



RADIO TEST REPORT

Test Report No. : 12710034S-B-R1

Applicant : Sony Corporation
Type of Equipment : Wireless Noise Canceling Stereo Headset
Model No. : WH-XB900N
FCC ID : AK8WHXB900N
Test regulation : FCC Part 15 Subpart C: 2018
(* Bluetooth part)
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 any agency of the Federal Government.
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 12710034S-B. 12710034S-B is replaced with this report.

Date of test: January 30 to February 10, 2019

Representative test engineer:

K. Noda

Kazuya Noda
Engineer

Consumer Technology Division

Approved by:

T. Imamura

Toyokazu Imamura
Leader

Consumer Technology Division



JAB
Testing
RTL02610

- ☐ 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

CONTENTS	PAGE
SECTION 1: Customer information.....	4
SECTION 2: Equipment under test (E.U.T.).....	4
SECTION 3: Test specification, procedures & results.....	5
SECTION 4: Operation of E.U.T. during testing.....	8
SECTION 5: Radiated Spurious Emission	10
SECTION 6: Antenna Terminal Conducted Tests.....	12
APPENDIX 1: Test data	13
20dB Bandwidth, 99%Occupied Bandwidth and Carrier Frequency Separation.....	13
Number of Hopping Frequency	17
Dwell time.....	19
Maximum Peak Output Power	22
Average Output Power	23
Radiated Spurious Emission	25
Conducted Spurious Emission	36
Conducted Emission Band Edge compliance	42
APPENDIX 2: Test instruments	44
APPENDIX 3: Photographs of test setup	46
Radiated Spurious Emission	46
Worst Case Position	47

SECTION 1: Customer information

Company Name	:	Sony Corporation
Address	:	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Telephone Number	:	+604-3835075
Contact Person	:	Maizatul Akmal, Mat Zan

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 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	:	Wireless Noise Canceling Stereo Headset
Model No.	:	WH-XB900N
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.7 V: Built-in lithium-ion rechargeable battery DC 5 V: When charged using USB
Receipt Date of Sample (Information from test lab.)	:	January 17, 2019
Country of Mass-production	:	China
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: WH-XB900N (referred to as the EUT in this report) is a Wireless Noise Canceling Stereo Headset.

Radio Specification

Bluetooth Low Energy

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	GFSK
Power Supply (radio part input)	:	DC 1.35 V
Antenna type	:	Chip Antenna
Antenna Gain	:	2.66 dBi
Clock frequency	:	crystal (X201: 26 MHz)

Bluetooth

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Power Supply (radio part input)	:	DC 1.35 V
Antenna type	:	Chip Antenna
Antenna Gain	:	2.66 dBi
Clock frequency	:	crystal (X201: 26 MHz)

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on 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

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 *2)	-
Carrier Frequency Separation	FCC: KDB 558074 D01 15.247 Meas Guidance v05 *1) IC: -	FCC: Section15.247(a)(1) IC: RSS-247 5.1 (b)	See data.	Complied a)	Conducted
20dB Bandwidth	FCC: KDB 558074 D01 15.247 Meas Guidance v05 *1) 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 *1) 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 v05 *1) 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 v05 *1) 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 *1) IC: RSS-Gen 6.13	FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	6.1 dB 4960.00 MHz, AV, Hori. Tx, Hopping Off, DH5 2480 MHz	Complied e) / f)	Conducted/ Radiated (above 30 MHz) *3)

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

*1) Since measurement was performed before issue of KDB 558074 v05r01, we referred to DA 00-705 and KDB 558074 v05 which had been accepted provisionally.

*2) The EUT operates with a battery. AC Line can be connected to the EUT via other device's USB port; however, the EUT stops transmission during recharging. Therefore, the test is not applicable to the EUT.

*3) 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.

FCC Part 15.31 (e)

The EUT is a battery-operated device and test was performed with the full-charged battery. Therefore, this 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.

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

EMI

There is no applicable rule of uncertainty in this applied standard. Therefore, the following 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
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)	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 %

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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 (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.=7, Int.=30 EDR: Ext.=72, Int.=41 Software: CSR BlueSuite BlueTest3 Version 2.6.6.1 311 *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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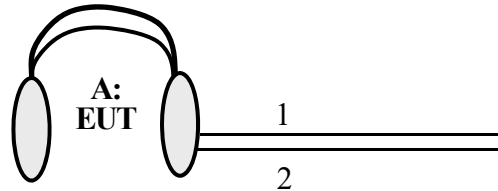
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4.2 Configuration and peripherals



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

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless Noise Canceling Stereo Headset	WH-XB900N	900015S *1) 9000139 *2)	Sony Corporation	EUT

*1) Used for Antenna Terminal conducted test

*2) Used for Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB	1.0	Shielded	Shielded	-
2	Audio	1.2	Shielded	Shielded	-

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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 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.

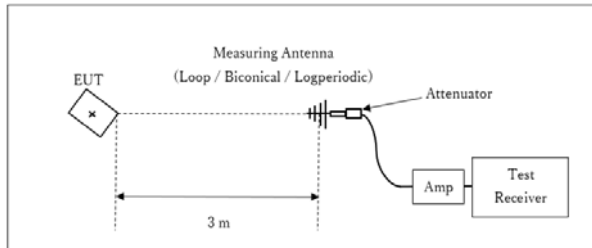
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9 (IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

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 2: Test Setup

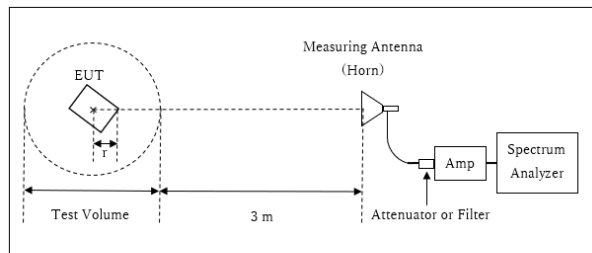
Below 1 GHz



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: $20 \times \log (3.91 \text{ m} / 3.0 \text{ m}) = 2.31 \text{ dB}$

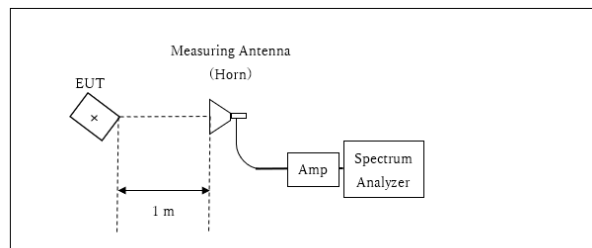
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.91 \text{ m}$

Test Volume : 2.0 m

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

$r = 0.09 \text{ m}$

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 X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Antenna polarization	Frequency				
	Below 1 GHz	1 GHz - 2.8 GHz	2.8 GHz - 13 GHz	13 GHz - 18 GHz	18 GHz - 26.5 GHz
Horizontal	Z	Z	X	X	X
Vertical	Z	X	Z	X	Z

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
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: 50 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) 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.
 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

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

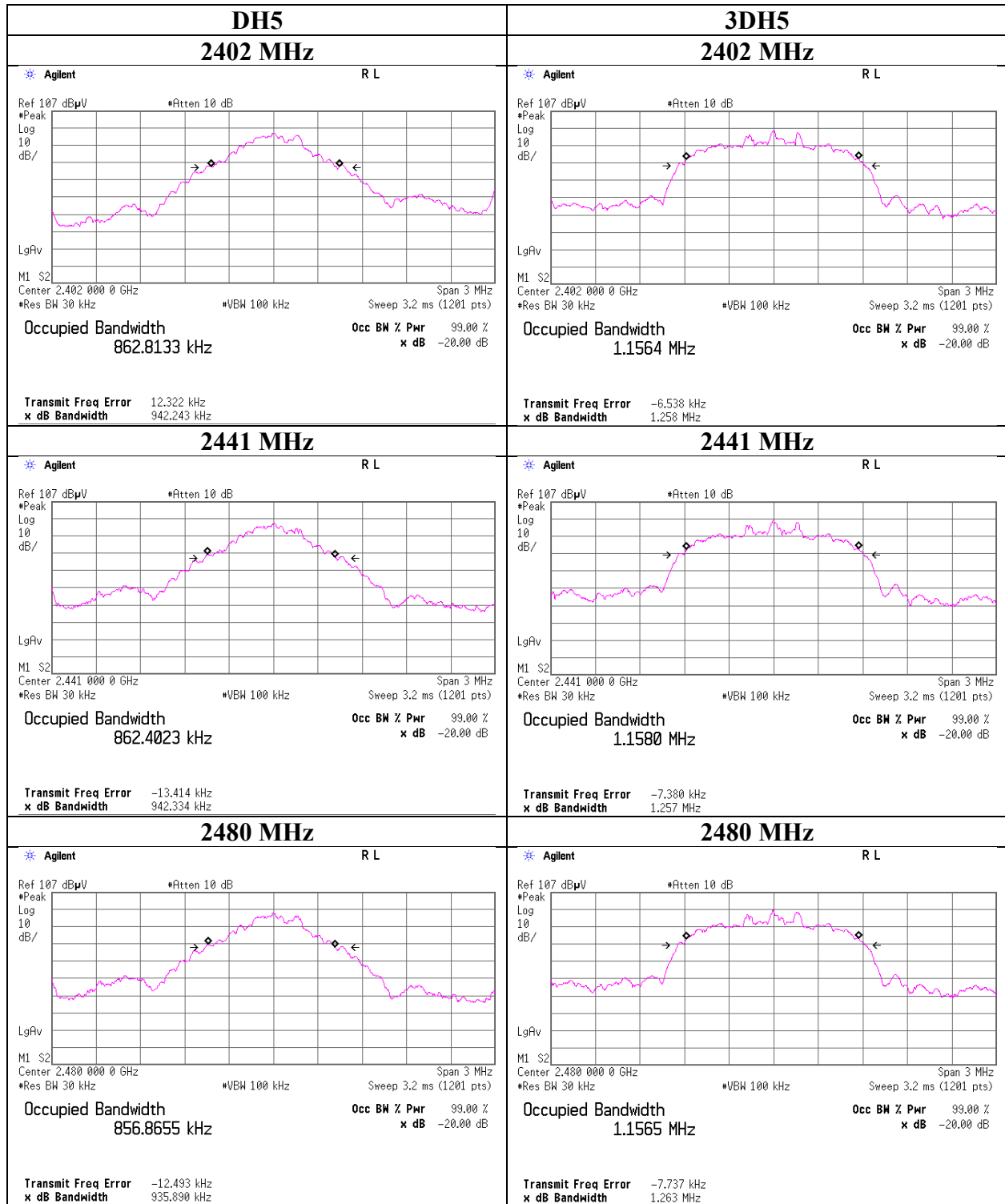
Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx, Hopping Off, Tx, Hopping On

Mode	Freq. [MHz]	20dB Bandwidth [MHz]	99% Occupied Bandwidth [kHz]	Carrier Frequency Separation [MHz]	Limit for Carrier Frequency separation [MHz]
DH5	2402.0	0.942	862.813	1.0000	≥ 0.628
DH5	2441.0	0.942	862.402	1.0000	≥ 0.628
DH5	2480.0	0.936	856.866	1.0075	≥ 0.624
DH5	Hopping On	-	78547.4	-	-
3DH5	2402.0	1.258	1156.4	1.0025	≥ 0.839
3DH5	2441.0	1.257	1158.0	1.0025	≥ 0.838
3DH5	2480.0	1.263	1156.5	1.0075	≥ 0.842
3DH5	Hopping On	-	78668.8	-	-

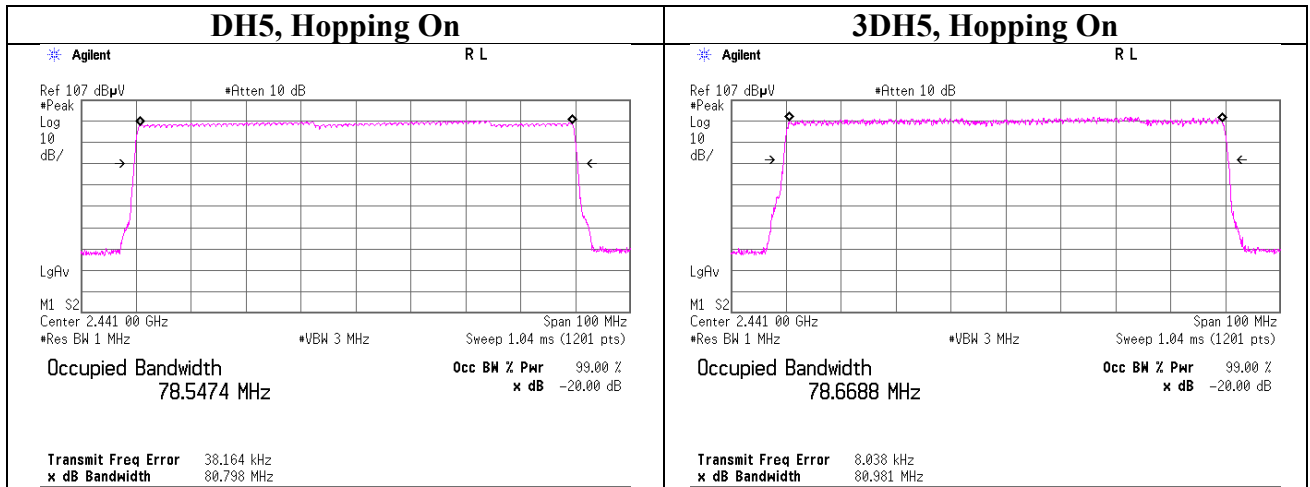
Limit: Two-thirds of 20dB Bandwidth or 25kHz (whichever is greater).

No limit applies to 20dB Bandwidth.

20dB Bandwidth and 99% Occupied Bandwidth



20dB Bandwidth and 99% Occupied Bandwidth



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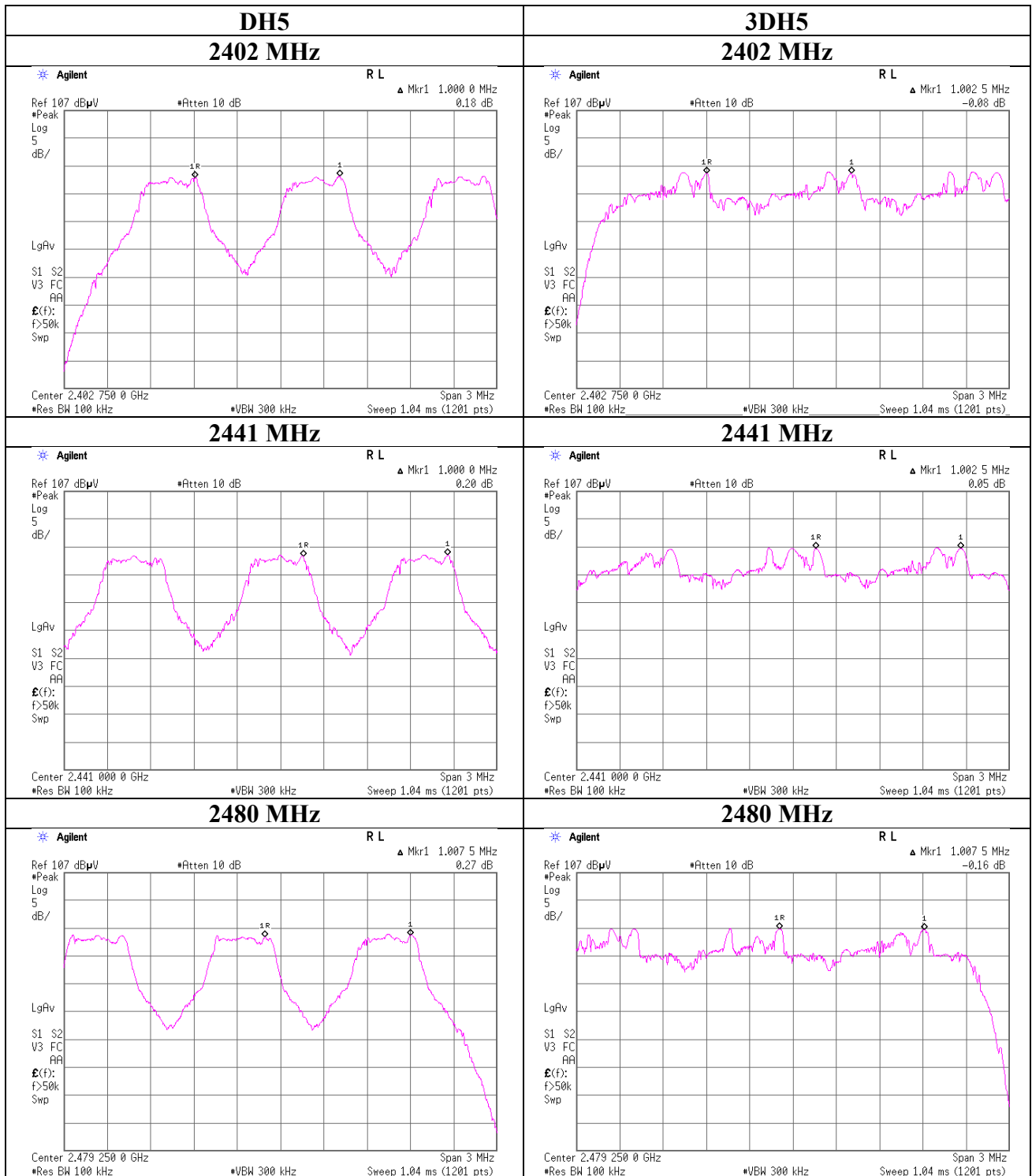
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Carrier Frequency Separation



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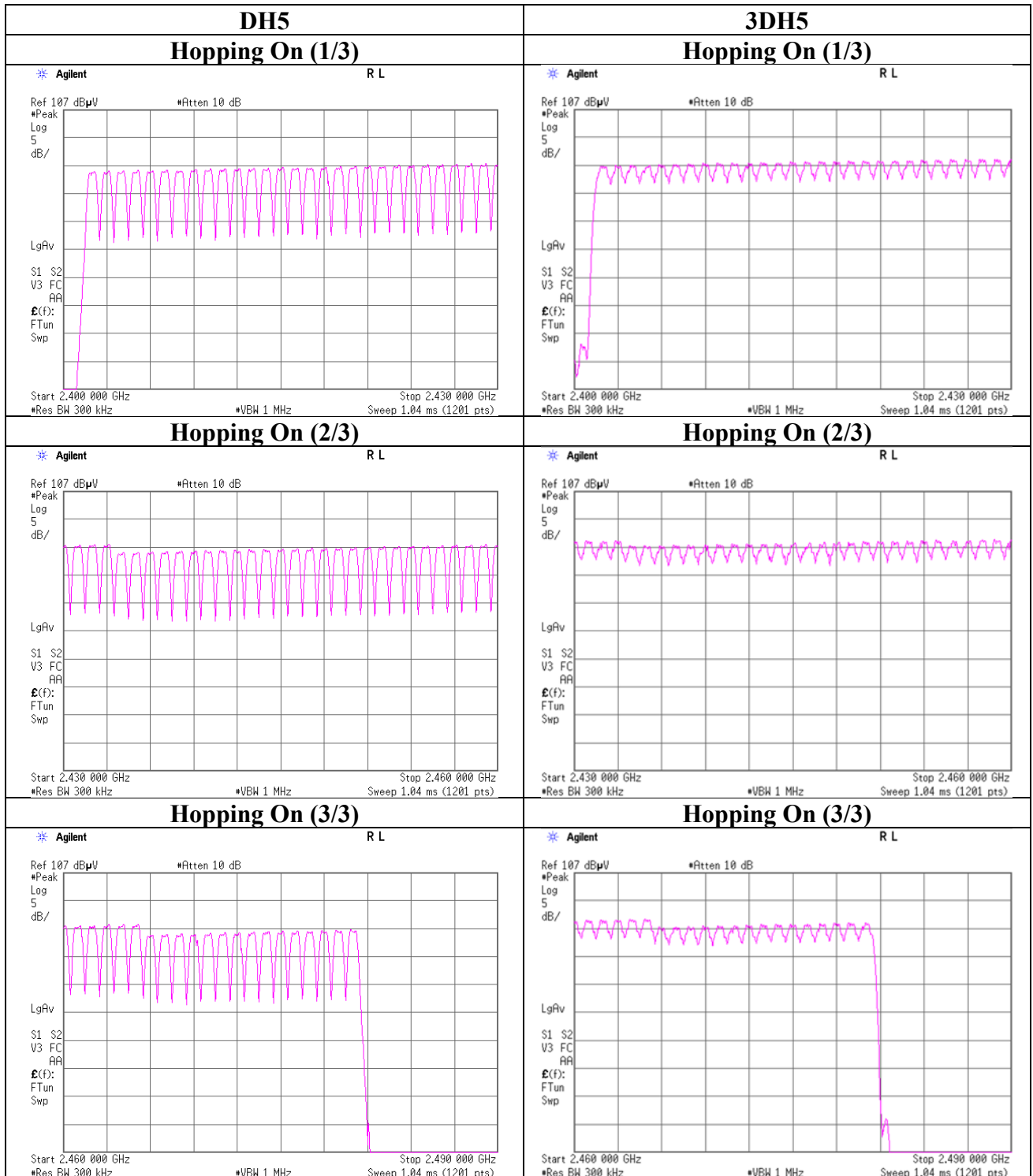
Number of Hopping Frequency

Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
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. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx, Hopping On

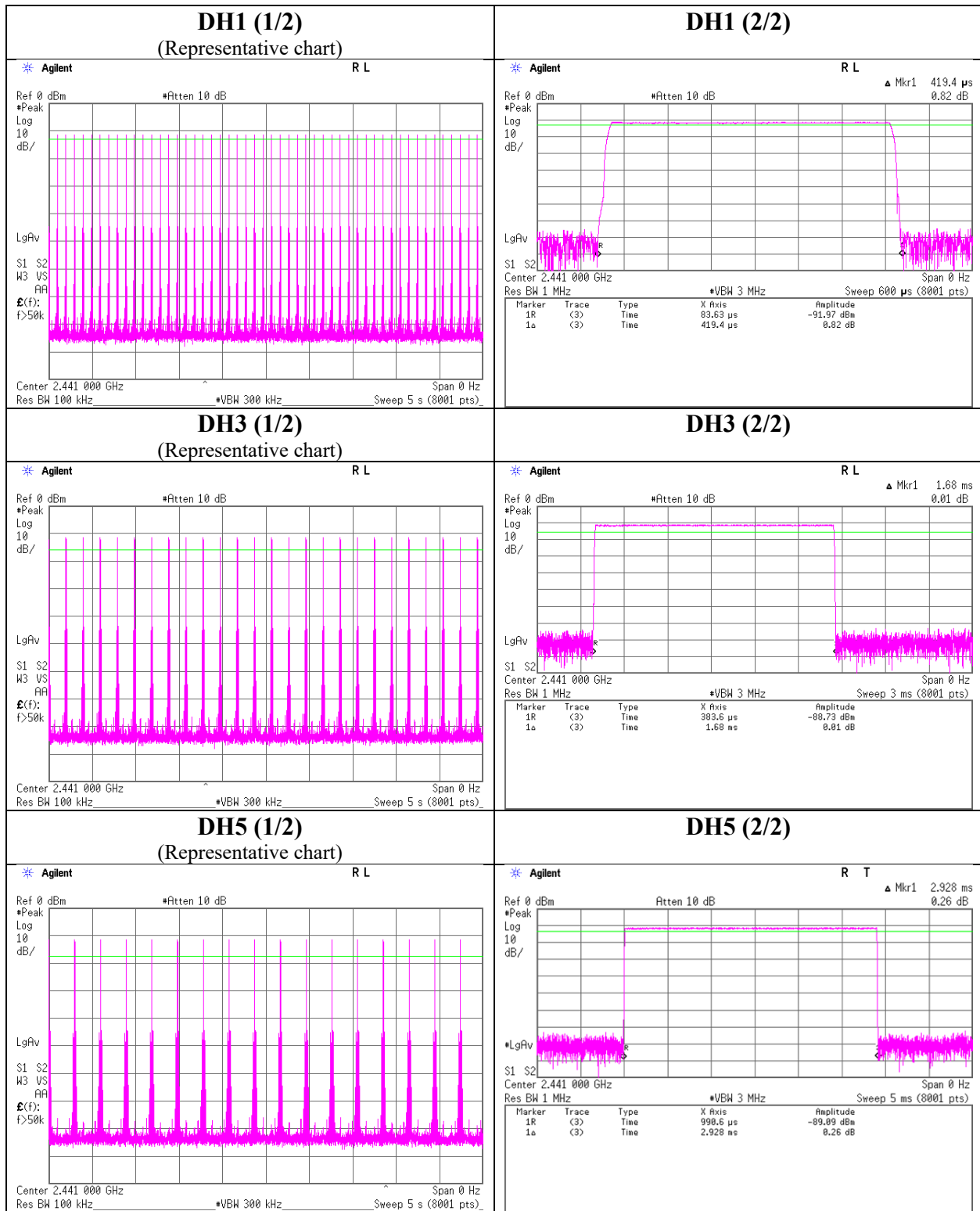
Mode	Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period				Length of transmission [msec]	Result [msec]	Limit [msec]
DH1	51.0 times	/	5 sec.	x 31.6 sec. = 323 times	0.419	135	400
DH3	26.0 times	/	5 sec.	x 31.6 sec. = 165 times	1.680	277	400
DH5	17.0 times	/	5 sec.	x 31.6 sec. = 108 times	2.928	316	400
3DH1	51.0 times	/	5 sec.	x 31.6 sec. = 323 times	0.437	141	400
3DH3	26.0 times	/	5 sec.	x 31.6 sec. = 165 times	1.702	281	400
3DH5	17.0 times	/	5 sec.	x 31.6 sec. = 108 times	2.951	319	400

Sample Calculation

Result = Number of transmission x Length of transmission

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



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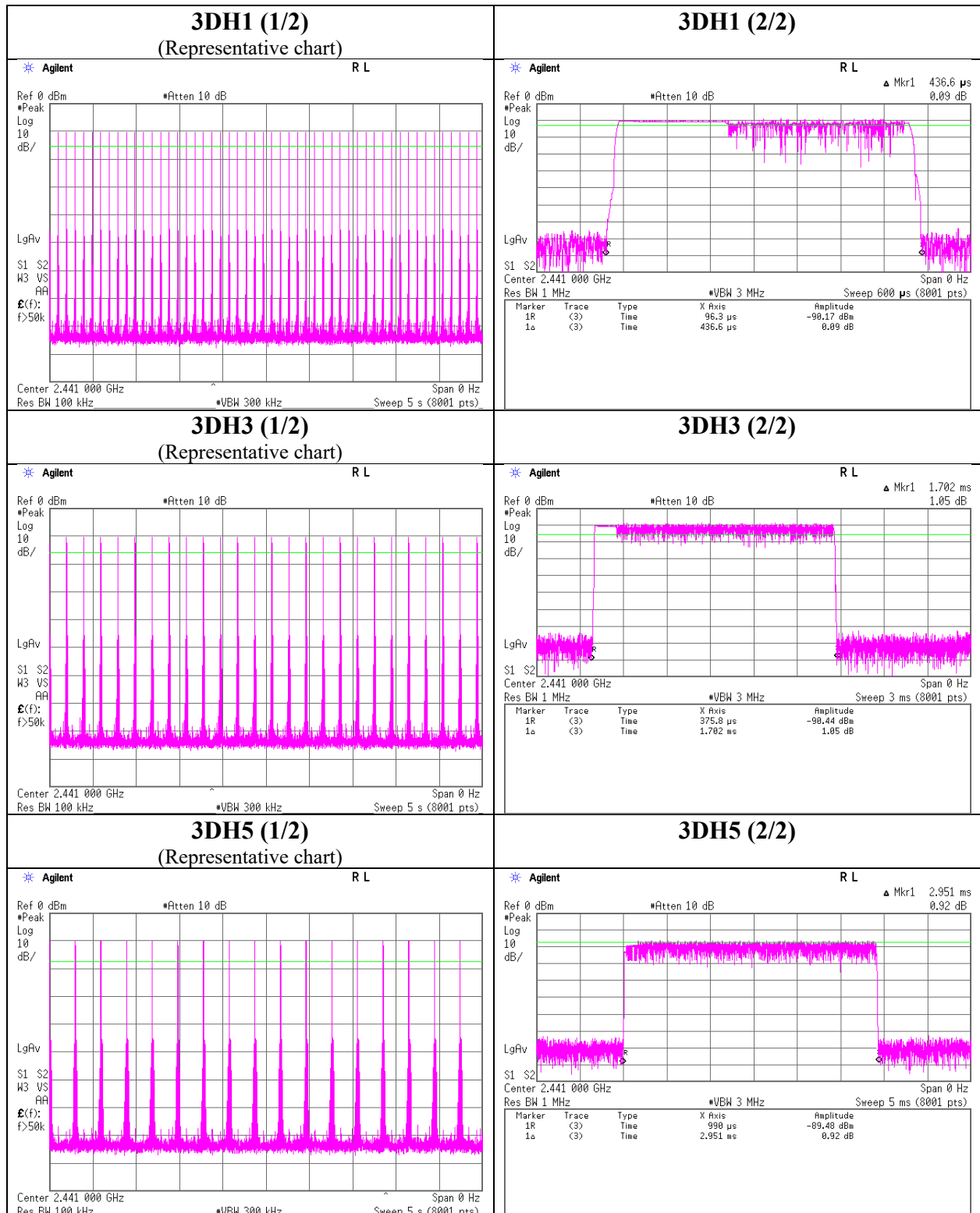
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Dwell time



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Maximum Peak Output Power

Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx, Hopping Off

Mode	Freq.	Reading	Cable Loss	Atten. Loss	Conducted Power					e.i.r.p. for RSS-247						
					Result		Limit		Margin	Antenna Gain	Result		Limit		Margin	
					[dBm]	[mW]	[dBm]	[mW]			[dBi]	[dBm]	[mW]	[dBm]		[mW]
DH5	2402.0	-11.28	1.90	9.82	0.44	1.11	20.96	125	20.52	2.66	3.10	2.04	36.02	4000	32.92	
DH5	2441.0	-10.71	1.95	9.82	1.06	1.28	20.96	125	19.90	2.66	3.72	2.36	36.02	4000	32.30	
DH5	2480.0	-10.39	1.94	9.82	1.37	1.37	20.96	125	19.59	2.66	4.03	2.53	36.02	4000	31.99	
2DH5	2402.0	-8.87	1.90	9.82	2.85	1.93	20.96	125	18.11	2.66	5.51	3.56	36.02	4000	30.51	
2DH5	2441.0	-8.23	1.95	9.82	3.54	2.26	20.96	125	17.42	2.66	6.20	4.17	36.02	4000	29.82	
2DH5	2480.0	-7.68	1.94	9.82	4.08	2.56	20.96	125	16.88	2.66	6.74	4.72	36.02	4000	29.28	
3DH5	2402.0	-8.40	1.90	9.82	3.32	2.15	20.96	125	17.64	2.66	5.98	3.96	36.02	4000	30.04	
3DH5	2441.0	-7.81	1.95	9.82	3.96	2.49	20.96	125	17.00	2.66	6.62	4.59	36.02	4000	29.40	
3DH5	2480.0	-7.28	1.94	9.82	4.48	2.81	20.96	125	16.48	2.66	7.14	5.18	36.02	4000	28.88	

Sample Calculation:

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

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

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Average Output Power (Reference data for RF Exposure)

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 4, 2019
Temperature / Humidity	21 deg. C / 37 % RH
Engineer	Kazuya Noda
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	-13.02	1.90	9.82	-1.30	0.74	1.08	-0.22	0.95
DH5	2441.0	-12.50	1.95	9.82	-0.73	0.85	1.08	0.35	1.08
DH5	2480.0	-12.11	1.94	9.82	-0.35	0.92	1.08	0.73	1.18
2DH5	2402.0	-13.00	1.90	9.82	-1.28	0.74	1.05	-0.23	0.95
2DH5	2441.0	-12.38	1.95	9.82	-0.61	0.87	1.05	0.44	1.11
2DH5	2480.0	-11.89	1.94	9.82	-0.13	0.97	1.05	0.92	1.24
3DH5	2402.0	-13.01	1.90	9.82	-1.29	0.74	1.05	-0.24	0.95
3DH5	2441.0	-12.40	1.95	9.82	-0.63	0.86	1.05	0.42	1.10
3DH5	2480.0	-11.87	1.94	9.82	-0.11	0.97	1.05	0.94	1.24

Sample Calculation:

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

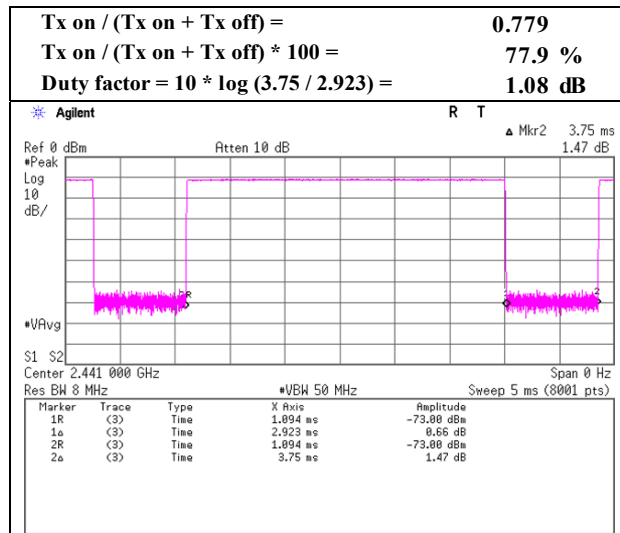
Result (Burst power average) = Time average + Duty factor

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

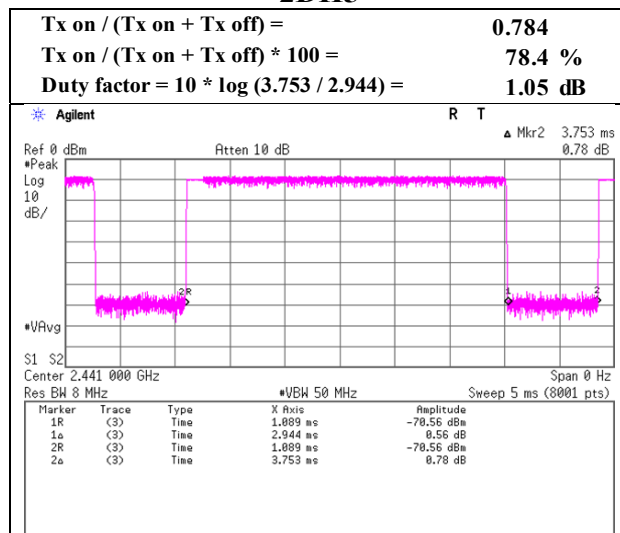
Burst Rate Confirmation

Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx, Hopping Off

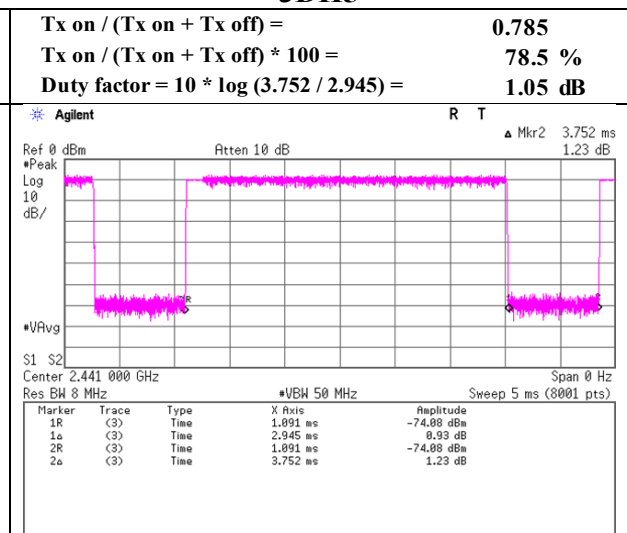
DH5



2DH5



3DH5



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Radiated Spurious Emission

Report No.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka	Kazuya Noda	Kazuya Noda
	(30 MHz - 1 GHz)	(1 GHz - 13 GHz)	(13 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, DH5 2402 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	109.125	QP	22.80	11.80	8.14	31.80	0.00	10.94	43.50	32.5	300	326	
Hori.	231.994	QP	28.50	11.39	6.18	31.76	0.00	14.31	46.00	31.6	200	217	
Hori.	303.996	QP	27.80	14.12	6.94	31.77	0.00	17.09	46.00	28.9	100	44	
Hori.	460.013	QP	24.10	16.89	7.73	31.89	0.00	16.83	46.00	29.1	100	352	
Hori.	556.009	QP	34.90	18.00	8.17	32.04	0.00	29.03	46.00	16.9	159	254	
Hori.	2390.000	PK	46.39	27.86	14.67	39.46	2.31	51.77	73.90	22.1	240	282	
Hori.	2558.026	PK	47.25	27.84	14.82	39.44	2.31	52.78	73.90	21.1	132	88	
Hori.	4804.000	PK	52.23	31.43	7.17	39.50	2.31	53.64	73.90	20.2	222	121	
Hori.	7206.000	PK	44.33	36.79	9.03	39.29	2.31	53.17	73.90	20.7	100	0	
Hori.	9608.000	PK	45.27	38.51	10.52	39.52	2.31	57.09	73.90	16.8	100	0	
Hori.	19220.000	PK	48.32	40.14	11.69	48.16	-9.54	42.45	73.90	31.4	173	148	
Hori.	2390.000	AV	33.38	27.86	14.67	39.46	2.31	38.76	53.90	15.1	240	282	
Hori.	2558.026	AV	39.14	27.84	14.82	39.44	2.31	44.67	53.90	9.2	132	88	
Hori.	4804.000	AV	45.35	31.43	7.17	39.50	2.31	46.76	53.90	7.1	222	121	
Hori.	7206.000	AV	32.51	36.79	9.03	39.29	2.31	41.35	53.90	12.5	100	0	
Hori.	9608.000	AV	33.46	38.51	10.52	39.52	2.31	45.28	53.90	8.6	100	0	
Hori.	19220.000	AV	42.83	40.14	11.69	48.16	-9.54	36.96	53.90	16.9	173	148	
Vert.	49.716	QP	22.20	11.27	7.45	31.82	0.00	9.10	40.00	30.9	100	359	
Vert.	146.894	QP	22.10	14.85	8.75	31.78	0.00	13.92	43.50	29.5	100	330	
Vert.	576.005	QP	31.50	18.54	8.24	32.03	0.00	26.25	46.00	19.7	100	94	
Vert.	915.975	QP	24.00	22.12	9.71	31.24	0.00	24.59	46.00	21.4	100	159	
Vert.	2390.000	PK	45.19	27.86	14.67	39.46	2.31	50.57	73.90	23.3	153	327	
Vert.	2558.066	PK	47.49	27.84	14.82	39.44	2.31	53.02	73.90	20.8	146	79	
Vert.	4804.000	PK	50.58	31.43	7.17	39.50	2.31	51.99	73.90	21.9	100	104	
Vert.	7206.000	PK	44.12	36.79	9.03	39.29	2.31	52.96	73.90	20.9	100	0	
Vert.	9608.000	PK	45.73	38.51	10.52	39.52	2.31	57.55	73.90	16.3	100	0	
Vert.	19220.000	PK	48.44	40.14	11.69	48.16	-9.54	42.57	73.90	31.3	213	112	
Vert.	2390.000	AV	33.33	27.86	14.67	39.46	2.31	38.71	53.90	15.1	153	327	
Vert.	2558.066	AV	39.25	27.84	14.82	39.44	2.31	44.78	53.90	9.1	146	79	
Vert.	4804.000	AV	43.34	31.43	7.17	39.50	2.31	44.75	53.90	9.1	100	104	
Vert.	7206.000	AV	32.59	36.79	9.03	39.29	2.31	41.43	53.90	12.4	100	0	
Vert.	9608.000	AV	33.82	38.51	10.52	39.52	2.31	45.64	53.90	8.2	100	0	
Vert.	19220.000	AV	41.91	40.14	11.69	48.16	-9.54	36.04	53.90	17.8	213	112	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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	91.95	27.86	14.68	39.46	2.31	97.34	-	-	Carrier
Hori.	2399.188	PK	43.67	27.86	14.68	39.46	2.31	49.06	77.34	28.2	
Hori.	2400.000	PK	45.85	27.86	14.68	39.46	2.31	51.24	77.34	26.1	
Vert.	2402.000	PK	91.51	27.86	14.68	39.46	2.31	96.90	-	-	Carrier
Vert.	2399.198	PK	42.60	27.86	14.68	39.46	2.31	47.99	76.90	28.9	
Vert.	2400.000	PK	44.94	27.86	14.68	39.46	2.31	50.33	76.90	26.5	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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

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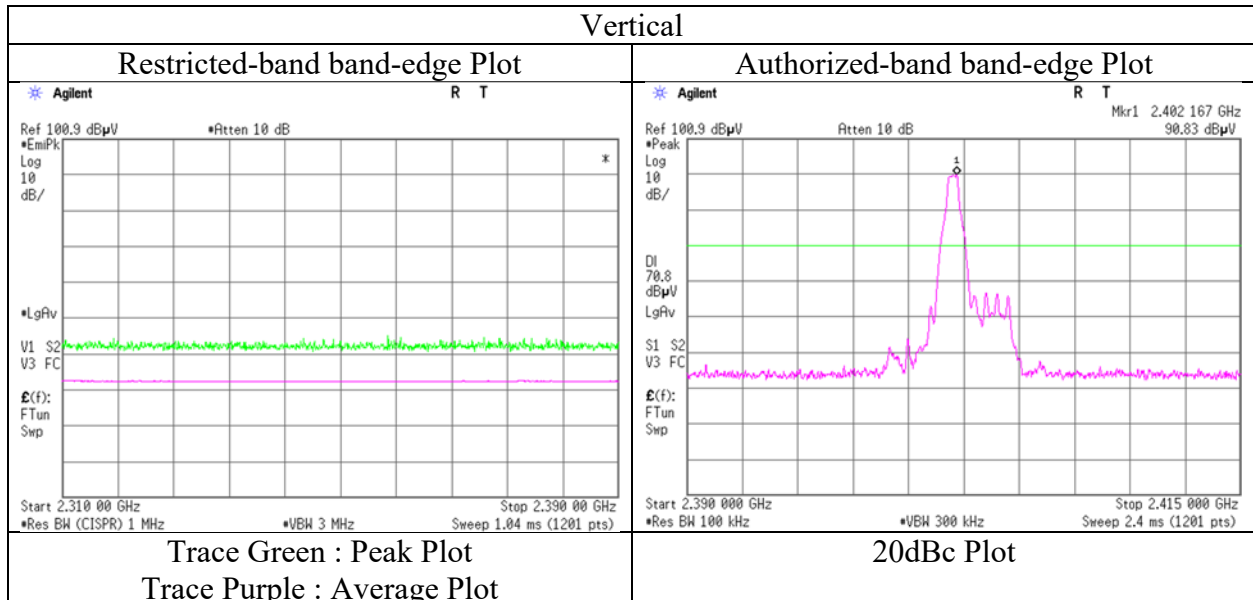
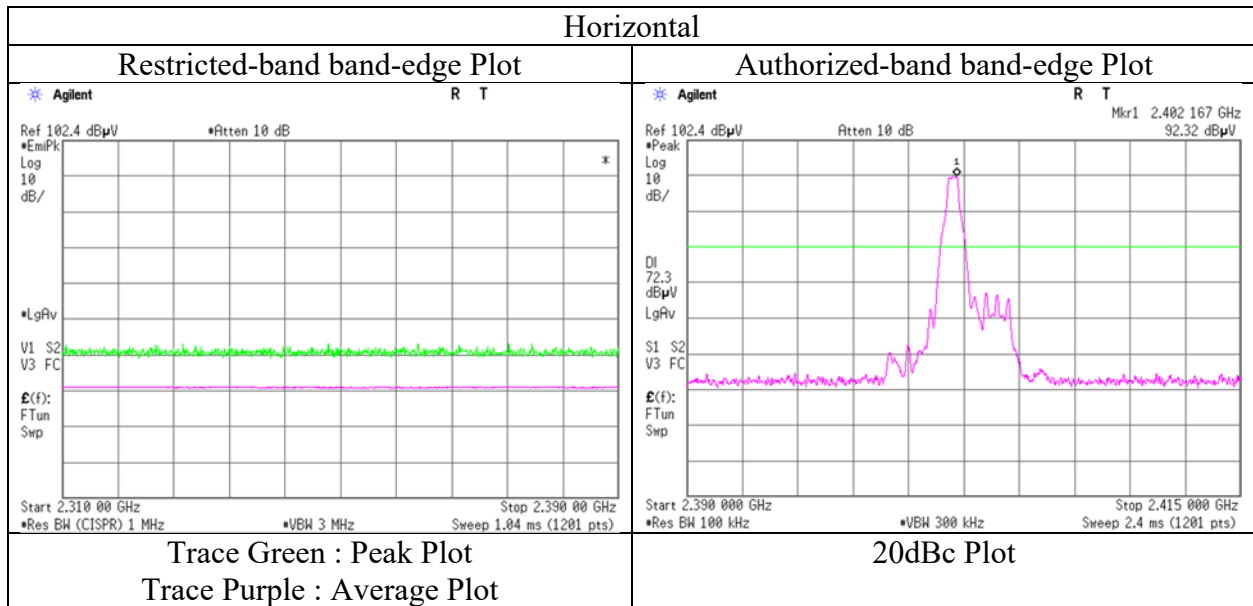
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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No. 3
Date	January 30, 2019
Temperature / Humidity	23 deg. C / 34 %RH
Engineer	Kazuya Noda
	(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.

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Radiated Spurious Emission

Report No.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka	Kazuya Noda	Kazuya Noda
	(30 MHz - 1 GHz)	(1 GHz - 13 GHz)	(13 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, DH5 2441 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	112.840	QP	21.90	12.30	8.14	31.80	0.00	10.54	43.50	32.9	204	320	
Hori.	260.031	QP	24.50	12.16	6.48	31.75	0.00	11.39	46.00	34.6	106	40	
Hori.	347.987	QP	24.50	15.00	7.23	31.77	0.00	14.96	46.00	31.0	100	213	
Hori.	453.013	QP	22.80	16.72	7.70	31.89	0.00	15.33	46.00	30.6	150	182	
Hori.	556.008	QP	34.70	18.00	8.17	32.04	0.00	28.83	46.00	17.1	167	244	
Hori.	2597.013	PK	49.41	27.87	14.87	39.43	2.31	55.03	73.90	18.8	134	90	
Hori.	4882.000	PK	51.61	31.37	7.23	39.50	2.31	53.02	73.90	20.8	190	124	
Hori.	7323.000	PK	44.58	37.01	9.08	39.35	2.31	53.63	73.90	20.2	100	0	
Hori.	9764.000	PK	44.49	38.92	10.44	39.41	2.31	56.75	73.90	17.1	100	0	
Hori.	19524.000	PK	48.81	40.08	11.88	47.70	-9.54	43.53	73.90	30.3	168	151	
Hori.	2597.013	AV	40.95	27.87	14.87	39.43	2.31	46.57	53.90	7.3	134	90	
Hori.	4882.000	AV	45.03	31.37	7.23	39.50	2.31	46.44	53.90	7.4	190	124	
Hori.	7323.000	AV	32.57	37.01	9.08	39.35	2.31	41.62	53.90	12.2	100	0	
Hori.	9764.000	AV	32.93	38.92	10.44	39.41	2.31	45.19	53.90	8.7	100	0	
Hori.	19524.000	AV	42.33	40.08	11.88	47.70	-9.54	37.05	53.90	16.8	168	151	
Vert.	48.980	QP	22.00	11.57	7.43	31.82	0.00	9.18	40.00	30.8	100	324	
Vert.	139.172	QP	21.70	14.45	8.58	31.79	0.00	12.94	43.50	30.5	100	208	
Vert.	564.000	QP	34.60	18.20	8.20	32.04	0.00	28.96	46.00	17.0	100	88	
Vert.	935.080	QP	23.10	22.04	9.77	31.10	0.00	23.81	46.00	22.1	100	159	
Vert.	2597.051	PK	49.33	27.87	14.87	39.43	2.31	54.95	73.90	18.9	147	83	
Vert.	4882.000	PK	49.75	31.37	7.23	39.50	2.31	51.16	73.90	22.7	100	101	
Vert.	7323.000	PK	44.56	37.01	9.08	39.35	2.31	53.61	73.90	20.2	100	0	
Vert.	9764.000	PK	45.31	38.92	10.44	39.41	2.31	57.57	73.90	16.3	100	0	
Vert.	19524.000	PK	47.61	40.08	11.88	47.70	-9.54	42.33	73.90	31.5	216	116	
Vert.	2597.051	AV	40.39	27.87	14.87	39.43	2.31	46.01	53.90	7.8	147	83	
Vert.	4882.000	AV	42.36	31.37	7.23	39.50	2.31	43.77	53.90	10.1	100	101	
Vert.	7323.000	AV	32.48	37.01	9.08	39.35	2.31	41.53	53.90	12.3	100	0	
Vert.	9764.000	AV	32.96	38.92	10.44	39.41	2.31	45.22	53.90	8.6	100	0	
Vert.	19524.000	AV	40.43	40.08	11.88	47.70	-9.54	35.15	53.90	18.7	216	116	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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.

Radiated Spurious Emission

Report No.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka	Kazuya Noda	Kazuya Noda
	(30 MHz - 1 GHz)	(1 GHz - 13 GHz)	(13 GHz - 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.	122.770	QP	21.90	13.37	8.23	31.80	0.00	11.70	43.50	31.8	100	1	
Hori.	556.033	QP	34.60	18.00	8.17	32.04	0.00	28.73	46.00	17.2	157	269	
Hori.	2483.500	PK	46.63	27.65	14.77	39.46	2.31	51.90	73.90	22.0	200	281	
Hori.	2483.982	PK	47.59	27.65	14.77	39.46	2.31	52.86	73.90	21.0	200	281	
Hori.	2636.020	PK	49.67	27.90	14.90	39.42	2.31	55.36	73.90	18.5	133	99	
Hori.	4960.000	PK	52.49	31.54	7.28	39.50	2.31	54.12	73.90	19.7	189	124	
Hori.	7440.000	PK	44.23	37.10	9.15	39.42	2.31	53.37	73.90	20.5	100	0	
Hori.	9920.000	PK	45.57	38.97	10.36	39.30	2.31	57.91	73.90	15.9	100	0	
Hori.	19836.000	PK	49.71	39.94	12.02	47.72	-9.54	44.41	73.90	29.4	159	150	
Hori.	2483.500	AV	35.69	27.65	14.77	39.46	2.31	40.96	53.90	12.9	200	281	
Hori.	2483.982	AV	35.99	27.65	14.77	39.46	2.31	41.26	53.90	12.6	200	281	
Hori.	2636.020	AV	41.25	27.90	14.90	39.42	2.31	46.94	53.90	6.9	133	99	
Hori.	4960.000	AV	46.15	31.54	7.28	39.50	2.31	47.78	53.90	6.1	189	124	
Hori.	7440.000	AV	33.06	37.10	9.15	39.42	2.31	42.20	53.90	11.7	100	0	
Hori.	9920.000	AV	33.53	38.97	10.36	39.30	2.31	45.87	53.90	8.0	100	0	
Hori.	19836.000	AV	43.63	39.94	12.02	47.72	-9.54	38.33	53.90	15.5	159	150	
Vert.	49.428	QP	22.20	11.39	7.44	31.82	0.00	9.21	40.00	30.7	100	104	
Vert.	138.507	QP	21.60	14.43	8.57	31.79	0.00	12.81	43.50	30.6	100	293	
Vert.	244.013	QP	25.10	11.63	6.31	31.75	0.00	11.29	46.00	34.7	150	4	
Vert.	331.959	QP	22.10	14.60	7.12	31.77	0.00	12.05	46.00	33.9	100	208	
Vert.	419.000	QP	21.40	16.08	7.57	31.85	0.00	13.20	46.00	32.8	100	223	
Vert.	572.005	QP	33.90	18.43	8.22	32.03	0.00	28.52	46.00	17.4	100	107	
Vert.	904.932	QP	23.50	22.07	9.68	31.32	0.00	23.93	46.00	22.0	100	45	
Vert.	2483.500	PK	48.22	27.65	14.77	39.46	2.31	53.49	73.90	20.4	144	317	
Vert.	2483.971	PK	48.56	27.65	14.77	39.46	2.31	53.83	73.90	20.0	144	317	
Vert.	2636.048	PK	49.93	27.90	14.90	39.42	2.31	55.62	73.90	18.2	146	91	
Vert.	4960.000	PK	50.54	31.54	7.28	39.50	2.31	52.17	73.90	21.7	100	89	
Vert.	7440.000	PK	45.10	37.10	9.15	39.42	2.31	54.24	73.90	19.6	100	0	
Vert.	9920.000	PK	45.27	38.97	10.36	39.30	2.31	57.61	73.90	16.2	100	0	
Vert.	19836.000	PK	47.28	39.94	12.02	47.72	-9.54	41.98	73.90	31.9	223	115	
Vert.	2483.500	AV	35.51	27.65	14.77	39.46	2.31	40.78	53.90	13.1	144	317	
Vert.	2483.971	AV	36.03	27.65	14.77	39.46	2.31	41.30	53.90	12.6	144	317	
Vert.	2636.048	AV	41.97	27.90	14.90	39.42	2.31	47.66	53.90	6.2	146	91	
Vert.	4960.000	AV	43.64	31.54	7.28	39.50	2.31	45.27	53.90	8.6	100	89	
Vert.	7440.000	AV	33.27	37.10	9.15	39.42	2.31	42.41	53.90	11.4	100	0	
Vert.	9920.000	AV	33.59	38.97	10.36	39.30	2.31	45.93	53.90	7.9	100	0	
Vert.	19836.000	AV	40.92	39.94	12.02	47.72	-9.54	35.62	53.90	18.2	223	115	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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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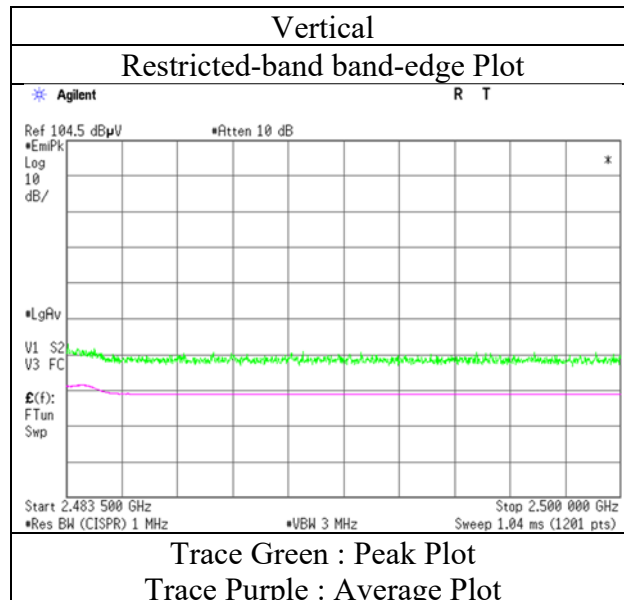
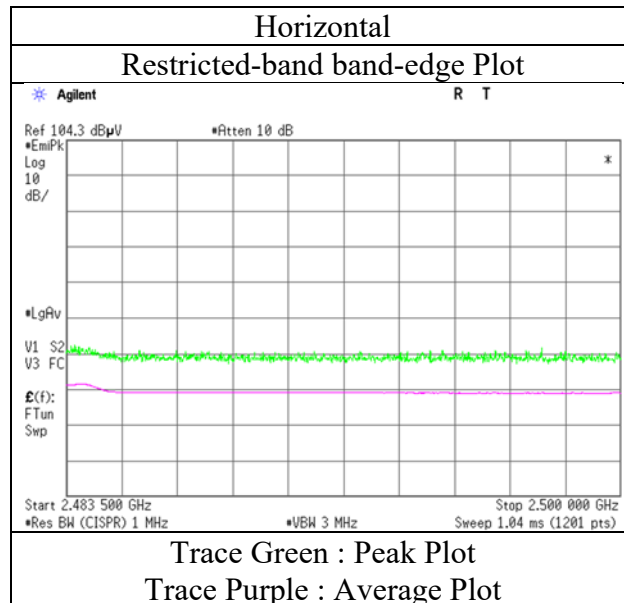
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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No. 3
Date	January 30, 2019
Temperature / Humidity	23 deg. C / 34 %RH
Engineer	Kazuya Noda
	(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.

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Shonan EMC Lab.

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

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Radiated Spurious Emission

Report No.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka	Kazuya Noda	Kazuya Noda
	(30 MHz - 1 GHz)	(1 GHz - 13 GHz)	(13 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2402 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	127.696	QP	21.60	13.78	8.31	31.79	0.00	11.90	43.50	31.6	303	302	
Hori.	268.018	QP	27.00	12.70	6.56	31.76	0.00	14.50	46.00	31.5	127	60	
Hori.	323.993	QP	26.80	14.36	7.07	31.77	0.00	16.46	46.00	29.5	100	60	
Hori.	445.236	QP	21.90	16.50	7.67	31.88	0.00	14.19	46.00	31.8	100	326	
Hori.	547.982	QP	32.70	17.84	8.14	32.04	0.00	26.64	46.00	19.3	149	266	
Hori.	912.892	QP	23.90	22.13	9.71	31.26	0.00	24.48	46.00	21.5	100	193	
Hori.	2390.000	PK	44.63	27.86	14.67	39.46	2.31	50.01	73.90	23.8	216	288	
Hori.	2558.021	PK	47.29	27.84	14.82	39.44	2.31	52.82	73.90	21.0	143	103	
Hori.	4804.000	PK	51.23	31.43	7.17	39.50	2.31	52.64	73.90	21.2	189	125	
Hori.	7206.000	PK	44.59	36.79	9.03	39.29	2.31	53.43	73.90	20.4	100	0	
Hori.	9608.000	PK	45.46	38.51	10.52	39.52	2.31	57.28	73.90	16.6	100	0	
Hori.	19212.000	PK	47.97	40.13	11.68	48.18	-9.54	42.06	73.90	31.8	169	148	
Hori.	2390.000	AV	33.01	27.86	14.67	39.46	2.31	38.39	53.90	15.5	216	288	
Hori.	2558.021	AV	36.57	27.84	14.82	39.44	2.31	42.10	53.90	11.8	143	103	
Hori.	4804.000	AV	41.56	31.43	7.17	39.50	2.31	42.97	53.90	10.9	189	125	
Hori.	7206.000	AV	32.49	36.79	9.03	39.29	2.31	41.33	53.90	12.5	100	0	
Hori.	9608.000	AV	33.34	38.51	10.52	39.52	2.31	45.16	53.90	8.7	100	0	
Hori.	19212.000	AV	42.01	40.13	11.68	48.18	-9.54	36.10	53.90	17.8	169	148	
Vert.	49.442	QP	22.10	11.38	7.44	31.82	0.00	9.10	40.00	30.9	100	314	
Vert.	77.500	QP	22.10	6.33	8.16	31.81	0.00	4.78	40.00	35.2	100	100	
Vert.	584.003	QP	32.90	18.83	8.27	32.02	0.00	27.98	46.00	18.0	100	108	
Vert.	2390.000	PK	45.42	27.86	14.67	39.46	2.31	50.80	73.90	23.1	165	327	
Vert.	2557.991	PK	47.79	27.84	14.82	39.44	2.31	53.32	73.90	20.5	147	97	
Vert.	4804.000	PK	50.79	31.43	7.17	39.50	2.31	52.20	73.90	21.7	100	85	
Vert.	7206.000	PK	44.38	36.79	9.03	39.29	2.31	53.22	73.90	20.6	100	0	
Vert.	9608.000	PK	45.34	38.51	10.52	39.52	2.31	57.16	73.90	16.7	100	0	
Vert.	19212.000	PK	46.01	40.13	11.68	48.18	-9.54	40.10	73.90	33.8	206	112	
Vert.	2390.000	AV	33.47	27.86	14.67	39.46	2.31	38.85	53.90	15.0	165	327	
Vert.	2557.991	AV	36.73	27.84	14.82	39.44	2.31	42.26	53.90	11.6	147	97	
Vert.	4804.000	AV	39.43	31.43	7.17	39.50	2.31	40.84	53.90	13.0	100	85	
Vert.	7206.000	AV	31.57	36.79	9.03	39.29	2.31	40.41	53.90	13.4	100	0	
Vert.	9608.000	AV	32.85	38.51	10.52	39.52	2.31	44.67	53.90	9.2	100	0	
Vert.	19212.000	AV	38.88	40.13	11.68	48.18	-9.54	32.97	53.90	20.9	206	112	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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	93.02	27.86	14.68	39.46	2.31	98.41	-	-	Carrier
Hori.	2399.521	PK	55.97	27.86	14.68	39.46	2.31	61.36	78.41	17.0	
Hori.	2400.000	PK	56.82	27.86	14.68	39.46	2.31	62.21	78.41	16.2	
Vert.	2402.000	PK	92.14	27.86	14.68	39.46	2.31	97.53	-	-	Carrier
Vert.	2399.501	PK	55.05	27.86	14.68	39.46	2.31	60.44	77.53	17.1	
Vert.	2400.000	PK	56.04	27.86	14.68	39.46	2.31	61.43	77.53	16.1	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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

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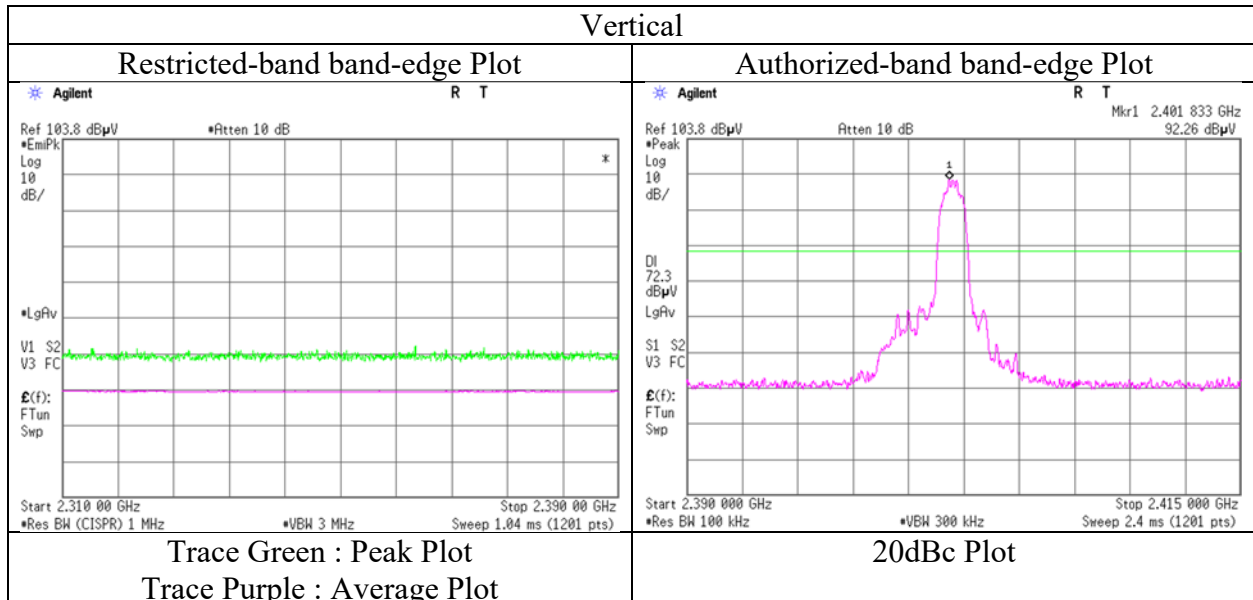
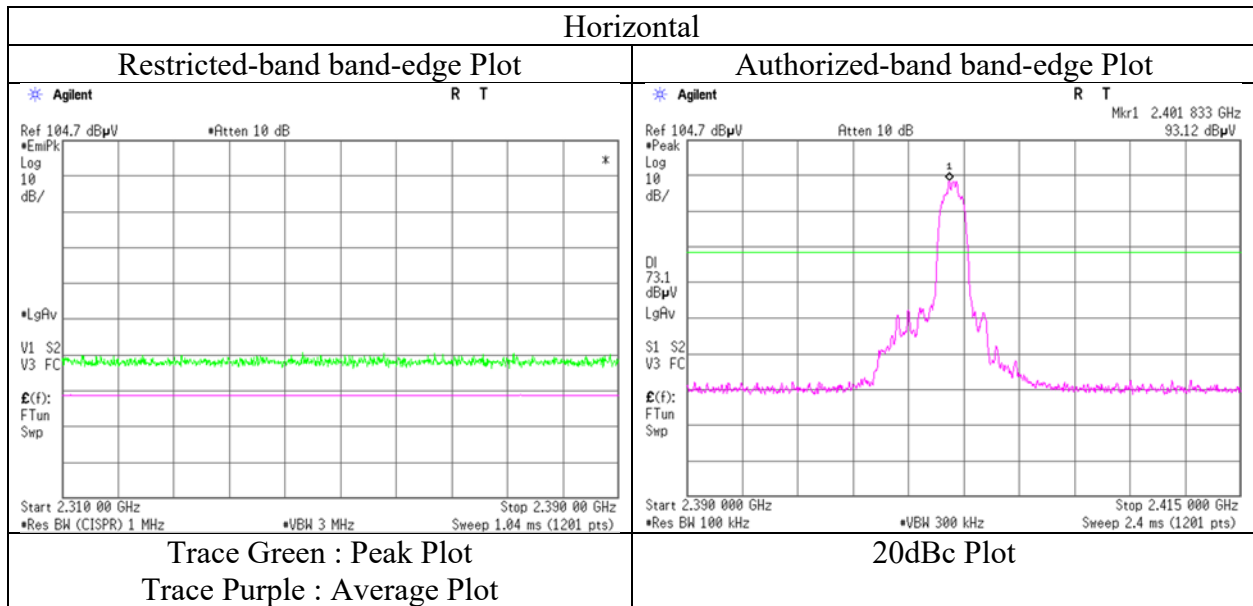
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Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No. 3
Date	January 30, 2019
Temperature / Humidity	23 deg. C / 34 %RH
Engineer	Kazuya Noda
	(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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Shonan EMC Lab.

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Radiated Spurious Emission

Report No.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka	Kazuya Noda	Kazuya Noda
	(30 MHz - 1 GHz)	(1 GHz - 13 GHz)	(13 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2441 MHz		

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg]	Remark
Hori.	122.837	QP	21.90	13.38	8.23	31.80	0.00	11.71	43.50	31.7	300	359	
Hori.	231.894	QP	28.00	11.38	6.17	31.76	0.00	13.79	46.00	32.2	127	81	
Hori.	303.995	QP	27.00	14.12	6.94	31.77	0.00	16.29	46.00	29.7	100	52	
Hori.	438.314	QP	21.70	16.33	7.64	31.87	0.00	13.80	46.00	32.2	200	131	
Hori.	552.313	QP	32.30	17.91	8.16	32.05	0.00	26.32	46.00	19.6	143	256	
Hori.	880.278	QP	23.60	21.95	9.60	31.45	0.00	23.70	46.00	22.3	100	217	
Hori.	2597.009	PK	48.87	27.87	14.87	39.43	2.31	54.49	73.90	19.4	133	97	
Hori.	4882.000	PK	50.79	31.37	7.23	39.50	2.31	52.20	73.90	21.7	221	122	
Hori.	7323.000	PK	44.19	37.01	9.08	39.35	2.31	53.24	73.90	20.6	100	0	
Hori.	9764.000	PK	45.51	38.92	10.44	39.41	2.31	57.77	73.90	16.1	100	0	
Hori.	19524.000	PK	48.12	40.08	11.88	47.70	-9.54	42.84	73.90	31.0	162	141	
Hori.	2597.009	AV	39.31	27.87	14.87	39.43	2.31	44.93	53.90	8.9	133	97	
Hori.	4882.000	AV	41.57	31.37	7.23	39.50	2.31	42.98	53.90	10.9	221	122	
Hori.	7323.000	AV	32.87	37.01	9.08	39.35	2.31	41.92	53.90	11.9	100	0	
Hori.	9764.000	AV	33.04	38.92	10.44	39.41	2.31	45.30	53.90	8.6	100	0	
Hori.	19524.000	AV	41.89	40.08	11.88	47.70	-9.54	36.61	53.90	17.3	162	141	
Vert.	48.464	QP	21.80	11.74	7.42	31.82	0.00	9.14	40.00	30.8	100	0	
Vert.	84.773	QP	22.10	7.18	8.40	31.81	0.00	5.87	40.00	34.1	100	358	
Vert.	579.995	QP	32.50	18.67	8.25	32.02	0.00	27.40	46.00	18.6	135	99	
Vert.	2597.003	PK	48.36	27.87	14.87	39.43	2.31	53.98	73.90	19.9	145	102	
Vert.	4882.000	PK	49.54	31.37	7.23	39.50	2.31	50.95	73.90	22.9	100	114	
Vert.	7323.000	PK	43.39	37.01	9.08	39.35	2.31	52.44	73.90	21.4	100	0	
Vert.	9764.000	PK	45.47	38.92	10.44	39.41	2.31	57.73	73.90	16.1	100	0	
Vert.	19524.000	PK	46.92	40.08	11.88	47.70	-9.54	41.64	73.90	32.2	220	112	
Vert.	2597.003	AV	38.00	27.87	14.87	39.43	2.31	43.62	53.90	10.2	145	102	
Vert.	4882.000	AV	39.21	31.37	7.23	39.50	2.31	40.62	53.90	13.2	100	114	
Vert.	7323.000	AV	32.84	37.01	9.08	39.35	2.31	41.89	53.90	12.0	100	0	
Vert.	9764.000	AV	33.02	38.92	10.44	39.41	2.31	45.28	53.90	8.6	100	0	
Vert.	19524.000	AV	39.52	40.08	11.88	47.70	-9.54	34.24	53.90	19.6	220	112	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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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Radiated Spurious Emission

Report No.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka	Kazuya Noda	Kazuya Noda
	(30 MHz - 1 GHz)	(1 GHz - 13 GHz)	(13 GHz - 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.	122.987	QP	22.00	13.40	8.23	31.80	0.00	11.83	43.50	31.6	150	6	
Hori.	244.010	QP	25.90	11.63	6.31	31.75	0.00	12.09	46.00	33.9	131	49	
Hori.	327.908	QP	26.20	14.47	7.09	31.77	0.00	15.99	46.00	30.0	100	96	
Hori.	420.031	QP	23.20	16.08	7.57	31.85	0.00	15.00	46.00	31.0	100	316	
Hori.	547.996	QP	32.90	17.84	8.14	32.04	0.00	26.84	46.00	19.1	154	250	
Hori.	914.337	QP	23.00	22.13	9.71	31.25	0.00	23.59	46.00	22.4	100	290	
Hori.	2483.500	PK	48.43	27.65	14.77	39.46	2.31	53.70	73.90	20.2	235	281	
Hori.	2635.984	PK	49.53	27.90	14.90	39.42	2.31	55.22	73.90	18.6	134	92	
Hori.	4960.000	PK	51.62	31.54	7.28	39.50	2.31	53.25	73.90	20.6	182	119	
Hori.	7440.000	PK	44.93	37.10	9.15	39.42	2.31	54.07	73.90	19.8	100	0	
Hori.	9920.000	PK	45.06	38.97	10.36	39.30	2.31	57.40	73.90	16.5	100	0	
Hori.	19836.000	PK	48.39	39.94	12.02	47.72	-9.54	43.09	73.90	30.8	153	146	
Hori.	2483.500	AV	35.32	27.65	14.77	39.46	2.31	40.59	53.90	13.3	235	281	
Hori.	2635.984	AV	39.79	27.90	14.90	39.42	2.31	45.48	53.90	8.4	134	92	
Hori.	4960.000	AV	42.84	31.54	7.28	39.50	2.31	44.47	53.90	9.4	182	119	
Hori.	7440.000	AV	33.29	37.10	9.15	39.42	2.31	42.43	53.90	11.4	100	0	
Hori.	9920.000	AV	33.57	38.97	10.36	39.30	2.31	45.91	53.90	7.9	100	0	
Hori.	19836.000	AV	42.13	39.94	12.02	47.72	-9.54	36.83	53.90	17.0	153	146	
Vert.	48.940	QP	22.10	11.58	7.43	31.82	0.00	9.29	40.00	30.7	100	0	
Vert.	186.355	QP	21.60	16.32	8.97	31.77	0.00	15.12	43.50	28.3	100	358	
Vert.	583.883	QP	32.80	18.83	8.27	32.02	0.00	27.88	46.00	18.1	100	92	
Vert.	2483.500	PK	47.67	27.65	14.77	39.46	2.31	52.94	73.90	20.9	151	257	
Vert.	2635.980	PK	48.97	27.90	14.90	39.42	2.31	54.66	73.90	19.2	143	93	
Vert.	4960.000	PK	49.33	31.54	7.28	39.50	2.31	50.96	73.90	22.9	100	117	
Vert.	7440.000	PK	44.85	37.10	9.15	39.42	2.31	53.99	73.90	19.9	100	0	
Vert.	9920.000	PK	45.02	38.97	10.36	39.30	2.31	57.36	73.90	16.5	100	0	
Vert.	19836.000	PK	47.64	39.94	12.02	47.72	-9.54	42.34	73.90	31.5	213	93	
Vert.	2483.500	AV	35.20	27.65	14.77	39.46	2.31	40.47	53.90	13.4	151	257	
Vert.	2635.980	AV	40.06	27.90	14.90	39.42	2.31	45.75	53.90	8.1	143	93	
Vert.	4960.000	AV	40.09	31.54	7.28	39.50	2.31	41.72	53.90	12.1	100	117	
Vert.	7440.000	AV	33.29	37.10	9.15	39.42	2.31	42.43	53.90	11.4	100	0	
Vert.	9920.000	AV	33.56	38.97	10.36	39.30	2.31	45.90	53.90	8.0	100	0	
Vert.	19836.000	AV	39.63	39.94	12.02	47.72	-9.54	34.33	53.90	19.5	213	93	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.91\text{ m} / 3.0\text{ m}) = 2.31\text{ dB}$

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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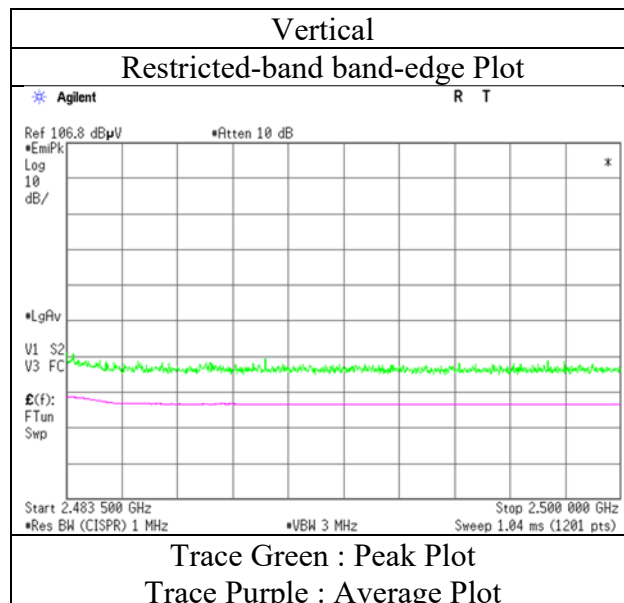
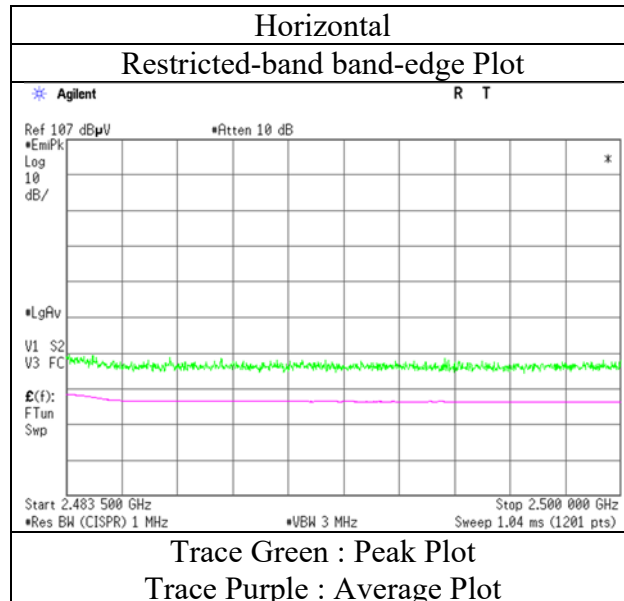
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Radiated Spurious Emission (Reference Plot for band-edge)

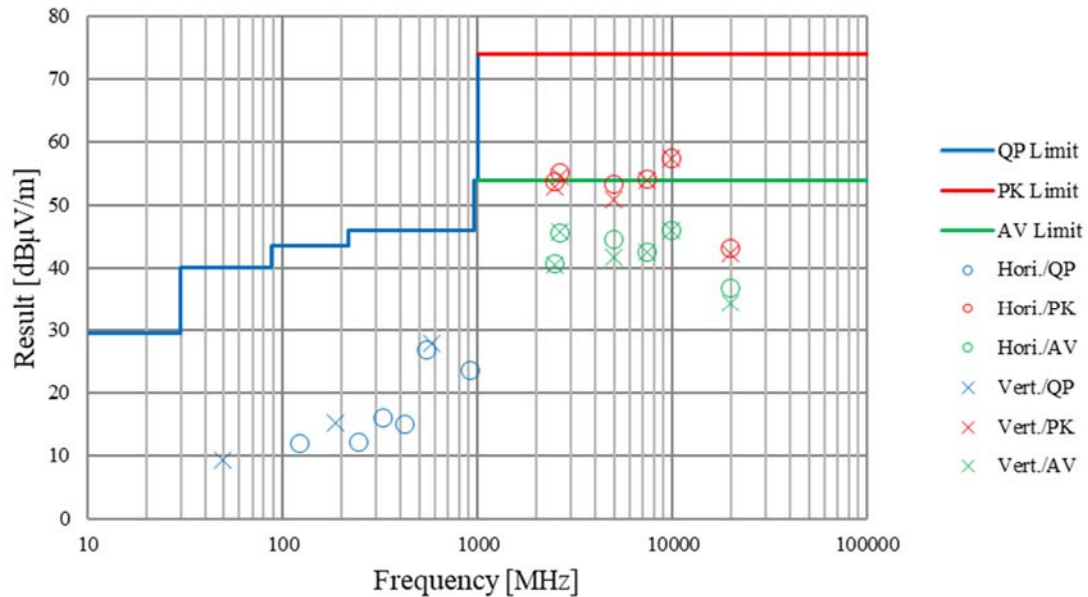
Report No.	12710034S-B-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No. 3
Date	January 30, 2019
Temperature / Humidity	23 deg. C / 34 %RH
Engineer	Kazuya Noda
	(1 GHz - 13 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz



* 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.	12710034S-B-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka (30 MHz - 1 GHz)	Kazuya Noda (1 GHz - 13 GHz)	Kazuya Noda (13 GHz - 26.5 GHz)
Mode	Tx, Hopping Off, 3DH5 2480 MHz		

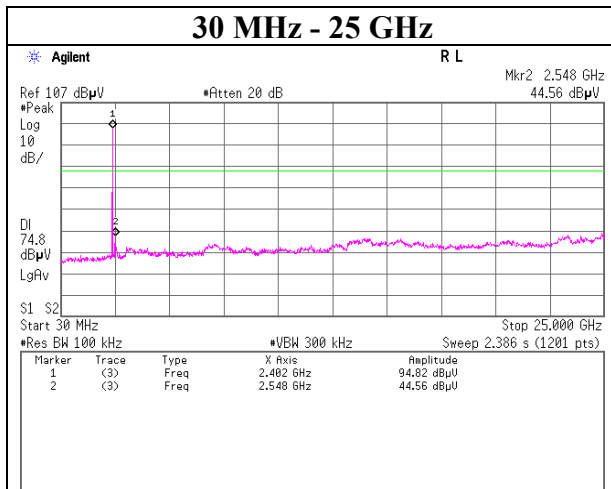
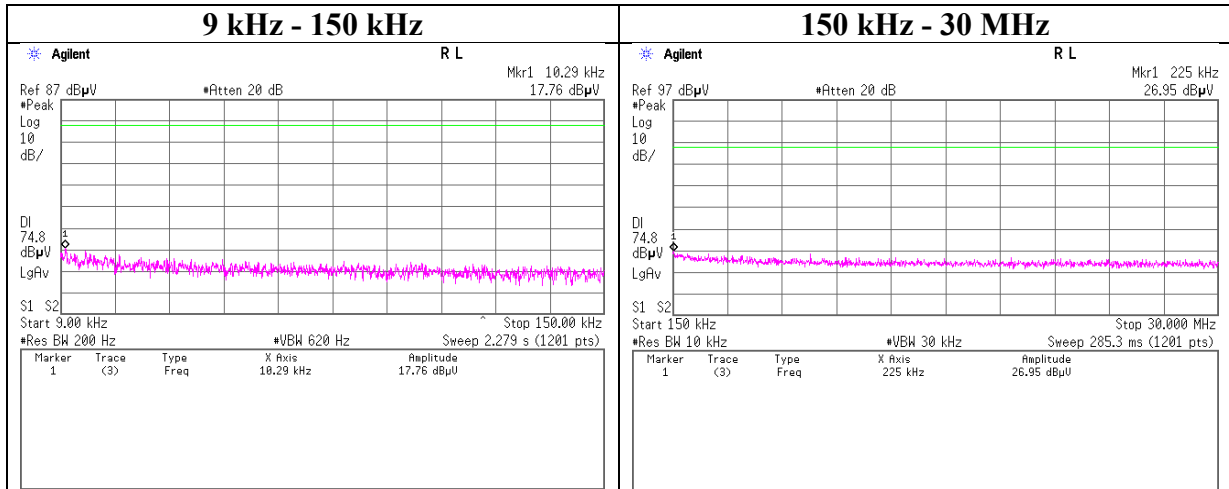


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 4, 2019
Temperature / Humidity	21 deg. C / 37 % RH
Engineer	Kazuya Noda
Mode	Tx, Hopping Off, DH5

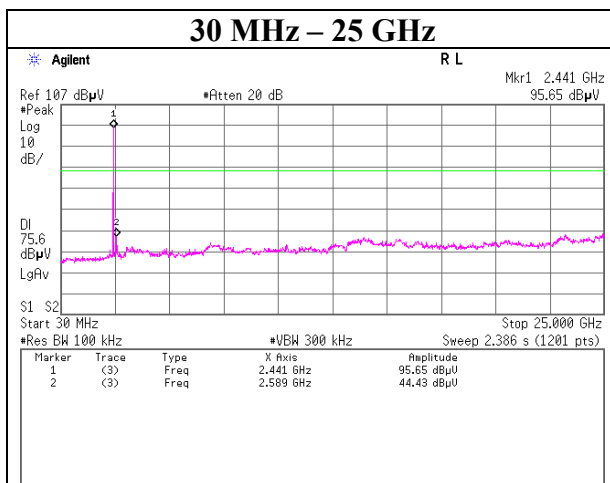
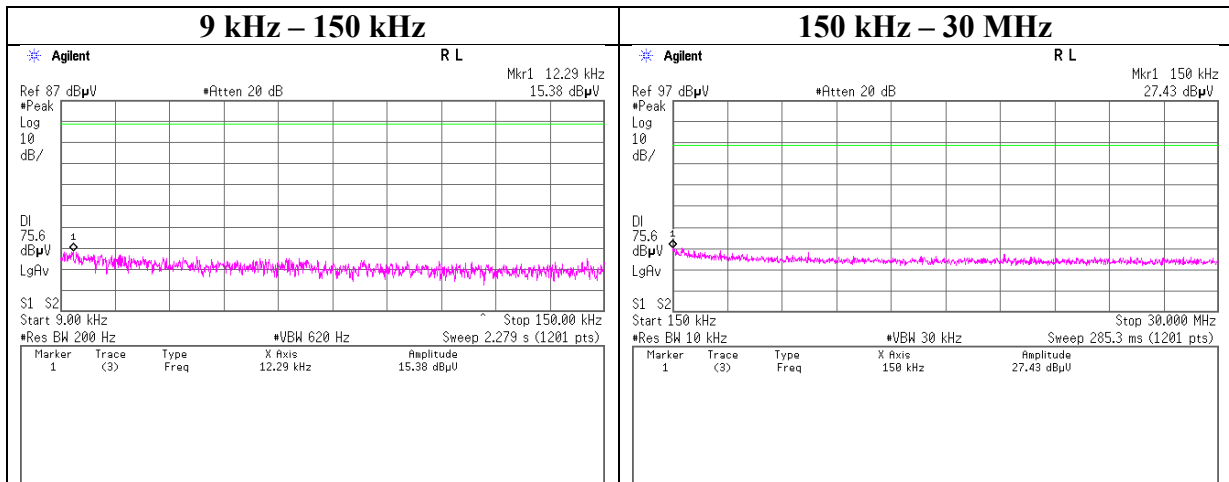
2402 MHz



Conducted Spurious Emission

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 4, 2019
Temperature / Humidity	21 deg. C / 37 % RH
Engineer	Kazuya Noda
Mode	Tx, Hopping Off, DH5

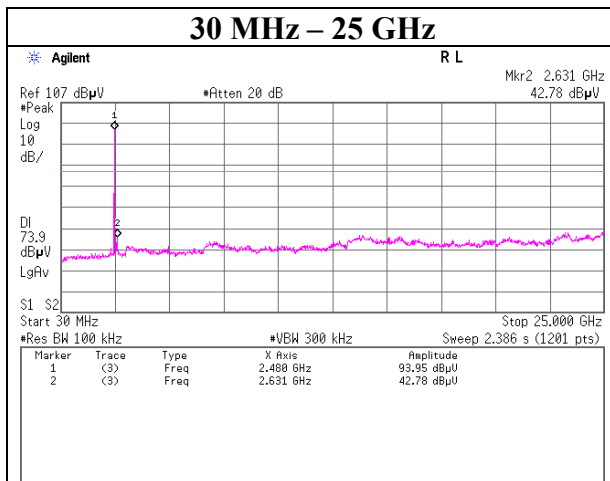
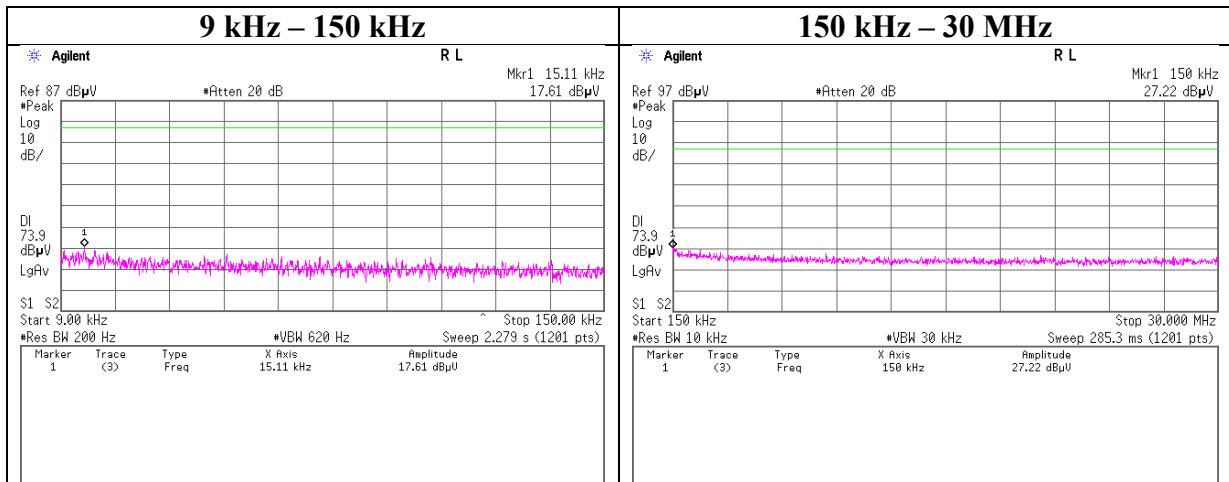
2441 MHz



Conducted Spurious Emission

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 4, 2019
Temperature / Humidity	21 deg. C / 37 % RH
Engineer	Kazuya Noda
Mode	Tx, Hopping Off, DH5

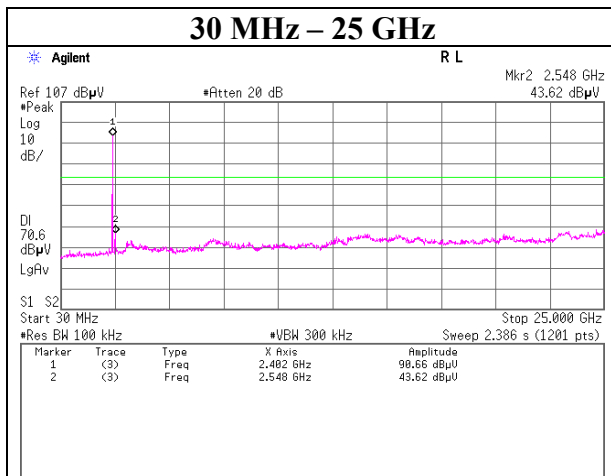
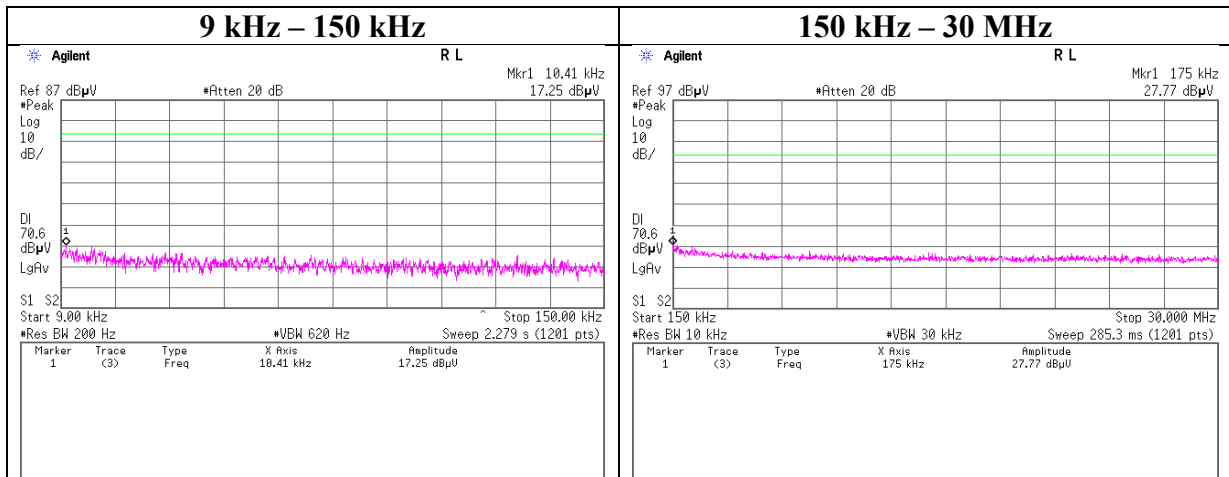
2480 MHz



Conducted Spurious Emission

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 4, 2019
Temperature / Humidity	21 deg. C / 37 % RH
Engineer	Kazuya Noda
Mode	Tx, Hopping Off, 3DH5

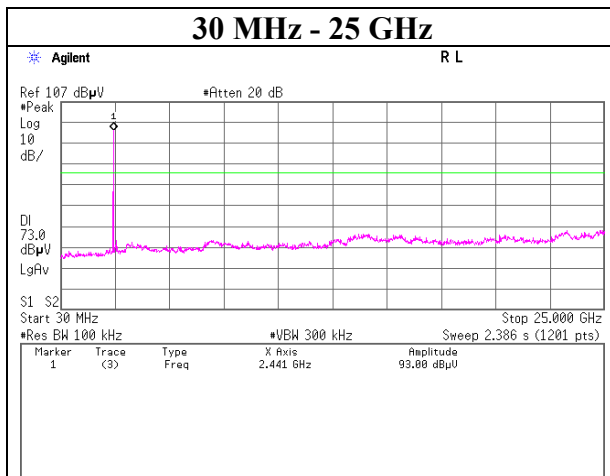
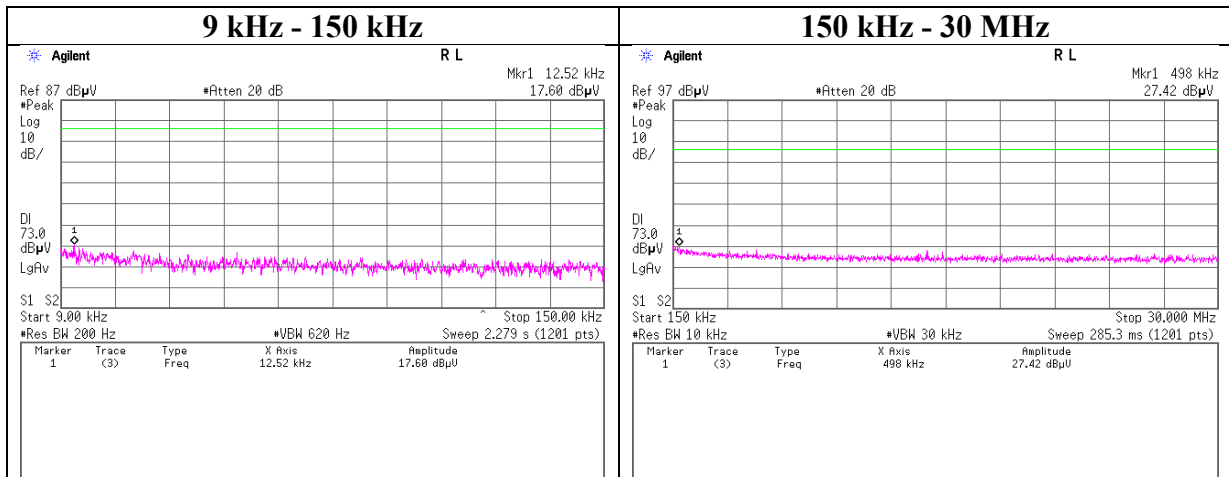
2402 MHz



Conducted Spurious Emission

Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx, Hopping Off, 3DH5

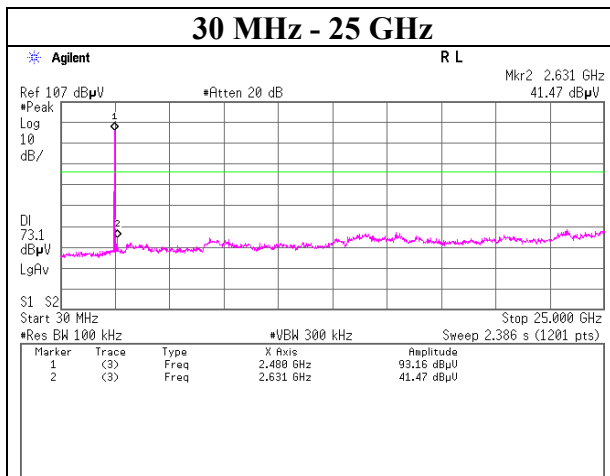
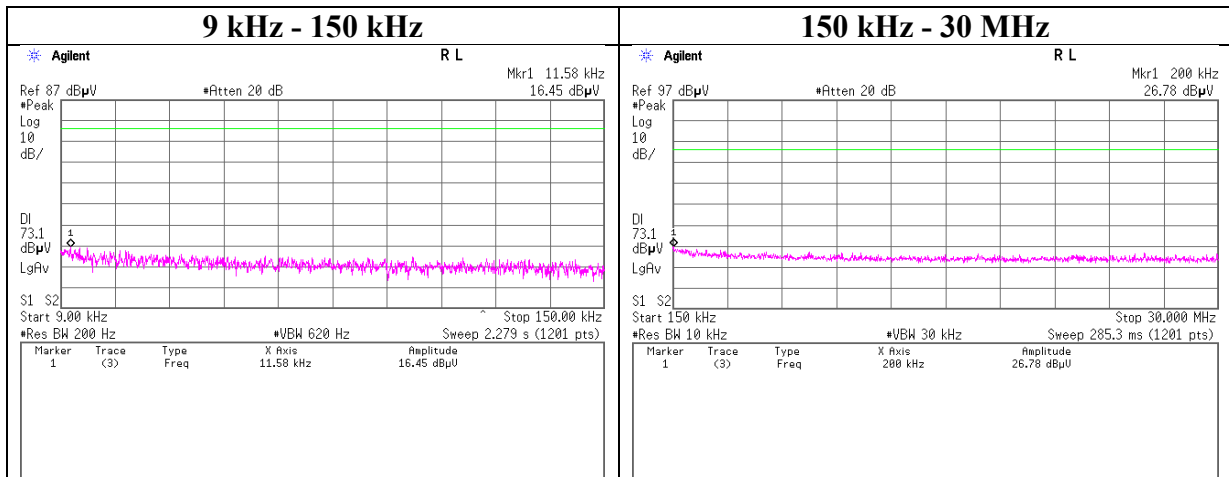
2441 MHz



Conducted Spurious Emission

Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx, Hopping Off, 3DH5

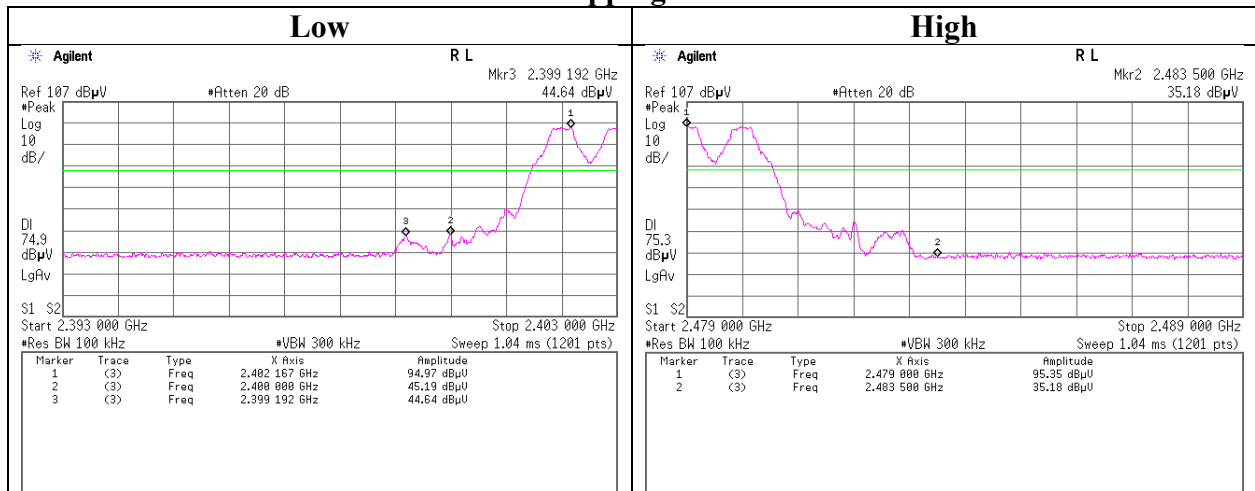
2480 MHz



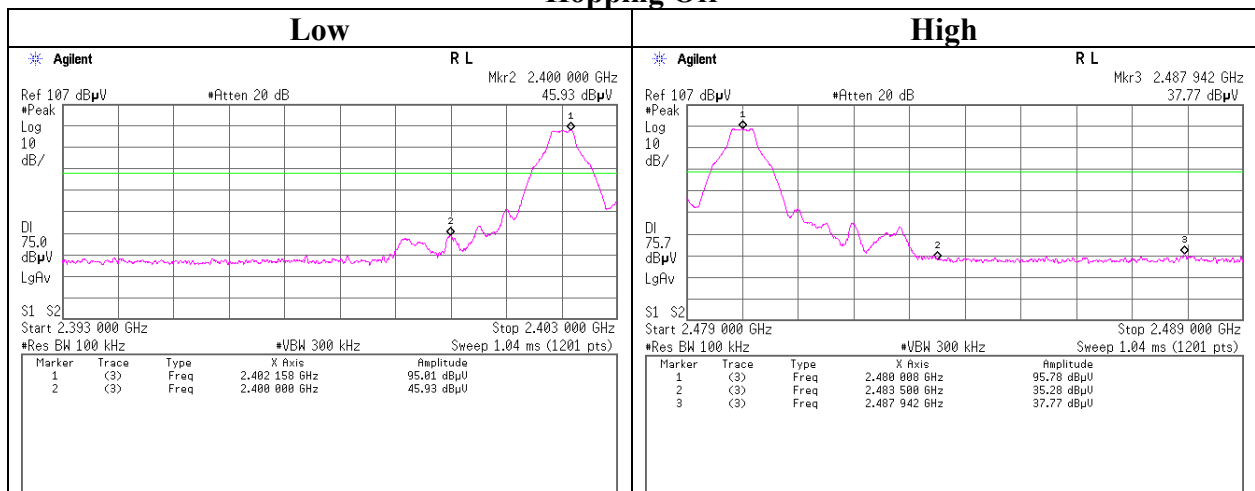
Conducted Emission Band Edge compliance

Report No. 12710034S-B-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx DH5

Hopping On



Hopping Off



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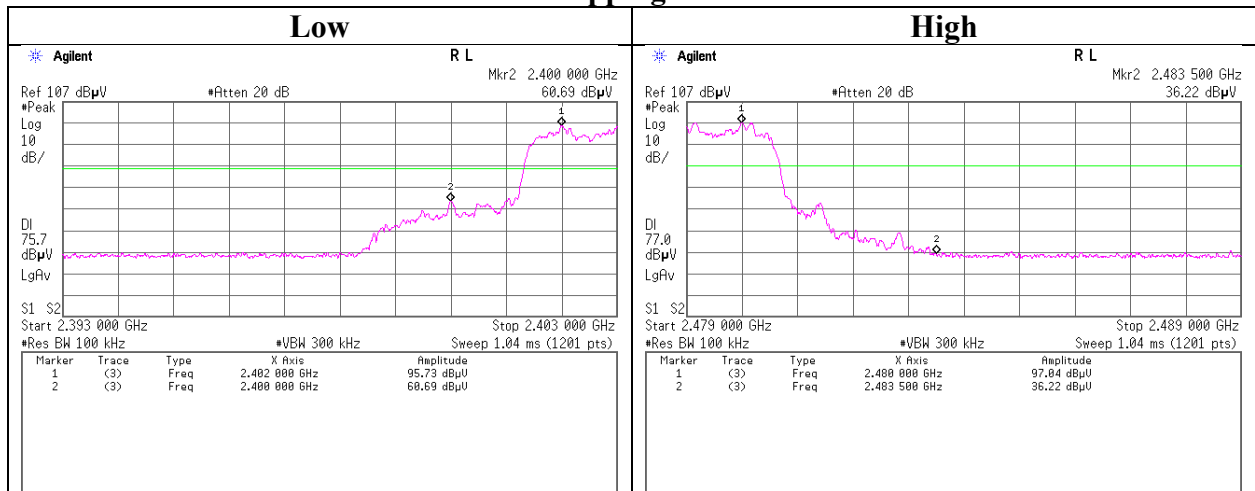
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

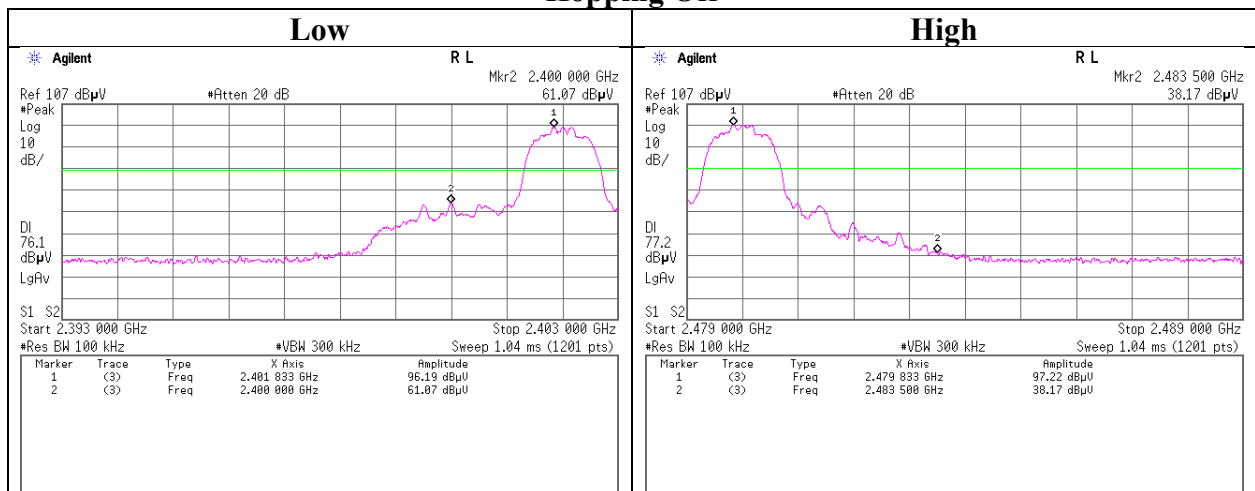
Conducted Emission Band Edge compliance

Report No.	12710034S-B-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 4, 2019
Temperature / Humidity	21 deg. C / 37 % RH
Engineer	Kazuya Noda
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)
SAT10-14	AT	154591	Attenuator	Weinschel Corp.	54A-10	81595	2018/4/20	2019/4/30	12
SCC-G14	AT	145175	Coaxial Cable	Suhner	SUCOFLEX 102	31600/2	2018/12/25	2019/12/31	12
SOS-09	AT	146318	Humidity Indicator	A&D	AD-5681	4061484	2018/12/5	2019/12/31	12
SPM-06	AT	146267	Power Meter	ANRITSU	ML2495A	850009	2018/5/10	2019/5/31	12
SPSS-03	AT	146309	Power sensor	ANRITSU	MA2411B	917063	2018/5/10	2019/5/31	12
SSA-03	AT	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2018/8/30	2019/8/31	12
COTS-SEM I-5	RE	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,PE)	-	-	-	-
KAT6-04	RE	144899	Attenuator	Inmet	18N-6dB	-	2018/12/25	2019/12/31	12
KJM-02	RE	146432	Measure	TAJIMA	GL19-55	-	-	-	-
KJM-09	RE	145929	Measure	KOMELON	KMC-36	-	-	-	-
KSA-08	RE	145089	Spectrum Analyzer	AGILENT	E4446A	MY46180525	2018/10/7	2019/10/31	12
SAEC-01(N SA)	RE	145597	Semi-Anechoic Chamber	TDK	SAEC-01(NS A)	1	2018/5/29	2019/5/31	12
SAEC-03(S VSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SV SWR)	3	2018/7/17	2019/7/31	12
SAF-01	RE	145003	Pre Amplifier	SONOMA	310N	290211	2019/2/5	2020/2/29	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
SAT10-05	RE	145136	Attenuator(above 1GHz)	AGILENT	8493C-010	74864	2018/11/25	2019/11/30	12
SAT3-09	RE	144959	Attenuator	JFW	50HF-003N	-	2018/8/23	2019/8/31	12
SBA-01	RE	145161	Biconical Antenna	Schwarzbeck	BBA9106	91032664	2018/6/5	2019/6/30	12
SCC-A1/A3/A5/A7/A8/A13/SRSE-01	RE	144967	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSF A/141PE/141PE/141PE/141P	-/0901-269(RF Selector)	2018/4/9	2019/4/30	12
SCC-A2/A4/A6/A7/A8/A13/SRSE-01	RE	144968	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSF A/141PE/141PE/141PE/141P	-/0901-269(RF Selector)	2018/4/9	2019/4/30	12
SCC-G05	RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2019/1/25	2020/1/31	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	MWX241-01000KMSKMS	-	2018/4/20	2019/4/30	12
SCC-G40	RE	166491	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S005	2019/1/25	2020/1/31	12
SCC-G41	RE	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2019/1/25	2020/1/31	12
SCC-G45	RE	168301	Coaxial Cable	HUBER+SUNER	SUCOFLEX 102 E	800137/2EA	2018/3/28	2019/3/31	12

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Local ID	Test Name	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Calibration Interval (Month)
SFL-02	RE	145301	Highpass Filter	MICRO-TRONICS	HPM50111	51	2018/11/16	2019/11/30	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-05	RE	145527	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	193	2018/6/5	2019/6/30	12
SOS-01	RE	146316	Humidity Indicator	A&D	AD-5681	4062555	2018/10/25	2019/10/31	12
SOS-05	RE	146293	Humidity Indicator	A&D	AD-5681	4062518	2018/10/25	2019/10/31	12
STR-07	RE	146209	Test Receiver	Rohde & Schwarz	ESU26	100484	2018/9/26	2019/9/30	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