



RADIO TEST REPORT

Test Report No. : 12658405S-A-R1

Applicant : Sony Corporation
Type of Equipment : AV Receiver
Model No. : XAV-AX7000
FCC ID : AK8XAVAX7000
Test regulation : FCC Part 15 Subpart C: 2018
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
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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. Shonan 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 12658405S-A. 12658405S-A is replaced with this report.

Date of test: December 23 and 24, 2018

Representative test engineer:



Shiro Kobayashi
Engineer

Consumer Technology Division

Approved by:



Akio Hayashi
Leader

Consumer Technology Division



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

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 12658405S-A

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SECTION 1: Customer information

Company Name	:	Sony Corporation
Address	:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Contact Person	:	Kazuhiko Nagano

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No. on the cover and other relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (E.U.T.)
- SECTION 4: Operation of E.U.T. during testing

* The laboratory is exempted from liability of any test results affected from the information in SECTION 2 and 4.

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	:	AV Receiver
Model No.	:	XAV-AX7000
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12 V (car battery)
Receipt Date of Sample (Information from test lab.)	:	December 11, 2018
Country of Mass-production	:	Thailand
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab.

2.2 Product Description

Model: XAV-AX7000 (referred to as the EUT in this report) is an AV Receiver.

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	FHSS
Antenna type	:	Meander Monopole antenna
Antenna Gain	:	0.929 dBi
Operating Temperature	:	0 deg. C to +40 deg. C
Clock frequency (Maximum)	:	26 MHz

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on March 12, 2018 and effective April 11, 2018

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

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

3.2 Procedures and results

Item	Procedure	Specification	Worst Margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 6. Standard test methods IC: RSS-Gen 8.8	FCC: Section 15.207 IC: RSS-Gen 8.8	N/A	N/A	*1)
Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705 *3) IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (b)	See data.	Complied a)	Conducted
20dB Bandwidth	FCC: FCC Public Notice DA 00-705 *3) IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (a)		Complied a)	Conducted
Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705 *3) IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (d)		Complied b)	Conducted
Dwell time	FCC: FCC Public Notice DA 00-705 *3) IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (d)		Complied c)	Conducted
Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705 *3) IC: RSS-Gen 6.12	FCC: Section15.247(a)(b)(1) IC: RSS-247 5.4 (b)		Complied d)	Conducted
Spurious Emission & Band Edge Compliance	FCC: FCC Public Notice DA 00-705 *3) IC: RSS-Gen 6.13	FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	3.8 dB 135.893 MHz, QP, Horizontal Tx 2441 MHz DH5	Complied# e) / f)	Conducted/ Radiated (above 30 MHz) *2)

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

*1) The test is not applicable since the EUT does not have AC power ports.

*2) Radiated test was selected over 30 MHz based on section 15.247(d).

*3) Although KDB 558074 v05 was issued, we referred to DA 00-705 which had been accepted provisionally.

a) Refer to APPENDIX 1 (data of 20dB Bandwidth, 99%Occupied Bandwidth and Carrier Frequency Separation)

b) Refer to APPENDIX 1 (data of Number of Hopping Frequency)

c) Refer to APPENDIX 1 (data of Dwell time)

d) Refer to APPENDIX 1 (data of Maximum Peak Output Power)

e) Refer to APPENDIX 1 (data of Conducted Spurious Emission)

f) 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.

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FCC Part 15.31 (e)

The equipment provides the wireless transmitter with stable power supply. 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

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	RSS-Gen 6.7	IC: -	N/A	Complied a)	Conducted

a) Refer to APPENDIX 1 (data of 20dB Bandwidth, 99%Occupied Bandwidth and Carrier Frequency Separation)

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

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

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.
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Item	Frequency range	Uncertainty (+/-)		
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.9 dB	2.8 dB	2.9 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.1 dB
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.7 dB
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.1 dB
	1 GHz-6 GHz	4.8 dB	4.8 dB	4.8 dB
	6 GHz-18 GHz	5.4 dB	5.4 dB	5.4 dB
	18 GHz-40 GHz	5.6 dB	5.6 dB	5.6 dB
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.7 dB	5.7 dB	5.7 dB
	18 GHz-40 GHz	5.9 dB	5.9 dB	5.9 dB

SAC=Semi-Anechoic Chamber

SR= Shielded Room is applied besides radiated emission

Antenna terminal test	Uncertainty (+/-)
Power Measurement above 1 GHz (Average Detector)_SPM-06	0.48 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	0.66 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.47 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	0.64 dB
Power Measurement above 1 GHz (Average Detector)_SPM-13	0.90 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-13	1.04 dB
Spurious emission (Conducted) below 1GHz	1.8 dB
Spurious emission (Conducted) 1 GHz-3 GHz	1.7 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.5 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.5 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.7 dB
Bandwidth Measurement	1.01 %
Duty cycle and Time Measurement	0.012 %

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3.5 Test Location

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 JAB Accreditation No. RTL02610
 FCC Test Firm Registration Number: 839876

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
No.1 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 shielded room	-	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room	-	2.55 x 4.1 x 2.5	-	-

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Mode(s)

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

Details of Operating Mode(s)

Test Item	Mode	Tested frequency
Spurious Emission (Conducted/Radiated)	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
Carrier Frequency Separation	Tx (Hopping On) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
20dB Bandwidth	Tx (Hopping Off) DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
Number of Hopping Frequency	Tx (Hopping On) DH5, 3DH5	-
Dwell time	Tx (Hopping On), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5	-
Maximum Peak Output Power	Tx (Hopping Off) DH5, 2DH5, 3DH5	2402 MHz 2441 MHz 2480 MHz
Band Edge Compliance (Conducted)	Tx DH5, 3DH5 -Hopping On -Hopping Off	2402 MHz 2480 MHz
99% Occupied Bandwidth	Tx DH5, 3DH5 -Hopping On -Hopping Off	2402 MHz 2441 MHz 2480 MHz
*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test) *2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative. * It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification. *EUT has the power settings by the software as follows; Power settings: BDR: Ext.=23, Int.=39 EDR: Ext.=73, Int.=48 Software: CSR BlueSuite BlueTest3 Version 2.6.6.0 *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.		

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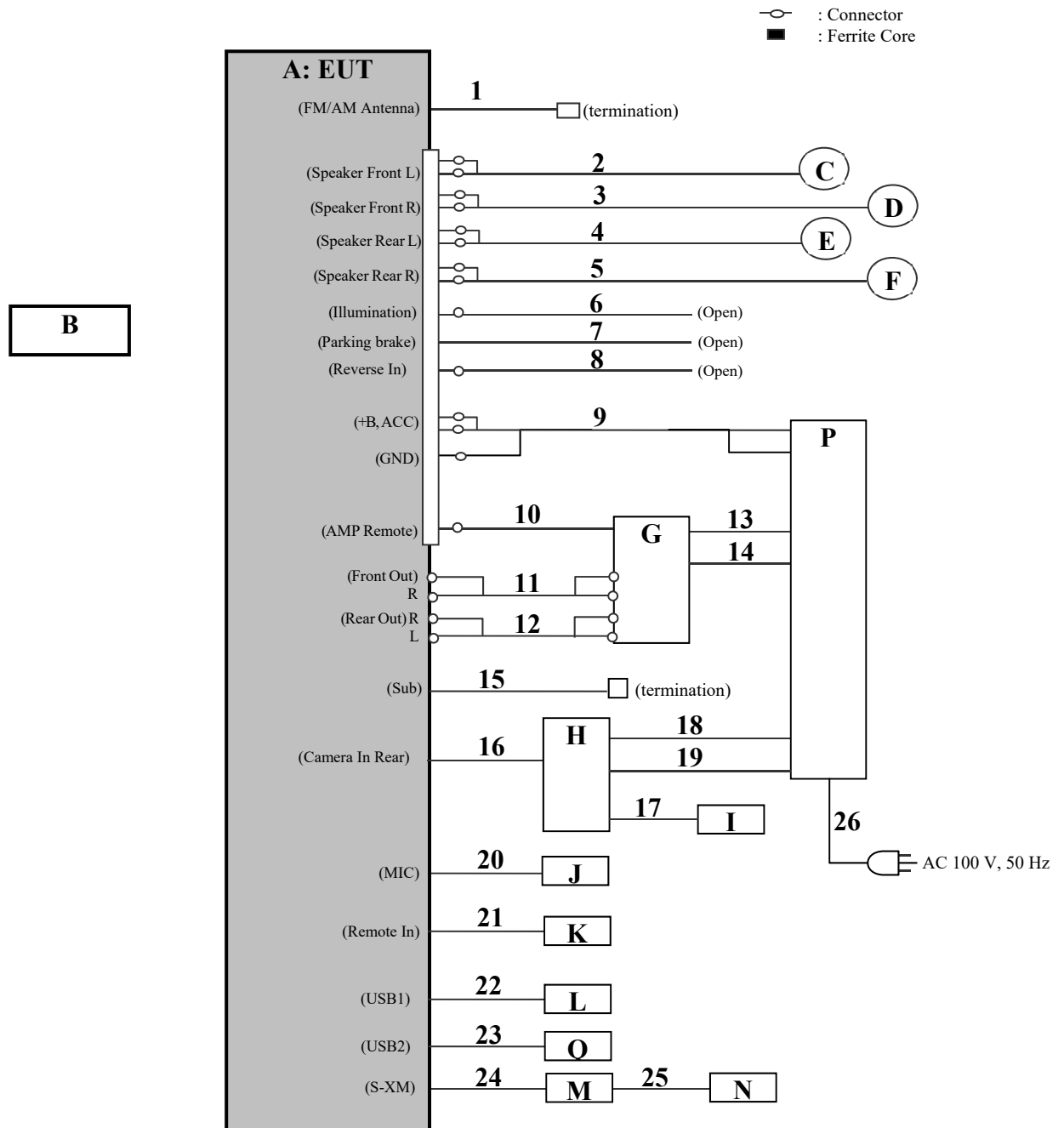
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4.2 Configuration and peripherals



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

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	AV Receiver	XAV-AX7000	92 *1) 93 *2)	Sony Corporation	EUT
B	Remote Commander	RM-X170	-	Sony Corporation	-
C	Speaker 1	IS-10	-	Sony Corporation	-
D	Speaker 2	IS-10	-	Sony Corporation	-
E	Speaker 3	XS-GTF1625R	-	Sony Corporation	-
F	Speaker 4	XS-GTF1625R	-	Sony Corporation	-
G	Stereo Power Amplifier	XM-GS4	0000052	Sony Corporation	-
H	Rear View Camera	XA-R800C	100114	Sony Corporation	-
I	Camera	-	-	Sony Corporation	-
J	MIC	-	-	Sony Corporation	-
K	Wired Remote Controller	RM-X4S	-	Sony Corporation	-
L	USB Memory	USM4GU	-	Sony Corporation	-
M	SIRIUS XM Connect Vehicle Tuner	SXV300	1QM90DWR	Sony Corporation	-
N	Vehicle Satellite Radio Antenna	NGVA3	1624A	Sony Corporation	-
O	USB Memory	USM4GU	-	Transcend	-
P	Power Supply(DC)	PAN35-10A	NA000955	Kikusui	-

*1) Used for Antenna Terminal conducted test

*2) Used for Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield (Cable)	Shield (Connector)	Remarks
1	FM antenna	1.0	Shielded	Shielded	-
2	Speaker (1)	0.15+2.4	Unshielded	Unshielded	-
3	Speaker (2)	0.15+2.4	Unshielded	Unshielded	-
4	Speaker (3)	0.15+1.9	Unshielded	Unshielded	-
5	Speaker (4)	0.15+1.9	Unshielded	Unshielded	-
6	Illumination	0.15+1.0	Unshielded	Unshielded	-
7	Parking	2.0	Unshielded	Unshielded	-
8	Reverse In	0.15+1.0	Unshielded	Unshielded	-
9	DC Power	0.4+1.8	Unshielded	Unshielded	-
10	AMP Remote	3.0	Unshielded	Unshielded	-
11	RCA (Front Audio Out)	5.0	Shielded	Shielded	-
12	RCA (Rear Audio Out)	5.0	Shielded	Shielded	-
13	DC Power (+)	1.4	Unshielded	Unshielded	-
14	DC Power (-)	1.4	Unshielded	Unshielded	-
15	RCA (Sub Audio Out)	1.2	Shielded	Shielded	-
16	Video	3.0	Shielded	Shielded	-
17	Camera	3.0	Shielded	Shielded	-
18	DC Power (+)	0.9	Unshielded	Unshielded	-
19	DC Power (-)	0.9	Unshielded	Unshielded	-
20	MIC	3.5	Shielded	Shielded	-
21	REMOTE IN	1.9	Shielded	Shielded	-
22	USB	2.0	Shielded	Shielded	-
23	USB	2.0	Shielded	Shielded	-
24	S-XM	0.6	Shielded	Shielded	-
25	Antenna	7.0	Shielded	Shielded	-
26	AC	1.8	Unshielded	Unshielded	-

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SECTION 5: Radiated Spurious Emission

Test Procedure

[For below 1 GHz]

EUT was placed on a platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The table is made of expanded polystyrol and expanded polypropylene and the table top is covered with polycarbonate. That has very low permittivity. 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 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

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

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

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

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

Test Antennas are used as below;

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

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

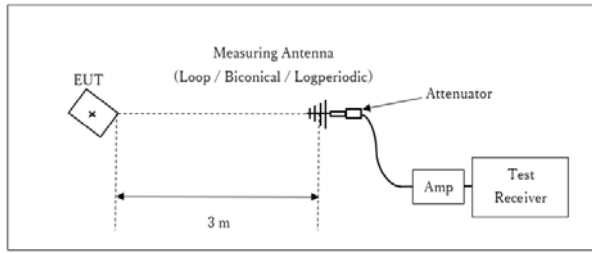
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9 (IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	RBW: 1 MHz VBW: 10 Hz *1)	RBW: 100 kHz VBW: 300 kHz

*1) Although DA 00-705 accepts VBW = 10 Hz for AV measurements, it was confirmed that superfluous smoothing was not performed.

Figure 1: Test Setup

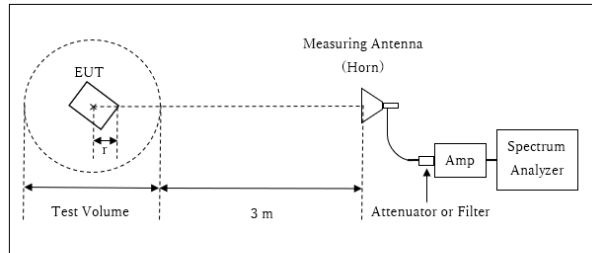
Below 1 GHz



x : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz



r : Radius of an outer periphery of EUT

x : Center of turn table

Distance Factor: $20 \times \log (3.88 \text{ m} / 3.0 \text{ m}) = 2.24 \text{ dB}$

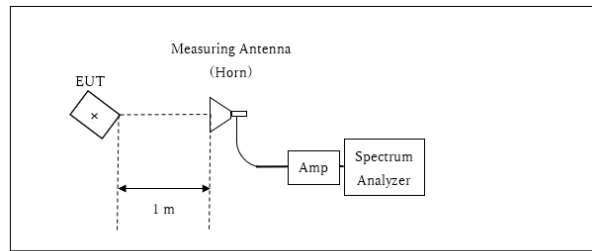
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.88 \text{ m}$

Test Volume : 2.0 m

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

$r = 0.12 \text{ m}$

13 GHz - 26.5 GHz



x : 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 angle of 0 deg. to 30 deg. based on the product specification to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Antenna polarization	Carrier	Spurious (Below 1 GHz)	Spurious (1 GHz –2.8 GHz)	Spurious (2.8 GHz –13 GHz)	Spurious (13 GHz –18 GHz)	Spurious (18 GHz – 26.5 GHz)
Horizontal	0 deg.	0 deg.	0 deg.	0 deg.	0 deg.	30 deg.
Vertical	30 deg.	0 deg.	30 deg.	0 deg.	0 deg.	0 deg.

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

Measurement range : 30 MHz - 26.5 GHz

Test data : APPENDIX

Test result : Pass

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SECTION 6: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

Test	Span	RBW	VBW	Sweep time	Detector	Trace	Instrument used
20dB Bandwidth	3 MHz	30 kHz	100 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth *1)	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold *1)	Spectrum Analyzer
Maximum Peak Output Power	-	-	-	Auto	Peak Average *2)	-	Power Meter (Sensor: 160 MHz BW)
Carrier Frequency Separation	3 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
Number of Hopping Frequency	30 MHz	300 kHz	1 MHz	Auto	Peak	Max Hold	Spectrum Analyzer
Dwell Time	Zero Span	100 kHz, 1 MHz	300 kHz, 3 MHz	As necessary capture the entire dwell time per hopping channel	Peak	Clear Write	Spectrum Analyzer
Conducted Spurious Emission *3)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				
	30 MHz to 25 GHz	100 kHz	300 kHz				
Conducted Spurious Emission Band Edge compliance	10 MHz	100 kHz	300 kHz	Auto	Peak	Max Hold	Spectrum Analyzer

*1) The measurement was performed with Max Hold since the duty cycle was not 100 %. Peak hold was applied as Worst-case measurement.

*2) Reference data

*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.

Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.

(9 kHz -150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz)

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

20dB Bandwidth, 99%Occupied Bandwidth and Carrier Frequency Separation

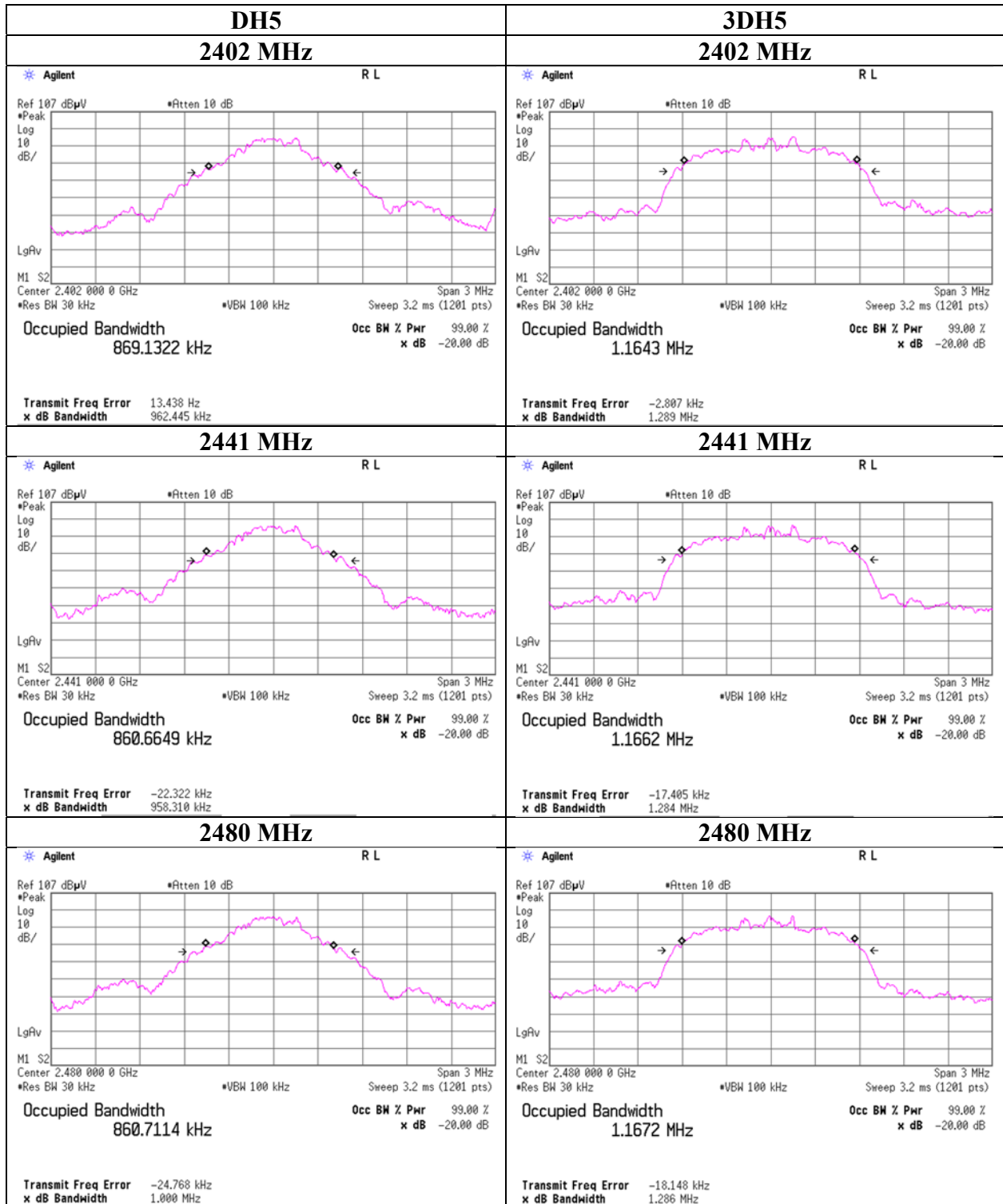
Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, Tx, Hopping On

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	99% Occupied Bandwidth [kHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.962	869.132	1.000	≥ 0.642
DH5	2441.0	0.958	860.665	1.000	≥ 0.639
DH5	2480.0	1.000	860.711	1.000	≥ 0.667
DH5	Hopping On	-	78449.8	-	-
3DH5	2402.0	1.289	1164.3	1.000	≥ 0.859
3DH5	2441.0	1.284	1166.2	1.000	≥ 0.856
3DH5	2480.0	1.286	1167.2	1.000	≥ 0.857
3DH5	Hopping On	-	78550.8	-	-

Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

20dB Bandwidth and 99% Occupied Bandwidth



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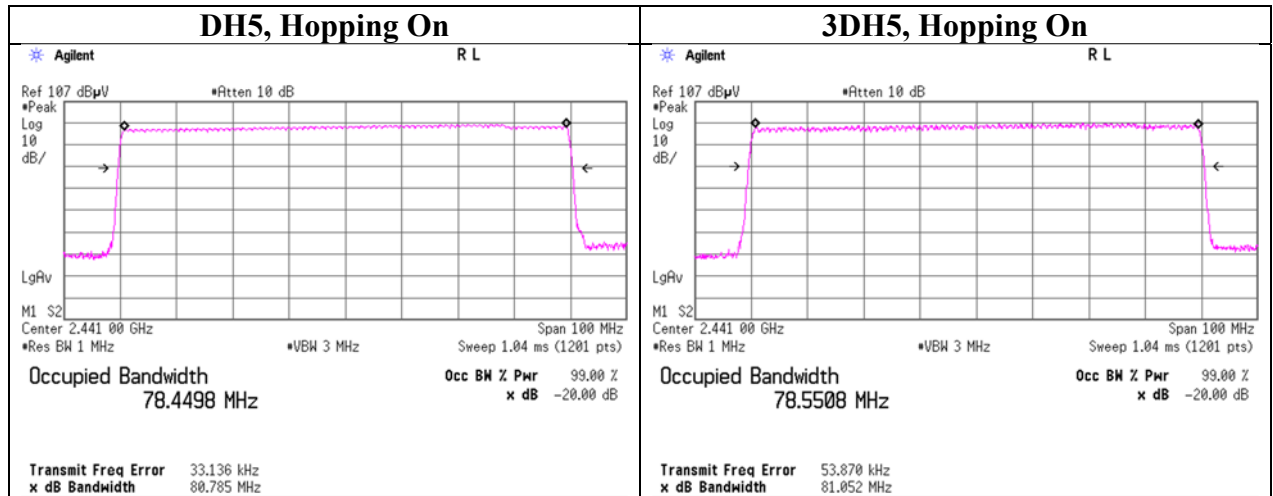
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20dB Bandwidth and 99% Occupied Bandwidth



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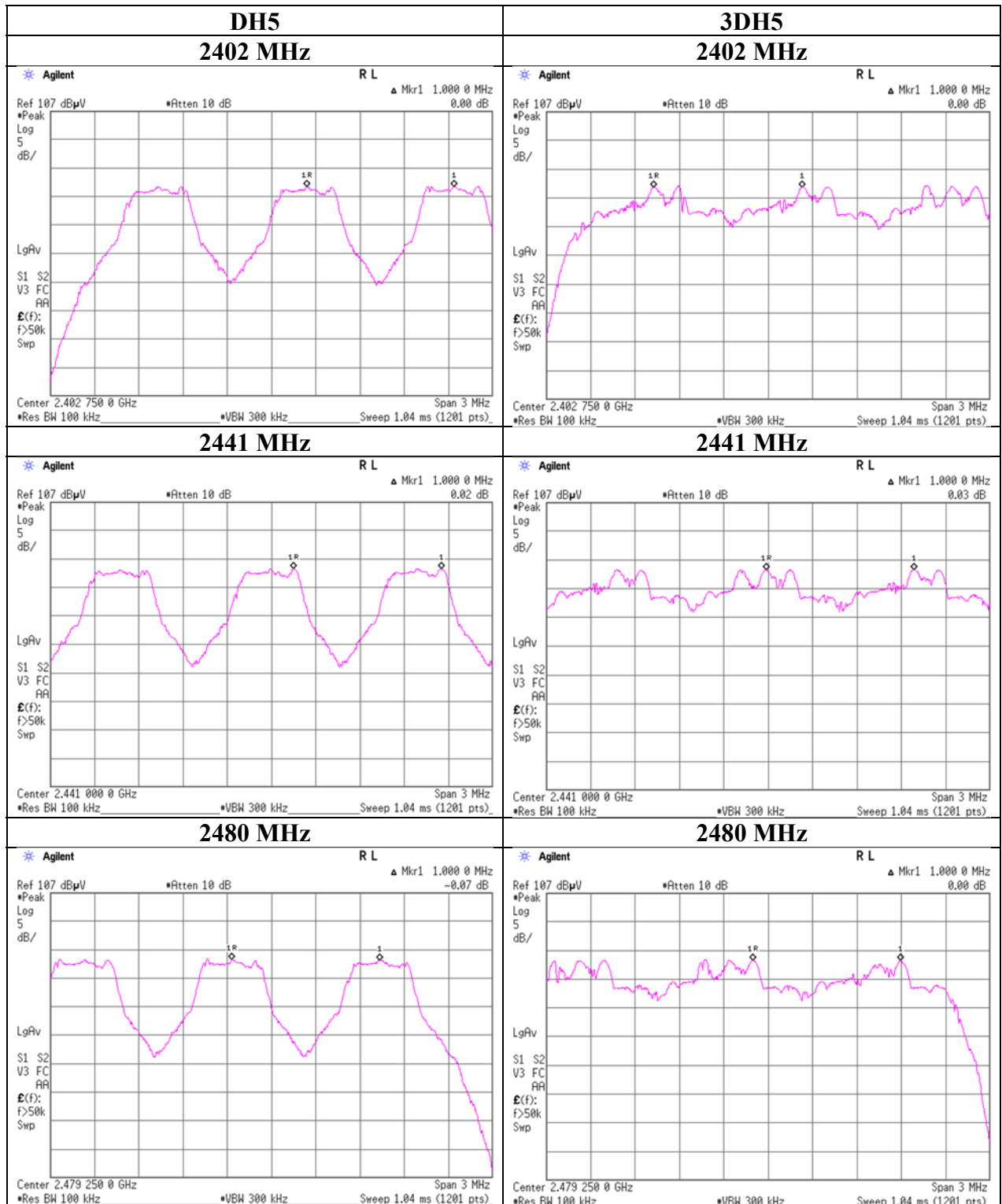
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Carrier Frequency Separation



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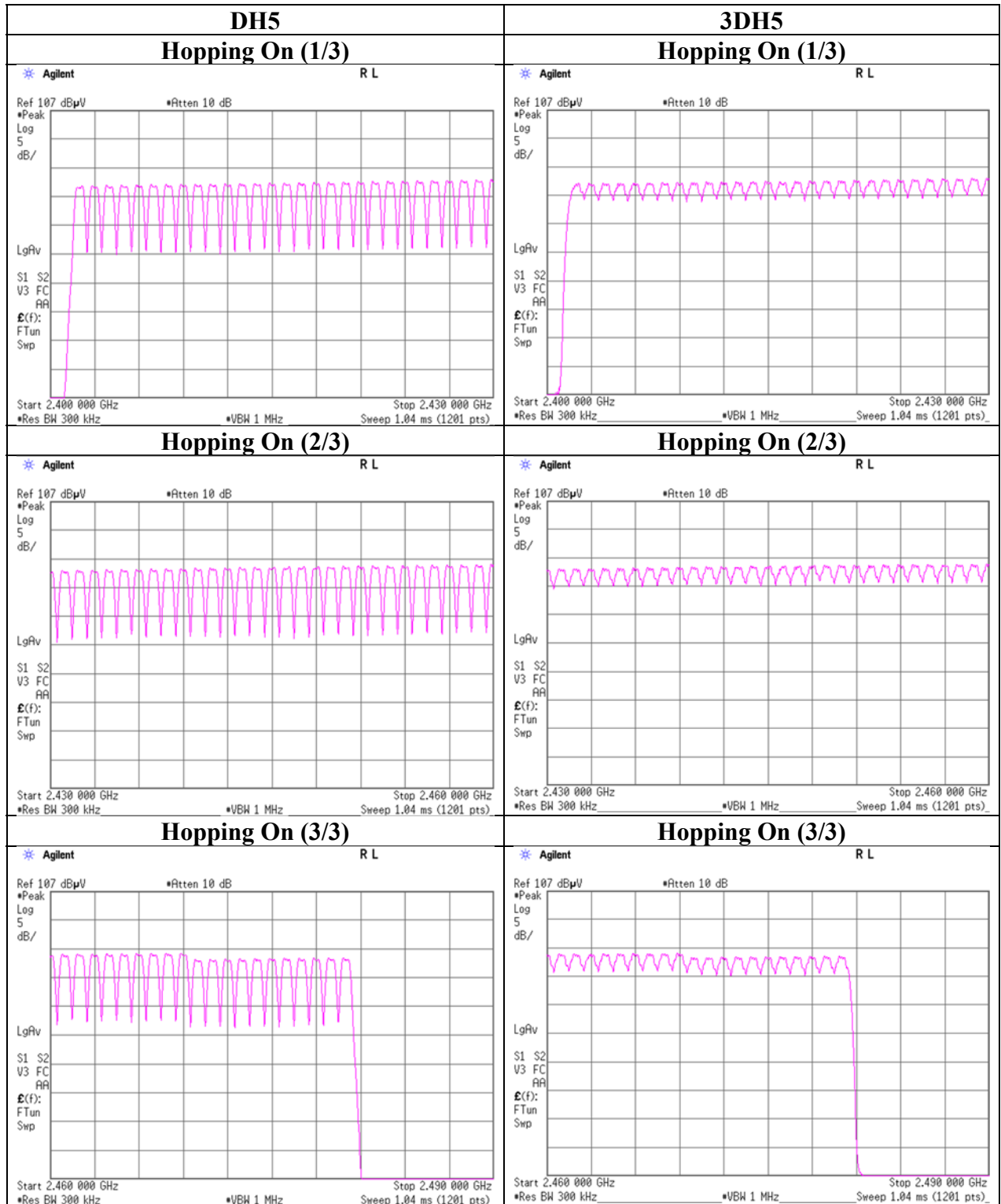
Number of Hopping Frequency

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping On

Mode	Number of channel [channels]	Limit [channels]
DH5	79	>= 15
3DH5	79	>= 15

Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.

Number of Hopping Frequency



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Dwell time

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping On

Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period				Length of transmission [msec]	Result [msec]	Limit [msec]
DH1	51.0 times	/	5 sec.	x 31.6 sec. =	323 times	0.413	400
DH3	26.0 times	/	5 sec.	x 31.6 sec. =	165 times	1.682	400
DH5	17.0 times	/	5 sec.	x 31.6 sec. =	108 times	2.919	400
3DH1	51.0 times	/	5 sec.	x 31.6 sec. =	323 times	0.437	400
3DH3	26.0 times	/	5 sec.	x 31.6 sec. =	165 times	1.683	400
3DH5	17.0 times	/	5 sec.	x 31.6 sec. =	108 times	2.941	318

Sample Calculation

Result = Number of transmission x Length of transmission

*Average data of 5 tests.(except Inquiry)

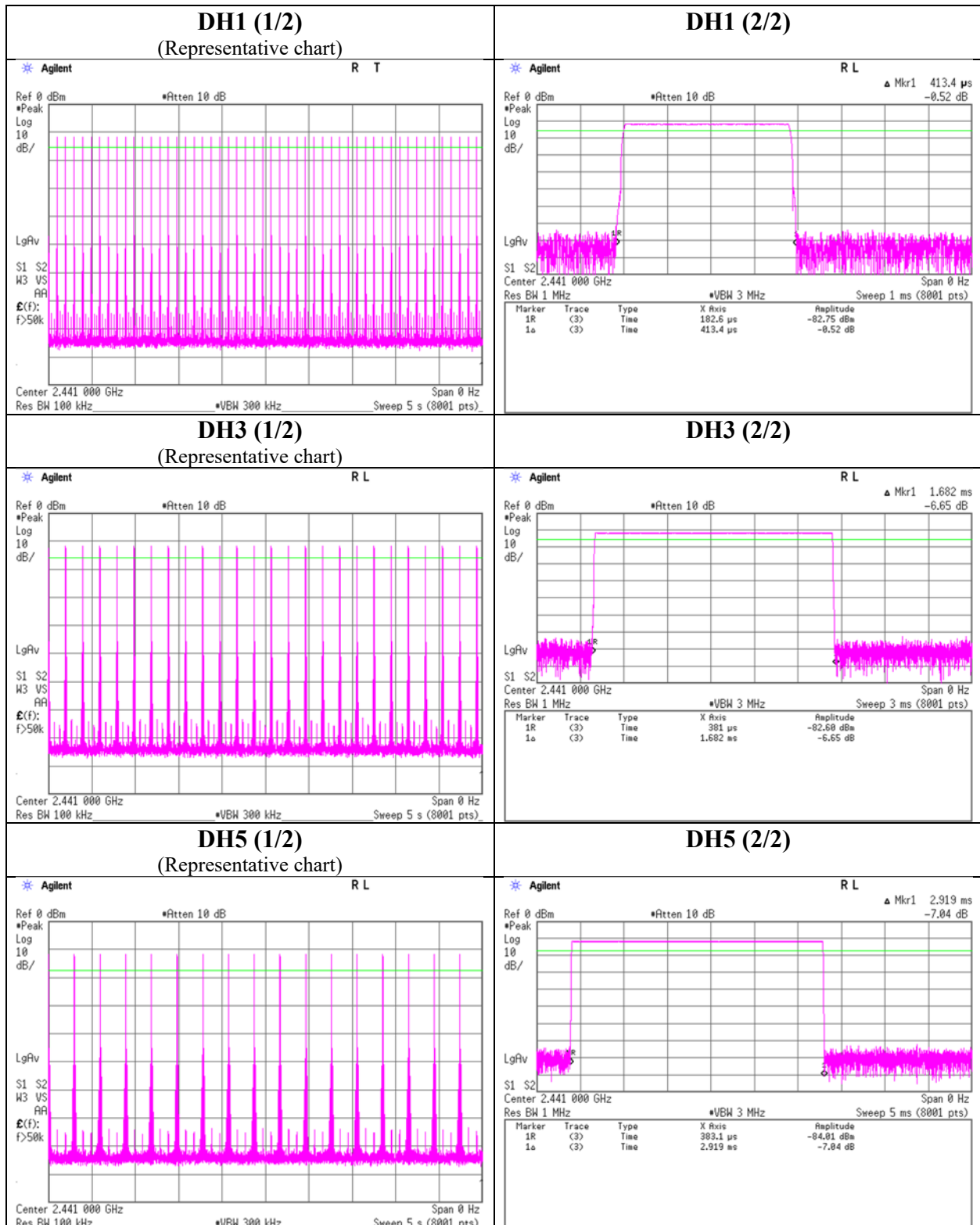
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	51	51	51	51	51	51
DH3	26	26	26	26	26	26
DH5	17	17	17	17	17	17
3DH1	51	51	51	51	51	51
3DH3	26	26	26	26	26	26
3DH5	17	17	17	17	17	17

Sample Calculation

Average = Summation (Sampling 1 to 5) / 5

This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in $N \times 0.4s$, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than $0.4s$ regardless of packet size. This is confirmed in the test report for $N = 79$.

Dwell time



UL Japan, Inc.

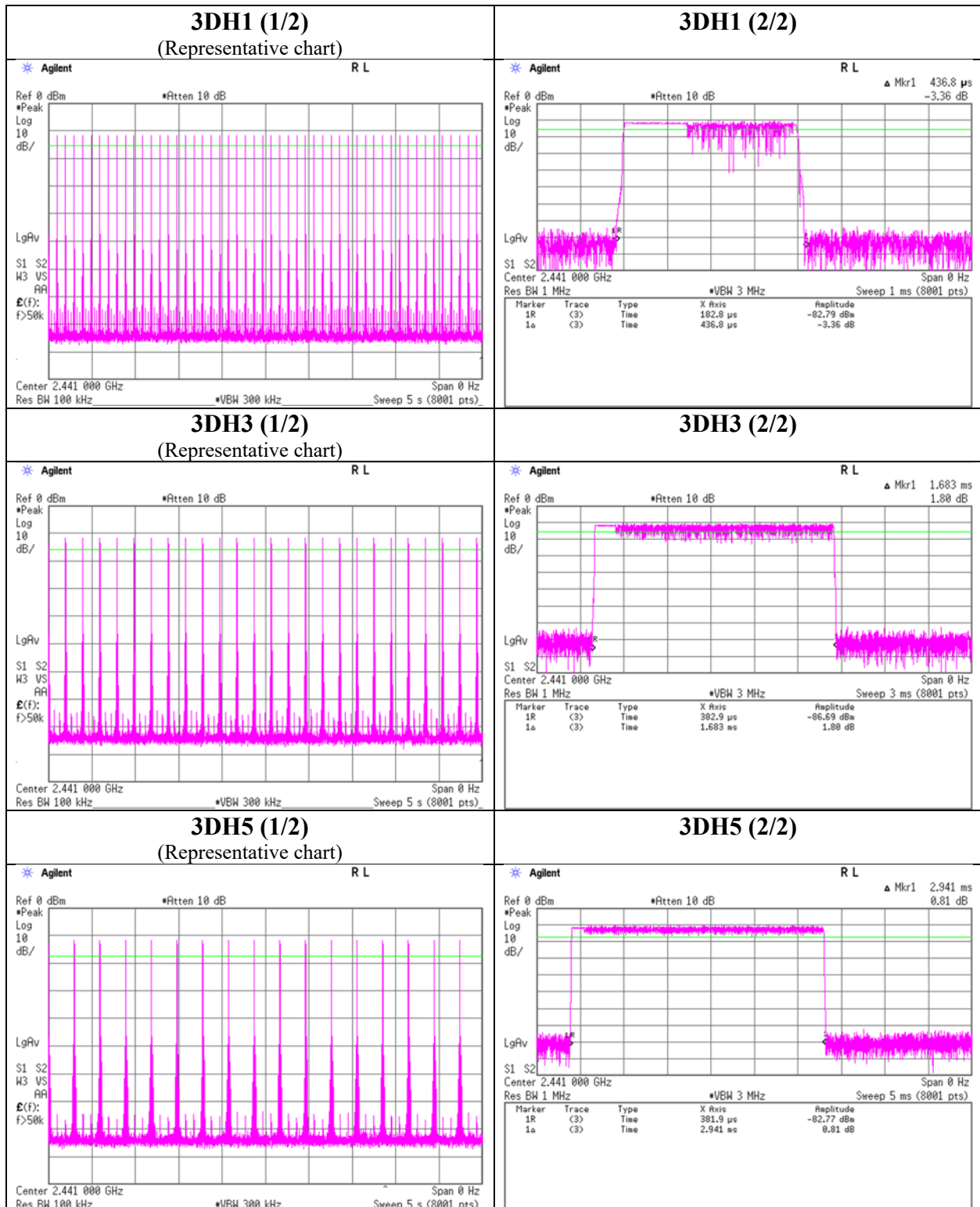
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Dwell time



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Facsimile : +81 463 50 6401

Maximum Peak Output Power

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off

					Conducted Power					e.i.r.p. for RSS-247							
Mode	Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin		
					[dBm]	[mW]	[dBm]	[mW]			[dB]	[dBi]	[dBm]	[mW]		[dBm]	[mW]
DH5	2402.0	-12.49	1.84	9.89	-0.76	0.84	20.96	125	21.72	0.93	0.17	1.04	36.02	4000	35.85		
DH5	2441.0	-11.03	1.86	9.89	0.72	1.18	20.96	125	20.24	0.93	1.65	1.46	36.02	4000	34.37		
DH5	2480.0	-11.01	1.87	9.89	0.75	1.19	20.96	125	20.21	0.93	1.68	1.47	36.02	4000	34.34		
2DH5	2402.0	-11.20	1.84	9.89	0.53	1.13	20.96	125	20.43	0.93	1.46	1.40	36.02	4000	34.56		
2DH5	2441.0	-9.92	1.86	9.89	1.83	1.52	20.96	125	19.13	0.93	2.76	1.89	36.02	4000	33.26		
2DH5	2480.0	-9.85	1.87	9.89	1.91	1.55	20.96	125	19.05	0.93	2.84	1.92	36.02	4000	33.18		
3DH5	2402.0	-10.75	1.84	9.89	0.98	1.25	20.96	125	19.98	0.93	1.91	1.55	36.02	4000	34.11		
3DH5	2441.0	-9.55	1.86	9.89	2.20	1.66	20.96	125	18.76	0.93	3.13	2.06	36.02	4000	32.89		
3DH5	2480.0	-9.43	1.87	9.89	2.33	1.71	20.96	125	18.63	0.93	3.26	2.12	36.02	4000	32.76		

Sample Calculation:

Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

e.i.r.p. Result = Conducted Power Result + Antenna Gain

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

As this device had AFH mode and frequency separation could not meet the requirement of over 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

Average Output Power
(Reference data for RF Exposure)

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
					[dBm]	[mW]		[dBm]	[mW]
DH5	2402.0	-14.53	1.84	9.89	-2.80	0.52	1.07	-1.73	0.67
DH5	2441.0	-12.90	1.86	9.89	-1.15	0.77	1.07	-0.08	0.98
DH5	2480.0	-12.88	1.87	9.89	-1.12	0.77	1.07	-0.05	0.99
2DH5	2402.0	-15.25	1.84	9.89	-3.52	0.44	1.07	-2.45	0.57
2DH5	2441.0	-13.94	1.86	9.89	-2.19	0.60	1.07	-1.12	0.77
2DH5	2480.0	-13.81	1.87	9.89	-2.05	0.62	1.07	-0.98	0.80
3DH5	2402.0	-15.24	1.84	9.89	-3.51	0.45	1.06	-2.45	0.57
3DH5	2441.0	-13.95	1.86	9.89	-2.20	0.60	1.06	-1.14	0.77
3DH5	2480.0	-13.82	1.87	9.89	-2.06	0.62	1.06	-1.00	0.79

Sample Calculation:

Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

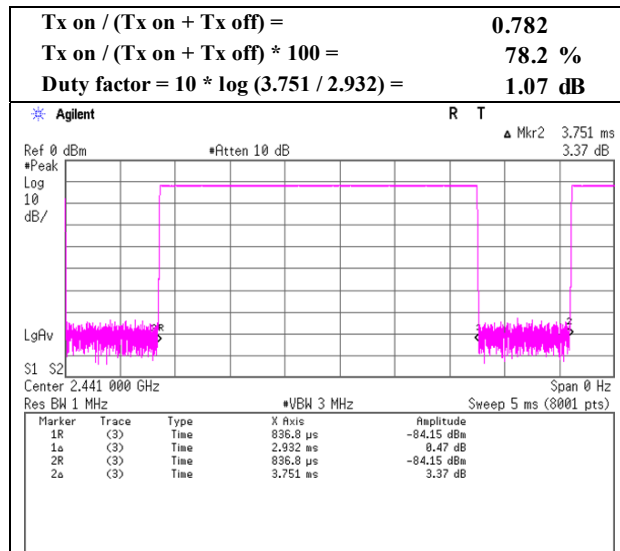
Result (Burst power average) = Time average + Duty factor

*The equipment and cables were not used for factor 0 dB of the data sheets.

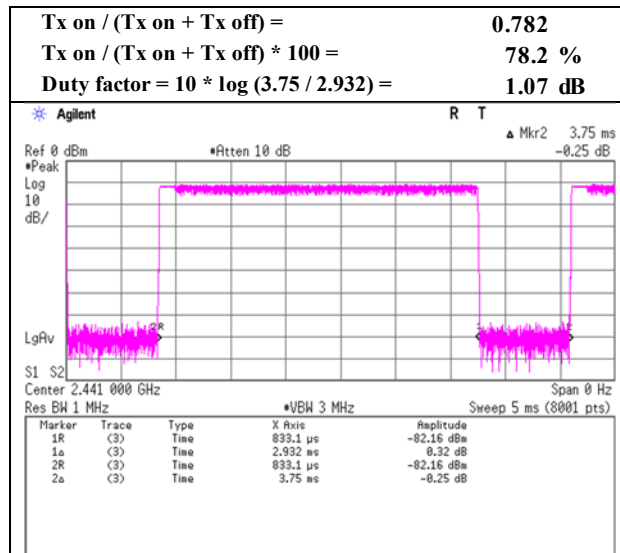
Burst Rate Confirmation

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off

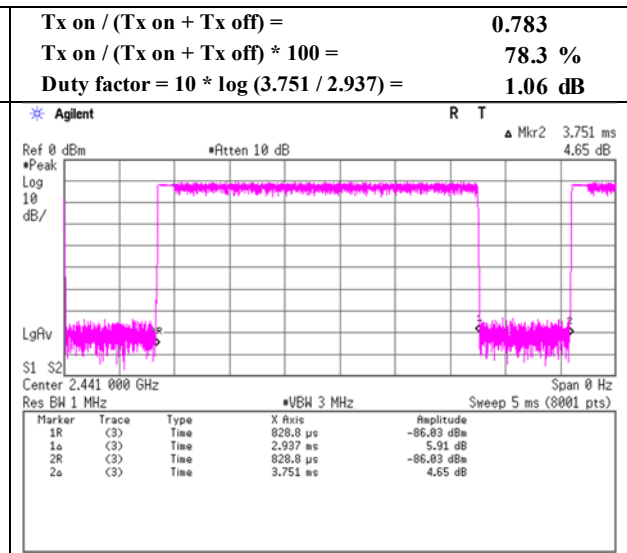
DH5



2DH5



3DH5



Radiated Spurious Emission

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka	Shiro Kobayashi	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -18 GHz)	(18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	135.868	QP	47.18	14.32	7.51	32.13	0.00	36.88	43.50	6.6	227	72	
Hori.	137.587	QP	45.88	14.37	7.56	32.13	0.00	35.68	43.50	7.8	231	160	
Hori.	139.321	QP	46.75	14.42	7.60	32.13	0.00	36.64	43.50	6.8	232	163	
Hori.	141.038	QP	48.23	14.53	7.63	32.13	0.00	38.26	43.50	5.2	236	156	
Hori.	423.224	QP	45.28	16.22	9.34	31.98	0.00	38.86	46.00	7.1	100	125	
Hori.	457.082	QP	43.75	16.81	9.47	31.97	0.00	38.06	46.00	7.9	100	230	
Hori.	490.939	QP	43.01	17.63	9.59	31.96	0.00	38.27	46.00	7.7	100	234	
Hori.	2351.977	PK	45.09	27.84	14.62	39.46	2.24	50.33	73.90	23.5	292	264	
Hori.	2390.000	PK	44.76	27.86	14.66	39.46	2.24	50.06	73.90	23.8	240	250	
Hori.	3118.310	PK	46.41	28.85	6.36	39.32	2.24	44.54	73.90	29.3	151	106	
Hori.	4804.000	PK	46.50	31.43	7.23	39.50	2.24	47.90	73.90	26.0	142	168	
Hori.	7206.000	PK	43.99	36.79	8.87	39.29	2.24	52.60	73.90	21.3	150	0	
Hori.	9608.000	PK	45.96	38.51	10.42	39.52	2.24	57.61	73.90	16.2	150	0	
Hori.	19216.000	PK	45.85	40.14	11.69	48.17	-9.54	39.97	73.90	33.9	147	219	
Hori.	2351.977	AV	33.57	27.84	14.62	39.46	2.24	38.81	53.90	15.0	292	264	
Hori.	2390.000	AV	32.82	27.86	14.66	39.46	2.24	38.12	53.90	15.7	240	250	
Hori.	3118.310	AV	37.08	28.85	6.36	39.32	2.24	35.21	53.90	18.6	151	106	
Hori.	4804.000	AV	35.78	31.43	7.23	39.50	2.24	37.18	53.90	16.7	142	168	
Hori.	7206.000	AV	32.00	36.79	8.87	39.29	2.24	40.61	53.90	13.2	150	0	
Hori.	9608.000	AV	33.71	38.51	10.42	39.52	2.24	45.36	53.90	8.5	150	0	
Hori.	19216.000	AV	36.54	40.14	11.69	48.17	-9.54	30.66	53.90	23.2	147	219	
Vert.	33.804	QP	35.83	17.22	6.53	32.20	0.00	27.38	40.00	12.6	100	68	
Vert.	45.158	QP	45.78	12.95	6.74	32.19	0.00	33.28	40.00	6.7	100	250	
Vert.	423.223	QP	41.22	16.22	9.34	31.98	0.00	34.80	46.00	11.2	120	153	
Vert.	2351.976	PK	45.92	27.84	14.62	39.46	2.24	51.16	73.90	22.7	208	337	
Vert.	2390.000	PK	44.94	27.86	14.66	39.46	2.24	50.24	73.90	23.6	148	169	
Vert.	3118.310	PK	46.66	28.85	6.36	39.32	2.24	44.79	73.90	29.1	150	33	
Vert.	4804.000	PK	46.84	31.43	7.23	39.50	2.24	48.24	73.90	25.6	178	168	
Vert.	7206.000	PK	44.15	36.79	8.87	39.29	2.24	52.76	73.90	21.1	150	0	
Vert.	9608.000	PK	46.05	38.51	10.42	39.52	2.24	57.70	73.90	16.2	150	0	
Vert.	19216.000	PK	46.45	40.14	11.69	48.17	-9.54	40.57	73.90	33.3	119	198	
Vert.	2351.976	AV	34.07	27.84	14.62	39.46	2.24	39.31	53.90	14.5	208	337	
Vert.	2390.000	AV	33.02	27.86	14.66	39.46	2.24	38.32	53.90	15.5	148	169	
Vert.	3118.310	AV	39.36	28.85	6.36	39.32	2.24	37.49	53.90	16.4	150	33	
Vert.	4804.000	AV	37.04	31.43	7.23	39.50	2.24	38.44	53.90	15.4	178	168	
Vert.	7206.000	AV	31.94	36.79	8.87	39.29	2.24	40.55	53.90	13.3	150	0	
Vert.	9608.000	AV	33.67	38.51	10.42	39.52	2.24	45.32	53.90	8.5	150	0	
Vert.	19216.000	AV	37.99	40.14	11.69	48.17	-9.54	32.11	53.90	21.7	119	198	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	83.12	27.86	14.67	39.46	2.24	88.43	-	-	Carrier
Hori.	2400.000	PK	36.47	27.86	14.67	39.46	2.24	41.78	68.43	26.6	
Vert.	2402.000	PK	90.58	27.86	14.67	39.46	2.24	95.89	-	-	Carrier
Vert.	2400.000	PK	41.65	27.86	14.67	39.46	2.24	46.96	75.89	28.9	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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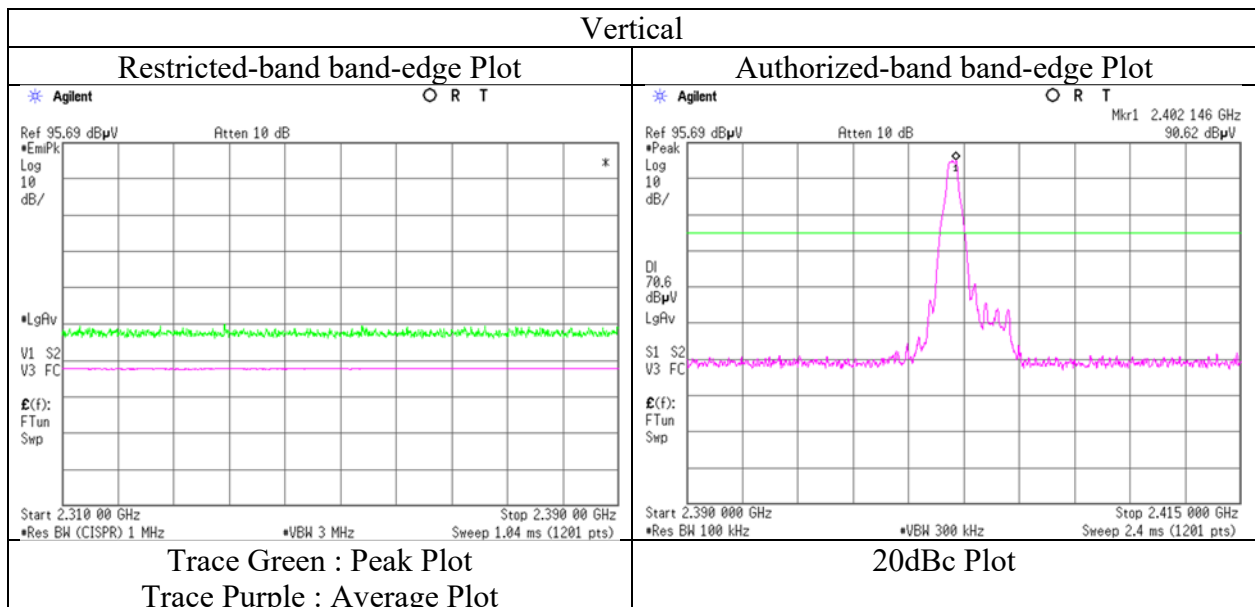
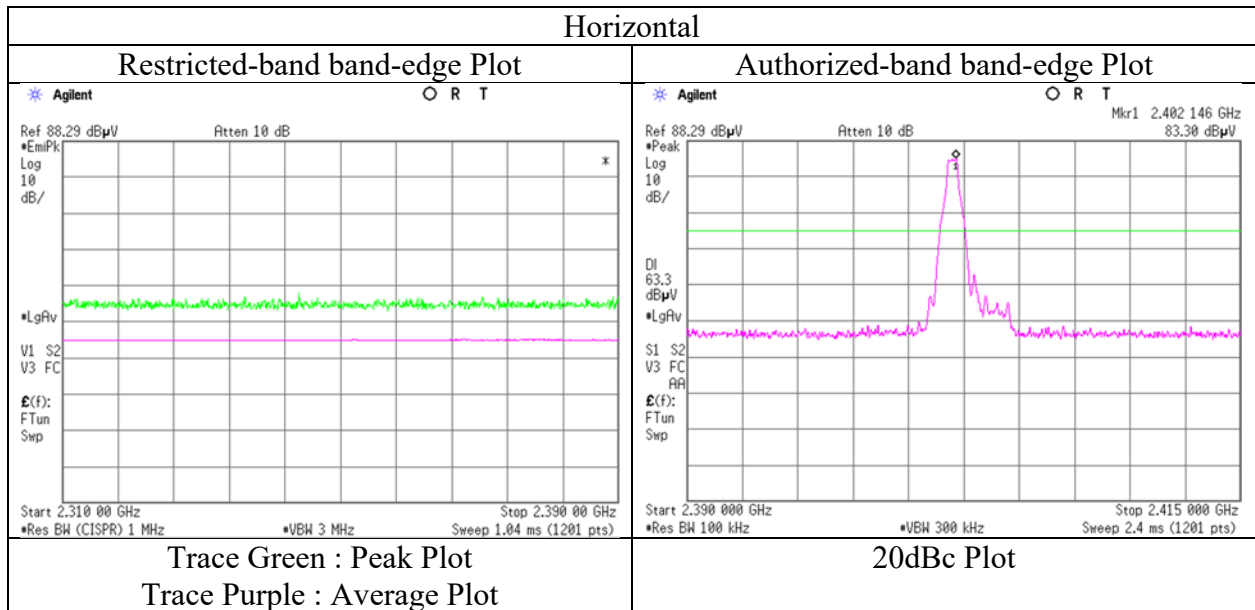
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12658405S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	December 23, 2018
Temperature / Humidity	21 deg. C / 32 % RH
Engineer	Shiro Kobayashi (1 GHz -13 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz



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

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

UL Japan, Inc.

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Radiated Spurious Emission

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka	Shiro Kobayashi	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -18 GHz)	(18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	135.893	QP	49.97	14.33	7.51	32.13	0.00	39.68	43.50	3.8	235	73	
Hori.	137.585	QP	47.89	14.37	7.56	32.13	0.00	37.69	43.50	5.8	221	165	
Hori.	139.306	QP	46.42	14.42	7.60	32.13	0.00	36.31	43.50	7.1	232	146	
Hori.	141.033	QP	45.83	14.53	7.63	32.13	0.00	35.86	43.50	7.6	231	156	
Hori.	423.216	QP	44.97	16.22	9.34	31.98	0.00	38.55	46.00	7.4	100	131	
Hori.	457.086	QP	43.69	16.81	9.47	31.97	0.00	38.00	46.00	8.0	100	235	
Hori.	490.935	QP	42.18	17.63	9.59	31.96	0.00	37.44	46.00	8.5	100	230	
Hori.	2351.977	PK	45.61	27.84	14.62	39.46	2.24	50.85	73.90	23.0	302	262	
Hori.	3118.310	PK	46.45	28.85	6.36	39.32	2.24	44.58	73.90	29.3	156	106	
Hori.	4882.000	PK	46.38	31.37	7.33	39.50	2.24	47.82	73.90	26.0	141	170	
Hori.	7323.000	PK	44.00	37.01	9.01	39.35	2.24	52.91	73.90	20.9	150	0	
Hori.	9764.000	PK	44.33	38.92	10.42	39.41	2.24	56.50	73.90	17.4	150	0	
Hori.	19528.000	PK	45.76	40.08	11.88	47.70	-9.54	40.48	73.90	33.4	152	232	
Hori.	2351.977	AV	33.56	27.84	14.62	39.46	2.24	38.80	53.90	15.1	302	262	
Hori.	3118.310	AV	36.86	28.85	6.36	39.32	2.24	34.99	53.90	18.9	156	106	
Hori.	4882.000	AV	36.10	31.37	7.33	39.50	2.24	37.54	53.90	16.3	141	170	
Hori.	7323.000	AV	31.68	37.01	9.01	39.35	2.24	40.59	53.90	13.3	150	0	
Hori.	9764.000	AV	32.59	38.92	10.42	39.41	2.24	44.76	53.90	9.1	150	0	
Hori.	19528.000	AV	35.05	40.08	11.88	47.70	-9.54	29.77	53.90	24.1	152	232	
Vert.	33.813	QP	34.98	17.22	6.53	32.20	0.00	26.53	40.00	13.4	100	65	
Vert.	45.149	QP	45.15	12.95	6.74	32.19	0.00	32.65	40.00	7.3	100	247	
Vert.	423.219	QP	41.58	16.22	9.34	31.98	0.00	35.16	46.00	10.8	118	151	
Vert.	2351.977	PK	45.79	27.84	14.62	39.46	2.24	51.03	73.90	22.8	141	172	
Vert.	3118.310	PK	47.54	28.85	6.36	39.32	2.24	45.67	73.90	28.2	148	33	
Vert.	4882.000	PK	46.48	31.37	7.33	39.50	2.24	47.92	73.90	25.9	207	69	
Vert.	7323.000	PK	43.86	37.01	9.01	39.35	2.24	52.77	73.90	21.1	150	0	
Vert.	9764.000	PK	44.42	38.92	10.42	39.41	2.24	56.59	73.90	17.3	150	0	
Vert.	19528.000	PK	45.57	40.08	11.88	47.70	-9.54	40.29	73.90	33.6	121	189	
Vert.	2351.977	AV	34.05	27.84	14.62	39.46	2.24	39.29	53.90	14.6	141	172	
Vert.	3118.310	AV	39.44	28.85	6.36	39.32	2.24	37.57	53.90	16.3	148	33	
Vert.	4882.000	AV	36.49	31.37	7.33	39.50	2.24	37.93	53.90	15.9	207	69	
Vert.	7323.000	AV	31.62	37.01	9.01	39.35	2.24	40.53	53.90	13.3	150	0	
Vert.	9764.000	AV	32.70	38.92	10.42	39.41	2.24	44.87	53.90	9.0	150	0	
Vert.	19528.000	AV	35.90	40.08	11.88	47.70	-9.54	30.62	53.90	23.2	121	189	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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

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Shonan EMC Lab.

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Radiated Spurious Emission

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka (30 MHz -1 GHz)	Shiro Kobayashi (1 GHz -18 GHz)	Makoto Hosaka (18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	134.146	QP	46.95	14.13	7.48	32.13	0.00	36.43	43.50	7.0	228	65	
Hori.	135.576	QP	47.36	14.28	7.51	32.13	0.00	37.02	43.50	6.4	231	167	
Hori.	137.567	QP	46.53	14.37	7.56	32.13	0.00	36.33	43.50	7.1	229	158	
Hori.	139.299	QP	46.09	14.42	7.60	32.13	0.00	35.98	43.50	7.5	238	152	
Hori.	423.227	QP	43.06	16.22	9.34	31.98	0.00	36.64	46.00	9.3	100	233	
Hori.	457.084	QP	43.74	16.81	9.47	31.97	0.00	38.05	46.00	7.9	100	229	
Hori.	490.944	QP	43.30	17.63	9.59	31.96	0.00	38.56	46.00	7.4	100	232	
Hori.	2351.977	PK	45.50	27.65	14.76	39.46	2.24	50.69	73.90	23.2	288	281	
Hori.	2483.500	PK	44.67	27.65	14.76	39.46	2.24	49.86	73.90	24.0	255	257	
Hori.	3118.718	PK	46.16	28.85	6.36	39.32	2.24	44.29	73.90	29.6	155	106	
Hori.	4960.000	PK	45.32	31.54	7.43	39.50	2.24	47.03	73.90	26.8	152	206	
Hori.	7440.000	PK	44.27	37.10	9.16	39.42	2.24	53.35	73.90	20.5	150	0	
Hori.	9920.000	PK	44.20	38.97	10.41	39.30	2.24	56.52	73.90	17.3	150	0	
Hori.	19840.000	PK	44.13	39.94	12.02	47.72	-9.54	38.83	73.90	35.0	144	215	
Hori.	2351.977	AV	33.64	27.65	14.76	39.46	2.24	38.83	53.90	15.0	288	281	
Hori.	2483.500	AV	32.94	27.65	14.76	39.46	2.24	38.13	53.90	15.7	255	257	
Hori.	3118.718	AV	36.37	28.85	6.36	39.32	2.24	34.50	53.90	19.4	155	106	
Hori.	4960.000	AV	34.64	31.54	7.43	39.50	2.24	36.35	53.90	17.5	152	206	
Hori.	7440.000	AV	31.92	37.10	9.16	39.42	2.24	41.00	53.90	12.9	150	0	
Hori.	9920.000	AV	31.69	38.97	10.41	39.30	2.24	44.01	53.90	9.8	150	0	
Hori.	19840.000	AV	32.60	39.94	12.02	47.72	-9.54	27.30	53.90	26.6	144	215	
Vert.	33.811	QP	35.88	17.22	6.53	32.20	0.00	27.43	40.00	12.5	100	57	
Vert.	45.153	QP	44.52	12.95	6.74	32.19	0.00	32.02	40.00	7.9	100	233	
Vert.	423.204	QP	41.28	16.22	9.34	31.98	0.00	34.86	46.00	11.1	120	154	
Vert.	2351.976	PK	45.34	27.84	14.62	39.46	2.24	50.58	73.90	23.3	210	335	
Vert.	2483.500	PK	45.13	27.65	14.76	39.46	2.24	50.32	73.90	23.5	136	173	
Vert.	3118.310	PK	47.37	28.85	6.36	39.32	2.24	45.50	73.90	28.4	148	31	
Vert.	4960.000	PK	45.88	31.54	7.43	39.50	2.24	47.59	73.90	26.3	246	132	
Vert.	7440.000	PK	44.51	37.10	9.16	39.42	2.24	53.59	73.90	20.3	150	0	
Vert.	9920.000	PK	43.90	38.97	10.41	39.30	2.24	56.22	73.90	17.6	150	0	
Vert.	19840.000	PK	44.34	39.94	12.02	47.72	-9.54	39.04	73.90	34.8	115	201	
Vert.	2351.976	AV	33.95	27.84	14.62	39.46	2.24	39.19	53.90	14.7	210	335	
Vert.	2483.500	AV	33.06	27.65	14.76	39.46	2.24	38.25	53.90	15.6	136	173	
Vert.	3118.310	AV	39.17	28.85	6.36	39.32	2.24	37.30	53.90	16.6	148	31	
Vert.	4960.000	AV	34.99	31.54	7.43	39.50	2.24	36.70	53.90	17.2	246	132	
Vert.	7440.000	AV	31.86	37.10	9.16	39.42	2.24	40.94	53.90	12.9	150	0	
Vert.	9920.000	AV	31.68	38.97	10.41	39.30	2.24	44.00	53.90	9.9	150	0	
Vert.	19840.000	AV	32.84	39.94	12.02	47.72	-9.54	27.54	53.90	26.3	115	201	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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

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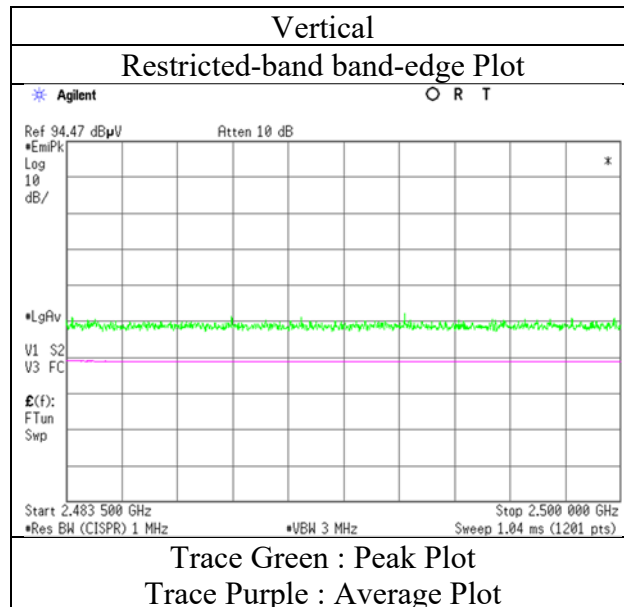
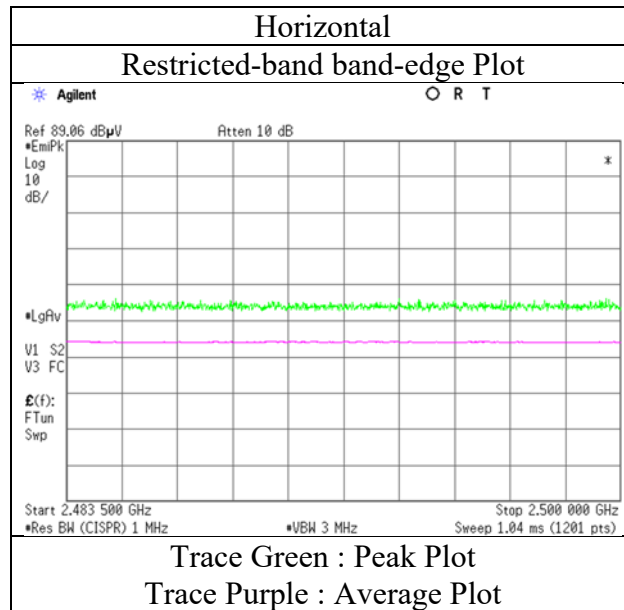
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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12658405S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	December 23, 2018
Temperature / Humidity	21 deg. C / 32 % RH
Engineer	Shiro Kobayashi (1 GHz -13 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz



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

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

Radiated Spurious Emission

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka	Shiro Kobayashi	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -18 GHz)	(18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	134.151	QP	48.68	14.13	7.48	32.13	0.00	38.16	43.50	5.3	220	71	
Hori.	135.883	QP	46.01	14.32	7.51	32.13	0.00	35.71	43.50	7.7	232	79	
Hori.	137.591	QP	45.33	14.37	7.56	32.13	0.00	35.13	43.50	8.3	228	161	
Hori.	141.040	QP	47.28	14.53	7.63	32.13	0.00	37.31	43.50	6.1	231	152	
Hori.	423.216	QP	44.58	16.22	9.34	31.98	0.00	38.16	46.00	7.8	100	234	
Hori.	457.084	QP	44.01	16.81	9.47	31.97	0.00	38.32	46.00	7.6	100	232	
Hori.	490.929	QP	43.66	17.63	9.59	31.96	0.00	38.92	46.00	7.0	100	235	
Hori.	2351.978	PK	45.61	27.84	14.62	39.46	2.24	50.85	73.90	23.0	282	215	
Hori.	2390.000	PK	44.85	27.86	14.66	39.46	2.24	50.15	73.90	23.7	245	234	
Hori.	3118.310	PK	45.27	28.85	6.36	39.32	2.24	43.40	73.90	30.5	152	105	
Hori.	4804.000	PK	45.55	31.43	7.23	39.50	2.24	46.95	73.90	26.9	138	166	
Hori.	7206.000	PK	43.54	36.79	8.87	39.29	2.24	52.15	73.90	21.7	150	0	
Hori.	9608.000	PK	46.21	38.51	10.42	39.52	2.24	57.86	73.90	16.0	150	0	
Hori.	19216.000	PK	46.87	40.14	11.69	48.17	-9.54	40.99	73.90	32.9	147	219	
Hori.	2351.978	AV	33.60	27.84	14.62	39.46	2.24	38.84	53.90	15.0	282	215	
Hori.	2390.000	AV	32.71	27.86	14.66	39.46	2.24	38.01	53.90	15.8	245	234	
Hori.	3118.310	AV	36.02	28.85	6.36	39.32	2.24	34.15	53.90	19.7	152	105	
Hori.	4804.000	AV	33.41	31.43	7.23	39.50	2.24	34.81	53.90	19.0	138	166	
Hori.	7206.000	AV	31.88	36.79	8.87	39.29	2.24	40.49	53.90	13.4	150	0	
Hori.	9608.000	AV	33.62	38.51	10.42	39.52	2.24	45.27	53.90	8.6	150	0	
Hori.	19216.000	AV	36.32	40.14	11.69	48.17	-9.54	30.44	53.90	23.4	147	219	
Vert.	33.812	QP	35.06	17.22	6.53	32.20	0.00	26.61	40.00	13.3	100	64	
Vert.	45.158	QP	45.41	12.95	6.74	32.19	0.00	32.91	40.00	7.0	100	244	
Vert.	423.224	QP	41.65	16.22	9.34	31.98	0.00	35.23	46.00	10.7	119	148	
Vert.	2351.977	PK	45.19	27.84	14.62	39.46	2.24	50.43	73.90	23.4	209	338	
Vert.	2390.000	PK	44.65	27.86	14.66	39.46	2.24	49.95	73.90	23.9	147	167	
Vert.	3118.310	PK	47.03	28.85	6.36	39.32	2.24	45.16	73.90	28.7	147	32	
Vert.	4804.000	PK	45.42	31.43	7.23	39.50	2.24	46.82	73.90	27.0	170	68	
Vert.	7206.000	PK	43.89	36.79	8.87	39.29	2.24	52.50	73.90	21.4	150	0	
Vert.	9608.000	PK	46.72	38.51	10.42	39.52	2.24	58.37	73.90	15.5	150	0	
Vert.	19216.000	PK	46.17	40.14	11.69	48.17	-9.54	40.29	73.90	33.6	118	200	
Vert.	2351.977	AV	34.05	27.84	14.62	39.46	2.24	39.29	53.90	14.6	209	338	
Vert.	2390.000	AV	33.01	27.86	14.66	39.46	2.24	38.31	53.90	15.5	147	167	
Vert.	3118.310	AV	39.07	28.85	6.36	39.32	2.24	37.20	53.90	16.7	147	32	
Vert.	4804.000	AV	34.19	31.43	7.23	39.50	2.24	35.59	53.90	18.3	170	68	
Vert.	7206.000	AV	31.86	36.79	8.87	39.29	2.24	40.47	53.90	13.4	150	0	
Vert.	9608.000	AV	33.63	38.51	10.42	39.52	2.24	45.28	53.90	8.6	150	0	
Vert.	19216.000	AV	36.14	40.14	11.69	48.17	-9.54	30.26	53.90	23.6	118	200	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	82.72	27.86	14.67	39.46	2.24	88.03	-	-	Carrier
Hori.	2400.000	PK	38.29	27.86	14.67	39.46	2.24	43.60	68.03	24.4	
Vert.	2402.000	PK	90.47	27.86	14.67	39.46	2.24	95.78	-	-	Carrier
Vert.	2400.000	PK	41.76	27.86	14.67	39.46	2.24	47.07	75.78	28.7	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.88\text{ m} / 3.0\text{ m}) = 2.24\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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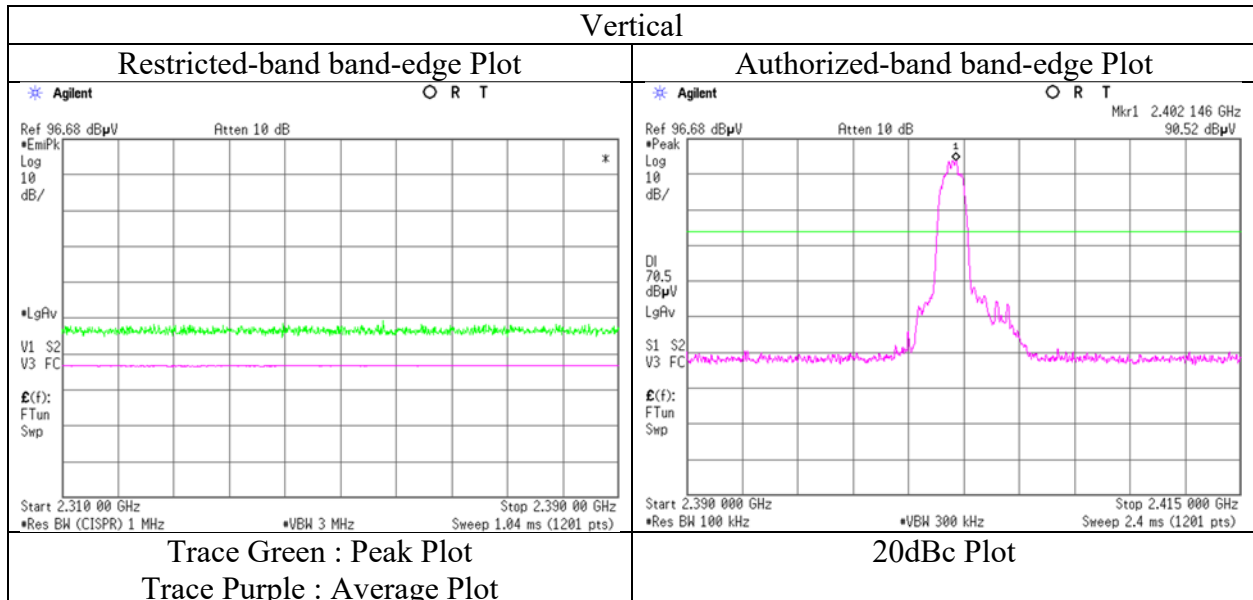
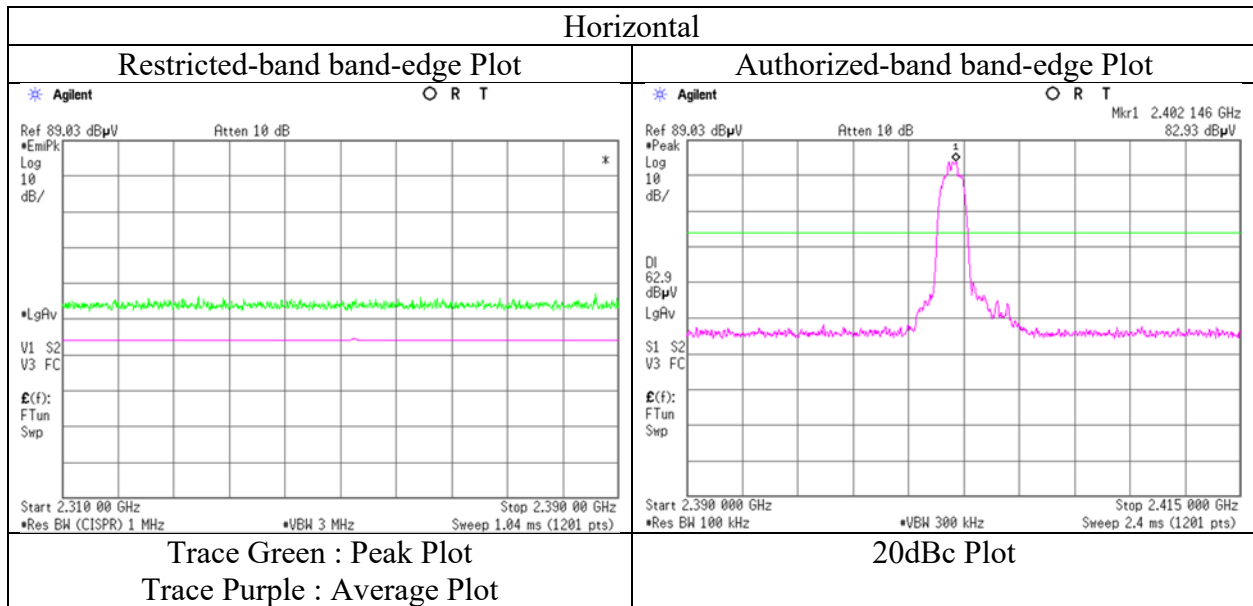
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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12658405S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	December 23, 2018
Temperature / Humidity	21 deg. C / 32 % RH
Engineer	Shiro Kobayashi (1 GHz -13 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz



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

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

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Radiated Spurious Emission

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka	Shiro Kobayashi	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -18 GHz)	(18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	134.155	QP	47.99	14.13	7.48	32.13	0.00	37.47	43.50	6.0	227	67	
Hori.	135.879	QP	46.89	14.32	7.51	32.13	0.00	36.59	43.50	6.9	231	63	
Hori.	137.587	QP	45.65	14.37	7.56	32.13	0.00	35.45	43.50	8.0	230	148	
Hori.	141.031	QP	47.46	14.53	7.63	32.13	0.00	37.49	43.50	6.0	232	161	
Hori.	423.211	QP	44.37	16.22	9.34	31.98	0.00	37.95	46.00	8.0	100	234	
Hori.	457.088	QP	44.12	16.81	9.47	31.97	0.00	38.43	46.00	7.5	100	229	
Hori.	490.925	QP	43.87	17.63	9.59	31.96	0.00	39.13	46.00	6.8	100	231	
Hori.	2351.975	PK	45.07	27.84	14.62	39.46	2.24	50.31	73.90	23.5	281	207	
Hori.	3118.310	PK	46.34	28.85	6.36	39.32	2.24	44.47	73.90	29.4	153	102	
Hori.	4882.000	PK	45.41	31.37	7.33	39.50	2.24	46.85	73.90	27.0	139	170	
Hori.	7323.000	PK	44.57	37.01	9.01	39.35	2.24	53.48	73.90	20.4	150	0	
Hori.	9764.000	PK	44.36	38.92	10.42	39.41	2.24	56.53	73.90	17.3	150	0	
Hori.	19528.000	PK	45.69	40.08	11.88	47.70	-9.54	40.41	73.90	33.4	147	211	
Hori.	2351.975	AV	33.65	27.84	14.62	39.46	2.24	38.89	53.90	15.0	281	207	
Hori.	3118.310	AV	35.96	28.85	6.36	39.32	2.24	34.09	53.90	19.8	153	102	
Hori.	4882.000	AV	33.67	31.37	7.33	39.50	2.24	35.11	53.90	18.7	139	170	
Hori.	7323.000	AV	31.68	37.01	9.01	39.35	2.24	40.59	53.90	13.3	150	0	
Hori.	9764.000	AV	32.50	38.92	10.42	39.41	2.24	44.67	53.90	9.2	150	0	
Hori.	19528.000	AV	34.91	40.08	11.88	47.70	-9.54	29.63	53.90	24.2	147	211	
Vert.	33.798	QP	36.03	17.22	6.53	32.20	0.00	27.58	40.00	12.4	100	56	
Vert.	45.162	QP	45.95	12.94	6.74	32.19	0.00	33.44	40.00	6.5	100	241	
Vert.	423.229	QP	41.47	16.22	9.34	31.98	0.00	35.05	46.00	10.9	100	141	
Vert.	2351.977	PK	45.23	27.84	14.62	39.46	2.24	50.47	73.90	23.4	202	334	
Vert.	3118.310	PK	46.81	28.85	6.36	39.32	2.24	44.94	73.90	28.9	145	33	
Vert.	4882.000	PK	44.88	31.37	7.33	39.50	2.24	46.32	73.90	27.5	169	71	
Vert.	7323.000	PK	44.31	37.01	9.01	39.35	2.24	53.22	73.90	20.6	150	0	
Vert.	9764.000	PK	44.71	38.92	10.42	39.41	2.24	56.88	73.90	17.0	150	0	
Vert.	19528.000	PK	45.97	40.08	11.88	47.70	-9.54	40.69	73.90	33.2	110	197	
Vert.	2351.977	AV	34.00	27.84	14.62	39.46	2.24	39.24	53.90	14.6	202	334	
Vert.	3118.310	AV	39.46	28.85	6.36	39.32	2.24	37.59	53.90	16.3	145	33	
Vert.	4882.000	AV	33.95	31.37	7.33	39.50	2.24	35.39	53.90	18.5	169	71	
Vert.	7323.000	AV	31.63	37.01	9.01	39.35	2.24	40.54	53.90	13.3	150	0	
Vert.	9764.000	AV	32.48	38.92	10.42	39.41	2.24	44.65	53.90	9.2	150	0	
Vert.	19528.000	AV	35.55	40.08	11.88	47.70	-9.54	30.27	53.90	23.6	110	197	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.88 m / 3.0 m) = 2.24 dB

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

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

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Shonan EMC Lab.

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Radiated Spurious Emission

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka	Shiro Kobayashi	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -18 GHz)	(18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	134.152	QP	48.55	14.13	7.48	32.13	0.00	38.03	43.50	5.4	232	68	
Hori.	135.869	QP	47.16	14.32	7.51	32.13	0.00	36.86	43.50	6.6	231	73	
Hori.	137.591	QP	45.27	14.37	7.56	32.13	0.00	35.07	43.50	8.4	227	142	
Hori.	141.038	QP	47.56	14.53	7.63	32.13	0.00	37.59	43.50	5.9	234	161	
Hori.	423.219	QP	44.06	16.22	9.34	31.98	0.00	37.64	46.00	8.3	100	233	
Hori.	457.084	QP	43.87	16.81	9.47	31.97	0.00	38.18	46.00	7.8	100	231	
Hori.	490.920	QP	43.58	17.63	9.59	31.96	0.00	38.84	46.00	7.1	100	228	
Hori.	2351.977	PK	45.10	27.84	14.62	39.46	2.24	50.34	73.90	23.5	256	254	
Hori.	2483.500	PK	44.41	27.65	14.76	39.46	2.24	49.60	73.90	24.3	256	254	
Hori.	3118.310	PK	44.88	28.85	6.36	39.32	2.24	43.01	73.90	30.8	156	106	
Hori.	4960.000	PK	43.44	31.54	7.43	39.50	2.24	45.15	73.90	28.7	129	155	
Hori.	7440.000	PK	43.92	37.10	9.16	39.42	2.24	53.00	73.90	20.9	150	0	
Hori.	9920.000	PK	43.53	38.97	10.41	39.30	2.24	55.85	73.90	18.0	150	0	
Hori.	19840.000	PK	43.53	39.94	12.02	47.72	-9.54	38.23	73.90	35.6	145	216	
Hori.	2351.977	AV	33.55	27.84	14.62	39.46	2.24	38.79	53.90	15.1	256	254	
Hori.	2483.500	AV	32.69	27.65	14.76	39.46	2.24	37.88	53.90	16.0	256	254	
Hori.	3118.310	AV	35.90	28.85	6.36	39.32	2.24	34.03	53.90	19.8	156	106	
Hori.	4960.000	AV	32.62	31.54	7.43	39.50	2.24	34.33	53.90	19.5	129	155	
Hori.	7440.000	AV	31.71	37.10	9.16	39.42	2.24	40.79	53.90	13.1	150	0	
Hori.	9920.000	AV	31.47	38.97	10.41	39.30	2.24	43.79	53.90	10.1	150	0	
Hori.	19840.000	AV	32.36	39.94	12.02	47.72	-9.54	27.06	53.90	26.8	145	216	
Vert.	35.809	QP	35.48	16.46	6.56	32.20	0.00	26.30	40.00	13.7	100	357	
Vert.	45.160	QP	45.76	12.95	6.74	32.19	0.00	33.26	40.00	6.7	100	214	
Vert.	423.224	QP	41.38	16.22	9.34	31.98	0.00	34.96	46.00	11.0	100	142	
Vert.	2351.977	PK	45.09	27.84	14.62	39.46	2.24	50.33	73.90	23.5	201	333	
Vert.	2483.500	PK	45.20	27.65	14.76	39.46	2.24	50.39	73.90	23.5	140	178	
Vert.	3118.310	PK	47.34	28.85	6.36	39.32	2.24	45.47	73.90	28.4	147	32	
Vert.	4960.000	PK	44.92	31.54	7.43	39.50	2.24	46.63	73.90	27.2	240	130	
Vert.	7440.000	PK	44.04	37.10	9.16	39.42	2.24	53.12	73.90	20.7	150	0	
Vert.	9920.000	PK	43.19	38.97	10.41	39.30	2.24	55.51	73.90	18.3	150	0	
Vert.	19840.000	PK	43.37	39.94	12.02	47.72	-9.54	38.07	73.90	35.8	115	189	
Vert.	2351.977	AV	34.00	27.84	14.62	39.46	2.24	39.24	53.90	14.6	201	333	
Vert.	2483.500	AV	33.10	27.65	14.76	39.46	2.24	38.29	53.90	15.6	140	178	
Vert.	3118.310	AV	39.64	28.85	6.36	39.32	2.24	37.77	53.90	16.1	147	32	
Vert.	4960.000	AV	33.07	31.54	7.43	39.50	2.24	34.78	53.90	19.1	240	130	
Vert.	7440.000	AV	31.93	37.10	9.16	39.42	2.24	41.01	53.90	12.8	150	0	
Vert.	9920.000	AV	31.54	38.97	10.41	39.30	2.24	43.86	53.90	10.0	150	0	
Vert.	19840.000	AV	32.75	39.94	12.02	47.72	-9.54	27.45	53.90	26.4	115	189	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.88 m / 3.0 m) = 2.24 dB

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

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

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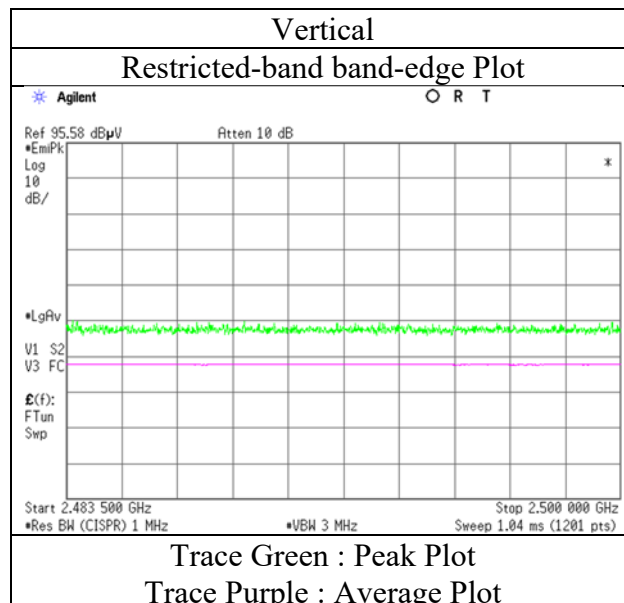
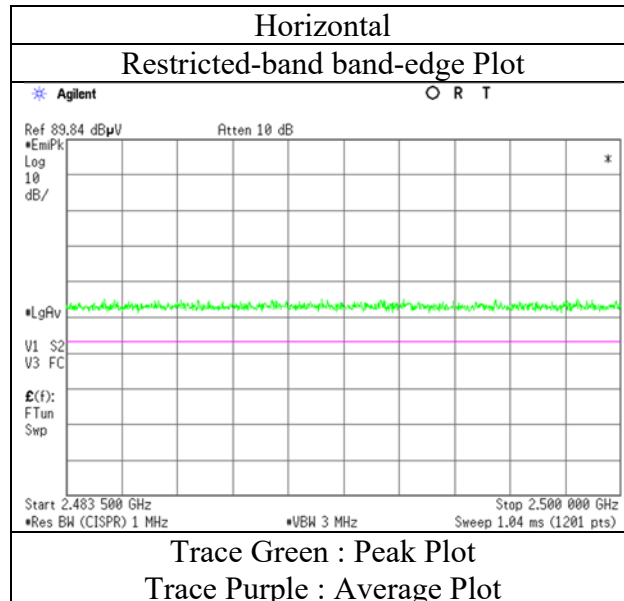
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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12658405S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	3
Date	December 23, 2018
Temperature / Humidity	21 deg. C / 32 % RH
Engineer	Shiro Kobayashi (1 GHz -13 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz

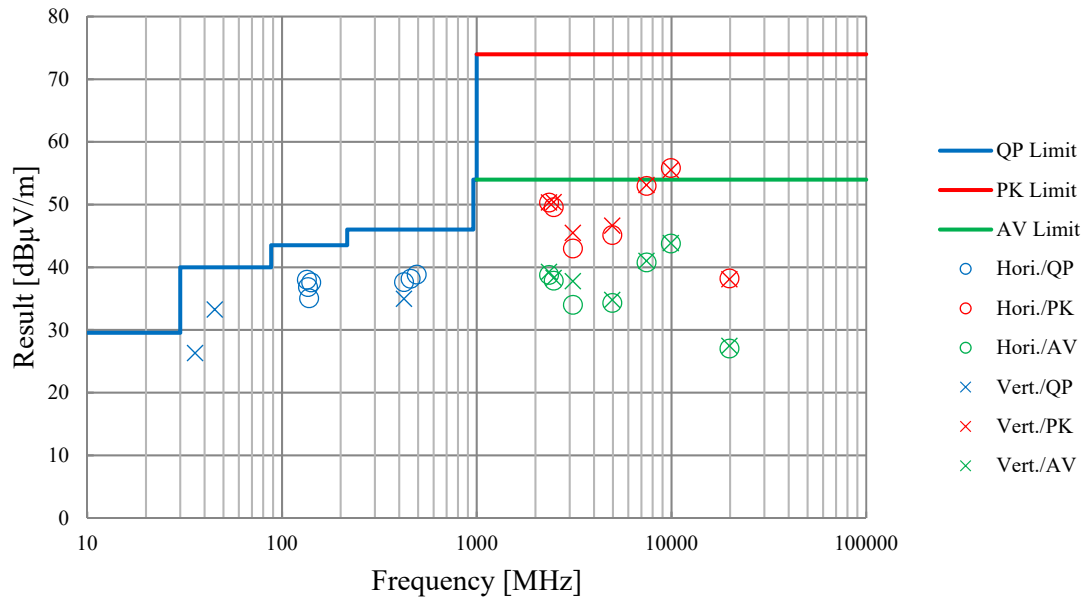


* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.

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

Radiated Spurious Emission
(Plot data, Worst case)

Report No.	12658405S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	3	3	3
Date	December 24, 2018	December 23, 2018	December 24, 2018
Temperature / Humidity	20 deg. C / 37 % RH	21 deg. C / 32 % RH	20 deg. C / 37 % RH
Engineer	Makoto Hosaka	Shiro Kobayashi	Makoto Hosaka
	(30 MHz -1 GHz)	(1 GHz -18 GHz)	(18 MHz -26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz		

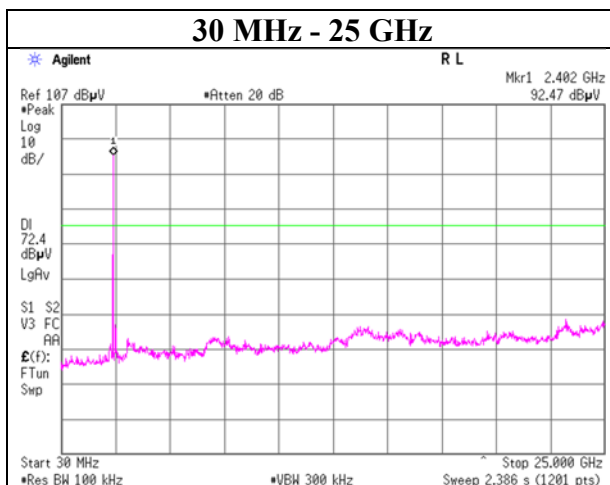
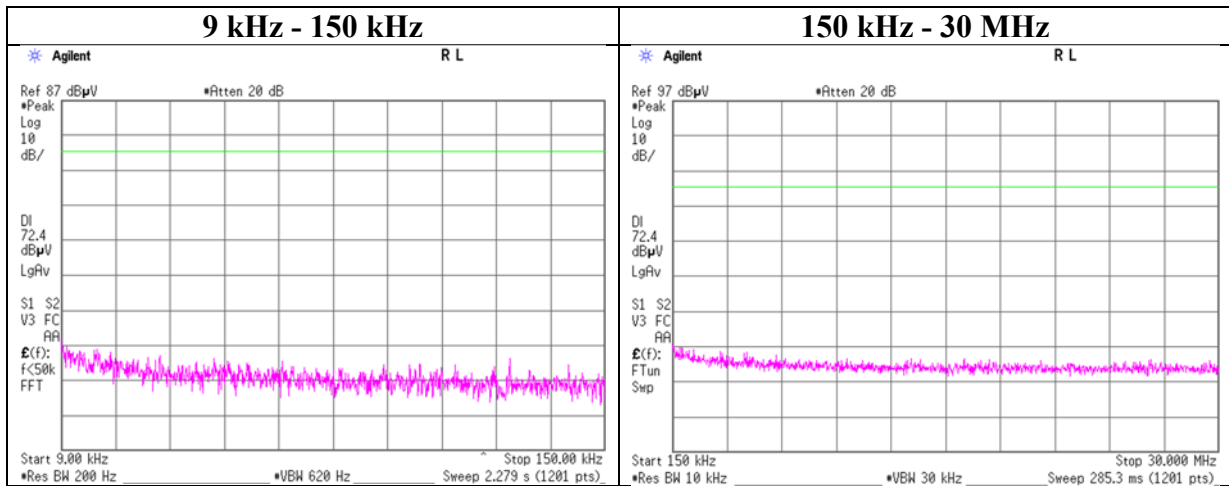


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, DH5

2402 MHz



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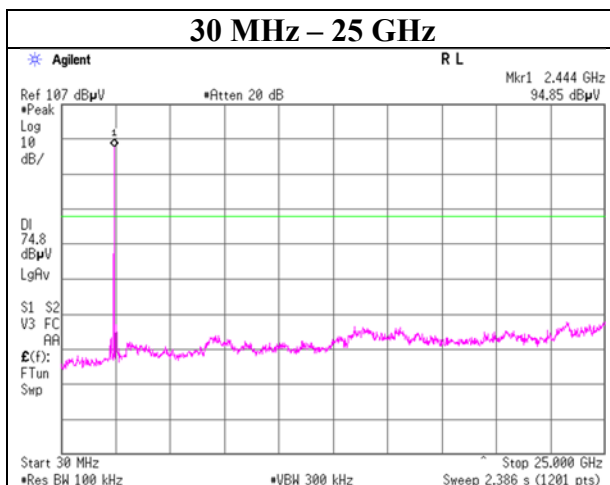
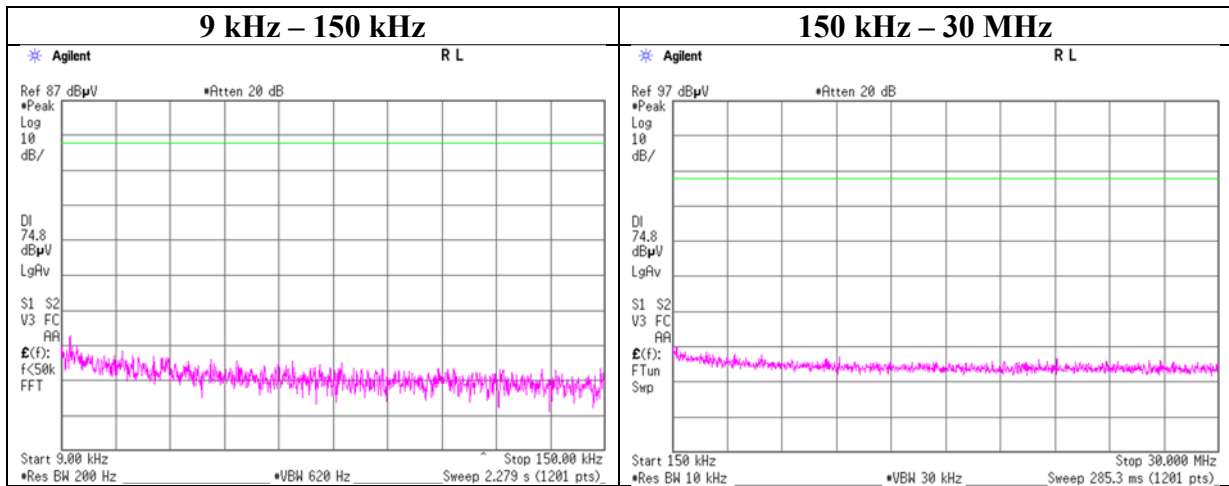
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Conducted Spurious Emission

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, DH5

2441 MHz



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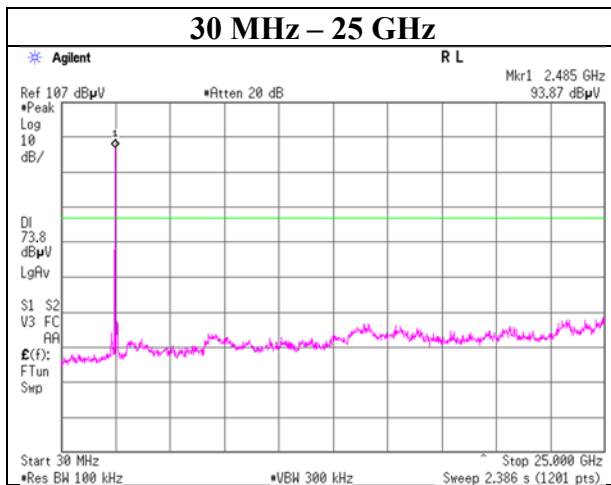
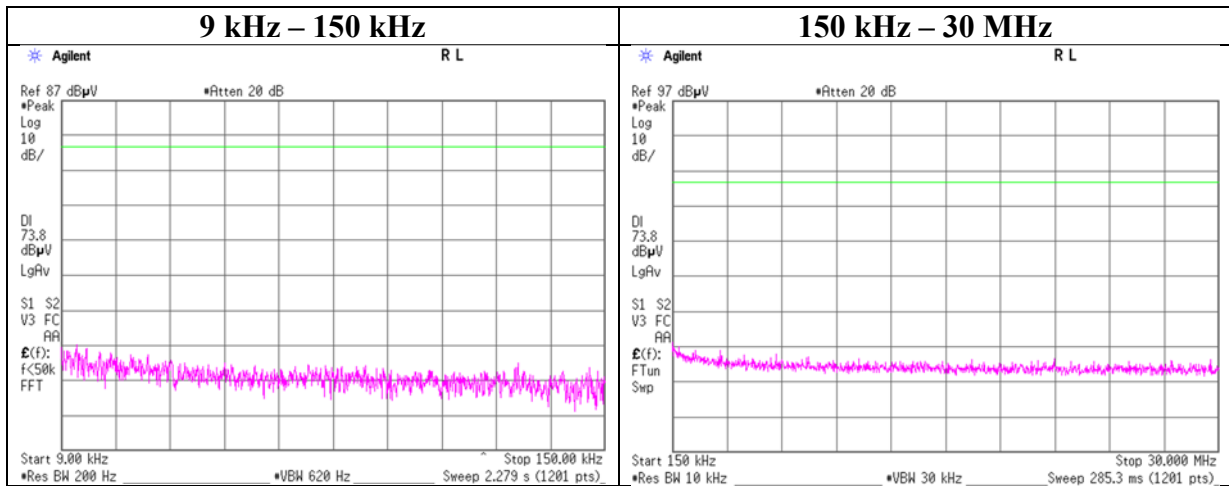
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Conducted Spurious Emission

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, DH5

2480 MHz



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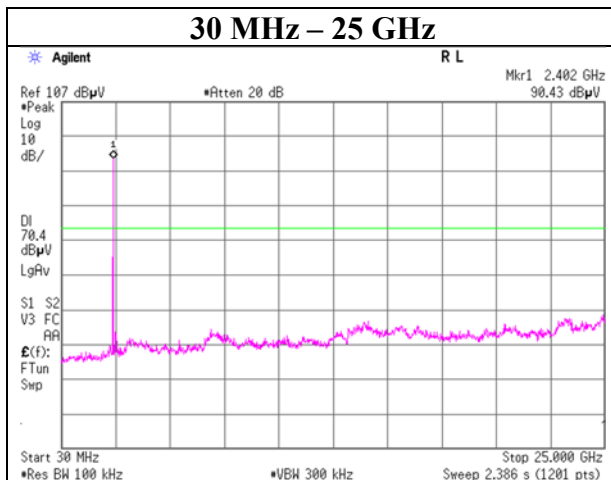
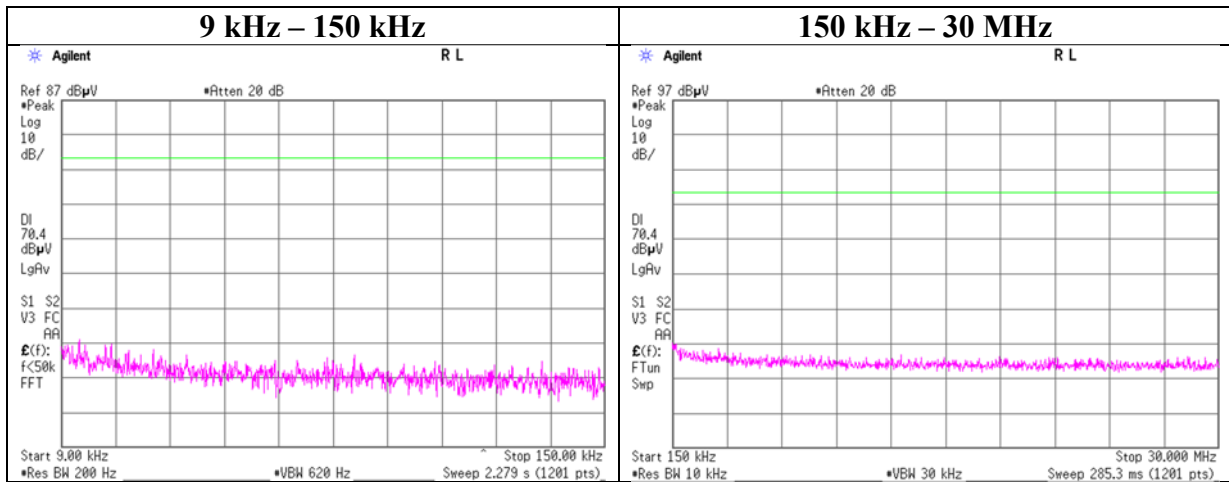
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Conducted Spurious Emission

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, 3DH5

2402 MHz



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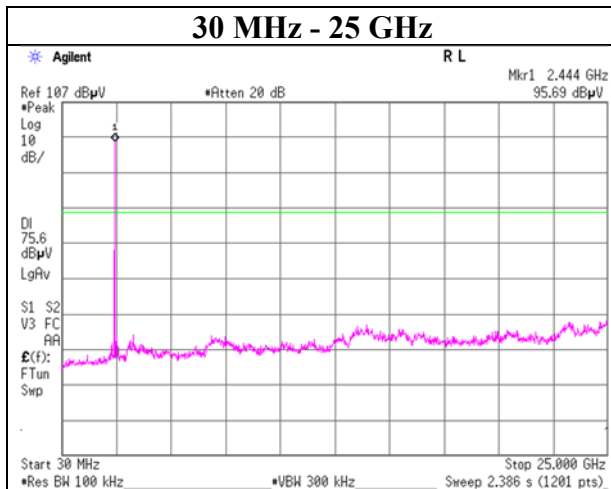
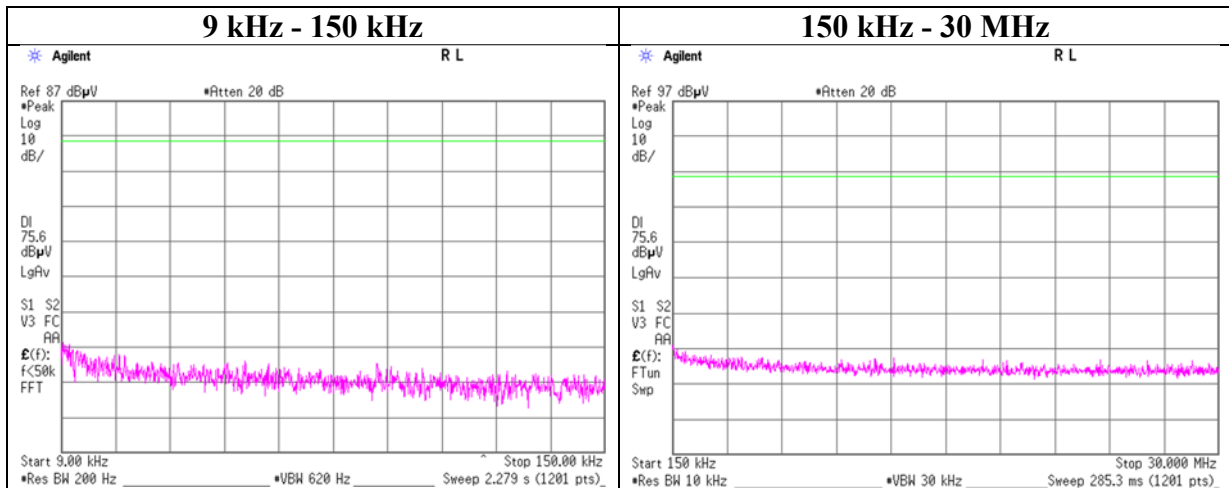
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Facsimile : +81 463 50 6401

Conducted Spurious Emission

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, 3DH5

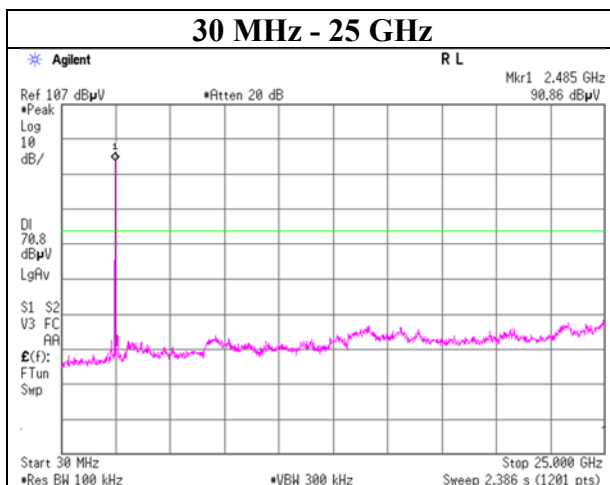
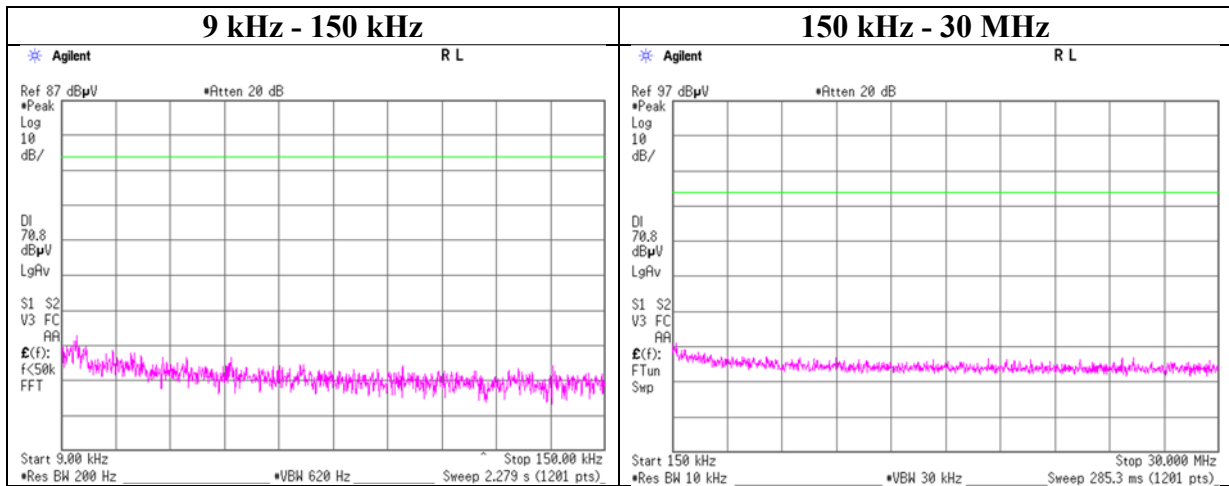
2441 MHz



Conducted Spurious Emission

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx, Hopping Off, 3DH5

2480 MHz



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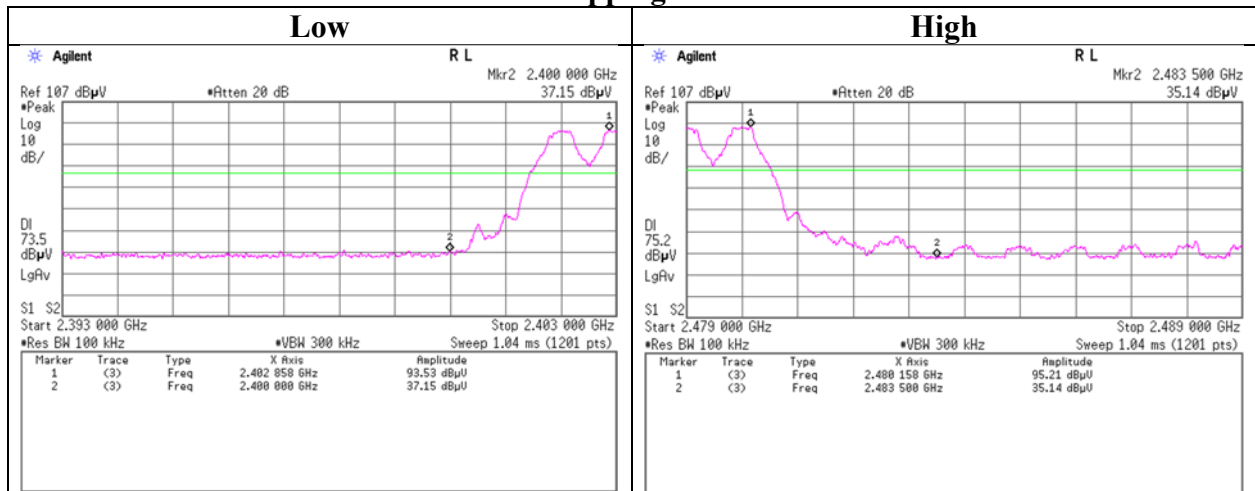
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

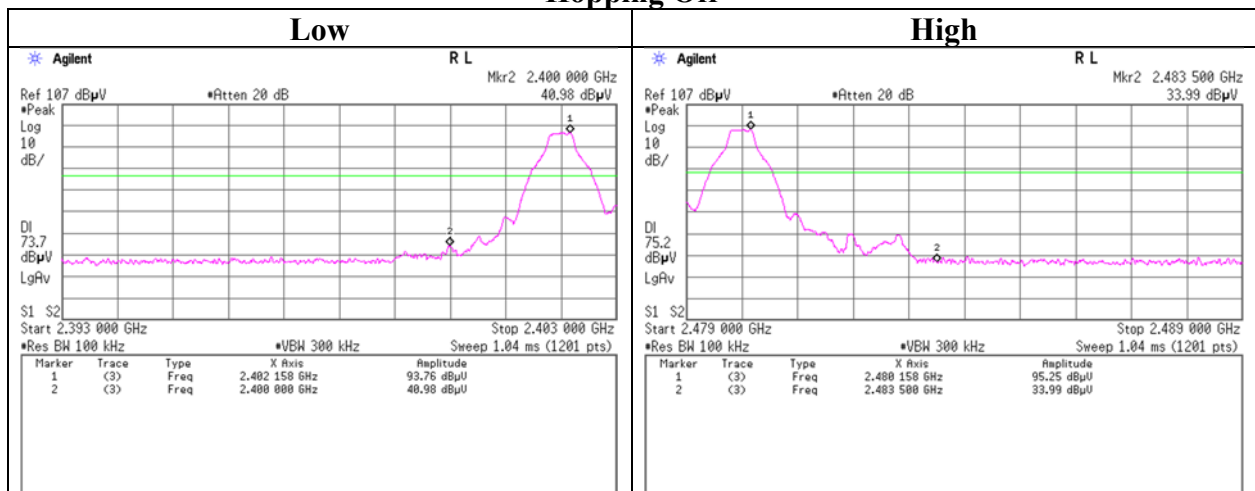
Conducted Emission Band Edge compliance

Report No.	12658405S-A-R1
Test place	Shonan EMC Lab. No.3 Shielded Room
Date	December 23, 2018
Temperature / Humidity	20 deg. C / 37 % RH
Engineer	Shiro Kobayashi
Mode	Tx DH5

Hopping On



Hopping Off



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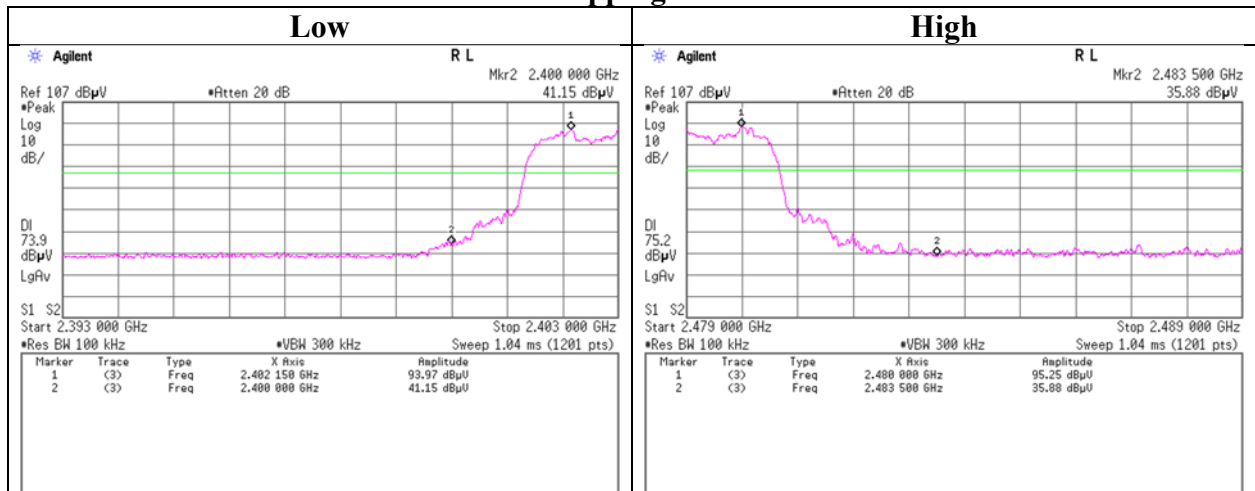
Telephone : +81 463 50 6400

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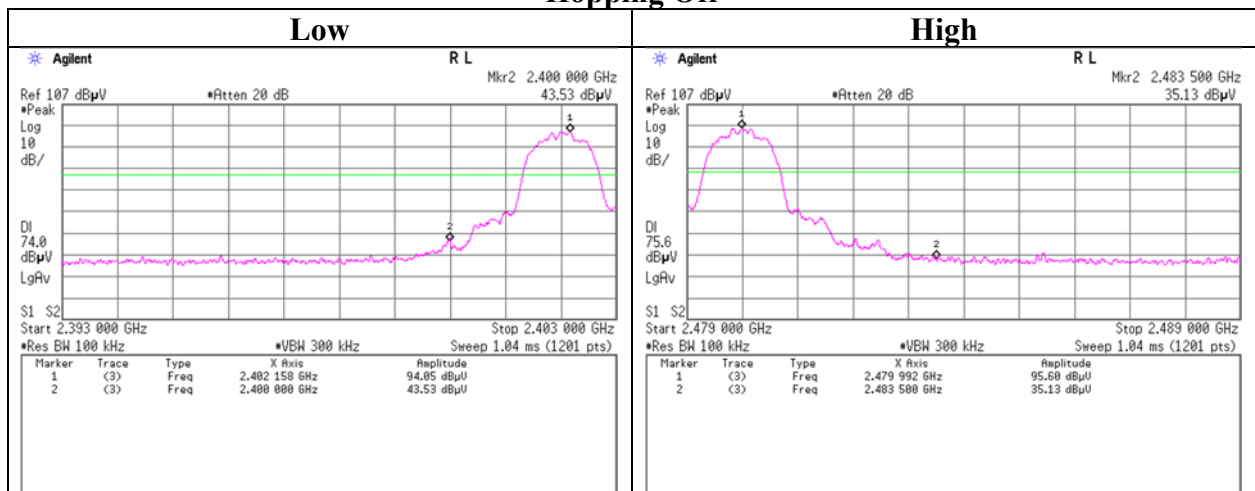
Conducted Emission Band Edge compliance

Report No. 12658405S-A-R1
Test place Shonan EMC Lab. No.3 Shielded Room
Date December 23, 2018
Temperature / Humidity 20 deg. C / 37 % RH
Engineer Shiro Kobayashi
Mode Tx 3DH5

Hopping On



Hopping Off



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APPENDIX 2: Test instruments

Test Instruments

Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
SAT10-16	AT	160494	Attenuator	Weinschel Corp.	54A-10	83406	2017/12/8	2018/12/31	12
SCC-G32	AT	145183	Coaxial Cable	Junkosha	MWX241-02000KMSK MS	OCT-09-13-005	2018/11/25	2019/11/30	12
SOS-06	AT	146294	Humidity Indicator	A&D	AD-5681	4062118	2018/12/5	2019/12/31	12
SPM-07	AT	146247	Power Meter	AGILENT	8990B	MY5100272	2018/7/13	2019/7/31	12
SPSS-04	AT	146310	Power sensor	AGILENT	N1923A	MY5326009	2018/7/13	2019/7/31	12
SSA-03	AT	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2018/8/30	2019/8/31	12
STS-03	AT,RE	146210	Digital Hitester	HIOKI	3805-50	80997823	2018/10/16	2019/10/31	12
COTS-SEMI-5	RE	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,M E,PE)	-	-	-	-
KJM-02	RE	146432	Measure	TAJIMA	GL19-55	-	-	-	-
SAEC-03(NSA)	RE	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2018/6/2	2019/6/30	12
SAEC-03(SVSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2018/7/17	2019/7/31	12
SAF-03	RE	145126	Pre Amplifier	SONOMA	310N	290213	2018/2/16	2019/2/28	12
SAF-04	RE	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2018/6/26	2019/6/30	12
SAF-08	RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2018/3/27	2019/3/31	12
SAT10-06	RE	145137	Attenuator	AGILENT	8493C-010	74865	2018/11/25	2019/11/30	12
SAT6-13	RE	167094	Attenuator	JFW	50HF-006N	-	2018/2/9	2019/2/28	12
SBA-03	RE	145023	Biconical Antenna	Schwarzbeck	BBA9106	91032666	2018/6/17	2019/6/30	12
SCC-C1/C2/C3/C4/C5/C10/S RSE-03	RE	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSF A/141PE/141P E/141PE/141P	-/0901-271(RF Selector)	2018/4/9	2019/4/30	12
SCC-G05	RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2018/1/29	2019/1/31	12
SCC-G22	RE	145180	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	2018/5/11	2019/5/31	12
SCC-G33	RE	145184	Coaxial Cable	Junkosha	MWX241-01000KMSK MS	-	2018/4/20	2019/4/30	12
SCC-G41	RE	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNM S/B	1612S006	2018/1/29	2019/1/31	12
SCC-G45	RE	168301	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102 E	800137/2EA	2018/3/28	2019/3/31	12
SFL-18	RE	145305	Highpass Filter	MICRO-TRONICS	HPM50111	119	2018/4/20	2019/4/30	12
SHA-03	RE	145501	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	2018/7/23	2019/7/31	12
SHA-04	RE	145512	Horn Antenna	ETS LINDGREN	Sep-60	LM3640	2018/7/23	2019/7/31	12
SLA-07	RE	145529	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	196	2018/6/17	2019/6/30	12
SOS-05	RE	146293	Humidity Indicator	A&D	AD-5681	4062518	2018/10/25	2019/10/31	12
SSA-02	RE	145800	Spectrum Analyzer	AGILENT	E4448A	MY48250106	2018/3/5	2019/3/31	12
STR-08	RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2018/11/28	2019/11/30	12

*Hyphens for Last Calibration Date, Calibration Due 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.

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

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

Test item: RE: Radiated Emission test, AT: Antenna Terminal Conducted test

UL Japan, Inc.

Shonan EMC Lab.

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