RADIO TEST REPORT

Test Report No. : 11204390H-B-R2

Applicant	:	**Hosiden Corporation**
Type of Equipment	:	**Bluetooth Low Energy beacon**
Model No.	:	**HRM5072**
FCC ID	:	**VIYHRM5072**
Test regulation	:	**FCC Part 15 Subpart C: 2015**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this 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. This report is a revised version of 11204390H-B-R1. 11204390H-B-R1 is replaced with this report.

Date of test: April 3 and 4, 2016

Representative test engineer:
S. Matsuyama
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Engineer
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Approved by:
Tsubasa Takayama
Engineer
Consumer Technology Division

NVLAP LAB CODE: 200572-0

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REVISION HISTORY

Original Test Report No.: 11204390H-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11204390H-B	April 19, 2016	-	-
1	11204390H-B-R1	May 17, 2016	P.11	Addition of following sentence *The test was performed that the Spurious evaluation as Peak with Duty factor since the pulse emission which is synchronous the worst duty cycle of Bluetooth Low Energy.
2	11204390H-B-R2	May 19, 2016	P.11	Addition of following sentence *Some spurious evaluations were performed by Peak with Duty factor, since the spurious emission occurred in synchronization with carrier. In this case carrier frequency kept the worst duty cycle; refer page 17 and 18.
2	11204390H-B-R2	May 19, 2016	P.17	Addition of following sentence *This is a waveform of transmission carrier.
2	11204390H-B-R2	May 19, 2016	P.18	Addition of following sentence *This is a waveform of spurious emission occurred in synchronization with carrier.

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SECTION 1: Customer information

Company Name	:	Hosiden Corporation
Address	:	4-33, Kitakyuhoji1chome, Yao-city, Osaka, 581-0071
Telephone Number	:	+81-72-924-1153
Facsimile Number	:	+81-72-996-4672
Contact Person	:	Tomoki Umeda

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

2.1 Identification of E.U.T.

Type of Equipment	:	Bluetooth Low Energy beacon
Model No.	:	HRM5072
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.0 V
Receipt Date of Sample	:	March 28, 2016
Country of Mass-production	:	CHINA and 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: HRM5072 (referred to as the EUT in this report) is a Bluetooth Low Energy beacon.

General Specification

Clock frequency(ies) in the system	:	CPU: 16 MHz

Radio Specification

Bluetooth Low Energy (Ver.4.1 + EDR/LE Dual mode)

Radio Type	:	Transmitter
Frequency of Operation	:	2402-2480MHz
Modulation	:	GFSK
Power Supply (radio part input)	:	DC 1.56 V
Antenna type	:	Internal Antenna
Antenna Gain	:	6.3 dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2015, final revised on November 23, 2015 *Some parts are effective on and after December 17, 2015 or December 23, 2015. The revision does not affect the test specification applied to the EUT.
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

* The EUT complies with FCC Part 15 Subpart B: 2015, final revised on November 23, 2015

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 DTS Meas Guidance v03r05 **IC:** -	**FCC:** Section 15.247(a)(2) **IC:** RSS-247 5.2(1)	See data.	Complied	Conducted
Maximum Peak Output Power	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** RSS-Gen 6.12	**FCC:** Section 15.247(b)(3) **IC:** RSS-247 5.4(4)		Complied	Conducted
Power Density	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** -	**FCC:** Section 15.247(e) **IC:** RSS-247 5.2(2)		Complied	Conducted
Spurious Emission Restricted Band Edges	**FCC:** KDB 558074 D01 DTS Meas Guidance v03r05 **IC:** RSS-Gen 6.13	**FCC:** Section15.247(d) **IC:** RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	4.5 dB 2483.500 MHz, PK, Horizontal.	Complied	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 is a battery operated drive.
*2) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 DTS Meas Guidance v03r05 12.2.7.

* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.

FCC Part 15.31 (e)
The test was performed with the New Battery (DC 3.0 V) and the stable voltage was supplied to the EUT during the tests. Therefore, the EUT complies with the requirement.

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

3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	**IC:** RSS-Gen 6.6	**IC:** -	N/A	-	Conducted

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

3.4 Uncertainty

EMI

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.

Ise EMC Lab.

Antenna terminal test Uncertainty (+/-)							
Power meter		Conducted emission and Power density			Conducted emission		Channel power
Below 1 GHz	Above 1 GHz	Below 1 GHz	1 GHz -3 GHz	3 GHz -18 GHz	18 GHz -26.5 GHz	26.5 GHz -40 GHz	
0.9 dB	1.0 dB	1.4 dB	1.7 dB	2.8 dB	2.8 dB	2.9 dB	2.6 dB

Polarity	Radiated emission (Below 1GHz)			
	(3 m*)(±dB)		(10 m*)(±dB)	
	30 – 200 MHz	200 – 1000MHz	30 – 200 MHz	200 – 1000MHz
Horizontal	4.8 dB	5.2 dB	4.8 dB	5.0 dB
Vertical	4.5 dB	5.9 dB	4.8 dB	5.1 dB

Radiated emission				
(3 m*)(±dB)		(1 m*)(±dB)	(0.5 m*)(±dB)	(10 m*)(±dB)
1 – 6GHz	6 – 18GHz	10 – 26.5 GHz	26.5 – 40GHz	1 -18 GHz
5.1 dB	5.3 dB	5.1 dB	5.1 dB	5.3 dB

*Measurement distance

Radiated emission test

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

3.5 Test Location

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Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	N/A	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 m x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

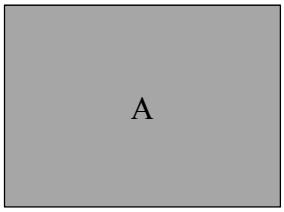
4.1 Operating Mode(s)

Bluetooth (BT) Low Energy (LE): Transmitting (Tx)

Test Item	Operating Mode	Tested Frequency
Conducted / Radiated Spurious Emission 6dB Bandwidth Maximum Peak Output Power Power Density 99% Occupied Bandwidth	Tx BT LE	2402MHz 2440MHz 2480MHz
*Power of the EUT was set by the software as follows; Power settings: +4 dBm (Max), -20 dBm (Min) Software: SDK10_radio_test_for_HRM5072 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.		

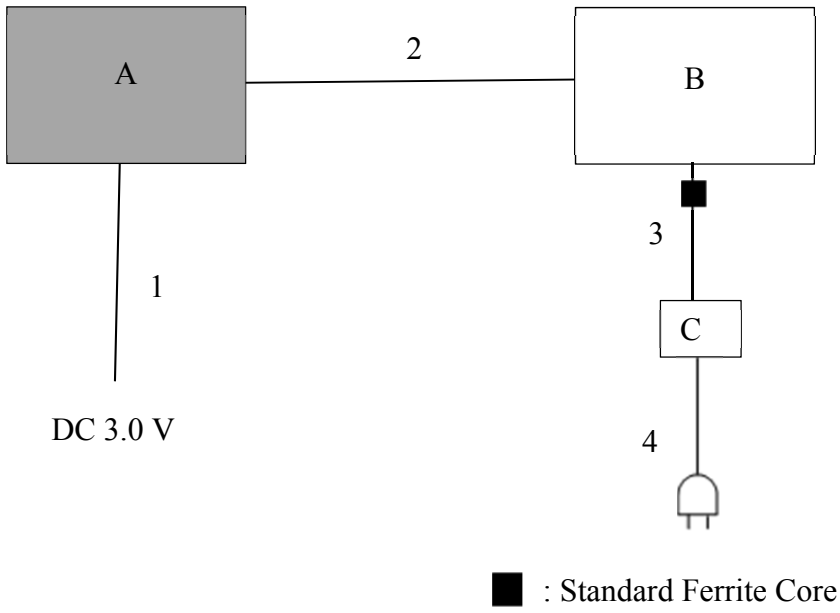
4.2 Configuration and peripherals

Radiated Spurious Emission test only



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

Antenna Terminal Conducted tests only



* 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	Bluetooth Low Energy beacon	HRM5072	8 *1) 12 *2)	Hosiden Corporation	EUT
B	Laptop PC	Type1952-D65	L3-DM302	Lenovo Corporation	-
C	AC Adapter	92P1160	IIS92PII60Z1BGH686DKV	Lenovo Corporation	-

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

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	0.5	Unshielded	Unshielded	-
2	USB Cable	1.8	Shielded	Shielded	-
3	DC Cable	1.8	Unshielded	Unshielded	-
4	AC Cable	1.0	Unshielded	Unshielded	-

SECTION 5: Radiated Spurious Emission

Test Procedure

It was measured based on "11.0 Emissions in non-restricted frequency bands" of "558074 D01 DTS Meas Guidance v03r05".

[For below 1GHz]
EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 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 1GHz]
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 *3)	PK
IF Bandwidth	BW 120 kHz	RBW: 1 MHz VBW: 3 MHz	Average Power Method: 12.2.5.2 RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces Duty factor was added to the results. 15.35(c) Peak with Duty factor *4)	RBW: 100 kHz VBW: 300kHz
Test Distance	3m	4.45 m *1) (1 GHz – 10GHz), 1 m *2) (10 GHz – 26.5 GHz)		4.45 m *1) (1 GHz – 10GHz), 1 m *2) (10 GHz – 26.5 GHz)

*1) Distance Factor: 20 x log (4.45 m / 3.0 m) = 3.43 dB
*2) Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.5 dB
*3) Average Power Measurement was performed based on 6. 0 & 12.2.5 of "KDB 558074 D01 DTS Meas Guidance v03r05"
*****4) Some spurious evaluations were performed by Peak with Duty factor, since the spurious emission occurred in synchronization with carrier. In this case carrier frequency kept the worst duty cycle; refer page 17 and 18.

- 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.

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

Measurement range : 30 M - 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	5 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	10 kHz	Auto	Peak	Max Hold	Spectrum Analyzer *3)
Conducted Spurious Emission *4)	9kHz to 150kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	9.1 kHz	27 kHz				

*1) Peak hold was applied as Worst-case measurement.
*2) Reference data
*3) Section 10.2 Method PKPSD (peak PSD) of "KDB 558074 D01 DTS Meas Guidance v03r05".
*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 = 9.1 kHz).

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

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

6dB Bandwidth

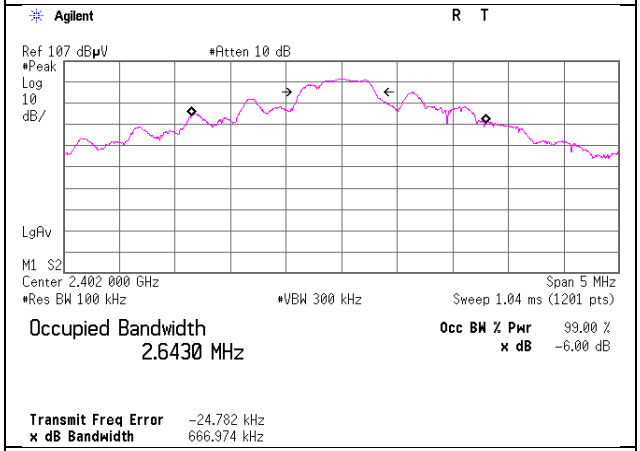
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
BT LE	2402	0.667	> 500
	2440	0.677	> 500
	2480	0.582	> 500

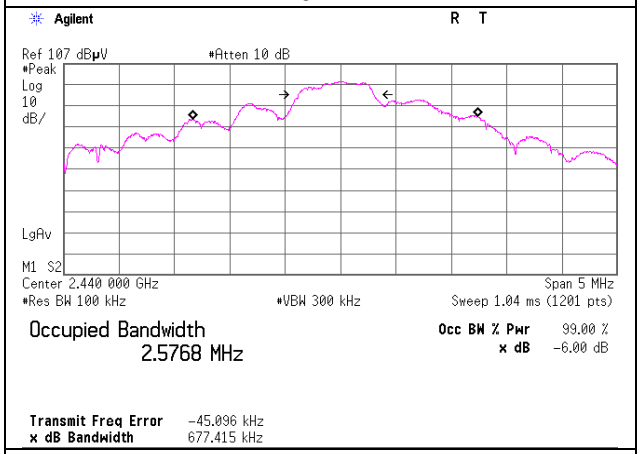
6dB Bandwidth

BT LE

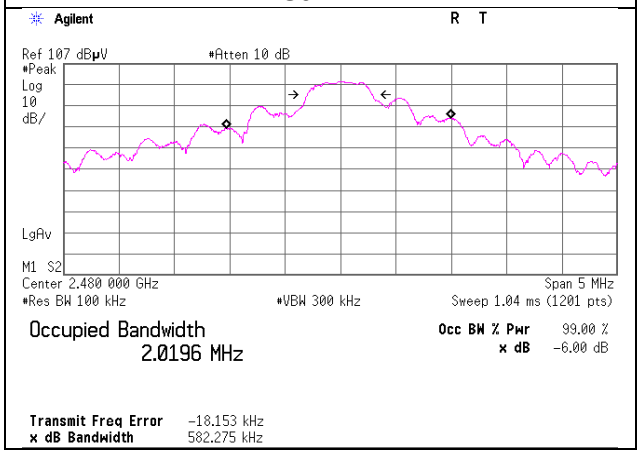
2402 MHz



2440 MHz



2480 MHz



Maximum Peak Output Power

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE

Power setting : +4dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2402	-8.76	1.17	10.09	2.50	1.78	29.70	1000	27.20
2440	-8.70	1.18	10.09	2.57	1.81	29.70	1000	27.13
2480	-8.53	1.19	10.09	2.75	1.88	29.70	1000	26.95

Power setting : -20dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result		Limit		Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dBm]	[mW]	[dB]
2402	-27.87	1.17	10.09	-16.61	0.02	29.70	1000	46.31
2440	-27.44	1.18	10.09	-16.17	0.02	29.70	1000	45.87
2480	-27.39	1.19	10.09	-16.11	0.02	29.70	1000	45.81

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

Average Output Power
(Reference data for RF Exposure)

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE

Power setting : +4dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2402	-9.35	1.17	10.09	1.91	1.55	0.16	2.07	1.61
2440	-9.25	1.18	10.09	2.02	1.59	0.16	2.18	1.65
2480	-9.15	1.19	10.09	2.13	1.63	0.16	2.29	1.69

Power setting : -20dBm

Freq.	Reading	Cable Loss	Atten. Loss	Result (Frame power)		Duty factor	Result (Burst power)	
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[mW]	[dB]	[dBm]	[mW]
2402	-31.31	1.17	10.09	-20.05	0.01	0.16	-19.89	0.01
2440	-30.78	1.18	10.09	-19.51	0.01	0.16	-19.35	0.01
2480	-30.55	1.19	10.09	-19.27	0.01	0.16	-19.11	0.01

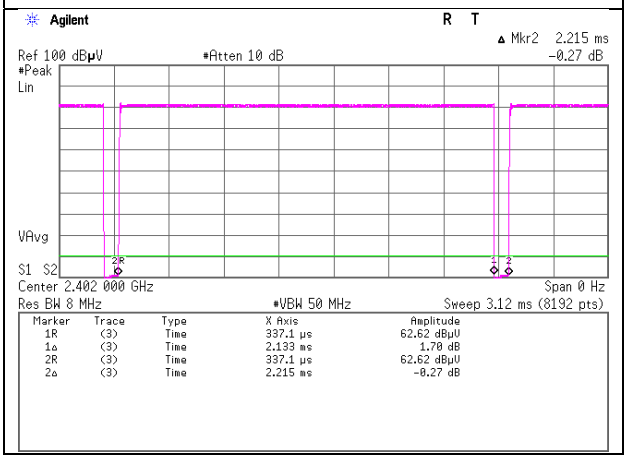
Sample Calculation:
Result (Frame power) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator
Result (Burst power) = Frame power + Duty factor

Burst rate confirmation

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE

Tx BLE

Tx on / (Tx on + Tx off) =	**0.963**
Tx on / (Tx on + Tx off) * 100 =	**96.3 %**
Duty factor = 10 * log (2.215 / 2.133) =	**0.16 dB**



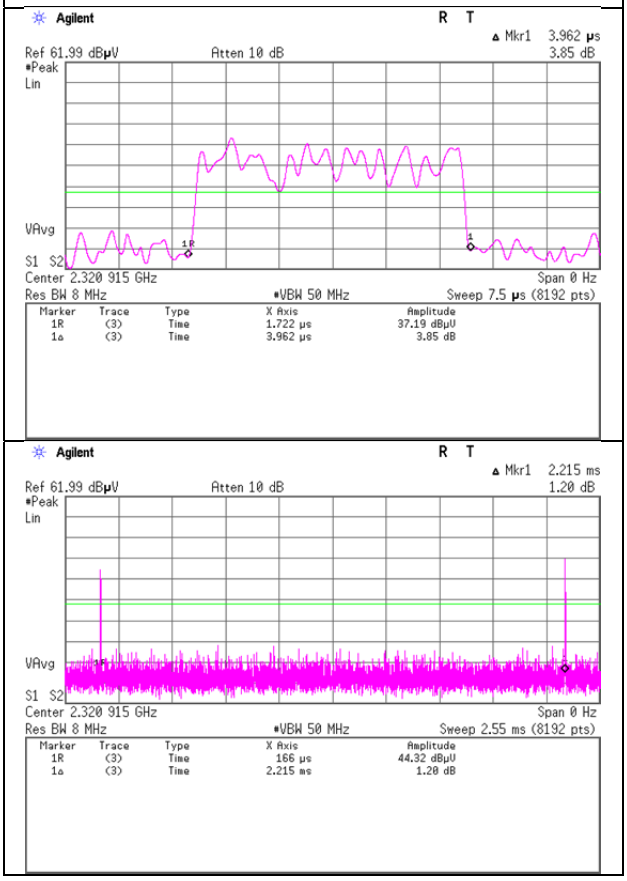
*This is a waveform of transmission carrier.

Burst rate confirmation
(Reference data for Peak with Duty factor)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	April 3, 2016
Date	22 deg. C / 50 % RH
Temperature / Humidity	Masafumi Niwa
Engineer	(Above 1GHz)
Mode	Tx BT LE

Tx BLE

Tx on / (Tx on + Tx off) = 0.002
Tx on / (Tx on + Tx off) * 100 = 0.2 %
Duty factor = 10 * log (2215 / 3.962) = 27.47 dB



*This is a waveform of spurious emission occurred in synchronization with carrier.

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 and No.1 Semi Anechoic Chamber	
Report No.	11204390H	
Date	April 3, 2016	April 4, 2016
Temperature / Humidity	22 deg. C / 50 % RH	23 deg. C / 40 % RH
Engineer	Masafumi Niwa (Above 1GHz)	Hiroyuki Furutaka (Below GHz)
Mode	Tx BT LE 2402 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	44.309	QP	28.9	12.7	7.6	38.9	-	10.3	40.0	29.7	
Hori	94.048	QP	28.6	8.8	8.4	39.2	-	6.6	43.5	36.9	
Hori	139.019	QP	28.6	14.3	8.9	39.2	-	12.6	43.5	30.9	
Hori	170.361	QP	28.5	15.5	9.4	39.2	-	14.2	43.5	29.3	
Hori	307.415	QP	28.3	13.6	10.6	38.8	-	13.7	46.0	32.3	
Hori	472.546	QP	28.0	17.1	11.8	38.4	-	18.5	46.0	27.5	
Hori	2320.915	PK	56.6	26.8	6.6	32.7	-	57.3	73.9	16.6	
Hori	2376.667	PK	60.1	26.9	6.6	32.7	-	60.9	73.9	13.0	
Hori	2390.000	PK	52.5	26.9	6.7	32.7	-	53.4	73.9	20.5	
Hori	4804.000	PK	39.9	31.8	8.9	31.8	-	48.8	73.9	25.1	Floor Noise
Hori	7206.000	PK	41.0	36.0	10.1	32.6	-	54.5	73.9	19.4	
Hori	9608.000	PK	41.3	38.2	10.9	33.2	-	57.2	73.9	16.7	Floor Noise
Hori	4804.000	AV	30.9	31.8	8.9	31.8	-	39.8	53.9	14.1	Floor Noise
Hori	7206.000	AV	33.6	36.0	10.1	32.6	0.2	47.3	53.9	6.6	
Hori	9608.000	AV	31.9	38.2	10.9	33.2	-	47.8	53.9	6.1	Floor Noise
Vert	44.309	QP	29.0	12.7	7.6	38.9	-	10.4	40.0	29.6	
Vert	94.048	QP	28.6	8.8	8.4	39.2	-	6.6	43.5	36.9	
Vert	138.678	QP	28.6	14.3	8.9	39.2	-	12.6	43.5	30.9	
Vert	170.702	QP	28.5	15.6	9.4	39.2	-	14.3	43.5	29.2	
Vert	312.225	QP	28.2	13.7	10.6	38.8	-	13.7	46.0	32.3	
Vert	474.149	QP	27.9	17.1	11.8	38.4	-	18.4	46.0	27.6	
Vert	2320.915	PK	56.9	26.8	6.6	32.7	-	57.6	73.9	16.3	
Vert	2376.667	PK	60.2	26.9	6.6	32.7	-	61.0	73.9	12.9	
Vert	2390.000	PK	52.0	26.9	6.7	32.7	-	52.9	73.9	21.0	
Vert	4804.000	PK	40.8	31.8	8.9	31.8	-	49.7	73.9	24.2	Floor Noise
Vert	7206.000	PK	42.9	36.0	10.1	32.6	-	56.4	73.9	17.5	
Vert	9608.000	PK	41.5	38.2	10.9	33.2	-	57.4	73.9	16.5	Floor Noise
Vert	4804.000	AV	31.0	31.8	8.9	31.8	-	39.9	53.9	14.0	Floor Noise
Vert	7206.000	AV	33.2	36.0	10.1	32.6	0.2	46.9	53.9	7.0	
Vert	9608.000	AV	32.0	38.2	10.9	33.2	-	47.9	53.9	6.0	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45m / 3.0 m) = 3.43 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2402.000	PK	98.5	26.9	6.7	32.7	99.4	-	-	Carrier
Hori	2400.000	PK	65.6	26.9	6.7	32.7	66.5	79.4	12.9	
Vert	2402.000	PK	98.4	26.9	6.7	32.7	99.3	-	-	Carrier
Vert	2400.000	PK	65.8	26.9	6.7	32.7	66.7	79.3	12.6	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

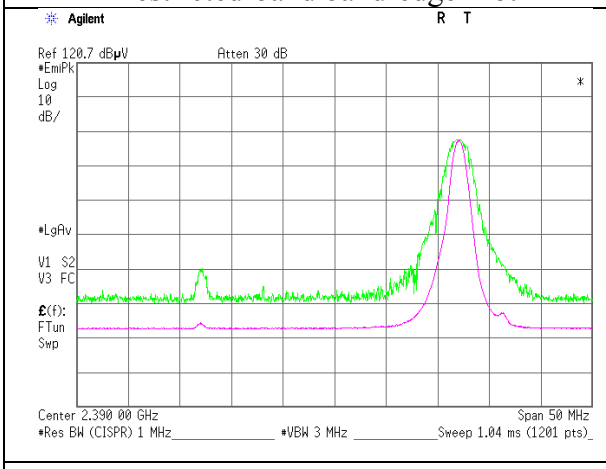
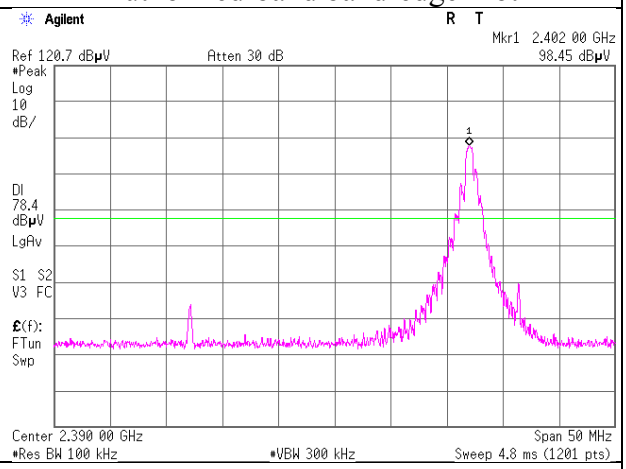
PK with Duty factor

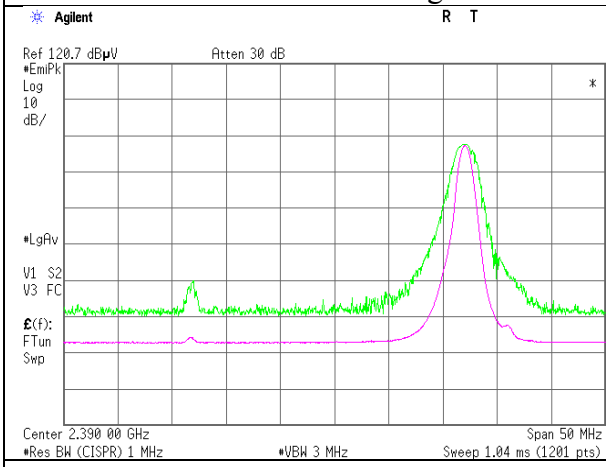
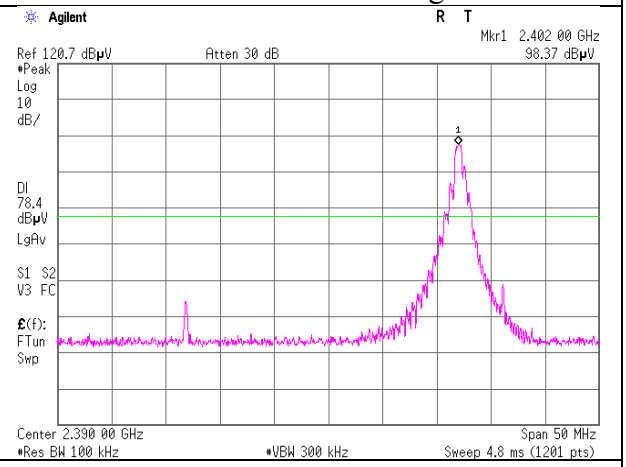
Frequency [MHz]	Detector	Reading [dBuV] Hor	Reading [dBuV] Ver	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m] Hor	Result [dBuV/m] Ver	Limit [dBuV/m]	Margin [dB] Hor	Margin [dB] Ver	Remark
2320.915	PK	56.6	56.9	26.8	6.6	32.7	-27.5	29.8	30.1	53.9	24.1	23.8	
2376.667	PK	60.1	60.2	26.9	6.6	32.7	-27.5	33.4	33.5	53.9	20.5	20.4	
2390.000	PK	52.5	52.0	26.9	6.7	32.7	-27.5	25.9	25.4	53.9	28.0	28.5	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier) + Duty factor (Refer to Burst rate confirmation sheet)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204390H
Date	April 3, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Masafumi Niwa (Above 1GHz)
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

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

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 and No.1 Semi Anechoic Chamber	
Report No.	11204390H	
Date	April 3, 2016	April 4, 2016
Temperature / Humidity	22 deg. C / 50 % RH	23 deg. C / 40 % RH
Engineer	Masafumi Niwa (Above 1GHz)	Hiroyuki Furutaka (Below GHz)
Mode	Tx BT LE 2440 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	44.309	QP	29.0	12.7	7.6	38.9	-	10.4	40.0	29.6	
Hori	95.000	QP	28.7	9.0	8.4	39.2	-	6.9	43.5	36.6	
Hori	140.000	QP	28.6	14.4	8.9	39.2	-	12.7	43.5	30.8	
Hori	170.361	QP	28.5	15.5	9.4	39.2	-	14.2	43.5	29.3	
Hori	308.000	QP	28.1	13.6	10.6	38.8	-	13.5	46.0	32.5	
Hori	472.900	QP	28.1	17.1	11.8	38.4	-	18.6	46.0	27.4	
Hori	2496.887	PK	64.6	26.9	6.7	32.6	-	65.6	73.9	8.3	
Hori	4880.000	PK	39.5	31.9	8.9	31.7	-	48.6	73.9	25.3	Floor Noise
Hori	7320.000	PK	43.0	36.0	10.2	32.6	-	56.6	73.9	17.3	
Hori	9760.000	PK	39.7	38.2	10.9	33.3	-	55.5	73.9	18.4	Floor Noise
Hori	4880.000	AV	30.9	31.9	8.9	31.7	-	40.0	53.9	13.9	Floor Noise
Hori	7320.000	AV	34.4	36.0	10.2	32.6	0.2	48.2	53.9	5.7	
Hori	9760.000	AV	31.4	38.2	10.9	33.3	-	47.2	53.9	6.7	Floor Noise
Vert	44.309	QP	29.0	12.7	7.6	38.9	-	10.4	40.0	29.6	
Vert	95.000	QP	28.6	9.0	8.4	39.2	-	6.8	43.5	36.7	
Vert	138.678	QP	28.6	14.3	8.9	39.2	-	12.6	43.5	30.9	
Vert	170.702	QP	28.4	15.6	9.4	39.2	-	14.2	43.5	29.3	
Vert	312.225	QP	28.1	13.7	10.6	38.8	-	13.6	46.0	32.4	
Vert	474.149	QP	27.8	17.1	11.8	38.4	-	18.3	46.0	27.7	
Vert	2496.887	PK	64.4	26.9	6.7	32.6	-	65.4	73.9	8.5	
Vert	4880.000	PK	39.1	31.9	8.9	31.7	-	48.2	73.9	25.7	Floor Noise
Vert	7320.000	PK	42.2	36.0	10.2	32.6	-	55.8	73.9	18.1	
Vert	9760.000	PK	40.1	38.2	10.9	33.3	-	55.9	73.9	18.0	Floor Noise
Vert	4880.000	AV	30.6	31.9	8.9	31.7	-	39.7	53.9	14.2	Floor Noise
Vert	7320.000	AV	34.3	36.0	10.2	32.6	0.2	48.1	53.9	5.8	
Vert	9760.000	AV	31.5	38.2	10.9	33.3	-	47.3	53.9	6.6	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45m / 3.0 m) = 3.43 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2440.000	PK	99.5	26.9	6.7	32.7	100.4	-	-	Carrier
Hori	2565.458	PK	54.1	27.1	6.7	32.6	55.3	80.4	25.1	
Vert	2440.000	PK	99.4	26.9	6.7	32.7	100.3	-	-	Carrier
Vert	2565.458	PK	52.4	27.1	6.7	32.6	53.6	80.3	26.7	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

Frequency [MHz]	Detector	Reading [dBuV] Hor	Reading [dBuV] Ver	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m] Hor	Result [dBuV/m] Ver	Limit [dBuV/m]	Margin [dB] Hor	Margin [dB] Ver	Remark
2496.887	PK	64.6	64.4	26.9	6.7	32.6	-27.5	38.1	37.9	53.9	15.8	16.0	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier) + Duty factor (Refer to Burst rate confirmation sheet)

Radiated Spurious Emission

Test place	Ise EMC Lab. No.3 and No.1 Semi Anechoic Chamber	
Report No.	11204390H	
Date	April 3, 2016	April 4, 2016
Temperature / Humidity	22 deg. C / 50 % RH	23 deg. C / 40 % RH
Engineer	Masafumi Niwa (Above 1GHz)	Hiroyuki Furutaka (Below GHz)
Mode	Tx BT LE 2480 MHz	

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	44.500	QP	29.0	12.6	7.6	38.9	-	10.3	40.0	29.7	
Hori	95.020	QP	28.7	9.0	8.4	39.2	-	6.9	43.5	36.6	
Hori	141.000	QP	28.7	14.4	9.0	39.2	-	12.9	43.5	30.6	
Hori	170.351	QP	28.6	15.5	9.4	39.2	-	14.3	43.5	29.2	
Hori	309.876	QP	28.3	13.6	10.6	38.8	-	13.7	46.0	32.3	
Hori	473.456	QP	28.1	17.1	11.8	38.4	-	18.6	46.0	27.4	
Hori	2483.500	PK	68.4	26.9	6.7	32.6	-	69.4	73.9	4.5	
Hori	2491.796	PK	61.7	26.9	6.7	32.6	-	62.7	73.9	11.2	
Hori	2496.855	PK	64.9	26.9	6.7	32.6	-	65.9	73.9	8.0	
Hori	4960.000	PK	39.8	32.1	8.8	31.7	-	49.0	73.9	24.9	Floor Noise
Hori	7440.000	PK	41.6	36.0	10.1	32.7	-	55.0	73.9	18.9	
Hori	9920.000	PK	40.0	38.2	11.0	33.4	-	55.8	73.9	18.1	Floor Noise
Hori	4960.000	AV	31.5	32.1	8.8	31.7	-	40.7	53.9	13.2	Floor Noise
Hori	7440.000	AV	34.3	36.0	10.1	32.7	0.2	47.9	53.9	6.0	
Hori	9920.000	AV	31.9	38.2	11.0	33.4	-	47.7	53.9	6.2	Floor Noise
Vert	44.309	QP	29.1	12.7	7.6	38.9	-	10.5	40.0	29.5	
Vert	95.100	QP	28.6	9.0	8.4	39.2	-	6.8	43.5	36.7	
Vert	138.678	QP	28.6	14.3	8.9	39.2	-	12.6	43.5	30.9	
Vert	170.876	QP	28.5	15.6	9.4	39.2	-	14.3	43.5	29.2	
Vert	313.098	QP	28.3	13.7	10.7	38.8	-	13.9	46.0	32.1	
Vert	474.125	QP	27.9	17.1	11.8	38.4	-	18.4	46.0	27.6	
Vert	2483.500	PK	68.0	26.9	6.7	32.6	-	69.0	73.9	4.9	
Vert	2491.796	PK	62.0	26.9	6.7	32.6	-	63.0	73.9	10.9	
Vert	2496.855	PK	65.0	26.9	6.7	32.6	-	66.0	73.9	7.9	
Vert	4960.000	PK	39.6	32.1	8.8	31.7	-	48.8	73.9	25.1	Floor Noise
Vert	7440.000	PK	43.4	36.0	10.1	32.7	-	56.8	73.9	17.1	
Vert	9920.000	PK	40.2	38.2	11.0	33.4	-	56.0	73.9	17.9	Floor Noise
Vert	4960.000	AV	31.6	32.1	8.8	31.7	-	40.8	53.9	13.1	Floor Noise
Vert	7440.000	AV	34.8	36.0	10.1	32.7	0.2	48.4	53.9	5.5	
Vert	9920.000	AV	31.9	38.2	11.0	33.4	-	47.7	53.9	6.2	Floor Noise

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log (4.45m / 3.0 m) = 3.43 dB
10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
Hori	2480.000	PK	102.6	26.9	6.7	32.6	103.6	-	-	Carrier
Hori	2565.422	PK	52.4	27.1	6.7	32.6	53.6	83.6	30.0	
Vert	2480.000	PK	102.2	26.9	6.7	32.6	103.2	-	-	Carrier
Vert	2565.422	PK	53.6	27.1	6.7	32.6	54.8	83.2	28.4	

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier)

PK with Duty factor

Frequency [MHz]	Detector	Reading [dBuV] Hor	Reading [dBuV] Ver	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m] Hor	Result [dBuV/m] Ver	Limit [dBuV/m]	Margin [dB] Hor	Margin [dB] Ver	Remark
2483.500	PK	68.4	68.0	26.9	6.7	32.6	-27.5	41.9	41.5	53.9	12.0	12.4	
2491.796	PK	61.7	62.0	26.9	6.7	32.6	-27.5	35.2	35.5	53.9	18.7	18.4	
2496.855	PK	64.9	65.0	26.9	6.7	32.6	-27.5	38.4	38.5	53.9	15.5	15.4	

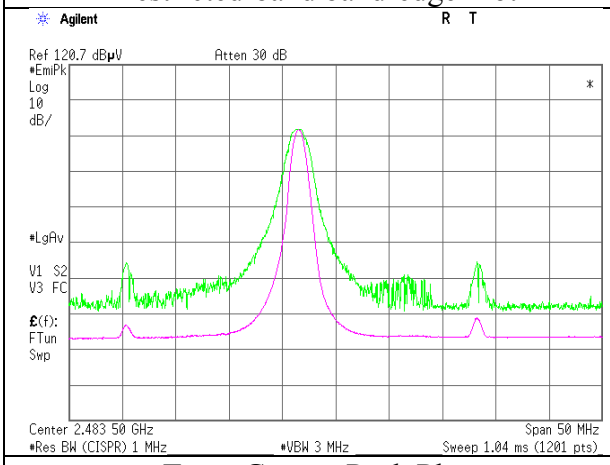
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amprifier) + Duty factor (Refer to Burst rate confirmation sheet)

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place	Ise EMC Lab. No.3 Semi Anechoic Chamber
Report No.	11204390H
Date	April 3, 2016
Temperature / Humidity	22 deg. C / 50 % RH
Engineer	Masafumi Niwa (Above 1GHz)
Mode	Tx BT LE 2480 MHz

Horizontal

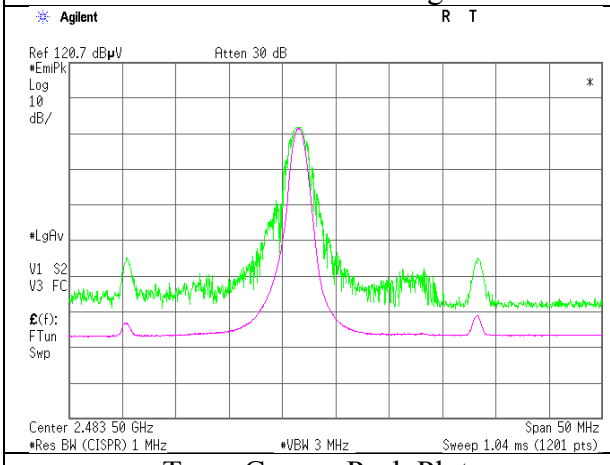
Restricted-band band-edge Plot



Trace Green : Peak Plot
Trace Purple : Average Plot

Vertical

Restricted-band band-edge Plot

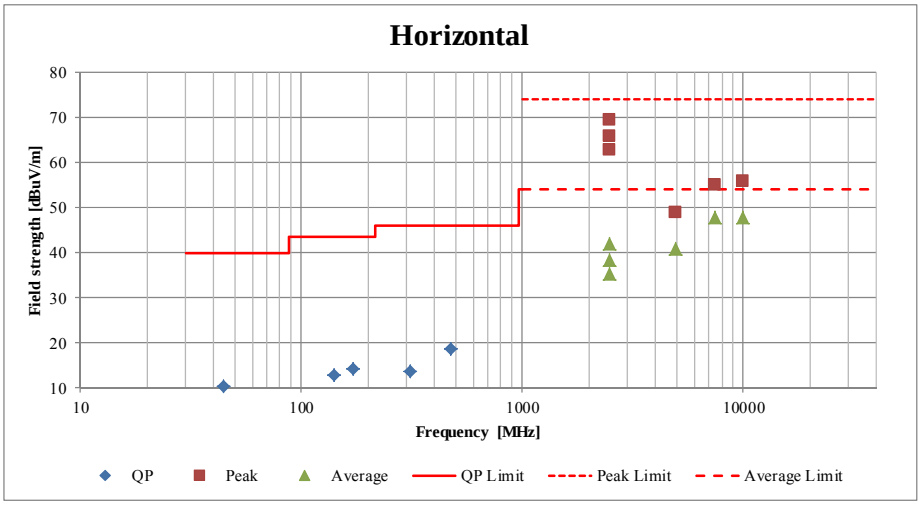


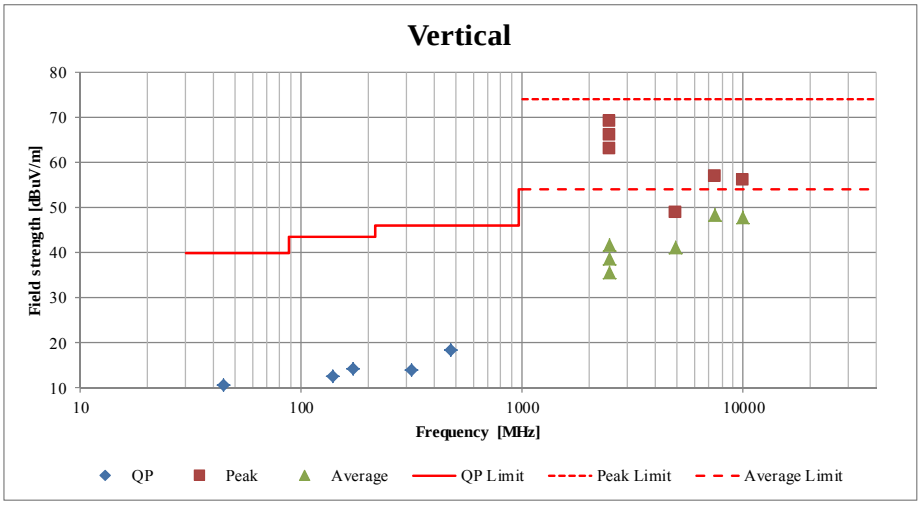
Trace Green : Peak Plot
Trace Purple : Average Plot

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

Radiated Spurious Emission
(Plot data, Worst case)

Test place	Ise EMC Lab. No.3 and No.1 Semi Anechoic Chamber	
Report No.	11204390H	
Date	April 3, 2016	April 4, 2016
Temperature / Humidity	22 deg. C / 50 % RH	23 deg. C / 40 % RH
Engineer	Masafumi Niwa (Above 1GHz)	Hiroyuki Furutaka (Below GHz)
Mode	Tx BT LE 2480 MHz	



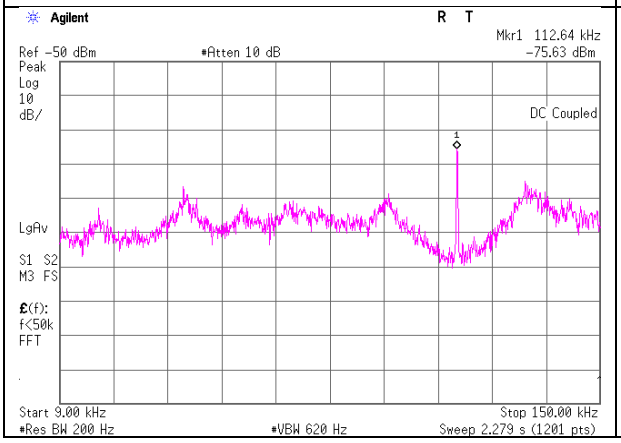


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

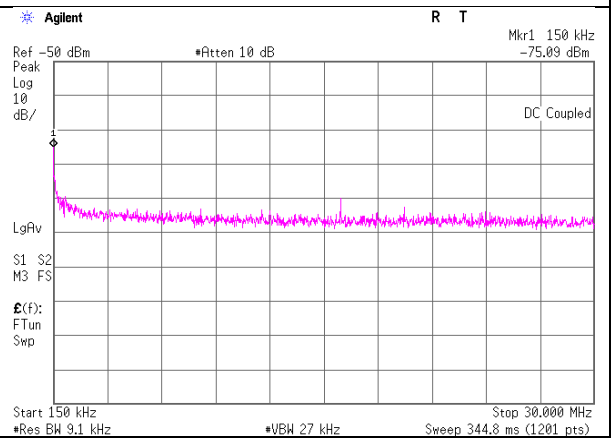
Conducted Spurious Emission

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE 2402 MHz

9 kHz - 150 kHz



150 kHz - 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator 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
112.64	-75.6	0.50	10.1	2.0	1	-63.0	300	6.0	-1.8	26.5	28.3	
150.00	-75.1	0.52	10.1	2.0	1	-62.5	300	6.0	-1.2	24.0	25.2	

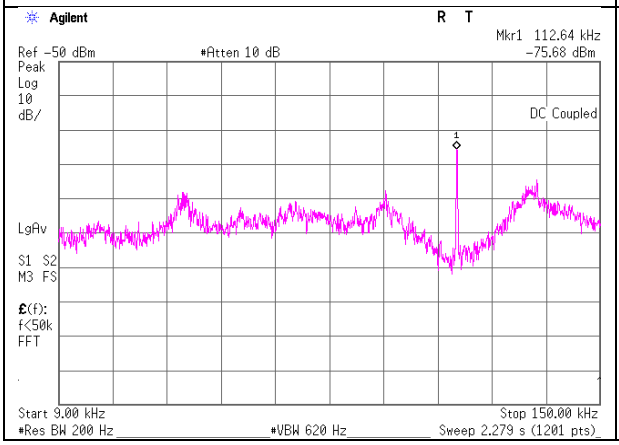
E = EIRP - 20 log (D) + Ground bounce + 104.8 [dBuV/m]

EIRP = Reading + Cable Loss + Attenator Loss + Antenna Gain + 10 * log (N)

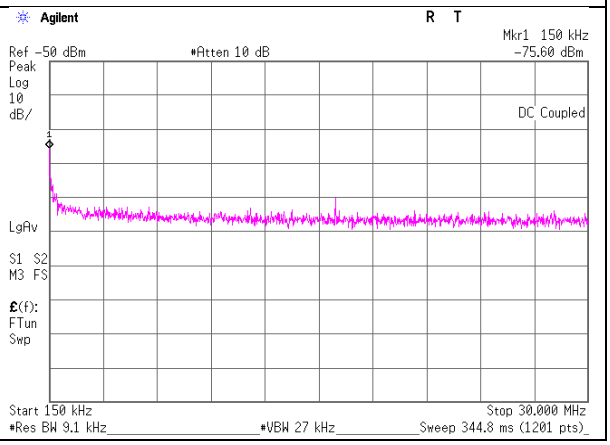
Conducted Spurious Emission

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE 2440 MHz

9 kHz - 150 kHz



150 kHz - 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator 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
112.64	-75.7	0.50	10.1	2.0	1	-63.1	300	6.0	-1.8	26.5	28.3	
150.00	-75.6	0.52	10.1	2.0	1	-63.0	300	6.0	-1.7	24.0	25.7	

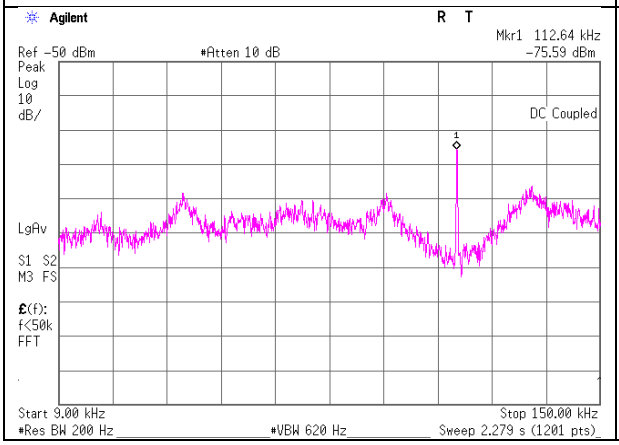
E = EIRP - 20 log (D) + Ground bounce + 104.8 [dBuV/m]

EIRP = Reading + Cable Loss + Attenator Loss + Antenna Gain + 10 * log (N)

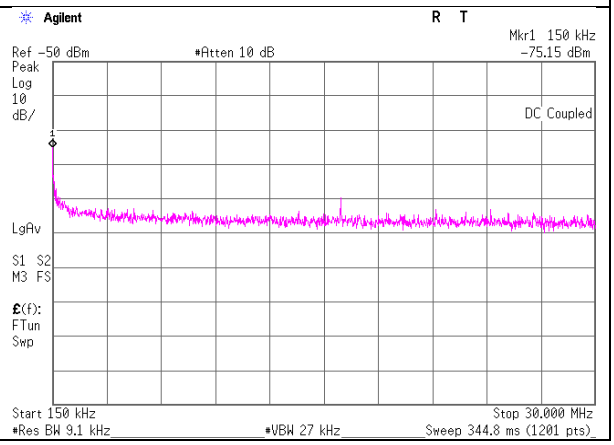
Conducted Spurious Emission

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE 2480 MHz

9 kHz - 150 kHz



150 kHz - 30 MHz



Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenator 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
112.64	-75.6	0.50	10.1	2.0	1	-63.0	300	6.0	-1.7	26.5	28.2	
150.00	-75.2	0.52	10.1	2.0	1	-62.5	300	6.0	-1.3	24.0	25.3	

E = EIRP - 20 log (D) + Ground bounce + 104.8 [dBuV/m]
EIRP = Reading + Cable Loss + Attenator Loss + Antenna Gain + 10 * log (N)

Power Density

Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE

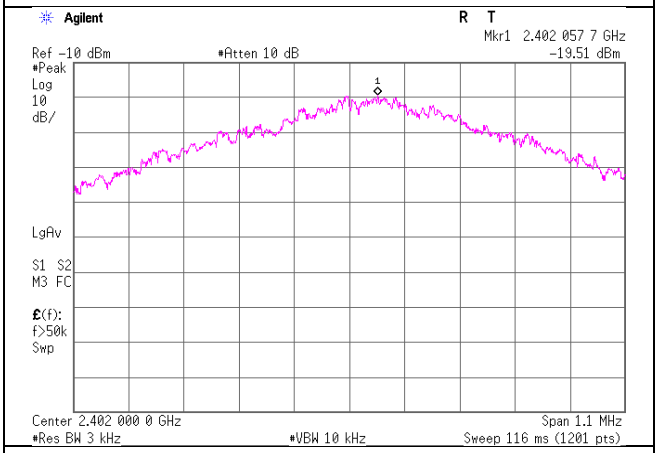
Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result [dBm]	Limit [dBm]	Margin [dB]
2402.00	-19.51	1.17	10.09	-8.25	8.00	16.25
2440.00	-19.34	1.18	10.09	-8.07	8.00	16.07
2480.00	-19.45	1.19	10.09	-8.17	8.00	16.17

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

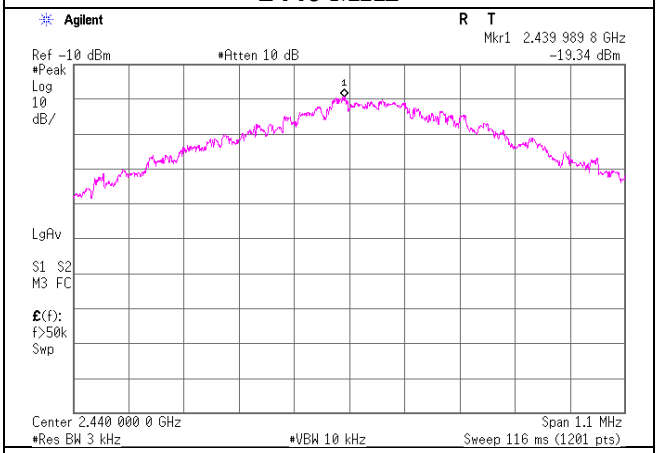
Power Density

BT LE

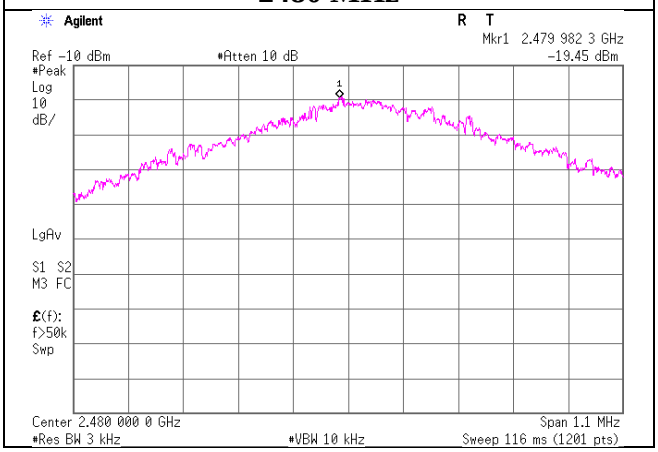
2402 MHz



2440 MHz



2480 MHz

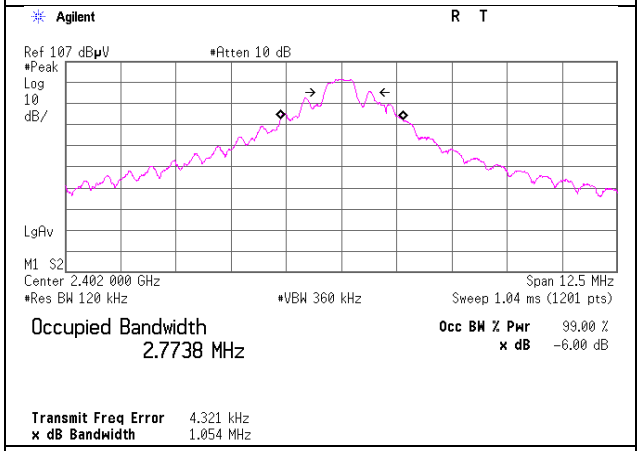


99%Occupied Bandwidth

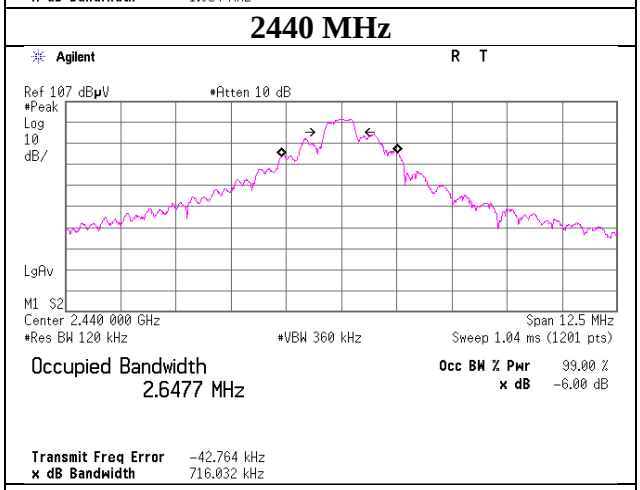
Test place	Ise EMC Lab. No.6 Measurement Room
Report No.	11204390H
Date	April 4, 2016
Temperature / Humidity	22 deg. C / 69 % RH
Engineer	Satofumi Matsuyama
Mode	Tx BT LE

BT LE

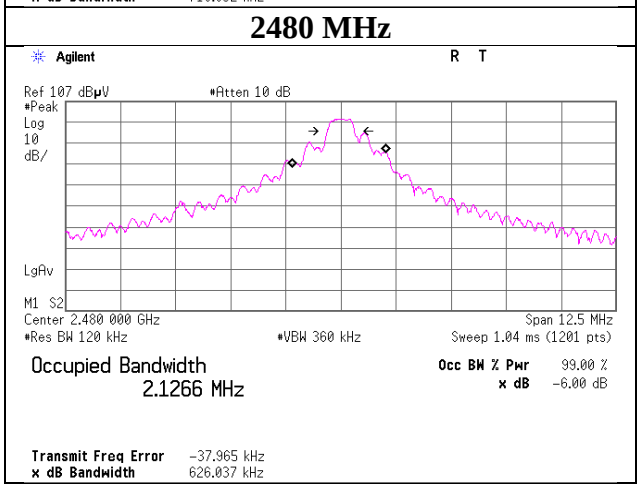
2402 MHz



2440 MHz



2480 MHz



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2015/10/01 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2016/01/21 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MSA-15	Spectrum Analyzer	Agilent	E4440A	MY46187105	RE	2015/11/11 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2015/05/18 * 12
MCC-167	Microwave Cable	Junkosha	MWX221	1404S374(1m) / 1405S074(5m)	RE	2015/05/21 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2016/03/24 * 12
MHA-16	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	RE	2015/05/19 * 12
MMM-08	DIGITAL HiTESTER	Hioki	3805	051201197	RE	2016/01/13 * 12
MHF-25	High Pass Filter 3.5-18.0GHz	UL Japan	HPF SELECTOR	001	RE	2015/09/16 * 12
MPM-16	Power Meter	Agilent	8990B	MY51000271	AT	2016/04/07 * 12
MPSE-22	Power sensor	Agilent	N1923A	MY54070003	AT	2016/04/07 * 12
MRENT-126	Spectrum Analyzer	KEYSIGHT	E4440A	MY46185516	AT	2015/07/31 * 12
MCC-170	Microwave Cable	Junkosha	MWX221	1409S493	AT	2016/03/11 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	AT	2016/03/18 * 12
MOTS-MATM	Antenna Terminal Measurement Software	UL Japan	-	-	AT	-
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	AT	2016/01/21 * 12
MAEC-01	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	RE	2015/09/19 * 12
MOS-27	Thermo-Hygrometer	CUSTOM	CTH-201	A08Q26	RE	2016/01/21 * 12
MJM-25	Measure	KOMELON	KMC-36	-	RE	-
MTR-09	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	RE	2015/06/08 * 12
KBA-05	Biconical Antenna	Schwarzbeck	BBA9106	2513	RE	2015/11/02 * 12
MLA-20	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-189	RE	2016/01/30 * 12
MAT-08	Attenuator(6dB)	Weinschel Corp	2	BK7971	RE	2015/11/10 * 12
MCC-02	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	-	RE	2015/09/29 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	1237616	RE	2016/02/25 * 12
MMM-03	Digital Tester	Fluke	FLUKE 26-3	78030621	RE	2015/08/19 * 12

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