



RADIO TEST REPORT

Test Report No. 13408125M-A-R1

Applicant : Panasonic Corporation
Type of EUT : Car Navigation
Model Number of EUT : AT2104
FCC ID : ACJ932AT2104
Test regulation : FCC Part 15 Subpart C:2020
*Bluetooth BR/EDR part
Test items : Radiated emission test
Test Result : Complied (Refer to SECTION 3.2)

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
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.
5. This test report must not be used by the customer to claim any endorsement by the A2LA accreditation body.
6. This test report covers Radio technical requirements.
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.
10. This report is a revised version of 13408125M-A. 13408125M-A is replaced with this report.

Date of test: July 16 to August 25, 2020

Representative test engineer: 
Kazuhiro Ando
Engineer
Consumer Technology Division

Approved by: 
Kenichi Suda
Manager
Consumer Technology Division



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.

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REVISION HISTORY

Original Test Report No.: 13408125M-A

Revision	Test report No.	Date	Page revised	Contents																																																																												
- (Original)	13408125M-A	September 30, 2020	-	-																																																																												
1	13408125M-A-R1	November 17, 2020	P.6	Correction of "Radio Specification": from <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">IEEE802.11ac (80 MHz band)</td> <td style="text-align: center;">5210 MHz, 5755 MHz</td> </tr> </table> to <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">IEEE802.11ac (80 MHz band)</td> <td style="text-align: center;">5210 MHz, 5775 MHz</td> </tr> </table> =>	IEEE802.11ac (80 MHz band)	5210 MHz, 5755 MHz	IEEE802.11ac (80 MHz band)	5210 MHz, 5775 MHz																																																																								
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Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	MCS	Modulation and Coding Scheme
AC	Alternating Current	MRA	Mutual Recognition Arrangement
AFH	Adaptive Frequency Hopping	N/A	Not Applicable
AM	Amplitude Modulation	NIST	National Institute of Standards and Technology
Amp, AMP	Amplifier	NS	No signal detect.
ANSI	American National Standards Institute	NSA	Normalized Site Attenuation
Ant, ANT	Antenna	NVLAP	National Voluntary Laboratory Accreditation Program
AP	Access Point	OBW	Occupied Band Width
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	Quadri-Phase Shift Keying
CW	Continuous Wave	RBW	Resolution Band Width
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	RSS	Radio Standards Specifications
DSSS	Direct Sequence Spread Spectrum	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	Test Receiver
EN	European Norm	Tx	Transmitting
ERP, e.r.p.	Effective Radiated Power	VBW	Video BandWidth
EU	European Union	Vert.	Vertical
EUT	Equipment Under Test	WLAN	Wireless LAN
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		
LIMS	Laboratory Information Management System		

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SECTION 1: Customer information

Company Name : Panasonic Corporation
Address : 4261 Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa, 224-8520 Japan
Telephone Number : +81-50-3758-9201
Contact Person : Ichiro Hirose

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 : Car Navigation
Model Number : AT2104
Serial Number : Refer to SECTION 4.2
Rating : DC 13.2 V
Receipt Date : June 30, 2020
Country of Mass-production : Japan, Mexico, Czech Republic
Condition : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification : No Modification by the test lab.

2.2 Product Description

Model: AT2104 (referred to as the EUT in this report) is a Car Navigation.

There are 2 type for AT2104; Hi type(14 inch Display) and Lo type(8 inch Display). The same RF Part and antenna are installed in these models, however antenna gain and antenna arrangement are different.

General specification

The maximum clock frequencies used in the EUT: 125 MHz

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Radio Specification

	IEEE802.11b	IEEE802.11g	IEEE802.11n (20 MHz band)	IEEE802.11n (40 MHz band)
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	2412 MHz – 2462 MHz, 5180 MHz – 5240 MHz, 5745 MHz – 5825 MHz	5190 MHz, 5230 MHz, 5755 MHz, 5795 MHz
Channel spacing	5 MHz		2.4 GHz band: 5 MHz 5 GHz band: 20 MHz	40 MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	
	IEEE802.11a	IEEE802.11ac (20 MHz band)	IEEE802.11ac (40 MHz band)	IEEE802.11ac (80 MHz band)
Frequency of operation	5180 MHz – 5240 MHz, 5745 MHz – 5825 MHz	5180 MHz – 5240 MHz, 5745 MHz – 5825 MHz	5190 MHz, 5230 MHz, 5755 MHz, 5795 MHz	5210 MHz, 5775 MHz
Channel spacing	20 MHz		40 MHz	80 MHz
Modulation	OFDM (64QAM, 16QAM, QPSK, BPSK)	OFDM (256QAM, 16QAM, QPSK, BPSK)		
	Bluetooth (BR/EDR)	Bluetooth Low Energy		
Frequency of operation	2402 MHz - 2480 MHz	2402 MHz - 2480 MHz		
Channel spacing	1 MHz	2 MHz		
Modulation	FHSS, GFSK, $\pi/4$ DQPSK, 8DPSK	FHSS, GFSK		
Antenna type	Inverted F type antenna			
Antenna Gain	Hi type (14 inch Display)	RF0	2.4 GHz WLAN	-0.83 dBi
			U-NII-1	2.17 dBi
			U-NII-3	2.37 dBi
		RF1	BT, BT LE	-0.13 dBi
			U-NII-1	2.59 dBi
			U-NII-3	2.64 dBi
	Lo type (8 inch Display)	RF0	2.4 GHz WLAN	2.25 dBi
			U-NII-1	1.41 dBi
			U-NII-3	0.99 dBi
		RF1	BT, BT LE	-0.22 dBi
		U-NII-1	1.08 dBi	
		U-NII-3	2.14 dBi	
Antenna Connector type	U.FL connector			
Operating Temperature	-30 deg. C to + 65 deg. C			

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on May 26, 2020 and effective July 27, 2020 except 15.258
* The revision does not affect the test result conducted before its effective date.

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

* The EUT complies with FCC Part 15 Subpart B.

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	Hi type 3.7 dB 838.218 MHz, QP, Hori. Lo type 9.2 dB 2111.020 MHz, AV, 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).					
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 RF Part regardless of input voltage.
Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

3.3 Addition to standard

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

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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 $k=2$.

Conducted emission

Frequency range	Required Uncertainty (+/-)	Uncertainty (+/-)
0.15 MHz to 30 MHz	3.4 dB	3.3 dB

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 26.5 GHz		5.6 dB
0.5 m	26.5 GHz to 40 GHz	Not Defined	5.9 dB

Antenna Terminal test

Test Item	Required Uncertainty (+/-)	Uncertainty (+/-)
6 dB Bandwidth / 99 % Occupied Bandwidth	Not Defined	1.6 %
Maximum Output Power	0.75 dB	0.73 dB
Burst Rate	Not Defined	0.256 %
Power Density	4 dB	2.2 dB
Conducted Spurious Emission (9 kHz to 30 MHz)	4 dB	2.2 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

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.

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SECTION 4: Operation of EUT during testing

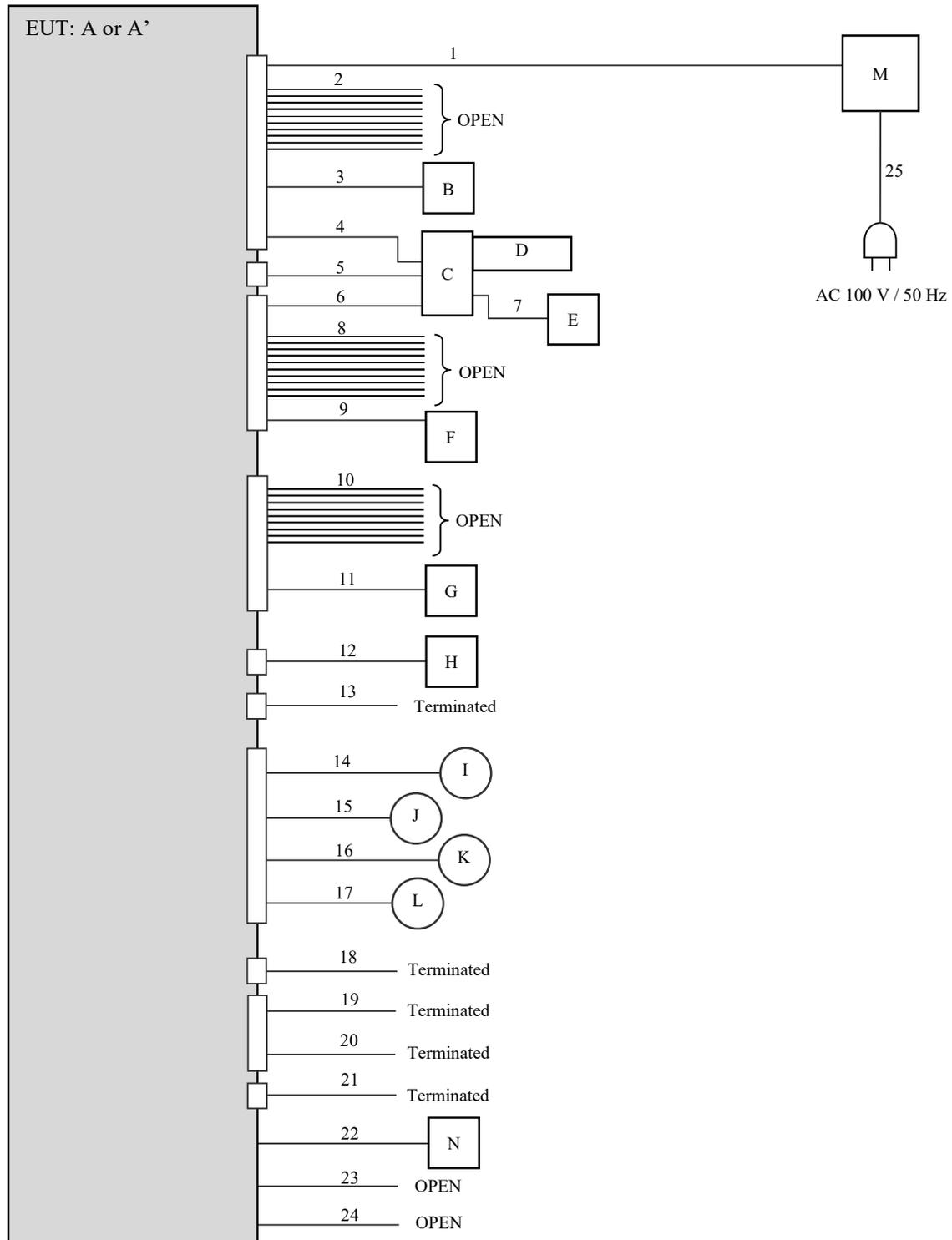
4.1 Operating Mode(s)

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Radiated Spurious Emission	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
	Tx (Hopping Off) DH5, 3DH5 with 11ac-20 MIMO 5745 MHz	2402 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)</p> <p>*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.</p> <p>* 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>*EUT has the power settings by the software as follows; Power settings : Fixed Software : Labtool Version: 2.0.0.71 (Date: 2020.05.29, 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>		

4.2 Configuration and peripherals



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

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Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car Navigation	AT2104	500025	Panasonic Corporation	EUT, Hi type
A'	Car Navigation	AT2104	500109	Panasonic Corporation	EUT, Lo type
B	Steering Switch	ST-SW-IF	0011	Panasonic Corporation	-
C	IF-Box	DEP32-10078	034	Panasonic Corporation	-
D	USB Memory	D33B29	-	Silicon Power	-
E	Smart Phone	ZTE B2016	cffdc231	ZTE	-
F	MIC	SDA3510A	0DC062841	Panasonic Corporation	-
G	MIC	SDA3510A	0DC062517	Panasonic Corporation	-
H	Rear Camera	GP-KDM301RC	06SD00026	Panasonic Corporation	-
I	Speaker	KFC-RS101	-	JVC KENWOOD	-
J	Speaker	KFC-RS101	-	JVC KENWOOD	-
K	Speaker	KFC-RS101	-	JVC KENWOOD	-
L	Speaker	KFC-RS101	-	JVC KENWOOD	-
M	Power Supply (DC)	GSV3000	1708192899	DIAMOND ANTENNA	-
N	JIG	J5DBG	WR14-4333	-	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC	3.0	Unshielded	Unshielded	-
2	Signal	3.0	Unshielded	Unshielded	-
3	Steering Switch	3.0 + 0.1	Unshielded	Unshielded	-
4	DC	3.0	Unshielded	Unshielded	-
5	IF-Box	2.5	Shielded	Shielded	-
6	Signal	3.0	Unshielded	Unshielded	-
7	USB	1.0	Shielded	Shielded	-
8	Signal	3.0	Unshielded	Unshielded	-
9	MIC	3.0 + 0.4	Unshielded	Unshielded	-
10	Signal	3.0	Unshielded	Unshielded	-
11	MIC	3.0 + 0.4	Unshielded	Unshielded	-
12	Rear Camera	3.0 + 0.2	Unshielded	Unshielded	-
13	GPS	0.1 + 2.5	Shielded	Shielded	-
14	Speaker	3.0 + 1.0	Unshielded	Unshielded	-
15	Speaker	3.0 + 1.0	Unshielded	Unshielded	-
16	Speaker	3.0 + 1.0	Unshielded	Unshielded	-
17	Speaker	3.0 + 1.0	Unshielded	Unshielded	-
18	DCM	3.0	Shielded	Shielded	-
19	FM	0.1 + 1.0	Shielded	Shielded	-
20	FM	0.1 + 1.5	Shielded	Shielded	-
21	Sirius XM	1.0	Shielded	Shielded	-
22	Signal	0.1	Unshielded	Unshielded	*1)
23	UART	0.2	Unshielded	Unshielded	*1)
24	Signal	0.15	Unshielded	Unshielded	*1)
25	AC	1.7	Unshielded	Unshielded	-

*1) This cable is for testing and is not included with products.

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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 beam width 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), *2)	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.

*2) In unwanted emission derived from carrier, measurement with Average detector was not performed.

The limit for Average detector is applied to the measurement value with Peak detector used Duty cycle correction factor (DCCF).

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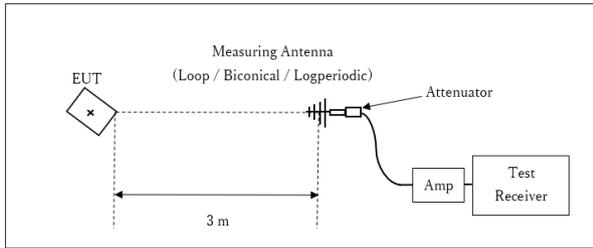
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Figure 1: Test Setup

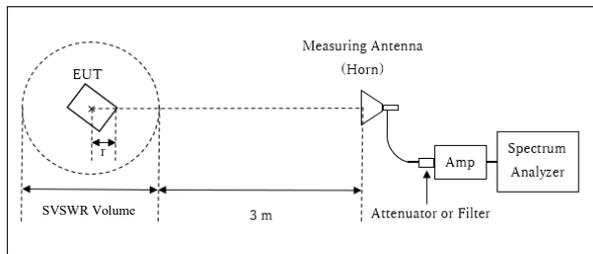
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 10 GHz



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

Hi type

Distance Factor: $20 \times \log(3.8 \text{ m} / 3.0 \text{ m}) = 2.05 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.8 \text{ m}$

Lo type

Distance Factor: $20 \times \log(3.87 \text{ m} / 3.0 \text{ m}) = 2.21 \text{ dB}$
* Test Distance: $(3 + \text{SVSWR Volume} / 2) - r = 3.87 \text{ m}$

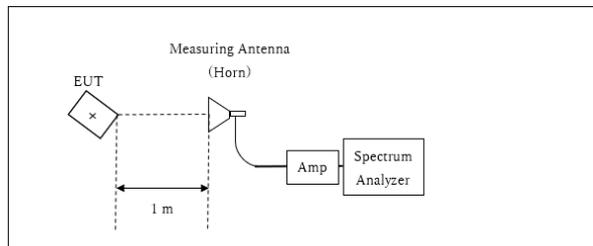
SVSWR Volume : 2.0 m

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

r = 0.2 m (Hi type)

r = 0.13 m (Lo type)

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.

Worst case:

< Hi type (14 inch Display) >

Antenna polarization	Carrier (Band edge)	Spurious				
		Below 1 GHz	Above 1 GHz			
			1 GHz - 2.8 GHz	2.8 GHz - 10 GHz	10 GHz - 18 GHz	18 GHz - 26.5 GHz
Horizontal	30 deg.	0 deg.	30 deg.	30 deg.	30 deg.	30 deg.
Vertical	30 deg.	0 deg.	30 deg.	30 deg.	30 deg.	30 deg.

< Lo type (8 inch Display) >

Antenna polarization	Carrier (Band edge)	Spurious				
		Below 1 GHz	Above 1 GHz			
			1 GHz - 2.8 GHz	2.8 GHz - 10 GHz	10 GHz - 18 GHz	18 GHz - 26.5 GHz
Horizontal	30 deg.	0 deg.	30 deg.	30 deg.	30 deg.	30 deg.
Vertical	30 deg.	0 deg.	30 deg.	30 deg.	30 deg.	30 deg.

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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

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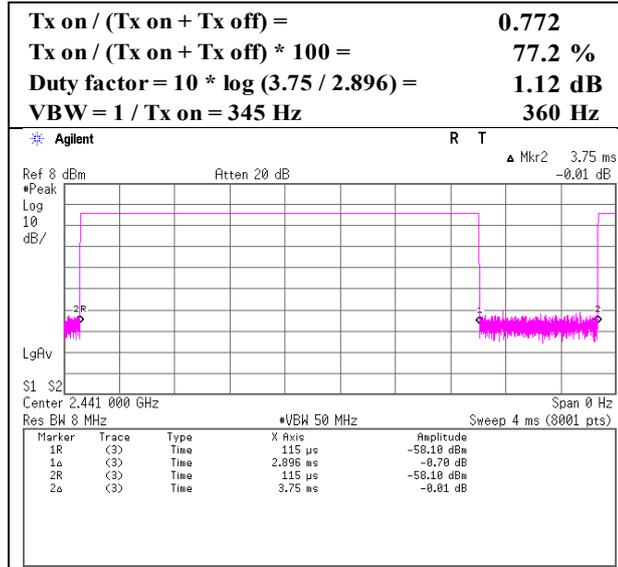
Facsimile : +81 478 82 3373

APPENDIX 1: Test data

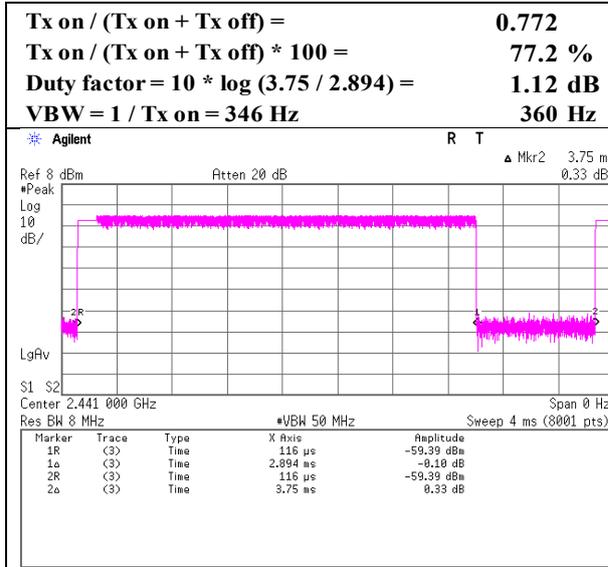
Burst Rate Confirmation

Report No. 13408125M-A-R1
Test place Shonan EMC Lab No.5 Shielded Room
Date July 16, 2020
Temperature / Humidity 24 deg. C / 58 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off

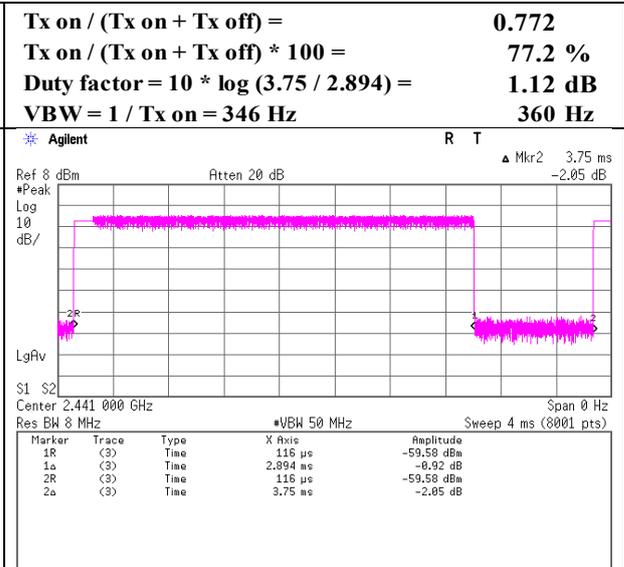
DH5



2DH5

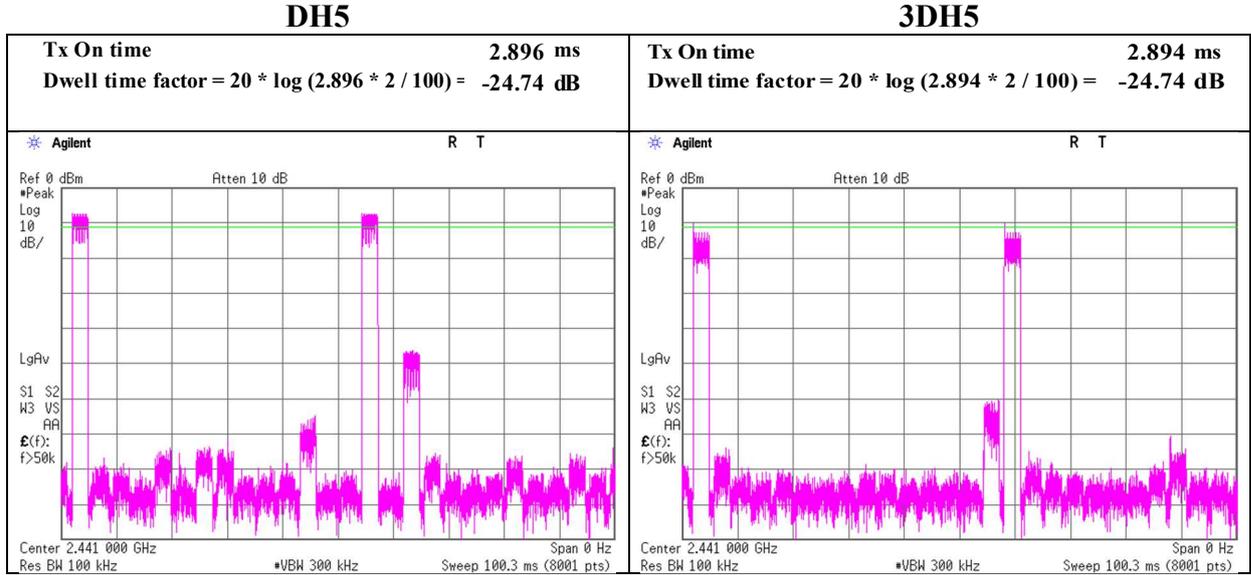


3DH5



Duty cycle correction factor

Report No.	13408125M-A-R1
Test place	Shonan EMC Lab No.5 Shielded Room
Date	August 18, 2020
Temperature / Humidity	24 deg. C / 40 % RH
Engineer	Shiro Kobayashi
Mode	Tx, Hopping On



As for Tx On time, refer to "Burst Rate Confirmation".

Radiated Spurious Emission

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6 No.6 No.6 No.6 No.6
Date August 2, 2020 July 22, 2020 July 22, 2020 July 27, 2020 July 28, 2020
Temperature / Humidity 24 deg. C / 53 % RH 23 deg. C / 57 % RH 23 deg. C / 57 % RH 23 deg. C / 59 % RH 22 deg. C / 60 % RH
Engineer Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe
(30 MHz -1000 MHz) (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
EUT Hi type

(* 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.	391.703	QP	44.94	15.50	8.58	32.27	0.00	36.75	46.0	9.2	100	20	
Hori.	477.814	QP	42.70	17.54	9.02	32.24	0.00	37.02	46.0	8.9	198	163	
Hori.	652.838	QP	36.13	20.46	9.80	32.20	0.00	34.19	46.0	11.8	146	69	
Hori.	874.083	QP	33.18	22.98	10.61	31.61	0.00	35.16	46.0	10.8	100	190	
Hori.	913.974	QP	29.90	23.74	10.73	31.35	0.00	33.02	46.0	12.9	100	178	
Hori.	999.991	QP	30.71	24.09	11.02	30.53	0.00	35.29	53.9	18.6	100	166	
Hori.	2092.804	PK	51.60	29.06	13.10	43.86	2.05	51.95	73.9	21.9	200	179	
Hori.	2390.000	PK	50.24	27.61	13.32	43.84	2.05	49.38	73.9	24.5	228	299	
Hori.	2498.583	PK	53.30	28.00	13.40	43.79	2.05	52.96	73.9	20.9	139	300	
Hori.	4804.000	PK	55.30	32.53	5.35	45.17	2.05	50.06	73.9	23.8	148	266	
Hori.	7206.000	PK	55.03	37.17	6.63	44.07	2.05	56.81	73.9	17.0	143	356	
Hori.	9608.000	PK	47.46	37.97	7.39	41.90	2.05	52.97	73.9	20.9	150	0	Floor noise
Hori.	2092.804	AV	41.10	29.06	13.10	43.86	2.05	41.45	53.9	12.4	200	179	VBW: 10 Hz
Vert.	391.703	QP	39.63	15.50	8.58	32.27	0.00	31.44	46.0	14.5	155	71	
Vert.	476.894	QP	42.66	17.53	9.02	32.24	0.00	36.97	46.0	9.0	137	52	
Vert.	652.838	QP	32.24	20.46	9.80	32.20	0.00	30.30	46.0	15.7	100	0	
Vert.	718.122	QP	31.71	21.00	10.05	32.13	0.00	30.63	46.0	15.3	100	35	
Vert.	2309.316	PK	50.10	27.52	13.27	43.87	2.05	49.07	73.9	24.8	150	3	
Vert.	2390.000	PK	51.60	27.61	13.32	43.84	2.05	50.74	73.9	23.1	170	3	
Vert.	2499.644	PK	55.30	28.01	13.40	43.79	2.05	54.97	73.9	18.9	150	5	
Vert.	4804.000	PK	54.20	32.53	5.35	45.17	2.05	48.96	73.9	24.9	171	244	
Vert.	7206.000	PK	57.30	37.17	6.63	44.07	2.05	59.08	73.9	14.8	114	38	
Vert.	9608.000	PK	47.67	37.97	7.39	41.90	2.05	53.18	73.9	20.7	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	50.24	27.61	13.32	43.84	-24.74	2.05	24.64	53.9	29.3	
Hori.	2498.583	PK	53.30	28.00	13.40	43.79	-24.74	2.05	28.22	53.9	25.7	
Hori.	4804.000	PK	55.30	32.53	5.35	45.17	-24.74	2.05	25.32	53.9	28.6	
Hori.	7206.000	PK	55.03	37.17	6.63	44.07	-24.74	2.05	32.07	53.9	21.8	
Hori.	9608.000	PK	47.46	37.97	7.39	41.90	-24.74	2.05	28.23	53.9	25.7	Floor noise
Vert.	2309.316	PK	50.10	27.52	13.27	43.87	-24.74	2.05	24.33	53.9	29.6	
Vert.	2390.000	PK	51.60	27.61	13.32	43.84	-24.74	2.05	26.00	53.9	27.9	
Vert.	2499.644	PK	55.30	28.01	13.40	43.79	-24.74	2.05	30.23	53.9	23.7	
Vert.	4804.000	PK	54.20	32.53	5.35	45.17	-24.74	2.05	24.22	53.9	29.7	
Vert.	7206.000	PK	57.30	37.17	6.63	44.07	-24.74	2.05	34.34	53.9	19.6	
Vert.	9608.000	PK	47.67	37.97	7.39	41.90	-24.74	2.05	28.44	53.9	25.5	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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	101.01	27.64	13.33	43.83	2.05	100.20	-	-	Carrier
Hori.	2399.841	PK	47.48	27.63	13.33	43.83	2.05	46.66	80.20	33.5	
Hori.	2400.000	PK	45.30	27.63	13.33	43.83	2.05	44.48	80.20	35.7	
Vert.	2402.000	PK	103.01	27.64	13.33	43.83	2.05	102.20	-	-	Carrier
Vert.	2399.630	PK	47.30	27.63	13.33	43.83	2.05	46.48	82.20	35.7	
Vert.	2400.000	PK	46.60	27.63	13.33	43.83	2.05	45.78	82.20	36.4	

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

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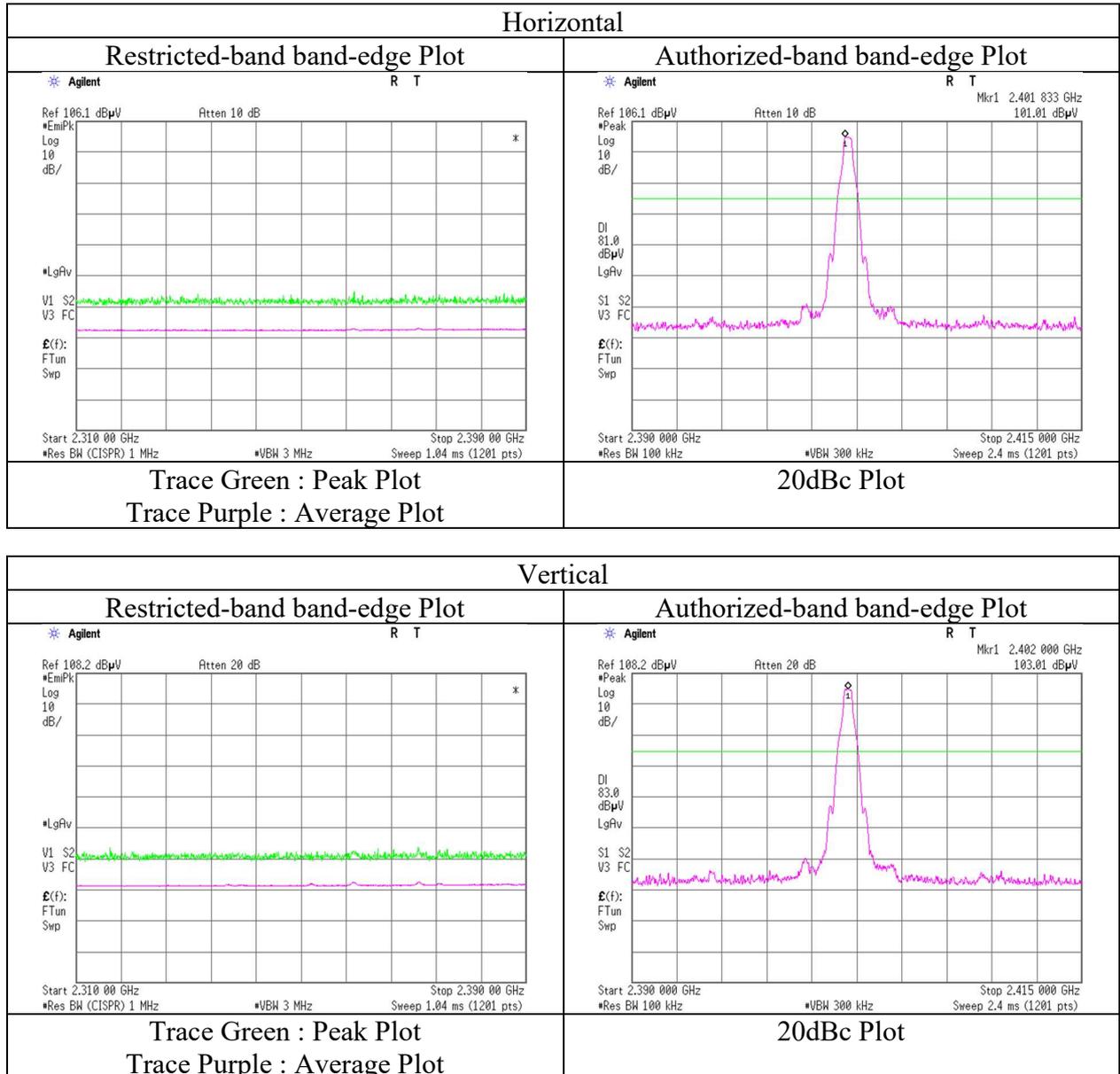
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Facsimile : +81 478 82 3373

Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	13408125M-A-R1
Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.6
Date	July 22, 2020
Temperature / Humidity	23 deg. C / 57 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx, Hopping Off, DH5 2402 MHz
EUT	Hi type



* 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.	13408125M-A-R1				
Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6
Date	August 2, 2020	July 22, 2020	July 23, 2020	July 27, 2020	July 28, 2020
Temperature / Humidity	24 deg. C / 53 % RH	23 deg. C / 57 % RH	23 deg. C / 55 % RH	23 deg. C / 59 % RH	22 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz -1000 MHz)	(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				
EUT	Hi type				

(* 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.	391.703	QP	44.15	15.50	8.58	32.27	0.00	35.96	46.0	10.0	100	13	
Hori.	477.008	QP	42.78	17.53	9.02	32.24	0.00	37.09	46.0	8.9	203	168	
Hori.	652.838	QP	35.80	20.46	9.80	32.20	0.00	33.86	46.0	12.1	147	68	
Hori.	874.083	QP	32.58	22.98	10.61	31.61	0.00	34.56	46.0	11.4	100	189	
Hori.	913.974	QP	30.00	23.74	10.73	31.35	0.00	33.12	46.0	12.8	100	168	
Hori.	999.991	QP	30.39	24.09	11.02	30.53	0.00	34.97	53.9	18.9	100	168	
Hori.	2093.361	PK	52.45	29.06	13.10	43.86	2.05	52.80	73.9	21.1	180	257	
Hori.	2535.899	PK	52.43	28.19	13.43	43.77	2.05	52.33	73.9	21.5	145	246	
Hori.	4882.000	PK	52.00	32.60	5.39	45.21	2.05	46.83	73.9	27.0	150	0	
Hori.	7323.000	PK	53.20	37.39	6.68	43.79	2.05	55.53	73.9	18.3	160	33	
Hori.	9764.000	PK	47.20	37.98	7.45	41.79	2.05	52.89	73.9	21.0	150	0	Floor noise
Hori.	2093.361	AV	42.40	29.06	13.10	43.86	2.05	42.75	53.9	11.1	180	257	VBW: 10 Hz
Vert.	391.703	QP	39.51	15.50	8.58	32.27	0.00	31.32	46.0	14.6	154	66	
Vert.	476.894	QP	42.39	17.53	9.02	32.24	0.00	36.70	46.0	9.3	134	45	
Vert.	652.838	QP	32.31	20.46	9.80	32.20	0.00	30.37	46.0	15.6	108	0	
Vert.	718.122	QP	31.70	21.00	10.05	32.13	0.00	30.62	46.0	15.3	100	35	
Vert.	2345.776	PK	53.18	27.51	13.29	43.86	2.05	52.17	73.9	21.7	126	0	
Vert.	2542.600	PK	54.80	28.22	13.44	43.76	2.05	54.75	73.9	19.1	143	0	
Vert.	4882.000	PK	52.30	32.60	5.39	45.21	2.05	47.13	73.9	26.7	150	0	
Vert.	7323.000	PK	56.00	37.39	6.68	43.79	2.05	58.33	73.9	15.5	138	36	
Vert.	9764.000	PK	46.80	37.98	7.45	41.79	2.05	52.49	73.9	21.4	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2535.899	PK	52.43	28.19	13.43	43.77	-24.74	2.05	27.59	53.9	26.3	
Hori.	4882.000	PK	52.00	32.60	5.39	45.21	-24.74	2.05	22.09	53.9	31.8	
Hori.	7323.000	PK	53.20	37.39	6.68	43.79	-24.74	2.05	30.79	53.9	23.1	
Hori.	9764.000	PK	47.20	37.98	7.45	41.79	-24.74	2.05	28.15	53.9	25.8	Floor noise
Vert.	2345.776	PK	53.18	27.51	13.29	43.86	-24.74	2.05	27.43	53.9	26.5	
Vert.	2542.600	PK	54.80	28.22	13.44	43.76	-24.74	2.05	30.01	53.9	23.9	
Vert.	4882.000	PK	52.30	32.60	5.39	45.21	-24.74	2.05	22.39	53.9	31.5	
Vert.	7323.000	PK	56.00	37.39	6.68	43.79	-24.74	2.05	33.59	53.9	20.3	
Vert.	9764.000	PK	46.80	37.98	7.45	41.79	-24.74	2.05	27.75	53.9	26.2	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

UL Japan, Inc.

Kashima EMC Lab.

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Radiated Spurious Emission

Report No.	13408125M-A-R1				
Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6
Date	August 2, 2020	July 22, 2020	July 23, 2020	July 27, 2020	July 28, 2020
Temperature / Humidity	24 deg. C / 53 % RH	23 deg. C / 57 % RH	23 deg. C / 55 % RH	23 deg. C / 59 % RH	22 deg. C / 60 % RH
Engineer	Hirimitsu Tanabe (30 MHz -1000 MHz)	Hirimitsu Tanabe (1 GHz -2.8 GHz)	Kazuhiro Ando (2.8 GHz -10 GHz)	Hirimitsu Tanabe (10 GHz -18 GHz)	Hirimitsu Tanabe (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz				
EUT	Hi type				

(* 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.	391.703	QP	46.60	15.50	8.58	32.27	0.00	38.41	46.0	7.5	100	19	
Hori.	477.008	QP	43.72	17.53	9.02	32.24	0.00	38.03	46.0	7.9	201	161	
Hori.	652.838	QP	35.91	20.46	9.80	32.20	0.00	33.97	46.0	12.0	141	70	
Hori.	874.083	QP	33.02	22.98	10.61	31.61	0.00	35.00	46.0	11.0	100	189	
Hori.	913.974	QP	30.12	23.74	10.73	31.35	0.00	33.24	46.0	12.7	100	168	
Hori.	999.991	QP	30.96	24.09	11.02	30.53	0.00	35.54	53.9	18.3	100	170	
Hori.	2093.307	PK	51.70	29.06	13.10	43.86	2.05	52.05	73.9	21.8	176	155	
Hori.	2483.500	PK	51.19	27.94	13.39	43.80	2.05	50.77	73.9	23.1	114	293	
Hori.	2577.397	PK	53.09	28.40	13.47	43.75	2.05	53.26	73.9	20.6	138	290	
Hori.	4960.000	PK	51.70	32.55	5.43	45.26	2.05	46.47	73.9	27.4	160	208	
Hori.	7440.000	PK	53.90	37.41	6.69	43.50	2.05	56.55	73.9	17.3	172	30	
Hori.	9920.000	PK	46.60	38.22	7.50	41.76	2.05	52.61	73.9	21.2	150	0	Floor noise
Hori.	2093.307	AV	41.50	29.06	13.10	43.86	2.05	41.85	53.9	12.0	176	155	VBW: 10 Hz
Vert.	402.732	QP	40.36	15.64	8.64	32.27	0.00	32.37	46.0	13.6	162	0	
Vert.	476.894	QP	42.59	17.53	9.02	32.24	0.00	36.90	46.0	9.1	136	47	
Vert.	652.838	QP	31.92	20.46	9.80	32.20	0.00	29.98	46.0	16.0	106	0	
Vert.	701.019	QP	32.80	20.85	9.99	32.16	0.00	31.48	46.0	14.5	100	28	
Vert.	2382.523	PK	55.20	27.59	13.32	43.84	2.05	54.32	73.9	19.5	140	0	
Vert.	2483.500	PK	52.70	27.94	13.39	43.80	2.05	52.28	73.9	21.6	140	0	
Vert.	2576.915	PK	52.40	28.40	13.47	43.75	2.05	52.57	73.9	21.3	152	0	
Vert.	4960.000	PK	51.70	32.55	5.43	45.26	2.05	46.47	73.9	27.4	160	210	
Vert.	7440.000	PK	54.90	37.41	6.69	43.50	2.05	57.55	73.9	16.3	171	35	
Vert.	9920.000	PK	47.20	38.22	7.50	41.76	2.05	53.21	73.9	20.6	150	0	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	51.19	27.94	13.39	43.80	-24.74	2.05	26.03	53.9	27.9	
Hori.	2577.397	PK	53.09	28.40	13.47	43.75	-24.74	2.05	28.52	53.9	25.4	
Hori.	4960.000	PK	51.70	32.55	5.43	45.26	-24.74	2.05	21.73	53.9	32.2	
Hori.	7440.000	PK	53.90	37.41	6.69	43.50	-24.74	2.05	31.81	53.9	22.1	
Hori.	9920.000	PK	46.60	38.22	7.50	41.76	-24.74	2.05	27.87	53.9	26.0	Floor noise
Vert.	2382.523	PK	55.20	27.59	13.32	43.84	-24.74	2.05	29.58	53.9	24.3	
Vert.	2483.500	PK	52.70	27.94	13.39	43.80	-24.74	2.05	27.54	53.9	26.4	
Vert.	2576.915	PK	52.40	28.40	13.47	43.75	-24.74	2.05	27.83	53.9	26.1	
Vert.	4960.000	PK	51.70	32.55	5.43	45.26	-24.74	2.05	21.73	53.9	32.2	
Vert.	7440.000	PK	54.90	37.41	6.69	43.50	-24.74	2.05	32.81	53.9	21.1	
Vert.	9920.000	PK	47.20	38.22	7.50	41.76	-24.74	2.05	28.47	53.9	25.4	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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Kashima EMC Lab.

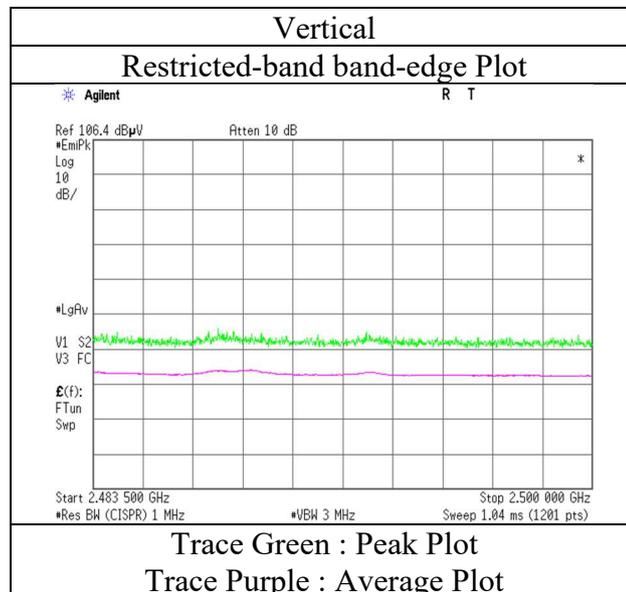
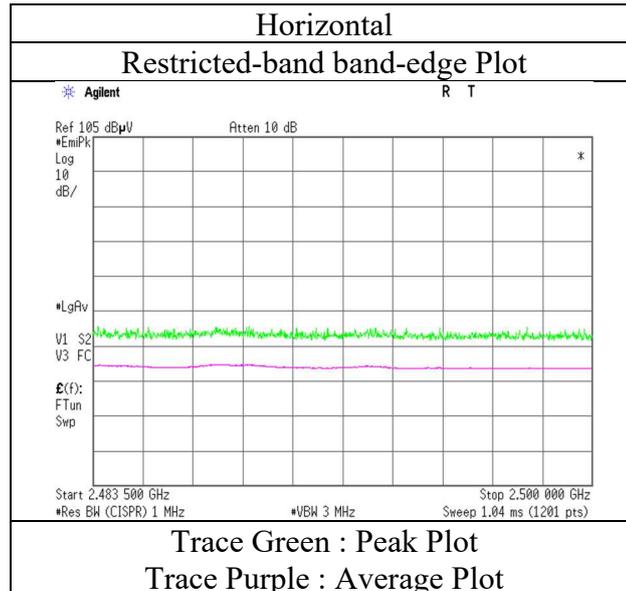
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Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date July 22, 2020
Temperature / Humidity 23 deg. C / 57 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, DH5 2480 MHz
EUT Hi type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6 No.6 No.6 No.6 No.6
Date August 2, 2020 July 22, 2020 July 23, 2020 July 27, 2020 July 28, 2020
Temperature / Humidity 24 deg. C / 53 % RH 23 deg. C / 57 % RH 23 deg. C / 55 % RH 23 deg. C / 59 % RH 22 deg. C / 60 % RH
Engineer Hiromitsu Tanabe Hiromitsu Tanabe Kazuhiro Ando Hiromitsu Tanabe Hiromitsu Tanabe
(30 MHz -1000 MHz) (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
EUT Hi type

(* 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.	391.703	QP	45.76	15.50	8.58	32.27	0.00	37.57	46.0	8.4	100	19	
Hori.	477.008	QP	43.65	17.53	9.02	32.24	0.00	37.96	46.0	8.0	198	164	
Hori.	652.838	QP	36.00	20.46	9.80	32.20	0.00	34.06	46.0	11.9	147	72	
Hori.	874.083	QP	33.00	22.98	10.61	31.61	0.00	34.98	46.0	11.0	100	188	
Hori.	913.974	QP	30.16	23.74	10.73	31.35	0.00	33.28	46.0	12.7	100	168	
Hori.	999.991	QP	30.87	24.09	11.02	30.53	0.00	35.45	53.9	18.4	100	168	
Hori.	2093.419	PK	52.28	29.06	13.10	43.86	2.05	52.63	73.9	21.2	201	177	
Hori.	2390.000	PK	50.77	27.61	13.32	43.84	2.05	49.91	73.9	23.9	226	301	
Hori.	4804.000	PK	52.20	32.53	5.35	45.17	2.05	46.96	73.9	26.9	159	12	
Hori.	7206.000	PK	53.50	37.17	6.63	44.07	2.05	55.28	73.9	18.6	156	322	
Hori.	9608.000	PK	46.70	37.97	7.39	41.90	2.05	52.21	73.9	21.6	150	0	Floor noise
Hori.	2093.419	AV	42.04	29.06	13.10	43.86	2.05	42.39	53.9	11.5	201	177	VBW: 10 Hz
Vert.	391.703	QP	40.82	15.50	8.58	32.27	0.00	32.63	46.0	13.3	185	44	
Vert.	476.894	QP	42.74	17.53	9.02	32.24	0.00	37.05	46.0	8.9	137	43	
Vert.	652.838	QP	31.96	20.46	9.80	32.20	0.00	30.02	46.0	15.9	104	0	
Vert.	701.019	QP	32.77	20.85	9.99	32.16	0.00	31.45	46.0	14.5	100	32	
Vert.	2093.502	PK	51.60	29.06	13.10	43.86	2.05	51.95	73.9	21.9	158	249	
Vert.	2390.000	PK	50.80	27.61	13.32	43.84	2.05	49.94	73.9	23.9	128	5	
Vert.	4804.000	PK	53.70	32.53	5.35	45.17	2.05	48.46	73.9	25.4	160	0	
Vert.	7206.000	PK	57.00	37.17	6.63	44.07	2.05	58.78	73.9	15.1	100	37	
Vert.	9608.000	PK	47.50	37.97	7.39	41.90	2.05	53.01	73.9	20.8	150	0	Floor noise
Vert.	2093.502	AV	41.02	29.06	13.10	43.86	2.05	41.37	53.9	12.5	158	249	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	50.77	27.61	13.32	43.84	-24.74	2.05	25.17	53.9	28.7	
Hori.	4804.000	PK	52.20	32.53	5.35	45.17	-24.74	2.05	22.22	53.9	31.7	
Hori.	7206.000	PK	53.50	37.17	6.63	44.07	-24.74	2.05	30.54	53.9	23.4	
Hori.	9608.000	PK	46.70	37.97	7.39	41.90	-24.74	2.05	27.47	53.9	26.4	Floor noise
Vert.	2390.000	PK	50.80	27.61	13.32	43.84	-24.74	2.05	25.20	53.9	28.7	
Vert.	4804.000	PK	53.70	32.53	5.35	45.17	-24.74	2.05	23.72	53.9	30.2	
Vert.	7206.000	PK	57.00	37.17	6.63	44.07	-24.74	2.05	34.04	53.9	19.9	
Vert.	9608.000	PK	47.50	37.97	7.39	41.90	-24.74	2.05	28.27	53.9	25.6	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	98.58	27.64	13.33	43.83	2.05	97.77	-	-	Carrier
Hori.	2399.914	PK	50.55	27.63	13.33	43.83	2.05	49.73	77.77	28.0	
Hori.	2400.000	PK	49.53	27.63	13.33	43.83	2.05	48.71	77.77	29.0	
Vert.	2402.000	PK	100.79	27.64	13.33	43.83	2.05	99.98	-	-	Carrier
Vert.	2399.903	PK	52.40	27.63	13.33	43.83	2.05	51.58	79.98	28.4	
Vert.	2400.000	PK	51.70	27.63	13.33	43.83	2.05	50.88	79.98	29.1	

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

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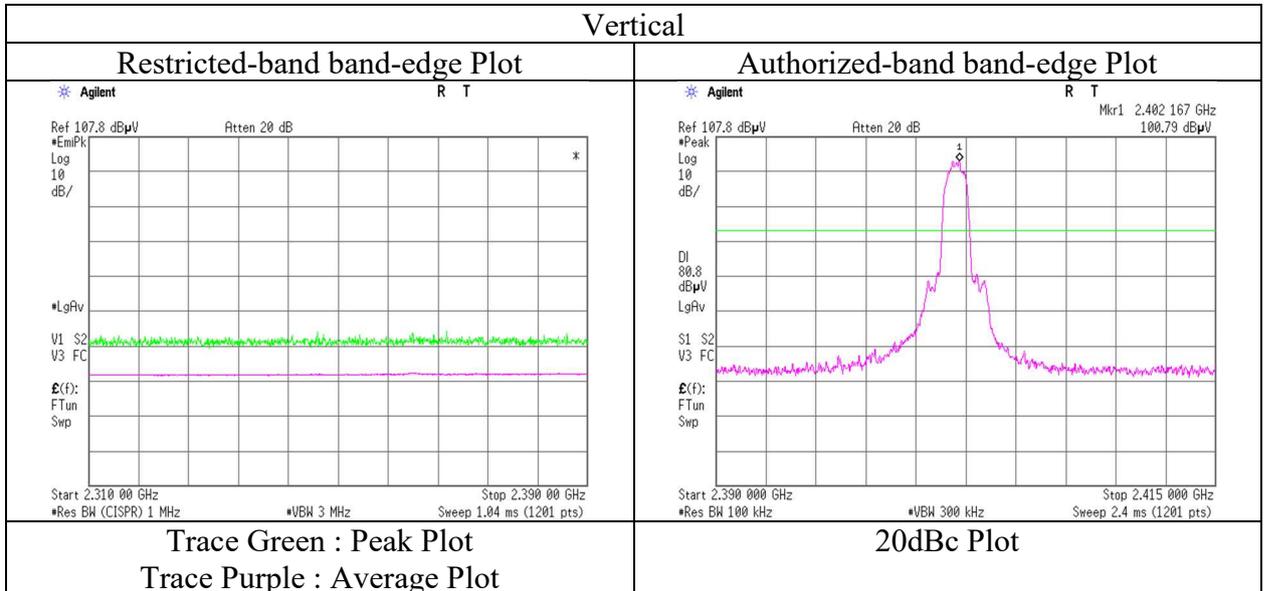
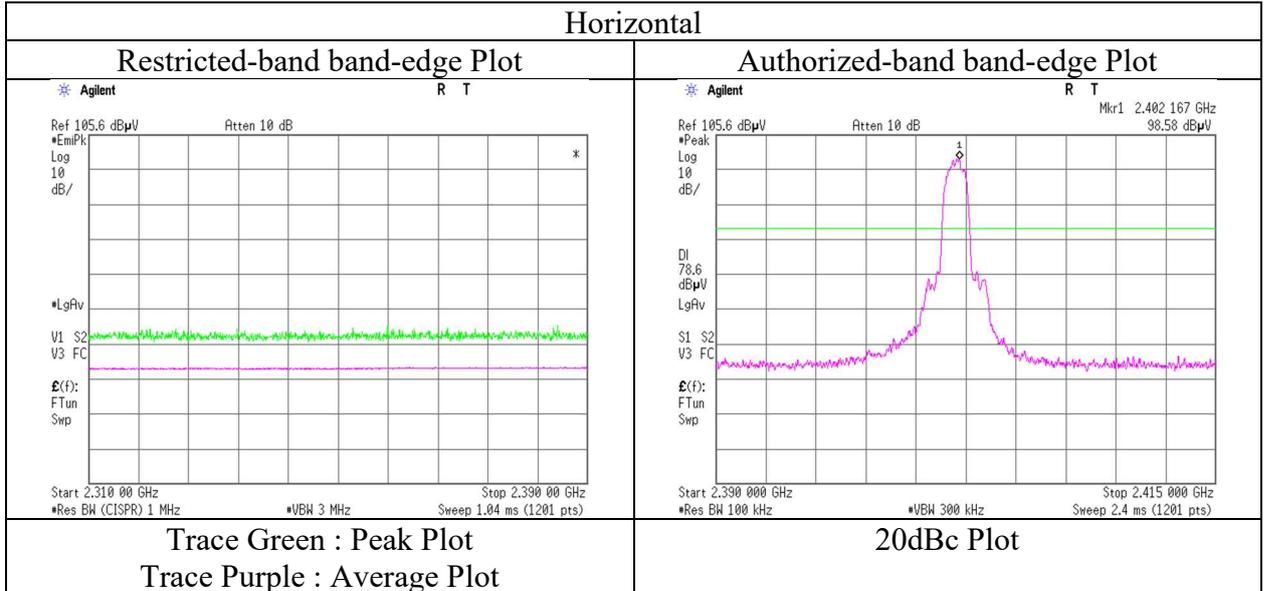
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**Radiated Spurious Emission
(Reference Plot for band-edge)**

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date July 22, 2020
Temperature / Humidity 23 deg. C / 57 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, 3DH5 2402 MHz
EUT Hi type



* 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.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 2, 2020	July 22, 2020	July 23, 2020	July 27, 2020	July 28, 2020	July 28, 2020
Temperature / Humidity	24 deg. C / 53 % RH	23 deg. C / 57 % RH	23 deg. C / 55 % RH	23 deg. C / 59 % RH	22 deg. C / 60 % RH	22 deg. C / 60 % RH
Engineer	Hiromitsu Tanabe	Hiromitsu Tanabe	Kazuhiro Ando	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz -1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz					
EUT	Hi type					

(* 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.	391.703	QP	44.90	15.50	8.58	32.27	0.00	36.71	46.0	9.2	100	24	
Hori.	477.008	QP	43.71	17.53	9.02	32.24	0.00	38.02	46.0	7.9	205	164	
Hori.	652.838	QP	35.85	20.46	9.80	32.20	0.00	33.91	46.0	12.0	144	68	
Hori.	874.083	QP	32.85	22.98	10.61	31.61	0.00	34.83	46.0	11.1	100	191	
Hori.	913.974	QP	30.16	23.74	10.73	31.35	0.00	33.28	46.0	12.7	100	170	
Hori.	999.991	QP	30.62	24.09	11.02	30.53	0.00	35.20	53.9	18.7	100	170	
Hori.	2093.260	PK	51.55	29.06	13.10	43.86	2.05	51.90	73.9	22.0	160	173	
Hori.	4882.000	PK	52.10	32.60	5.39	45.21	2.05	46.93	73.9	26.9	160	0	
Hori.	7323.000	PK	52.10	37.39	6.68	43.79	2.05	54.43	73.9	19.4	184	335	
Hori.	9764.000	PK	47.20	37.98	7.45	41.79	2.05	52.89	73.9	21.0	150	0	Floor noise
Hori.	2093.260	AV	41.84	29.06	13.10	43.86	2.05	42.19	53.9	11.7	160	173	VBW: 10 Hz
Vert.	391.703	QP	40.91	15.50	8.58	32.27	0.00	32.72	46.0	13.2	182	41	
Vert.	476.894	QP	42.77	17.53	9.02	32.24	0.00	37.08	46.0	8.9	133	50	
Vert.	652.838	QP	32.23	20.46	9.80	32.20	0.00	30.29	46.0	15.7	100	0	
Vert.	701.019	QP	32.64	20.85	9.99	32.16	0.00	31.32	46.0	14.6	100	43	
Vert.	2093.477	PK	51.80	29.06	13.10	43.86	2.05	52.15	73.9	21.7	153	253	
Vert.	4882.000	PK	52.00	32.60	5.39	45.21	2.05	46.83	73.9	27.0	160	0	
Vert.	7323.000	PK	53.80	37.39	6.68	43.79	2.05	56.13	73.9	17.7	166	38	
Vert.	9764.000	PK	47.50	37.98	7.45	41.79	2.05	53.19	73.9	20.7	150	0	Floor noise
Vert.	2093.477	AV	40.80	29.06	13.10	43.86	2.05	41.15	53.9	12.7	153	253	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4882.000	PK	52.10	32.60	5.39	45.21	-24.74	2.05	22.19	53.9	31.7	
Hori.	7323.000	PK	52.10	37.39	6.68	43.79	-24.74	2.05	29.69	53.9	24.2	
Hori.	9764.000	PK	47.20	37.98	7.45	41.79	-24.74	2.05	28.15	53.9	25.8	Floor noise
Vert.	4882.000	PK	52.00	32.60	5.39	45.21	-24.74	2.05	22.09	53.9	31.8	
Vert.	7323.000	PK	53.80	37.39	6.68	43.79	-24.74	2.05	31.39	53.9	22.5	
Vert.	9764.000	PK	47.50	37.98	7.45	41.79	-24.74	2.05	28.45	53.9	25.5	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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Radiated Spurious Emission

Report No.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 2, 2020	July 22, 2020	July 23, 2020	July 27, 2020	July 28, 2020	July 28, 2020
Temperature / Humidity	24 deg. C / 53 % RH	23 deg. C / 57 % RH	23 deg. C / 55 % RH	23 deg. C / 59 % RH	22 deg. C / 60 % RH	22 deg. C / 60 % RH
Engineer	Hirimitsu Tanabe (30 MHz -1000 MHz)	Hirimitsu Tanabe (1 GHz -2.8 GHz)	Kazuhiro Ando (2.8 GHz -10 GHz)	Hirimitsu Tanabe (10 GHz -18 GHz)	Hirimitsu Tanabe (18 GHz -26.5 GHz)	Hirimitsu Tanabe (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz					
EUT	Hi type					

(* 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.	391.703	QP	45.12	15.50	8.58	32.27	0.00	36.93	46.0	9.0	100	16	
Hori.	477.008	QP	43.57	17.53	9.02	32.24	0.00	37.88	46.0	8.1	206	159	
Hori.	652.838	QP	35.85	20.46	9.80	32.20	0.00	33.91	46.0	12.0	141	64	
Hori.	874.083	QP	32.98	22.98	10.61	31.61	0.00	34.96	46.0	11.0	100	187	
Hori.	913.974	QP	30.16	23.74	10.73	31.35	0.00	33.28	46.0	12.7	100	169	
Hori.	999.991	QP	31.04	24.09	11.02	30.53	0.00	35.62	53.9	18.2	100	169	
Hori.	2092.471	PK	51.27	29.07	13.10	43.86	2.05	51.63	73.9	22.2	208	176	
Hori.	2483.500	PK	53.60	27.94	13.39	43.80	2.05	53.18	73.9	20.7	245	275	
Hori.	4960.000	PK	51.60	32.55	5.43	45.26	2.05	46.37	73.9	27.5	160	0	
Hori.	7440.000	PK	52.80	37.41	6.69	43.50	2.05	55.45	73.9	18.4	159	32	
Hori.	9920.000	PK	47.70	38.22	7.50	41.76	2.05	53.71	73.9	20.1	150	0	Floor noise
Hori.	2092.471	AV	42.13	29.07	13.10	43.86	2.05	42.49	53.9	11.4	208	176	VBW: 10 Hz
Vert.	391.703	QP	41.39	15.50	8.58	32.27	0.00	33.20	46.0	12.8	181	0	
Vert.	476.894	QP	42.77	17.53	9.02	32.24	0.00	37.08	46.0	8.9	134	46	
Vert.	652.838	QP	31.89	20.46	9.80	32.20	0.00	29.95	46.0	16.0	100	0	
Vert.	701.019	QP	33.14	20.85	9.99	32.16	0.00	31.82	46.0	14.1	100	29	
Vert.	2092.922	PK	51.40	29.06	13.10	43.86	2.05	51.75	73.9	22.1	157	251	
Vert.	2483.500	PK	55.12	27.94	13.39	43.80	2.05	54.70	73.9	19.2	154	4	
Vert.	4960.000	PK	52.30	32.55	5.43	45.26	2.05	47.07	73.9	26.8	160	0	
Vert.	7440.000	PK	53.40	37.41	6.69	43.50	2.05	56.05	73.9	17.8	131	35	
Vert.	9920.000	PK	46.80	38.22	7.50	41.76	2.05	52.81	73.9	21.0	150	0	Floor noise
Vert.	2092.922	AV	40.90	29.06	13.10	43.86	2.05	41.25	53.9	12.6	157	251	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	53.60	27.94	13.39	43.80	-24.74	2.05	28.44	53.9	25.5	
Hori.	4960.000	PK	51.60	32.55	5.43	45.26	-24.74	2.05	21.63	53.9	32.3	
Hori.	7440.000	PK	52.80	37.41	6.69	43.50	-24.74	2.05	30.71	53.9	23.2	
Hori.	9920.000	PK	47.70	38.22	7.50	41.76	-24.74	2.05	28.97	53.9	24.9	Floor noise
Vert.	2483.500	PK	55.12	27.94	13.39	43.80	-24.74	2.05	29.96	53.9	23.9	
Vert.	4960.000	PK	52.30	32.55	5.43	45.26	-24.74	2.05	22.33	53.9	31.6	
Vert.	7440.000	PK	53.40	37.41	6.69	43.50	-24.74	2.05	31.31	53.9	22.6	
Vert.	9920.000	PK	46.80	38.22	7.50	41.76	-24.74	2.05	28.07	53.9	25.8	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

UL Japan, Inc.

Kashima EMC Lab.

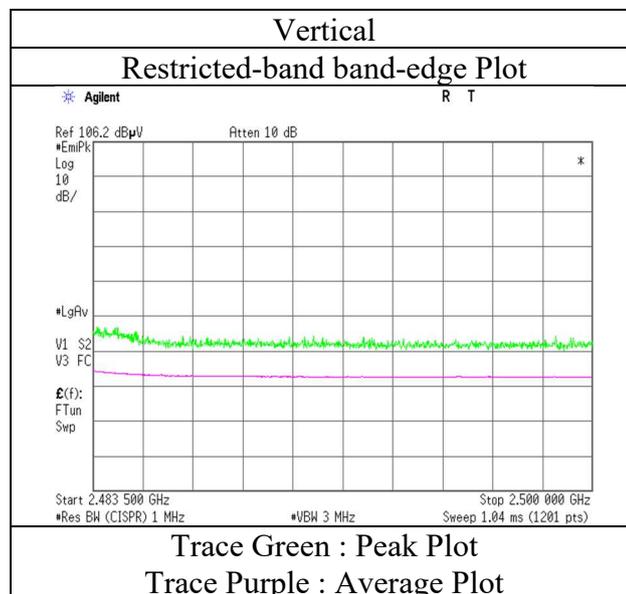
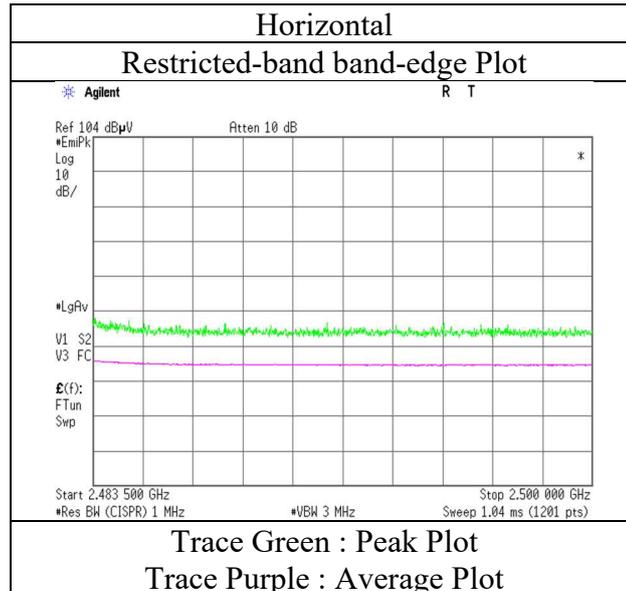
1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

Facsimile : +81 478 82 3373

Radiated Spurious Emission
(Reference Plot for band-edge)

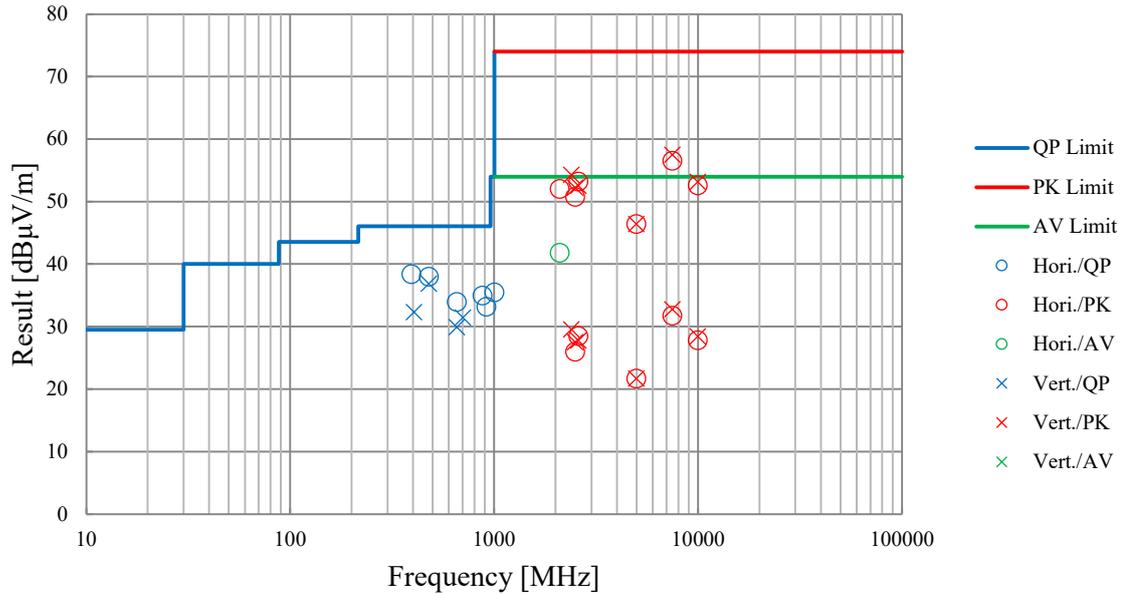
Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date July 22, 2020
Temperature / Humidity 23 deg. C / 57 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, 3DH5 2480 MHz
EUT Hi type



* 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.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 2, 2020	July 22, 2020	July 23, 2020	July 27, 2020	July 28, 2020	July 28, 2020
Temperature / Humidity	24 deg. C / 53 % RH	23 deg. C / 57 % RH	23 deg. C / 55 % RH	23 deg. C / 59 % RH	22 deg. C / 60 % RH	22 deg. C / 60 % RH
Engineer	Hiroimitsu Tanabe	Hiroimitsu Tanabe	Kazuhiro Ando	Hiroimitsu Tanabe	Hiroimitsu Tanabe	Hiroimitsu Tanabe
Mode	Tx, Hopping Off, DH5 2480 MHz					
EUT	Hi type					



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

Radiated Spurious Emission

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6 No.6 No.6 No.6 No.6
Date August 6, 2020 August 5, 2020 August 5, 2020 August 5, 2020 August 5, 2020
Temperature / Humidity 22 deg. C / 55 % RH 22 deg. C / 60 % RH 22 deg. C / 60 % RH 23 deg. C / 54 % RH 23 deg. C / 54 % RH
Engineer Kazuhiro Ando Kazuhiro Ando Kazuhiro Ando Hiromitsu Tanabe Hiromitsu Tanabe
(30 MHz -1000 MHz) (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 with 11ac-20 MIMO 5745 MHz
EUT Hi type

(* 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.	232.641	QP	49.20	10.80	7.64	32.35	0.00	35.29	46.0	10.7	153	299	
Hori.	387.692	QP	43.00	15.43	8.56	32.27	0.00	34.72	46.0	11.2	100	13	
Hori.	477.221	QP	42.80	17.53	9.02	32.24	0.00	37.11	46.0	8.8	100	18	
Hori.	593.634	QP	42.50	19.69	9.52	32.23	0.00	39.48	46.0	6.5	188	245	
Hori.	772.567	QP	40.70	22.21	10.25	32.02	0.00	41.14	46.0	4.8	122	224	
Hori.	838.218	QP	40.70	22.80	10.51	31.80	0.00	42.21	46.0	3.7	115	218	
Hori.	2309.300	PK	51.06	27.52	13.27	43.87	2.05	50.03	73.9	23.8	157	181	
Hori.	2390.000	PK	50.13	27.61	13.32	43.84	2.05	49.27	73.9	24.6	112	25	
Hori.	2498.350	PK	52.05	28.00	13.40	43.79	2.05	51.71	73.9	22.1	140	300	
Hori.	4804.000	PK	53.61	32.53	5.35	45.17	2.05	48.37	73.9	25.5	173	169	
Hori.	7206.000	PK	54.98	37.17	6.63	44.07	2.05	56.76	73.9	17.1	134	278	
Hori.	9608.000	PK	47.41	37.97	7.39	41.90	2.05	52.92	73.9	20.9	150	0	Floor noise
Hori.	2309.300	AV	41.77	27.52	13.27	43.87	2.05	40.74	53.9	13.1	157	181	VBW: 10 Hz
Vert.	593.635	QP	42.60	19.69	9.52	32.23	0.00	39.58	46.0	6.4	117	340	
Vert.	772.336	QP	39.10	22.20	10.25	32.02	0.00	39.53	46.0	6.4	100	163	
Vert.	838.346	QP	36.80	22.80	10.51	31.80	0.00	38.31	46.0	7.6	100	304	
Vert.	2309.300	PK	53.90	27.52	13.27	43.87	2.05	52.87	73.9	21.0	138	5	
Vert.	2390.000	PK	51.71	27.61	13.32	43.84	2.05	50.85	73.9	23.0	141	4	
Vert.	2498.360	PK	53.82	28.00	13.40	43.79	2.05	53.48	73.9	20.4	165	0	
Vert.	4804.000	PK	51.57	32.53	5.35	45.17	2.05	46.33	73.9	27.5	179	242	
Vert.	7206.000	PK	57.44	37.17	6.63	44.07	2.05	59.22	73.9	14.6	103	34	
Vert.	9608.000	PK	47.07	37.97	7.39	41.90	2.05	52.58	73.9	21.3	150	0	Floor noise
Vert.	2309.300	AV	39.83	27.52	13.27	43.87	2.05	38.80	53.9	15.1	138	5	VBW: 10 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	50.13	27.61	13.32	43.84	-24.74	2.05	24.53	53.9	29.4	
Hori.	2498.350	PK	52.05	28.00	13.40	43.79	-24.74	2.05	26.97	53.9	26.9	
Hori.	4804.000	PK	53.61	32.53	5.35	45.17	-24.74	2.05	23.63	53.9	30.3	
Hori.	7206.000	PK	54.98	37.17	6.63	44.07	-24.74	2.05	32.02	53.9	21.9	
Hori.	9608.000	PK	47.41	37.97	7.39	41.90	-24.74	2.05	28.18	53.9	25.7	Floor noise
Vert.	2390.000	PK	51.71	27.61	13.32	43.84	-24.74	2.05	26.11	53.9	27.8	
Vert.	2498.360	PK	53.82	28.00	13.40	43.79	-24.74	2.05	28.74	53.9	25.2	
Vert.	4804.000	PK	51.57	32.53	5.35	45.17	-24.74	2.05	21.59	53.9	32.3	
Vert.	7206.000	PK	57.44	37.17	6.63	44.07	-24.74	2.05	34.48	53.9	19.4	
Vert.	9608.000	PK	47.07	37.97	7.39	41.90	-24.74	2.05	27.84	53.9	26.1	Floor noise

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + DCCF + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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	101.55	27.64	13.33	43.83	2.05	100.74	-	-	Carrier
Hori.	2399.675	PK	47.38	27.63	13.33	43.83	2.05	46.56	80.74	34.1	
Hori.	2400.000	PK	46.91	27.63	13.33	43.83	2.05	46.09	80.74	34.6	
Vert.	2402.000	PK	103.23	27.64	13.33	43.83	2.05	102.42	-	-	Carrier
Vert.	2399.650	PK	48.97	27.63	13.33	43.83	2.05	48.15	82.42	34.2	
Vert.	2400.000	PK	48.64	27.63	13.33	43.83	2.05	47.82	82.42	34.6	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.8 m / 3.0 m) = 2.05 dB
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

UL Japan, Inc.

Kashima EMC Lab.

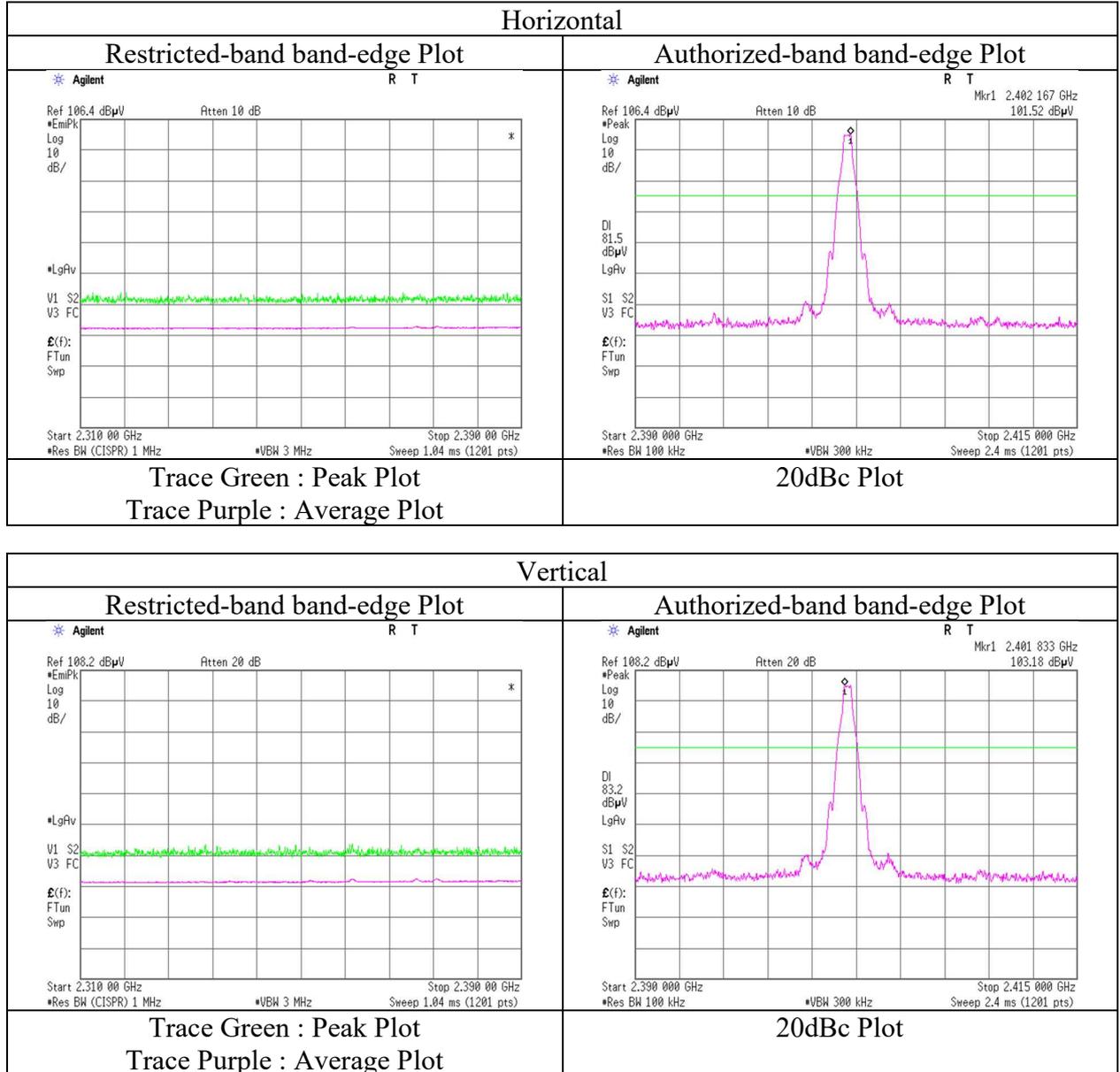
1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

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Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
Mode Tx, Hopping Off, DH5 2402 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
(1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type

(* 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	53.19	27.94	13.39	43.80	2.05	52.77	73.9	21.1	120	296	
Vert.	2483.500	PK	54.79	27.94	13.39	43.80	2.05	54.37	73.9	19.5	163	4	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	53.19	27.94	13.39	43.80	-24.74	2.05	28.03	53.9	25.9	
Vert.	2483.500	PK	54.79	27.94	13.39	43.80	-24.74	2.05	29.63	53.9	24.3	

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

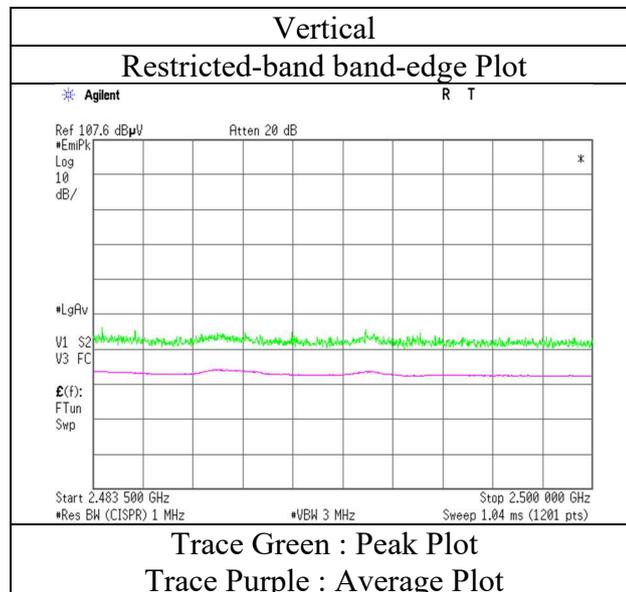
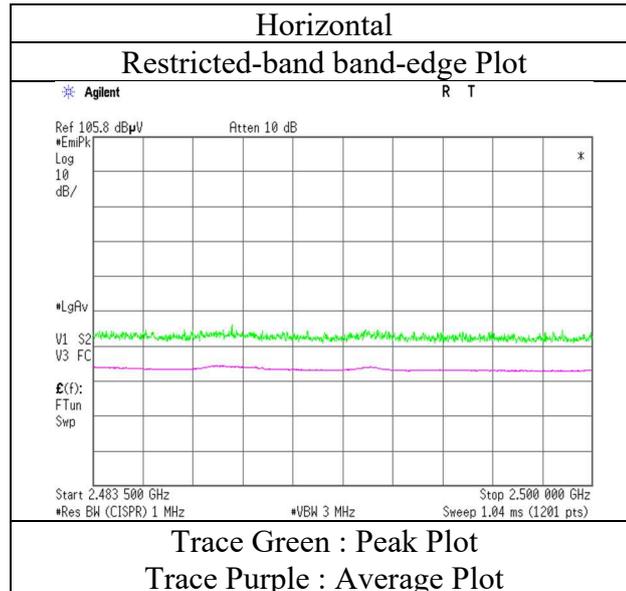
Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
Mode Tx, Hopping Off, DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
(1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, 3DH5 2402 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type

(* 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	49.66	27.61	13.32	43.84	2.05	48.80	73.9	25.1	152	294	
Vert.	2390.000	PK	51.29	27.61	13.32	43.84	2.05	50.43	73.9	23.4	123	4	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	49.66	27.61	13.32	43.84	-24.74	2.05	24.06	53.9	29.8	
Vert.	2390.000	PK	51.29	27.61	13.32	43.84	-24.74	2.05	25.69	53.9	28.2	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	98.29	27.64	13.33	43.83	2.05	97.48	-	-	Carrier
Hori.	2399.917	PK	50.98	27.63	13.33	43.83	2.05	50.16	77.48	27.3	
Hori.	2400.000	PK	49.67	27.63	13.33	43.83	2.05	48.85	77.48	28.6	
Vert.	2402.000	PK	100.28	27.64	13.33	43.83	2.05	99.47	-	-	Carrier
Vert.	2399.907	PK	51.72	27.63	13.33	43.83	2.05	50.90	79.47	28.5	
Vert.	2400.000	PK	51.92	27.63	13.33	43.83	2.05	51.10	79.47	28.3	

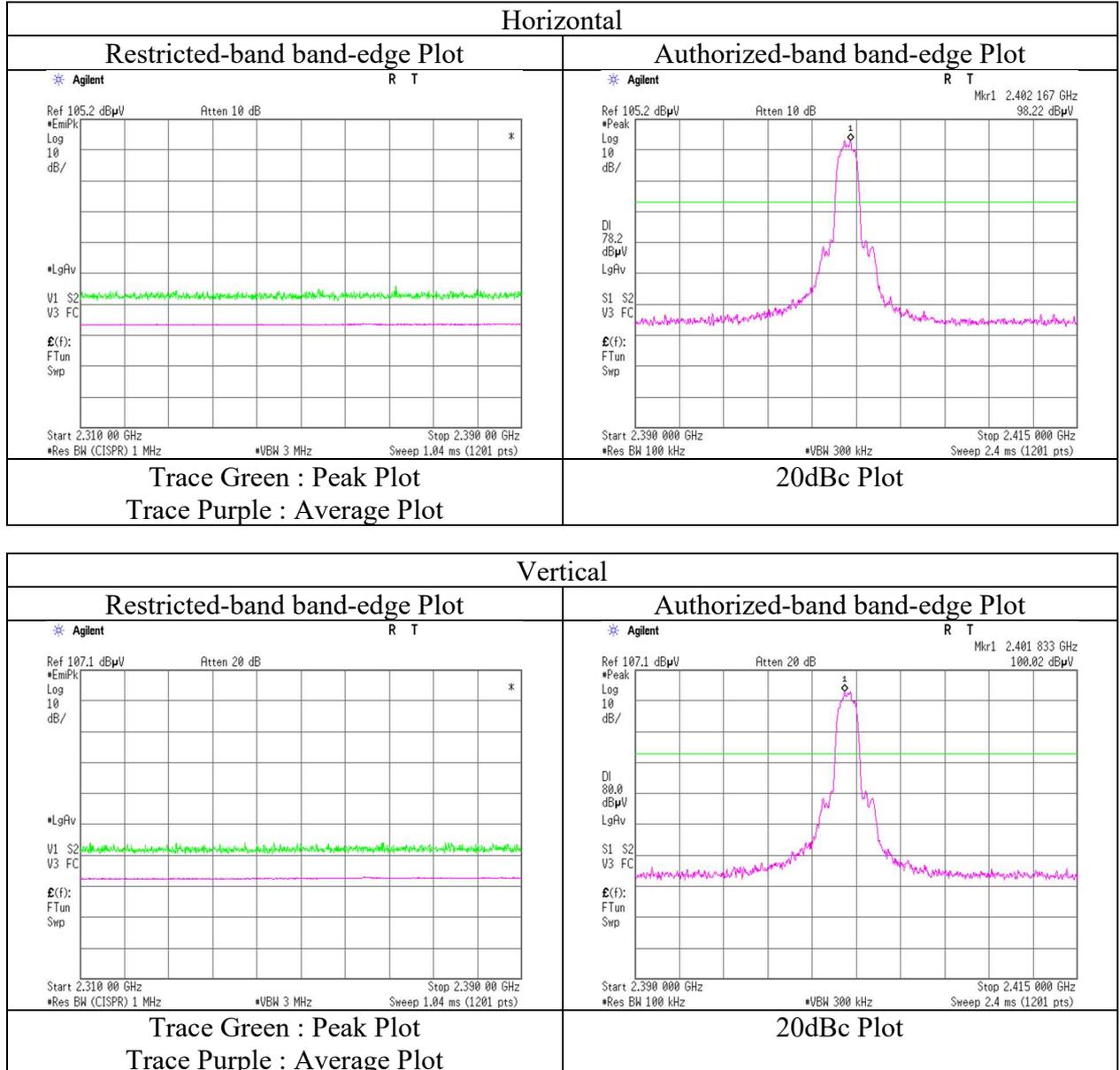
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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)**

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
Mode Tx, Hopping Off, 3DH5 2402 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
(1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, 3DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	2483.500	PK	54.31	27.94	13.39	43.80	2.05	53.89	73.9	20.0	247	278	
Vert.	2483.500	PK	56.46	27.94	13.39	43.80	2.05	56.04	73.9	17.8	163	4	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	54.31	27.94	13.39	43.80	-24.74	2.05	29.15	53.9	24.8	
Vert.	2483.500	PK	56.46	27.94	13.39	43.80	-24.74	2.05	31.30	53.9	22.6	

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

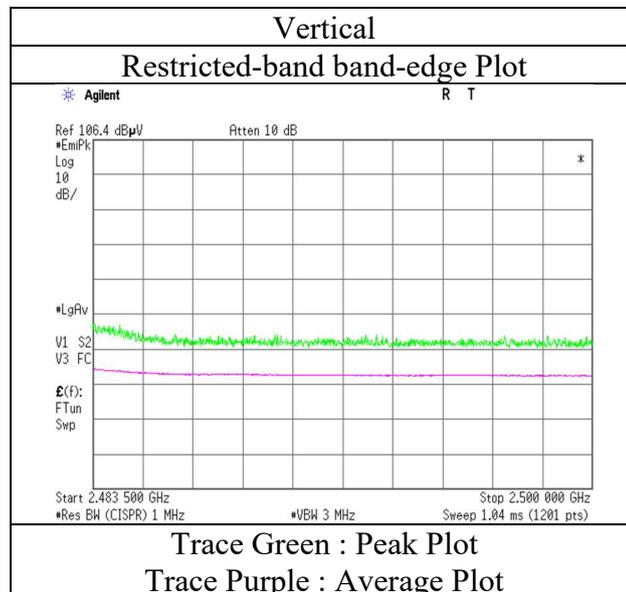
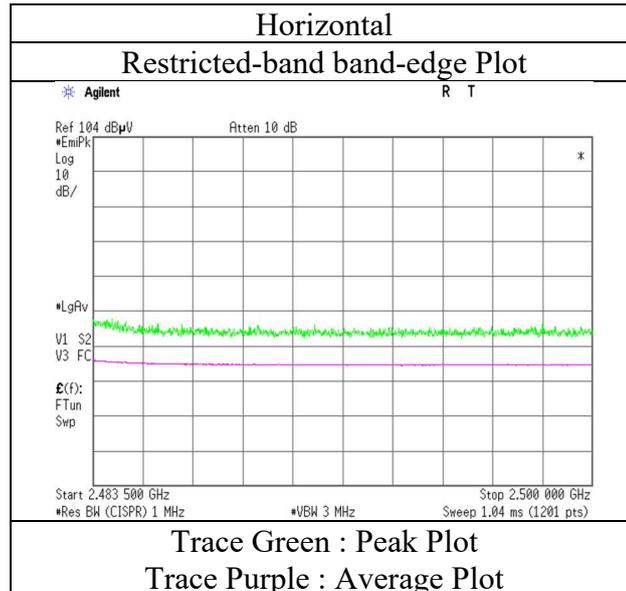
Distance factor : 1 GHz - 10 GHz : $20\log(3.8\text{ m} / 3.0\text{ m}) = 2.05\text{ dB}$

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

Radiated Spurious Emission
(Reference Plot for band-edge)

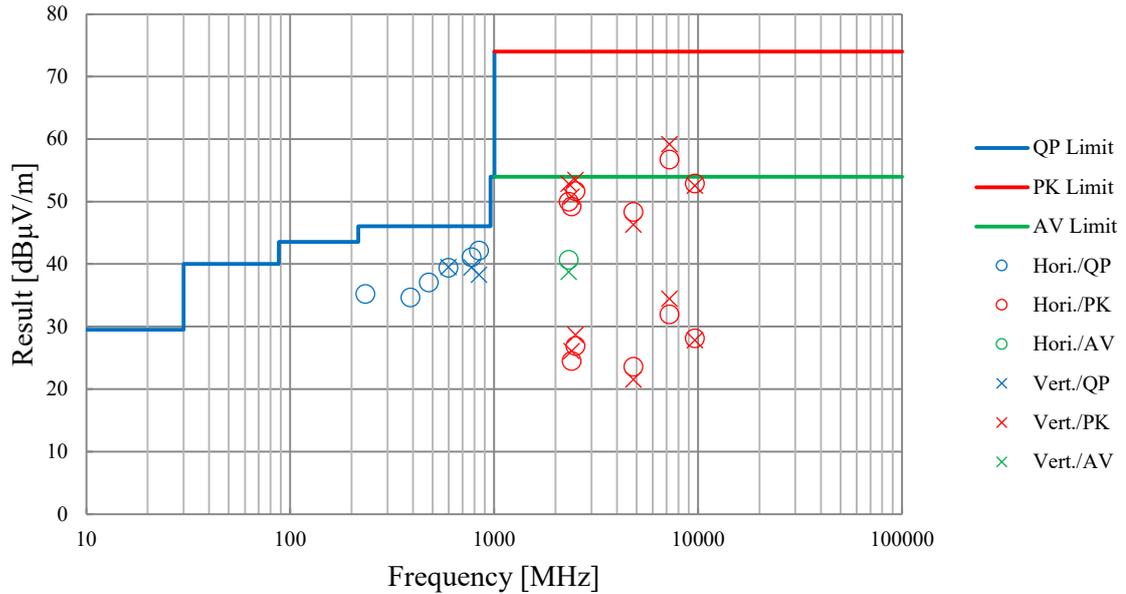
Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 5, 2020
Temperature / Humidity 22 deg. C / 60 % RH
Engineer Kazuhiro Ando
Mode Tx, Hopping Off, 3DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Hi type



* 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.	13408125M-A-R1				
Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6
Date	August 6, 2020	August 5, 2020	August 5, 2020	August 5, 2020	August 5, 2020
Temperature / Humidity	22 deg. C / 55 % RH	22 deg. C / 60 % RH	22 deg. C / 60 % RH	23 deg. C / 54 % RH	23 deg. C / 54 % RH
Engineer	Kazuhiro Ando	Kazuhiro Ando	Kazuhiro Ando	Hiromitsu Tanabe	Hiromitsu Tanabe
Mode	Tx, Hopping Off, DH5 2402 MHz with 11ac-20 MIMO 5745 MHz				
EUT	Hi type				



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

Radiated Spurious Emission

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6 No.6 No.6 No.6 No.6
Date August 7, 2020 August 2, 2020 July 31, 2020 July 31, 2020 July 31, 2020
Temperature / Humidity 22 deg. C / 55 % RH 24 deg. C / 53 % RH 21 deg. C / 58 % RH 21 deg. C / 58 % RH 21 deg. C / 58 % RH
Engineer Kazuhiro Ando Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe
(30 MHz -1000 MHz) (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
EUT Lo type

(* 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.	212.418	QP	48.60	9.94	7.50	32.37	0.00	33.67	43.5	9.8	160	288	
Hori.	560.841	QP	32.70	18.76	9.39	32.24	0.00	28.61	46.0	17.3	100	13	
Hori.	640.000	QP	34.90	20.45	9.74	32.21	0.00	32.88	46.0	13.1	164	191	
Hori.	718.127	QP	32.70	21.00	10.05	32.13	0.00	31.62	46.0	14.3	155	0	
Hori.	875.049	QP	33.20	22.98	10.61	31.60	0.00	35.19	46.0	10.8	117	217	
Hori.	999.997	QP	34.20	24.09	11.02	30.53	0.00	38.78	53.9	15.1	100	154	
Hori.	2111.275	PK	51.58	28.92	13.12	43.87	2.21	51.96	73.9	21.9	151	176	
Hori.	2307.355	PK	51.57	27.52	13.26	43.87	2.21	50.69	73.9	23.2	184	351	
Hori.	2390.000	PK	50.68	27.61	13.32	43.84	2.21	49.98	73.9	23.9	227	290	
Hori.	2497.207	PK	53.30	28.00	13.40	43.79	2.21	53.12	73.9	20.7	210	277	
Hori.	4804.000	PK	51.40	32.53	5.35	45.17	2.21	46.32	73.9	27.5	100	40	
Hori.	7206.000	PK	55.30	37.17	6.63	44.07	2.21	57.24	73.9	16.6	194	108	
Hori.	9608.000	PK	46.50	37.97	7.39	41.90	2.21	52.17	73.9	21.7	140	57	
Hori.	2111.275	AV	43.81	28.92	13.12	43.87	2.21	44.19	53.9	9.7	151	176	VBW: 10 Hz
Vert.	875.037	QP	31.50	22.98	10.61	31.60	0.00	33.49	46.0	12.5	143	10	
Vert.	999.998	QP	36.50	24.09	11.02	30.53	0.00	41.08	53.9	12.8	124	182	
Vert.	2112.305	PK	51.58	28.91	13.12	43.87	2.21	51.95	73.9	21.9	214	264	
Vert.	2308.072	PK	51.91	27.52	13.26	43.87	2.21	51.03	73.9	22.8	220	6	
Vert.	2390.000	PK	50.07	27.61	13.32	43.84	2.21	49.37	73.9	24.5	152	13	
Vert.	2498.508	PK	53.25	28.00	13.40	43.79	2.21	53.07	73.9	20.8	188	0	
Vert.	4804.000	PK	53.10	32.53	5.35	45.17	2.21	48.02	73.9	25.8	187	159	
Vert.	7206.000	PK	56.40	37.17	6.63	44.07	2.21	58.34	73.9	15.5	238	198	
Vert.	9608.000	PK	47.30	37.97	7.39	41.90	2.21	52.97	73.9	20.9	174	22	
Vert.	2112.305	AV	42.12	28.91	13.12	43.87	2.21	42.49	53.9	11.4	214	264	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2307.355	PK	51.57	27.52	13.26	43.87	-24.74	2.21	25.95	53.9	28.0	
Hori.	2390.000	PK	50.68	27.61	13.32	43.84	-24.74	2.21	25.24	53.9	28.7	
Hori.	2497.207	PK	53.30	28.00	13.40	43.79	-24.74	2.21	28.38	53.9	25.5	
Hori.	4804.000	PK	51.40	32.53	5.35	45.17	-24.74	2.21	21.58	53.9	32.3	
Hori.	7206.000	PK	55.30	37.17	6.63	44.07	-24.74	2.21	32.50	53.9	21.4	
Hori.	9608.000	PK	46.50	37.97	7.39	41.90	-24.74	2.21	27.43	53.9	26.5	
Vert.	2308.072	PK	51.91	27.52	13.26	43.87	-24.74	2.21	26.29	53.9	27.6	
Vert.	2390.000	PK	50.07	27.61	13.32	43.84	-24.74	2.21	24.63	53.9	29.3	
Vert.	2498.508	PK	53.25	28.00	13.40	43.79	-24.74	2.21	28.33	53.9	25.6	
Vert.	4804.000	PK	53.10	32.53	5.35	45.17	-24.74	2.21	23.28	53.9	30.6	
Vert.	7206.000	PK	56.40	37.17	6.63	44.07	-24.74	2.21	33.60	53.9	20.3	
Vert.	9608.000	PK	47.30	37.97	7.39	41.90	-24.74	2.21	28.23	53.9	25.7	

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	100.36	27.64	13.33	43.83	2.21	99.71	-	-	Carrier
Hori.	2399.700	PK	46.50	27.63	13.33	43.83	2.21	45.84	79.71	33.8	
Hori.	2400.000	PK	45.23	27.63	13.33	43.83	2.21	44.57	79.71	35.1	
Vert.	2402.000	PK	99.46	27.64	13.33	43.83	2.21	98.81	-	-	Carrier
Vert.	2399.711	PK	47.30	27.63	13.33	43.83	2.21	46.64	78.81	32.1	
Vert.	2400.000	PK	44.50	27.63	13.33	43.83	2.21	43.84	78.81	34.9	

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

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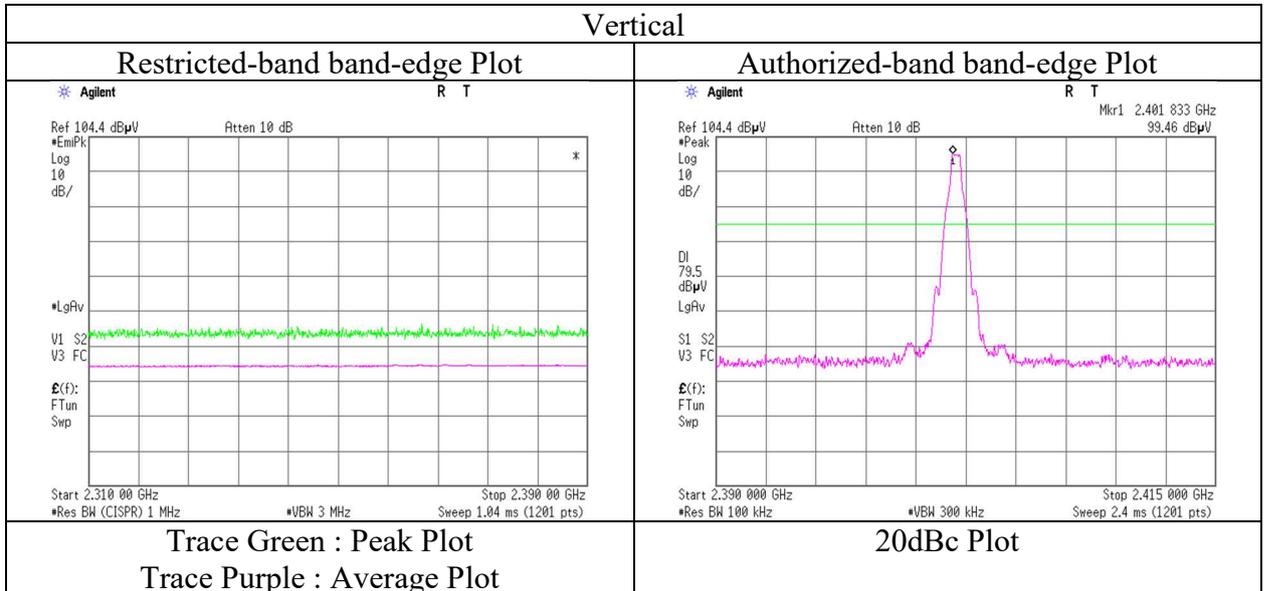
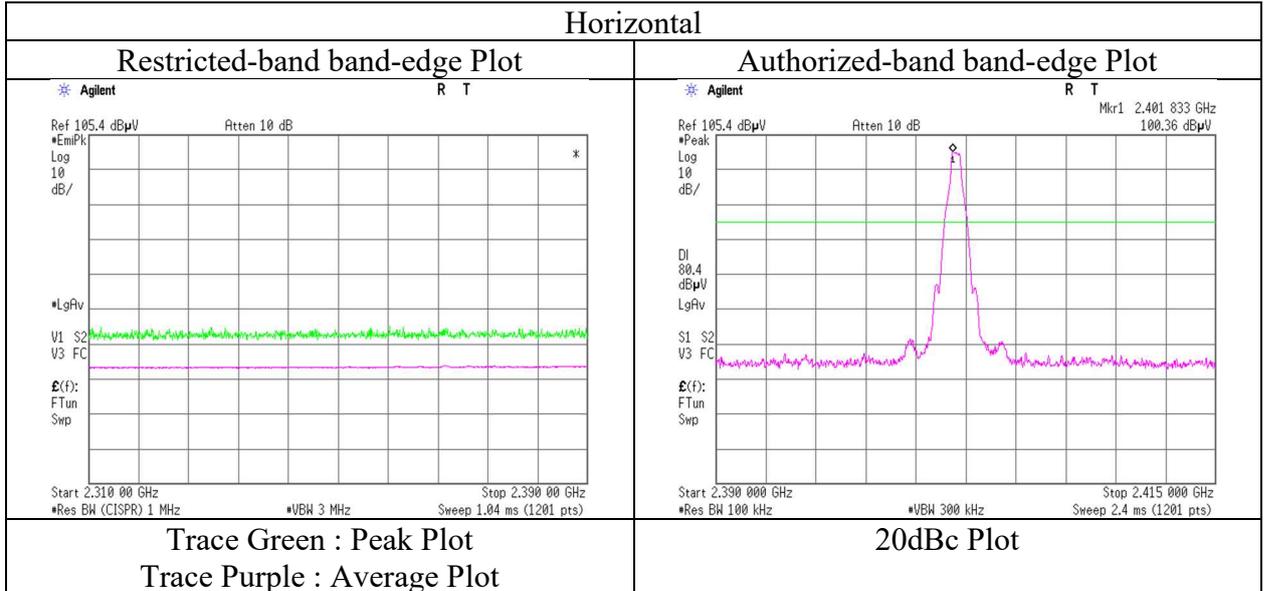
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Facsimile : +81 478 82 3373

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

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 2, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, DH5 2402 MHz
EUT Lo type



* 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.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 7, 2020	August 1, 2020	July 31, 2020	July 31, 2020	July 31, 2020	July 31, 2020
Temperature / Humidity	22 deg. C / 55 % RH	24 deg. C / 57 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH
Engineer	Kazuhiro Ando (30 MHz -1000 MHz)	Kazuhiro Ando (1 GHz -2.8 GHz)	Hiromitsu Tanabe (2.8 GHz -10 GHz)	Hiromitsu Tanabe (10 GHz -18 GHz)	Hiromitsu Tanabe (10 GHz -18 GHz)	Hiromitsu Tanabe (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz					
EUT	Lo type					

(* 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.	212.395	QP	46.90	9.94	7.50	32.37	0.00	31.97	43.5	11.5	175	290	
Hori.	560.809	QP	32.50	18.76	9.39	32.24	0.00	28.41	46.0	17.5	100	21	
Hori.	640.000	QP	34.90	20.45	9.74	32.21	0.00	32.88	46.0	13.1	151	174	
Hori.	718.128	QP	33.20	21.00	10.05	32.13	0.00	32.12	46.0	13.8	154	0	
Hori.	874.997	QP	33.90	22.98	10.61	31.61	0.00	35.88	46.0	10.1	117	214	
Hori.	999.997	QP	34.70	24.09	11.02	30.53	0.00	39.28	53.9	14.6	100	149	
Hori.	2111.020	PK	51.48	28.92	13.12	43.87	2.21	51.86	73.9	22.0	137	172	
Hori.	2344.520	PK	50.87	27.51	13.29	43.86	2.21	50.02	73.9	23.8	301	345	
Hori.	2537.380	PK	52.21	28.20	13.43	43.77	2.21	52.28	73.9	21.6	143	277	
Hori.	4882.000	PK	50.90	32.60	5.39	45.21	2.21	45.89	73.9	28.0	107	0	
Hori.	7323.000	PK	52.10	37.39	6.68	43.79	2.21	54.59	73.9	19.3	313	260	
Hori.	9764.000	PK	46.20	37.98	7.45	41.79	2.21	52.05	73.9	21.8	150	0	Floor noise
Hori.	2111.020	AV	44.30	28.92	13.12	43.87	2.21	44.68	53.9	9.2	137	172	VBW: 10 Hz
Vert.	875.022	QP	31.90	22.98	10.61	31.60	0.00	33.89	46.0	12.1	144	8	
Vert.	999.999	QP	36.50	24.09	11.02	30.53	0.00	41.08	53.9	12.8	114	177	
Vert.	2111.020	PK	51.98	28.92	13.12	43.87	2.21	52.36	73.9	21.5	151	252	
Vert.	2344.520	PK	51.95	27.51	13.29	43.86	2.21	51.10	73.9	22.8	138	15	
Vert.	2537.380	PK	51.42	28.20	13.43	43.77	2.21	51.49	73.9	22.4	177	352	
Vert.	4882.000	PK	52.30	32.60	5.39	45.21	2.21	47.29	73.9	26.6	103	44	
Vert.	7323.000	PK	52.70	37.39	6.68	43.79	2.21	55.19	73.9	18.7	187	56	
Vert.	9764.000	PK	45.60	37.98	7.45	41.79	2.21	51.45	73.9	22.4	150	0	Floor noise
Vert.	2111.020	AV	43.91	28.92	13.12	43.87	2.21	44.29	53.9	9.6	151	252	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2344.520	PK	50.87	27.51	13.29	43.86	-24.74	2.21	25.28	53.9	28.6	
Hori.	2537.380	PK	52.21	28.20	13.43	43.77	-24.74	2.21	27.54	53.9	26.4	
Hori.	4882.000	PK	50.90	32.60	5.39	45.21	-24.74	2.21	21.15	53.9	32.8	
Hori.	7323.000	PK	52.10	37.39	6.68	43.79	-24.74	2.21	29.85	53.9	24.1	
Hori.	9764.000	PK	46.20	37.98	7.45	41.79	-24.74	2.21	27.31	53.9	26.6	Floor noise
Vert.	2344.520	PK	51.95	27.51	13.29	43.86	-24.74	2.21	26.36	53.9	27.5	
Vert.	2537.380	PK	51.42	28.20	13.43	43.77	-24.74	2.21	26.75	53.9	27.2	
Vert.	4882.000	PK	52.30	32.60	5.39	45.21	-24.74	2.21	22.55	53.9	31.4	
Vert.	7323.000	PK	52.70	37.39	6.68	43.79	-24.74	2.21	30.45	53.9	23.5	
Vert.	9764.000	PK	45.60	37.98	7.45	41.79	-24.74	2.21	26.71	53.9	27.2	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

UL Japan, Inc.

Kashima EMC Lab.

1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

Facsimile : +81 478 82 3373

Radiated Spurious Emission

Report No.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 7, 2020	August 1, 2020	July 31, 2020	July 31, 2020	July 31, 2020	July 31, 2020
Temperature / Humidity	22 deg. C / 55 % RH	24 deg. C / 57 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH
Engineer	Kazuhiro Ando (30 MHz -1000 MHz)	Kazuhiro Ando (1 GHz -2.8 GHz)	Hiromitsu Tanabe (2.8 GHz -10 GHz)	Hiromitsu Tanabe (10 GHz -18 GHz)	Hiromitsu Tanabe (10 GHz -18 GHz)	Hiromitsu Tanabe (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz					
EUT	Lo type					

(* 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.	212.447	QP	45.00	9.94	7.50	32.37	0.00	30.07	43.5	13.4	161	294	
Hori.	560.695	QP	33.80	18.76	9.39	32.24	0.00	29.71	46.0	16.2	100	16	
Hori.	640.000	QP	33.00	20.45	9.74	32.21	0.00	30.98	46.0	15.0	156	174	
Hori.	718.127	QP	33.50	21.00	10.05	32.13	0.00	32.42	46.0	13.5	150	0	
Hori.	874.997	QP	34.20	22.98	10.61	31.61	0.00	36.18	46.0	9.8	125	214	
Hori.	999.997	QP	34.20	24.09	11.02	30.53	0.00	38.78	53.9	15.1	100	154	
Hori.	2111.010	PK	51.24	28.92	13.12	43.87	2.21	51.62	73.9	22.2	132	194	
Hori.	2378.920	PK	52.94	27.58	13.32	43.84	2.21	52.21	73.9	21.6	229	298	
Hori.	2483.500	PK	51.08	27.94	13.39	43.80	2.21	50.82	73.9	23.0	155	295	
Hori.	2578.980	PK	51.23	28.41	13.47	43.75	2.21	51.57	73.9	22.3	219	288	
Hori.	4960.000	PK	53.40	32.55	5.43	45.26	2.21	48.33	73.9	25.5	154	288	
Hori.	7440.000	PK	53.40	37.41	6.69	43.50	2.21	56.21	73.9	17.6	213	10	
Hori.	9920.000	PK	47.10	38.22	7.50	41.76	2.21	53.27	73.9	20.6	150	0	Floor noise
Hori.	2111.010	AV	43.95	28.92	13.12	43.87	2.21	44.33	53.9	9.5	132	194	VBW: 10 Hz
Vert.	874.997	QP	31.90	22.98	10.61	31.61	0.00	33.88	46.0	12.1	156	11	
Vert.	999.999	QP	36.50	24.09	11.02	30.53	0.00	41.08	53.9	12.8	123	175	
Vert.	2111.010	PK	52.16	28.92	13.12	43.87	2.21	52.54	73.9	21.3	153	253	
Vert.	2378.920	PK	50.82	27.58	13.32	43.84	2.21	50.09	73.9	23.8	151	16	
Vert.	2483.500	PK	51.46	27.94	13.39	43.80	2.21	51.20	73.9	22.7	106	355	
Vert.	2578.980	PK	51.17	28.41	13.47	43.75	2.21	51.51	73.9	22.3	180	0	
Vert.	4960.000	PK	51.00	32.55	5.43	45.26	2.21	45.93	73.9	27.9	100	2	
Vert.	7440.000	PK	52.40	37.41	6.69	43.50	2.21	55.21	73.9	18.6	130	60	
Vert.	9920.000	PK	46.60	38.22	7.50	41.76	2.21	52.77	73.9	21.1	150	0	Floor noise
Vert.	2111.010	AV	44.08	28.92	13.12	43.87	2.21	44.46	53.9	9.4	153	253	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2378.920	PK	52.94	27.58	13.32	43.84	-24.74	2.21	27.47	53.9	26.4	
Hori.	2483.500	PK	51.08	27.94	13.39	43.80	-24.74	2.21	26.08	53.9	27.8	
Hori.	2578.980	PK	51.23	28.41	13.47	43.75	-24.74	2.21	26.83	53.9	27.1	
Hori.	4960.000	PK	53.40	32.55	5.43	45.26	-24.74	2.21	23.59	53.9	30.3	
Hori.	7440.000	PK	53.40	37.41	6.69	43.50	-24.74	2.21	31.47	53.9	22.4	
Hori.	9920.000	PK	47.10	38.22	7.50	41.76	-24.74	2.21	28.53	53.9	25.4	Floor noise
Vert.	2378.920	PK	50.82	27.58	13.32	43.84	-24.74	2.21	25.35	53.9	28.6	
Vert.	2483.500	PK	51.46	27.94	13.39	43.80	-24.74	2.21	26.46	53.9	27.4	
Vert.	2578.980	PK	51.17	28.41	13.47	43.75	-24.74	2.21	26.77	53.9	27.1	
Vert.	4960.000	PK	51.00	32.55	5.43	45.26	-24.74	2.21	21.19	53.9	32.7	
Vert.	7440.000	PK	52.40	37.41	6.69	43.50	-24.74	2.21	30.47	53.9	23.4	
Vert.	9920.000	PK	46.60	38.22	7.50	41.76	-24.74	2.21	28.03	53.9	25.9	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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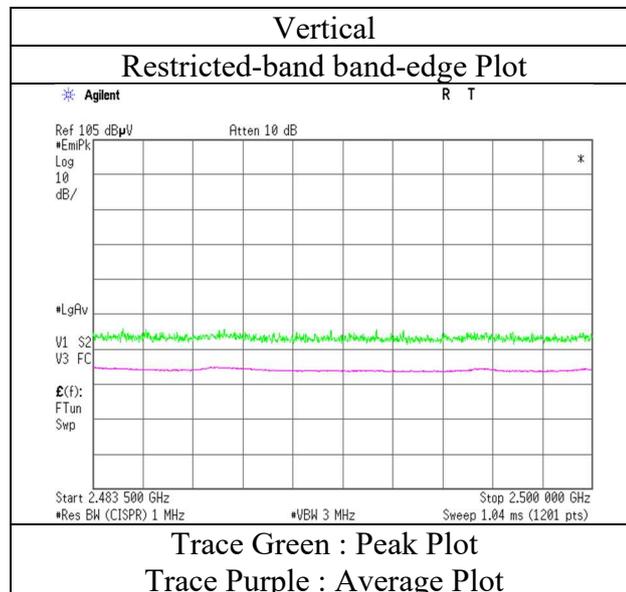
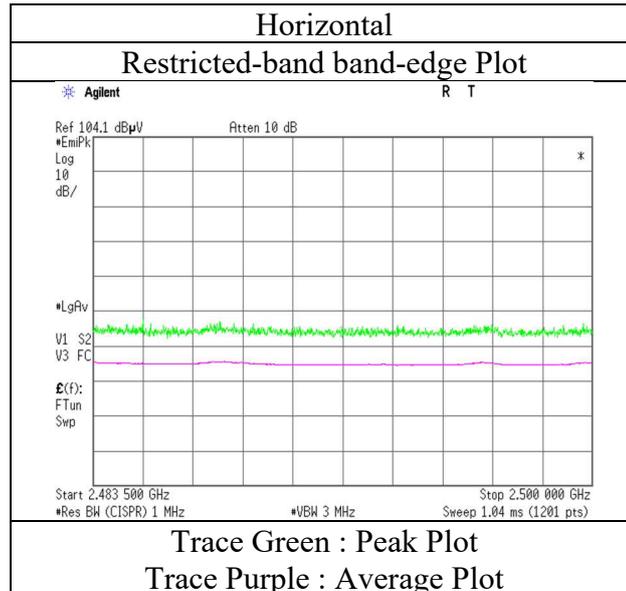
1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

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Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	13408125M-A-R1
Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.6
Date	August 1, 2020
Temperature / Humidity	24 deg. C / 57 % RH
Engineer	Kazuhiro Ando
Mode	Tx, Hopping Off, DH5 2480 MHz
EUT	Lo type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6 No.6 No.6 No.6 No.6
Date August 7, 2020 August 2, 2020 July 31, 2020 July 31, 2020 July 31, 2020
Temperature / Humidity 22 deg. C / 55 % RH 24 deg. C / 53 % RH 21 deg. C / 58 % RH 21 deg. C / 58 % RH 21 deg. C / 58 % RH
Engineer Kazuhiro Ando Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe
(30 MHz -1000 MHz) (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
EUT Lo type

(* 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.	212.278	QP	43.40	9.94	7.50	32.37	0.00	28.47	43.5	15.0	160	290	
Hori.	560.573	QP	32.80	18.75	9.39	32.24	0.00	28.70	46.0	17.3	100	19	
Hori.	640.000	QP	30.00	20.45	9.74	32.21	0.00	27.98	46.0	18.0	148	158	
Hori.	718.126	QP	34.00	21.00	10.05	32.13	0.00	32.92	46.0	13.0	147	0	
Hori.	874.996	QP	34.20	22.98	10.61	31.61	0.00	36.18	46.0	9.8	123	214	
Hori.	999.997	QP	34.20	24.09	11.02	30.53	0.00	38.78	53.9	15.1	100	150	
Hori.	2112.660	PK	52.47	28.91	13.12	43.87	2.21	52.84	73.9	21.0	145	177	
Hori.	2390.000	PK	50.70	27.61	13.32	43.84	2.21	50.00	73.9	23.9	223	300	
Hori.	4804.000	PK	51.97	32.53	5.35	45.17	2.21	46.89	73.9	27.0	207	229	
Hori.	7206.000	PK	53.36	37.17	6.63	44.07	2.21	55.30	73.9	18.6	203	107	
Hori.	9608.000	PK	46.56	37.97	7.39	41.90	2.21	52.23	73.9	21.6	150	0	Floor noise
Hori.	2112.660	AV	43.17	28.91	13.12	43.87	2.21	43.54	53.9	10.3	145	177	VBW: 10 Hz
Vert.	875.022	QP	32.00	22.98	10.61	31.60	0.00	33.99	46.0	12.0	147	10	
Vert.	999.999	QP	36.70	24.09	11.02	30.53	0.00	41.28	53.9	12.6	118	179	
Vert.	2112.592	PK	52.70	28.91	13.12	43.87	2.21	53.07	73.9	20.8	154	248	
Vert.	2390.000	PK	50.00	27.61	13.32	43.84	2.21	49.30	73.9	24.6	143	14	
Vert.	4804.000	PK	53.42	32.53	5.35	45.17	2.21	48.34	73.9	25.5	187	157	
Vert.	7206.000	PK	55.01	37.17	6.63	44.07	2.21	56.95	73.9	16.9	237	198	
Vert.	9608.000	PK	46.21	37.97	7.39	41.90	2.21	51.88	73.9	22.0	150	0	Floor noise
Vert.	2112.592	AV	43.96	28.91	13.12	43.87	2.21	44.33	53.9	9.5	154	248	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	50.70	27.61	13.32	43.84	-24.74	2.21	25.26	53.9	28.6	
Hori.	4804.000	PK	51.97	32.53	5.35	45.17	-24.74	2.21	22.15	53.9	31.8	
Hori.	7206.000	PK	53.36	37.17	6.63	44.07	-24.74	2.21	30.56	53.9	23.3	
Hori.	9608.000	PK	46.56	37.97	7.39	41.90	-24.74	2.21	27.49	53.9	26.4	Floor noise
Vert.	2390.000	PK	50.00	27.61	13.32	43.84	-24.74	2.21	24.56	53.9	29.3	
Vert.	4804.000	PK	53.42	32.53	5.35	45.17	-24.74	2.21	23.60	53.9	30.3	
Vert.	7206.000	PK	55.01	37.17	6.63	44.07	-24.74	2.21	32.21	53.9	21.7	
Vert.	9608.000	PK	46.21	37.97	7.39	41.90	-24.74	2.21	27.14	53.9	26.8	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	97.37	27.64	13.33	43.83	2.21	96.72	-	-	Carrier
Hori.	2400.000	PK	50.24	27.63	13.33	43.83	2.21	49.58	76.72	27.1	
Vert.	2402.000	PK	96.13	27.64	13.33	43.83	2.21	95.48	-	-	Carrier
Vert.	2400.000	PK	50.00	27.63	13.33	43.83	2.21	49.34	75.48	26.1	

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

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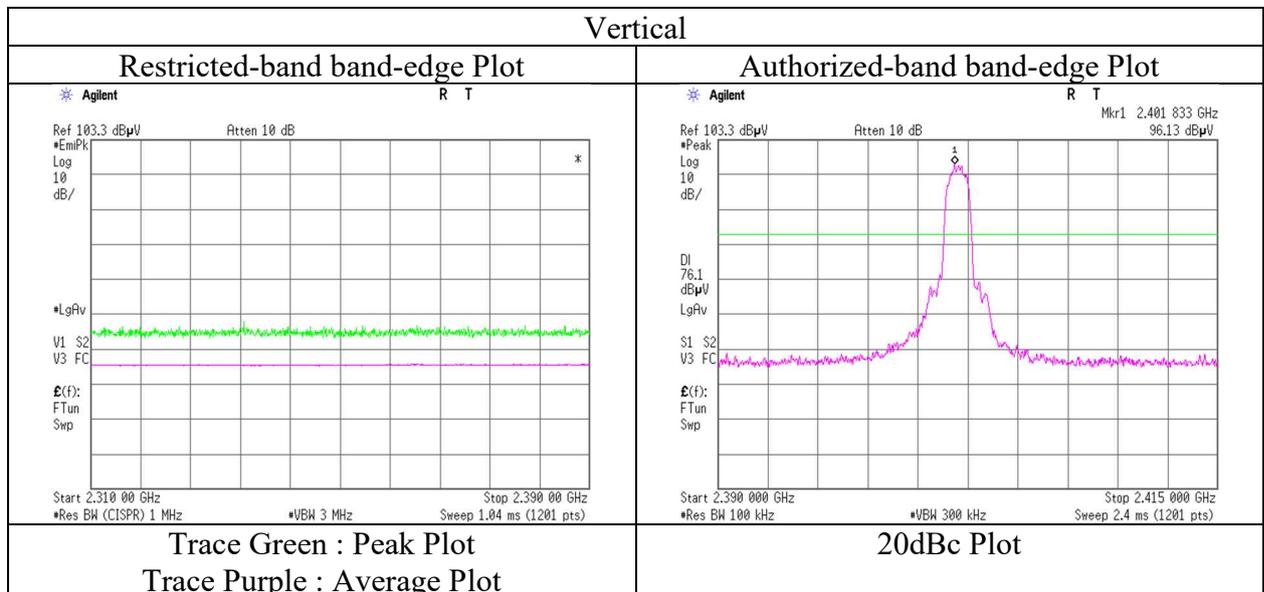
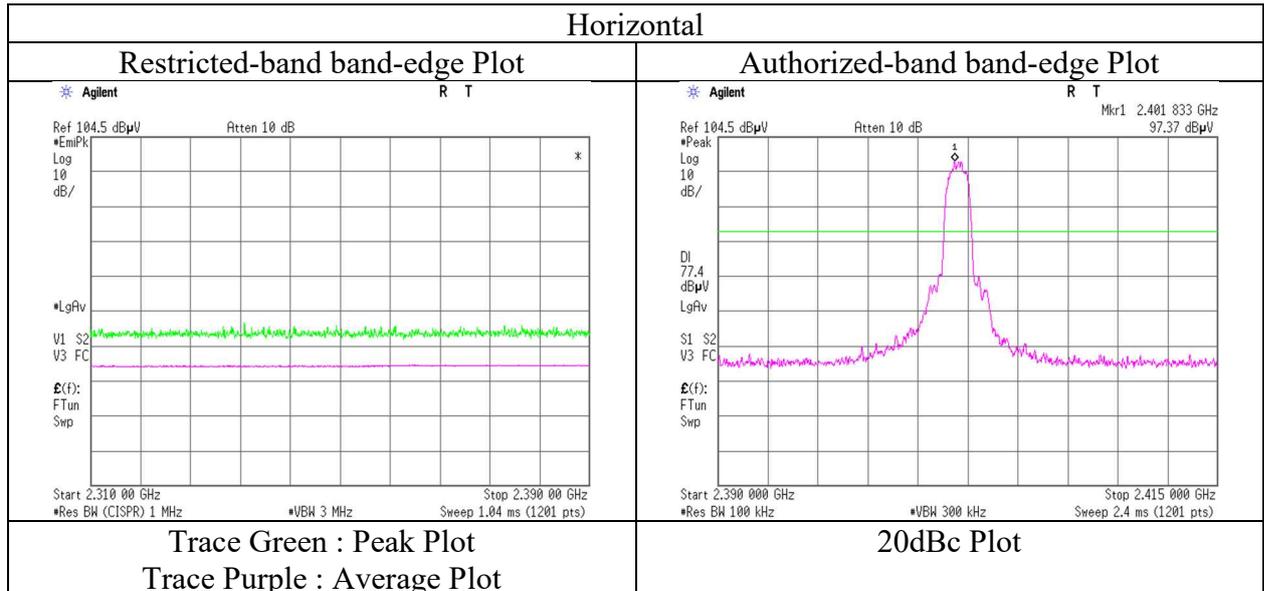
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**Radiated Spurious Emission
(Reference Plot for band-edge)**

Report No.	13408125M-A-R1
Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.6
Date	August 2, 2020
Temperature / Humidity	24 deg. C / 53 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx, Hopping Off, 3DH5 2402 MHz
EUT	Lo type



* 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.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 7, 2020	August 1, 2020	July 31, 2020	July 31, 2020	July 31, 2020	July 31, 2020
Temperature / Humidity	22 deg. C / 55 % RH	24 deg. C / 57 % RH	21 deg. C / 58 % RH			
Engineer	Kazuhiro Ando	Kazuhiro Ando	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
	(30 MHz -1000 MHz)	(1 GHz -2.8 GHz)	(2.8 GHz -10 GHz)	(10 GHz -18 GHz)	(10 GHz -18 GHz)	(18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz					
EUT	Lo type					

(* 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.	212.411	QP	43.50	9.94	7.50	32.37	0.00	28.57	43.5	14.9	162	287	
Hori.	560.818	QP	32.80	18.76	9.39	32.24	0.00	28.71	46.0	17.2	100	21	
Hori.	640.000	QP	30.00	20.45	9.74	32.21	0.00	27.98	46.0	18.0	143	143	
Hori.	718.124	QP	34.00	21.00	10.05	32.13	0.00	32.92	46.0	13.0	152	0	
Hori.	874.998	QP	34.20	22.98	10.61	31.61	0.00	36.18	46.0	9.8	118	214	
Hori.	999.997	QP	34.20	24.09	11.02	30.53	0.00	38.78	53.9	15.1	100	149	
Hori.	2111.330	PK	52.56	28.92	13.12	43.87	2.21	52.94	73.9	20.9	133	178	
Hori.	4882.000	PK	51.54	32.60	5.39	45.21	2.21	46.53	73.9	27.3	184	333	
Hori.	7323.000	PK	50.26	37.39	6.68	43.79	2.21	52.75	73.9	21.1	204	110	
Hori.	9764.000	PK	46.54	37.98	7.45	41.79	2.21	52.39	73.9	21.5	150	0	Floor noise
Hori.	2111.330	AV	44.14	28.92	13.12	43.87	2.21	44.52	53.9	9.3	133	178	VBW: 10 Hz
Vert.	874.998	QP	31.90	22.98	10.61	31.61	0.00	33.88	46.0	12.1	151	12	
Vert.	999.999	QP	36.80	24.09	11.02	30.53	0.00	41.38	53.9	12.5	118	174	
Vert.	2111.330	PK	52.12	28.92	13.12	43.87	2.21	52.50	73.9	21.4	153	253	
Vert.	4882.000	PK	52.04	32.60	5.39	45.21	2.21	47.03	73.9	26.8	198	5	
Vert.	7323.000	PK	52.75	37.39	6.68	43.79	2.21	55.24	73.9	18.6	190	56	
Vert.	9764.000	PK	46.71	37.98	7.45	41.79	2.21	52.56	73.9	21.3	150	0	Floor noise
Vert.	2111.330	AV	43.71	28.92	13.12	43.87	2.21	44.09	53.9	9.8	153	253	VBW: 10 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4882.000	PK	51.54	32.60	5.39	45.21	-24.74	2.21	21.79	53.9	32.1	
Hori.	7323.000	PK	50.26	37.39	6.68	43.79	-24.74	2.21	28.01	53.9	25.9	
Hori.	9764.000	PK	46.54	37.98	7.45	41.79	-24.74	2.21	27.65	53.9	26.3	Floor noise
Vert.	4882.000	PK	52.04	32.60	5.39	45.21	-24.74	2.21	22.29	53.9	31.6	
Vert.	7323.000	PK	52.75	37.39	6.68	43.79	-24.74	2.21	30.50	53.9	23.4	
Vert.	9764.000	PK	46.71	37.98	7.45	41.79	-24.74	2.21	27.82	53.9	26.1	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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Radiated Spurious Emission

Report No.	13408125M-A-R1					
Test place	Kashima EMC Lab.					
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6	No.6
Date	August 7, 2020	August 1, 2020	July 31, 2020	July 31, 2020	July 31, 2020	July 31, 2020
Temperature / Humidity	22 deg. C / 55 % RH	24 deg. C / 57 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH
Engineer	Kazuhiro Ando (30 MHz -1000 MHz)	Kazuhiro Ando (1 GHz -2.8 GHz)	Hiromitsu Tanabe (2.8 GHz -10 GHz)	Hiromitsu Tanabe (10 GHz -18 GHz)	Hiromitsu Tanabe (10 GHz -18 GHz)	Hiromitsu Tanabe (18 GHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz					
EUT	Lo type					

(* 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.	212.448	QP	43.60	9.94	7.50	32.37	0.00	28.67	43.5	14.8	160	291	
Hori.	560.898	QP	32.80	18.76	9.39	32.24	0.00	28.71	46.0	17.2	100	19	
Hori.	640.000	QP	30.00	20.45	9.74	32.21	0.00	27.98	46.0	18.0	148	160	
Hori.	718.127	QP	34.20	21.00	10.05	32.13	0.00	33.12	46.0	12.8	153	0	
Hori.	874.998	QP	33.90	22.98	10.61	31.61	0.00	35.88	46.0	10.1	127	219	
Hori.	999.997	QP	34.20	24.09	11.02	30.53	0.00	38.78	53.9	15.1	100	156	
Hori.	2111.050	PK	51.96	28.92	13.12	43.87	2.21	52.34	73.9	21.5	226	171	
Hori.	2483.500	PK	52.87	27.94	13.39	43.80	2.21	52.61	73.9	21.2	172	334	
Hori.	4960.000	PK	50.90	32.55	5.43	45.26	2.21	45.83	73.9	28.0	185	289	
Hori.	7440.000	PK	52.76	37.41	6.69	43.50	2.21	55.57	73.9	18.3	235	247	
Hori.	9920.000	PK	46.13	38.22	7.50	41.76	2.21	52.30	73.9	21.6	150	0	Floor noise
Hori.	2111.050	AV	44.21	28.92	13.12	43.87	2.21	44.59	53.9	9.3	226	171	VBW: 360 Hz
Vert.	874.997	QP	32.00	22.98	10.61	31.61	0.00	33.98	46.0	12.0	145	10	
Vert.	999.999	QP	36.70	24.09	11.02	30.53	0.00	41.28	53.9	12.6	121	175	
Vert.	2111.050	PK	52.12	28.92	13.12	43.87	2.21	52.50	73.9	21.4	151	252	
Vert.	2483.500	PK	53.38	27.94	13.39	43.80	2.21	53.12	73.9	20.7	100	0	
Vert.	4960.000	PK	51.14	32.55	5.43	45.26	2.21	46.07	73.9	27.8	100	10	
Vert.	7440.000	PK	53.19	37.41	6.69	43.50	2.21	56.00	73.9	17.9	105	12	
Vert.	9920.000	PK	47.20	38.22	7.50	41.76	2.21	53.37	73.9	20.5	150	0	Floor noise
Vert.	2111.050	AV	43.78	28.92	13.12	43.87	2.21	44.16	53.9	9.7	151	252	VBW: 360 Hz

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	52.87	27.94	13.39	43.80	-24.74	2.21	27.87	53.9	26.0	
Hori.	4960.000	PK	50.90	32.55	5.43	45.26	-24.74	2.21	21.09	53.9	32.8	
Hori.	7440.000	PK	52.76	37.41	6.69	43.50	-24.74	2.21	30.83	53.9	23.1	
Hori.	9920.000	PK	46.13	38.22	7.50	41.76	-24.74	2.21	27.56	53.9	26.3	Floor noise
Vert.	2483.500	PK	53.38	27.94	13.39	43.80	-24.74	2.21	28.38	53.9	25.5	
Vert.	4960.000	PK	51.14	32.55	5.43	45.26	-24.74	2.21	21.33	53.9	32.6	
Vert.	7440.000	PK	53.19	37.41	6.69	43.50	-24.74	2.21	31.26	53.9	22.6	
Vert.	9920.000	PK	47.20	38.22	7.50	41.76	-24.74	2.21	28.63	53.9	25.3	Floor noise

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

Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

UL Japan, Inc.

Kashima EMC Lab.

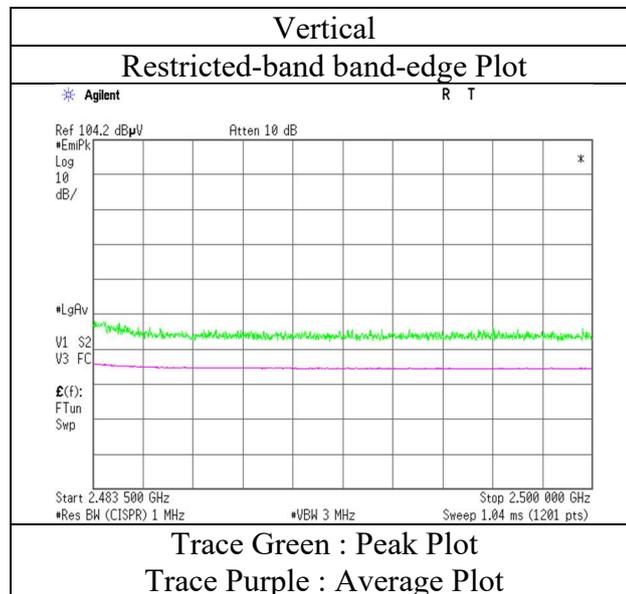
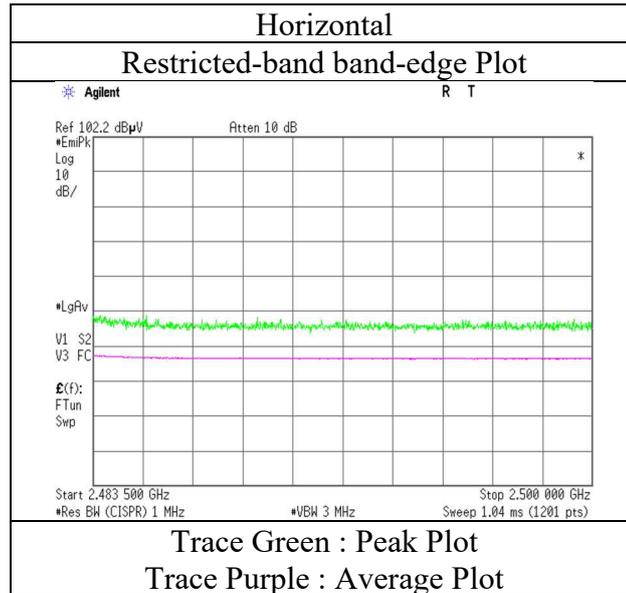
1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

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Radiated Spurious Emission
(Reference Plot for band-edge)

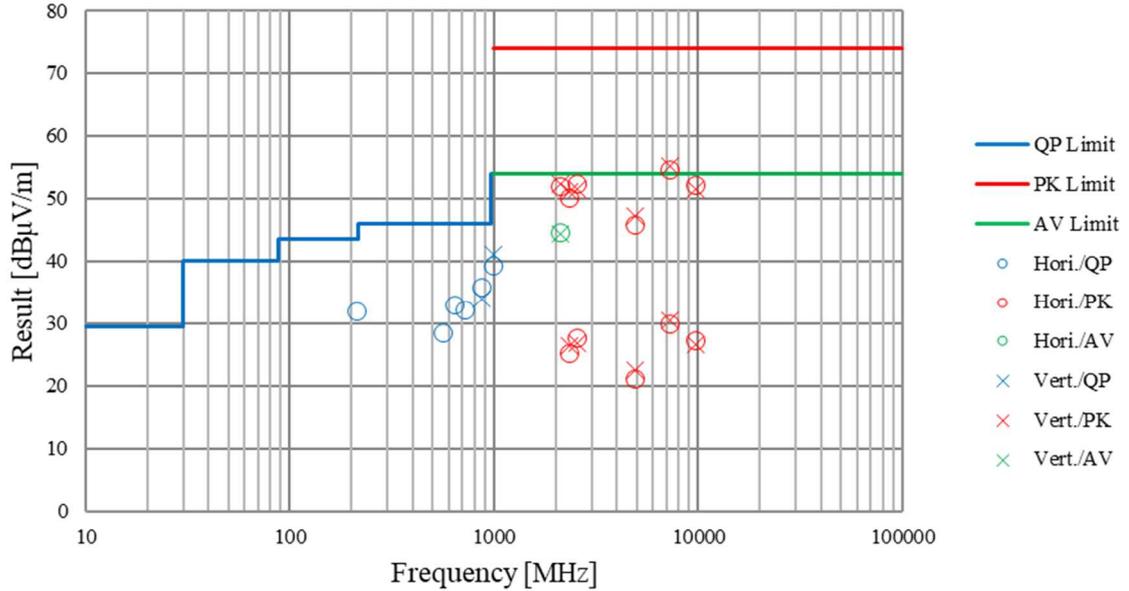
Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6
Date August 1, 2020
Temperature / Humidity 24 deg. C / 57 % RH
Engineer Kazuhiro Ando
Mode Tx, Hopping Off, 3DH5 2480 MHz
EUT Lo type



* 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.	13408125M-A-R1				
Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.6	No.6	No.6	No.6	No.6
Date	August 7, 2020	August 1, 2020	July 31, 2020	July 31, 2020	July 31, 2020
Temperature / Humidity	22 deg. C / 55 % RH	24 deg. C / 57 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH	21 deg. C / 58 % RH
Engineer	Kazuhiro Ando	Kazuhiro Ando	Hiromitsu Tanabe	Hiromitsu Tanabe	Hiromitsu Tanabe
Mode	Tx, Hopping Off, DH5 2441 MHz				
EUT	Lo type				



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

Radiated Spurious Emission

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.6 No.11 No.11 No.11 No.11
Date August 17, 2020 August 20, 2020 August 20, 2020 August 25, 2020 August 25, 2020
Temperature / Humidity 24 deg. C / 56 % RH 24 deg. C / 53 % RH 24 deg. C / 53 % RH 24 deg. C / 58 % RH 24 deg. C / 58 % RH
Engineer Kazuhiro Ando Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe Hiromitsu Tanabe
(30 MHz -1000 MHz) (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 with 11ac-20 MIMO 5745 MHz
EUT Lo type

(* 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.	245.757	QP	48.09	11.72	7.73	32.34	0.00	35.20	46.0	10.8	137	278	
Hori.	248.375	QP	44.61	11.77	7.75	32.34	0.00	31.79	46.0	14.2	143	278	
Hori.	253.215	QP	47.68	11.89	7.78	32.34	0.00	35.01	46.0	10.9	135	281	
Hori.	718.126	QP	34.40	21.00	10.05	32.13	0.00	33.32	46.0	12.6	147	354	
Hori.	874.997	QP	34.39	22.98	10.61	31.61	0.00	36.37	46.0	9.6	124	151	
Hori.	999.996	QP	35.23	24.09	11.02	30.53	0.00	39.81	53.9	14.0	100	144	
Hori.	2111.255	PK	51.77	28.92	13.12	43.87	2.21	52.15	73.9	21.7	198	232	
Hori.	2307.908	PK	51.67	27.52	13.26	43.87	2.21	50.79	73.9	23.1	184	351	
Hori.	2390.000	PK	50.75	27.61	13.32	43.84	2.21	50.05	73.9	23.8	222	301	
Hori.	2495.563	PK	53.76	27.99	13.40	43.79	2.21	53.57	73.9	20.3	202	270	
Hori.	4804.000	PK	52.50	32.53	5.35	45.17	2.21	47.42	73.9	26.4	105	0	
Hori.	7206.000	PK	55.90	37.17	6.63	44.07	2.21	57.84	73.9	16.0	184	107	
Hori.	9608.000	PK	46.50	37.97	7.39	41.90	2.21	52.17	73.9	21.7	140	57	
Hori.	2111.255	AV	43.85	28.92	13.12	43.87	2.21	44.23	53.9	9.6	198	232	VBW: 10 Hz
Vert.	874.997	QP	31.26	22.98	10.61	31.61	0.00	33.24	46.0	12.7	100	294	
Vert.	999.996	QP	33.65	24.09	11.02	30.53	0.00	38.23	53.9	15.6	106	163	
Vert.	2112.305	PK	51.80	28.91	13.12	43.87	2.21	52.17	73.9	21.7	214	249	
Vert.	2307.196	PK	52.00	27.52	13.26	43.87	2.21	51.12	73.9	22.7	206	3	
Vert.	2390.000	PK	50.64	27.61	13.32	43.84	2.21	49.94	73.9	23.9	133	7	
Vert.	2498.508	PK	53.38	28.00	13.40	43.79	2.21	53.20	73.9	20.7	180	0	
Vert.	4804.000	PK	54.20	32.53	5.35	45.17	2.21	49.12	73.9	24.7	208	193	
Vert.	7206.000	PK	56.55	37.17	6.63	44.07	2.21	58.49	73.9	15.4	238	194	
Vert.	9608.000	PK	47.50	37.97	7.39	41.90	2.21	53.17	73.9	20.7	175	24	
Vert.	2112.305	AV	42.13	28.91	13.12	43.87	2.21	42.50	53.9	11.4	214	249	VBW: 10 Hz

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2307.908	PK	51.67	27.52	13.26	43.87	-24.74	2.21	26.05	53.9	27.9	
Hori.	2390.000	PK	50.75	27.61	13.32	43.84	-24.74	2.21	25.31	53.9	28.6	
Hori.	2495.563	PK	53.76	27.99	13.40	43.79	-24.74	2.21	28.83	53.9	25.1	
Hori.	4804.000	PK	52.50	32.53	5.35	45.17	-24.74	2.21	22.68	53.9	31.2	
Hori.	7206.000	PK	55.90	37.17	6.63	44.07	-24.74	2.21	33.10	53.9	20.8	
Hori.	9608.000	PK	46.50	37.97	7.39	41.90	-24.74	2.21	27.43	53.9	26.5	
Vert.	2307.196	PK	52.00	27.52	13.26	43.87	-24.74	2.21	26.38	53.9	27.5	
Vert.	2390.000	PK	50.64	27.61	13.32	43.84	-24.74	2.21	25.20	53.9	28.7	
Vert.	2498.508	PK	53.38	28.00	13.40	43.79	-24.74	2.21	28.46	53.9	25.4	
Vert.	4804.000	PK	54.20	32.53	5.35	45.17	-24.74	2.21	24.38	53.9	29.5	
Vert.	7206.000	PK	56.55	37.17	6.63	44.07	-24.74	2.21	33.75	53.9	20.2	
Vert.	9608.000	PK	47.50	37.97	7.39	41.90	-24.74	2.21	28.43	53.9	25.5	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + DCCF + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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	101.21	27.64	13.33	43.83	2.21	100.56	-	-	Carrier
Hori.	2399.649	PK	47.58	27.63	13.33	43.83	2.21	46.92	80.56	33.6	
Hori.	2400.000	PK	45.23	27.63	13.33	43.83	2.21	44.57	80.56	35.9	
Vert.	2402.000	PK	100.55	27.64	13.33	43.83	2.21	99.90	-	-	Carrier
Vert.	2399.711	PK	48.11	27.63	13.33	43.83	2.21	47.45	79.90	32.4	
Vert.	2400.000	PK	45.51	27.63	13.33	43.83	2.21	44.85	79.90	35.0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor
Distance factor : 1 GHz - 10 GHz : 20log (3.87 m / 3.0 m) = 2.21 dB
10 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

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Kashima EMC Lab.

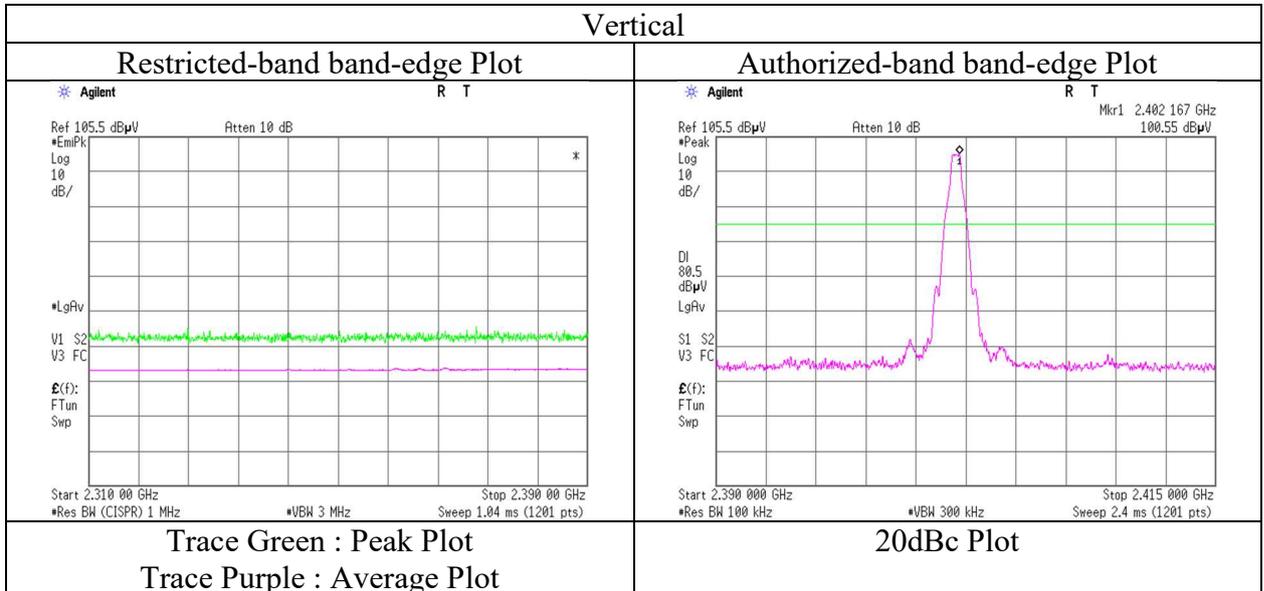
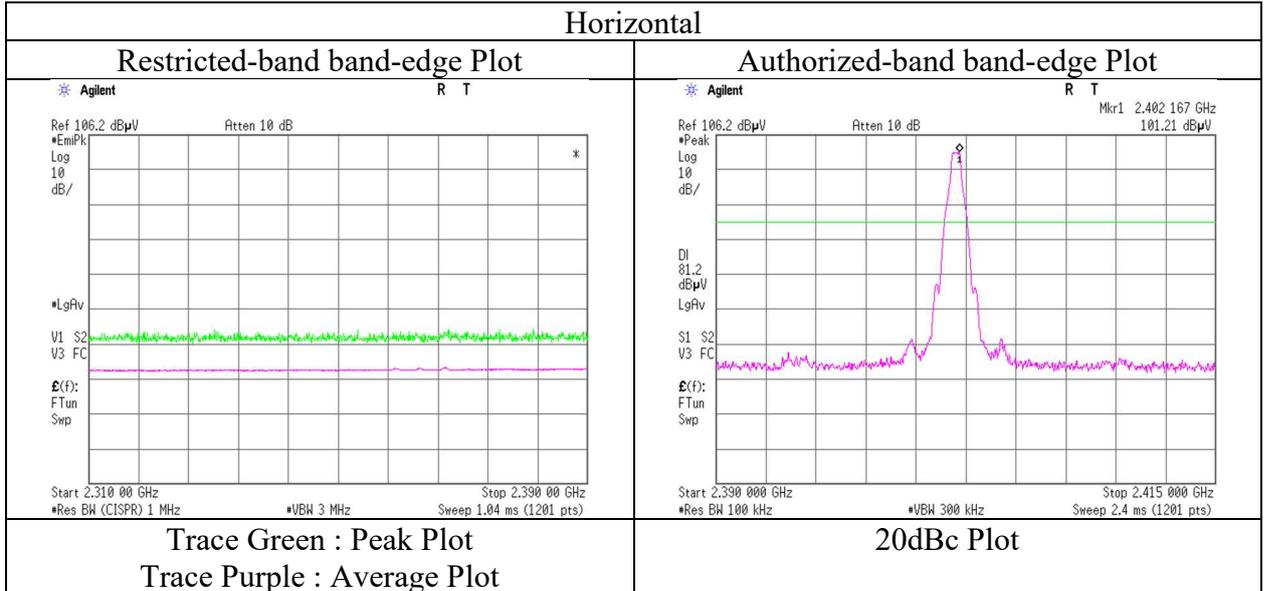
1614, Mushihata, Katori-shi, Chiba-ken, 289-0341 Japan

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Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.11
Date August 20, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, DH5 2402 MHz with 11ac-20 MIMO 5745 MHz
EUT Lo type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.11
Date August 20, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
(1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Lo type

(* 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	51.10	27.94	13.39	43.80	2.21	50.84	73.9	23.0	145	283	
Vert.	2483.500	PK	51.50	27.94	13.39	43.80	2.21	51.24	73.9	22.6	123	0	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	51.10	27.94	13.39	43.80	-24.74	2.21	26.10	53.9	27.8	
Vert.	2483.500	PK	51.50	27.94	13.39	43.80	-24.74	2.21	26.50	53.9	27.4	

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

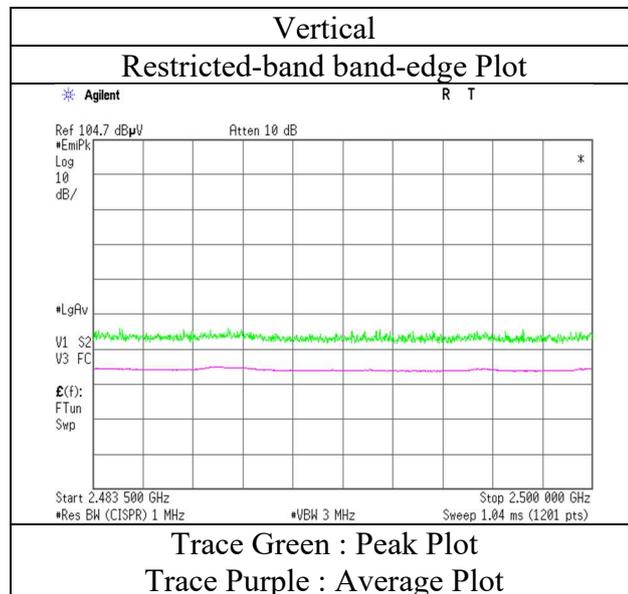
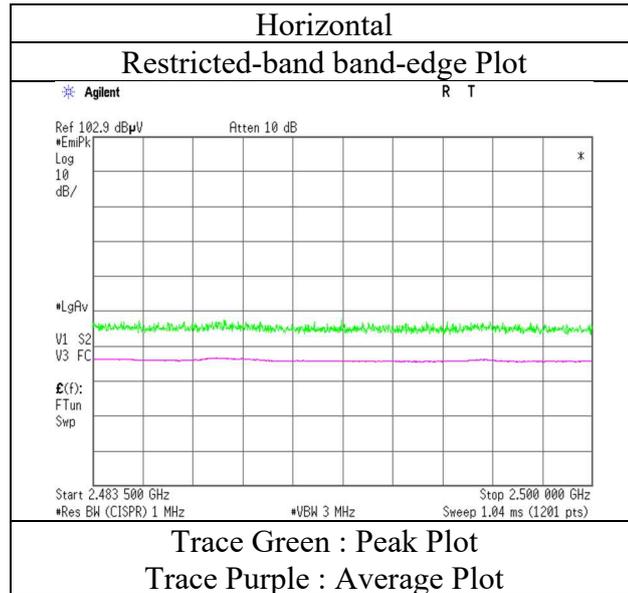
Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.11
Date August 20, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Lo type



* 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. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.11
Date August 20, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
(1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, 3DH5 2402 MHz with 11ac-20 MIMO 5745 MHz
EUT Lo type

(* 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	50.73	27.61	13.32	43.84	2.21	50.03	73.9	23.8	232	300	
Vert.	2390.000	PK	50.06	27.61	13.32	43.84	2.21	49.36	73.9	24.5	132	5	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	PK	50.73	27.61	13.32	43.84	-24.74	2.21	25.29	53.9	28.6	
Vert.	2390.000	PK	50.06	27.61	13.32	43.84	-24.74	2.21	24.62	53.9	29.3	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	97.39	27.64	13.33	43.83	2.21	96.74	-	-	Carrier
Hori.	2400.000	PK	50.69	27.63	13.33	43.83	2.21	50.03	76.74	26.7	
Vert.	2402.000	PK	97.12	27.64	13.33	43.83	2.21	96.47	-	-	Carrier
Vert.	2400.000	PK	50.07	27.63	13.33	43.83	2.21	49.41	76.47	27.0	

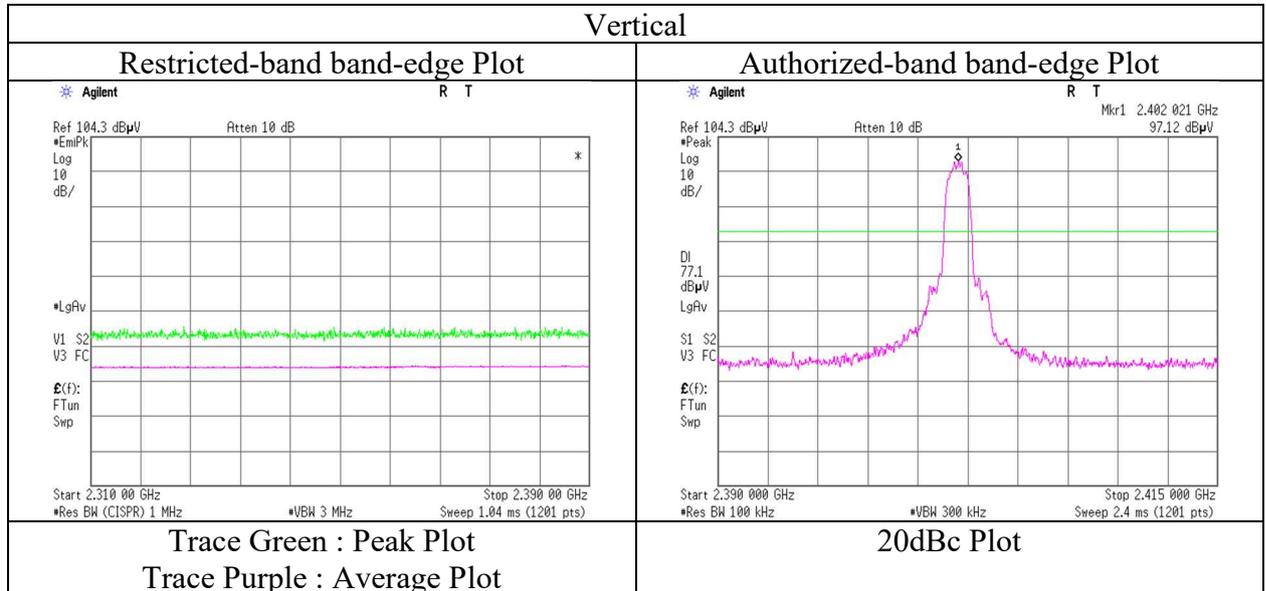
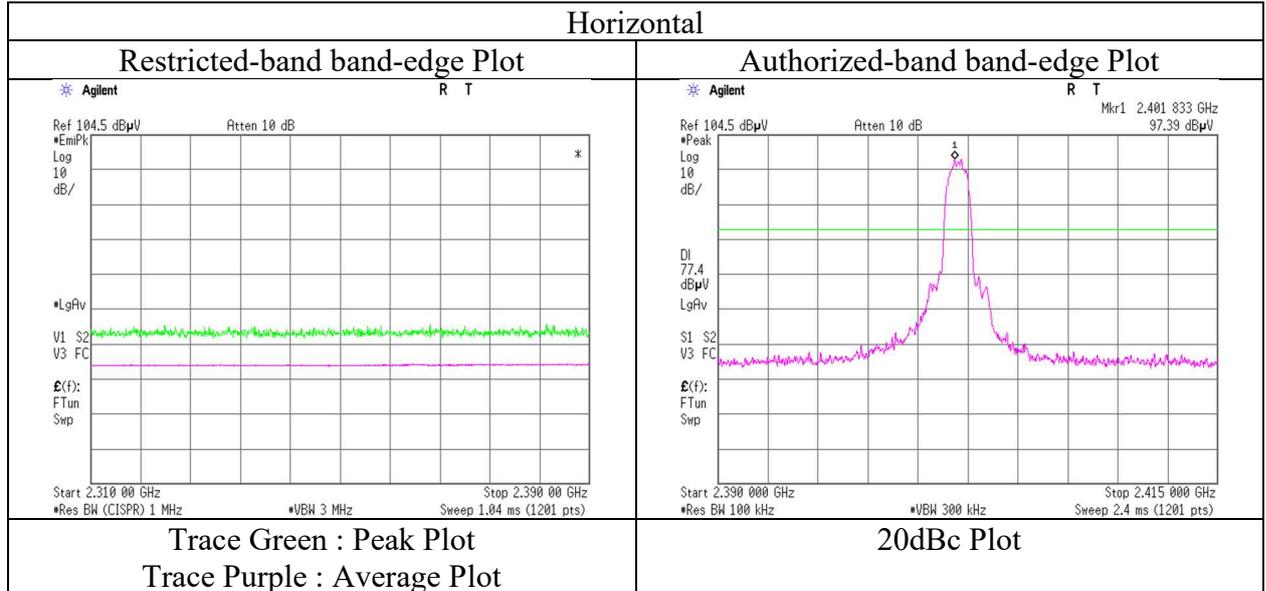
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Distance factor

Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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)

Report No.	13408125M-A-R1
Test place	Kashima EMC Lab.
Semi Anechoic Chamber	No.11
Date	August 20, 2020
Temperature / Humidity	24 deg. C / 53 % RH
Engineer	Hiromitsu Tanabe
Mode	Tx, Hopping Off, 3DH5 2402 MHz with 11ac-20 MIMO 5745 MHz
EUT	Lo type



* 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.

UL Japan, Inc.

Kashima EMC Lab.

1614, Mushiata, Katori-shi, Chiba-ken, 289-0341 Japan

Telephone : +81 478 88 6500

Facsimile : +81 478 82 3373

Radiated Spurious Emission

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.11
Date August 20, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
(1 GHz - 2.8 GHz)
Mode Tx, Hopping Off, 3DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Lo type

(* 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	52.91	27.94	13.39	43.80	2.21	52.65	73.9	21.2	170	348	
Vert.	2483.500	PK	53.43	27.94	13.39	43.80	2.21	53.17	73.9	20.7	127	0	

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

Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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

Peak measurement value with Duty cycle correction factor (DCCF)

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	DCCF [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	PK	52.91	27.94	13.39	43.80	-24.74	2.21	27.91	53.9	26.0	
Vert.	2483.500	PK	53.43	27.94	13.39	43.80	-24.74	2.21	28.43	53.9	25.5	

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

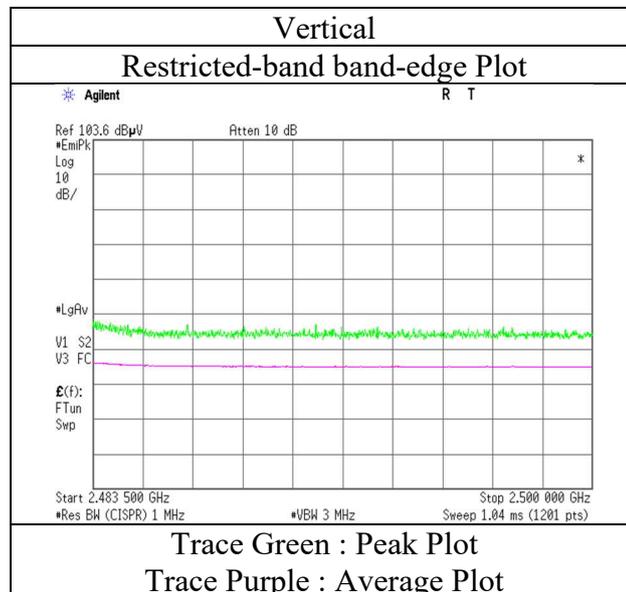
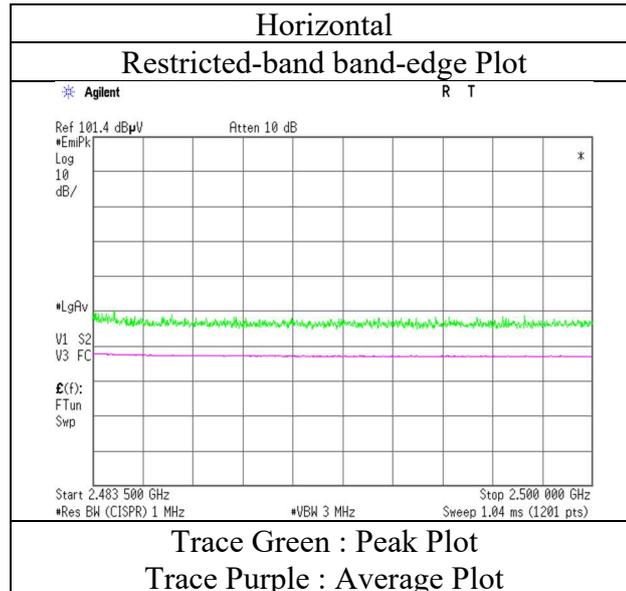
Distance factor : 1 GHz - 10 GHz : $20\log(3.87\text{ m} / 3.0\text{ m}) = 2.21\text{ dB}$

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

Duty cycle correction factor (DCCF) refer to "Duty cycle correction factor" sheet.

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No. 13408125M-A-R1
Test place Kashima EMC Lab.
Semi Anechoic Chamber No.11
Date August 20, 2020
Temperature / Humidity 24 deg. C / 53 % RH
Engineer Hiromitsu Tanabe
Mode Tx, Hopping Off, 3DH5 2480 MHz with 11ac-20 MIMO 5745 MHz
EUT Lo type

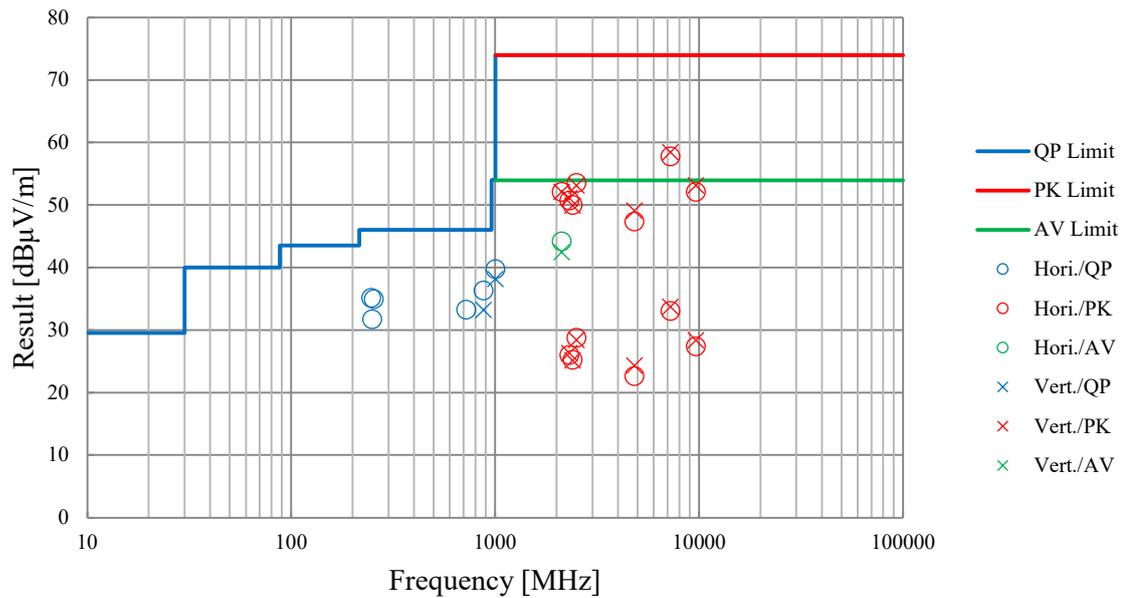


* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.

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

Radiated Spurious Emission (Plot data, Worst case)

Report No.	13408125M-A-R1				
Test place	Kashima EMC Lab.				
Semi Anechoic Chamber	No.6	No.11	No.11	No.11	No.11
Date	August 17, 2020	August 20, 2020	August 20, 2020	August 25, 2020	August 25, 2020
Temperature / Humidity	24 deg. C / 56 % RH	24 deg. C / 53 % RH	24 deg. C / 53 % RH	24 deg. C / 58 % RH	24 deg. C / 58 % RH
Engineer	Kazuhiro Ando	Hiroimitsu Tanabe	Hiroimitsu Tanabe	Hiroimitsu Tanabe	Hiroimitsu Tanabe
Mode	Tx, Hopping Off, DH5 2402 MHz with 11ac-20 MIMO 5745 MHz				
EUT	Lo type				



*These plots data contain 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	CCC-S6-R	143107	6 Site RE System	UL Japan Inc.	none(No.6 RE)	none	2019/12/20	12
RE	CBL-09	143122	LOGBICON	Schwarzbeck Mess - Elektronik	VULB 9168	508	2020/04/07	12
RE	CAT5-04	178807	5dB Fixed Atten.	PASTERNAK	PE7047-5	none	2020/04/01	12
RE	CAF-07	142929	Pre-Amplifier	SONOMA INSTRUMENT	310N	240505	2019/11/21	12
RE	CTR-02	144194	Test Receiver	Rohde & Schwarz	ESCI	100601	2019/09/04	12
RE(GHz)	TSA-01	143642	Spectrum Analyzer	Keysight Technologies Inc	N9030A	MY53310670 Version A.13.12	2020/05/19	12
RE(GHz)	CAF-22	142940	Pre-Amplifier	Micro Wave Factory	MPR-1G26.5-35	161399	2020/06/08	12
RE(GHz)	CCC-G14	192241	Microwave Cable	Huber+Suhner	SF104/PC35m/PC35m/1000mm	805411/4	2020/01/15	12
RE(GHz)	CCC-G17	192244	Microwave Cable	Huber+Suhner	SF104/11N/11PC35/8000MM	808996/4	2020/01/15	12
RE(GHz)	CHA-25	143456	Double Ridged Wave Guide	ETS-Lindgren	3115	00204573	2020/02/08	12
RE(GHz)	CAT10-17	143023	10dB Fixed Atten.	Weinschel - API Technologies Corp	54A-10	56251	2020/05/15	12
RE(GHz)	CHF-04	143442	HPF	MICRO-TRONICS	HPM50111-02	009	2020/05/15	12
RE(GHz)	CHA-07	143438	Double Ridged Horn	ETS-Lindgren	3160-09	00166043	2020/06/06	12
RE(GHz)	CAF-19	142937	Pre-Amplifier	TOYO	HAP18-26W	00000035	2020/06/09	12
RE(GHz)	CCC-W09	143113	Micro Wave Cable	Suhner	SUCOFLEX104	MY588/4	2020/07/05	12
EMI	CSCL-08	143667	Ruler	TAJIMA	L25-55	none	-	-
EMI	COS-06	143538	Temperature & Humidity Indicator	Hioki	3641/9680-50	070727010/070799296	2020/07/21	12
EMI	CBM-06	143129	Barometer	Sunoh	SBR-151	000017	2018/11/26	36
EMI	CTS-07	144209	Digital Multimeter	Fluke Corporation	FLK-83-V	17610192	2019/10/27	12
EMI	COTS-CE MI-03	178804	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE, ME,PE)	-	-	-

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

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

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

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

Test item: RE: Radiated Emission test

UL Japan, Inc.

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