



RADIO TEST REPORT

Test Report No. : 12710034S-A-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 Low Energy 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.
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6. This test report covers Radio technical requirements.
It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in SECTION 1.
10. This report is a revised version of 12710034S-A. 12710034S-A is replaced with this report.

Date of test: January 30 to February 10, 2019

Representative test engineer: 
Kazuya Noda
Engineer
Consumer Technology Division

Approved by: 
Toyokazu Imamura
Leader
Consumer Technology Division



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

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 12710034S-A

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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	9
SECTION 6: Antenna Terminal Conducted Tests.....	11
APPENDIX 1: Test data	12
6 dB Bandwidth and 99 % Occupied Bandwidth.....	12
Maximum Peak Output Power	15
Average Output Power	16
Radiated Spurious Emission	18
Conducted Spurious Emission	24
Power Density	27
APPENDIX 2: Test instruments	29
APPENDIX 3: Photographs of test setup	31
Radiated Spurious Emission	31
Worst Case Position	32

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
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Modulation	:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Power Supply (radio part input)	:	DC 1.35 V
Antenna type	:	Chip Antenna
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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	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	FCC: ANSI C63.10-2013 6. Standard test methods	FCC: Section 15.207	N/A	N/A*1)	-
	IC: RSS-Gen 8.8	IC: RSS-Gen 8.8			
6dB Bandwidth	FCC: KDB 558074 D01 15.247 Meas Guidance v05	FCC: Section 15.247(a)(2)	See data.	Complied a)	Conducted
	IC: -	IC: RSS-247 5.2(a)			
Maximum Peak Output Power	FCC: KDB 558074 D01 15.247 Meas Guidance v05	FCC: Section 15.247(b)(3)		Complied b)	Conducted
	IC: RSS-Gen 6.12	IC: RSS-247 5.4(d)			
Power Density	FCC: KDB 558074 D01 15.247 Meas Guidance v05	FCC: Section 15.247(e)		Complied c)	Conducted
	IC: -	IC: RSS-247 5.2(b)			
Spurious Emission Restricted Band Edges	FCC: KDB 558074 D01 15.247 Meas Guidance v05	FCC: Section 15.247(d)	3.5 dB 2483.500 MHz, AV, Vert. Tx BT LE 2480 MHz	Complied# d), e)	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *2)
	IC: RSS-Gen 6.13	IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10			

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

*1) 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.

*2) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05 8.5 and 8.6.

a) Refer to APPENDIX 1 (data of 6 dB Bandwidth and 99 % Occupied Bandwidth)

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

c) Refer to APPENDIX 1 (data of Power Density)

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

e) 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 6 dB Bandwidth and 99 % Occupied Bandwidth)

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 %

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

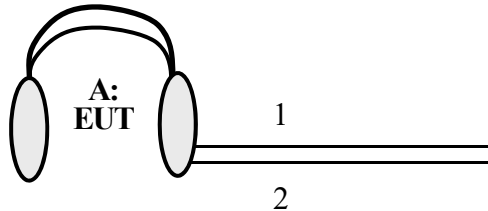
Refer to APPENDIX.

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

4.1 Operating Mode(s)

Mode	Frequency	Remarks*
Bluetooth Low Energy (BT LE)	2402 MHz, 2440 MHz, 2480 MHz	PRBS9
*Power of the EUT was set by the software as follows; Power settings: BT LE: Fixed Software: CSR BlueSuite BlueTest Version 2.6.6.1311 *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(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

It was measured based on "8.5 and 8.6 of KDB 558074 D01 15.247 Meas Guidance v05".

[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.

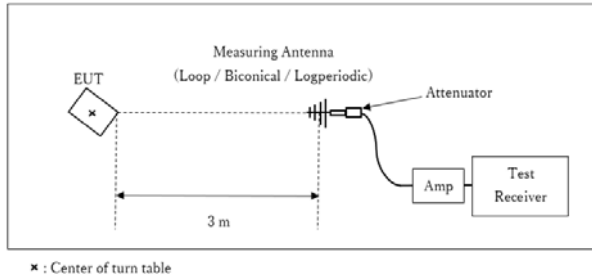
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9(IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *1)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	11.12.2.5.2 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (Linear voltage) Trace: 100 traces Duty factor was added to the results.	RBW: 100 kHz VBW: 300 kHz

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

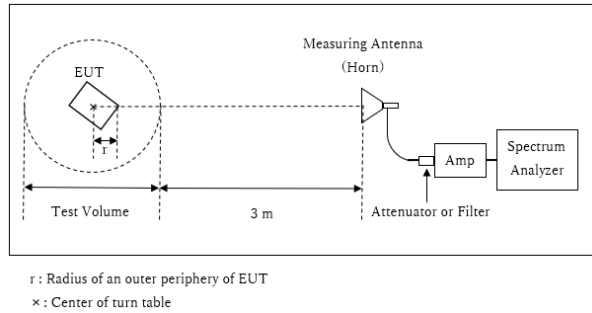
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

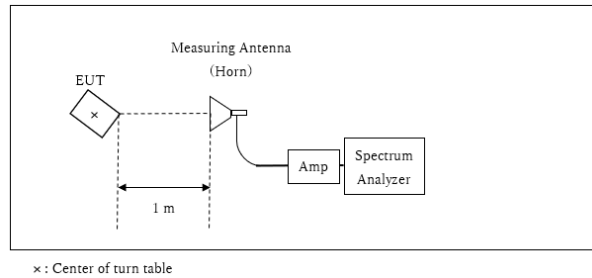
1 GHz - 13 GHz



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



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
6 dB Bandwidth	10 MHz	100 kHz	300 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)
Peak Power Density	1.5 times the 6 dB Bandwidth	3 kHz	9.1 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *5)	9 kHz to 150 kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150 kHz to 30 MHz	10 kHz	30 kHz				
*1) Peak hold was applied as Worst-case measurement. *2) Reference data *3) Section 11.10.2 Method PKPSD (peak PSD) of "ANSI C63.10-2013". *4) 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

6 dB Bandwidth and 99 % Occupied Bandwidth

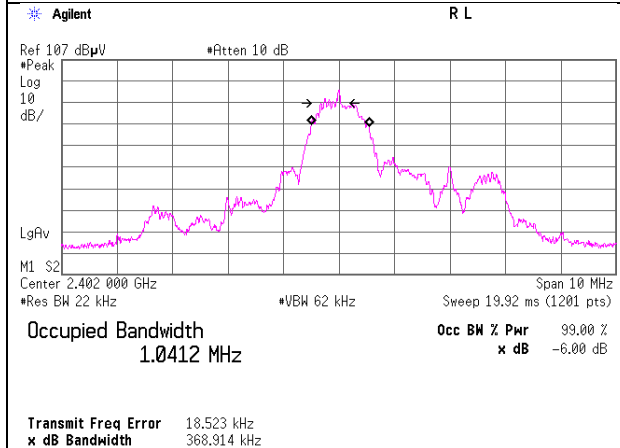
Report No. 12710034S-A-R1
Test place Shonan EMC Lab. No.5 Shielded Room
Date February 4, 2019
Temperature / Humidity 21 deg. C / 37 % RH
Engineer Kazuya Noda
Mode Tx

Mode	Frequency [MHz]	99% Occupied Bandwidth [kHz]	6dB Bandwidth [MHz]	Limit for 6dB Bandwidth [MHz]
BT LE	2402	1041.2	0.736	> 0.5000
	2440	1042.4	0.734	> 0.5000
	2480	1042.3	0.736	> 0.5000

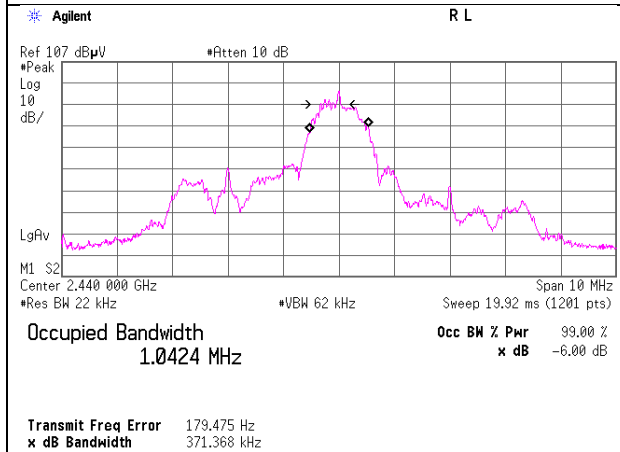
99%Occupied Bandwidth

BT LE

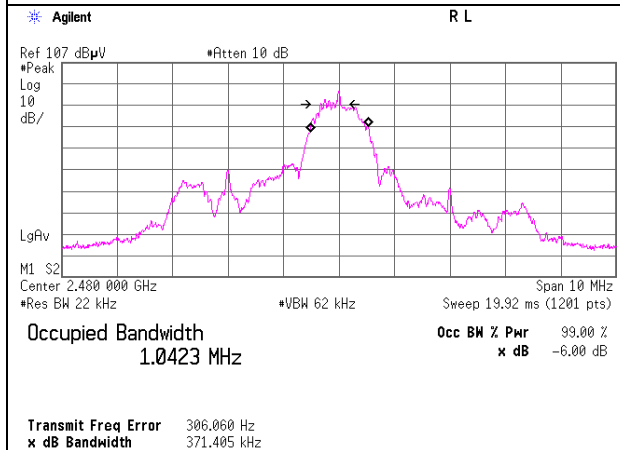
2402 MHz



2440 MHz



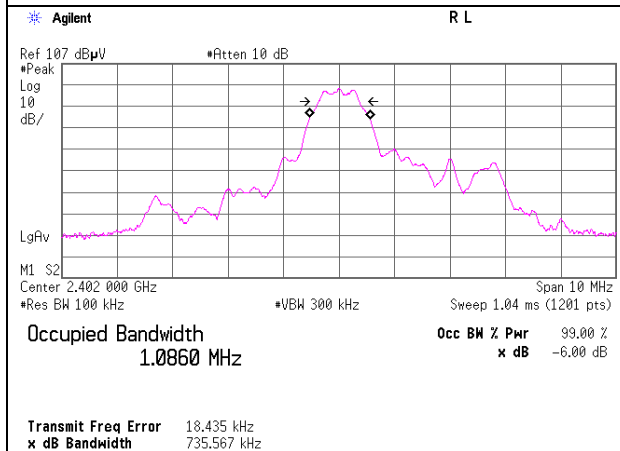
2480 MHz



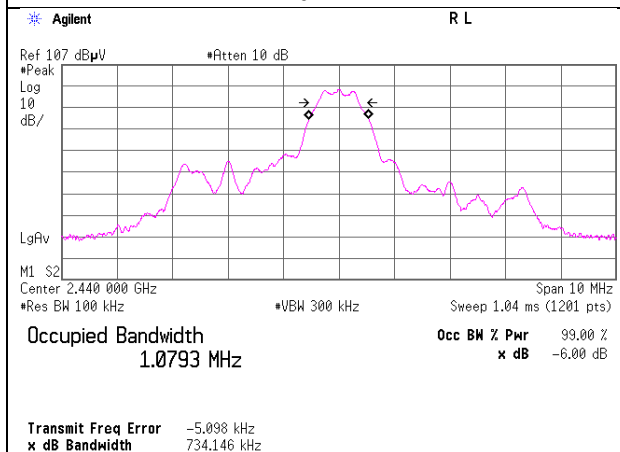
6dB Bandwidth

BT LE

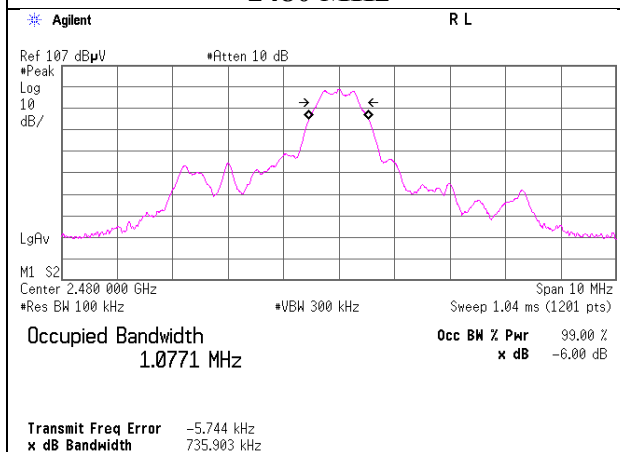
2402 MHz



2440 MHz



2480 MHz



Maximum Peak Output Power

Report No. 12710034S-A-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

BT LE				Conducted Power					e.i.r.p. for RSS-247					
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]	Antenna Gain [dBi]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]			[dBm]	[mW]	[dBm]	[mW]	
2402	-11.43	1.56	9.82	-0.05	0.99	30.00	1000	30.05	2.66	2.61	1.82	36.02	4000	33.41
2440	-11.06	1.57	9.82	0.33	1.08	30.00	1000	29.67	2.66	2.99	1.99	36.02	4000	33.03
2480	-10.59	1.58	9.82	0.81	1.21	30.00	1000	29.19	2.66	3.47	2.22	36.02	4000	32.55

Sample Calculation:

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

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

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

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Average Output Power
(Reference data for RF Exposure)

Report No. 12710034S-A-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

BT LE

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result (Time average)		Duty factor [dB]	Result (Burst power average)	
				[dBm]	[mW]		[dBm]	[mW]
2402	-13.83	1.56	9.82	-2.45	0.57	1.66	-0.79	0.83
2440	-13.45	1.57	9.82	-2.06	0.62	1.66	-0.40	0.91
2480	-13.09	1.58	9.82	-1.69	0.68	1.66	-0.03	0.99

Sample Calculation:

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

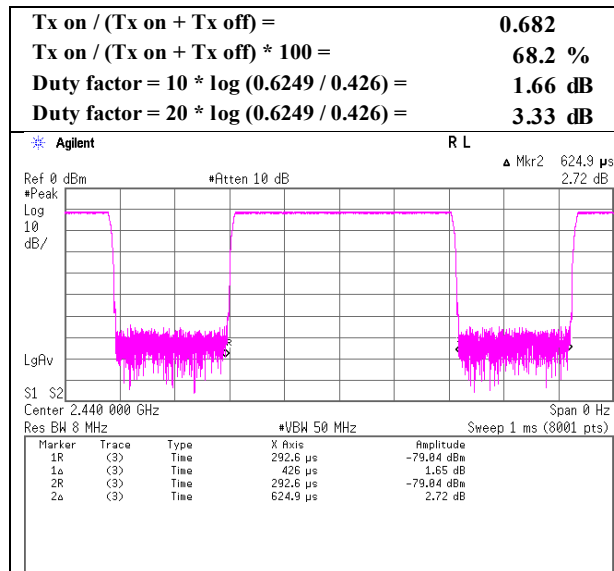
Result (Burst power average) = Time average + Duty factor

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

Burst rate confirmation

Report No.	12710034S-A-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

BT LE



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

Radiated Spurious Emission

Report No.	12710034S-A-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 BT LE 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.	123.200	QP	21.90	13.44	8.23	31.80	0.00	11.77	43.50	31.7	229	155	
Hori.	232.005	QP	28.20	11.39	6.18	31.76	0.00	14.01	46.00	31.9	124	56	
Hori.	351.462	QP	21.50	15.05	7.25	31.77	0.00	12.03	46.00	33.9	100	2	
Hori.	430.940	QP	21.70	16.20	7.61	31.86	0.00	13.65	46.00	32.3	200	78	
Hori.	569.782	QP	26.40	18.36	8.22	32.03	0.00	20.95	46.00	25.0	158	216	
Hori.	2390.000	PK	45.01	27.86	14.67	39.46	2.31	50.39	73.90	23.5	153	282	
Hori.	2558.012	PK	47.14	27.84	14.82	39.44	2.31	52.67	73.90	21.2	139	99	
Hori.	4804.000	PK	51.64	31.43	7.17	39.50	2.31	53.05	73.90	20.8	237	121	
Hori.	7206.000	PK	44.58	36.79	9.03	39.29	2.31	53.42	73.90	20.4	100	0	
Hori.	19220.000	PK	48.61	40.14	11.69	48.16	-9.54	42.74	73.90	31.1	163	148	
Hori.	2558.012	AV	39.23	27.84	14.82	39.44	2.31	44.76	53.90	9.1	139	99	
Vert.	49.031	QP	22.10	11.55	7.43	31.82	0.00	9.26	40.00	30.7	100	2	
Vert.	92.112	QP	22.20	8.65	8.34	31.81	0.00	7.38	43.50	36.1	100	209	
Vert.	575.991	QP	31.00	18.54	8.24	32.03	0.00	25.75	46.00	20.2	100	106	
Vert.	704.228	QP	24.70	19.89	8.85	32.03	0.00	21.41	46.00	24.5	100	9	
Vert.	2390.000	PK	44.78	27.86	14.67	39.46	2.31	50.16	73.90	23.7	114	331	
Vert.	2558.051	PK	47.48	27.84	14.82	39.44	2.31	53.01	73.90	20.8	143	82	
Vert.	4804.000	PK	50.56	31.43	7.17	39.50	2.31	51.97	73.90	21.9	102	91	
Vert.	7206.000	PK	44.42	36.79	9.03	39.29	2.31	53.26	73.90	20.6	100	0	
Vert.	19220.000	PK	47.08	40.14	11.69	48.16	-9.54	41.21	73.90	32.6	220	115	
Vert.	2558.051	AV	38.26	27.84	14.82	39.44	2.31	43.79	53.90	10.1	143	82	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.91 m / 3.0 m) = 2.31 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2390.000	AV	35.92	27.86	14.67	39.46	3.33	2.31	44.63	53.90	9.2	*1)
Hori.	4804.000	AV	44.48	31.43	7.17	39.50	3.33	2.31	49.22	53.90	4.6	
Hori.	7206.000	AV	34.99	36.79	9.03	39.29	3.33	2.31	47.16	53.90	6.7	
Hori.	19220.000	AV	42.82	40.14	11.69	48.16	3.33	-9.54	40.28	53.90	13.6	
Vert.	2390.000	AV	35.95	27.86	14.67	39.46	3.33	2.31	44.66	53.90	9.2	*1)
Vert.	4804.000	AV	43.23	31.43	7.17	39.50	3.33	2.31	47.97	53.90	5.9	
Vert.	7206.000	AV	34.56	36.79	9.03	39.29	3.33	2.31	46.73	53.90	7.1	
Vert.	19220.000	AV	41.27	40.14	11.69	48.16	3.33	-9.54	38.73	53.90	15.1	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.91 m / 3.0 m) = 2.31 dB

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

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

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

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

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	91.74	27.86	14.68	39.46	2.31	97.13	-	-	Carrier
Hori.	2398.690	PK	43.67	27.86	14.68	39.46	2.31	49.06	77.13	28.0	
Hori.	2400.000	PK	44.27	27.86	14.68	39.46	2.31	49.66	77.13	27.4	
Vert.	2402.000	PK	90.41	27.86	14.68	39.46	2.31	95.80	-	-	Carrier
Vert.	2398.719	PK	42.06	27.86	14.68	39.46	2.31	47.45	75.80	28.3	
Vert.	2400.000	PK	43.45	27.86	14.68	39.46	2.31	48.84	75.80	26.9	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.91 m / 3.0 m) = 2.31 dB

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

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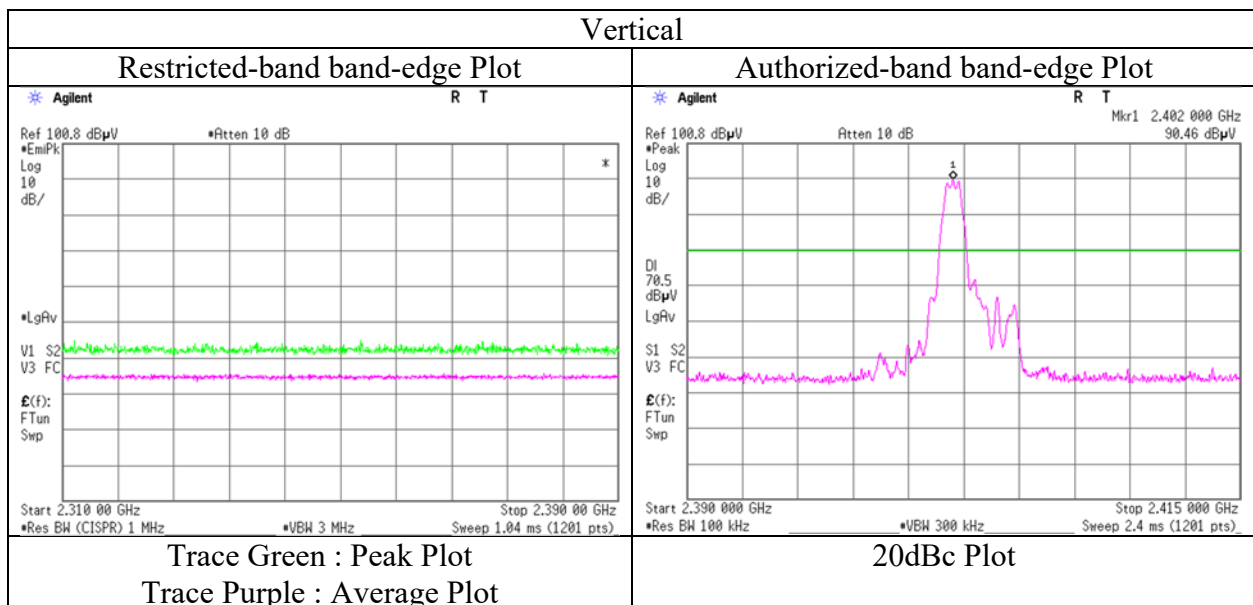
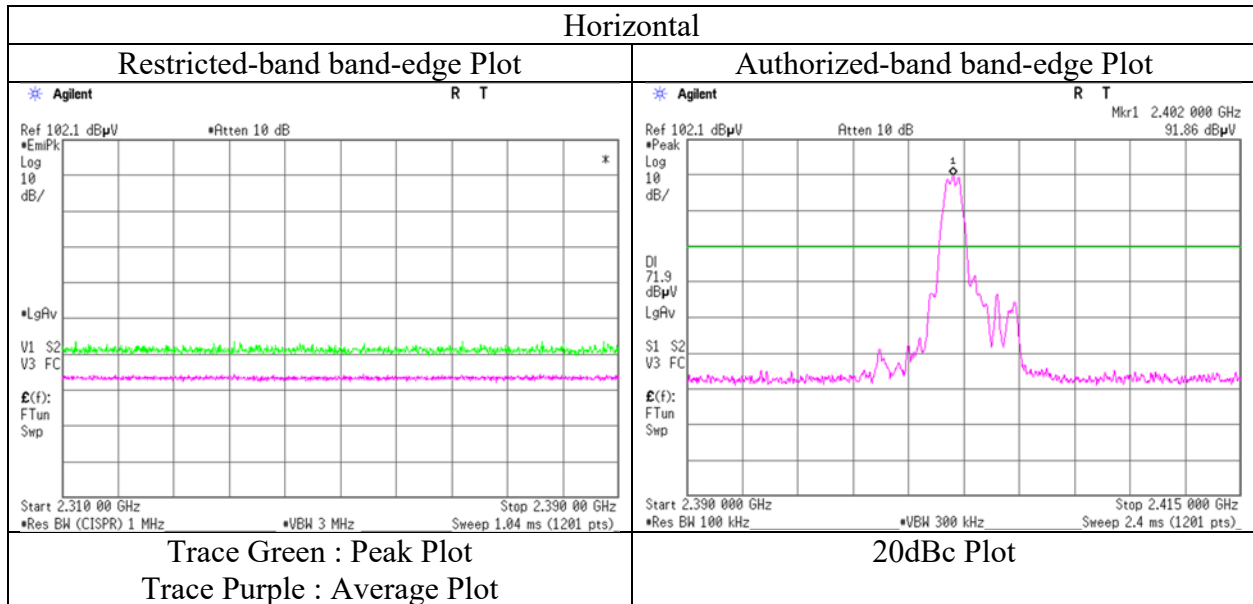
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Radiated Spurious Emission (Reference Plot for band-edge)

Report No.	12710034S-A-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 BT LE 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-A-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 BT LE 2440 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.	122.433	QP	21.90	13.33	8.21	31.80	0.00	11.64	43.50	31.8	200	34	
Hori.	232.002	QP	28.20	11.39	6.18	31.76	0.00	14.01	46.00	31.9	132	67	
Hori.	375.934	QP	22.10	15.14	7.36	31.80	0.00	12.80	46.00	33.2	100	348	
Hori.	444.334	QP	22.00	16.47	7.67	31.88	0.00	14.26	46.00	31.7	150	59	
Hori.	556.019	QP	29.90	18.00	8.17	32.04	0.00	24.03	46.00	21.9	142	261	
Hori.	2595.988	PK	48.58	27.87	14.87	39.43	2.31	54.20	73.90	19.7	133	89	
Hori.	4880.000	PK	51.83	31.37	7.23	39.50	2.31	53.24	73.90	20.6	163	124	
Hori.	7320.000	PK	44.31	37.00	9.08	39.35	2.31	53.35	73.90	20.5	100	0	
Hori.	19516.000	PK	48.41	40.09	11.88	47.70	-9.54	43.14	73.90	30.7	158	142	
Hori.	2595.988	AV	40.54	27.87	14.87	39.43	2.31	46.16	53.90	7.7	133	89	
Vert.	49.466	QP	22.30	11.37	7.44	31.82	0.00	9.29	40.00	30.7	100	15	
Vert.	144.743	QP	21.90	14.70	8.70	31.78	0.00	13.52	43.50	29.9	100	72	
Vert.	572.632	QP	29.30	18.44	8.23	32.03	0.00	23.94	46.00	22.0	100	105	
Vert.	791.890	QP	22.80	20.74	9.17	31.90	0.00	20.81	46.00	25.1	150	112	
Vert.	2595.976	PK	47.98	27.87	14.87	39.43	2.31	53.60	73.90	20.3	144	89	
Vert.	4880.000	PK	50.18	31.37	7.23	39.50	2.31	51.59	73.90	22.3	100	88	
Vert.	7320.000	PK	44.48	37.00	9.08	39.35	2.31	53.52	73.90	20.3	100	0	
Vert.	19516.000	PK	47.87	40.09	11.88	47.70	-9.54	42.60	73.90	31.3	241	114	
Vert.	2595.976	AV	40.73	27.87	14.87	39.43	2.31	46.35	53.90	7.5	144	89	

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	4880.000	AV	44.06	31.37	7.23	39.50	3.33	2.31	48.80	53.90	5.1	
Hori.	7320.000	AV	34.81	37.00	9.08	39.35	3.33	2.31	47.18	53.90	6.7	
Hori.	19516.000	AV	42.77	40.09	11.88	47.70	3.33	-9.54	40.83	53.90	13.0	
Vert.	4880.000	AV	42.22	31.37	7.23	39.50	3.33	2.31	46.96	53.90	6.9	
Vert.	7320.000	AV	35.05	37.00	9.08	39.35	3.33	2.31	47.42	53.90	6.4	
Vert.	19516.000	AV	41.54	40.09	11.88	47.70	3.33	-9.54	39.60	53.90	14.3	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Duty factor + 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 : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.54\text{ dB}$

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

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

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Radiated Spurious Emission

Report No.	12710034S-A-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 BT LE 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.	122.862	QP	22.00	13.38	8.23	31.80	0.00	11.81	43.50	31.6	163	68	
Hori.	232.004	QP	28.30	11.39	6.18	31.76	0.00	14.11	46.00	31.8	124	45	
Hori.	332.001	QP	26.60	14.60	7.12	31.77	0.00	16.55	46.00	29.4	100	61	
Hori.	412.092	QP	21.90	16.02	7.54	31.84	0.00	13.62	46.00	32.3	100	188	
Hori.	575.990	QP	30.30	18.54	8.24	32.03	0.00	25.05	46.00	20.9	150	228	
Hori.	2483.500	PK	50.07	27.65	14.77	39.46	2.31	55.34	73.90	18.5	233	284	
Hori.	2636.018	PK	49.81	27.90	14.90	39.42	2.31	55.50	73.90	18.4	133	88	
Hori.	4960.000	PK	53.17	31.54	7.28	39.50	2.31	54.80	73.90	19.1	100	122	
Hori.	7440.000	PK	44.81	37.10	9.15	39.42	2.31	53.95	73.90	19.9	100	0	
Hori.	19836.000	PK	48.94	39.94	12.02	47.72	-9.54	43.64	73.90	30.2	160	142	
Hori.	2636.018	AV	41.35	27.90	14.90	39.42	2.31	47.04	53.90	6.8	133	88	
Vert.	49.347	QP	22.30	11.42	7.44	31.82	0.00	9.34	40.00	30.6	100	0	
Vert.	93.321	QP	22.10	8.91	8.32	31.81	0.00	7.52	43.50	35.9	100	0	
Vert.	568.280	QP	29.20	18.32	8.21	32.03	0.00	23.70	46.00	22.3	100	183	
Vert.	921.365	QP	24.60	22.09	9.73	31.20	0.00	25.22	46.00	20.7	100	137	
Vert.	2483.500	PK	51.82	27.65	14.77	39.46	2.31	57.09	73.90	16.8	100	271	
Vert.	2636.036	PK	49.56	27.90	14.90	39.42	2.31	55.25	73.90	18.6	128	90	
Vert.	4960.000	PK	50.80	31.54	7.28	39.50	2.31	52.43	73.90	21.4	100	88	
Vert.	7440.000	PK	44.76	37.10	9.15	39.42	2.31	53.90	73.90	20.0	100	0	
Vert.	19836.000	PK	47.64	39.94	12.02	47.72	-9.54	42.34	73.90	31.5	249	112	
Vert.	2636.036	AV	41.69	27.90	14.90	39.42	2.31	47.38	53.90	6.5	128	90	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.91 m / 3.0 m) = 2.31 dB

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

Average measurement value with duty factor

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2483.500	AV	40.22	27.65	14.77	39.46	3.33	2.31	48.82	53.90	5.0	*1)
Hori.	4960.000	AV	45.19	31.54	7.28	39.50	3.33	2.31	50.15	53.90	3.7	
Hori.	7440.000	AV	35.69	37.10	9.15	39.42	3.33	2.31	48.16	53.90	5.7	
Hori.	19836.000	AV	43.13	39.94	12.02	47.72	3.33	-9.54	41.16	53.90	12.7	
Vert.	2483.500	AV	41.77	27.65	14.77	39.46	3.33	2.31	50.37	53.90	3.5	*1)
Vert.	4960.000	AV	43.08	31.54	7.28	39.50	3.33	2.31	48.04	53.90	5.8	
Vert.	7440.000	AV	35.72	37.10	9.15	39.42	3.33	2.31	48.19	53.90	5.7	
Vert.	19836.000	AV	41.17	39.94	12.02	47.72	3.33	-9.54	39.20	53.90	14.7	

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

Distance factor : 1 GHz - 13 GHz : 20log(3.91 m / 3.0 m) = 2.31 dB

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

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

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

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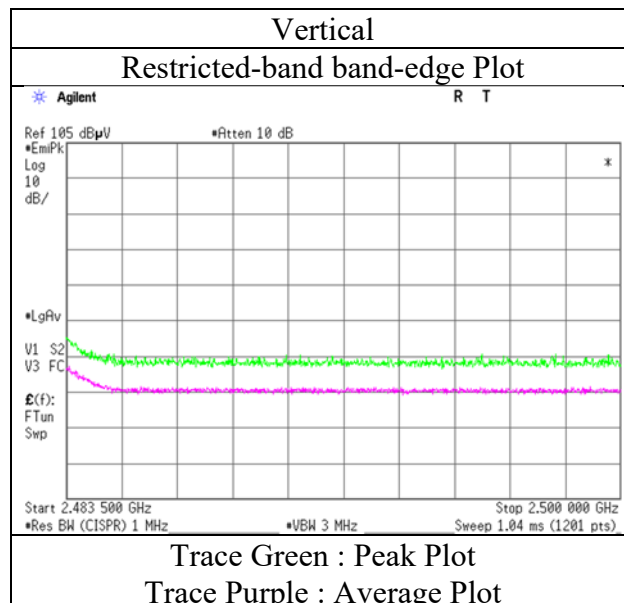
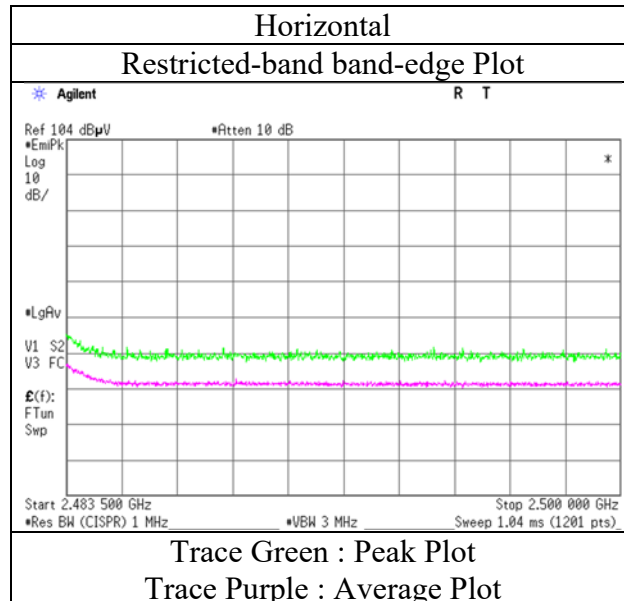
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Radiated Spurious Emission (Reference Plot for band-edge)

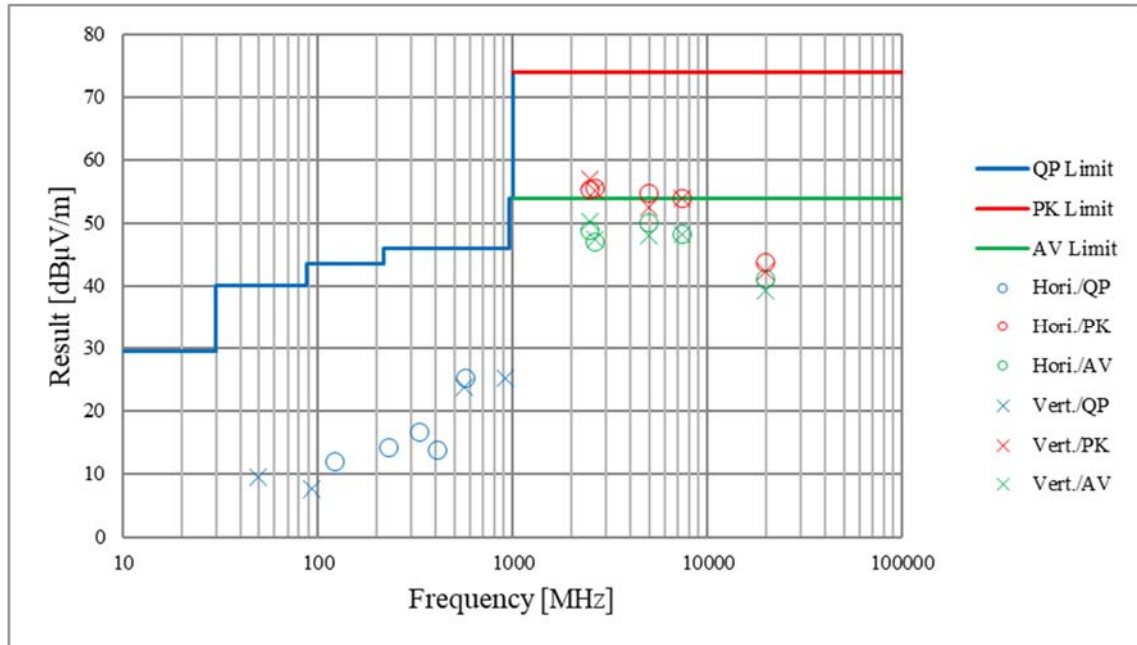
Report No.	12710034S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No. 3
Date	January 30, 2019
Temperature / Humidity	23 deg. C / 34 %RH
Engineer	Kazuya Noda
	(1 GHz - 13 GHz)
Mode	Tx BT LE 2480 MHz



* 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)

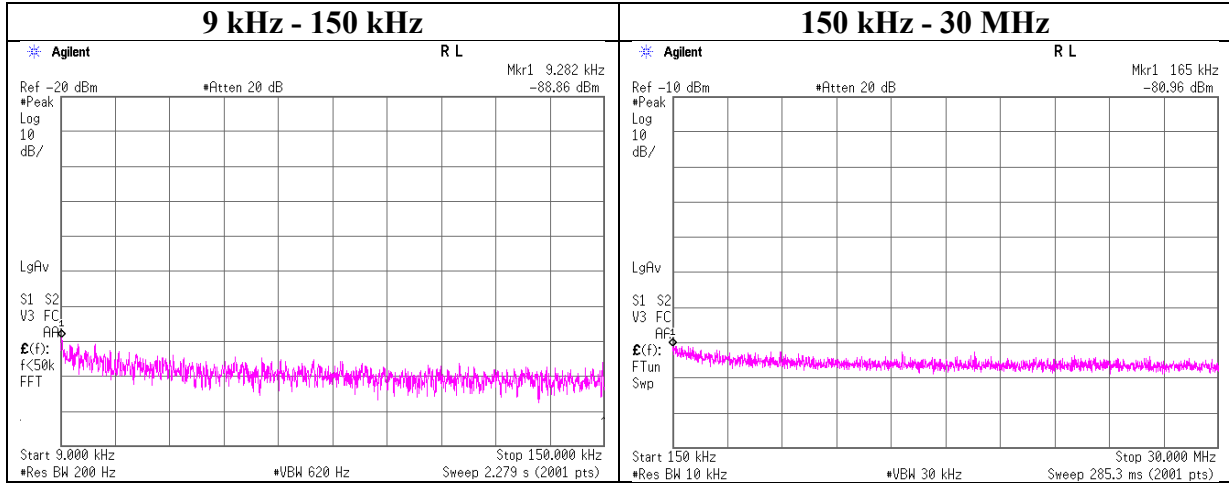
Report No.	12710034S-A-R1	No. 3	No. 3
Test place	Shonan EMC Lab.	No. 3	No. 3
Semi Anechoic Chamber	No. 1	No. 3	No. 3
Date	February 10, 2019	January 30, 2019	January 31, 2019
Temperature / Humidity	22 deg. C / 32 %RH	23 deg. C / 34 %RH	25 deg. C / 30 %RH
Engineer	Makoto Hosaka (30 MHz - 1 GHz)	Kazuya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



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

Conducted Spurious Emission

Report No.	12710034S-A-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 BT LE 2402 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.282	-88.86	1.56	9.82	2.66	1	-74.8	300	6.0	-13.6	48.2	61.8	
165.000	-80.96	1.56	9.82	2.66	1	-66.9	300	6.0	-5.7	23.2	28.9	

$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$

N: Number of output

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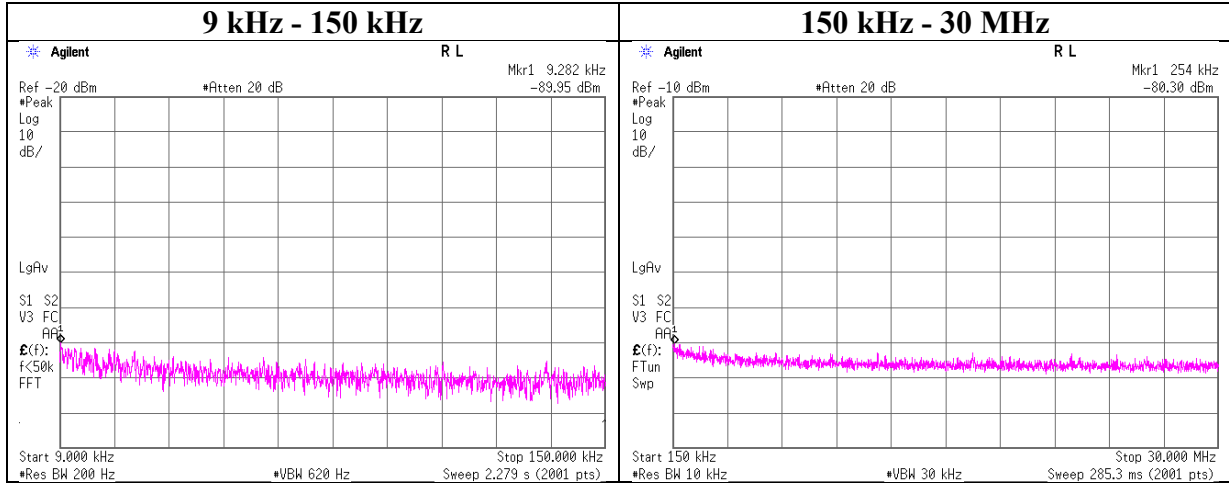
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Conducted Spurious Emission

Report No. 12710034S-A-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 BT LE 2440 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.282	-89.95	1.57	9.82	2.66	1	-75.9	300	6.0	-14.6	48.2	62.8	
254.000	-80.30	1.57	9.82	2.66	1	-66.3	300	6.0	-5.0	19.5	24.5	

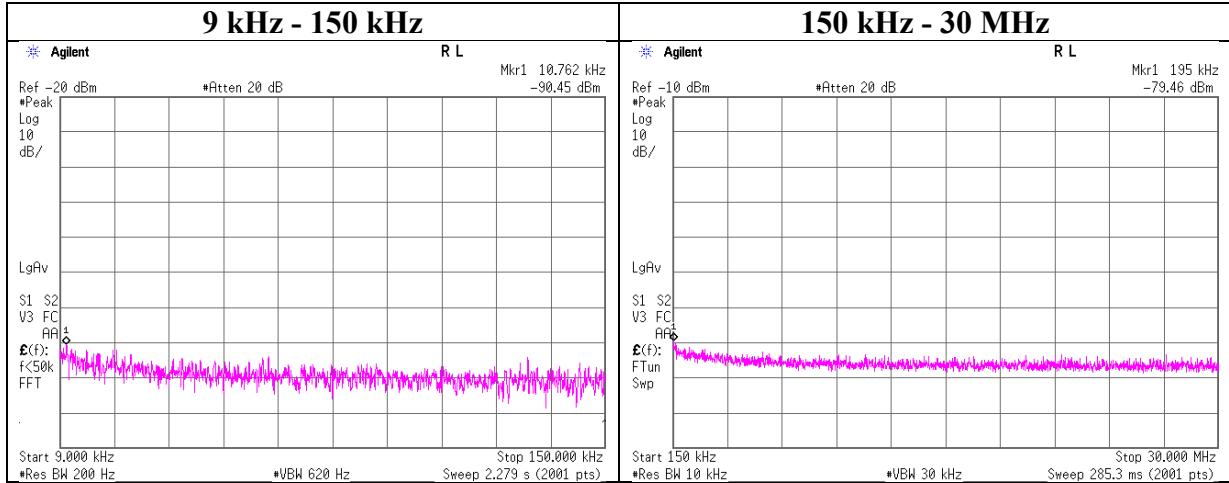
$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$

N: Number of output

Conducted Spurious Emission

Report No.	12710034S-A-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 BT LE 2480 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
10.762	-90.45	1.58	9.82	2.66	1	-76.4	300	6.0	-15.1	46.9	62.0	
195.000	-79.46	1.58	9.82	2.66	1	-65.4	300	6.0	-4.1	21.8	25.9	

$E \text{ [dBuV/m]} = \text{EIRP [dBm]} - 20 \log (\text{Distance [m]}) + \text{Ground bounce [dB]} + 104.8 \text{ [dBuV/m]}$

$\text{EIRP [dBm]} = \text{Reading [dBm]} + \text{Cable loss [dB]} + \text{Attenuator Loss [dB]} + \text{Antenna gain [dBi]} + 10 * \log (N)$

N: Number of output

Power Density

Report No. 12710034S-A-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

BT LE

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2402.00	-27.26	1.56	9.82	-15.88	8.00	23.88
2440.00	-26.97	1.57	9.82	-15.58	8.00	23.58
2480.00	-26.64	1.58	9.82	-15.24	8.00	23.24

Sample Calculation:

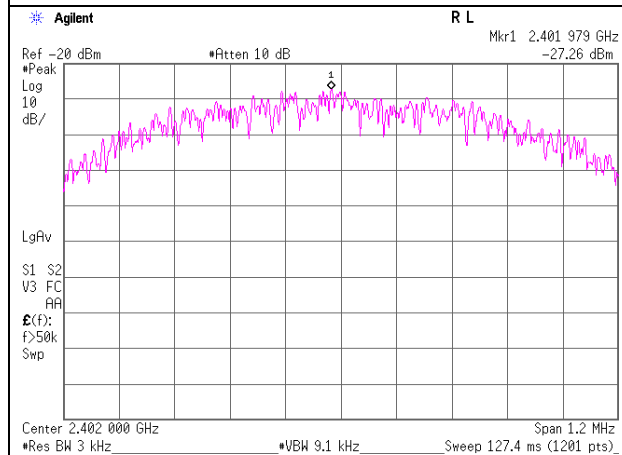
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

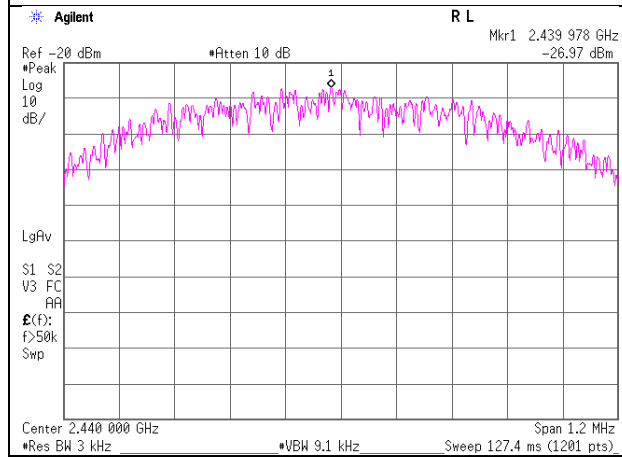
Power Density

BT LE

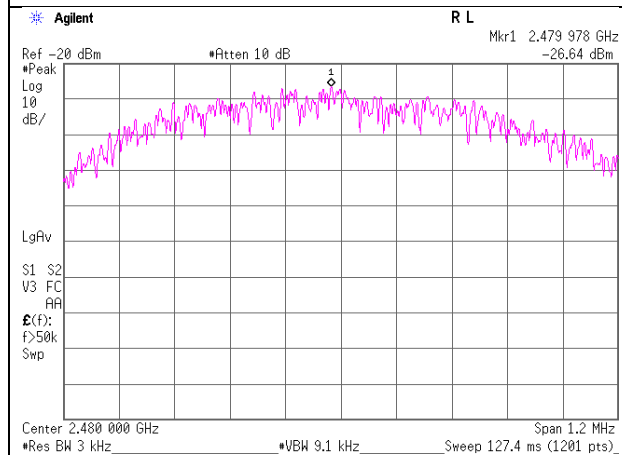
2402 MHz



2440 MHz



2480 MHz



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-SEMI-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(NSA)	RE	145597	Semi-Anechoic Chamber	TDK	SAEC-01(NSA)	1	2018/5/29	2019/5/31	12
SAEC-03(SVSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	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/12DSFA/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/12DSFA/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

UL Japan, Inc.

Shonan EMC Lab.

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Facsimile : +81 463 50 6401

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