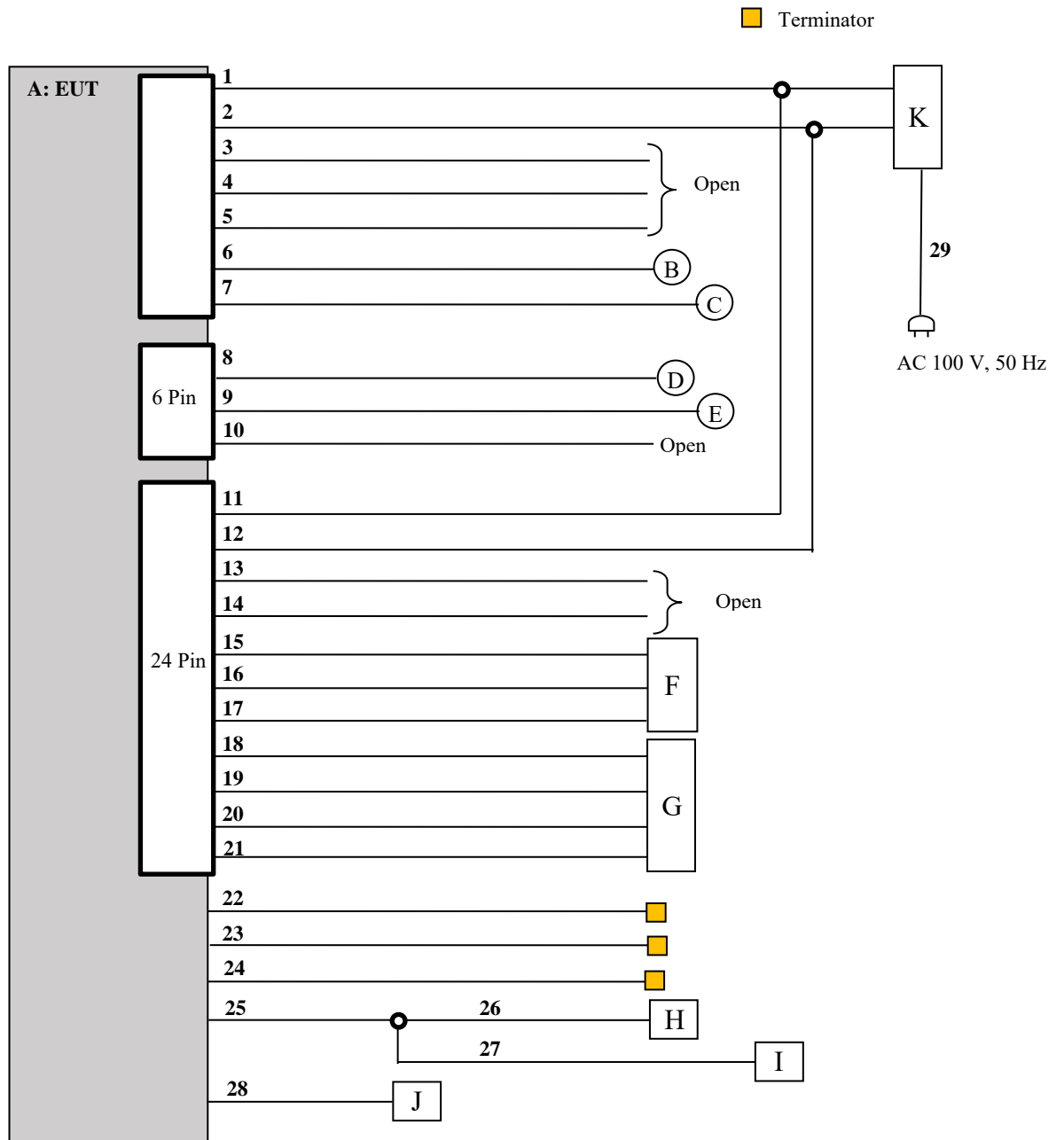
4.1 Operating Mode(s)

Mode	Remarks*
Bluetooth (BT)	BR / EDR, Payload: PRBS9
<p>*EUT has the power settings by the software as follows; Power Setting: 4 dBm Software: Tas0801.exe, Version: 00201200 (Date: 2022.02 02, Storage location: EUT memory)</p> <p>*This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.</p>	

Details of Operating Mode(s)

Test Item	Mode	Hopping	Tested Frequency
Radiated Spurious Emission (Below 1 GHz)	Tx 3DH5 *1)	Off	2480 MHz
Radiated Spurious Emission (Above 1 GHz)	Tx DH5 Tx 3DH5	Off	2402 MHz 2441 MHz 2480 MHz
<p>*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative. *It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.</p> <p>*1) Spurious emissions for frequencies below 1 GHz were limited to the channel that had the highest power during the antenna terminal test, as preliminary testing indicated that changing the operating frequency had no significant impact on the emissions in those frequency bands.</p>			

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	Display Audio	AVH-0239ZT	K1BA009	PIONEER CORPORATION	EUT
B	Speaker	KFC-RS101	482C	JVC KENWOOD	-
C	Speaker	KFC-RS101	482C	JVC KENWOOD	-
D	Speaker	KFC-RS101	492C	JVC KENWOOD	-
E	Speaker	KFC-RS101	492C	JVC KENWOOD	-
F	Steering switch	-	-	PIONEER CORPORATION	-
G	Camera	22DA-BC-030	-	PIONEER CORPORATION	-
H	Smartphone	ANE-LX2J	SCV7N18508005047	HUAWEI	-
I	USB Memory	RUF-C/U2	P2051100245	BUFFALO	-
J	GPS Antenna	86860-B2120-H	0010233	PIONEER CORPORATION	-
K	DC Power Supply	GSV3000	2010221559	DIAMOND ANTENNA	-

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC (+B, ACC)	1.3	Unshielded	Unshielded	-
2	DC (GND)	1.3	Unshielded	Unshielded	-
3	ILL +	1.0 + 1.0	Unshielded	Unshielded	-
4	AMP	1.0 + 1.0	Unshielded	Unshielded	-
5	TMU	1.0 + 1.0	Unshielded	Unshielded	-
6	Speaker Front Left	1.0 + 1.0	Unshielded	Unshielded	-
7	Speaker Front Right	1.0 + 1.0	Unshielded	Unshielded	-
8	Speaker Rear Left	1.0 + 1.0	Unshielded	Unshielded	-
9	Speaker Rear Right	1.0 + 1.0	Unshielded	Unshielded	-
10	ILL -	1.0 + 1.0	Unshielded	Unshielded	-
11	DC (+B)	1.3	Unshielded	Unshielded	-
12	DC (GND)	1.3	Unshielded	Unshielded	-
13	Signal (MIN+, MIN-, MACC, SGND)	1.0 + 1.0	Unshielded	Unshielded	-
14	Signal (IG, NC, NC, NC, SPD, SNS2, REV, CANH, CANL, PKB, SGND/SDEI)	1.0 + 1.0	Unshielded	Unshielded	-
15	STSW1	1.5	Unshielded	Unshielded	-
16	STSW2	1.5	Unshielded	Unshielded	-
17	SWG	1.5	Unshielded	Unshielded	-
18	V +	1.5	Unshielded	Unshielded	-
19	V -	1.5	Unshielded	Unshielded	-
20	CA +	1.5	Unshielded	Unshielded	-
21	CGND	1.5	Unshielded	Unshielded	-
22	RCA	2.0	Shielded	Shielded	-
23	Audio mini	2.0	Shielded	Shielded	-
24	Antenna	0.3 + 2.0 + 1.0 + 1.0	Shielded	Shielded	-
25	USB	0.75	Shielded	Shielded	-
26	USB (Type C)	1.5	Shielded	Shielded	-
27	USB (Type A)	1.5	Shielded	Shielded	-
28	GPS	0.3	Shielded	Shielded	-
29	AC Cable	1.8	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission

Test Procedure

[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.

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.

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 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	Below 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.

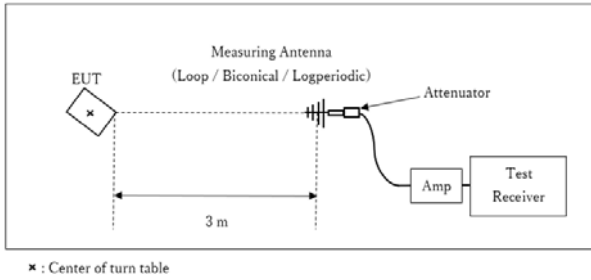
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9 (ISED) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (ISED).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *1)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	RBW: 1 MHz VBW: 1/T (T: burst length, refer to Burst rate confirmation sheet) Detector: Peak	RBW: 100 kHz VBW: 300 kHz

*1) Average Power Measurement was performed based on KDB 558074 D01 15.247 Meas Guidance v05r02.

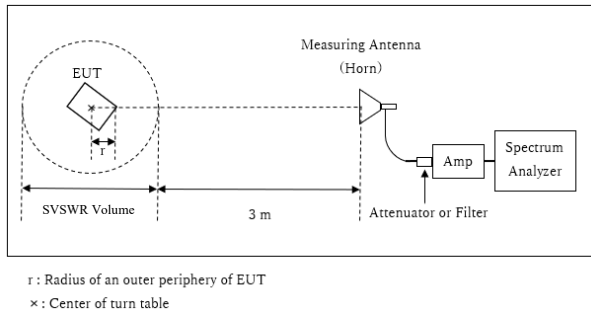
Figure 1: Test Setup

Below 1 GHz



Test Distance: 3 m

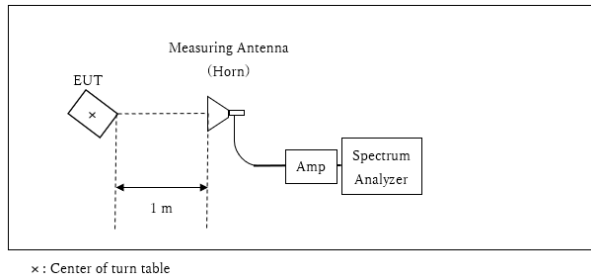
1 GHz to 10 GHz



Distance Factor: $20 \times \log(4.36 \text{ m} / 3.0 \text{ m}) = 3.25 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 4.36 \text{ m}$

SVSWR Volume : 3.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
 $r = 0.14 \text{ m}$

10 GHz to 26.5 GHz



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

- The carrier level and noise levels were confirmed at each position of 5 deg., 6 deg. and 10 deg. axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Antenna polarization	Carrier	Spurious (30 MHz - 1 GHz)	Spurious (1 GHz - 2.8 GHz)	Spurious (2.8 GHz - 10 GHz)	Spurious (10 GHz - 18 GHz)	Spurious (18 GHz - 26.5 GHz)
Horizontal	10 deg.	5 deg.	10 deg	10 deg	10 deg	10 deg
Vertical	10 deg.	5 deg.	10 deg.	10 deg	10 deg	10 deg

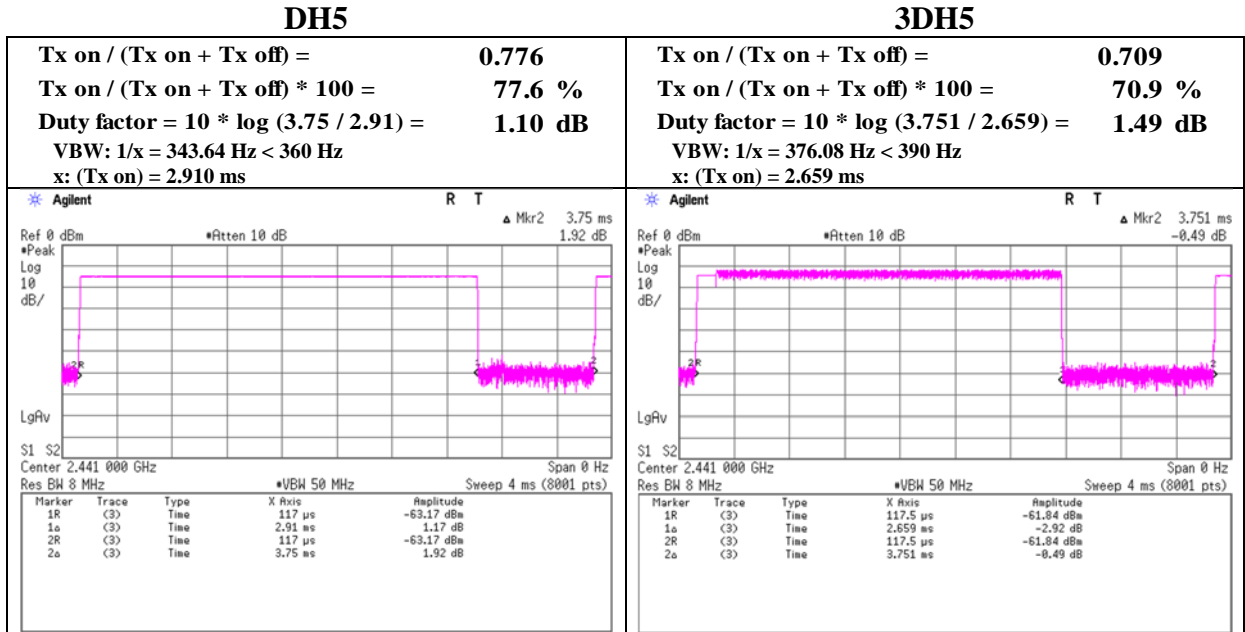
The test results and limit are rounded off to one decimal place, so some differences might be observed.

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

APPENDIX 1: Test data

Burst Rate Confirmation

Test place	Kashima EMC Lab. No.10 Semi Anechoic Chamber
Date	May 10, 2022
Temperature / Humidity	20 deg. C / 45 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx



Radiated Spurious Emission

Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.11	No.6
Date	May 13, 2022	May 21, 2022	May 25, 2022	May 16, 2022
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	20 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	52.10	27.50	13.23	43.88	3.25	52.20	73.9	21.7	190	300	
Hori.	4804.000	PK	50.23	32.54	5.15	45.18	3.25	45.99	73.9	27.9	150	0	Floor noise
Hori.	7206.000	PK	48.64	37.22	6.32	44.06	3.25	51.37	73.9	22.5	150	0	Floor noise
Hori.	9608.000	PK	46.52	37.99	7.22	41.96	3.25	53.02	73.9	20.8	150	0	Floor noise
Hori.	2390.000	AV	38.20	27.50	13.23	43.88	3.25	38.30	53.9	15.6	190	300	VBW: 360 Hz
Hori.	4804.000	AV	38.63	32.54	5.15	45.18	3.25	34.39	53.9	19.5	150	0	Floor noise
Hori.	7206.000	AV	37.07	37.22	6.32	44.06	3.25	39.80	53.9	14.1	150	0	Floor noise
Hori.	9608.000	AV	34.87	37.99	7.22	41.96	3.25	41.37	53.9	12.5	150	0	Floor noise
Vert.	2390.000	PK	51.60	27.50	13.23	43.88	3.25	51.70	73.9	22.2	180	265	
Vert.	4804.000	PK	50.38	32.54	5.15	45.18	3.25	46.14	73.9	27.7	150	0	Floor noise
Vert.	7206.000	PK	48.78	37.22	6.32	44.06	3.25	51.51	73.9	22.3	150	0	Floor noise
Vert.	9608.000	PK	46.95	37.99	7.22	41.96	3.25	53.45	73.9	20.4	150	0	Floor noise
Vert.	2390.000	AV	38.10	27.50	13.23	43.88	3.25	38.20	53.9	15.7	180	265	VBW: 360 Hz
Vert.	4804.000	AV	38.65	32.54	5.15	45.18	3.25	34.41	53.9	19.4	150	0	Floor noise
Vert.	7206.000	AV	37.04	37.22	6.32	44.06	3.25	39.77	53.9	14.1	150	0	Floor noise
Vert.	9608.000	AV	34.78	37.99	7.22	41.96	3.25	41.28	53.9	12.6	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 : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

* These results have sufficient margin without taking account Dwell time factor.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	94.00	27.53	13.24	43.88	3.25	94.14	-	-	Carrier
Hori.	2400.000	PK	41.30	27.52	13.24	43.88	3.25	41.43	74.14	32.7	
Vert.	2402.000	PK	94.50	27.53	13.24	43.88	3.25	94.64	-	-	Carrier
Vert.	2400.000	PK	41.10	27.52	13.24	43.88	3.25	41.23	74.64	33.4	

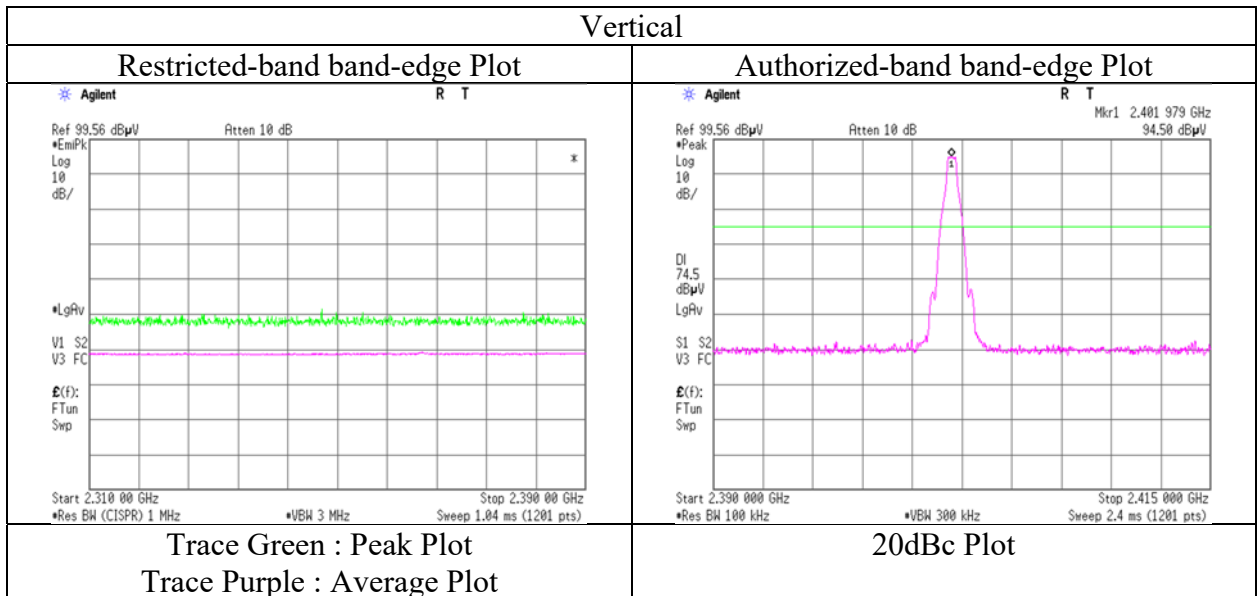
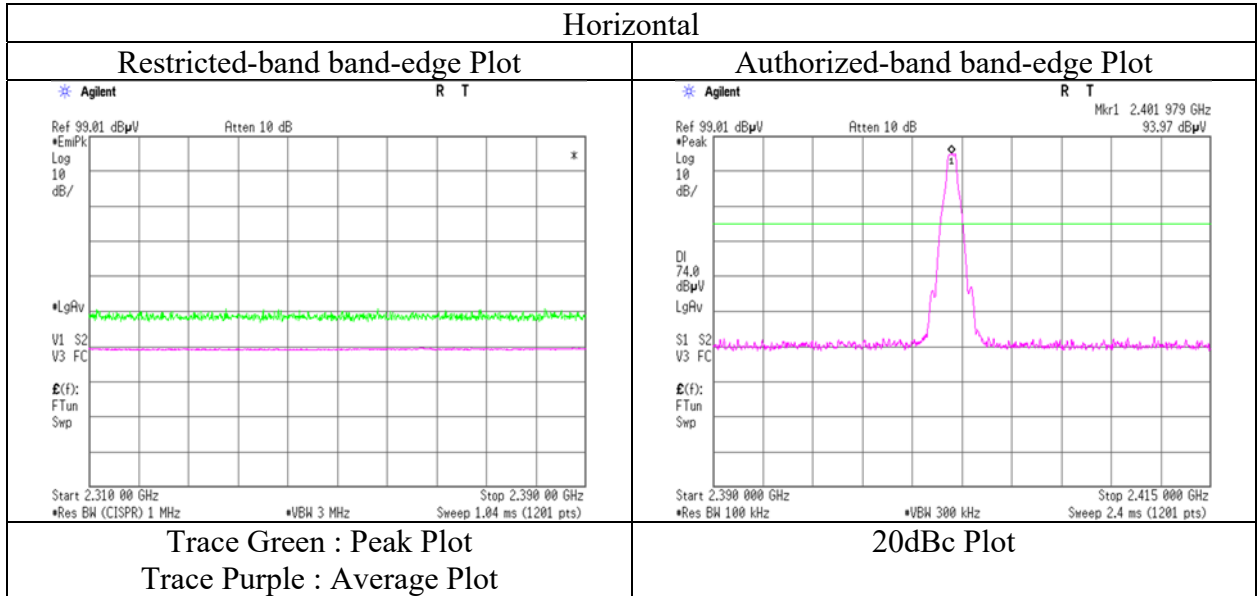
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.10
Date	May 13, 2022
Temperature / Humidity	20 deg. C / 45 % RH
Engineer	Hiromitsu Tanabe
	(1 GHz - 2.8 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz



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

Radiated Spurious Emission

Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.11	No.6
Date	May 13, 2022	May 21, 2022	May 25, 2022	May 16, 2022
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	20 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz			

(* 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.	4882.000	PK	50.46	32.56	5.20	45.23	3.25	46.24	73.9	27.6	150	0	Floor noise
Hori.	7323.000	PK	48.23	37.37	6.32	43.81	3.25	51.36	73.9	22.5	150	0	Floor noise
Hori.	9764.000	PK	46.17	37.99	7.25	41.84	3.25	52.82	73.9	21.0	150	0	Floor noise
Hori.	4882.000	AV	38.49	32.56	5.20	45.23	3.25	34.27	53.9	19.6	150	0	Floor noise
Hori.	7323.000	AV	36.76	37.37	6.32	43.81	3.25	39.89	53.9	14.0	150	0	Floor noise
Hori.	9764.000	AV	34.65	37.99	7.25	41.84	3.25	41.30	53.9	12.6	150	0	Floor noise
Vert.	4882.000	PK	50.13	32.56	5.20	45.23	3.25	45.91	73.9	27.9	150	0	Floor noise
Vert.	7323.000	PK	48.24	37.37	6.32	43.81	3.25	51.37	73.9	22.5	150	0	Floor noise
Vert.	9764.000	PK	46.56	37.99	7.25	41.84	3.25	53.21	73.9	20.6	150	0	Floor noise
Vert.	4882.000	AV	38.51	32.56	5.20	45.23	3.25	34.29	53.9	19.6	150	0	Floor noise
Vert.	7323.000	AV	36.79	37.37	6.32	43.81	3.25	39.92	53.9	13.9	150	0	Floor noise
Vert.	9764.000	AV	34.64	37.99	7.25	41.84	3.25	41.29	53.9	12.6	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 : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

* These results have sufficient margin without taking account Dwell time factor.

Radiated Spurious Emission

Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.11	No.6	
Date	May 13, 2022	May 21, 2022	May 16, 2022	
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	
	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	
Mode	Tx, Hopping Off, DH5 2480 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	51.40	27.87	13.30	43.82	3.25	52.00	73.9	21.9	160	115	
Hori.	4960.000	PK	50.51	32.66	5.26	45.25	3.25	46.43	73.9	27.4	150	0	Floor noise
Hori.	7440.000	PK	48.40	37.36	6.36	43.51	3.25	51.86	73.9	22.0	150	0	Floor noise
Hori.	9920.000	PK	47.85	38.19	7.33	41.80	3.25	54.82	73.9	19.0	150	0	Floor noise
Hori.	2483.500	AV	38.30	27.87	13.30	43.82	3.25	38.90	53.9	15.0	160	115	VBW: 360 Hz
Hori.	4960.000	AV	38.44	32.66	5.26	45.25	3.25	34.36	53.9	19.5	150	0	Floor noise
Hori.	7440.000	AV	36.78	37.36	6.36	43.51	3.25	40.24	53.9	13.6	150	0	Floor noise
Hori.	9920.000	AV	36.11	38.19	7.33	41.80	3.25	43.08	53.9	10.8	150	0	Floor noise
Vert.	2483.500	PK	51.60	27.87	13.30	43.82	3.25	52.20	73.9	21.7	130	265	
Vert.	4960.000	PK	50.30	32.66	5.26	45.25	3.25	46.22	73.9	27.6	150	0	Floor noise
Vert.	7440.000	PK	48.38	37.36	6.36	43.51	3.25	51.84	73.9	22.0	150	0	Floor noise
Vert.	9920.000	PK	47.68	38.19	7.33	41.80	3.25	54.65	73.9	19.2	150	0	Floor noise
Vert.	2483.500	AV	38.40	27.87	13.30	43.82	3.25	39.00	53.9	14.9	130	265	VBW: 360 Hz
Vert.	4960.000	AV	38.44	32.66	5.26	45.25	3.25	34.36	53.9	19.5	150	0	Floor noise
Vert.	7440.000	AV	36.74	37.36	6.36	43.51	3.25	40.20	53.9	13.7	150	0	Floor noise
Vert.	9920.000	AV	36.08	38.19	7.33	41.80	3.25	43.05	53.9	10.8	150	0	Floor noise

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

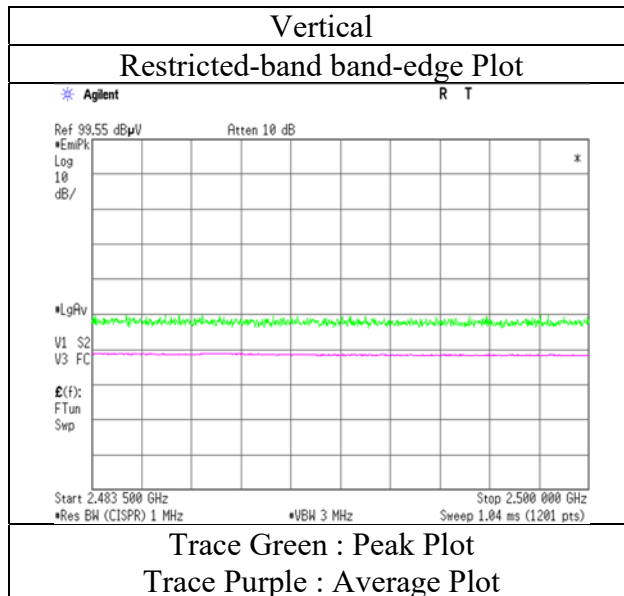
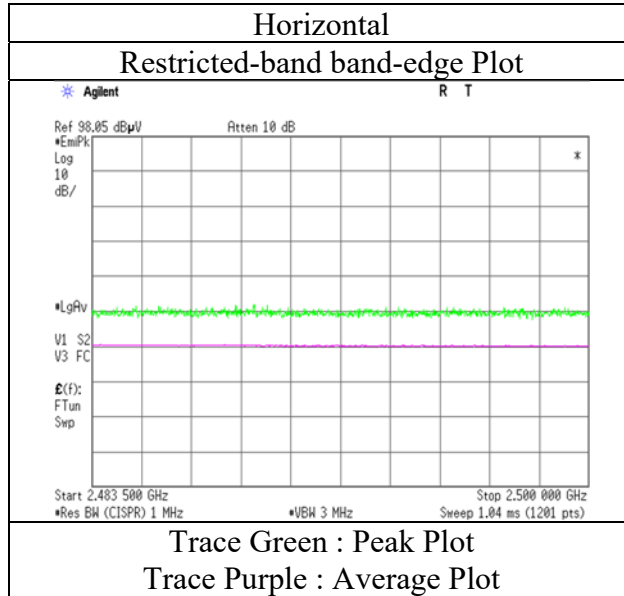
Distance factor : 1 GHz - 10 GHz : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

* These results have sufficient margin without taking account Dwell time factor.

Radiated Spurious Emission (Reference Plot for band-edge)

Test place Kashima EMC Lab.
Semi Anechoic Chamber No.10
Date May 13, 2022
Temperature / Humidity 20 deg. C / 45 % RH
Engineer Hiromitsu Tanabe
 (1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, DH5 2480 MHz



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

Radiated Spurious Emission

Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.11	No.6
Date	May 13, 2022	May 21, 2022	May 25, 2022	May 16, 2022
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	20 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2390.000	PK	51.70	27.50	13.23	43.88	3.25	51.80	73.9	22.1	245	297	
Hori.	4804.000	PK	50.27	32.54	5.15	45.18	3.25	46.03	73.9	27.8	150	0	Floor noise
Hori.	7206.000	PK	48.32	37.22	6.32	44.06	3.25	51.05	73.9	22.8	150	0	Floor noise
Hori.	9608.000	PK	46.42	37.99	7.22	41.96	3.25	52.92	73.9	20.9	150	0	Floor noise
Hori.	2390.000	AV	38.00	27.50	13.23	43.88	3.25	38.10	53.9	15.8	245	297	VBW: 390 Hz
Hori.	4804.000	AV	38.66	32.54	5.15	45.18	3.25	34.42	53.9	19.4	150	0	Floor noise
Hori.	7206.000	AV	37.15	37.22	6.32	44.06	3.25	39.88	53.9	14.0	150	0	Floor noise
Hori.	9608.000	AV	35.00	37.99	7.22	41.96	3.25	41.50	53.9	12.4	150	0	Floor noise
Vert.	2390.000	PK	52.00	27.50	13.23	43.88	3.25	52.10	73.9	21.8	147	255	
Vert.	4804.000	PK	50.46	32.54	5.15	45.18	3.25	46.22	73.9	27.6	150	0	Floor noise
Vert.	7206.000	PK	48.65	37.22	6.32	44.06	3.25	51.38	73.9	22.5	150	0	Floor noise
Vert.	9608.000	PK	46.15	37.99	7.22	41.96	3.25	52.65	73.9	21.2	150	0	Floor noise
Vert.	2390.000	AV	37.90	27.50	13.23	43.88	3.25	38.00	53.9	15.9	147	255	VBW: 390 Hz
Vert.	4804.000	AV	38.72	32.54	5.15	45.18	3.25	34.48	53.9	19.4	150	0	Floor noise
Vert.	7206.000	AV	37.17	37.22	6.32	44.06	3.25	39.90	53.9	14.0	150	0	Floor noise
Vert.	9608.000	AV	34.87	37.99	7.22	41.96	3.25	41.37	53.9	12.5	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 : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

* These results have sufficient margin without taking account Dwell time factor.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	96.60	27.53	13.24	43.88	3.25	96.74	-	-	Carrier
Hori.	2400.000	PK	43.60	27.52	13.24	43.88	3.25	43.73	76.74	33.0	
Vert.	2402.000	PK	94.80	27.53	13.24	43.88	3.25	94.94	-	-	Carrier
Vert.	2400.000	PK	42.10	27.52	13.24	43.88	3.25	42.23	74.94	32.7	

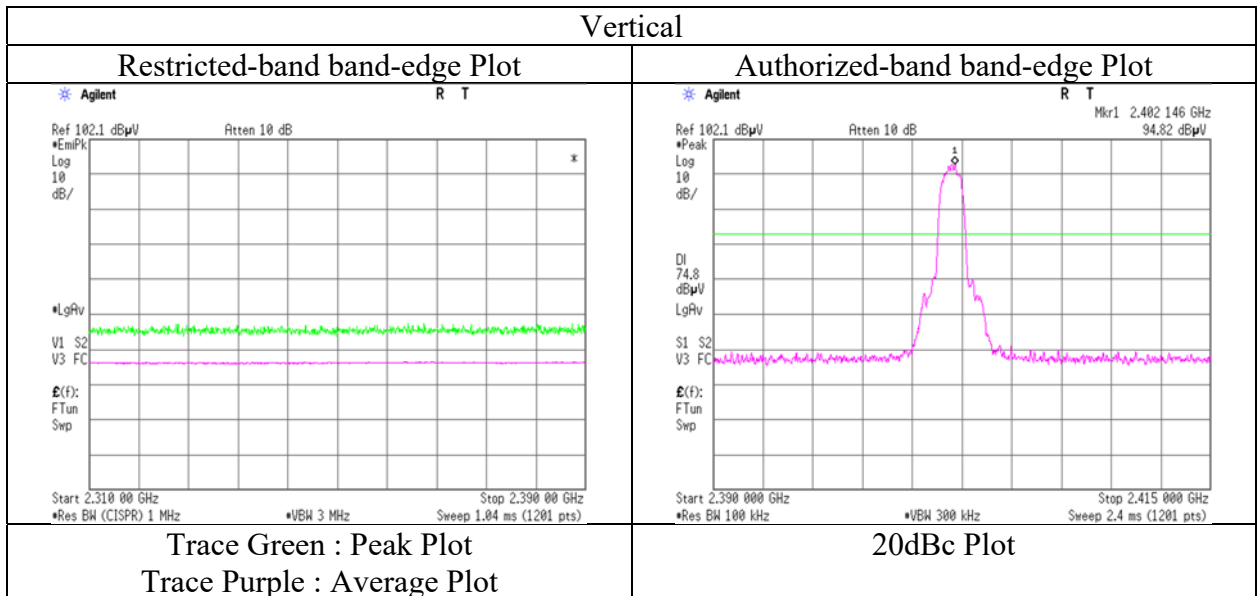
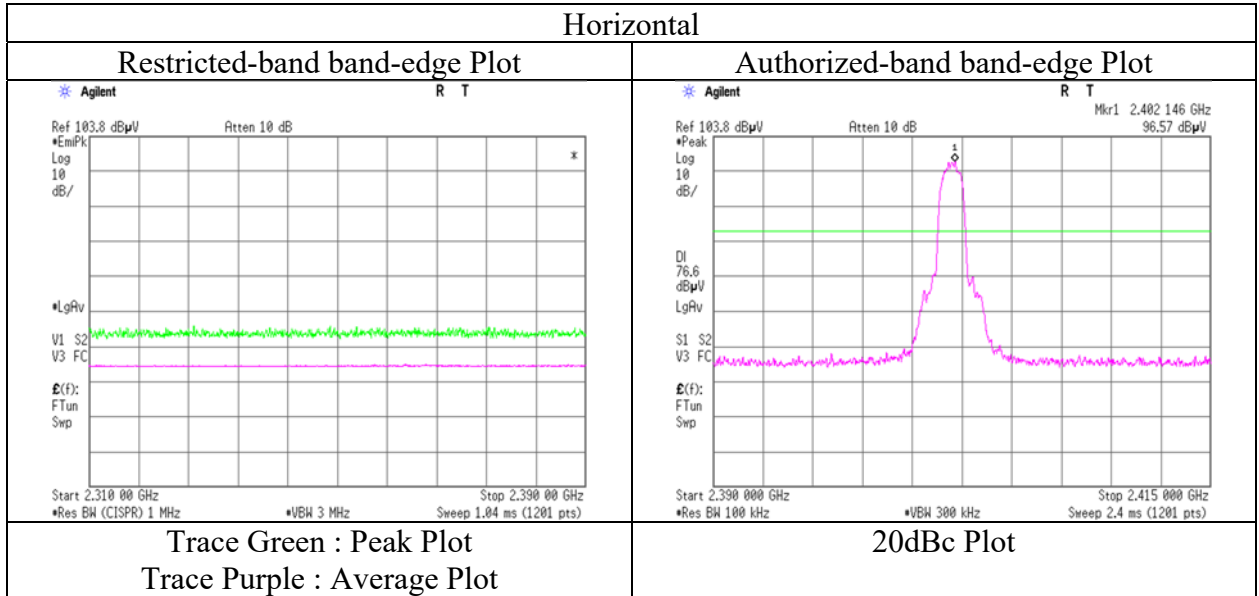
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.10
Date	May 13, 2022
Temperature / Humidity	20 deg. C / 45 % RH
Engineer	Hiromitsu Tanabe
	(1 GHz - 2.8 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz



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

Radiated Spurious Emission

Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.11	No.6
Date	May 13, 2022	May 21, 2022	May 25, 2022	May 16, 2022
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	20 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz			

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	4882.000	PK	50.38	32.56	5.20	45.23	3.25	46.16	73.9	27.7	150	0	Floor noise
Hori.	7323.000	PK	48.84	37.37	6.32	43.81	3.25	51.97	73.9	21.9	150	0	Floor noise
Hori.	9764.000	PK	46.27	37.99	7.25	41.84	3.25	52.92	73.9	20.9	150	0	Floor noise
Hori.	4882.000	AV	38.62	32.56	5.20	45.23	3.25	34.40	53.9	19.5	150	0	Floor noise
Hori.	7323.000	AV	36.86	37.37	6.32	43.81	3.25	39.99	53.9	13.9	150	0	Floor noise
Hori.	9764.000	AV	34.66	37.99	7.25	41.84	3.25	41.31	53.9	12.5	150	0	Floor noise
Vert.	4882.000	PK	50.06	32.56	5.20	45.23	3.25	45.84	73.9	28.0	150	0	Floor noise
Vert.	7323.000	PK	48.66	37.37	6.32	43.81	3.25	51.79	73.9	22.1	150	0	Floor noise
Vert.	9764.000	PK	46.15	37.99	7.25	41.84	3.25	52.80	73.9	21.1	150	0	Floor noise
Vert.	4882.000	AV	38.57	32.56	5.20	45.23	3.25	34.35	53.9	19.5	150	0	Floor noise
Vert.	7323.000	AV	36.85	37.37	6.32	43.81	3.25	39.98	53.9	13.9	150	0	Floor noise
Vert.	9764.000	AV	34.73	37.99	7.25	41.84	3.25	41.38	53.9	12.5	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 : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

* These results have sufficient margin without taking account Dwell time factor.

Radiated Spurious Emission

Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.10	No.10	No.10	No.11	No.6
Date	May 11, 2022	May 13, 2022	May 21, 2022	May 25, 2022	May 16, 2022
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	20 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
Mode	(80 MHz - 1000 MHz)	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)
	Tx, Hopping Off, 3DH5 2480 MHz				

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	83.870	QP	31.20	8.30	6.68	31.53	0.00	14.65	40.0	25.3	250	80	
Hori.	143.773	QP	31.80	13.14	7.32	31.42	0.00	20.84	43.5	22.6	220	280	
Hori.	261.666	QP	37.80	12.13	8.37	31.32	0.00	26.98	46.0	19.0	130	140	
Hori.	479.240	QP	31.20	17.46	10.09	31.18	0.00	27.57	46.0	18.4	100	170	
Hori.	958.375	QP	26.30	23.99	12.30	30.79	0.00	31.80	46.0	14.2	100	315	
Hori.	2483.500	PK	50.50	27.87	13.30	43.82	3.25	51.10	73.9	22.8	160	115	
Hori.	4960.000	PK	50.13	32.66	5.26	45.25	3.25	46.05	73.9	27.8	150	0	Floor noise
Hori.	7440.000	PK	48.73	37.36	6.36	43.51	3.25	52.19	73.9	21.7	150	0	Floor noise
Hori.	9920.000	PK	47.32	38.19	7.33	41.80	3.25	54.29	73.9	19.6	150	0	Floor noise
Hori.	2483.500	AV	38.60	27.87	13.30	43.82	3.25	39.20	53.9	14.7	160	115	VBW: 390 Hz
Hori.	4960.000	AV	38.58	32.66	5.26	45.25	3.25	34.50	53.9	19.4	150	0	Floor noise
Hori.	7440.000	AV	36.98	37.36	6.36	43.51	3.25	40.44	53.9	13.4	150	0	Floor noise
Hori.	9920.000	AV	36.13	38.19	7.33	41.80	3.25	43.10	53.9	10.8	150	0	Floor noise
Vert.	68.237	QP	32.00	11.86	6.47	31.56	0.00	18.77	40.0	21.2	100	220	
Vert.	143.773	QP	32.70	13.14	7.32	31.42	0.00	21.74	43.5	21.7	100	115	
Vert.	259.318	QP	38.40	12.03	8.35	31.32	0.00	27.46	46.0	18.5	100	0	
Vert.	958.465	QP	27.30	23.99	12.30	30.79	0.00	32.80	46.0	13.2	100	175	
Vert.	2483.500	PK	50.40	27.87	13.30	43.82	3.25	51.00	73.9	22.9	130	270	
Vert.	4960.000	PK	50.77	32.66	5.26	45.25	3.25	46.69	73.9	27.2	150	0	Floor noise
Vert.	7440.000	PK	48.82	37.36	6.36	43.51	3.25	52.28	73.9	21.6	150	0	Floor noise
Vert.	9920.000	PK	48.14	38.19	7.33	41.80	3.25	55.11	73.9	18.7	150	0	Floor noise
Vert.	2483.500	AV	38.70	27.87	13.30	43.82	3.25	39.30	53.9	14.6	130	270	VBW: 390 Hz
Vert.	4960.000	AV	38.59	32.66	5.26	45.25	3.25	34.51	53.9	19.3	150	0	Floor noise
Vert.	7440.000	AV	36.91	37.36	6.36	43.51	3.25	40.37	53.9	13.5	150	0	Floor noise
Vert.	9920.000	AV	36.10	38.19	7.33	41.80	3.25	43.07	53.9	10.8	150	0	Floor noise

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

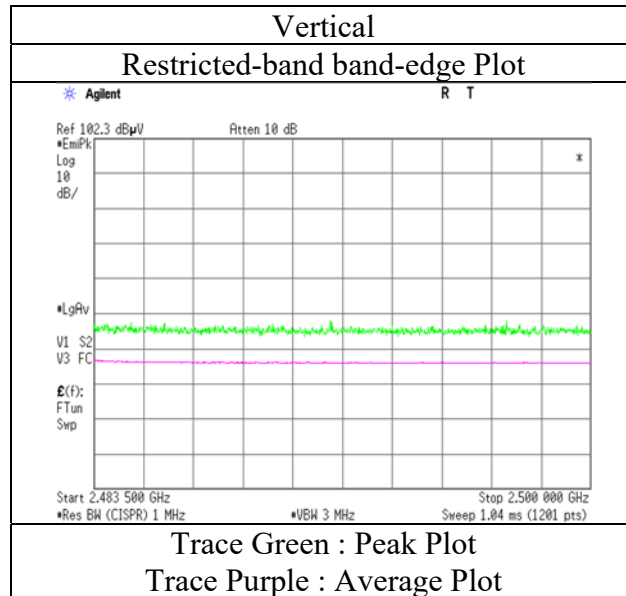
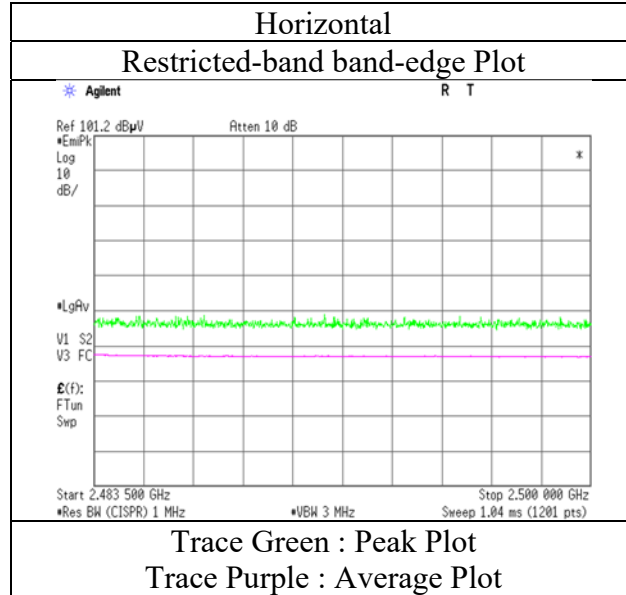
Distance factor : 1 GHz - 10 GHz : $20\log(4.36\text{ m} / 3.0\text{ m}) = 3.25\text{ dB}$

10 GHz - 26.5 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

* These results have sufficient margin without taking account Dwell time factor.

Radiated Spurious Emission (Reference Plot for band-edge)

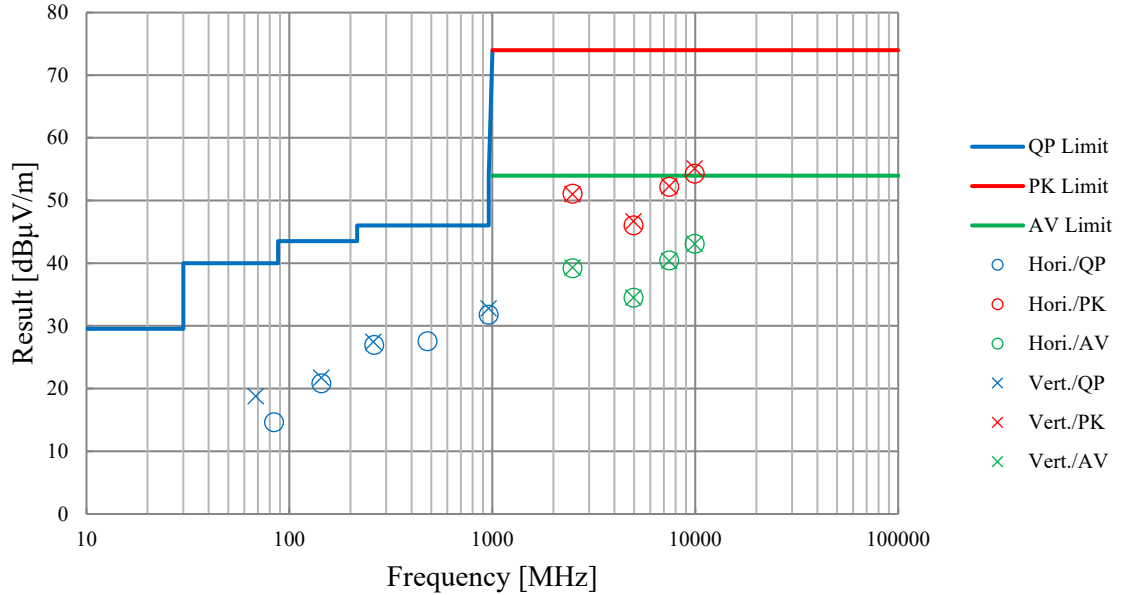
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.10
Date May 13, 2022
Temperature / Humidity 20 deg. C / 45 % RH
Engineer Hiromitsu Tanabe
 (1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, 3DH5 2480 MHz



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

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

Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.10	No.10	No.10	No.11	No.6
Date	May 11, 2022	May 13, 2022	May 21, 2022	May 25, 2022	May 16, 2022
Temperature / Humidity	20 deg. C / 45 % RH	20 deg. C / 45 % RH	20 deg. C / 51 % RH	21 deg. C / 58 % RH	20 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
Mode	(80 MHz - 1000 MHz) Tx, Hopping Off, 3DH5 2480 MHz	(1 GHz - 2.8 GHz)	(2.8 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 26.5 GHz)



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

APPENDIX 2: Test Instruments

Test Equipment

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	CTR-09	144199	Test Receiver	Keysight Technologies Inc	N9038A	MY53290016	2021/07/16	12
RE	CHA-24	143455	Double Ridged Wave Guide	ETS-Lindgren (Cedar Park, Texas)	3115	00204569	2022/02/05	12
RE	CAF-22	142940	Pre-Amplifier	Micro Wave Factory	MPR-1G26.5-35	161399	2021/06/11	12
RE	CCC-G09	143140	Micro Wave Cable	Junkosha	MWX221	1407S222	2021/11/12	12
RE	CCC-G16	192243	Microwave Cable	Huber+Suhner	SF104/11N/11PC35/8000MM	808995/4	2022/01/18	12
RE	CAT10-17	143023	10dB Fixed Atten.	Weinschel - API Technologies Corp	54A-10	56251	2021/05/14	12
RE	CHF-04	143442	HPF	MICRO-TRONICS	HPM50111-02	009	2021/05/14	12
RE	CBL-08	143121	LOGBICON	Schwarzbeck Mess-Elektronik OHG	VULB 9168	343	2022/04/18	12
RE	CAT5-03	178806	5dB Fixed Atten.	Pasternack Enterprises	PE7047-5	none	2022/04/01	12
RE	CCC-S10-R3	143165	10 Site RE 3m System	UL Japan	none	none	2021/08/10	12
RE	CAF-28	183880	Pre-Amplifier	UL Japan	ZKL-2	001	2022/04/06	12
RE	CHA-07	143438	Double Ridged Horn	ETS-Lindgren (Cedar Park, Texas)	3160-09	00166043	2021/06/05	12
RE	CAF-19	142937	Pre-Amplifier	TOYO	HAP18-26W	00000035	2021/06/23	12
RE	CCC-W09	143113	Micro Wave Cable	Suhner	SUCOFLEX104	MY588/4	2021/08/03	12
RE	TSA-01	143642	Spectrum Analyzer	Keysight Technologies Inc	N9030A	MY53310670 Version A.13.12	2021/05/24	12
RE	CSCL-08	143667	Ruler	TAJIMA	L25-55	none	-	-
RE	COS-06	143538	Temperature & Humidity Indicator	HIOKI E.E. CORPORATION	3641/9680-50	070727010/070799296	2021/07/27	12
RE	CBM-06	143129	Barometer	Sanoh Co., Ltd	SBR-151	000017	2021/11/24	36
RE	CTS-07	144209	Digital Multimeter	Fluke Corporation	FLK-83-V	17610192	2021/10/20	12
RE	COTS-CEMI-03	178804	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3 (RE,CE,ME,PE)	Ver 3.1.0484	-	-
RE	CHA-28	146356	Horn Antenna	ETS-Lindgren	3116	46543	2022/02/05	12
RE	KAF-06	144880	Pre Amplifier	TSJ (Techno Science Japan)	MLA-1840B02-35	-	2022/04/13	12
RE	CCC-G13	171928	Microwave Cable	Huber+Suhner	SF102/SKm/1000m	801389/2	2021/08/03	12
RE	CCC-W10	142992	Micro Wave Cable	Suhner	SUCOFLEX102	MY010/2A	2021/08/03	12
RE	CTR-01	144193	Test Receiver	Rohde & Schwarz	ESU40	100426	2022/04/15	12

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

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

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

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

Test item: RE: Radiated Emission