RADIO TEST REPORT

Test Report No. : 12636090S-A-R1

Applicant	:	**CASIO COMPUTER CO., LTD.**
Type of Equipment	:	**Watch**
Model No.	:	**EQB-1000**
FCC ID	:	**BBQS0JW**
Test regulation	:	**FCC Part 15 Subpart C: 2018**
Test Result	:	**Complied (Refer to SECTION 3.2)**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim 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 12636090S-A. 12636090S-A is replaced with this report.

Date of test: January 21 to February 14, 2019

Representative test engineer: K. Noda
Kazuya Noda
Engineer
Consumer Technology Division

Approved by: A. Hayashi
Akio Hayashi
Leader
Consumer Technology Division

CERTIFICATE 1266.03

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

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

REVISION HISTORY

Original Test Report No.: 12636090S-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12636090S-A	March 27, 2019	-	-
1	12636090S-A-R1	April 3, 2019	8	Modification of 4.2: Addition of DC power supply and AC Cable

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	CASIO COMPUTER CO., LTD.
Address	:	2-1, Sakaecho 3 chome, Hamura-shi, Tokyo 205-8555 Japan
Telephone Number	:	+81-42-579-7282
Facsimile Number	:	+81-42-579-7702
Contact Person	:	Hiroaki Suzuki

The information provided from the customer is as follows;
- Applicant, Type of Equipment, Model No., FCC ID on the cover and other relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (E.U.T.)
- SECTION 4: Operation of E.U.T. during testing

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

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

2.1 Identification of E.U.T.

Type of Equipment	:	Watch
Model No.	:	EQB-1000
Serial No.	:	Refer to Section 4.2
Rating	:	EQB-1000 (Watch): Typical DC 2.5 V CW5604 (Module): Normal: DC 3.0 V, Min.: DC 1.9 V, Max.: DC 3.3 V
Receipt Date of Sample (Information from test lab.)	:	January 21, 2019
Country of Mass-production	:	China, Thailand, Japan
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: EQB-1000 (referred to as the EUT in this report) is a Watch.

* EQB-1000 has alternative name as R022.

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	GFSK
Channel spacing	:	2 MHz
Antenna type	:	Chip (Monopole)
Antenna Gain	:	2.5 dBi
Operating Temperature	:	-10 deg.C to +60 deg.C
Clock frequency (Maximum)		16 MHz

SECTION 3: Test specification, procedures & results

3.1 Test Specification

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

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

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	**FCC:** ANSI C63.10-2013 6. Standard test methods **IC:** RSS-Gen 8.8	**FCC:** Section 15.207 **IC:** RSS-Gen 8.8	-	N/A	*1)
6dB Bandwidth	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r01 **IC:** -	**FCC:** Section 15.247(a)(2) **IC:** RSS-247 5.2(a)	See data.	Complied a)	Conducted
Maximum Peak Output Power	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r01 **IC:** RSS-Gen 6.12	**FCC:** Section 15.247(b)(3) **IC:** RSS-247 5.4(d)		Complied b)	Conducted
Power Density	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r01 **IC:** -	**FCC:** Section 15.247(e) **IC:** RSS-247 5.2(b)		Complied c)	Conducted
Spurious Emission Restricted Band Edges	**FCC:** KDB 558074 D01 15.247 Meas Guidance v05r01 **IC:** RSS-Gen 6.13	**FCC:** Section15.247(d) **IC:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	3.7 dB 7440.00 MHz, AV, Horizontal Tx 2480 MHz	Complied# d), e)	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *2)

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) The test is not applicable since the EUT has no AC mains.
*2) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r01 8.5 and 8.6. (The revision from v05 to v05r01 does not affect the test result.)

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.

FCC Part 15.31 (e)
The EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage.
Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore the EUT complies with the requirement.

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

3.3 Addition to standard

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

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.
Shonan EMC Lab.

Item	Frequency range	Uncertainty (+/-)		
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.9 dB	2.8 dB	2.9 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	3.0 dB	3.0 dB	3.1 dB
	30 MHz-200 MHz	4.6 dB	4.6 dB	4.7 dB
	200 MHz-1 GHz	6.0 dB	6.0 dB	6.1 dB
	1 GHz-6 GHz	4.8 dB	4.8 dB	4.8 dB
	6 GHz-18 GHz	5.4 dB	5.4 dB	5.4 dB
	18 GHz-40 GHz	5.6 dB	5.6 dB	5.6 dB
Radiated emission (Measurement distance: 1 m)	1 GHz-18 GHz	5.7 dB	5.7 dB	5.7 dB
	18 GHz-40 GHz	5.9 dB	5.9 dB	5.9 dB

SAC=Semi-Anechoic Chamber
SR= Shielded Room is applied besides radiated emission

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

3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone: +81 463 50 6400, Facsimile: +81 463 50 6401
A2LA Certificate Number: 1266.03
FCC Test Firm Registration Number: 626366

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

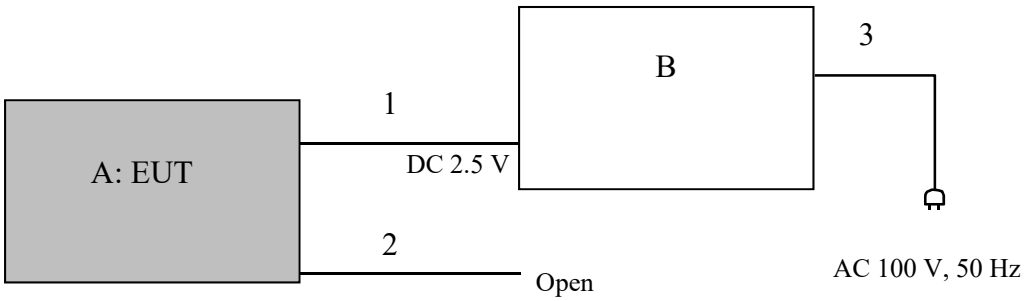
Refer to APPENDIX.

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

4.1 Operating Mode(s)

Mode	Frequency	Remarks*
Transmitting (Tx), Bluetooth Low Energy (BT LE)	2402 MHz, 2440 MHz, 2480 MHz	PRBS9
*Power of the EUT was set by the software as follows; - Power Setting: Fixed - Software: BLE RF Test Version 9.9 *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 and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Watch	EQB-1000	No.05 *1) No.02 *2)	Casio Computer Co., Ltd.	EUT
B	Power Supply	PAN35-10A	NA000955	KIKUSUI	-

*1) Used for Antenna Terminal conducted test
*2) Used for Radiated Emission test

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	0.1 + 2.0	Unshielded	Unshielded	*3)
2	Signal Cable	0.1	Unshielded	Unshielded	*4)
3	AC Cable	1.8	Unshielded	Unshielded	-

*3) Cable for test operation
*4) Cable for system reset during the development, not used for the product

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 v05r01".

[For below 1 GHz]
EUT was placed on a platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane.
The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The height of the measuring antenna varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

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

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

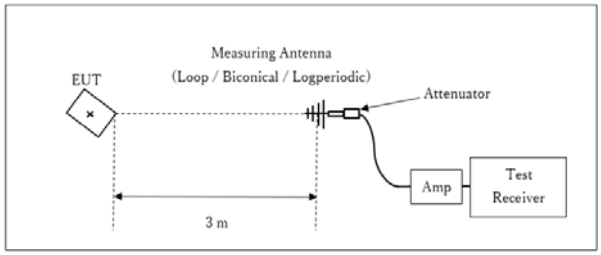
20 dBc was applied to the frequency over the limit of FCC 15.209 / Table 4 of RSS-Gen 8.9(IC) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (IC).

Frequency	Below 1 GHz	Above 1 GHz		20 dBc
Instrument used	Test Receiver	Spectrum Analyzer		Spectrum Analyzer
Detector	QP	PK	AV *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 1: Test Setup

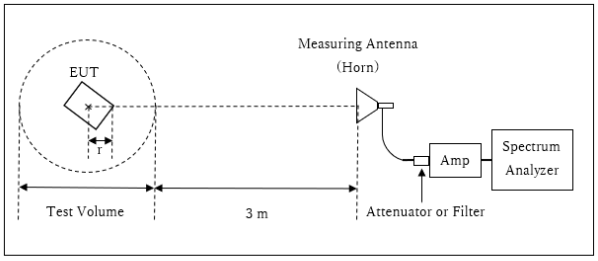
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz - 13 GHz

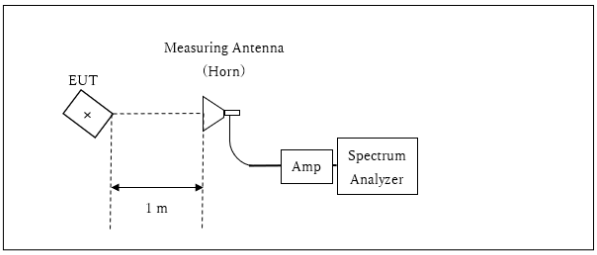


r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.96 m*/3.0 m) = 2.41 dB
* Test Distance: (3 + Test Volume /2) - r = 3.96 m

Test Volume: 2 m
(Test Volume has been calibrated based on CISPR 16-1-4.)
r = 0.04 m

13 GHz - 26.5 GHz



× : Center of turn table

Distance Factor: 20 x log (1.0 m* / 3.0 m) = -9.54 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	Carrier	Spurious (Below 1 GHz)	Spurious (1 GHz -13 GHz)	Spurious (13 GHz -26.5 GHz)
Horizontal	X	X	X	X
Vertical	X	X	X	X

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

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
6dB 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 6dB Bandwidth	3 kHz	9.1 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *4)	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 low enough 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

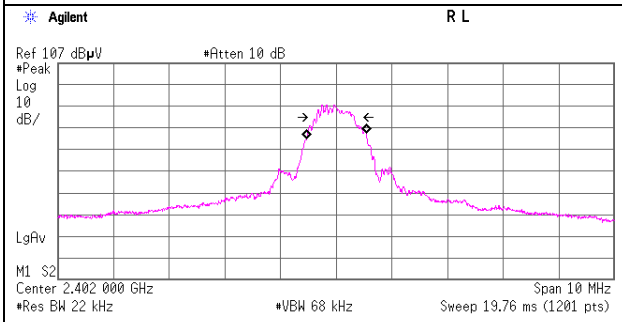
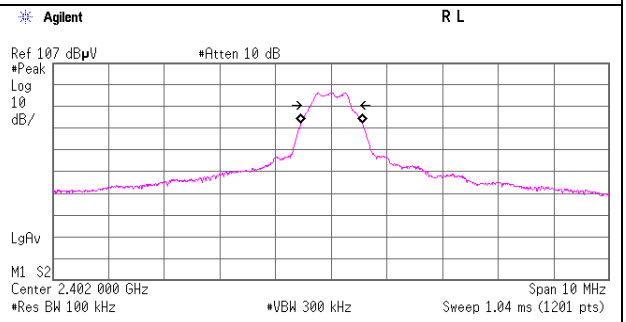
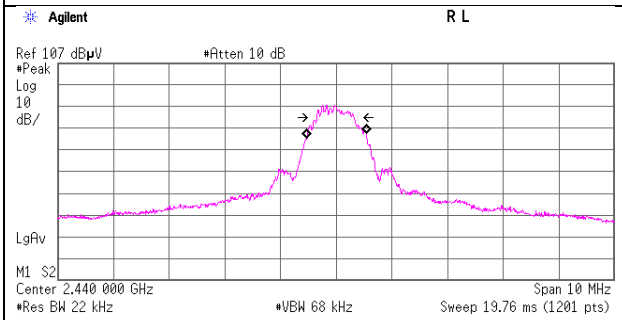
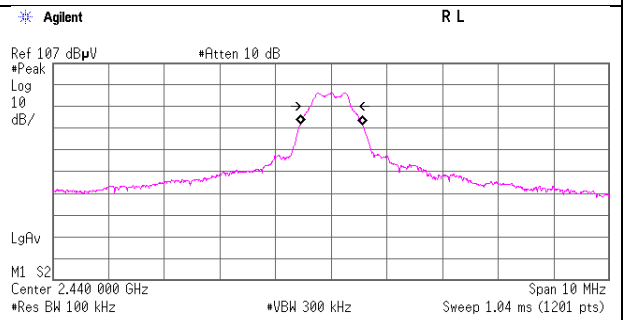
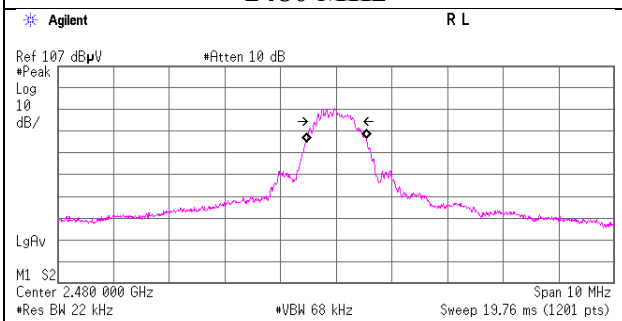
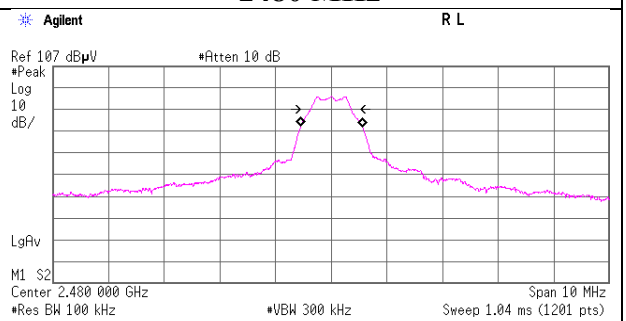
6 dB Bandwidth and 99 % Occupied Bandwidth

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE

Mode	Frequency [MHz]	99 % Occupied Bandwidth [kHz]	6 dB Bandwidth [MHz]	Limit for 6 dB Bandwidth [MHz]
BT LE	2402	1068.7	0.725	> 0.5000
	2440	1073.6	0.725	> 0.5000
	2480	1076.6	0.733	> 0.5000

99% Occupied Bandwidth

BT LE

99 % Occupied Bandwidth	6 dB Bandwidth
2402 MHz	**2402 MHz**
	
2440 MHz	**2440 MHz**
	
2480 MHz	**2480 MHz**
	

Maximum Peak Output Power

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE

				Conducted Power					e.i.r.p. for RSS-247					
Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin	Antenna Gain	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]	[dBi]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2402	-12.54	1.86	9.82	-0.86	0.82	30.00	1000	30.86	2.50	1.64	1.46	36.02	4000	34.38
2440	-12.62	1.87	9.82	-0.93	0.81	30.00	1000	30.93	2.50	1.57	1.44	36.02	4000	34.45
2480	-12.91	1.88	9.82	-1.21	0.76	30.00	1000	31.21	2.50	1.29	1.35	36.02	4000	34.73

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.

Average Output Power
(Reference data for RF Exposure / SAR testing)

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE

Freq.	Reading	Cable Loss	Atten. Loss	Result (Time average)		Duty factor	Result (Burst power average)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2402	-14.84	1.86	9.82	-3.16	0.48	2.00	-1.16	0.77
2440	-14.90	1.87	9.82	-3.21	0.48	2.00	-1.21	0.76
2480	-15.21	1.88	9.82	-3.51	0.45	2.00	-1.51	0.71

Sample Calculation:
Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss
Result (Burst power average) = Time average + Duty factor

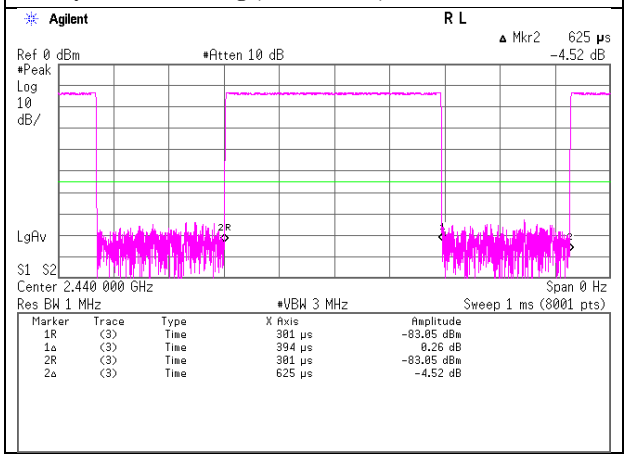
*The equipment and cables were not used for factor 0 dB of the data sheets.

Burst rate confirmation

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE

BT LE

Tx on / (Tx on + Tx off) =	**0.630**
Tx on / (Tx on + Tx off) * 100 =	**63.0 %**
(for Average power)	
Duty factor = 10 * log (0.625 / 0.394) =	**2.00 dB**
(for Spurious emissions)	
Duty factor = 20 * log (0.625 / 0.394) =	**4.01 dB**



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

Radiated Spurious Emission

Report No.	12636090S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2019	February 5, 2019	February 13, 2019
Temperature / Humidity	20 deg. C / 33 % RH	21 deg. C / 35 % RH	22 deg. C / 32 % RH
Engineer	Yosuke Ishikawa	Makoto Hosaka	Yohsuke Matsuzawa
	(1 GHz - 18 GHz)	(30 MHz - 1 GHz)	(18 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.	112.000	QP	21.50	12.17	7.24	32.15	0.00	8.76	43.50	34.7	150	310	
Hori.	176.000	QP	21.30	15.88	7.85	32.10	0.00	12.93	43.50	30.5	199	120	
Hori.	272.000	QP	21.20	12.94	8.53	32.01	0.00	10.66	46.00	35.3	150	317	
Hori.	400.000	QP	21.00	15.86	9.25	31.98	0.00	14.13	46.00	31.8	134	195	
Hori.	2390.000	PK	45.95	27.86	14.66	39.46	2.41	51.42	73.90	22.4	138	180	
Hori.	4804.000	PK	45.09	31.43	7.23	39.50	2.41	46.66	73.90	27.2	100	0	
Hori.	7206.000	PK	45.12	36.79	8.87	39.29	2.41	53.90	73.90	**20.0**	100	0	
Vert.	32.000	QP	22.10	17.92	6.49	32.20	0.00	14.31	40.00	25.6	100	196	
Vert.	80.000	QP	23.10	6.44	7.56	32.17	0.00	4.93	40.00	35.0	100	19	
Vert.	224.000	QP	21.30	11.23	8.20	32.05	0.00	8.68	46.00	37.3	100	309	
Vert.	240.000	QP	23.20	11.65	8.31	32.03	0.00	11.13	46.00	34.8	100	129	
Vert.	272.000	QP	21.10	12.94	8.53	32.01	0.00	10.56	46.00	35.4	100	59	
Vert.	352.000	QP	21.00	15.14	9.04	31.95	0.00	13.23	46.00	32.7	100	4	
Vert.	368.000	QP	21.10	15.14	9.11	31.96	0.00	13.39	46.00	32.6	100	4	
Vert.	2390.000	PK	45.96	27.86	14.66	39.46	2.41	51.43	73.90	22.4	150	140	
Vert.	4804.000	PK	46.35	31.43	7.23	39.50	2.41	47.92	73.90	25.9	100	0	
Vert.	7206.000	PK	44.53	36.79	8.87	39.29	2.41	53.31	73.90	20.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 dB
13 GHz - 26.5 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	34.87	27.86	14.66	39.46	4.01	2.41	44.35	53.90	9.5	*1)
Hori.	4804.000	AV	37.12	31.43	7.23	39.50	4.01	2.41	42.70	53.90	11.2	
Hori.	7206.000	AV	36.95	36.79	8.87	39.29	4.01	2.41	49.74	53.90	4.1	
Vert.	2390.000	AV	33.65	27.86	14.66	39.46	4.01	2.41	43.13	53.90	10.7	*1)
Vert.	4804.000	AV	37.35	31.43	7.23	39.50	4.01	2.41	42.93	53.90	10.9	
Vert.	7206.000	AV	37.03	36.79	8.87	39.29	4.01	2.41	49.82	53.90	**4.0**	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 dB
13 GHz - 26.5 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)

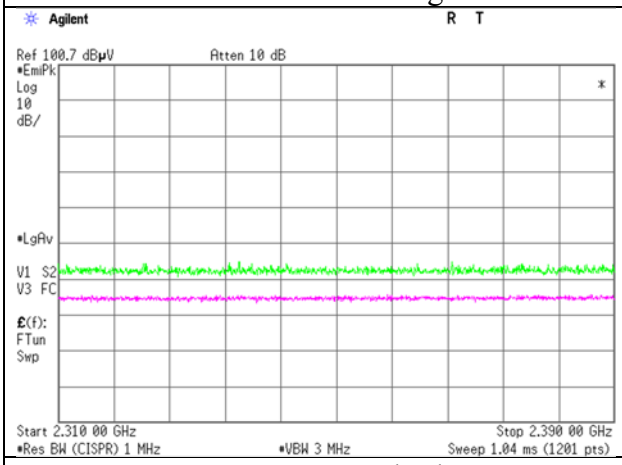
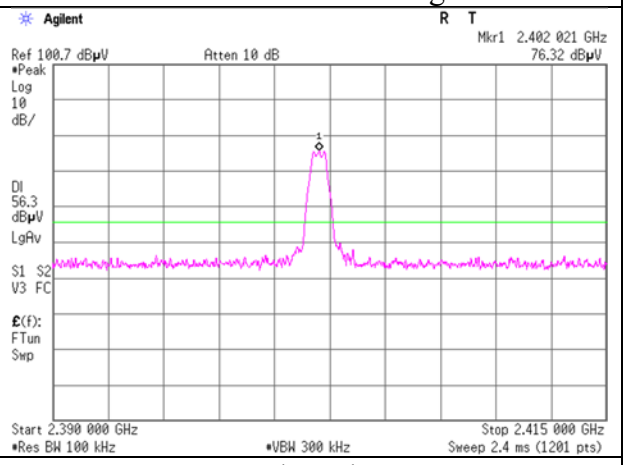
20 dBc Data Sheet **(RBW 100 kHz, VBW 300 kHz)**

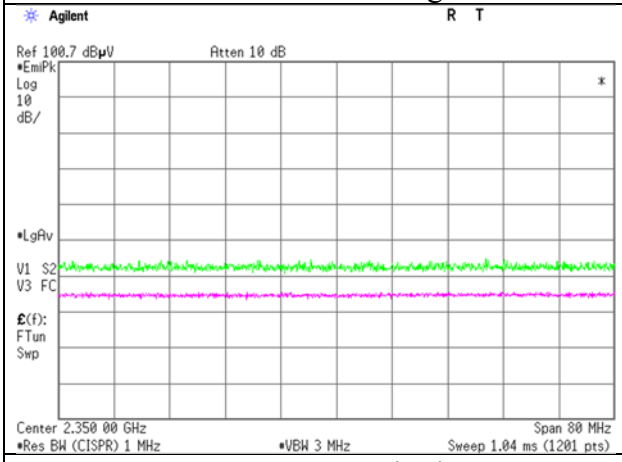
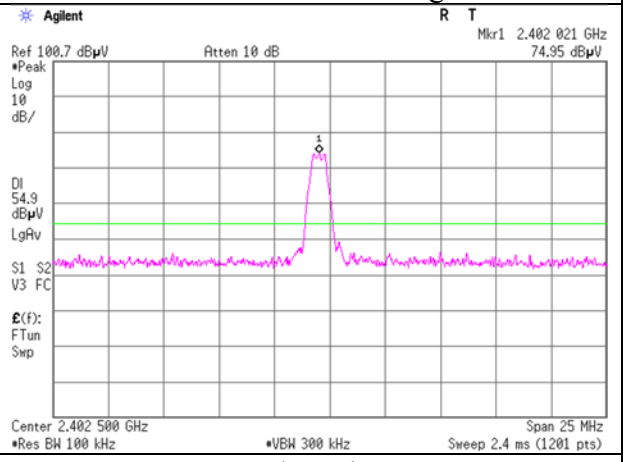
Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori.	2402.000	PK	77.38	27.86	14.67	39.46	2.41	82.86	-	-	Carreir
Hori.	2400.000	PK	37.70	27.86	14.67	39.46	2.41	43.18	62.86	19.6	
Vert.	2402.000	PK	75.48	27.86	14.67	39.46	2.41	80.96	-	-	Carreir
Vert.	2400.000	PK	40.21	27.86	14.67	39.46	2.41	45.69	60.96	15.2	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 dB
13 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 21, 2019
Temperature / Humidity	20 deg. C / 33 % RH
Engineer	Yosuke Ishikawa
	(1 GHz - 18 GHz)
Mode	Tx BT LE 2402 MHz

Horizontal	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

Vertical	
Restricted-band band-edge Plot	Authorized-band band-edge Plot
	
Trace Green : Peak Plot Trace Purple : Average Plot	20dBc Plot

* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission

Report No.	12636090S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2019	February 5, 2019	February 13, 2019
Temperature / Humidity	20 deg. C / 33 % RH	21 deg. C / 35 % RH	22 deg. C / 32 % RH
Engineer	Yosuke Ishikawa	Makoto Hosaka	Yohsuke Matsuzawa
	(1 GHz - 18 GHz)	(30 MHz - 1 GHz)	(18 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.	32.000	QP	22.20	17.92	6.49	32.20	0.00	14.41	40.00	25.5	373	1	
Hori.	128.000	QP	21.10	13.79	7.36	32.14	0.00	10.11	43.50	33.3	200	61	
Hori.	192.000	QP	21.50	16.34	7.84	32.08	0.00	13.60	43.50	29.9	139	157	
Hori.	288.000	QP	21.00	13.52	8.63	32.01	0.00	11.14	46.00	34.8	100	284	
Hori.	400.000	QP	21.00	15.86	9.25	31.98	0.00	14.13	46.00	31.8	101	306	
Hori.	416.000	QP	20.90	16.13	9.31	31.98	0.00	14.36	46.00	31.6	100	353	
Hori.	4880.000	PK	46.18	31.37	7.33	39.50	2.41	47.79	73.90	26.1	150	310	
Hori.	7320.000	PK	44.01	37.00	9.01	39.35	2.41	53.08	73.90	20.8	100	0	
Vert.	64.000	QP	22.00	7.46	6.48	32.18	0.00	3.76	40.00	36.2	100	354	
Vert.	96.000	QP	21.50	9.46	7.44	32.16	0.00	6.24	43.50	37.2	100	144	
Vert.	176.000	QP	21.30	15.88	7.85	32.10	0.00	12.93	43.50	30.5	100	335	
Vert.	208.000	QP	21.30	11.28	8.09	32.06	0.00	8.61	43.50	34.8	100	359	
Vert.	256.000	QP	21.00	12.00	8.42	32.01	0.00	9.41	46.00	36.5	100	347	
Vert.	368.000	QP	21.00	15.14	9.11	31.96	0.00	13.29	46.00	32.7	100	290	
Vert.	4880.000	PK	46.58	31.37	7.33	39.50	2.41	48.19	73.90	25.7	224	359	
Vert.	7320.000	PK	44.85	37.00	9.01	39.35	2.41	53.92	73.90	**19.9**	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 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.	4880.000	AV	36.37	31.37	7.33	39.50	4.01	2.41	41.99	53.90	11.9	
Hori.	7320.000	AV	36.87	37.00	9.01	39.35	4.01	2.41	49.95	53.90	**3.9**	
Vert.	4880.000	AV	36.80	31.37	7.33	39.50	4.01	2.41	42.42	53.90	11.4	
Vert.	7320.000	AV	36.75	37.00	9.01	39.35	4.01	2.41	49.83	53.90	**4.0**	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 dB
13 GHz - 26.5GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Duty factor Calculation chart" sheet.

Radiated Spurious Emission

Report No.	12636090S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2019	February 5, 2019	February 13, 2019
Temperature / Humidity	20 deg. C / 33 % RH	21 deg. C / 35 % RH	22 deg. C / 32 % RH
Engineer	Yosuke Ishikawa	Makoto Hosaka	Yohsuke Matsuzawa
	(1 GHz - 18 GHz)	(30 MHz - 1 GHz)	(18 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.	80.000	QP	22.20	6.44	7.56	32.17	0.00	4.03	40.00	35.9	167	0	
Hori.	144.000	QP	21.10	14.57	7.68	32.12	0.00	11.23	43.50	32.2	278	306	
Hori.	208.000	QP	21.30	11.28	8.09	32.06	0.00	8.61	43.50	34.8	150	13	
Hori.	272.000	QP	21.20	12.94	8.53	32.01	0.00	10.66	46.00	35.3	100	95	
Hori.	384.000	QP	21.10	15.30	9.17	31.97	0.00	13.60	46.00	32.4	150	157	
Hori.	416.000	QP	20.90	16.13	9.31	31.98	0.00	14.36	46.00	31.6	100	1	
Hori.	2483.500	PK	48.67	27.65	14.76	39.46	2.41	54.03	73.90	**19.8**	170	179	
Hori.	4960.000	PK	46.06	31.54	7.43	39.50	2.41	47.94	73.90	25.9	170	246	
Hori.	7440.000	PK	44.26	37.10	9.16	39.42	2.41	53.51	73.90	20.3	100	0	
Vert.	32.000	QP	21.00	17.92	6.49	32.20	0.00	13.21	40.00	26.7	100	233	
Vert.	48.000	QP	21.30	11.93	6.77	32.19	0.00	7.81	40.00	32.1	100	356	
Vert.	160.000	QP	21.70	15.05	7.87	32.11	0.00	12.51	43.50	30.9	100	207	
Vert.	176.000	QP	21.40	15.88	7.85	32.10	0.00	13.03	43.50	30.4	100	356	
Vert.	192.000	QP	21.10	16.34	7.84	32.08	0.00	13.20	43.50	30.3	100	182	
Vert.	352.000	QP	21.00	15.14	9.04	31.95	0.00	13.23	46.00	32.7	100	4	
Vert.	2483.500	PK	46.93	27.65	14.76	39.46	2.41	52.29	73.90	21.6	225	221	
Vert.	4960.000	PK	46.73	31.54	7.43	39.50	2.41	48.61	73.90	25.2	167	348	
Vert.	7440.000	PK	44.12	37.10	9.16	39.42	2.41	53.37	73.90	20.5	100	0	

Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 dB
13 GHz - 26.5 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	37.03	27.65	14.76	39.46	4.01	2.41	46.40	53.90	7.5	*1)
Hori.	4960.000	AV	36.47	31.54	7.43	39.50	4.01	2.41	42.36	53.90	11.5	
Hori.	7440.000	AV	36.91	37.10	9.16	39.42	4.01	2.41	50.17	53.90	**3.7**	
Vert.	2483.500	AV	36.53	27.65	14.76	39.46	4.01	2.41	45.90	53.90	8.0	*1)
Vert.	4960.000	AV	37.29	31.54	7.43	39.50	4.01	2.41	43.18	53.90	10.7	
Vert.	7440.000	AV	36.82	37.10	9.16	39.42	4.01	2.41	50.08	53.90	3.8	

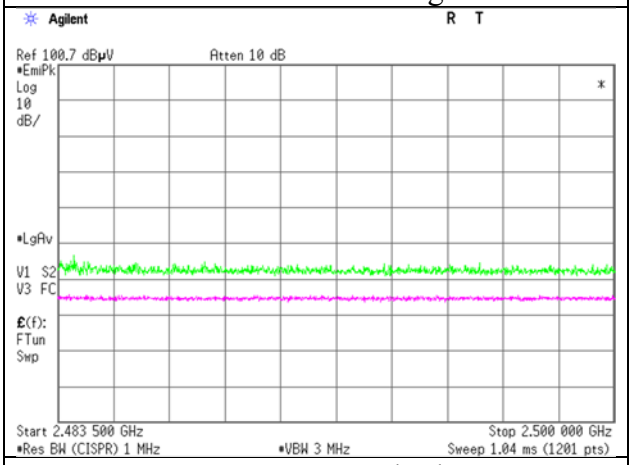
Result = Reading + Ant.Fac. + Loss (Cable+(Attenuator or Filter)(below 18 GHz)) - Gain(Amprifier) + Duty factor + Distance factor
Distance factor : 1 GHz - 13 GHz : 20log (3.96 m / 3.0 m) = 2.41 dB
13 GHz - 26.5 GHz : 20log (1.0 m / 3.0 m) = -9.54 dB
Duty factor refer to "Duty factor Calculation chart" sheet.
*1) Not out of band emission (Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab.
Semi Anechoic Chamber	No.3
Date	January 21, 2019
Temperature / Humidity	20 deg. C / 33 % RH
Engineer	Yosuke Ishikawa
	(1 GHz - 18 GHz)
Mode	Tx BT LE 2480 MHz

Horizontal

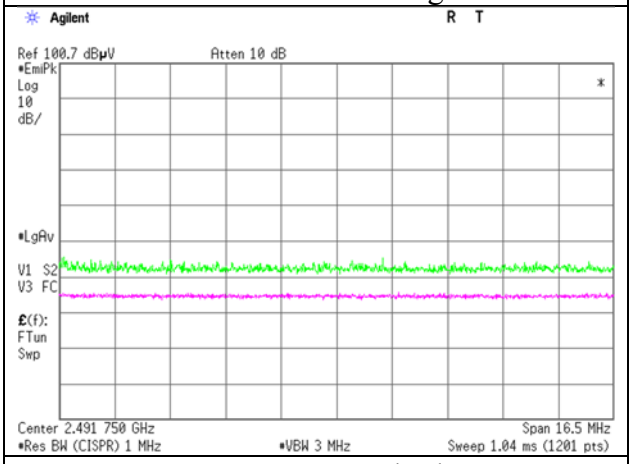
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

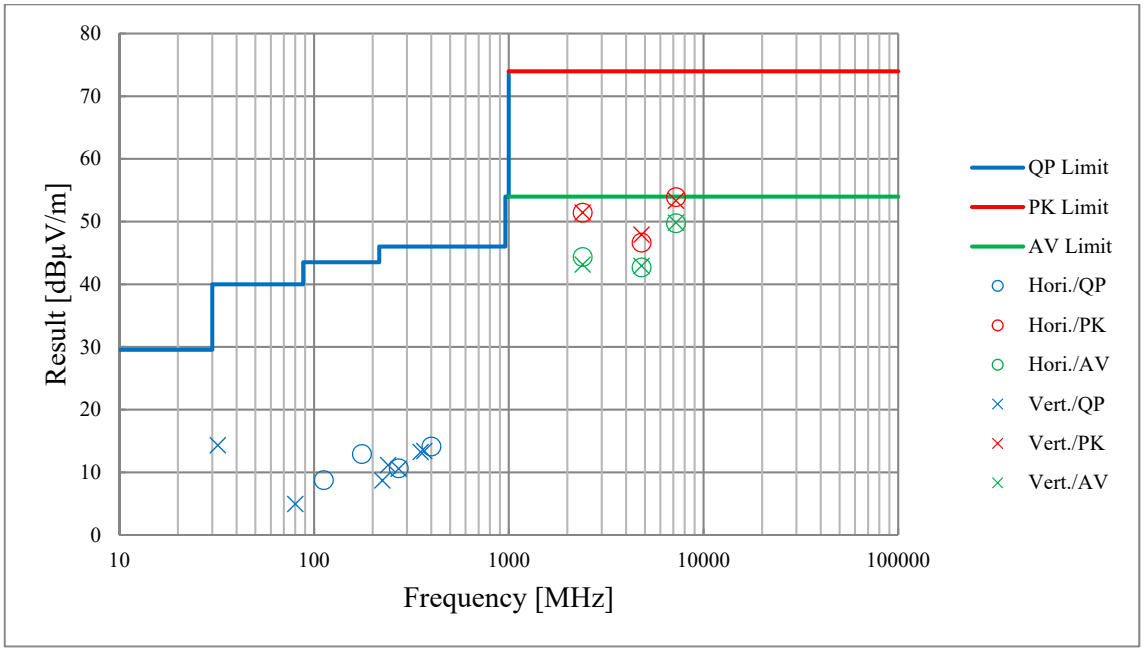


Trace Green : Peak Plot
Trace Purple : Average Plot

* 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.	12636090S-A-R1		
Test place	Shonan EMC Lab.		
Semi Anechoic Chamber	No.3	No.3	No.3
Date	January 21, 2019	February 5, 2019	February 13, 2019
Temperature / Humidity	20 deg. C / 33 % RH	21 deg. C / 35 % RH	22 deg. C / 32 % RH
Engineer	Yosuke Ishikawa	Makoto Hosaka	Yohsuke Matsuzawa
	(1 GHz - 18 GHz)	(30 MHz - 1 GHz)	(18 GHz – 26.5 GHz)
Mode	Tx BT LE 2402 MHz		

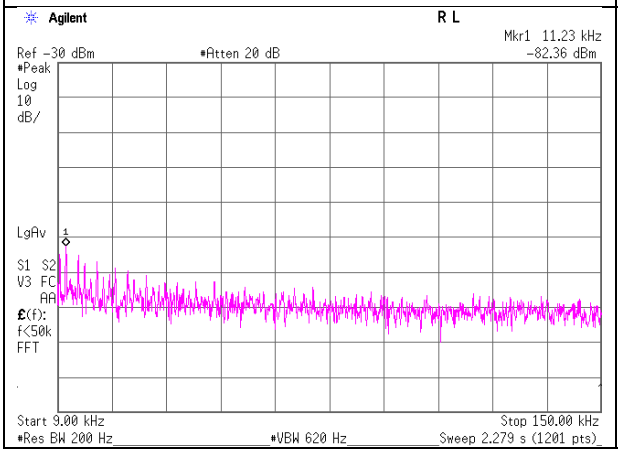


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

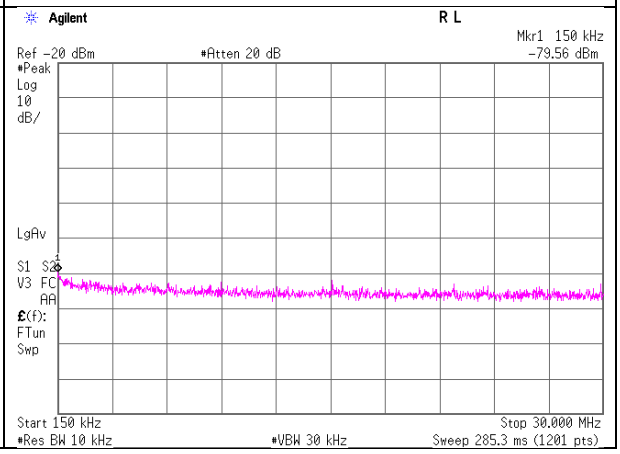
Conducted Spurious Emission

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE 2402 MHz

9 kHz - 150 kHz



150 kHz - 30 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
11.23	-82.4	0.01	9.7	2.5	1	-70.1	300	6.0	-8.9	46.5	55.4	
150.00	-79.6	0.01	9.7	2.5	1	-67.3	300	6.0	-6.1	24.0	30.1	

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

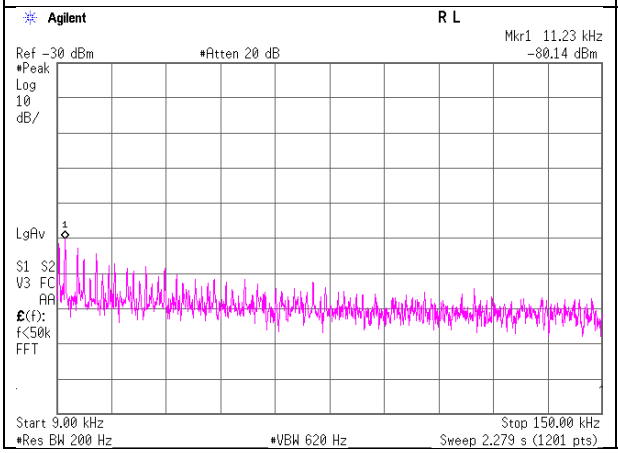
EIRP[dBm] = Reading [dBm] + Cable loss [dB] + Attenuator Loss [dB] + Antenna gain [dBi] + 10 * log (N)

N: Number of output

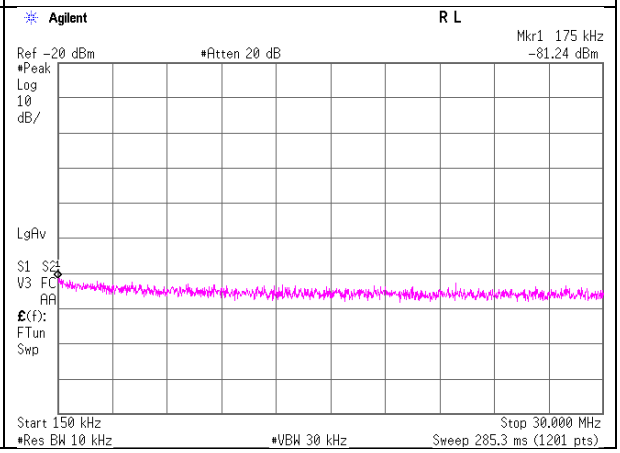
Conducted Spurious Emission

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE 2440 MHz

9 kHz - 150 kHz



150 kHz - 30 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
11.23	-80.1	0.01	9.7	2.5	1	-67.9	300	6.0	-6.6	46.5	53.1	
175.00	-81.2	0.01	9.7	2.5	1	-69.0	300	6.0	-7.7	22.7	30.4	

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

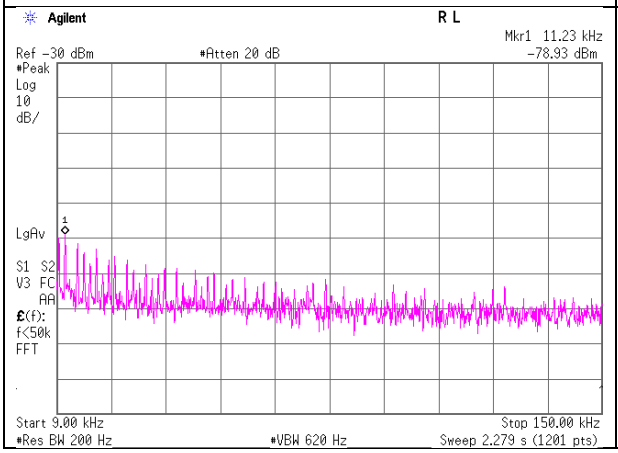
EIRP[dBm] = Reading [dBm] + Cable loss [dB] + Attenuator Loss [dB] + Antenna gain [dBi] + 10 * log (N)

N: Number of output

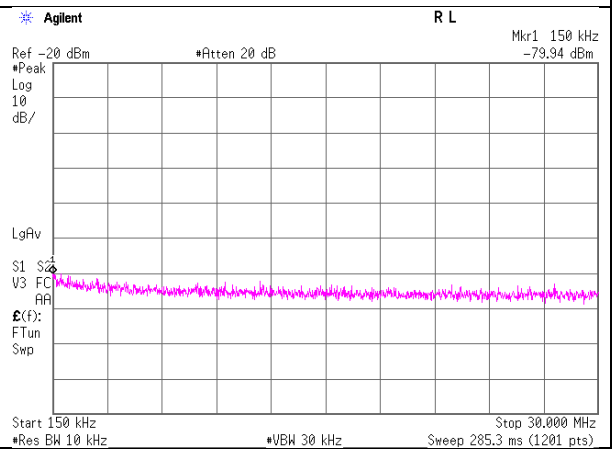
Conducted Spurious Emission

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % RH
Engineer	Kazuya Noda
Mode	Tx BT LE 2480 MHz

9 kHz - 150 kHz



150 kHz - 30 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
11.23	-78.9	0.01	9.7	2.5	1	-66.7	300	6.0	-5.4	46.5	51.9	
150.00	-79.9	0.01	9.7	2.5	1	-67.7	300	6.0	-6.4	24.0	30.4	

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

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

N: Number of output

Power Density

Report No.	12636090S-A-R1
Test place	Shonan EMC Lab. No.5 Shielded Room
Date	February 14, 2019
Temperature / Humidity	22 deg. C / 35 % 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	-28.04	1.86	9.82	-16.36	8.00	24.36
2440.00	-28.02	1.87	9.82	-16.33	8.00	24.33
2480.00	-28.22	1.88	9.82	-16.52	8.00	24.52

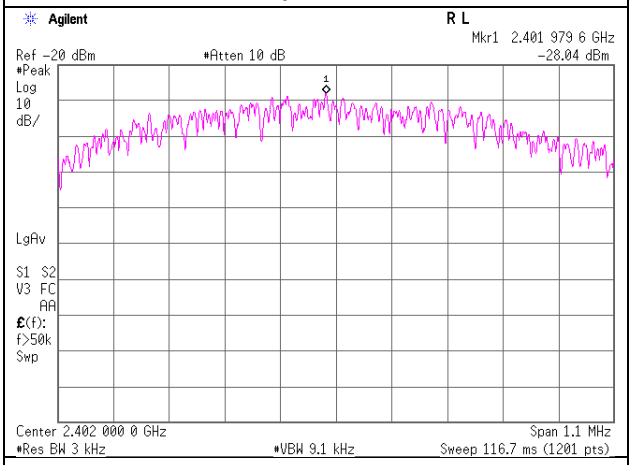
Sample Calculation:
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

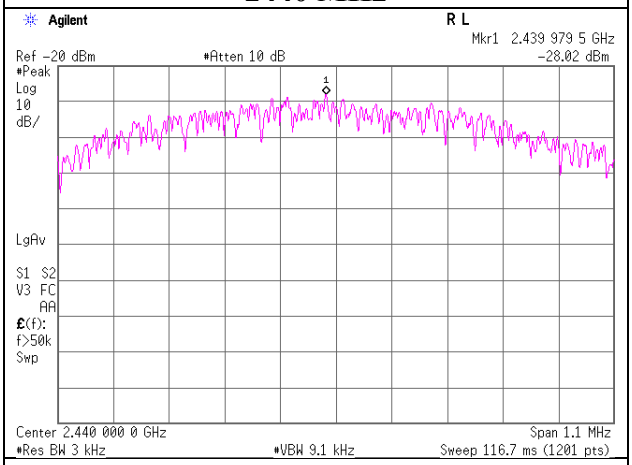
Power Density

BT LE

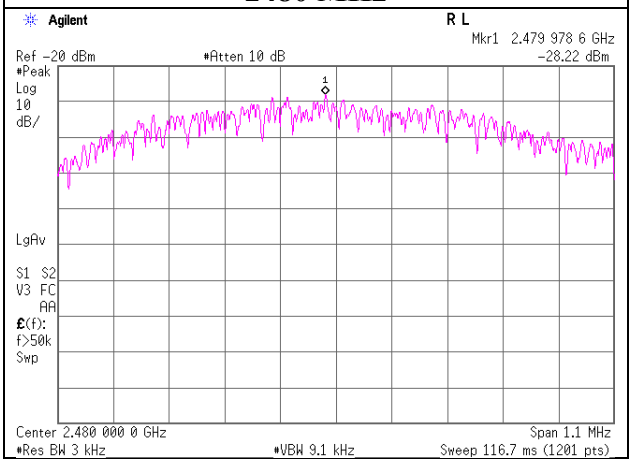
2402 MHz



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-02	AT	145800	Spectrum Analyzer	AGILENT	E4448A	MY48250106	2018/3/5	2019/3/31	12
STS-05	AT	146212	Digital Hitester	HIOKI	3805-50	80997828	2018/10/16	2019/10/31	12
COTS-SEMI-5	RE	170932	EMI Software	TSJ	TEPTO-DV3(RE,CE,ME,PE)	-	-	-	-
KJM-02	RE	146432	Measure	TAJIMA	GL19-55	-	-	-	-
SAEC-03(NSA)	RE	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2018/6/2	2019/6/30	12
SAEC-03(SVSWR)	RE	145566	Semi-Anechoic Chamber	TDK	SAEC-03(SVSWR)	3	2018/7/17	2019/7/31	12
SAF-03	RE	145126	Pre Amplifier	SONOMA	310N	290213	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
SAT10-06	RE	145137	Attenuator	AGILENT	8493C-010	74865	2018/11/25	2019/11/30	12
SAT6-13	RE	167094	Attenuator	JFW	50HF-006N		2019/2/5	2020/2/29	12
SBA-03	RE	145023	Biconical Antenna	Schwarzbeck	BBA9106	91032666	2018/6/17	2019/6/30	12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	RE	145171	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141P	-/0901-271(RF Selector)	2018/4/9	2019/4/30	12
SCC-G05	RE	145039	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	2019/1/25	2020/1/31	12
SCC-G15	RE	145176	Coaxial Cable	Suhner	SUCOFLEX 102	32703/2	2018/3/19	2019/3/31	12
SCC-G22	RE	145180	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	2018/5/11	2019/5/31	12
SCC-G41	RE	151617	Coaxial Cable	Junkosha	MWX221-01000NFSNMS/B	1612S006	2019/1/25	2020/1/31	12
SFL-18	RE	145305	Highpass Filter	MICRO-TRONICS	HPM50111	119	2018/4/20	2019/4/30	12
SHA-03	RE	145501	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	2018/7/23	2019/7/31	12
SHA-04	RE	145512	Horn Antenna	ETS LINDGREN	Sep-60	LM3640	2018/7/23	2019/7/31	12
SLA-07	RE	145529	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	196	2018/6/17	2019/6/30	12
SOS-05	RE	146293	Humidity Indicator	A&D	AD-5681	4062518	2018/10/25	2019/10/31	12
SSA-03	RE	145801	Spectrum Analyzer	AGILENT	E4448A	MY48250152	2018/8/30	2019/8/31	12
STR-08	RE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2018/11/28	2019/11/30	12
STS-03	RE	146210	Digital Hitester	HIOKI	3805-50	80997823	2018/10/16	2019/10/31	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