



# RADIO TEST REPORT

Test Report No. : 14027963S-G

**Applicant** : JVCKENWOOD Corporation  
**Type of EUT** : Monitor with Receiver  
**Model Number of EUT** : DMX958XR  
**FCC ID** : IOMJ5268  
**Test regulation** : FCC Part 15 Subpart C: 2021  
\*Wireless LAN part  
**Test item** : Radiated Spurious Emission tests  
**Test Result** : Complied (Refer to SECTION 3)

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Kashima EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in SECTION 1.

**Date of test:** \_\_\_\_\_ October 4 to 22, 2021 \_\_\_\_\_

**Representative test engineer:** \_\_\_\_\_  \_\_\_\_\_  
Kazuhiro Ando  
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.  
 There is no testing item of "Non-accreditation".

**UL Japan, Inc.**

**Kashima EMC Lab.**

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## REVISION HISTORY

**Original Test Report No.: 14027963S-G**

Revision	Test report No.	Date	Page revised	Contents
- (Original)	14027963S-G	November 25, 2021	-	-

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

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

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## **SECTION 1: Customer information**

Company Name : JVCKENWOOD Corporation  
Address : 2967-3, Ishikawa-machi, Hachioji, Tokyo 192-8525 Japan  
Telephone Number : +81-42-646-5525  
Contact Person : Seigo Tsutsumi

The information provided from the customer is as follows;

- Applicant, Type 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
  - 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**

Type : Monitor with Receiver  
Model Number : DMX958XR  
Serial Number : Refer to SECTION 4.2  
Condition : Production model  
Receipt Date : October 4, 2021  
Modification : No Modification by the test lab.

### **2.2 Product Description**

Model: DMX958XR (referred to as the EUT in this report) is a Monitor with Receiver.

There are three variant models DMX908S, DMX9708S, KW-M875BW  
These models are identical except for presence of Panel, Dashboard Camera control terminal,  
HD Radio, HD Camera Ready, Display and these difference do not affect the radio.

**General Specification**

Rating : DC 12 V

**Radio Specification**

Type of radio	Bluetooth (BR/EDR)	IEEE802.11b	IEEE802.11g	IEEE802.11a	IEEE802.11n (20 MHz BW)	IEEE802.11n (40 MHz BW)	IEEE802.11ac
Frequency of operation	2402 MHz - 2480 MHz	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5745 MHz - 5805 MHz	2412 MHz - 2462 MHz 5745 MHz - 5805 MHz	5755 MHz - 5795 MHz	5745 MHz-5805 MHz (20 MHz BW) 5755 MHz-5795 MHz (40 MHz BW) 5775 MHz (80 MHz BW)
Type of modulation	FHSS	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)			OFDM (256QAM, 16QAM, QPSK, BPSK)
Channel spacing	1 MHz	5 MHz		20 MHz	2.4 GHz band 5 MHz 5 GHz band 20 MHz	40 MHz	20 MHz (20 MHz BW) 40 MHz (40 MHz BW) 80 MHz (80 MHz BW)

Antenna type	Internal Antenna (Chip Antenna)
Antenna Gain	Antenna 0 (ANT-0) : -7.7 dBi (2.4 GHz Wireless LAN only), -4.7 dBi (5 GHz) Antenna 1 (ANT-1) : -9.9 dBi (2.4 GHz Bluetooth only), -4.6 dBi (5 GHz)
Power Supply (radio art input)	DC 3.6 V/ 3.3 V/1.8 V
Clock frequency (Maximum)	37.4 MHz
Clock frequency in the system (Maximum)	6.2208 GHz

## **SECTION 3: Test specification, procedures & results**

### **3.1 Test Specification**

Test Specification : FCC Part 15 Subpart C  
FCC Part 15 final revised on May 3, 2021 and effective July 2, 2021

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 ISED: RSS-Gen 6.13	FCC: Section15.247(d) ISED: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	3.2 dB 777.443 MHz, QP, Hori. 840.000 MHz, QP, Hori.	Complied# a)	Radiated (above 30 MHz) *1)
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.					
*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.					
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.					

\* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

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

The EUT provides stable voltage constantly to the wireless transmitter 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

There is no applicable rule of uncertainty in this applied standard. Therefore, the results are derived depending on whether 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

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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)**

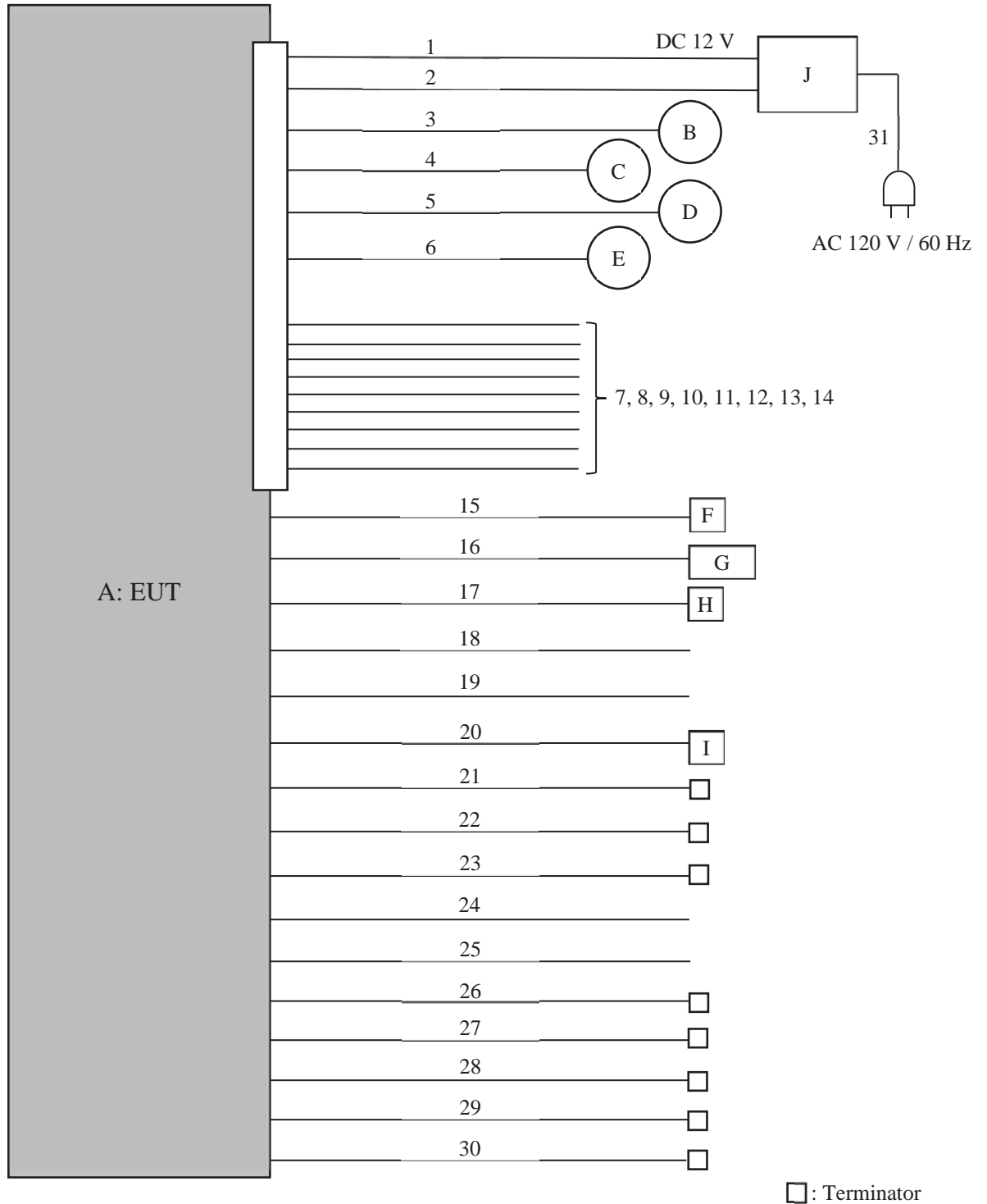
Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - ” of TCB Council Workshop October 2009.

<b>Mode</b>	<b>Remarks*</b>
IEEE 802.11b (11b)	11 Mbps, PN9
IEEE 802.11g (11g)	48 Mbps, PN9
IEEE 802.11n 20 MHz BW (11n-20)	MCS 5, PN9
*The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel)	
*Power of the EUT was set by the software as follows; Power settings: Fixed Software: SoC: 0.0.0805.4600 Syscom: 1.0.0479.3100 Panel: 1.0.0209.3700 (Date: 2021.10.4, Storage location: EUT memory)	
*This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.	

\*The details of Operating mode(s)

<b>Test Item</b>	<b>Operating Mode</b>	<b>Tested Antenna</b>	<b>Tested frequency</b>
Spurious Emission (Radiated)	11b Tx	ANT-0	2412 MHz
	11g Tx		2437 MHz
	11n-20 Tx		2462 MHz

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	Monitor with Receiver	DMX958XR	PK-X0013	JVCKENWOOD Corporation	EUT
B	Speaker	KFC-RS101	-	JVCKENWOOD	-
C	Speaker	KFC-RS101	-	JVCKENWOOD	-
D	Speaker	KFC-RS101	-	JVCKENWOOD	-
E	Speaker	KFC-RS101	-	JVCKENWOOD	-
F	USB Memory	-	-	Apacer	-
G	iPhone 5	MD297J/A	C39KWKE6DTWD	Apple Inc.	-
H	GPS ANTENNA	GPA-GS204	-	JVCKENWOOD	-
I	Microphone	GD-VHM4214C	-	JVCKENWOOD	-
J	DC Power Supply	GSV3000	1708192899	DIAMOND ANTENNA	-

**List of cables used**

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC (ACC, B+)	0.15 + 1.6	Unshielded	Unshielded	-
2	DC (GND, PRK SW)	0.15 + 1.6	Unshielded	Unshielded	-
3	Speaker (Front-L) +/-	0.15 + 1.0 +	Unshielded	Unshielded	-
4	Speaker (Front-R) +/-	0.15 + 1.0 +	Unshielded	Unshielded	-
5	Speaker (Rear-L) +/-	0.15 + 1.0 +	Unshielded	Unshielded	-
6	Speaker (Rear-R) +/-	0.15 + 1.0 +	Unshielded	Unshielded	-
7	P-Cont	0.15 + 1.0	Unshielded	Unshielded	-
8	Ant.Cont	0.15 + 1.0	Unshielded	Unshielded	-
9	S.Pluse	0.15 + 1.0	Unshielded	Unshielded	-
10	UPDATE	0.15 + 1.0	Unshielded	Unshielded	-
11	ILLUMI	0.15 + 1.0	Unshielded	Unshielded	-
12	L.Mute	0.15 + 1.0	Unshielded	Unshielded	-
13	Reverse	0.15 + 1.0	Unshielded	Unshielded	-
14	CAM I/O	0.15 + 1.0	Unshielded	Unshielded	-
15	USB	1.0	Shielded	Shielded	-
16	HDMI + Lightning Adapter	1.5 + 0.1	Shielded	Shielded	-
17	GPS Ant	3.5	Shielded	Shielded	-
18	Audio in	2.0	Shielded	Shielded	-
19	SXM I/F	1.0	Shielded	Shielded	-
20	Mic	3.0	Shielded	Shielded	-
21	Rear Preout	1.2	Shielded	Shielded	-
22	Front Preout	1.2	Shielded	Shielded	-
23	Subwoofer Preout	1.0	Shielded	Shielded	-
24	AV IN(Audio)	1.0	Shielded	Shielded	-
25	3-CAM	1.0	Shielded	Shielded	-
26	VIDEO OUT	1.0	Shielded	Shielded	-
27	R-CAM	1.0	Shielded	Shielded	-
28	V-IN	1.0	Shielded	Shielded	-
29	F-CAM	1.0	Shielded	Shielded	-
30	FM/AM ANT	0.15 + 1.0	Shielded	Shielded	-
31	AC	1.7	Unshielded	Unshielded	-

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## **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.

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	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

\*1) Average Power Measurement was performed based on ANSI C63.10-2013.

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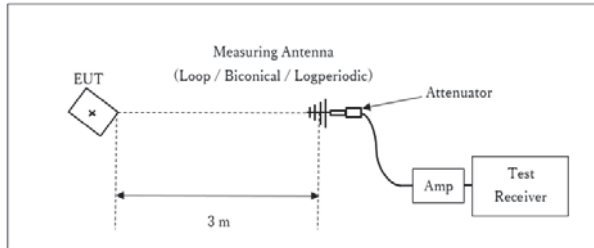
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**Figure 1 Test Setup**

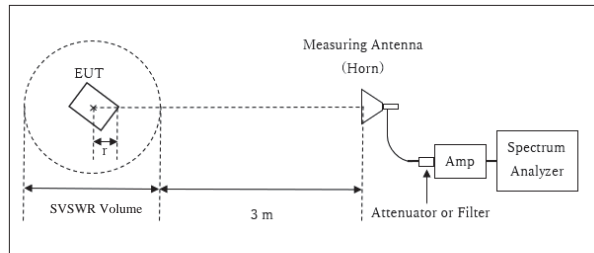
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 10 GHz



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

Distance Factor:  $20 \times \log ( 4.40 \text{ m} / 3 \text{ m} ) = 3.33 \text{ dB}$

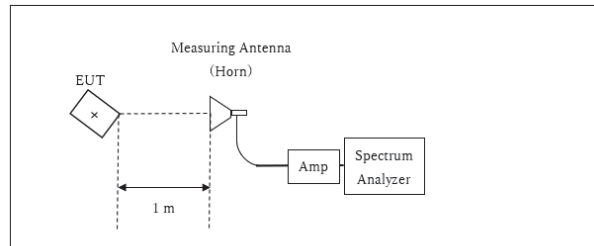
\*Test Distance:  $( 3 + \text{SVSWR Volume} / 2 ) - r = 4.4 \text{ m}$

SVSWR Volume: 3 m

(SVSWR Volume has been calibrated based on CISPR 16-1-4.)

r = 0.1 m

10 GHz – 26.5 GHz



× : Center of turn table

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

\*Test Distance: 1 m

- The carrier level and noise levels were confirmed at each position of 0 deg. and 30 deg. 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	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.
Vertical	30 deg.	0 deg.	30 deg.	30 deg.	0 deg.	0 deg.

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

**Measurement range : 30 MHz - 26.5 GHz**  
**Test data : APPENDIX**  
**Test result : Pass**

**UL Japan, Inc.**

**Kashima EMC Lab.**

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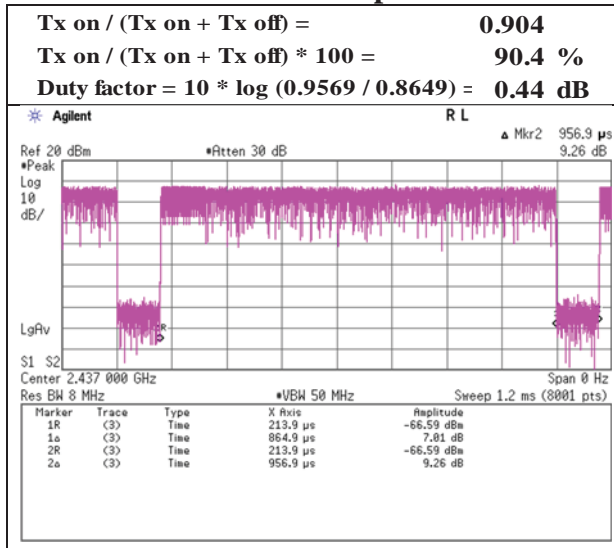
Facsimile : +81 478 82 3373

**APPENDIX 1: Test data**

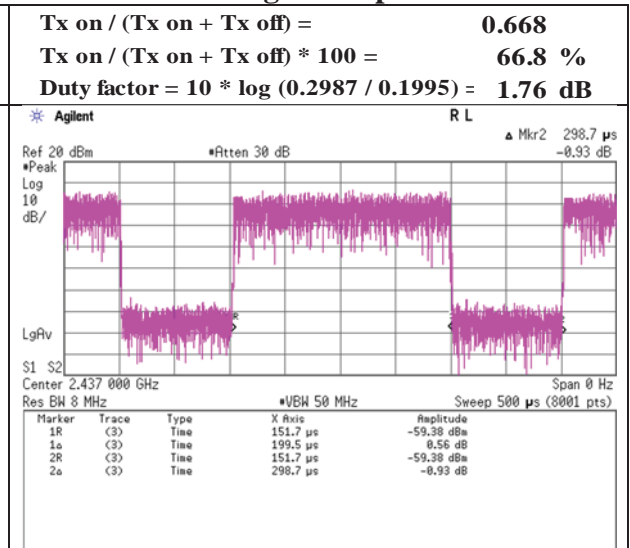
**Burst rate confirmation**

Report No. 14027963S-G  
Test place Shonan EMC Lab. No.5 Shielded Room  
Date October 4, 2021  
Temperature / Humidity 23 deg. C / 55 % RH  
Engineer Takahiro Kawakami  
Mode Tx

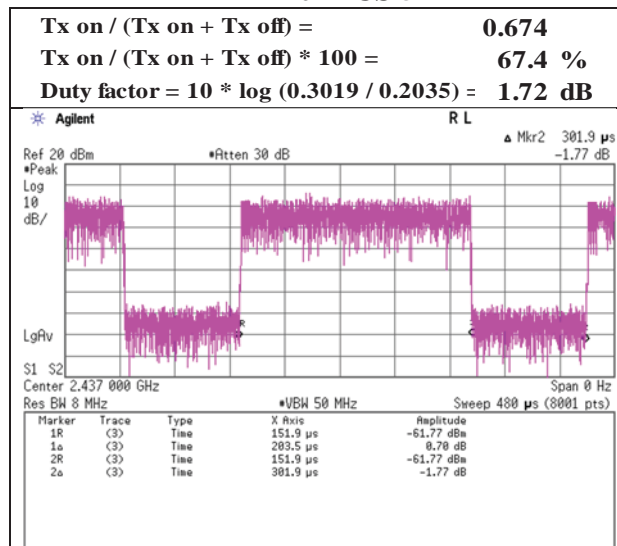
**11b 11 Mbps**



**11g 48 Mbps**



**11n-20 MCS 5**



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

## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 5, 2021	October 7, 2021	October 7, 2021
Temperature / Humidity	20 deg. C / 54 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	24 deg. C / 56 % 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 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.	1680.007	PK	51.00	25.37	12.76	41.59	3.33	50.87	73.9	23.0	349	251	
Hori.	2390.000	PK	47.30	27.61	13.30	41.42	3.33	50.12	73.9	23.7	313	240	
Hori.	3852.787	PK	52.40	31.30	4.87	41.26	3.33	50.64	73.9	23.2	217	195	
Hori.	4824.000	PK	45.50	32.63	5.27	41.17	3.33	45.56	73.9	28.3	150	0	Floor noise
Hori.	7236.000	PK	44.40	37.38	6.47	39.71	3.33	51.87	73.9	22.0	150	0	Floor noise
Hori.	9648.000	PK	43.30	37.95	7.27	38.50	3.33	53.35	73.9	20.5	150	0	Floor noise
Hori.	1680.007	AV	40.80	25.37	12.76	41.59	3.33	40.67	53.9	13.2	349	251	
Hori.	3852.787	AV	47.30	31.30	4.87	41.26	3.33	45.54	53.9	8.3	217	195	
Vert.	1680.021	PK	51.20	25.37	12.76	41.59	3.33	51.07	73.9	22.8	302	337	
Vert.	2390.000	PK	50.20	27.61	13.30	41.42	3.33	53.02	73.9	20.8	338	160	
Vert.	3855.237	PK	52.20	31.32	4.86	41.26	3.33	50.45	73.9	23.4	280	338	
Vert.	4824.000	PK	45.20	32.63	5.27	41.17	3.33	45.26	73.9	28.6	150	0	Floor noise
Vert.	7236.000	PK	44.30	37.38	6.47	39.71	3.33	51.77	73.9	22.1	150	0	Floor noise
Vert.	9648.000	PK	44.30	37.95	7.27	38.50	3.33	54.35	73.9	19.5	150	0	Floor noise
Vert.	1680.021	AV	41.50	25.37	12.76	41.59	3.33	41.37	53.9	12.5	302	337	
Vert.	3855.237	AV	47.20	31.32	4.86	41.26	3.33	45.45	53.9	8.4	280	338	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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	38.90	27.61	13.30	41.42	0.44	3.33	42.16	53.9	11.7	*1)
Hori.	4824.000	AV	36.50	32.63	5.27	41.17	0.44	3.33	37.00	53.9	16.9	Floor noise
Hori.	7236.000	AV	35.30	37.38	6.47	39.71	0.44	3.33	43.21	53.9	10.6	Floor noise
Hori.	9648.000	AV	34.40	37.95	7.27	38.50	0.44	3.33	44.89	53.9	9.0	Floor noise
Vert.	2390.000	AV	38.20	27.61	13.30	41.42	0.44	3.33	41.46	53.9	12.4	*1)
Vert.	4824.000	AV	36.70	32.63	5.27	41.17	0.44	3.33	37.20	53.9	16.7	Floor noise
Vert.	7236.000	AV	35.60	37.38	6.47	39.71	0.44	3.33	43.51	53.9	10.3	Floor noise
Vert.	9648.000	AV	34.60	37.95	7.27	38.50	0.44	3.33	45.09	53.9	8.8	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" 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	89.80	27.65	13.32	41.42	3.33	92.68	-	-	Carrier
Hori.	2398.833	PK	44.70	27.60	13.31	41.42	3.33	47.52	72.68	25.1	
Hori.	2400.000	PK	43.40	27.60	13.31	41.42	3.33	46.22	72.68	26.4	
Vert.	2412.000	PK	86.40	27.65	13.32	41.42	3.33	89.28	-	-	Carrier
Vert.	2398.450	PK	42.60	27.60	13.31	41.42	3.33	45.42	69.28	23.8	
Vert.	2400.000	PK	40.60	27.60	13.31	41.42	3.33	43.42	69.28	25.8	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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**Kashima EMC Lab.**

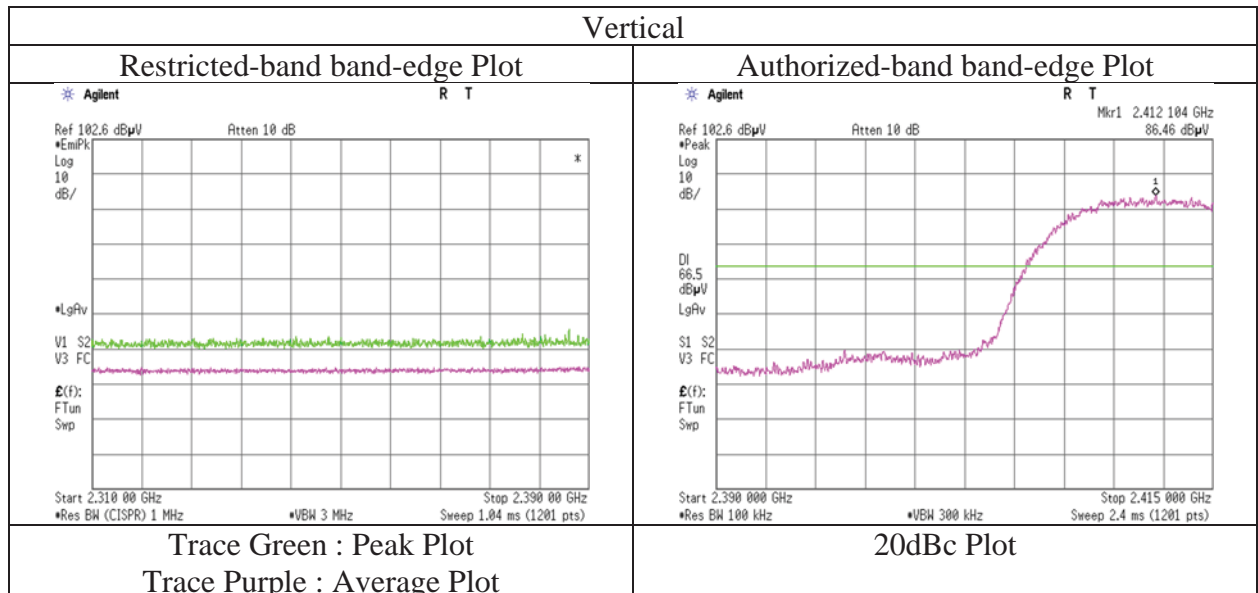
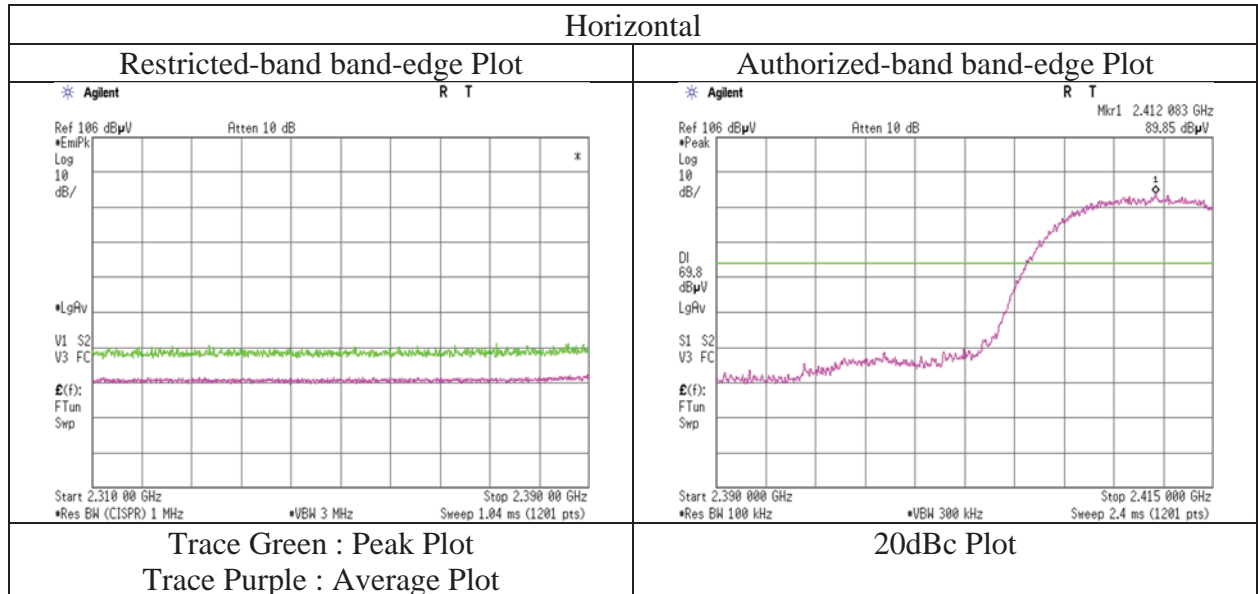
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**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

Report No.	14027963S-G
Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.10
Date	October 5, 2021
Temperature / Humidity	20 deg. C / 54 % RH
Engineer	Hirimitsu Tanabe
	(1 GHz - 2.8 GHz)
Mode	Tx 11b 2412 MHz



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



## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 5, 2021	October 7, 2021	October 7, 2021
Temperature / Humidity	20 deg. C / 54 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	24 deg. C / 56 % 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 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.	1679.942	PK	48.20	25.37	12.76	41.59	3.33	48.07	73.9	25.8	354	262	
Hori.	3852.891	PK	52.30	31.30	4.87	41.26	3.33	50.54	73.9	23.3	218	195	
Hori.	4874.000	PK	45.90	32.61	5.28	41.17	3.33	45.95	73.9	27.9	150	0	Floor noise
Hori.	7311.000	PK	44.20	37.53	6.49	39.67	3.33	51.88	73.9	22.0	150	0	Floor noise
Hori.	9748.000	PK	43.00	38.09	7.31	38.42	3.33	53.31	73.9	20.5	150	0	Floor noise
Hori.	1679.942	AV	40.00	25.37	12.76	41.59	3.33	39.87	53.9	14.0	354	262	
Hori.	3852.891	AV	47.00	31.30	4.87	41.26	3.33	45.24	53.9	<b>8.6</b>	218	195	
Vert.	1680.052	PK	51.50	25.37	12.76	41.59	3.33	51.37	73.9	22.5	305	332	
Vert.	3854.436	PK	50.50	31.31	4.86	41.26	3.33	48.74	73.9	25.1	278	338	
Vert.	4874.000	PK	45.30	32.61	5.28	41.17	3.33	45.35	73.9	28.5	150	0	Floor noise
Vert.	7311.000	PK	44.50	37.53	6.49	39.67	3.33	52.18	73.9	21.7	150	0	Floor noise
Vert.	9748.000	PK	42.80	38.09	7.31	38.42	3.33	53.11	73.9	20.7	150	0	Floor noise
Vert.	1680.052	AV	41.20	25.37	12.76	41.59	3.33	41.07	53.9	12.8	305	332	
Vert.	3854.436	AV	46.40	31.31	4.86	41.26	3.33	44.64	53.9	9.2	278	338	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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.	4874.000	AV	36.40	32.61	5.28	41.17	0.44	3.33	36.89	53.9	17.0	Floor noise
Hori.	7311.000	AV	35.40	37.53	6.49	39.67	0.44	3.33	43.52	53.9	10.3	Floor noise
Hori.	9748.000	AV	33.90	38.09	7.31	38.42	0.44	3.33	44.65	53.9	9.2	Floor noise
Vert.	4874.000	AV	36.70	32.61	5.28	41.17	0.44	3.33	37.19	53.9	16.7	Floor noise
Vert.	7311.000	AV	35.50	37.53	6.49	39.67	0.44	3.33	43.62	53.9	10.2	Floor noise
Vert.	9748.000	AV	34.20	38.09	7.31	38.42	0.44	3.33	44.95	53.9	8.9	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" sheet.

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## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 5, 2021	October 7, 2021	October 7, 2021
Temperature / Humidity	20 deg. C / 54 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	24 deg. C / 56 % 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 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.	1680.021	PK	50.70	25.37	12.76	41.59	3.33	50.57	73.9	23.3	346	252	
Hori.	2483.500	PK	42.70	28.01	13.36	41.40	3.33	46.00	73.9	27.9	372	247	
Hori.	3853.068	PK	52.20	31.31	4.87	41.26	3.33	50.45	73.9	23.4	217	195	
Hori.	4924.000	PK	45.40	32.67	5.34	41.18	3.33	45.56	73.9	28.3	150	0	Floor noise
Hori.	7386.000	PK	44.50	37.49	6.54	39.61	3.33	52.25	73.9	21.6	150	0	Floor noise
Hori.	9848.000	PK	42.70	38.11	7.34	38.35	3.33	53.13	73.9	20.7	150	0	Floor noise
Hori.	1680.021	AV	40.60	25.37	12.76	41.59	3.33	40.47	53.9	13.4	346	252	
Hori.	3853.068	AV	47.30	31.31	4.87	41.26	3.33	45.55	53.9	8.3	217	195	
Vert.	1680.013	PK	50.70	25.37	12.76	41.59	3.33	50.57	73.9	23.3	304	334	
Vert.	2483.500	PK	47.00	28.01	13.36	41.40	3.33	50.30	73.9	23.6	237	232	
Vert.	3855.127	PK	52.20	31.32	4.86	41.26	3.33	50.45	73.9	23.4	280	338	
Vert.	4924.000	PK	45.90	32.67	5.34	41.18	3.33	46.06	73.9	27.8	150	0	Floor noise
Vert.	7386.000	PK	44.50	37.49	6.54	39.61	3.33	52.25	73.9	21.6	150	0	Floor noise
Vert.	9848.000	PK	43.90	38.11	7.34	38.35	3.33	54.33	73.9	19.5	150	0	Floor noise
Vert.	1680.013	AV	42.10	25.37	12.76	41.59	3.33	41.97	53.9	11.9	304	334	
Vert.	3855.127	AV	47.30	31.32	4.86	41.26	3.33	45.55	53.9	8.3	280	338	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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	39.00	28.01	13.36	41.40	0.44	3.33	42.74	53.9	11.1	*1)
Hori.	4924.000	AV	36.50	32.67	5.34	41.18	0.44	3.33	37.10	53.9	16.8	Floor noise
Hori.	7386.000	AV	35.50	37.49	6.54	39.61	0.44	3.33	43.69	53.9	10.2	Floor noise
Hori.	9848.000	AV	33.80	38.11	7.34	38.35	0.44	3.33	44.67	53.9	9.2	Floor noise
Vert.	2483.500	AV	38.00	28.01	13.36	41.40	0.44	3.33	41.74	53.9	12.1	*1)
Vert.	4924.000	AV	36.80	32.67	5.34	41.18	0.44	3.33	37.40	53.9	16.5	Floor noise
Vert.	7386.000	AV	35.40	37.49	6.54	39.61	0.44	3.33	43.59	53.9	10.3	Floor noise
Vert.	9848.000	AV	34.00	38.11	7.34	38.35	0.44	3.33	44.87	53.9	9.0	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

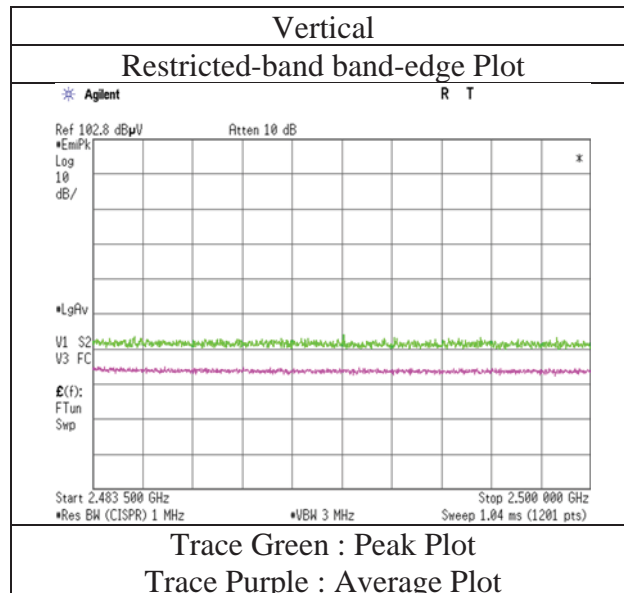
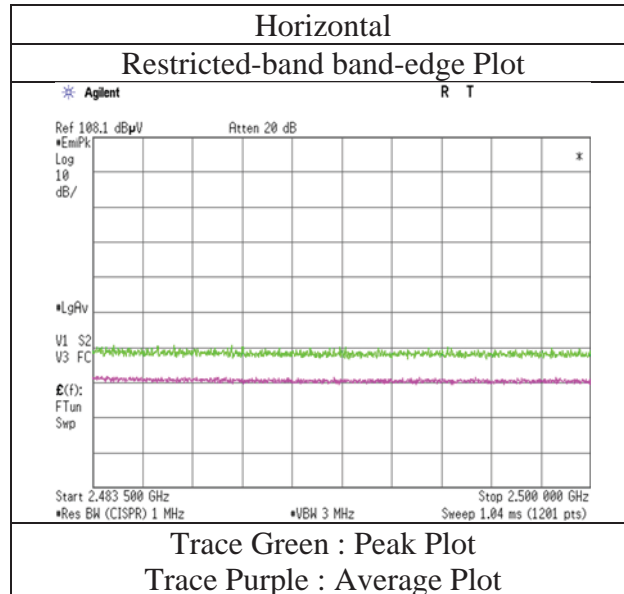
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" sheet.

\*1) Not out of band emission (Leakage Power)

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

Report No. 14027963S-G  
Test place Kashima EMC Lab.  
Semi Anechoic Chamber No.10  
Date October 5, 2021  
Temperature / Humidity 20 deg. C / 54 % RH  
Engineer Hiromitsu Tanabe  
(1 GHz - 2.8 GHz)  
Mode Tx 11b 2462 MHz



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

## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.10	No.10	No.10
Date	October 22, 2021	October 5, 2021	October 7, 2021	October 8, 2021
Temperature / Humidity	19 deg. C / 50 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	23 deg. C / 52 % RH
Engineer	Hiramitsu Tanabe	Hiramitsu Tanabe	Kazuhiro Ando	Kazuhiro Ando
	(30 MHz - 1000 MHz)	(1 GHz - 10 GHz)	(10 GHz - 18 GHz)	(18 GHz - 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.	186.880	QP	47.50	10.82	6.94	32.09	0.00	33.17	43.5	10.3	177	279	
Hori.	300.020	QP	52.90	13.50	7.55	32.01	0.00	41.94	46.0	4.0	106	231	
Hori.	600.000	QP	43.50	20.03	8.80	32.03	0.00	40.30	46.0	5.7	180	248	
Hori.	777.443	QP	43.00	22.34	9.38	31.92	0.00	42.80	46.0	3.2	113	11	
Hori.	840.000	QP	42.00	22.86	9.57	31.71	0.00	42.72	46.0	3.2	114	4	
Hori.	933.000	QP	39.80	24.12	9.86	31.15	0.00	42.63	46.0	3.3	110	6	
Hori.	1680.013	PK	51.00	25.37	12.76	41.59	3.33	50.87	73.9	23.0	352	255	
Hori.	2390.000	PK	48.40	27.61	13.30	41.42	3.33	51.22	73.9	22.6	128	184	
Hori.	3853.229	PK	51.90	31.31	4.87	41.26	3.33	50.15	73.9	23.7	216	195	
Hori.	4824.000	PK	45.80	32.63	5.27	41.17	3.33	45.86	73.9	28.0	150	0	Floor noise
Hori.	7236.000	PK	44.00	37.38	6.47	39.71	3.33	51.47	73.9	22.4	150	0	Floor noise
Hori.	9648.000	PK	43.70	37.95	7.27	38.50	3.33	53.75	73.9	20.1	150	0	Floor noise
Hori.	1680.013	AV	40.60	25.37	12.76	41.59	3.33	40.47	53.9	13.4	352	255	
Hori.	3853.229	AV	47.70	31.31	4.87	41.26	3.33	45.95	53.9	7.9	216	195	
Vert.	300.000	QP	46.00	13.50	7.55	32.01	0.00	35.04	46.0	10.9	156	206	
Vert.	600.000	QP	42.50	20.03	8.80	32.03	0.00	39.30	46.0	6.7	200	325	
Vert.	777.667	QP	40.30	22.34	9.38	31.92	0.00	40.10	46.0	5.9	147	216	
Vert.	933.000	QP	35.70	24.12	9.86	31.15	0.00	38.53	46.0	7.4	110	180	
Vert.	1680.016	PK	51.50	25.37	12.76	41.59	3.33	51.37	73.9	22.5	306	333	
Vert.	2390.000	PK	47.70	27.61	13.30	41.42	3.33	50.52	73.9	23.3	241	233	
Vert.	3854.579	PK	51.90	31.31	4.86	41.26	3.33	50.14	73.9	23.7	281	337	
Vert.	4824.000	PK	45.30	32.63	5.27	41.17	3.33	45.36	73.9	28.5	150	0	Floor noise
Vert.	7236.000	PK	44.20	37.38	6.47	39.71	3.33	51.67	73.9	22.2	150	0	Floor noise
Vert.	9648.000	PK	43.30	37.95	7.27	38.50	3.33	53.35	73.9	20.5	150	0	Floor noise
Vert.	1680.016	AV	42.40	25.37	12.76	41.59	3.33	42.27	53.9	11.6	306	333	
Vert.	3854.579	AV	46.70	31.31	4.86	41.26	3.33	44.94	53.9	8.9	281	337	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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	38.60	27.61	13.30	41.42	1.76	3.33	43.18	53.9	10.7	*1)
Hori.	4824.000	AV	36.40	32.63	5.27	41.17	1.76	3.33	38.22	53.9	15.6	Floor noise
Hori.	7236.000	AV	35.40	37.38	6.47	39.71	1.76	3.33	44.63	53.9	9.2	Floor noise
Hori.	9648.000	AV	34.70	37.95	7.27	38.50	1.76	3.33	46.51	53.9	7.3	Floor noise
Vert.	2390.000	AV	38.50	27.61	13.30	41.42	1.76	3.33	43.08	53.9	10.8	*1)
Vert.	4824.000	AV	36.60	32.63	5.27	41.17	1.76	3.33	38.42	53.9	15.4	Floor noise
Vert.	7236.000	AV	35.50	37.38	6.47	39.71	1.76	3.33	44.73	53.9	9.1	Floor noise
Vert.	9648.000	AV	34.60	37.95	7.27	38.50	1.76	3.33	46.41	53.9	7.4	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" 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	80.70	27.65	13.32	41.42	3.33	83.58	-	-	Carrier
Hori.	2400.000	PK	40.70	27.60	13.31	41.42	3.33	43.52	63.58	20.0	
Vert.	2412.000	PK	79.50	27.65	13.32	41.42	3.33	82.38	-	-	Carrier
Vert.	2400.000	PK	40.40	27.60	13.31	41.42	3.33	43.22	62.38	19.1	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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**Kashima EMC Lab.**

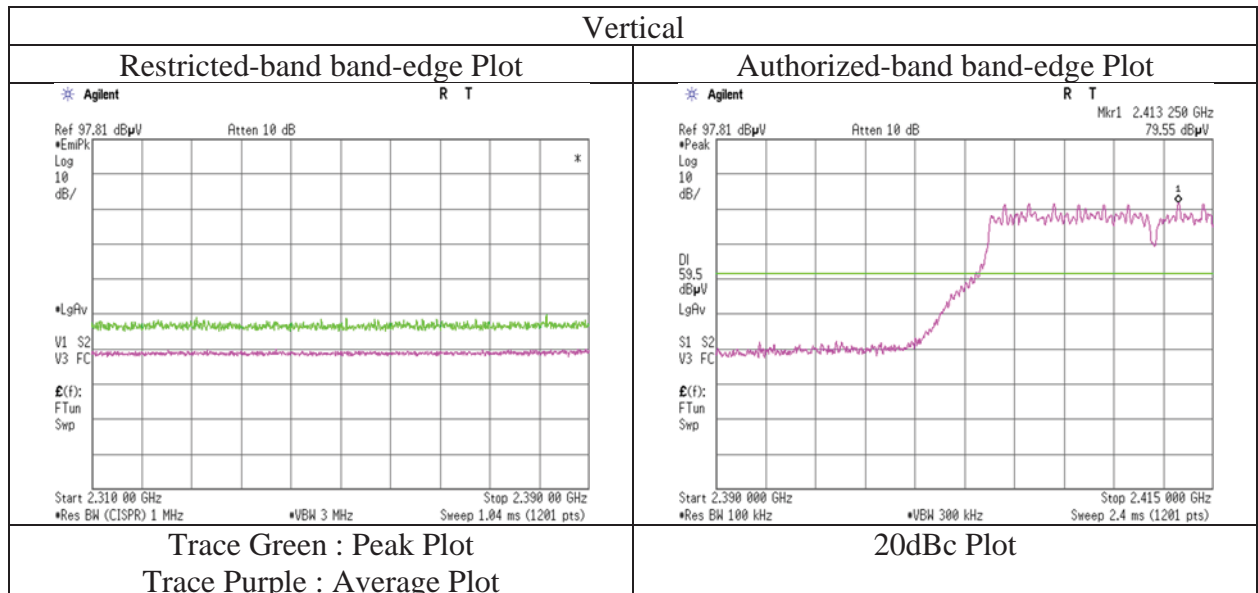
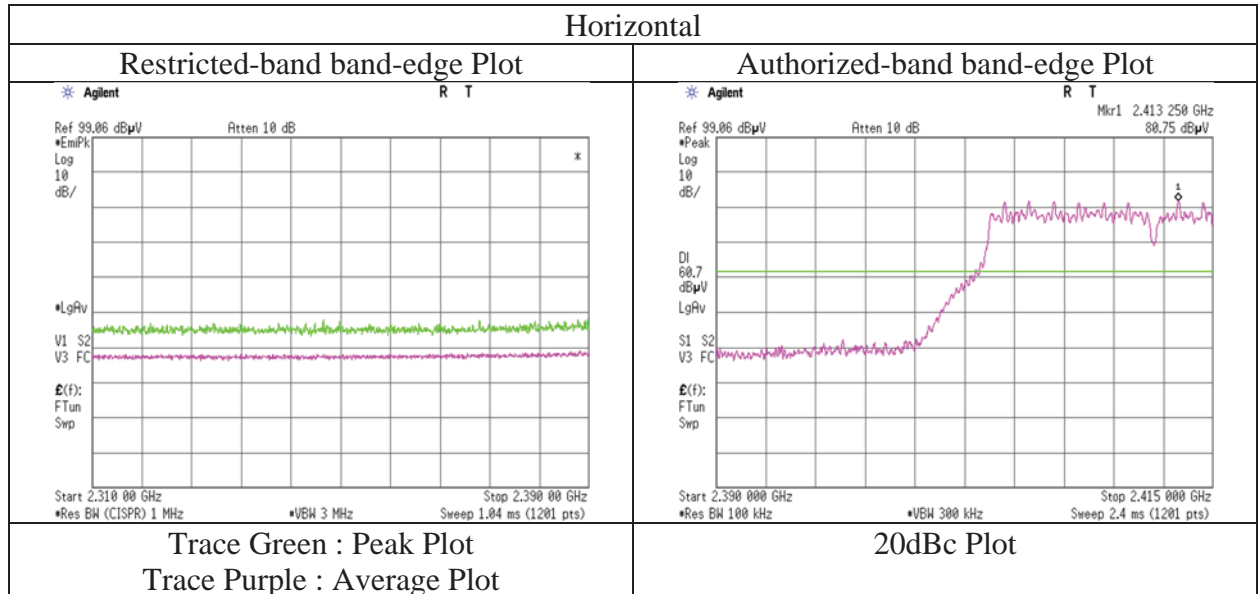
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**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

Report No. 14027963S-G  
Test place Kashima EMC Lab.  
Semi Anechoic Chamber No.10  
Date October 5, 2021  
Temperature / Humidity 20 deg. C / 54 % RH  
Engineer Hiromitsu Tanabe  
(1 GHz - 10 GHz)  
Mode Tx 11g 2412 MHz



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

## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 5, 2021	October 7, 2021	October 8, 2021
Temperature / Humidity	20 deg. C / 54 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	23 deg. C / 52 % 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 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.	1679.998	PK	49.20	25.37	12.76	41.59	3.33	49.07	73.9	24.8	354	257	
Hori.	3853.366	PK	52.20	31.31	4.87	41.26	3.33	50.45	73.9	23.4	216	195	
Hori.	4874.000	PK	45.70	32.61	5.28	41.17	3.33	45.75	73.9	28.1	150	0	Floor noise
Hori.	7311.000	PK	44.80	37.53	6.49	39.67	3.33	52.48	73.9	21.4	150	0	Floor noise
Hori.	9748.000	PK	43.40	38.09	7.31	38.42	3.33	53.71	73.9	20.1	150	0	Floor noise
Hori.	1679.998	AV	40.80	25.37	12.76	41.59	3.33	40.67	53.9	13.2	354	257	
Hori.	3853.366	AV	47.40	31.31	4.87	41.26	3.33	45.65	53.9	8.2	216	195	
Vert.	1679.996	PK	51.90	25.37	12.76	41.59	3.33	51.77	73.9	22.1	306	333	
Vert.	3854.252	PK	51.40	31.31	4.86	41.26	3.33	49.64	73.9	24.2	281	337	
Vert.	4874.000	PK	45.80	32.61	5.28	41.17	3.33	45.85	73.9	28.0	150	0	Floor noise
Vert.	7311.000	PK	44.50	37.53	6.49	39.67	3.33	52.18	73.9	21.7	150	0	Floor noise
Vert.	9748.000	PK	43.30	38.09	7.31	38.42	3.33	53.61	73.9	20.2	150	0	Floor noise
Vert.	1679.996	AV	41.80	25.37	12.76	41.59	3.33	41.67	53.9	12.2	306	333	
Vert.	3854.252	AV	46.70	31.31	4.86	41.26	3.33	44.94	53.9	8.9	281	337	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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.	4874.000	AV	36.40	32.61	5.28	41.17	1.76	3.33	38.21	53.9	15.6	Floor noise
Hori.	7311.000	AV	35.30	37.53	6.49	39.67	1.76	3.33	44.74	53.9	9.1	Floor noise
Hori.	9748.000	AV	34.20	38.09	7.31	38.42	1.76	3.33	46.27	53.9	7.6	Floor noise
Vert.	4874.000	AV	36.60	32.61	5.28	41.17	1.76	3.33	38.41	53.9	15.4	Floor noise
Vert.	7311.000	AV	35.50	37.53	6.49	39.67	1.76	3.33	44.94	53.9	8.9	Floor noise
Vert.	9748.000	AV	34.00	38.09	7.31	38.42	1.76	3.33	46.07	53.9	7.8	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" sheet.

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**Kashima EMC Lab.**

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## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 5, 2021	October 7, 2021	October 8, 2021
Temperature / Humidity	20 deg. C / 54 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	23 deg. C / 52 % 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 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.	1680.016	PK	48.80	25.37	12.76	41.59	3.33	48.67	73.9	25.2	152	265	
Hori.	2483.500	PK	40.40	28.01	13.36	41.40	3.33	43.70	73.9	30.2	367	247	
Hori.	3853.641	PK	52.10	31.31	4.87	41.26	3.33	50.35	73.9	23.5	218	196	
Hori.	4924.000	PK	45.50	32.67	5.34	41.18	3.33	45.66	73.9	28.2	150	0	Floor noise
Hori.	7386.000	PK	44.20	37.49	6.54	39.61	3.33	51.95	73.9	21.9	150	0	Floor noise
Hori.	9848.000	PK	43.20	38.11	7.34	38.35	3.33	53.63	73.9	20.2	150	0	Floor noise
Hori.	1680.016	AV	39.60	25.37	12.76	41.59	3.33	39.47	53.9	14.4	152	265	
Hori.	3853.641	AV	47.80	31.31	4.87	41.26	3.33	46.05	53.9	7.8	218	196	
Vert.	1680.010	PK	51.30	25.37	12.76	41.59	3.33	51.17	73.9	22.7	308	335	
Vert.	2483.500	PK	47.20	28.01	13.36	41.40	3.33	50.50	73.9	23.4	231	236	
Vert.	3853.865	PK	51.30	31.31	4.87	41.26	3.33	49.55	73.9	24.3	283	337	
Vert.	4924.000	PK	45.90	32.67	5.34	41.18	3.33	46.06	73.9	27.8	150	0	Floor noise
Vert.	7386.000	PK	44.60	37.49	6.54	39.61	3.33	52.35	73.9	21.5	150	0	Floor noise
Vert.	9848.000	PK	42.30	38.11	7.34	38.35	3.33	52.73	73.9	21.1	150	0	Floor noise
Vert.	1680.010	AV	41.30	25.37	12.76	41.59	3.33	41.17	53.9	12.7	308	335	
Vert.	3853.865	AV	46.50	31.31	4.87	41.26	3.33	44.75	53.9	9.1	283	337	

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

Distance factor : 1 GHz - 10 GHz :  $20\log(4.4\text{ m} / 3.0\text{ m}) = 3.33\text{ dB}$

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

### 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	39.90	28.01	13.36	41.40	1.76	3.33	44.96	53.9	8.9	*1)
Hori.	4924.000	AV	36.70	32.67	5.34	41.18	1.76	3.33	38.62	53.9	15.2	Floor noise
Hori.	7386.000	AV	35.90	37.49	6.54	39.61	1.76	3.33	45.41	53.9	8.4	Floor noise
Hori.	9848.000	AV	34.00	38.11	7.34	38.35	1.76	3.33	46.19	53.9	7.7	Floor noise
Vert.	2483.500	AV	38.50	28.01	13.36	41.40	1.76	3.33	43.56	53.9	10.3	*1)
Vert.	4924.000	AV	36.80	32.67	5.34	41.18	1.76	3.33	38.72	53.9	15.1	Floor noise
Vert.	7386.000	AV	35.70	37.49	6.54	39.61	1.76	3.33	45.21	53.9	8.6	Floor noise
Vert.	9848.000	AV	34.20	38.11	7.34	38.35	1.76	3.33	46.39	53.9	7.5	Floor noise

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

Distance factor : 1 GHz - 10 GHz :  $20\log(4.4\text{ m} / 3.0\text{ m}) = 3.33\text{ dB}$

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

Duty factor refer to "Duty factor Calculation chart" sheet.

\*1) Not out of band emission (Leakage Power)

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**Kashima EMC Lab.**

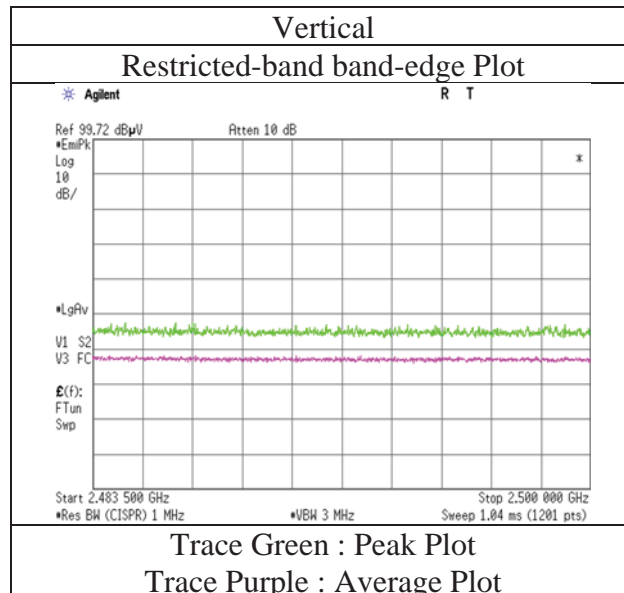
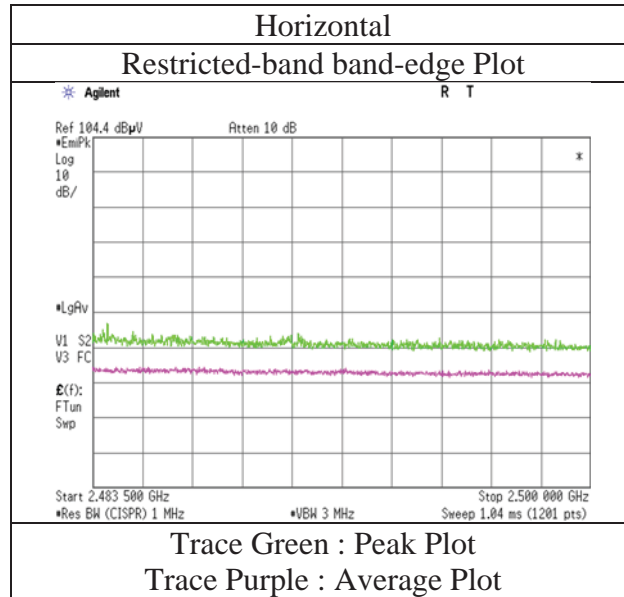
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Facsimile : +81 478 82 3373

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

Report No. 14027963S-G  
Test place Kashima EMC Lab.  
Semi Anechoic Chamber No.10  
Date October 5, 2021  
Temperature / Humidity 20 deg. C / 54 % RH  
Engineer Hiromitsu Tanabe  
(1 GHz - 2.8 GHz)  
Mode Tx 11g 2462 MHz



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



## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 6, 2021	October 7, 2021	October 8, 2021
Temperature / Humidity	20 deg. C / 54 % RH	21 deg. C / 55 % RH	24 deg. C / 56 % RH	23 deg. C / 52 % 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 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.	1680.016	PK	49.70	25.37	12.76	41.59	3.33	49.57	73.9	24.3	358	255	
Hori.	2390.000	PK	49.90	27.61	13.30	41.42	3.33	52.72	73.9	21.1	395	251	
Hori.	3853.916	PK	51.20	31.31	4.87	41.26	3.33	49.45	73.9	24.4	155	179	
Hori.	4824.000	PK	45.80	32.63	5.27	41.17	3.33	45.86	73.9	28.0	150	0	Floor noise
Hori.	7236.000	PK	44.20	37.38	6.47	39.71	3.33	51.67	73.9	22.2	150	0	Floor noise
Hori.	9648.000	PK	43.80	37.95	7.27	38.50	3.33	53.85	73.9	20.0	150	0	Floor noise
Hori.	1680.016	AV	40.50	25.37	12.76	41.59	3.33	40.37	53.9	13.5	358	255	
Hori.	3853.916	AV	46.80	31.31	4.87	41.26	3.33	45.05	53.9	8.8	155	179	
Vert.	1680.008	PK	51.40	25.37	12.76	41.59	3.33	51.27	73.9	22.6	304	336	
Vert.	2390.000	PK	47.30	27.61	13.30	41.42	3.33	50.12	73.9	23.7	265	230	
Vert.	3852.834	PK	51.70	31.30	4.87	41.26	3.33	49.94	73.9	23.9	226	141	
Vert.	4824.000	PK	45.30	32.63	5.27	41.17	3.33	45.36	73.9	28.5	150	0	Floor noise
Vert.	7236.000	PK	44.20	37.38	6.47	39.71	3.33	51.67	73.9	22.2	150	0	Floor noise
Vert.	9648.000	PK	43.80	37.95	7.27	38.50	3.33	53.85	73.9	20.0	150	0	Floor noise
Vert.	1680.008	AV	41.40	25.37	12.76	41.59	3.33	41.27	53.9	12.6	304	336	
Vert.	3852.834	AV	45.70	31.30	4.87	41.26	3.33	43.94	53.9	9.9	226	141	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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	39.80	27.61	13.30	41.42	1.72	3.33	44.34	53.9	9.5	*1)
Hori.	4824.000	AV	36.60	32.63	5.27	41.17	1.72	3.33	38.38	53.9	15.5	Floor noise
Hori.	7236.000	AV	35.50	37.38	6.47	39.71	1.72	3.33	44.69	53.9	9.2	Floor noise
Hori.	9648.000	AV	34.80	37.95	7.27	38.50	1.72	3.33	46.57	53.9	7.3	Floor noise
Vert.	2390.000	AV	38.70	27.61	13.30	41.42	1.72	3.33	43.24	53.9	10.6	*1)
Vert.	4824.000	AV	36.40	32.63	5.27	41.17	1.72	3.33	38.18	53.9	15.7	Floor noise
Vert.	7236.000	AV	35.20	37.38	6.47	39.71	1.72	3.33	44.39	53.9	9.5	Floor noise
Vert.	9648.000	AV	34.60	37.95	7.27	38.50	1.72	3.33	46.37	53.9	7.5	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" 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	84.50	27.65	13.32	41.42	3.33	87.38	-	-	Carrier
Hori.	2400.000	PK	44.30	27.60	13.31	41.42	3.33	47.12	67.38	20.2	
Vert.	2412.000	PK	79.40	27.65	13.32	41.42	3.33	82.28	-	-	Carrier
Vert.	2400.000	PK	40.30	27.60	13.31	41.42	3.33	43.12	62.28	19.1	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

**UL Japan, Inc.**

**Kashima EMC Lab.**

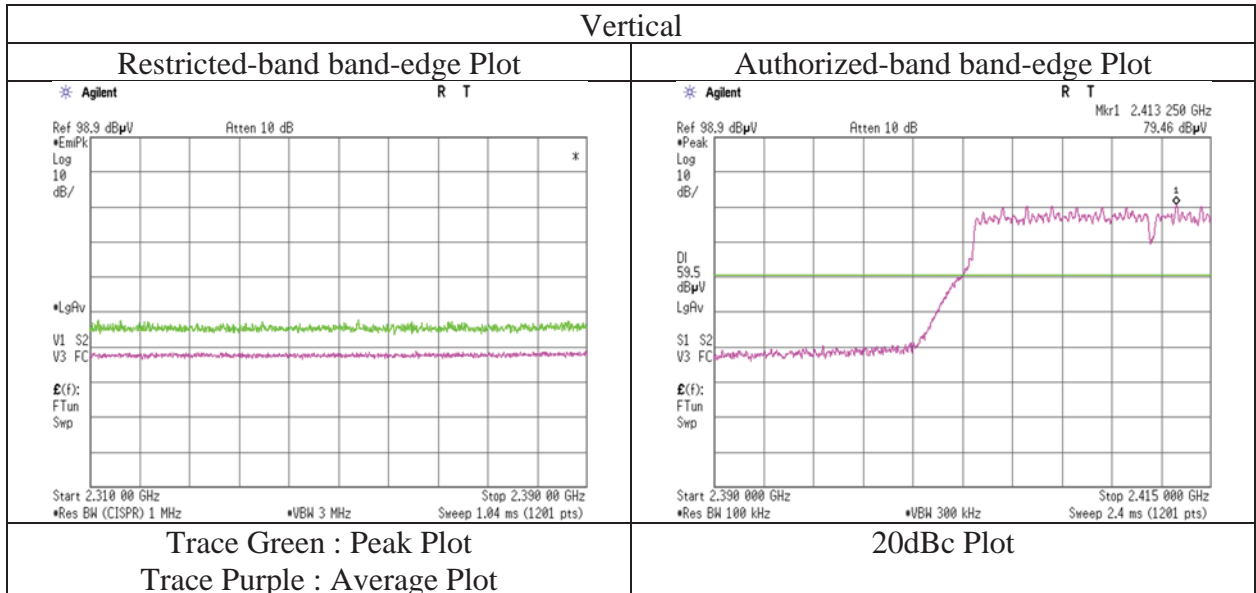
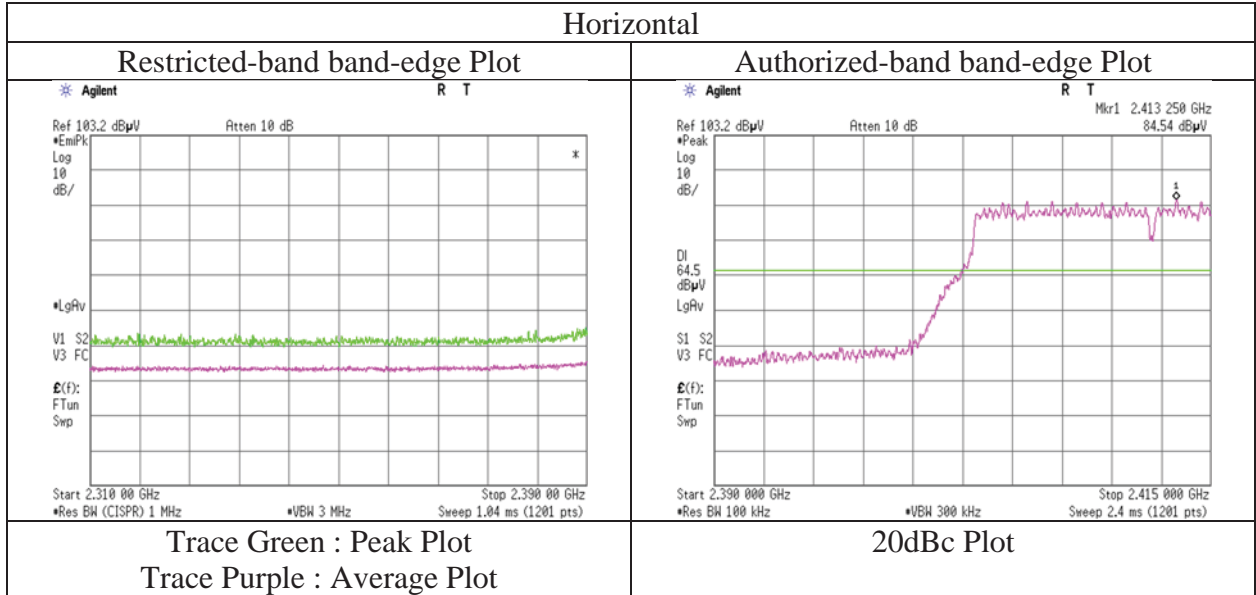
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**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

Report No.	14027963S-G
Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.10
Date	October 5, 2021
Temperature / Humidity	20 deg. C / 54 % RH
Engineer	Hirimitsu Tanabe
	(1 GHz - 2.8 GHz)
Mode	Tx 11g 2412 MHz



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

## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 6, 2021	October 7, 2021	October 8, 2021
Temperature / Humidity	20 deg. C / 54 % RH	21 deg. C / 55 % RH	24 deg. C / 56 % RH	23 deg. C / 52 % 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 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.	1679.957	PK	50.90	25.37	12.76	41.59	3.33	50.77	73.9	23.1	352	257	
Hori.	3853.599	PK	51.50	31.31	4.87	41.26	3.33	49.75	73.9	24.1	151	180	
Hori.	4874.000	PK	45.50	32.61	5.28	41.17	3.33	45.55	73.9	28.3	150	0	Floor noise
Hori.	7311.000	PK	44.00	37.53	6.49	39.67	3.33	51.68	73.9	22.2	150	0	Floor noise
Hori.	9748.000	PK	43.00	38.09	7.31	38.42	3.33	53.31	73.9	20.5	150	0	Floor noise
Hori.	1679.957	AV	41.00	25.37	12.76	41.59	3.33	40.87	53.9	13.0	352	257	
Hori.	3853.599	AV	46.70	31.31	4.87	41.26	3.33	44.95	53.9	8.9	151	180	
Vert.	1680.057	PK	51.20	25.37	12.76	41.59	3.33	51.07	73.9	22.8	307	332	
Vert.	3852.315	PK	51.20	31.30	4.87	41.26	3.33	49.44	73.9	24.4	221	141	
Vert.	4874.000	PK	43.30	32.61	5.28	41.17	3.33	43.35	73.9	30.5	150	0	Floor noise
Vert.	7311.000	PK	44.20	37.53	6.49	39.67	3.33	51.88	73.9	22.0	150	0	Floor noise
Vert.	9748.000	PK	43.00	38.09	7.31	38.42	3.33	53.31	73.9	20.5	150	0	Floor noise
Vert.	1680.057	AV	41.20	25.37	12.76	41.59	3.33	41.07	53.9	12.8	307	332	
Vert.	3852.315	AV	45.40	31.30	4.87	41.26	3.33	43.64	53.9	10.2	221	141	

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

Distance factor : 1 GHz - 10 GHz : 20log (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 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.	4874.000	AV	36.30	32.61	5.28	41.17	1.72	3.33	38.07	53.9	15.8	Floor noise
Hori.	7311.000	AV	35.20	37.53	6.49	39.67	1.72	3.33	44.60	53.9	9.3	Floor noise
Hori.	9748.000	AV	33.90	38.09	7.31	38.42	1.72	3.33	45.93	53.9	7.9	Floor noise
Vert.	4874.000	AV	35.50	32.61	5.28	41.17	1.72	3.33	37.27	53.9	16.6	Floor noise
Vert.	7311.000	AV	35.40	37.53	6.49	39.67	1.72	3.33	44.80	53.9	9.1	Floor noise
Vert.	9748.000	AV	33.90	38.09	7.31	38.42	1.72	3.33	45.93	53.9	7.9	Floor noise

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 (4.4 m / 3.0 m) = 3.33 dB

10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty factor refer to "Duty factor Calculation chart" sheet.

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## Radiated Spurious Emission

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.10	No.10	No.10	No.10
Date	October 5, 2021	October 6, 2021	October 7, 2021	October 8, 2021
Temperature / Humidity	20 deg. C / 54 % RH	21 deg. C / 55 % RH	24 deg. C / 56 % RH	23 deg. C / 52 % 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 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.	1680.011	PK	49.80	25.37	12.76	41.59	3.33	49.67	73.9	24.2	358	257	
Hori.	2483.500	PK	47.30	28.01	13.36	41.40	3.33	50.60	73.9	23.3	233	245	
Hori.	3853.335	PK	51.70	31.31	4.87	41.26	3.33	49.95	73.9	23.9	152	180	
Hori.	4924.000	PK	44.90	32.67	5.34	41.18	3.33	45.06	73.9	28.8	150	0	Floor noise
Hori.	7386.000	PK	44.00	37.49	6.54	39.61	3.33	51.75	73.9	22.1	150	0	Floor noise
Hori.	9848.000	PK	43.20	38.11	7.34	38.35	3.33	53.63	73.9	20.2	150	0	Floor noise
Hori.	1680.011	AV	40.30	25.37	12.76	41.59	3.33	40.17	53.9	13.7	358	257	
Hori.	3853.335	AV	46.40	31.31	4.87	41.26	3.33	44.65	53.9	9.2	152	180	
Vert.	1680.022	PK	51.00	25.37	12.76	41.59	3.33	50.87	73.9	23.0	308	335	
Vert.	2483.500	PK	47.20	28.01	13.36	41.40	3.33	50.50	73.9	23.4	231	236	
Vert.	3852.013	PK	50.70	31.30	4.87	41.26	3.33	48.94	73.9	24.9	222	141	
Vert.	4924.000	PK	45.90	32.67	5.34	41.18	3.33	46.06	73.9	27.8	150	0	Floor noise
Vert.	7386.000	PK	44.90	37.49	6.54	39.61	3.33	52.65	73.9	21.2	150	0	Floor noise
Vert.	9848.000	PK	42.10	38.11	7.34	38.35	3.33	52.53	73.9	21.3	150	0	Floor noise
Vert.	1680.022	AV	40.70	25.37	12.76	41.59	3.33	40.57	53.9	13.3	308	335	
Vert.	3852.013	AV	45.50	31.30	4.87	41.26	3.33	43.74	53.9	10.1	222	141	

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

Distance factor : 1 GHz - 10 GHz :  $20\log(4.4\text{ m} / 3.0\text{ m}) = 3.33\text{ dB}$

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

### 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	38.50	28.01	13.36	41.40	1.72	3.33	43.52	53.9	10.3	*1)
Hori.	4924.000	AV	36.60	32.67	5.34	41.18	1.72	3.33	38.48	53.9	15.4	Floor noise
Hori.	7386.000	AV	35.70	37.49	6.54	39.61	1.72	3.33	45.17	53.9	8.7	Floor noise
Hori.	9848.000	AV	33.90	38.11	7.34	38.35	1.72	3.33	46.05	53.9	7.8	Floor noise
Vert.	2483.500	AV	38.40	28.01	13.36	41.40	1.72	3.33	43.42	53.9	10.4	*1)
Vert.	4924.000	AV	36.60	32.67	5.34	41.18	1.72	3.33	38.48	53.9	15.4	Floor noise
Vert.	7386.000	AV	35.60	37.49	6.54	39.61	1.72	3.33	45.07	53.9	8.8	Floor noise
Vert.	9848.000	AV	33.90	38.11	7.34	38.35	1.72	3.33	46.05	53.9	7.8	Floor noise

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

Distance factor : 1 GHz - 10 GHz :  $20\log(4.4\text{ m} / 3.0\text{ m}) = 3.33\text{ dB}$

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

Duty factor refer to "Duty factor Calculation chart" sheet.

\*1) Not out of band emission (Leakage Power)

**UL Japan, Inc.**

**Kashima EMC Lab.**

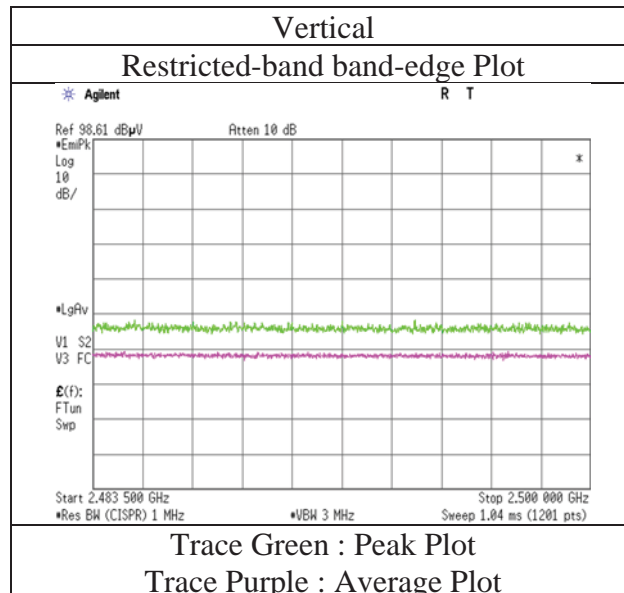
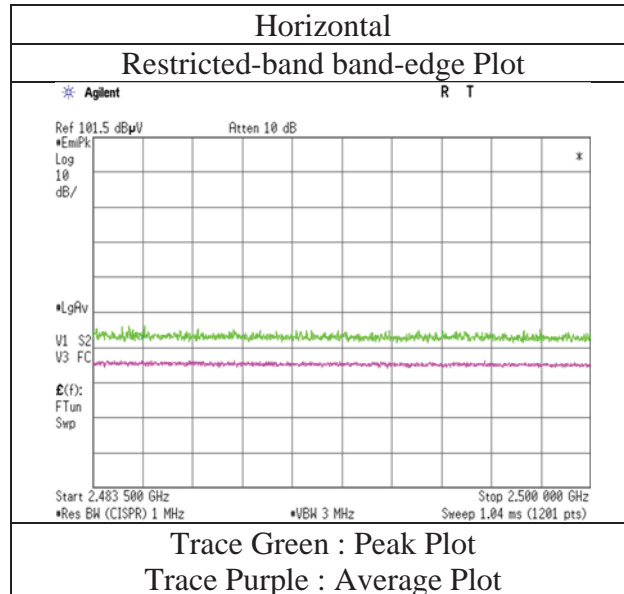
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**Radiated Spurious Emission**  
**(Reference Plot for band-edge)**

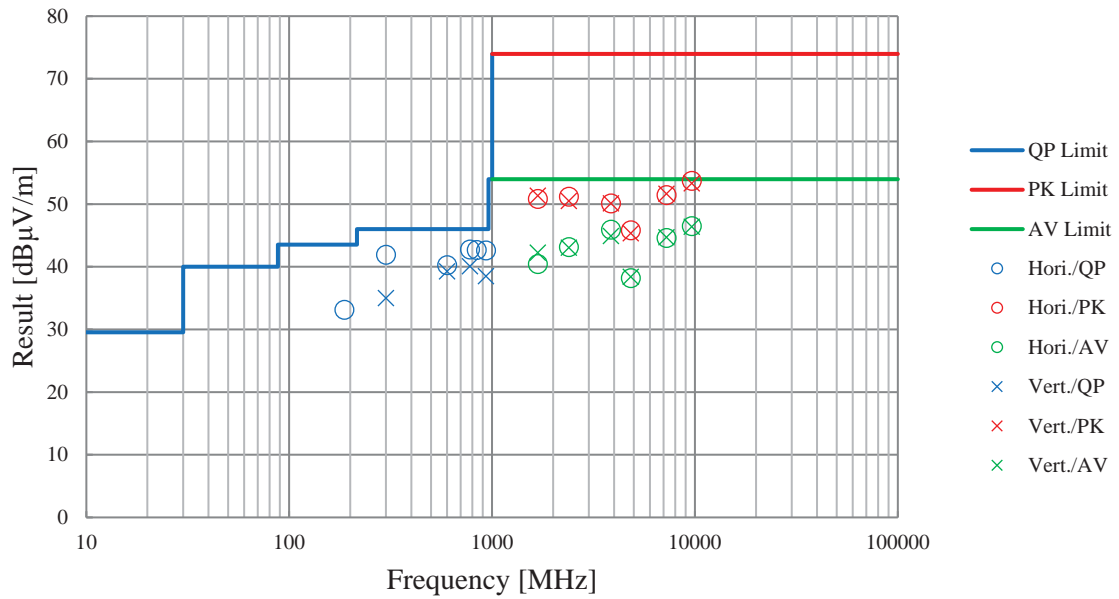
Report No. 14027963S-G  
Test place Kashima EMC Lab.  
Semi Anechoic Chamber No.10  
Date October 5, 2021  
Temperature / Humidity 20 deg. C / 54 % RH  
Engineer Hiromitsu Tanabe  
(1 GHz - 2.8 GHz)  
Mode Tx 11n-20 2462 MHz



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

**Radiated Spurious Emission**  
**(Plot data, Worst case)**

Report No.	14027963S-G			
Test place	Kashima EMC Lab.			
Semi Anechoic Chamber	No.11	No.10	No.10	No.10
Date	October 22, 2021	October 5, 2021	October 7, 2021	October 7, 2021
Temperature / Humidity	19 deg. C / 50 % RH	20 deg. C / 54 % RH	24 deg. C / 56 % RH	24 deg. C / 56 % RH
Engineer	Hiromitsu Tanabe (30 MHz - 1000 MHz)	Hiromitsu Tanabe (1 GHz - 10 GHz)	Kazuhiro Ando (10 GHz - 18 GHz)	Kazuhiro Ando (18 GHz - 26.5 GHz)
Mode	Tx 11g 2412 MHz			



\*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(GHz)	CTR-09	144199	Test Receiver	Keysight Technologies Inc	N9038A	MY53290016	2021/07/16	12
RE(GHz)	CHA-24	143455	Double Ridged Wave Guide	ETS-Lindgren (Cedar Park, Texas)	3115	00204569	2021/02/06	12
RE(GHz)	CAF-18	142908	Pre-Amplifier	TOYO	TPA0118-36	A-1001	2021/02/08	12
RE(GHz)	CCC-G09	143140	Micro Wave Cable	Junkosha	MWX221	1407S222	2020/11/16	12
RE(GHz)	CCC-G16	192243	Microwave Cable	Huber+Suhner	SF104/11N/11PC35/8000MM	808995/4	2021/01/19	12
RE(GHz)	CAT10-17	143023	10dB Fixed Atten.	Weinschel - API Technologies Corp	54A-10	56251	2021/05/14	12
RE(GHz)	CHF-04	143442	HPF	MICRO-TRONICS	HPM50111-02	009	2021/05/14	12
RE(GHz)	CSA-07	143643	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY52490024	2021/06/08	12
RE(GHz)	CHF-03	143459	HPF	MICRO-TRONICS	HPM50111-02	008	2021/05/14	12
RE(GHz)	CHA-07	143438	Double Ridged Horn	ETS-Lindgren (Cedar Park, Texas)	3160-09	00166043	2021/06/05	12
RE(GHz)	CAF-19	142937	Pre-Amplifier	TOYO	HAP18-26W	00000035	2021/06/23	12
RE(GHz)	CCC-W09	143113	Micro Wave Cable	Suhner	SUCOFLEX104	MY588/4	2021/08/03	12
RE(GHz)	TSA-01	143642	Spectrum Analyzer	Keysight Technologies Inc	N9030A	MY53310670 Version A.13.12	2021/05/24	12
RE	CCC-S11-R	143169	11Site RE 3m System	None	none(No.11 RE)	none	2020/11/10	12
RE	CBL-09	143122	LOGBICON	Schwarzbeck Mess-Elektronik OHG	VULB 9168	508	2021/04/19	12
RE	CAT5-04	178807	5dB Fixed Atten.	Pasternack Enterprises	PE7047-5	none	2021/04/21	12
RE	CAF-16	142936	Pre-Amplifier	SONOMA INSTRUMENT	310N	325015	2021/05/27	12
RE	CTR-01	144193	Test Receiver	Rohde & Schwarz	ESU40	100426	2021/04/23	12
RE	CSCL-12	143653	Ruler	TAJIMA	L19-55	none	-	-
RE	COS-10	143542	Temperature & Humidity Indicator	HIOKI E.E. CORPORATION	3641/9680-50	090999895/090905406	2021/06/24	12
RE	CBM-10	143133	Barometer	Sunoh	SBR-151	001439	2018/11/26	36
RE	CTS-14	144216	Digital Multimeter	Fluke Corporation	115	994460954	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	-	-

\*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

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