



RADIO TEST REPORT

Test Report No. : 12903002S-A-R1

Applicant : Sony Corporation
Type of Equipment : AV Receiver
Model No. : XAV-AX8000
FCC ID : AK8XAVAX8000
Test regulation : FCC Part 15 Subpart C: 2019
Test Result : Complied (Refer to SECTION 3.2)

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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.
5. This test report must not be used by the customer to claim product certification, approval, or 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. 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 12903002S-A. 12903002S-A is replaced with this report.

Date of test: June 13 to 23, 2019

Representative test engineer:

T. Yamada

Toshinori Yamada
Engineer
Consumer Technology Division

Approved by:

A. Hayashi

Akio Hayashi
Leader
Consumer Technology Division



CERTIFICATE 1266.03

- ☐ 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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1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
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SECTION 1: Customer information

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

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No., 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 (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 above 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-AX8000
Serial No.	:	Refer to SECTION 4.2
Rating	:	DC 12 V
Receipt Date of Sample (Information from test lab.)	:	June 6, 2019
Country of Mass-production	:	Thailand
Condition of EUT	:	Production 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-AX8000 (referred to as the EUT in this report) is an AV Receiver.

Radio Specification

Bluetooth (BDR / EDR function)

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	FHSS
Antenna type	:	Meander Monopole antenna
Antenna Gain	:	-0.63 dBi
Clock frequency (Maximum)	:	26MHz

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on June 4, 2019 and effective July 5, 2019 except 15.258

Title : FCC 47CFR Part15 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 revision on June 4, 2019, does not affect the test specification applied to the EUT.

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

3.2 Procedures and results

Item	Test 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: KDB 558074 D01 15.247 Meas Guidance v05r02 IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (b)	See data.	Complied a)	Conducted
20 dB Bandwidth	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (a)		Complied a)	Conducted
Number of Hopping Frequency	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (d)		Complied b)	Conducted
Dwell time	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 IC: -	FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (d)		Complied c)	Conducted
Maximum Peak Output Power	FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 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: KDB 558074 D01 15.247 Meas Guidance v05r02 IC: RSS-Gen 6.13	FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	3.1 dB 118.659 MHz, 120.359 MHz, QP, Horizontal, Tx, DH5, 2480 MHz	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).

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.

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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	- a)	Conducted
a) Refer to APPENDIX 1 (data of 20 dB 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

EMI

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	No. 4 SAC / SR	No. 5,6,8 SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.9 dB	2.8 dB	2.9 dB	2.9 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	-	-
Radiated emission (Measurement distance: 1 m)	18 GHz-40 GHz	5.6 dB	5.6 dB	5.6 dB	-	-
	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	0.81 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	1.53 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.95 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.21 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	2.3 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.4 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.4 dB
Bandwidth Measurement	0.61 %
Duty cycle and Time Measurement	0.012 %

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.

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

Telephone: +81 463 50 6400, Facsimile: +81 463 50 6401

A2LA Certificate Number: 1266.03 (FCC Test Firm Registration Number: 626366, ISED Lab Company Number: 2973D)

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber	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.

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

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Facsimile : +81 463 50 6401

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

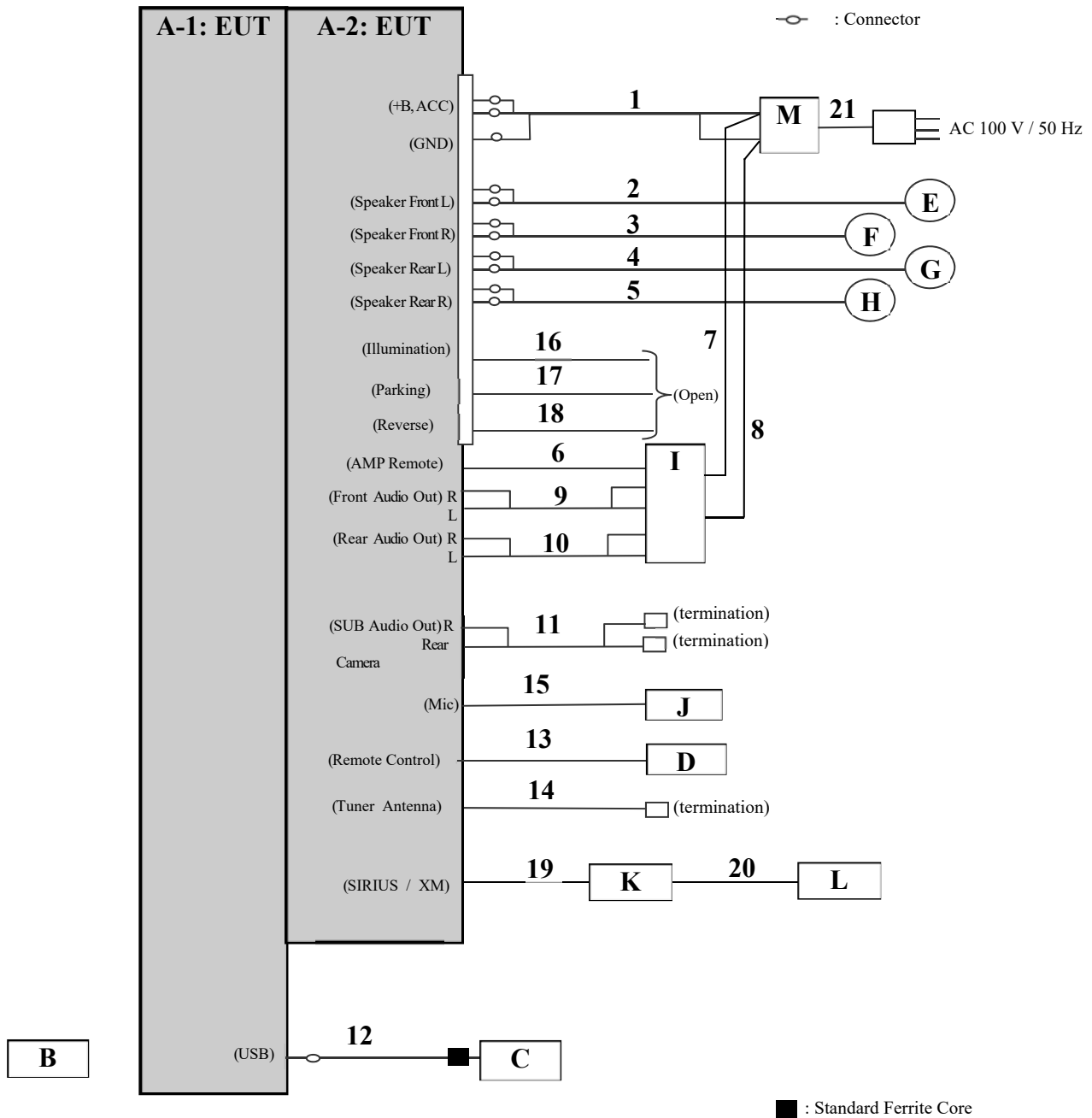
4.1 Operating Mode(s)

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
20 dB 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 test items based on Bluetooth Core specification. *EUT has the power settings by the software as follows; Power settings: BDR: Ext.=26, Int.=45 EDR: Ext.=42, Int.=48 Software: CSR BlueSuite BlueTest Version 2.5.8 *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.		

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-1 A-2	AV Receiver	XAV-AX8000	50, *1) 49 *2)	Sony	EUT
B	Remote Controller	RM-X170	-	Sony	-
C	USB memory	USM4GU	-	Sony	-
D	Wired Remote Controller	RM-X4S	-	Sony	-
E	Speaker 1	IS-10	-	-	-
F	Speaker 2	IS-10	-	-	-
G	Speaker 3	XS-PKF1621	-	Sony	-
H	Speaker 4	XS-PKF1621	-	Sony	-
I	Monaural Power Amplifier	XM-4S-020	-	Sony	-
J	Mic	-	-	-	-
K	SIRIUS XM CONNECT VEHICLE TUNER	SXV300	1627	Sony	-
L	Vehicle Satellite Radio Antenna works on both SIRIUS and XM Networks	NGVA3	1624A	Sony	-
M	DC Power Supply	PAN35-10A	NA000955	Kikusui	-

*1) Used for Antenna Terminal conducted tests

*2) Used for Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Power	0.15 + 1.8	Unshielded	Unshielded	-
2	Speaker (1)	0.15 + 2.0	Unshielded	Unshielded	-
3	Speaker (2)	0.15 + 2.0	Unshielded	Unshielded	-
4	Speaker (3)	0.15 + 2.0	Unshielded	Unshielded	-
5	Speaker (4)	0.15 + 2.0	Unshielded	Unshielded	-
6	AMP Remote	0.15 + 1.0	Unshielded	Unshielded	-
7	DC Power (+)	2.5	Unshielded	Unshielded	-
8	DC Power (-)	2.5	Unshielded	Unshielded	-
9	RCA (Front Audio Out)	5.0	Shielded	Shielded	-
10	RCA (Rear Audio Out)	5.0	Shielded	Shielded	-
11	RCA (SUB Audio Out)	3.0	Shielded	Shielded	-
12	USB	0.9	Shielded	Shielded	-
13	Remote Control	2.0	Shielded	Shielded	-
14	Tuner Antenna	1.1	Shielded	Shielded	-
15	Mic	3.5	Unshielded	Unshielded	-
16	Illumination	0.15 + 1.0	Unshielded	Unshielded	-
17	Parking	2.0	Unshielded	Unshielded	-
18	Reverse	0.15 + 1.0	Unshielded	Unshielded	-
19	Signal	0.65	Shielded	Shielded	-
20	SIRIUS antenna	7.1	Shielded	Shielded	-
21	AC	2.0	Unshielded	Unshielded	-

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

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Facsimile : +81 463 50 6401

SECTION 5: Radiated Spurious Emission

Test Procedure

[For below 1 GHz]

EUT was placed on a platform of nominal size, 1.0 m by 2.0 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 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

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

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

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

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

Test Antennas are used as below;

Frequency	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.

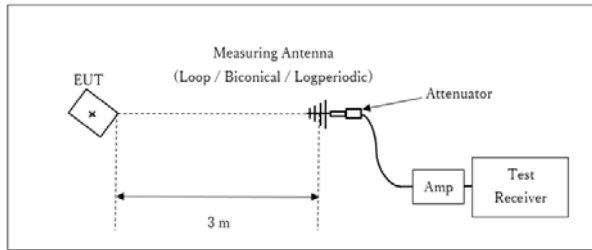
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9 (IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

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

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

Figure 2: Test Setup

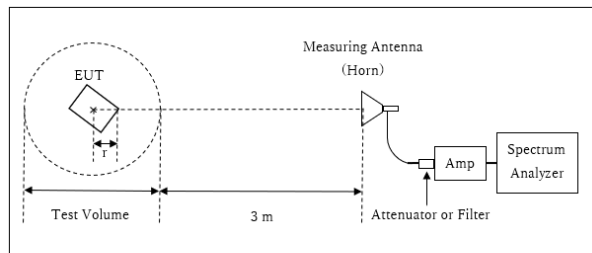
Below 1 GHz



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: $20 \times \log (3.84 \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

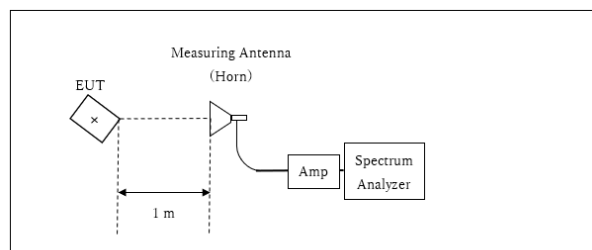
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.84 \text{ m}$

Test Volume : 2.0 m

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

$r = 0.16 \text{ m}$

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 each position of -30 deg. to +30 deg. of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Antenna polarization	Spurious			
	Below 1 GHz	Above 1 GHz		
		1 GHz- 2.8 GHz	2.8 GHz -13 GHz	13 GHz - 26.5 GHz
Horizontal	0 deg.	0 deg.	0 deg.	0 deg.
Vertical	0 deg.	+30 deg.	0 deg.	0 deg.

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

Measurement range : 30 MHz - 26.5 GHz

Test data : APPENDIX

Test result : Pass

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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
20 dB 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	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	100 kHz	300 kHz	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	9.1 kHz	27 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) Peak hold was applied as Worst-case measurement. *2) Reference data *3) In the frequency range below 30 MHz, 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.
 The equipment and cables were not used for factor 0 dB of the data sheets.

Test data : APPENDIX
 Test result : Pass

APPENDIX 1: Test data

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

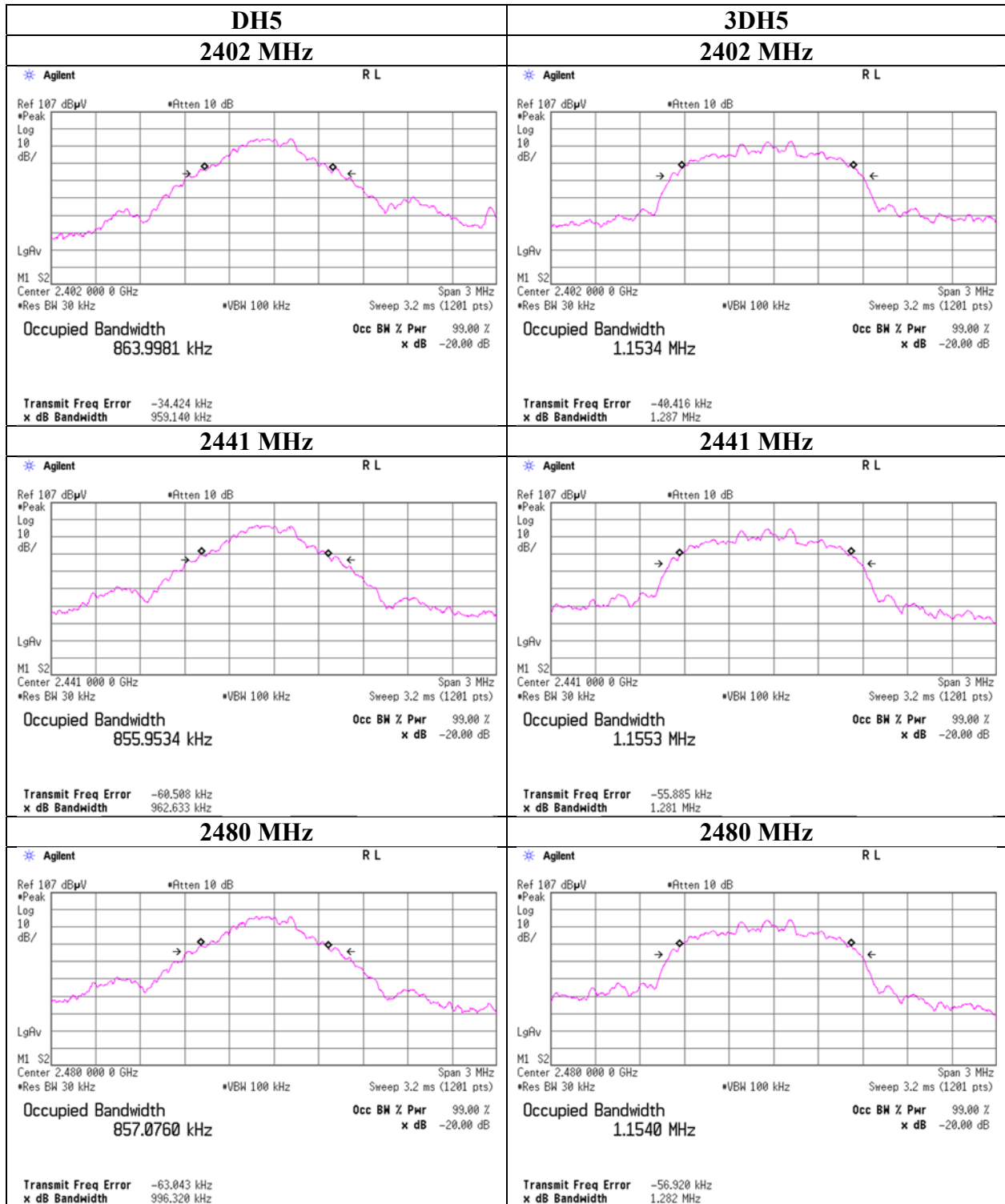
Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, Tx, Hopping On

Mode	Freq. [MHz]	20 dB Bandwidth [MHz]	99 % Occupied Bandwidth [kHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.959	863.9981	1.000	≥ 0.639
DH5	2441.0	0.963	855.9534	1.000	≥ 0.642
DH5	2480.0	0.996	857.0760	1.000	≥ 0.664
DH5	Hopping On	-	78352.1	-	-
3DH5	2402.0	1.287	1153.4	1.000	≥ 0.858
3DH5	2441.0	1.281	1155.3	1.000	≥ 0.854
3DH5	2480.0	1.282	1154.0	1.000	≥ 0.855
3DH5	Hopping On	-	78424.6	-	-

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

No limit applies to 20 dB Bandwidth.

20 dB Bandwidth and 99 % Occupied Bandwidth



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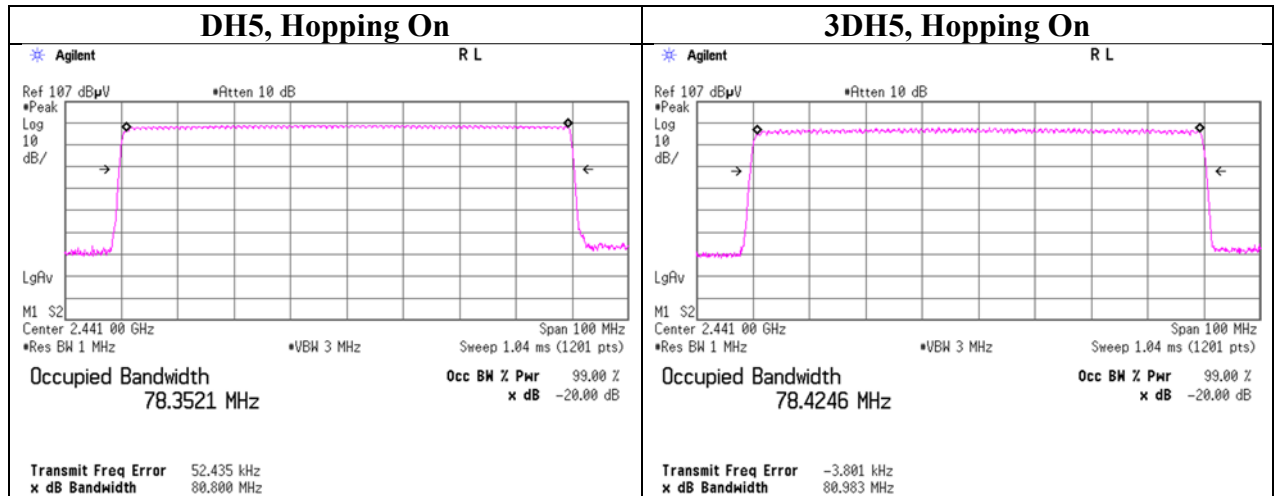
Shonan EMC Lab.

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

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20 dB Bandwidth and 99 % Occupied Bandwidth



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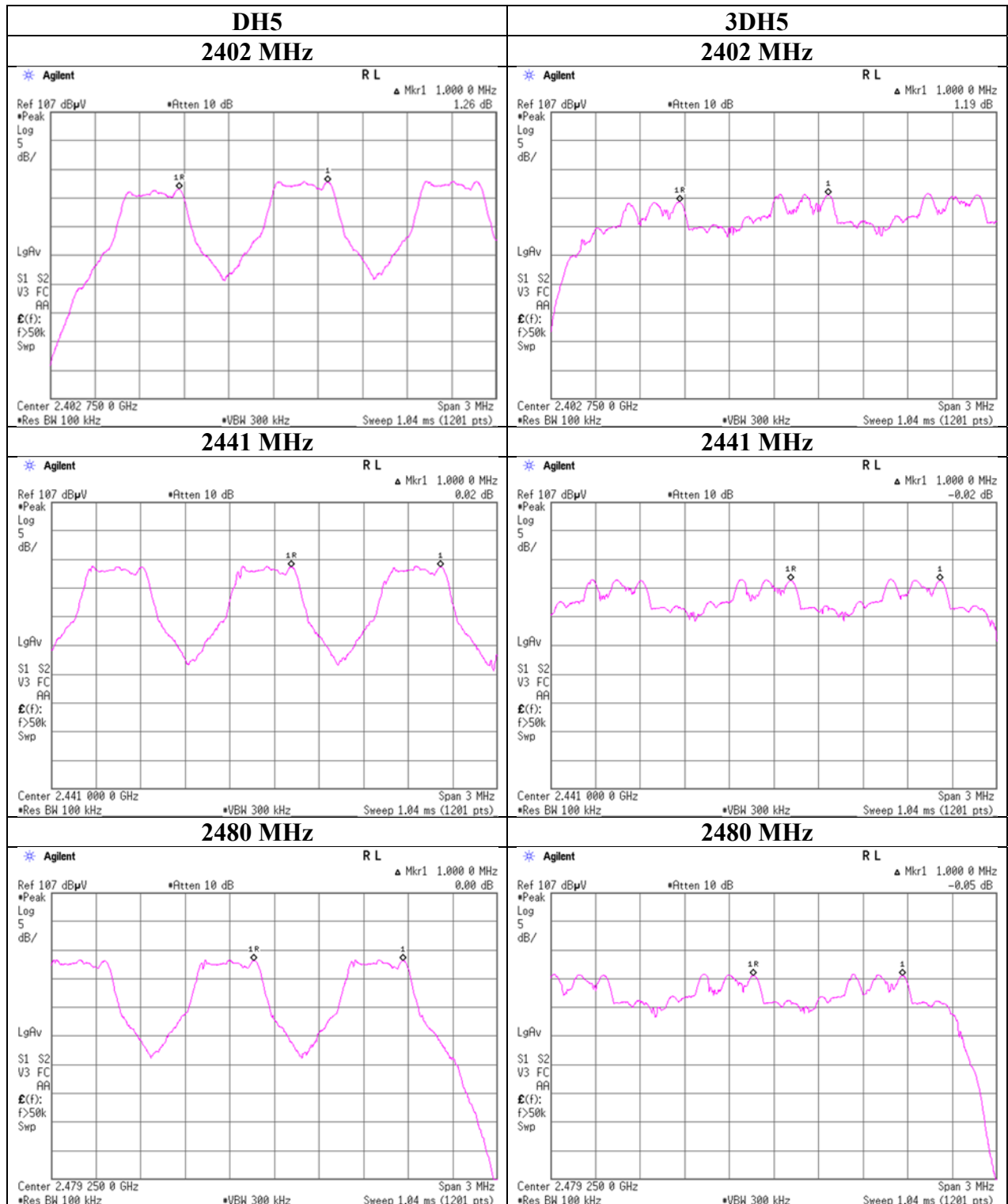
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Carrier Frequency Separation



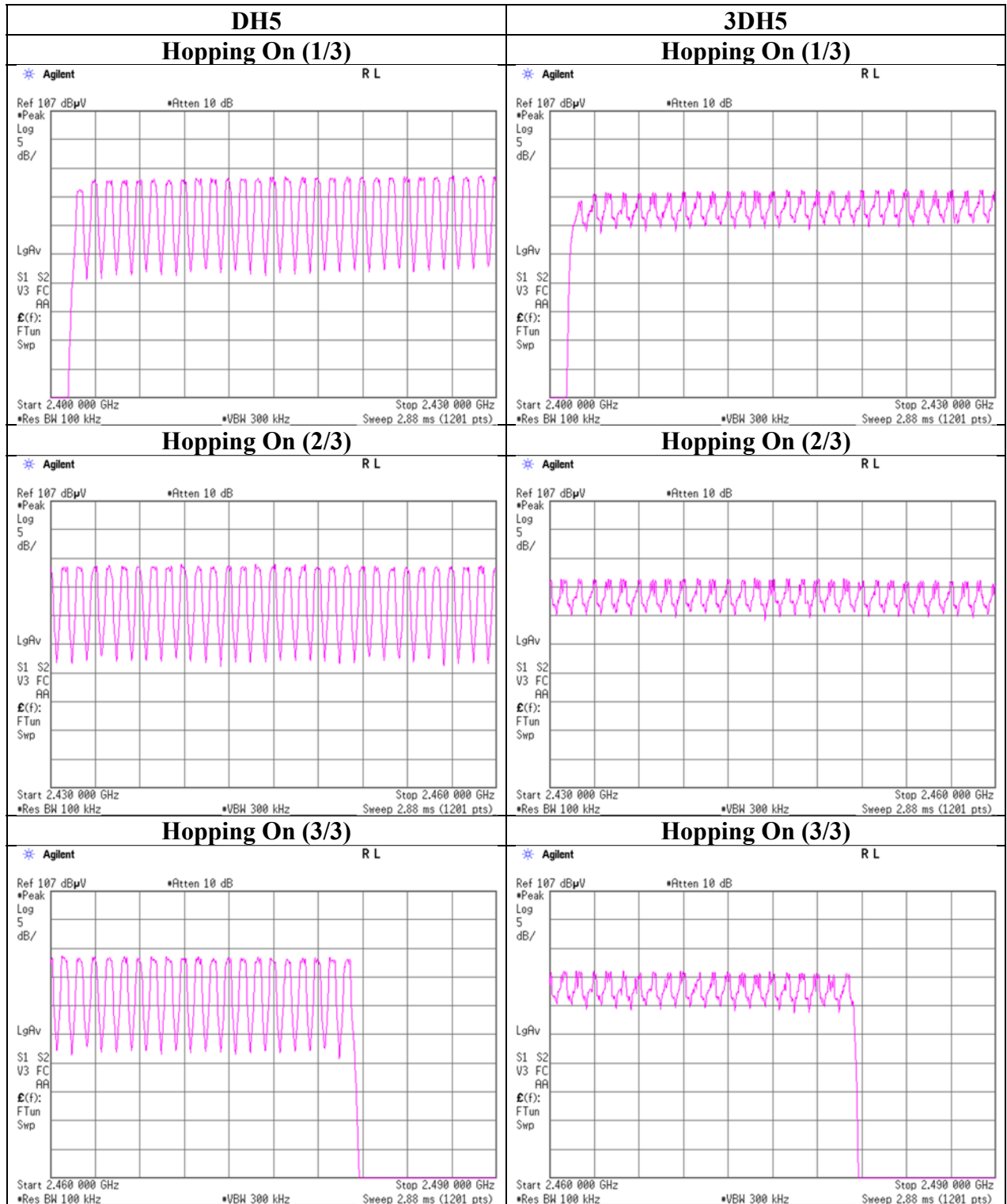
Number of Hopping Frequency

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
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.	12903002S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 13, 2019
Temperature / Humidity	25 deg. C / 47 % RH
Engineer	Toshinori Yamada
Mode	Tx, Hopping On

Mode	Number of transmission in a 31.6 (79 Hopping x 0.4) second period	Length of transmission [ms]	Result [ms]	Limit [ms]
DH1	51.0 times / 5 s x 31.6 s = 323 times	0.420	135	400
DH3	26.0 times / 5 s x 31.6 s = 165 times	1.678	277	400
DH5	17.0 times / 5 s x 31.6 s = 108 times	2.930	316	400
3DH1	51.0 times / 5 s x 31.6 s = 323 times	0.435	140	400
3DH3	26.0 times / 5 s x 31.6 s = 165 times	1.690	279	400
3DH5	17.0 times / 5 s x 31.6 s = 108 times	2.938	317	400

Sample Calculation

Result = Number of transmission x Length of transmission

*Average data of 5 tests.(except Inquiry)

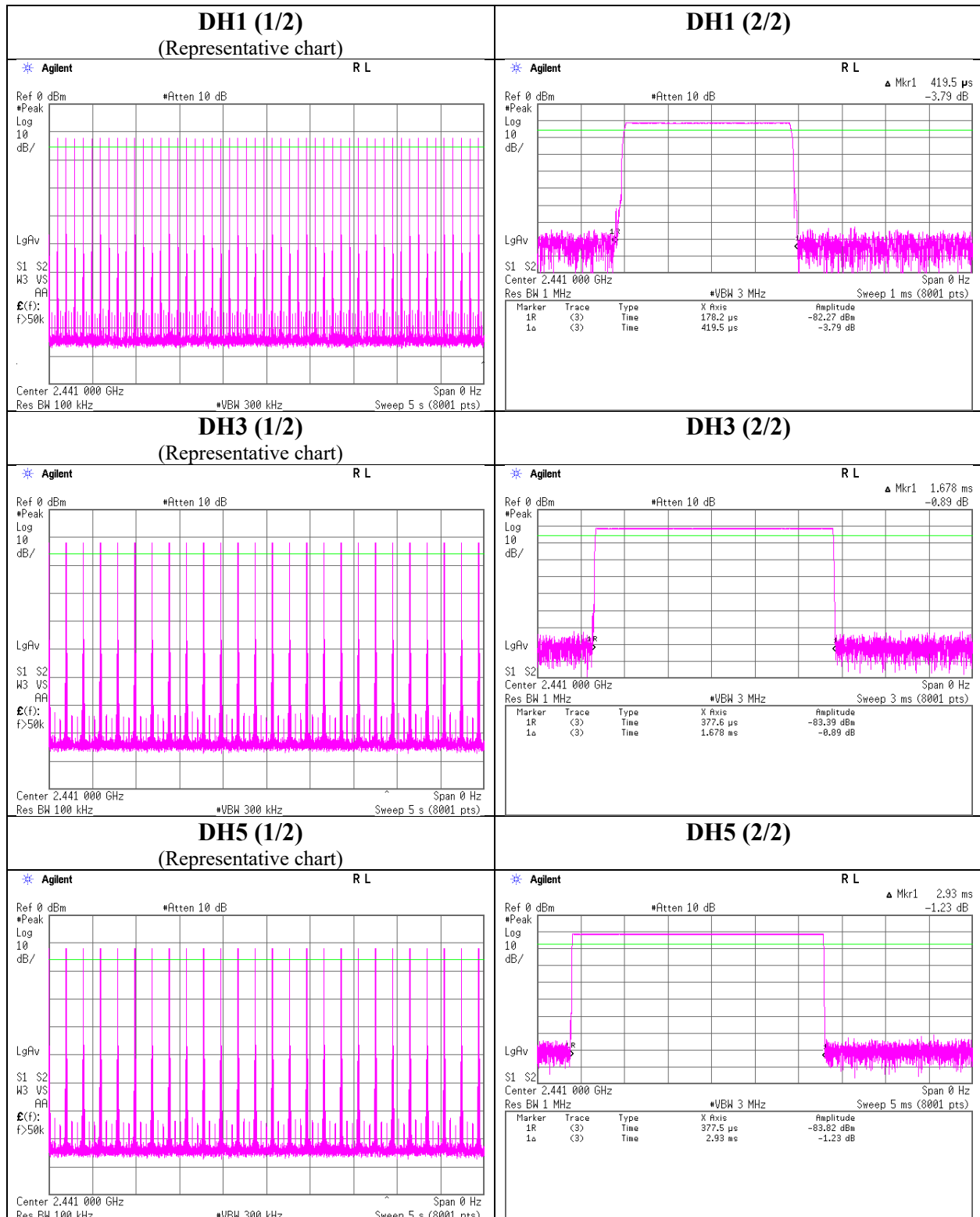
Mode	Sampling [times]					Average [times]
	1	2	3	4	5	
DH1	51	51	51	51	51	51
DH3	26	26	26	26	26	26
DH5	17	17	17	17	17	17
3DH1	51	51	51	51	51	51
3DH3	26	26	26	26	26	26
3DH5	17	17	17	17	17	17

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 $N \times 0.4$ s, where N is the number of channels being used in the hopping sequence ($20 \leq N \leq 79$), is always less than 0.4 s regardless of packet size. This is confirmed in the test report for $N = 79$.

Dwell time



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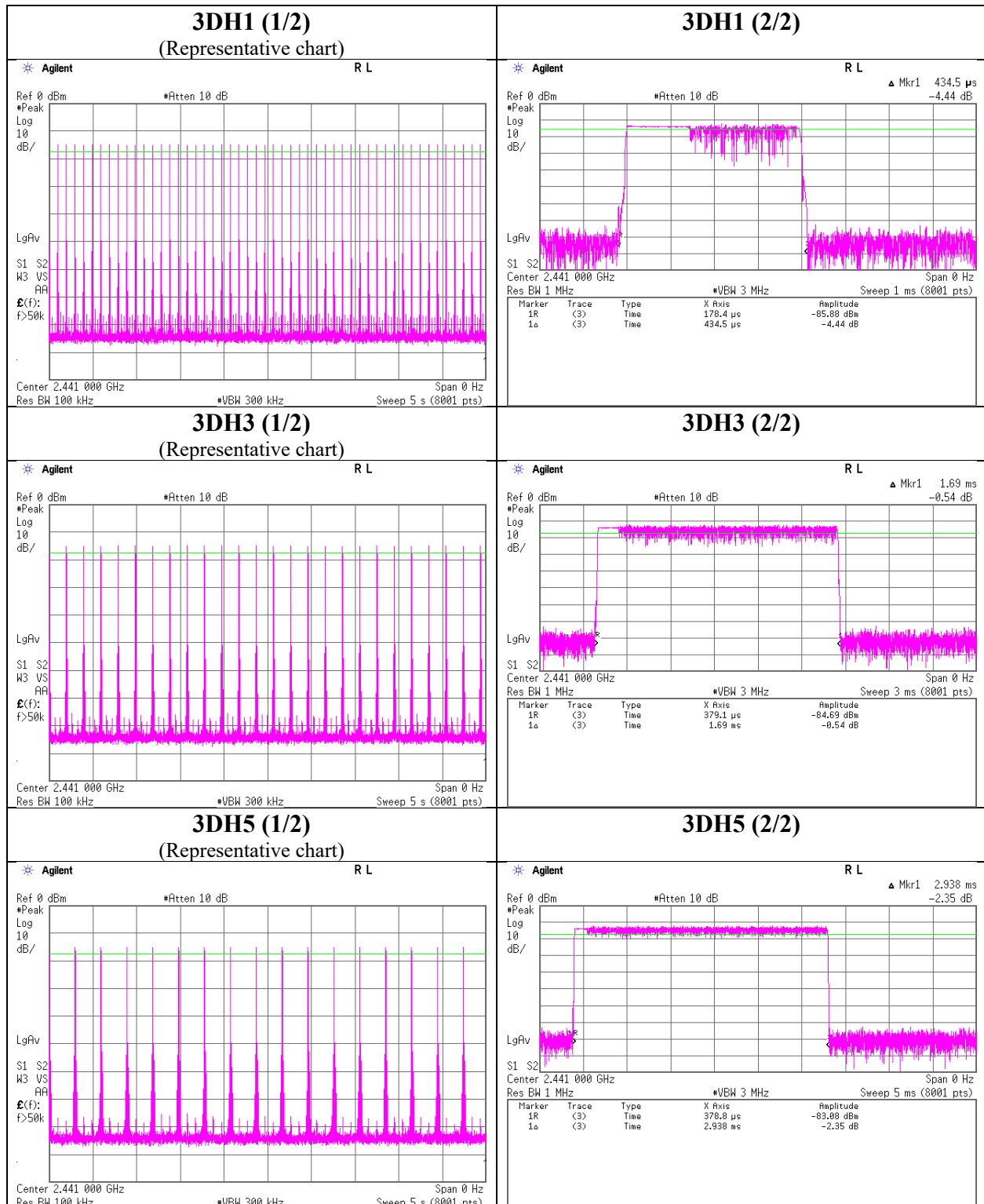
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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Dwell time



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Telephone : +81 463 50 6400

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Maximum Peak Output Power

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off

Mode	Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Conducted Power					e.i.r.p. for RSS-247					
					Result		Limit		Margin	Antenna Gain [dBi]	Result		Limit		Margin
					[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
DH5	2402.0	-12.36	1.37	9.69	-1.30	0.74	20.96	125	22.26	-0.63	-1.93	0.64	36.02	4000	37.95
DH5	2441.0	-10.23	1.38	9.69	0.84	1.21	20.96	125	20.12	-0.63	0.21	1.05	36.02	4000	35.81
DH5	2480.0	-10.73	1.39	9.70	0.36	1.09	20.96	125	20.60	-0.63	-0.27	0.94	36.02	4000	36.29
2DH5	2402.0	-13.41	1.37	9.69	-2.35	0.58	20.96	125	23.31	-0.63	-2.98	0.50	36.02	4000	39.00
2DH5	2441.0	-11.47	1.38	9.69	-0.40	0.91	20.96	125	21.36	-0.63	-1.03	0.79	36.02	4000	37.05
2DH5	2480.0	-12.05	1.39	9.70	-0.96	0.80	20.96	125	21.92	-0.63	-1.59	0.69	36.02	4000	37.61
3DH5	2402.0	-12.97	1.37	9.69	-1.91	0.64	20.96	125	22.87	-0.63	-2.54	0.56	36.02	4000	38.56
3DH5	2441.0	-11.15	1.38	9.69	-0.08	0.98	20.96	125	21.04	-0.63	-0.71	0.85	36.02	4000	36.73
3DH5	2480.0	-11.45	1.39	9.70	-0.36	0.92	20.96	125	21.32	-0.63	-0.99	0.80	36.02	4000	37.01

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: 20 ch) 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 20 dB BW without 2/3 relaxation, 125 mW power limit was applied to it.

Average Output Power (Reference data for RF Exposure)

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 13, 2019
Temperature / Humidity	25 deg. C / 47 % RH
Engineer	Toshinori Yamada
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	2402.00	-14.53	1.37	9.69	-3.47	0.45	1.08	-2.39	0.58
DH5	2441.00	-12.09	1.38	9.69	-1.02	0.79	1.08	0.06	1.01
DH5	2480.00	-12.63	1.39	9.70	-1.54	0.70	1.08	-0.46	0.90
2DH5	2402.00	-17.82	1.37	9.69	-6.76	0.21	1.06	-5.70	0.27
2DH5	2441.00	-15.79	1.38	9.69	-4.72	0.34	1.06	-3.66	0.43
2DH5	2480.00	-16.40	1.39	9.70	-5.31	0.29	1.06	-4.25	0.38
3DH5	2402.00	-17.81	1.37	9.69	-6.75	0.21	1.06	-5.69	0.27
3DH5	2441.00	-15.77	1.38	9.69	-4.70	0.34	1.06	-3.64	0.43
3DH5	2480.00	-16.38	1.39	9.70	-5.29	0.30	1.06	-4.23	0.38

Sample Calculation:

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

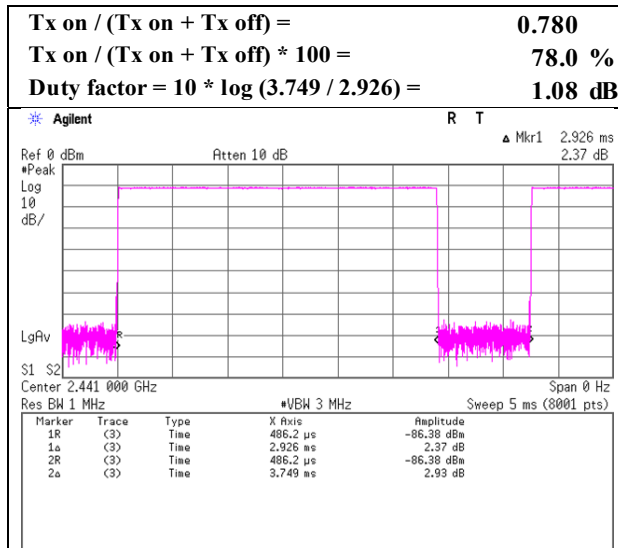
Result (Burst power average) = Time average + Duty factor

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

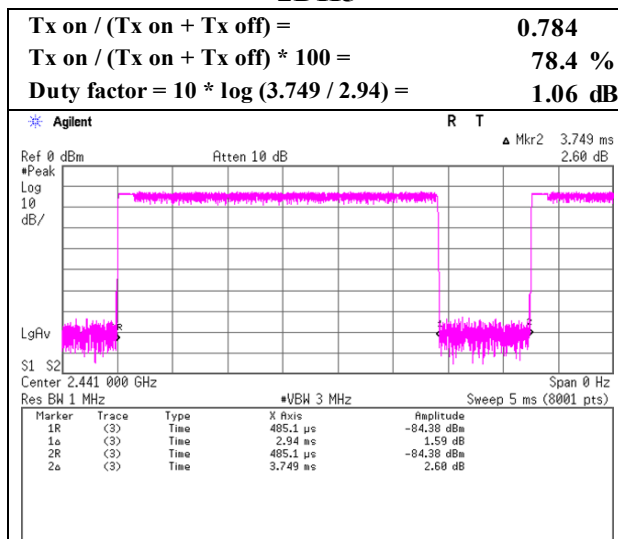
Burst Rate Confirmation

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 13, 2019
Temperature / Humidity	25 deg. C / 47 % RH
Engineer	Toshinori Yamada
Mode	Tx, Hopping Off

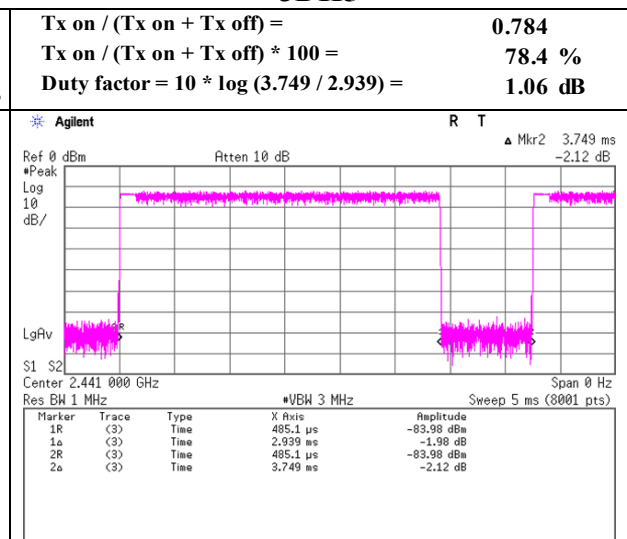
DH5



2DH5



3DH5



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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	12903002S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.2	No.3	No.2
Date	June 23, 2019	June 22, 2019	June 23, 2019
Temperature / Humidity	24 deg. C / 61 % RH	23 deg. C / 51 % RH	24 deg. C / 61 % RH
Engineer	Kenichi Adachi	Takahiro Suzuki	Kenichi Adachi
	(30 MHz -1 GHz)	(1 GHz -13 GHz)	(above 13 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.	37.518	QP	30.76	15.81	7.02	31.93	0.00	21.66	40.00	18.3	249	91	
Hori.	68.672	QP	43.04	6.67	7.27	31.91	0.00	25.07	40.00	14.9	265	205	
Hori.	73.591	QP	44.54	6.28	7.68	31.90	0.00	26.60	40.00	13.4	214	223	
Hori.	118.658	QP	51.06	12.94	8.05	31.87	0.00	40.18	43.50	3.3	148	37	
Hori.	137.564	QP	48.98	14.28	8.45	31.85	0.00	39.86	43.50	3.6	212	26	
Hori.	495.012	QP	38.44	17.64	8.05	31.62	0.00	32.51	46.00	13.5	100	19	
Hori.	960.024	QP	33.81	22.07	10.11	30.45	0.00	35.54	53.90	18.4	100	24	
Hori.	2390.000	PK	45.79	27.44	14.11	39.59	2.15	49.90	73.90	24.0	157	222	*1)
Hori.	4804.000	PK	47.86	31.48	6.45	39.75	2.15	48.19	73.90	25.7	150	0	
Hori.	7206.000	PK	46.55	36.14	8.19	39.53	2.15	53.50	73.90	20.4	150	0	
Hori.	9608.000	PK	46.21	38.64	9.39	39.67	2.15	56.72	73.90	17.2	150	0	
Hori.	2390.000	AV	32.12	27.44	14.11	39.59	2.15	36.23	53.90	17.7	157	222	VBW: 360 Hz, *1)
Hori.	4804.000	AV	32.76	31.48	6.45	39.75	2.15	33.09	53.90	20.8	150	0	VBW: 360 Hz
Hori.	7206.000	AV	32.54	36.14	8.19	39.53	2.15	39.49	53.90	14.4	150	0	VBW: 360 Hz
Hori.	9608.000	AV	33.03	38.64	9.39	39.67	2.15	43.54	53.90	10.4	150	0	VBW: 360 Hz
Vert.	37.883	QP	30.06	15.65	7.03	31.93	0.00	20.81	40.00	19.2	100	334	
Vert.	68.672	QP	46.59	6.67	7.27	31.91	0.00	28.62	40.00	11.4	100	119	
Vert.	118.658	QP	44.21	12.94	8.05	31.87	0.00	33.33	43.50	10.2	100	181	
Vert.	137.564	QP	48.18	14.28	8.45	31.85	0.00	39.06	43.50	4.4	100	208	
Vert.	495.012	QP	33.86	17.64	8.05	31.62	0.00	27.93	46.00	18.1	174	34	
Vert.	960.024	QP	31.74	22.07	10.11	30.45	0.00	33.47	53.90	20.4	173	29	
Vert.	2390.000	PK	45.97	27.44	14.11	39.59	2.15	50.08	73.90	23.8	157	7	*1)
Vert.	4804.000	PK	47.67	31.48	6.45	39.75	2.15	48.00	73.90	25.9	150	0	
Vert.	7206.000	PK	44.97	36.14	8.19	39.53	2.15	51.92	73.90	22.0	150	0	
Vert.	9608.000	PK	45.91	38.64	9.39	39.67	2.15	56.42	73.90	17.5	150	0	
Vert.	2390.000	AV	32.11	27.44	14.11	39.59	2.15	36.22	53.90	17.7	157	7	VBW: 360 Hz, *1)
Vert.	4804.000	AV	33.15	31.48	6.45	39.75	2.15	33.48	53.90	20.4	150	0	VBW: 360 Hz
Vert.	7206.000	AV	32.54	36.14	8.19	39.53	2.15	39.49	53.90	14.4	150	0	VBW: 360 Hz
Vert.	9608.000	AV	33.34	38.64	9.39	39.67	2.15	43.85	53.90	10.1	150	0	VBW: 360 Hz

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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.

*1) Out of band emission (Leakage power).

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark	Height [cm]	Angle [deg]
Hori.	2402.000	PK	77.92	27.27	14.12	39.59	2.15	81.87	-	-	Carrier	157	222
Hori.	2400.000	PK	35.51	27.25	14.12	39.59	2.15	39.44	61.87	22.4	Carrier	157	222
Vert.	2402.000	PK	86.87	27.27	14.12	39.59	2.15	90.82	-	-	Carrier	157	7
Vert.	2400.000	PK	36.47	27.25	14.12	39.59	2.15	40.40	70.82	30.4	Carrier	157	7

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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 Duty cycle correction factor.

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Shonan EMC Lab.

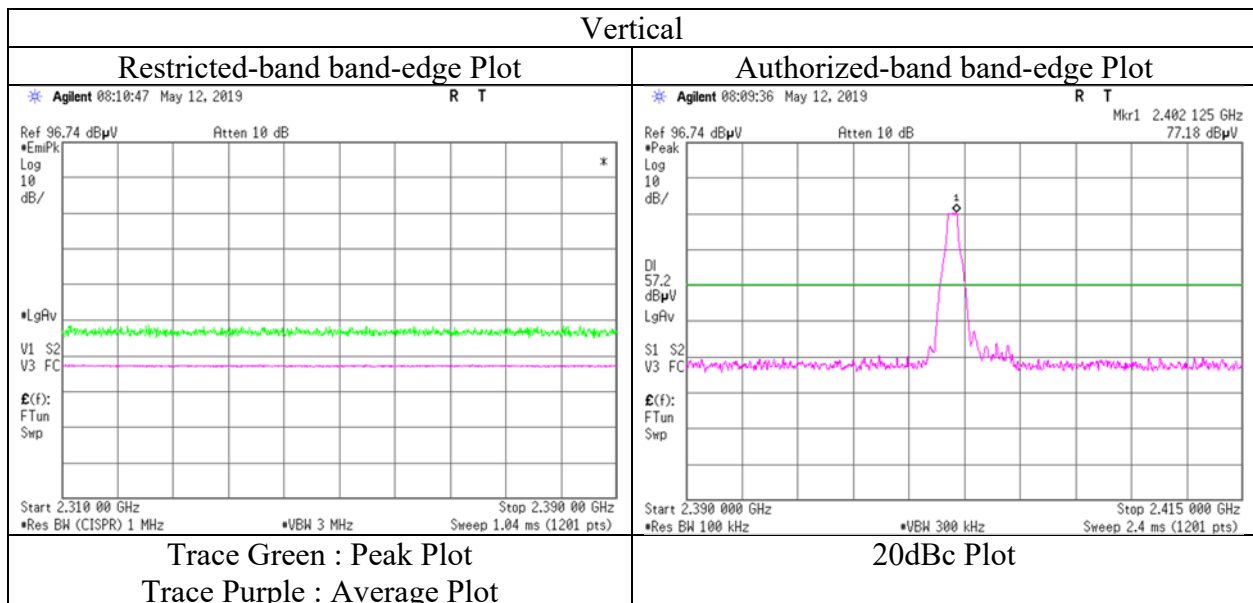
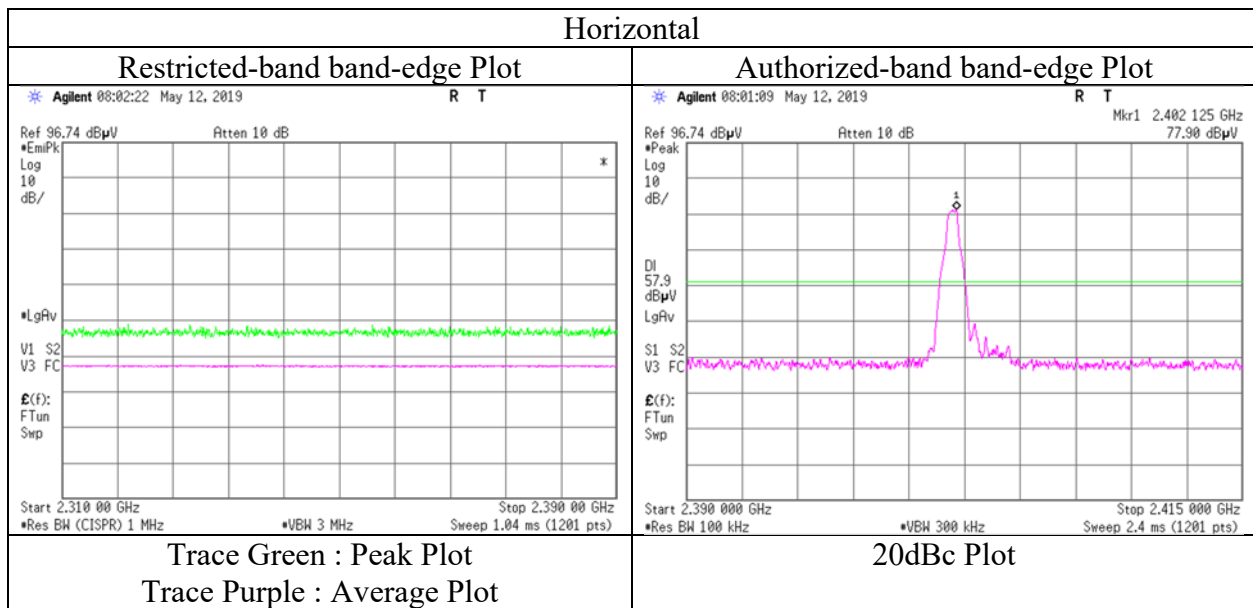
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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	June 22, 2019
Temperature / Humidity	23 deg. C / 51 % RH
Engineer	Takahiro Suzuki
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.

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Radiated Spurious Emission

Report No.	12903002S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.2	No.3	No.2
Date	June 23, 2019	June 22, 2019	June 23, 2019
Temperature / Humidity	24 deg. C / 61 % RH	23 deg. C / 51 % RH	24 deg. C / 61 % RH
Engineer	Kenichi Adachi	Takahiro Suzuki	Kenichi Adachi
	(30 MHz -1 GHz)	(1 GHz -13 GHz)	(above 13 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.	37.531	QP	30.56	15.80	7.02	31.93	0.00	21.45	40.00	18.6	251	92	
Hori.	68.668	QP	43.11	6.67	7.27	31.91	0.00	25.14	40.00	14.9	270	210	
Hori.	73.589	QP	44.62	6.28	7.68	31.90	0.00	26.68	40.00	13.3	213	221	
Hori.	118.657	QP	51.12	12.94	8.05	31.87	0.00	40.24	43.50	3.3	147	39	
Hori.	137.565	QP	49.04	14.28	8.45	31.85	0.00	39.92	43.50	3.6	209	27	
Hori.	495.012	QP	38.36	17.64	8.05	31.62	0.00	32.43	46.00	13.6	100	18	
Hori.	960.023	QP	33.75	22.07	10.11	30.45	0.00	35.48	53.90	18.4	100	25	
Hori.	4882.000	PK	47.68	31.64	6.48	39.74	2.15	48.21	73.90	25.7	150	0	
Hori.	7323.000	PK	46.81	36.24	8.23	39.60	2.15	53.83	73.90	20.1	150	0	
Hori.	9764.000	PK	46.09	39.10	9.35	39.48	2.15	57.21	73.90	16.7	150	0	
Hori.	4882.000	AV	32.98	31.64	6.48	39.74	2.15	33.51	53.90	20.4	150	0	VBW: 360 Hz
Hori.	7323.000	AV	32.44	36.24	8.23	39.60	2.15	39.46	53.90	14.4	150	0	VBW: 360 Hz
Hori.	9764.000	AV	32.86	39.10	9.35	39.48	2.15	43.98	53.90	9.9	150	0	VBW: 360 Hz
Vert.	37.898	QP	29.97	15.64	7.03	31.93	0.00	20.71	40.00	19.3	100	331	
Vert.	68.668	QP	46.76	6.67	7.27	31.91	0.00	28.79	40.00	11.2	100	121	
Vert.	118.657	QP	44.73	12.94	8.05	31.87	0.00	33.85	43.50	9.7	100	183	
Vert.	137.565	QP	48.22	14.28	8.45	31.85	0.00	39.10	43.50	4.4	100	201	
Vert.	495.012	QP	33.45	17.64	8.05	31.62	0.00	27.52	46.00	18.5	172	36	
Vert.	960.023	QP	31.58	22.07	10.11	30.45	0.00	33.31	53.90	20.6	173	28	
Vert.	4882.000	PK	47.57	31.64	6.48	39.74	2.15	48.10	73.90	25.8	150	0	
Vert.	7323.000	PK	44.91	36.24	8.23	39.60	2.15	51.93	73.90	22.0	150	0	
Vert.	9764.000	PK	45.76	39.10	9.35	39.48	2.15	56.88	73.90	17.0	150	0	
Vert.	4882.000	AV	33.25	31.64	6.48	39.74	2.15	33.78	53.90	20.1	150	0	VBW: 360 Hz
Vert.	7323.000	AV	32.74	36.24	8.23	39.60	2.15	39.76	53.90	14.1	150	0	VBW: 360 Hz
Vert.	9764.000	AV	33.19	39.10	9.35	39.48	2.15	44.31	53.90	9.6	150	0	VBW: 360 Hz

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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.

***These results have sufficient margin without taking account Duty cycle correction factor.**

Radiated Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.3 No.2
Date June 23, 2019 June 22, 2019 June 23, 2019
Temperature / Humidity 24 deg. C / 61 % RH 23 deg. C / 51 % RH 24 deg. C / 61 % RH
Engineer Kenichi Adachi Takahiro Suzuki Kenichi Adachi
(30 MHz -1 GHz) (1 GHz -13 GHz) (above 13 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.	37.523	QP	30.66	15.81	7.02	31.93	0.00	21.56	40.00	18.4	252	90	
Hori.	68.669	QP	43.04	6.67	7.27	31.91	0.00	25.07	40.00	14.9	268	203	
Hori.	73.577	QP	44.65	6.28	7.68	31.90	0.00	26.71	40.00	13.3	212	229	
Hori.	118.659	QP	51.26	12.94	8.05	31.87	0.00	40.38	43.50	3.1	149	35	
Hori.	120.359	QP	51.04	13.12	8.07	31.86	0.00	40.37	43.50	3.1	147	34	
Hori.	137.562	QP	48.85	14.28	8.45	31.85	0.00	39.73	43.50	3.8	211	31	
Hori.	495.011	QP	38.35	17.64	8.05	31.62	0.00	32.42	46.00	13.6	100	21	
Hori.	960.023	QP	33.74	22.07	10.11	30.45	0.00	35.47	53.90	18.4	100	25	
Hori.	2483.500	PK	44.42	28.15	14.19	39.62	2.15	49.29	73.90	24.6	197	40	*1)
Hori.	4960.000	PK	45.56	31.97	6.51	39.72	2.15	46.47	73.90	27.4	232	87	
Hori.	7440.000	PK	47.14	36.43	8.25	39.68	2.15	54.29	73.90	19.6	150	0	
Hori.	9920.000	PK	46.03	38.86	9.31	39.28	2.15	57.07	73.90	16.8	150	0	
Hori.	2483.500	AV	32.28	28.15	14.19	39.62	2.15	37.15	53.90	16.8	197	40	VBW: 360 Hz, *1)
Hori.	4960.000	AV	38.31	31.97	6.51	39.72	2.15	39.22	53.90	14.7	232	87	VBW: 360 Hz
Hori.	7440.000	AV	33.88	36.43	8.25	39.68	2.15	41.03	53.90	12.9	150	0	VBW: 360 Hz
Hori.	9920.000	AV	34.22	38.86	9.31	39.28	2.15	45.26	53.90	8.6	150	0	VBW: 360 Hz
Vert.	37.885	QP	30.01	15.65	7.03	31.93	0.00	20.76	40.00	19.2	100	331	
Vert.	68.669	QP	46.88	6.67	7.27	31.91	0.00	28.91	40.00	11.1	100	118	
Vert.	118.659	QP	44.10	12.94	8.05	31.87	0.00	33.22	43.50	10.3	100	182	
Vert.	137.562	QP	48.09	14.28	8.45	31.85	0.00	38.97	43.50	4.5	100	205	
Vert.	495.011	QP	33.55	17.64	8.05	31.62	0.00	27.62	46.00	18.4	172	33	
Vert.	960.023	QP	31.45	22.07	10.11	30.45	0.00	33.18	53.90	20.7	172	27	
Vert.	2483.500	PK	48.31	28.15	14.19	39.62	2.15	53.18	73.90	20.7	104	186	*1)
Vert.	4960.000	PK	47.22	31.97	6.51	39.72	2.15	48.13	73.90	25.8	150	0	
Vert.	7440.000	PK	46.78	36.43	8.25	39.68	2.15	53.93	73.90	20.0	150	0	
Vert.	9920.000	PK	46.87	38.86	9.31	39.28	2.15	57.91	73.90	16.0	150	0	
Vert.	2483.500	AV	35.22	28.15	14.19	39.62	2.15	40.09	53.90	13.8	104	186	VBW: 360 Hz, *1)
Vert.	4960.000	AV	34.56	31.97	6.51	39.72	2.15	35.47	53.90	18.4	150	0	VBW: 360 Hz
Vert.	7440.000	AV	34.29	36.43	8.25	39.68	2.15	41.44	53.90	12.5	150	0	VBW: 360 Hz
Vert.	9920.000	AV	34.07	38.86	9.31	39.28	2.15	45.11	53.90	8.8	150	0	VBW: 360 Hz

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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.

*1) Out of band emission (Leakage power).

***These results have sufficient margin without taking account Duty cycle correction factor.**

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Shonan EMC Lab.

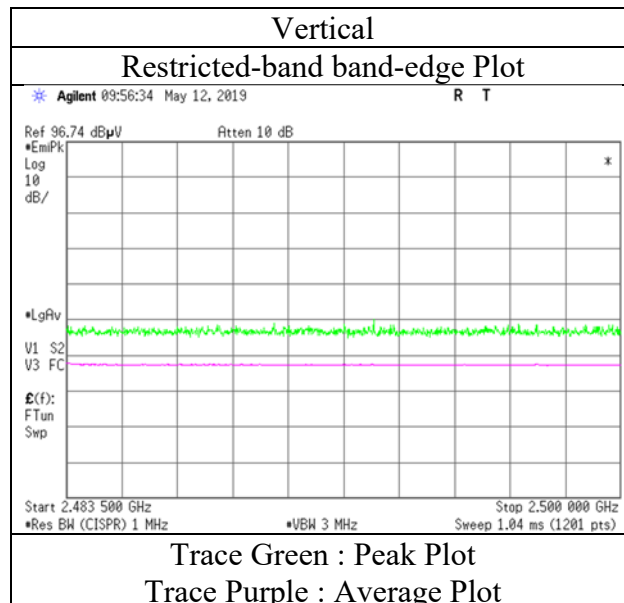
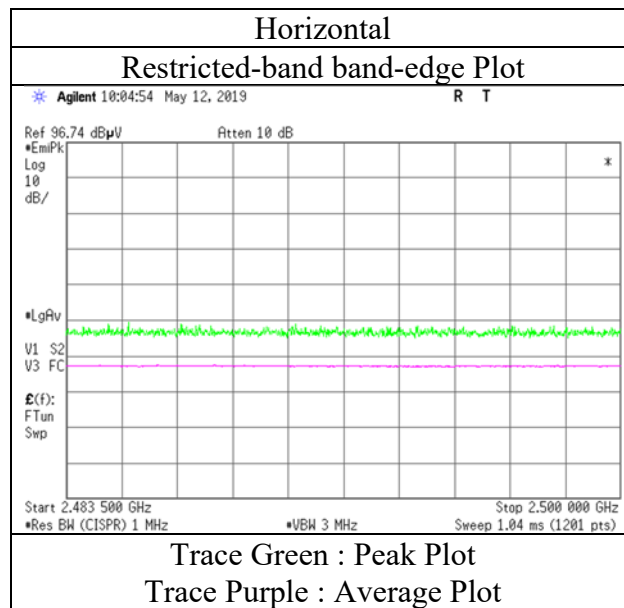
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	June 22, 2019
Temperature / Humidity	23 deg. C / 51 % RH
Engineer	Takahiro Suzuki
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. 12903002S-A-R1
Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 No.3 No.2
Date June 23, 2019 June 22, 2019 June 23, 2019
Temperature / Humidity 24 deg. C / 61 % RH 23 deg. C / 51 % RH 24 deg. C / 61 % RH
Engineer Kenichi Adachi Takahiro Suzuki Kenichi Adachi
(30 MHz -1 GHz) (1 GHz -13 GHz) (above 13 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.	37.531	QP	30.42	15.80	7.02	31.93	0.00	21.31	40.00	18.7	247	95	
Hori.	68.666	QP	42.85	6.67	7.27	31.91	0.00	24.88	40.00	15.1	271	202	
Hori.	73.611	QP	44.54	6.28	7.68	31.90	0.00	26.60	40.00	13.4	212	219	
Hori.	118.658	QP	49.79	12.94	8.05	31.87	0.00	38.91	43.50	4.6	149	38	
Hori.	120.358	QP	49.54	13.12	8.07	31.86	0.00	38.87	43.50	4.6	146	36	
Hori.	137.563	QP	49.24	14.28	8.45	31.85	0.00	40.12	43.50	3.4	213	27	
Hori.	495.011	QP	38.12	17.64	8.05	31.62	0.00	32.19	46.00	13.8	100	21	
Hori.	960.022	QP	33.74	22.07	10.11	30.45	0.00	35.47	53.90	18.4	100	25	
Hori.	2390.000	PK	44.57	27.44	14.11	39.59	2.15	48.68	73.90	25.2	122	220	*1)
Hori.	4804.000	PK	47.67	31.48	6.45	39.75	2.15	48.00	73.90	25.9	150	0	
Hori.	7206.000	PK	46.82	36.14	8.19	39.53	2.15	53.77	73.90	20.1	150	0	
Hori.	9608.000	PK	46.39	38.64	9.39	39.67	2.15	56.90	73.90	17.0	150	0	
Hori.	2390.000	AV	32.12	27.44	14.11	39.59	2.15	36.23	53.90	17.7	122	220	VBW: 360 Hz, *1)
Hori.	4804.000	AV	32.85	31.48	6.45	39.75	2.15	33.18	53.90	20.7	150	0	VBW: 360 Hz
Hori.	7206.000	AV	32.33	36.14	8.19	39.53	2.15	39.28	53.90	14.6	150	0	VBW: 360 Hz
Hori.	9608.000	AV	32.84	38.64	9.39	39.67	2.15	43.35	53.90	10.6	150	0	VBW: 360 Hz
Vert.	37.913	QP	29.95	15.64	7.03	31.93	0.00	20.69	40.00	19.3	100	333	
Vert.	68.667	QP	46.98	6.67	7.27	31.91	0.00	29.01	40.00	11.0	100	115	
Vert.	118.658	QP	44.02	12.94	8.05	31.87	0.00	33.14	43.50	10.4	100	184	
Vert.	137.563	QP	48.09	14.28	8.45	31.85	0.00	38.97	43.50	4.5	100	204	
Vert.	495.011	QP	33.66	17.64	8.05	31.62	0.00	27.73	46.00	18.3	173	32	
Vert.	960.022	QP	31.58	22.07	10.11	30.45	0.00	33.31	53.90	20.6	172	31	
Vert.	2390.000	PK	46.65	27.44	14.11	39.59	2.15	50.76	73.90	23.1	375	135	*1)
Vert.	4804.000	PK	47.93	31.48	6.45	39.75	2.15	48.26	73.90	25.6	150	0	
Vert.	7206.000	PK	46.61	36.14	8.19	39.53	2.15	53.56	73.90	20.3	150	0	
Vert.	9608.000	PK	46.08	38.64	9.39	39.67	2.15	56.59	73.90	17.3	150	0	
Vert.	2390.000	AV	33.62	27.44	14.11	39.59	2.15	37.73	53.90	16.2	375	135	VBW: 360 Hz, *1)
Vert.	4804.000	AV	32.55	31.48	6.45	39.75	2.15	32.88	53.90	21.0	150	0	VBW: 360 Hz
Vert.	7206.000	AV	32.57	36.14	8.19	39.53	2.15	39.52	53.90	14.4	150	0	VBW: 360 Hz
Vert.	9608.000	AV	32.89	38.64	9.39	39.67	2.15	43.40	53.90	10.5	150	0	VBW: 360 Hz

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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.

*1) Out of band emission (Leakage power).

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark	Height [cm]	Angle [deg]
Hori.	2402.000	PK	75.33	27.27	14.12	39.59	2.15	79.28	-	-	Carrier	122	220
Hori.	2400.000	PK	36.41	27.25	14.12	39.59	2.15	40.34	59.28	18.9		122	220
Vert.	2402.000	PK	85.51	27.27	14.12	39.59	2.15	89.46	-	-	Carrier	375	135
Vert.	2400.000	PK	36.51	27.25	14.12	39.59	2.15	40.44	69.46	29.0		375	135

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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 Duty cycle correction factor.**

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Shonan EMC Lab.

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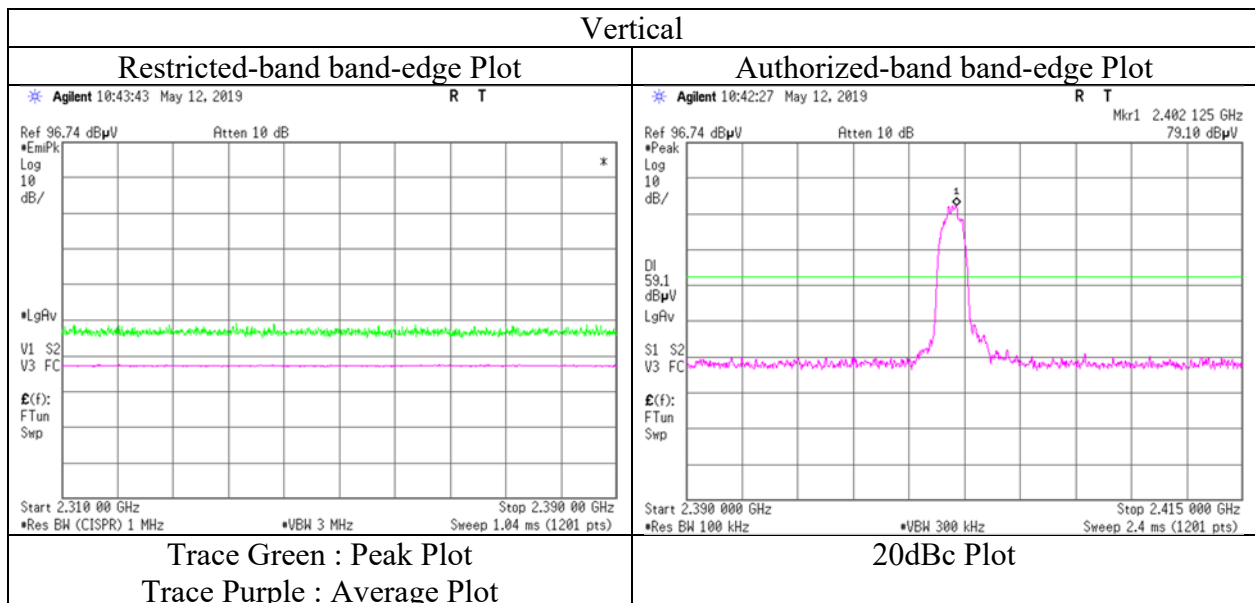
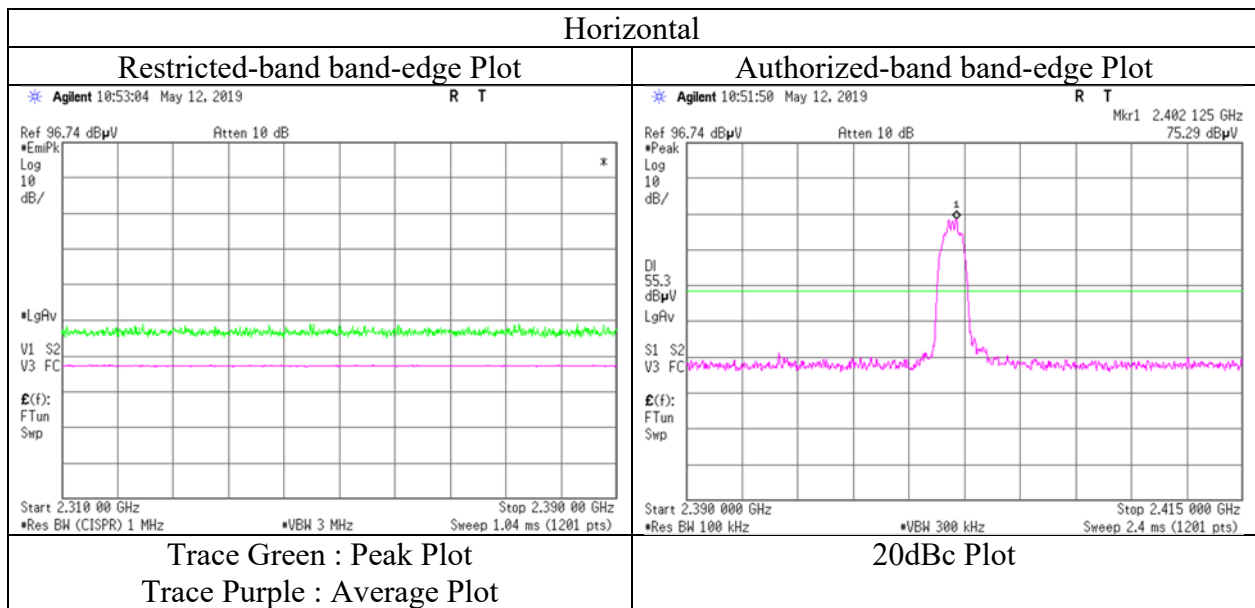
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	June 22, 2019
Temperature / Humidity	23 deg. C / 51 % RH
Engineer	Takahiro Suzuki

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.

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	12903002S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.2	No.3	No.2
Date	June 23, 2019	June 22, 2019	June 23, 2019
Temperature / Humidity	24 deg. C / 61 % RH	23 deg. C / 51 % RH	24 deg. C / 61 % RH
Engineer	Kenichi Adachi	Takahiro Suzuki	Kenichi Adachi
	(30 MHz -1 GHz)	(1 GHz -13 GHz)	(above 13 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.	37.578	QP	30.43	15.78	7.02	31.93	0.00	21.30	40.00	18.7	247	92	
Hori.	68.667	QP	42.67	6.67	7.27	31.91	0.00	24.70	40.00	15.3	267	201	
Hori.	73.616	QP	44.76	6.28	7.68	31.90	0.00	26.82	40.00	13.2	213	221	
Hori.	118.657	QP	49.98	12.94	8.05	31.87	0.00	39.10	43.50	4.4	149	36	
Hori.	120.359	QP	47.34	13.12	8.07	31.86	0.00	36.67	43.50	6.8	148	27	
Hori.	137.563	QP	49.02	14.28	8.45	31.85	0.00	39.90	43.50	3.6	209	25	
Hori.	495.013	QP	38.65	17.64	8.05	31.62	0.00	32.72	46.00	13.3	100	21	
Hori.	960.023	QP	33.74	22.07	10.11	30.45	0.00	35.47	53.90	18.4	100	19	
Hori.	4882.000	PK	47.54	31.64	6.48	39.74	2.15	48.07	73.90	25.8	100	0	
Hori.	7323.000	PK	46.39	36.24	8.23	39.60	2.15	53.41	73.90	20.5	100	0	
Hori.	9764.000	PK	46.25	39.10	9.35	39.48	2.15	57.37	73.90	16.5	100	0	
Hori.	4882.000	AV	32.67	31.64	6.48	39.74	2.15	33.20	53.90	20.7	100	0	VBW: 360 Hz
Hori.	7323.000	AV	32.50	36.24	8.23	39.60	2.15	39.52	53.90	14.4	100	0	VBW: 360 Hz
Hori.	9764.000	AV	32.47	39.10	9.35	39.48	2.15	43.59	53.90	10.3	100	0	VBW: 360 Hz
Vert.	37.923	QP	29.92	15.63	7.03	31.93	0.00	20.65	40.00	19.4	100	333	
Vert.	68.666	QP	46.67	6.67	7.27	31.91	0.00	28.70	40.00	11.3	100	121	
Vert.	118.657	QP	44.13	12.94	8.05	31.87	0.00	33.25	43.50	10.3	100	182	
Vert.	137.563	QP	48.06	14.28	8.45	31.85	0.00	38.94	43.50	4.6	100	207	
Vert.	495.013	QP	33.62	17.64	8.05	31.62	0.00	27.69	46.00	18.3	171	35	
Vert.	960.023	QP	31.58	22.07	10.11	30.45	0.00	33.31	53.90	20.6	173	31	
Vert.	4882.000	PK	47.28	31.64	6.48	39.74	2.15	47.81	73.90	26.1	150	0	
Vert.	7323.000	PK	44.75	36.24	8.23	39.60	2.15	51.77	73.90	22.1	150	0	
Vert.	9764.000	PK	45.61	39.10	9.35	39.48	2.15	56.73	73.90	17.2	150	0	
Vert.	4882.000	AV	33.55	31.64	6.48	39.74	2.15	34.08	53.90	19.8	150	0	VBW: 360 Hz
Vert.	7323.000	AV	32.52	36.24	8.23	39.60	2.15	39.54	53.90	14.4	150	0	VBW: 360 Hz
Vert.	9764.000	AV	33.04	39.10	9.35	39.48	2.15	44.16	53.90	9.7	150	0	VBW: 360 Hz

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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.

***These results have sufficient margin without taking account Duty cycle correction factor.**

UL Japan, Inc.

Shonan EMC Lab.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission

Report No.	12903002S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.2	No.3	No.2
Date	June 23, 2019	June 22, 2019	June 23, 2019
Temperature / Humidity	24 deg. C / 61 % RH	23 deg. C / 51 % RH	24 deg. C / 61 % RH
Engineer	Kenichi Adachi	Takahiro Suzuki	Kenichi Adachi
	(30 MHz -1 GHz)	(1 GHz -13 GHz)	(above 13 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.	37.545	QP	30.23	15.80	7.02	31.93	0.00	21.12	40.00	18.9	247	89	
Hori.	68.669	QP	42.63	6.67	7.27	31.91	0.00	24.66	40.00	15.3	267	201	
Hori.	73.597	QP	44.45	6.28	7.68	31.90	0.00	26.51	40.00	13.5	209	222	
Hori.	118.657	QP	49.96	12.94	8.05	31.87	0.00	39.08	43.50	4.4	148	36	
Hori.	120.357	QP	48.58	13.11	8.07	31.86	0.00	37.90	43.50	5.6	146	34	
Hori.	137.560	QP	49.29	14.28	8.45	31.85	0.00	40.17	43.50	3.3	210	32	
Hori.	495.012	QP	38.34	17.64	8.05	31.62	0.00	32.41	46.00	13.6	100	18	
Hori.	960.025	QP	33.69	22.07	10.11	30.45	0.00	35.42	53.90	18.5	100	328	
Hori.	2483.500	PK	44.43	28.15	14.19	39.62	2.15	49.30	73.90	24.6	110	78	*1)
Hori.	4960.000	PK	47.97	31.97	6.51	39.72	2.15	48.88	73.90	25.0	231	89	
Hori.	7440.000	PK	47.18	36.43	8.25	39.68	2.15	54.33	73.90	19.6	150	0	
Hori.	9920.000	PK	45.87	38.86	9.31	39.28	2.15	56.91	73.90	17.0	150	0	
Hori.	2483.500	AV	32.13	28.15	14.19	39.62	2.15	37.00	53.90	16.9	110	78	VBW: 360 Hz, *1)
Hori.	4960.000	AV	35.42	31.97	6.51	39.72	2.15	36.33	53.90	17.6	231	89	VBW: 360 Hz
Hori.	7440.000	AV	33.73	36.43	8.25	39.68	2.15	40.88	53.90	13.0	150	0	VBW: 360 Hz
Hori.	9920.000	AV	34.10	38.86	9.31	39.28	2.15	45.14	53.90	8.8	150	0	VBW: 360 Hz
Vert.	37.899	QP	29.93	15.64	7.03	31.93	0.00	20.67	40.00	19.3	100	249	
Vert.	68.669	QP	46.15	6.67	7.27	31.91	0.00	28.18	40.00	11.8	100	120	
Vert.	118.657	QP	44.26	12.94	8.05	31.87	0.00	33.38	43.50	10.1	100	183	
Vert.	137.560	QP	48.21	14.28	8.45	31.85	0.00	39.09	43.50	4.4	100	204	
Vert.	495.012	QP	33.72	17.64	8.05	31.62	0.00	27.79	46.00	18.2	174	35	
Vert.	960.025	QP	31.68	22.07	10.11	30.45	0.00	33.41	53.90	20.5	172	27	
Vert.	2483.500	PK	46.94	28.15	14.19	39.62	2.15	51.81	73.90	22.1	107	187	*1)
Vert.	4960.000	PK	47.15	31.97	6.51	39.72	2.15	48.06	73.90	25.8	150	0	
Vert.	7440.000	PK	46.66	36.43	8.25	39.68	2.15	53.81	73.90	20.1	150	0	
Vert.	9920.000	PK	46.71	38.86	9.31	39.28	2.15	57.75	73.90	16.2	150	0	
Vert.	2483.500	AV	33.86	28.15	14.19	39.62	2.15	38.73	53.90	15.2	107	187	VBW: 360 Hz, *1)
Vert.	4960.000	AV	34.39	31.97	6.51	39.72	2.15	35.30	53.90	18.6	150	0	VBW: 360 Hz
Vert.	7440.000	AV	34.30	36.43	8.25	39.68	2.15	41.45	53.90	12.5	150	0	VBW: 360 Hz
Vert.	9920.000	AV	34.01	38.86	9.31	39.28	2.15	45.05	53.90	8.8	150	0	VBW: 360 Hz

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

Distance factor : 1 GHz - 13 GHz : $20 \log((4 - 0.16) \text{ m} / 3.0 \text{ m}) = 2.15 \text{ dB}$

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.

*1) Out of band emission (Leakage power).

***These results have sufficient margin without taking account Duty cycle correction factor.**

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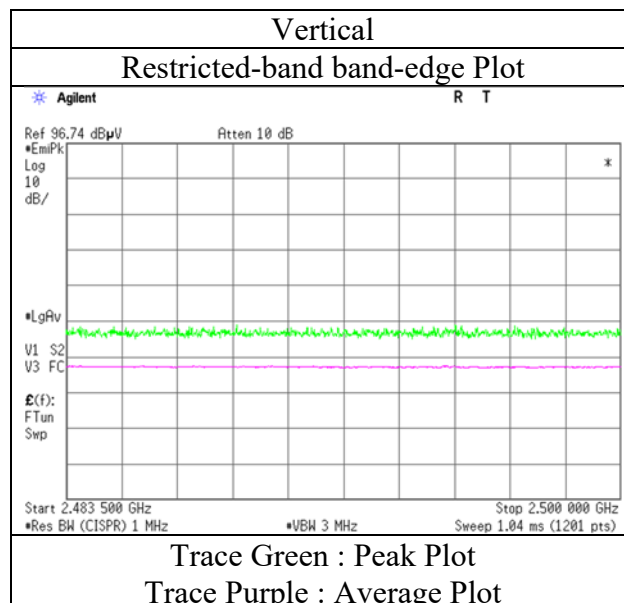
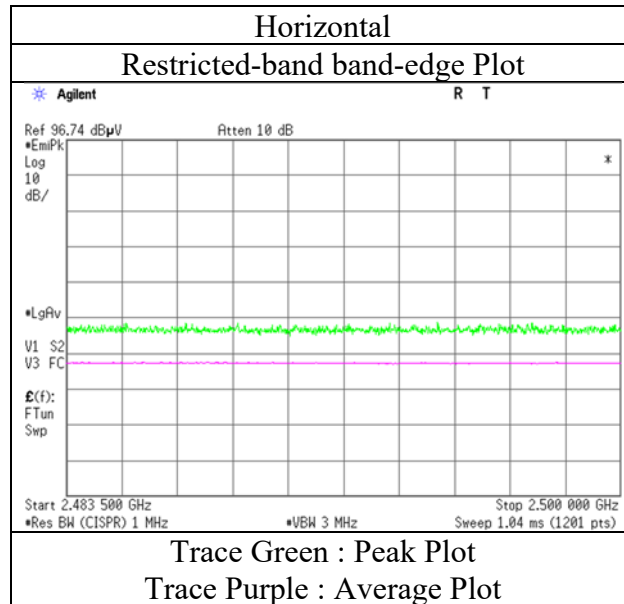
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	June 22, 2019
Temperature / Humidity	23 deg. C / 51 % RH
Engineer	Takahiro Suzuki

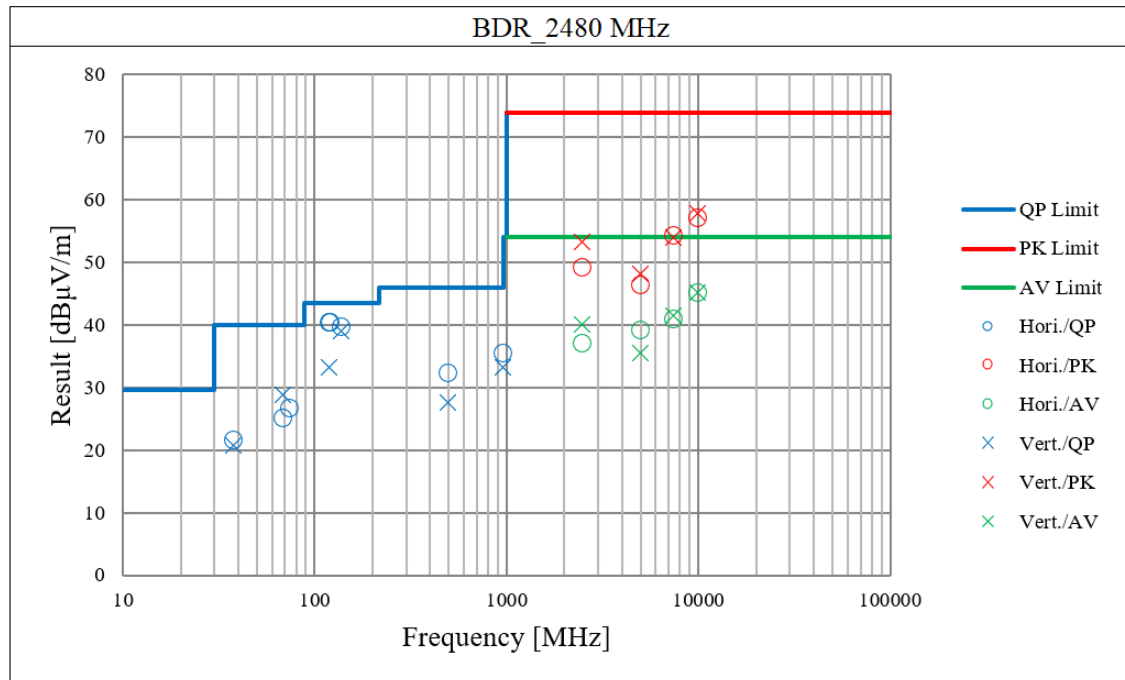
Mode Tx, Hopping Off, 3DH5 2480 MHz



* 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.	12903002S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.2	No.3	No.2
Date	June 23, 2019	June 22, 2019	June 23, 2019
Temperature / Humidity	24 deg. C / 61 % RH	23 deg. C / 51 % RH	24 deg. C / 61 % RH
Engineer	Kenichi Adachi	Takahiro Suzuki	Kenichi Adachi
	(30 MHz -1 GHz)	(1 GHz -13 GHz)	(above 13 GHz)
Mode	Tx, Hopping Off, DH5 2480 MHz		

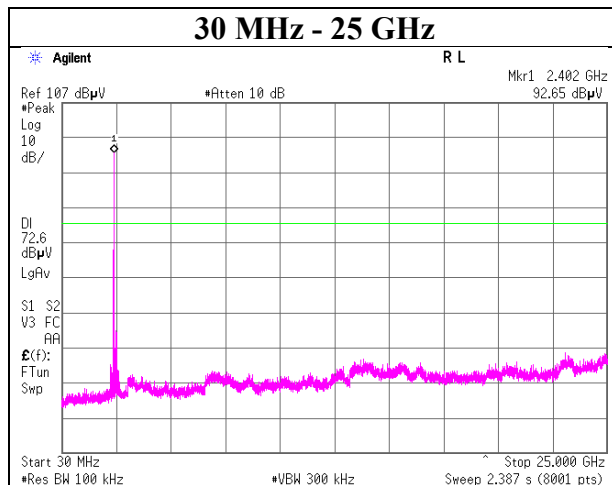
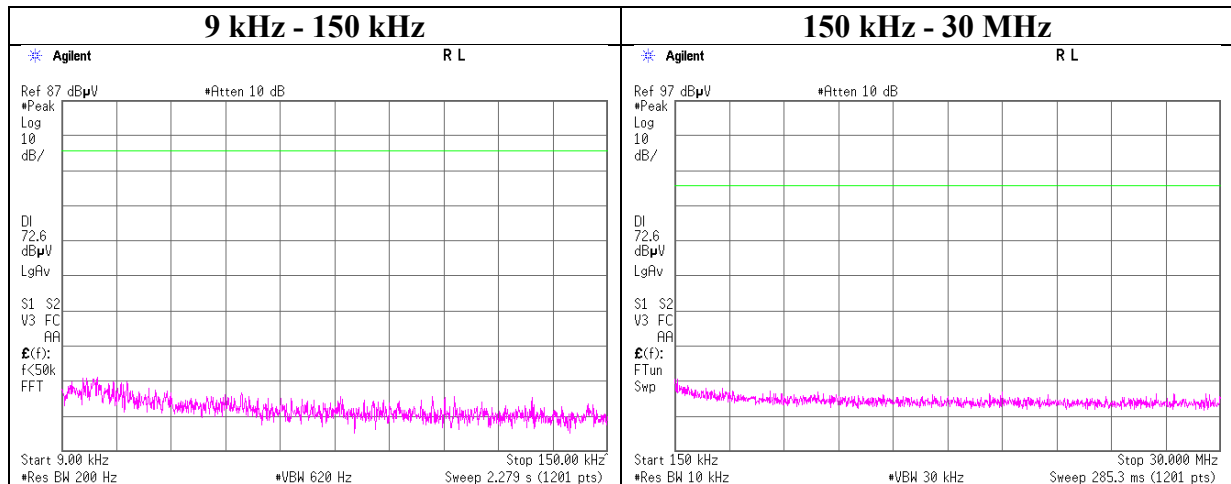


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, DH5

2402 MHz



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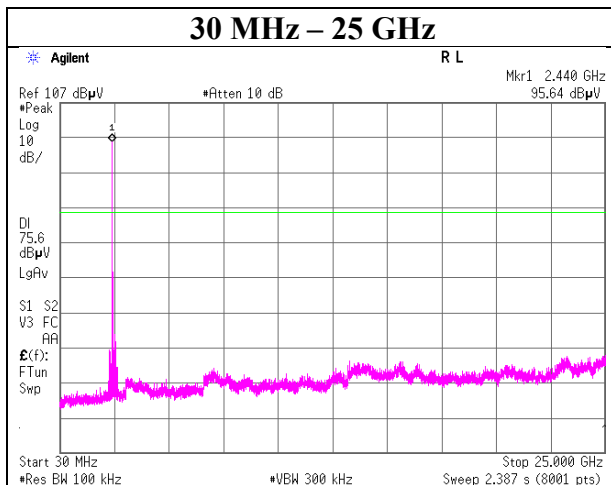
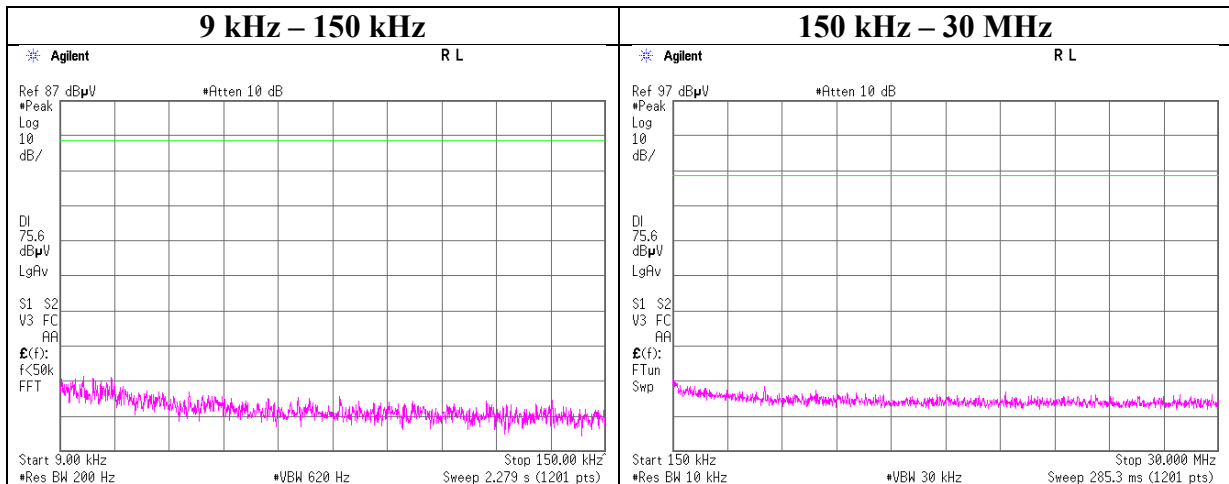
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Conducted Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, DH5

2441 MHz



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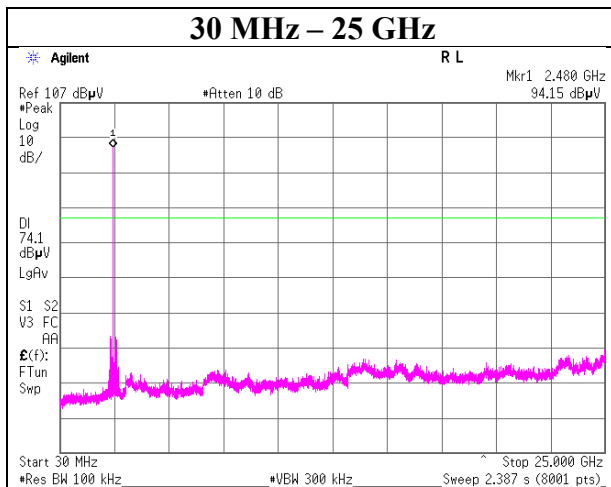
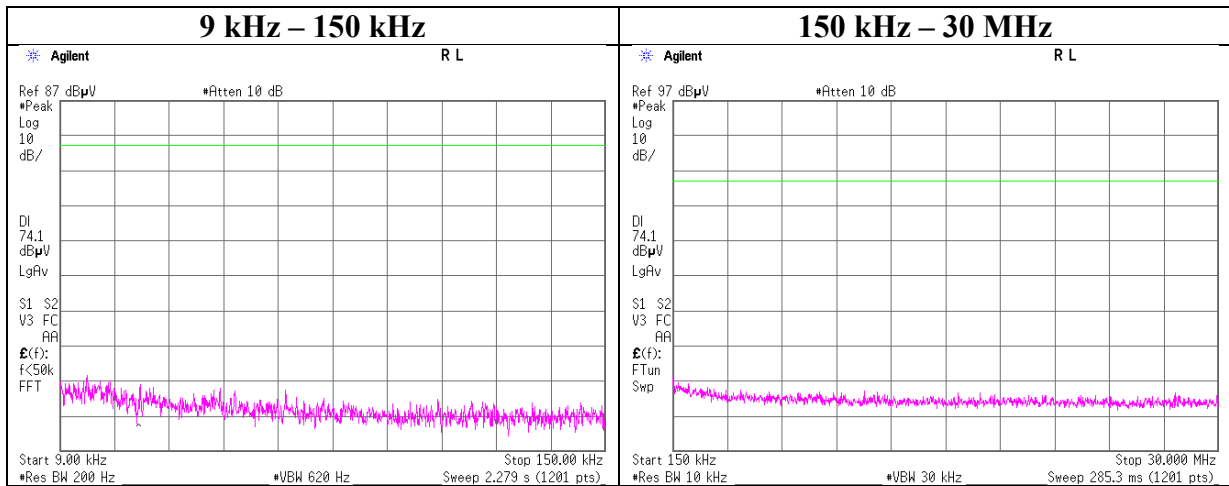
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Conducted Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, DH5

2480 MHz



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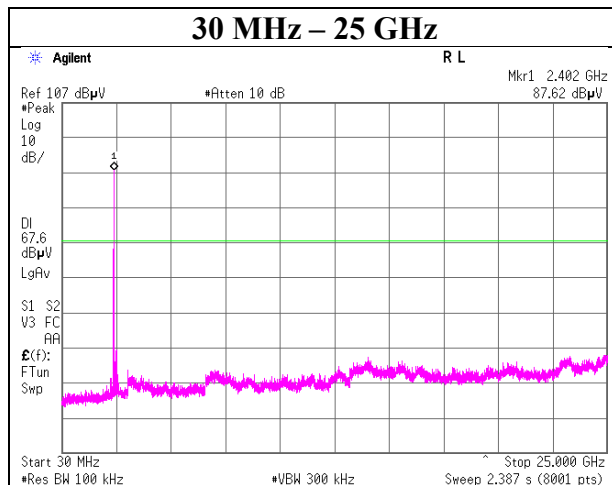
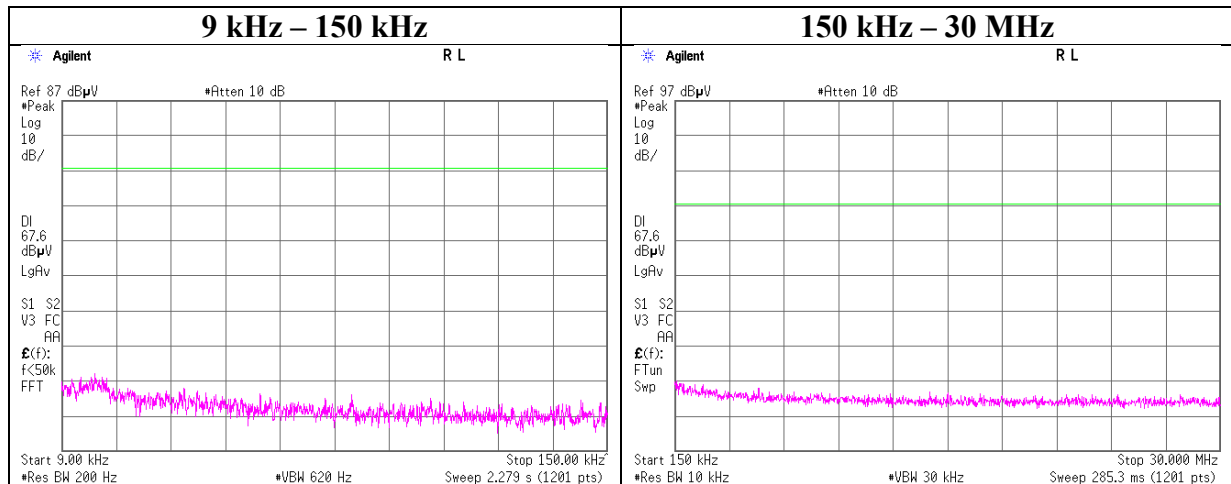
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Conducted Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, 3DH5

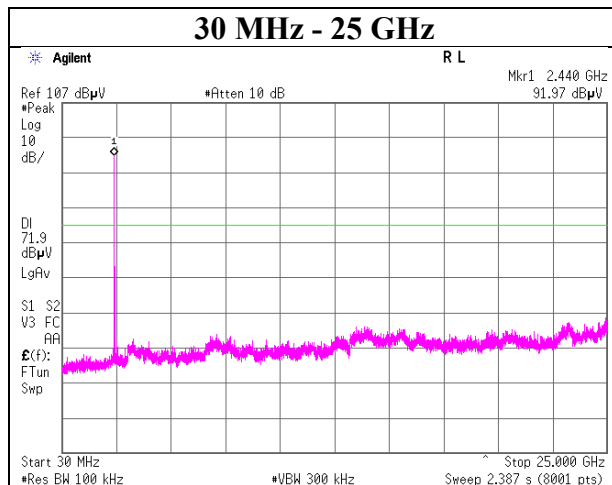
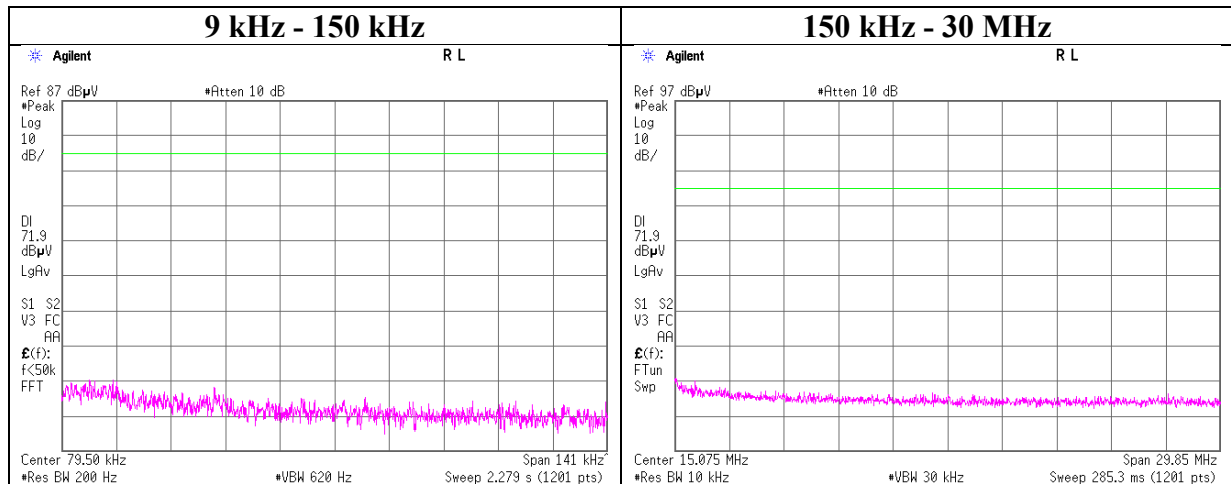
2402 MHz



Conducted Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, 3DH5

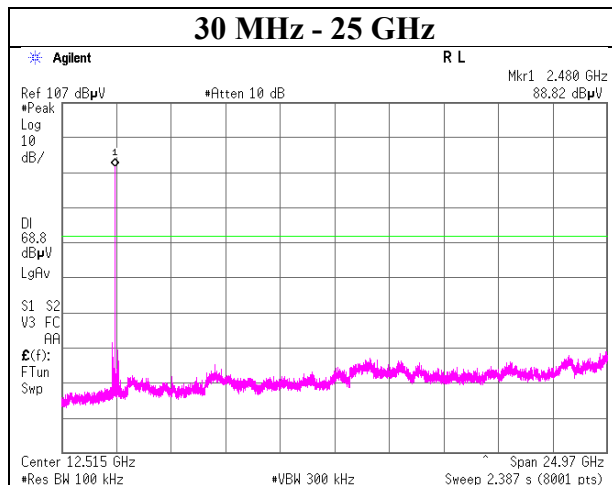
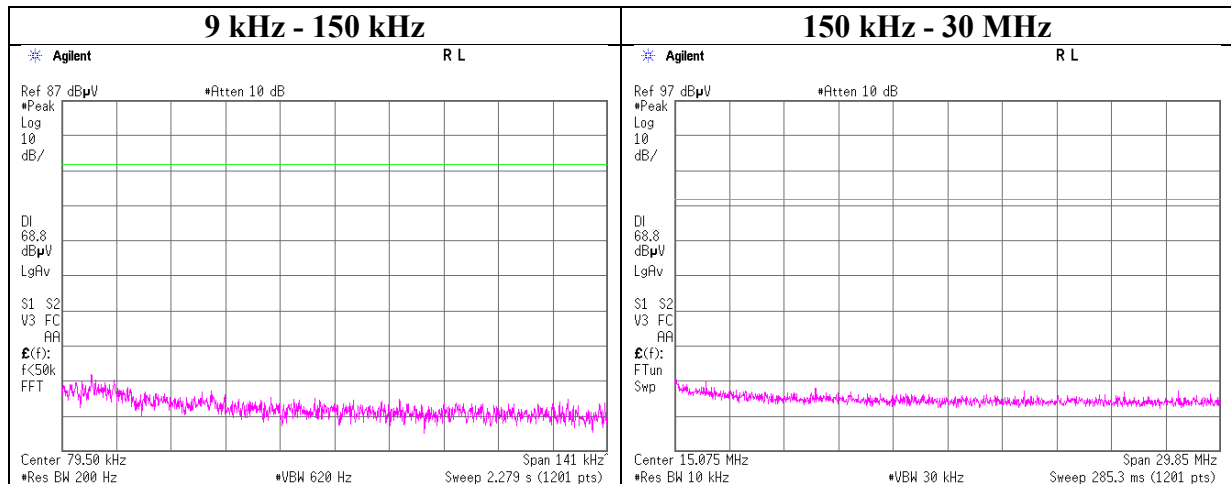
2441 MHz



Conducted Spurious Emission

Report No. 12903002S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date June 13, 2019
Temperature / Humidity 25 deg. C / 47 % RH
Engineer Toshinori Yamada
Mode Tx, Hopping Off, 3DH5

2480 MHz



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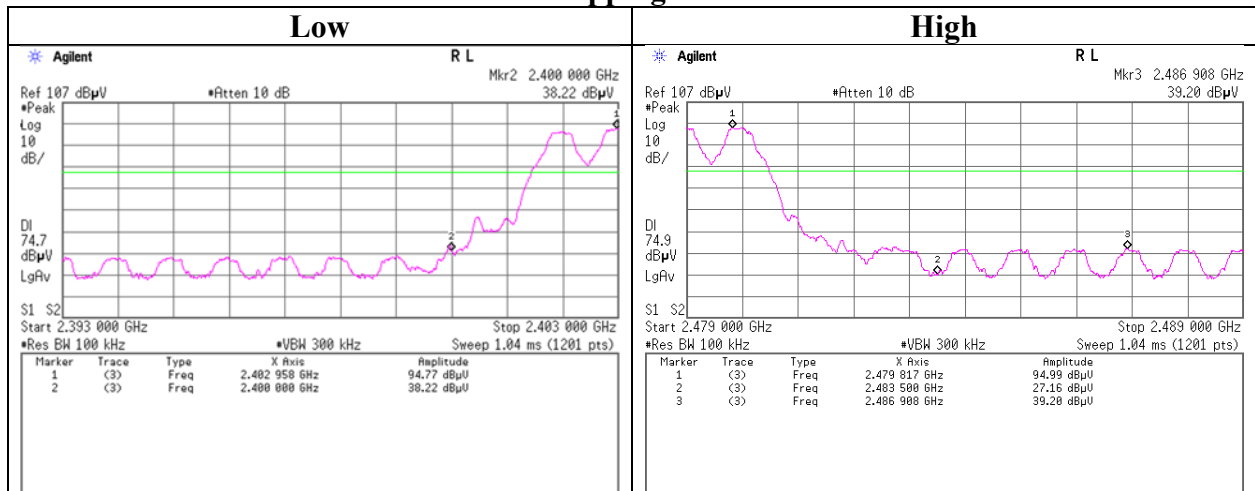
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

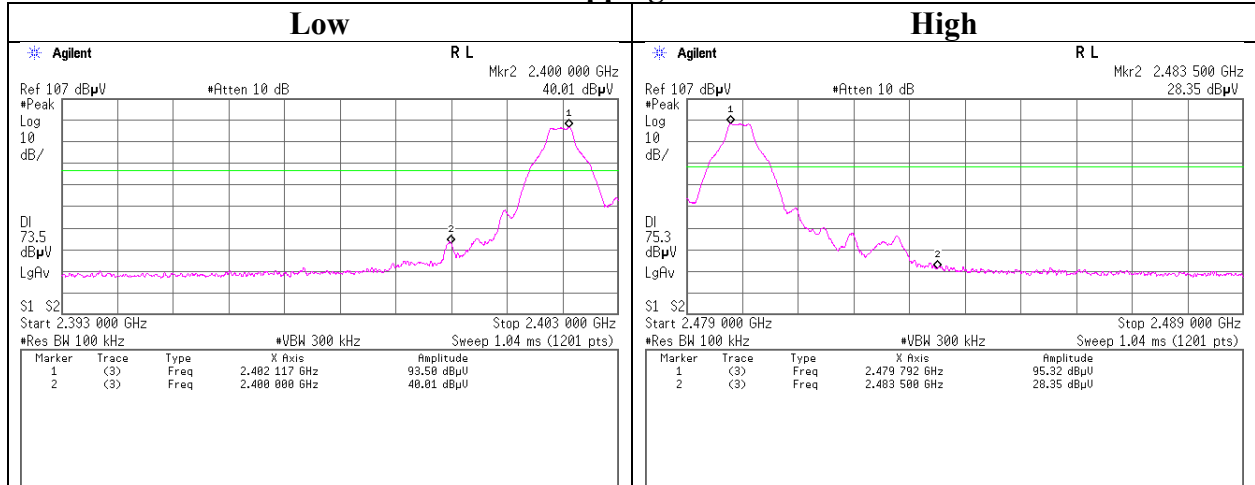
Conducted Emission Band Edge compliance

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 13, 2019
Temperature / Humidity	25 deg. C / 47 % RH
Engineer	Toshinori Yamada
Mode	Tx DH5

Hopping On



Hopping Off



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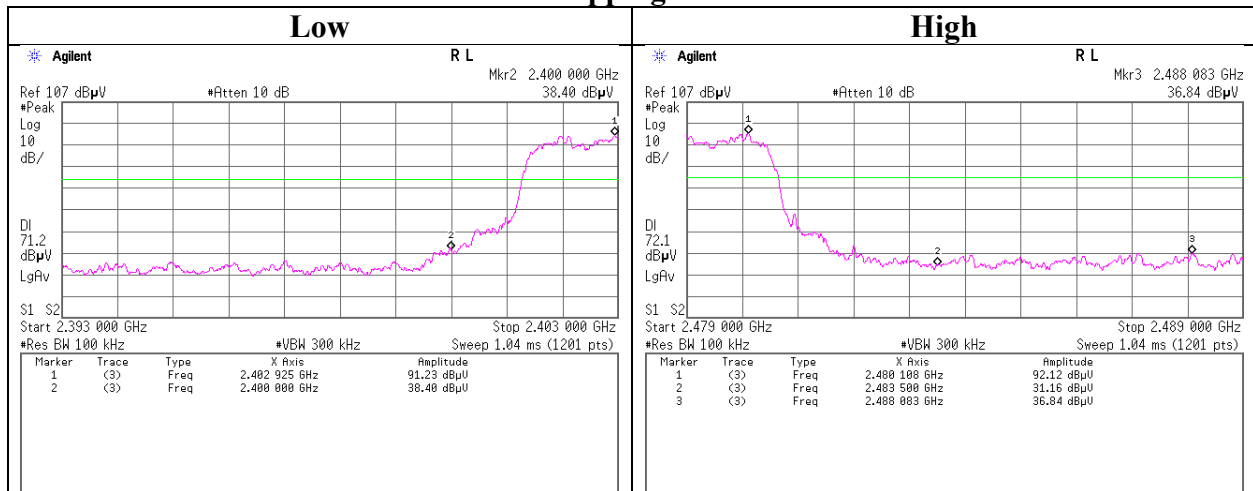
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

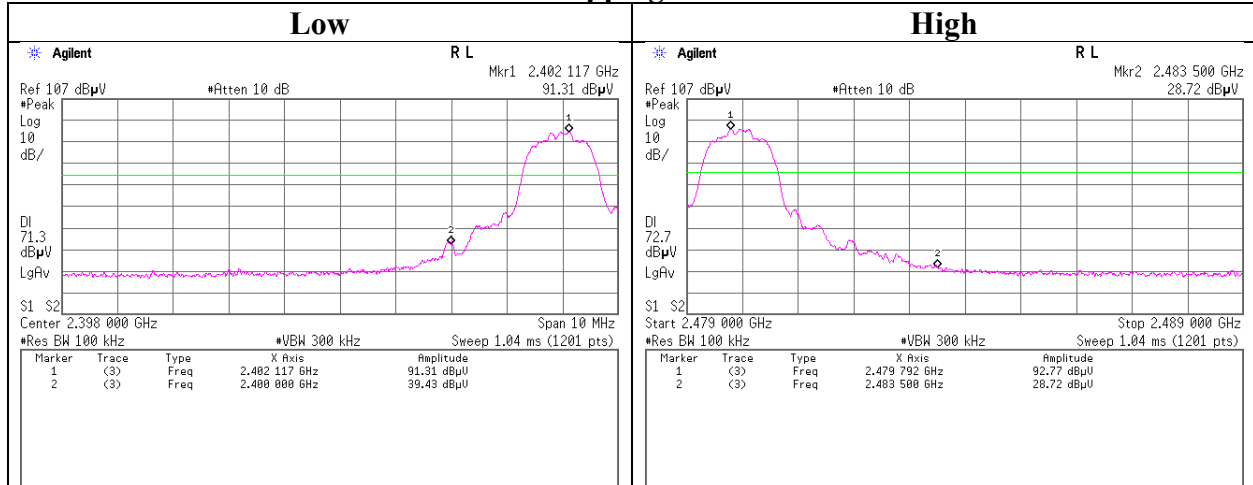
Conducted Emission Band Edge compliance

Report No.	12903002S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	June 13, 2019
Temperature / Humidity	25 deg. C / 47 % RH
Engineer	Toshinori Yamada
Mode	Tx 3DH5

Hopping On



Hopping Off



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APPENDIX 2: Test instruments

Test Instruments (1/2)

Local ID	Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
KTS-07	AT	145111	Digital Tester	SANWA	PC500	7019232	2018/10/17	2019/10/31	12
SAT10-09	AT	145132	Attenuator	Weinschel Corp.	54A-10	W5692	2018/11/25	2019/11/30	12
SAT10-16	AT	160494	Attenuator	Weinschel Corp.	54A-10	83406	2018/12/6	2019/12/30	12
SCC-G12	AT	145040	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	2019/3/27	2020/3/31	12
SOS-09	AT	146318	Humidity Indicator	A&D	AD-5681	4061484	2018/12/5	2019/12/31	12
SPM-13	AT	169910	Power Meter	KEYSIGHT	8990B	MY51000448	2019/3/6	2020/3/31	12
SPSS-06	AT	169911	Power sensor	KEYSIGHT	N1923A	MY57270004	2019/3/6	2020/3/31	12
SSA-03	AT	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2018/8/30	2019/8/31	12
COTS-SEMI-5	RE	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,P E)	-	-	-	-
KHA-02	RE	144941	Horn Antenna	Schwarzbeck	BBHA9120D	230	2019/5/9	2020/5/31	12
KHA-04	RE	146351	Horn Antenna	EMCO	460451	1278	2019/5/9	2020/5/31	12
KSA-08	RE	145089	Spectrum Analyzer	AGILENT	E4446A	MY46180525	2018/10/7	2019/10/31	12
SAEC-02(NSA)	RE	145563	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	2019/4/4	2020/4/30	12
SAEC-02(SVSWR)	RE	145598	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	2019/5/9	2020/5/31	12
SAF-02	RE	145004	Pre Amplifier	SONOMA	310N	290212	2019/2/5	2020/2/29	12
SAF-04	RE	145127	Pre Amplifier	Toyo Corporation	TPA0118-36	2072554	2019/6/4	2020/6/30	12
SAF-08	RE	145007	Pre Amplifier	Toyo Corporation	HAP18-26W	19	2019/3/5	2020/3/31	12
SAT10-05	RE	145136	Attenuator(above 1GHz)	AGILENT	8493C-010	74864	2018/11/25	2019/11/30	12
SAT3-11	RE	150921	Attenuator	JFW	50HF-003N	-	2019/1/25	2020/1/31	12
SAT6-14	RE	167095	Attenuator	JFW	50HF-006N	-	2019/2/5	2020/2/29	12
SBA-02	RE	145022	Biconical Antenna	Schwarzbeck	BBA9106	91032665	2019/4/1	2020/4/30	12
SCC-B1/B3/B5/B7/B8/B13/SRSE-02	RE	144975	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-270(RF Selector)	2019/4/19	2020/4/30	12
SCC-B2/B4/B6/B7/B8/B13/SRSE-02	RE	144976	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-270(RF Selector)	2019/4/19	2020/4/30	12
SCC-G15	RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2019/3/27	2020/3/31	12
SCC-G41	RE	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2019/1/25	2020/1/31	12
SCC-G50	RE	178573	Coaxial Cable	HUBER+SUNER	SUCOFLEX_104_E	MY13407/4E	2019/3/26	2020/3/31	12
SCC-G51	RE	178572	Coaxial Cable	HUBER+SUNER	SUCOFLEX 104	800288 /4A	2019/3/26	2020/3/31	12

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Test Instruments (2/2)

Local ID	Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
SCC-G57	RE	179540	Coaxial Cable	Huber+Suhner	SUCOFLEX 102	802815/2	2019/5/16	2020/5/31	12
SFL-02	RE	145301	Highpass Filter	MICRO-TRONICS	HPM50111	51	2018/11/16	2019/11/30	12
SJM-09	RE	145336	Measure	PROMART	SEN1935	-	-	-	-
SLA-06	RE	145528	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	195	2019/4/1	2020/4/30	12
SOS-03	RE	146317	Humidity Indicator	A&D	AD-5681	4063325	2018/10/25	2019/10/31	12
STR-07	RE	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2018/9/26	2019/9/30	12
STS-02	RE	145793	Digital Hitester	HIOKI	3805-50	80997819	2019/4/2	2020/4/30	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**