



RADIO TEST REPORT

Test Report No. : 11425425S-A-R1

Applicant : Canon Inc.
Type of Equipment : BLE Module
Model No. : K30375
FCC ID : AZDK30375
Test regulation : FCC Part 15 Subpart C: 2016
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.
5. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
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 11425425S-A. 11425425S-A is replaced with this report.

Date of test: September 6 to 8, 2016

Representative test engineer:

Yosuke Ishikawa
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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Shonan EMC Lab.

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 11425425S-A

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SECTION 1: Customer information

Company Name	:	Canon Inc.
Address	:	3-451 Tsukagoshi, Saiwai-ku, Kawasaki-shi, Kanagawa 212-8530 Japan
Telephone Number	:	+81-3-3758-2111
Contact Person	:	Haruyuki Yanagi

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

2.1 Identification of E.U.T.

Type of Equipment	:	BLE Module
Model No.	:	K30375
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.3 V
Receipt Date of Sample	:	September 3, 2016
Country of Mass-production	:	Thailand, Vietnam
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: K30375 (referred to as the EUT in this report) is a BLE Module.

Radio Specification

Radio Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Modulation	:	GFSK
Antenna type	:	Pattern antenna (Monopole)
Antenna Gain	:	0.23 dBi
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 April 6, 2016.

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	13.6 dB, 6.55186 MHz, N QP, Tx 2402 MHz	Complied	-
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: Section 15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10	7.4 dB 9760.00 MHz, AV, Horizontal Tx 2440 MHz	Complied	Conducted (below 30 MHz)/ Radiated (above 30 MHz) *1)
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. *1) 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 RF Module has its own regulator. The RF part is constantly provided voltage (DC 1.2 V) through the regulator regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203/212

The antenna is not removable from the EUT. Therefore, the equipment complies with the antenna requirement.

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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

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.
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Item	Frequency range	Uncertainty (+/-)			
		No. 1 SAC / SR	No. 2 SAC / SR	No. 3 SAC / SR	No. 4 SAC / SR
Conducted emission (AC Mains) LISN	150 kHz-30 MHz	2.1 dB	2.1 dB	2.6 dB	2.2 dB
Radiated emission (Measurement distance: 3 m)	9 kHz-30 MHz	2.7 dB	2.7 dB	3.1 dB	-
	30 MHz-300 MHz	4.4 dB	4.4 dB	4.6 dB	-
	300 MHz-1 GHz	5.6 dB	5.5 dB	5.3 dB	-
	1 GHz-13 GHz	5.2 dB	5.2 dB	5.2 dB	-
Radiated emission (Measurement distance: 1 m)	13 GHz-18 GHz	4.9 dB	4.9 dB	4.9 dB	-
	18 GHz-40 GHz	4.9 dB	4.9 dB	4.9 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	0.76 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-06	0.79 dB
Power Measurement above 1 GHz (Average Detector)_SPM-07	0.74 dB
Power Measurement above 1 GHz (Peak Detector)_SPM-07	1.08 dB
Spurious emission (Conducted) below 1GHz	1.5 dB
Spurious emission (Conducted) 1 GHz-3 GHz	1.7 dB
Spurious emission (Conducted) 3 GHz-18 GHz	2.4 dB
Spurious emission (Conducted) 18 GHz-26.5 GHz	2.5 dB
Spurious emission (Conducted) 26.5 GHz-40 GHz	2.5 dB
Bandwidth Measurement	0.66 %
Duty cycle and Time Measurement	0.012 %

Conducted Emission test

The data listed in this test report has enough margin, more than the site margin.

Radiated emission test

The data listed in this test report has enough margin, more than the site margin.

3.5 Test Location

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JAB Accreditation No. RTL02610

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	10m
No.2 Semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
No.3 Semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
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

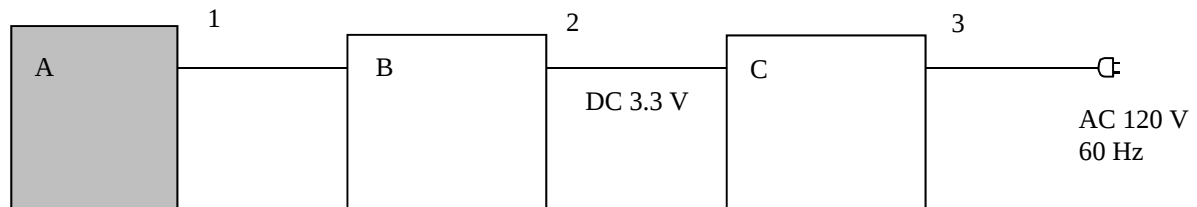
Refer to APPENDIX.

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

4.1 Operating Mode(s)

Mode	Remarks*	Frequency
Bluetooth Low Energy	PN9	2402 MHz 2440 MHz 2480 MHz
*Transmitting duty was 100 % on all tests. *The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel) Power settings: Fixed Software: Connection Manager Version: 3.08 *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	BLE Module	K30375	A44	Canon	EUT
B	JIG	-	-	Canon	-
C	DC Power Supply	PAN35-10A	NA000955	Kikusui	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	Signal	0.6	Unshielded	Unshielded	-
2	DC	1	Unshielded	Unshielded	-
3	AC	2	Unshielded	Unshielded	-

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SECTION 5: Conducted Emission

Test Procedure and conditions

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 rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN) / Artificial mains Network (AMN) and excess AC cable was bundled in center.

Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN / (AMN) to the input power source.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a shielded room. The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

Detector	: QP and CISPR AV
Measurement range	: 0.15 MHz – 30 MHz
Test data	: APPENDIX
Test result	: Pass

SECTION 6: 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 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 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 300 MHz	300 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: RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces If duty cycle was less than 98%, a duty factor was added to the results.	RBW: 100 kHz VBW: 300 kHz
Test Distance	3 m	3.99 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)		3.99 m *1) (1 GHz – 13 GHz), 1 m *2) (13 GHz – 26.5 GHz)

*1) Distance Factor: $20 \times \log (3.99 \text{ m} / 3.0 \text{ m}) = 2.48 \text{ dB}$

*2) Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$

*3) Average Power Measurement was performed based on 6.0 & 12.2.5 of "KDB 558074 D01 DTS Meas Guidance v03r05"

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 (Band edge)	Spurious				
		Below 1 GHz	Above 1 GHz			
			1 GHz -2.8 GHz	2.8 GHz -13 GHz	13 GHz -18 GHz	18 GHz - 26.5 GHz
Horizontal	Y	Y	Y	Y	X	X
Vertical	Z	Y	Z	Z	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 7: 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	Sample	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)	9kHz to 150kHz	200 Hz	620 Hz	Auto	Peak	Max Hold	Spectrum Analyzer
	150kHz to 30MHz	10 kHz	30 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 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.

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

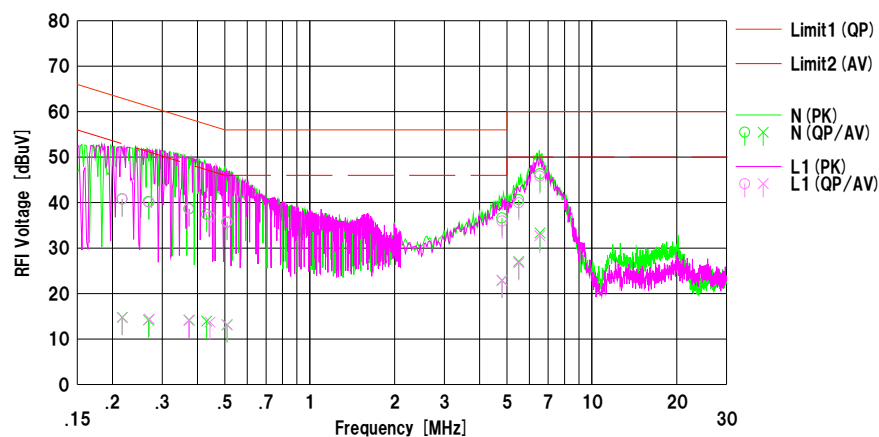
DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date : 2016/09/08

Mode : Tx 2402MHz
Power : AC 120 V / 60 Hz (DC 3.3 V)
Temp./Humi. : 25 deg.C / 57 %RH

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Hiroyuki Morikawa



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.21657	28.20	2.20	12.59	40.79	14.79	62.95	52.95	22.1	38.1	N	
2	0.26825	27.60	1.60	12.59	40.19	14.19	61.17	51.17	20.9	36.9	N	
3	0.37432	26.00	1.50	12.63	38.63	14.13	58.40	48.40	19.7	34.2	N	
4	0.43096	24.80	1.30	12.62	37.42	13.92	57.23	47.23	19.8	33.3	N	
5	0.50929	23.00	0.50	12.63	35.63	13.13	56.00	46.00	20.3	32.8	N	
6	4.80105	23.70	10.00	12.91	36.61	22.91	56.00	46.00	19.3	23.0	N	
7	5.50200	27.70	14.10	12.96	40.66	27.06	60.00	50.00	19.3	22.9	N	
8	6.55186	33.30	20.30	13.02	46.32	33.32	60.00	50.00	13.6	16.6	N	
9	0.21639	28.20	2.10	12.59	40.79	14.69	62.96	52.96	22.1	38.2	L1	
10	0.27008	27.50	1.80	12.59	40.09	14.39	61.12	51.12	21.0	36.7	L1	
11	0.37251	26.00	1.50	12.63	38.63	14.13	58.44	48.44	19.8	34.3	L1	
12	0.44281	24.20	1.10	12.62	36.82	13.72	57.01	47.01	20.1	33.2	L1	
13	0.50967	23.20	0.50	12.63	35.83	13.13	56.00	46.00	20.1	32.8	L1	
14	4.80942	23.00	10.00	12.91	35.91	22.91	56.00	46.00	20.0	23.0	L1	
15	5.51154	27.00	13.80	12.96	39.96	26.76	60.00	50.00	20.0	23.2	L1	
16	6.53841	32.80	19.70	13.02	45.82	32.72	60.00	50.00	14.1	17.2	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-03

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Conducted Emission

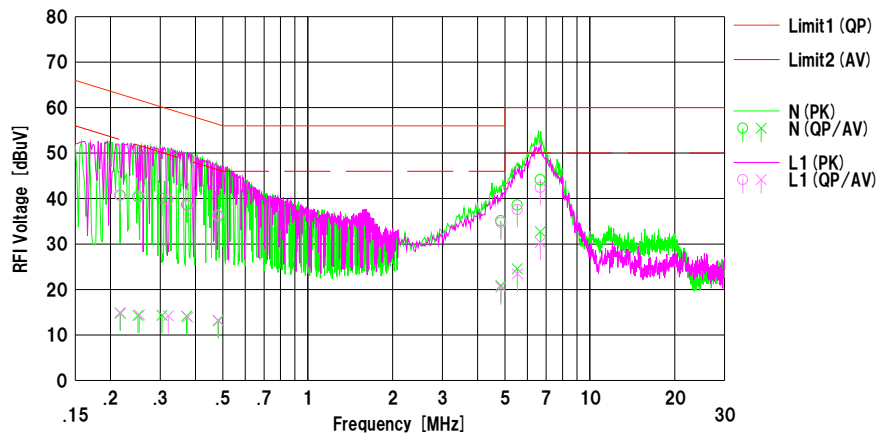
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UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date : 2016/09/08

Mode : Tx 2440MHz
Power : AC 120 V / 60 Hz (DC 3.3 V)
Temp./Humi. : 25 deg.C / 57 %RH

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Hiroyuki Morikawa



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]		<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.21687	28.10	2.20	12.59	40.69	14.79	62.94	52.94	22.2	38.1	N	
2	0.25012	27.80	1.70	12.58	40.38	14.28	61.75	51.75	21.3	37.4	N	
3	0.30441	27.40	1.70	12.61	40.01	14.31	60.12	50.12	20.1	35.8	N	
4	0.37202	26.00	1.50	12.63	38.63	14.13	58.46	48.46	19.8	34.3	N	
5	0.48290	23.40	0.50	12.63	36.03	13.13	56.29	46.29	20.2	33.1	N	
6	4.83634	22.20	8.00	12.91	35.11	20.91	56.00	46.00	20.8	25.0	N	
7	5.53087	25.60	11.60	12.96	38.56	24.56	60.00	50.00	21.4	25.4	N	
8	6.67357	31.10	19.70	13.02	44.12	32.72	60.00	50.00	15.8	17.2	N	
9	0.21584	28.10	2.30	12.59	40.69	14.89	62.98	52.98	22.2	38.0	L1	
10	0.25329	27.80	1.80	12.58	40.38	14.38	61.65	51.65	21.2	37.2	L1	
11	0.32047	27.20	1.60	12.61	39.81	14.21	59.69	49.69	19.8	35.4	L1	
12	0.37532	25.80	1.30	12.62	38.42	13.92	58.38	48.38	19.9	34.4	L1	
13	0.48041	23.70	0.60	12.63	36.33	13.23	56.33	46.33	20.0	33.1	L1	
14	4.84104	21.80	7.60	12.91	34.71	20.51	56.00	46.00	21.2	25.4	L1	
15	5.53755	24.60	10.50	12.96	37.56	23.46	60.00	50.00	22.4	26.5	L1	
16	6.67372	29.40	17.30	13.02	42.42	30.32	60.00	50.00	17.5	19.6	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-03

Conducted Emission

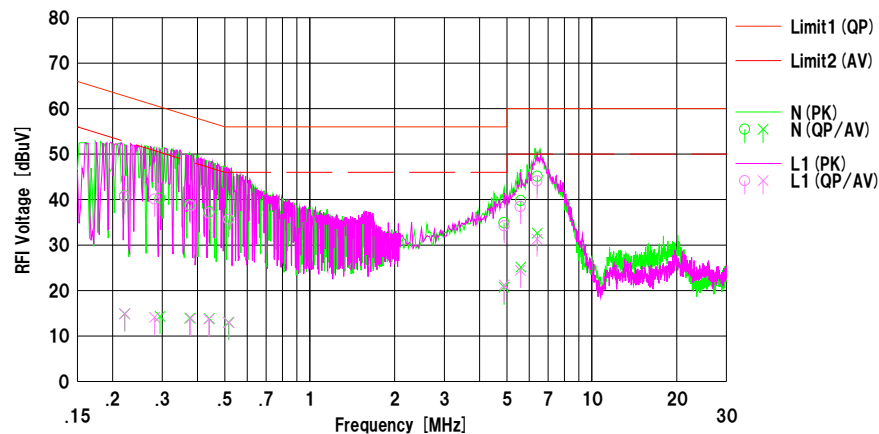
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UL Japan, Inc. Shonan EMC Lab. No.2 Shielded Room
Date : 2016/09/08

Mode : Tx 2480MHz
Power : AC 120 V / 60 Hz (DC 3.3 V)
Temp./Humi. : 25 deg.C / 57 %RH

Limit1 : FCC 15C (15.207) QP
Limit2 : FCC 15C (15.207) AV

Engineer : Hiroyuki Morikawa



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<OP> [dBuV]	<AV> [dBuV]		<OP> [dBuV]	<AV> [dBuV]	<OP> [dBuV]	<AV> [dBuV]	<OP> [dB]	<AV> [dB]		
1	0.22075	28.20	2.30	12.59	40.79	14.89	62.79	52.79	22.0	37.9	N	
2	0.29469	27.70	1.70	12.61	40.31	14.31	60.39	50.39	20.0	36.0	N	
3	0.37530	26.20	1.30	12.62	38.82	13.92	58.38	48.38	19.5	34.4	N	
4	0.44040	24.70	1.20	12.62	37.32	13.82	57.05	47.05	19.7	33.2	N	
5	0.51512	23.00	0.40	12.63	35.63	13.03	56.00	46.00	20.3	32.9	N	
6	4.88846	22.00	7.80	12.91	34.91	20.71	56.00	46.00	21.0	25.2	N	
7	5.60262	26.80	12.20	12.97	39.77	25.17	60.00	50.00	20.2	24.8	N	
8	6.40826	32.10	19.60	13.01	45.11	32.61	60.00	50.00	14.8	17.3	N	
9	0.22083	28.10	2.30	12.59	40.69	14.89	62.79	52.79	22.1	37.9	L1	
10	0.28158	27.50	1.50	12.60	40.10	14.10	60.77	50.77	20.6	36.6	L1	
11	0.37843	26.00	1.30	12.62	38.62	13.92	58.31	48.31	19.6	34.3	L1	
12	0.43840	24.40	1.10	12.62	37.02	13.72	57.09	47.09	20.0	33.3	L1	
13	0.51693	23.00	0.30	12.63	35.63	12.93	56.00	46.00	20.3	33.0	L1	
14	4.89140	21.30	8.30	12.91	34.21	21.21	56.00	46.00	21.7	24.7	L1	
15	5.58064	25.50	11.50	12.96	38.46	24.46	60.00	50.00	21.5	25.5	L1	
16	6.40205	31.10	18.30	13.01	44.11	31.31	60.00	50.00	15.8	18.6	L1	

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]
LISN: SLS-03

6dB Bandwidth

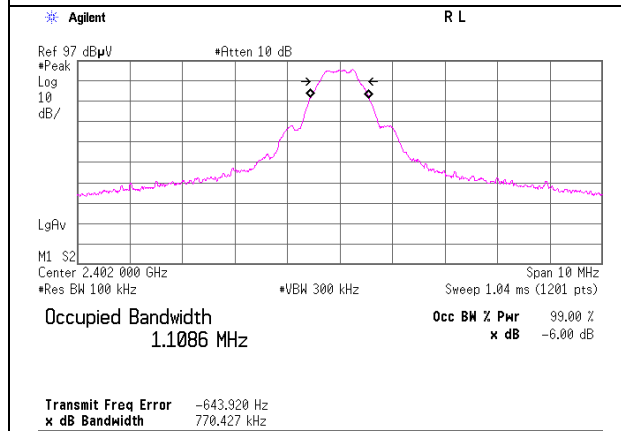
Test place Shonan EMC Lab. No.6 Shielded Room
Report No. 11425425S-A-R1
Date September 8, 2016
Temperature / Humidity 24 deg. C / 50 % RH
Engineer Yosuke Ishikawa
Mode Tx BT LE

Mode	Frequency [MHz]	6dB Bandwidth [MHz]	Limit [kHz]
BT LE	2402	0.770	> 500
	2440	0.777	> 500
	2480	0.778	> 500

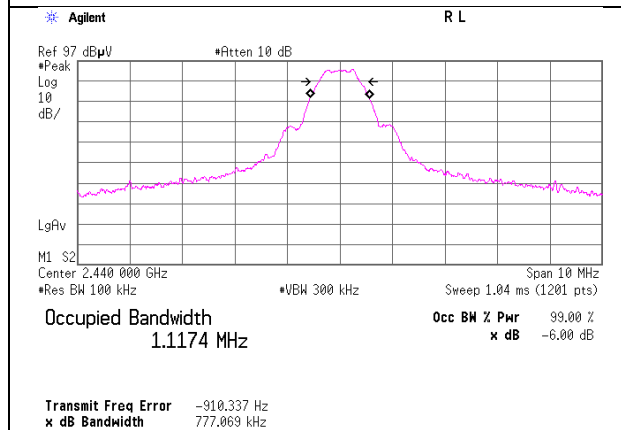
6dB Bandwidth

BT LE

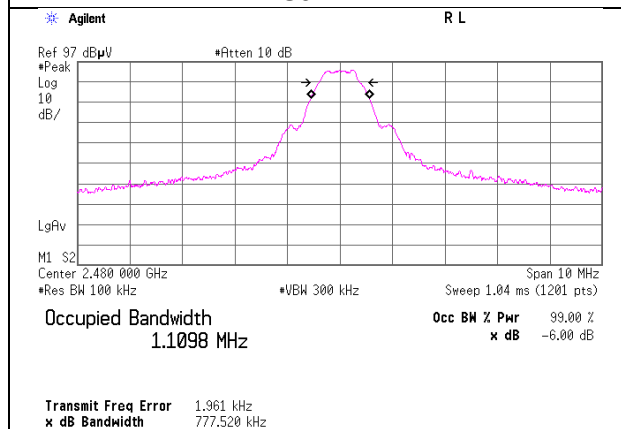
2402 MHz



2440 MHz



2480 MHz



Maximum Peak Output Power

Test place Shonan EMC Lab. No.6 Shielded Room
Report No. 11425425S-A-R1
Date September 8, 2016
Temperature / Humidity 24 deg. C / 50 % RH
Engineer Yosuke Ishikawa
Mode Tx BT LE

Freq. [MHz]	Reading [dBm]	Cable Loss [dB]	Atten. Loss [dB]	Result		Limit		Margin [dB]
				[dBm]	[mW]	[dBm]	[mW]	
2402	-13.10	1.28	10.01	-1.81	0.66	30.00	1000	31.81
2440	-12.94	1.29	10.01	-1.64	0.69	30.00	1000	31.64
2480	-12.83	1.29	10.01	-1.53	0.70	30.00	1000	31.53

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.

Average Output Power
(Reference data for RF Exposure)

Test place : Shonan EMC Lab. No.6 Shielded Room
Report No. : 11425425S-A-R1
Date : September 8, 2016
Temperature / Humidity : 24 deg. C / 50 % RH
Engineer : Yosuke Ishikawa
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	-13.86	1.28	10.01	-2.57	0.55	0.00	-2.57	0.55
2440	-13.59	1.29	10.01	-2.29	0.59	0.00	-2.29	0.59
2480	-13.53	1.29	10.01	-2.23	0.60	0.00	-2.23	0.60

Sample Calculation:

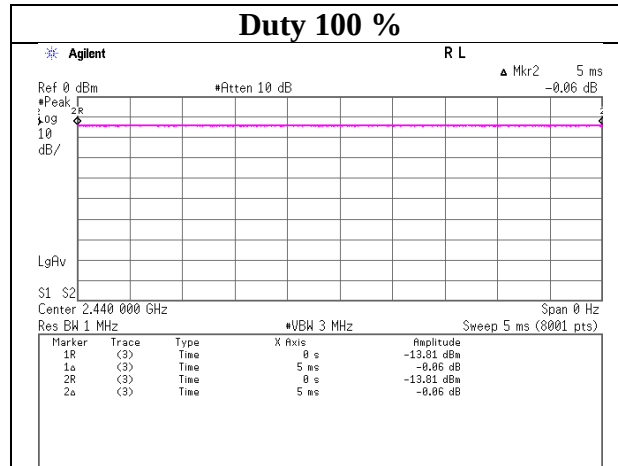
Result (Time average) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator I

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

Test place Shonan EMC Lab. No.6 Shielded Room
Report No. 11425425S-A-R1
Date September 8, 2016
Temperature / Humidity 24 deg. C / 50 % RH
Engineer Yosuke Ishikawa
Mode Tx BT LE



Radiated Spurious Emission

Test place : Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 11425425S-A-R1
Date : September 6, 2016 September 8, 2016
Temperature / Humidity : 22 deg. C / 66 % RH 22 deg. C / 65 % RH
Engineer : Hiroyuki Morikawa Hiroyuki Morikawa
(1 GHz-26.5 GHz) (30 MHz-1000 MHz)
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.	179.000	QP	32.00	15.88	8.76	31.78	0.00	24.86	43.50	18.6	187	215	
Hori.	186.670	QP	29.30	16.08	8.83	31.77	0.00	22.44	43.50	21.0	187	37	
Hori.	905.838	QP	22.30	22.09	9.86	30.82	0.00	23.43	46.00	22.5	100	136	
Hori.	2390.000	PK	46.32	27.17	13.70	37.06	2.48	52.61	73.90	21.2	161	126	
Hori.	4804.000	PK	46.73	31.13	5.92	37.12	2.48	49.14	73.90	24.7	158	203	
Hori.	7206.000	PK	44.31	36.43	7.23	37.84	2.48	52.61	73.90	21.2	153	0	
Hori.	9608.000	PK	46.38	38.28	7.85	39.13	2.48	55.86	73.90	18.0	153	0	
Hori.	2390.000	AV	34.47	27.17	13.70	37.06	2.48	40.76	53.90	13.1	161	126	
Hori.	4804.000	AV	38.67	31.13	5.92	37.12	2.48	41.08	53.90	12.8	158	203	
Hori.	7206.000	AV	35.73	36.43	7.23	37.84	2.48	44.03	53.90	9.8	153	0	
Hori.	9608.000	AV	35.63	38.28	7.85	39.13	2.48	45.11	53.90	8.7	153	0	
Vert.	38.668	QP	25.60	14.87	7.07	31.91	0.00	15.63	40.00	24.3	100	2	
Vert.	74.000	QP	38.10	6.18	7.59	31.88	0.00	19.99	40.00	20.0	100	24	
Vert.	78.000	QP	40.30	6.15	7.64	31.87	0.00	22.22	40.00	17.7	100	148	
Vert.	80.000	QP	37.50	6.13	7.67	31.87	0.00	19.43	40.00	20.5	100	170	
Vert.	2390.000	PK	46.45	27.17	13.70	37.06	2.48	52.74	73.90	21.1	161	135	
Vert.	4804.000	PK	45.86	31.13	5.92	37.12	2.48	48.27	73.90	25.6	152	190	
Vert.	7206.000	PK	44.54	36.43	7.23	37.84	2.48	52.84	73.90	21.0	153	0	
Vert.	9608.000	PK	46.25	38.28	7.85	39.13	2.48	55.73	73.90	18.1	153	0	
Vert.	2390.000	AV	34.28	27.17	13.70	37.06	2.48	40.57	53.90	13.3	161	135	
Vert.	4804.000	AV	35.84	31.13	5.92	37.12	2.48	38.25	53.90	15.6	152	190	
Vert.	7206.000	AV	35.05	36.43	7.23	37.84	2.48	43.35	53.90	10.5	153	0	
Vert.	9608.000	AV	35.65	38.28	7.85	39.13	2.48	45.13	53.90	8.7	153	0	

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

Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB

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

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	85.22	27.21	13.71	37.05	2.48	91.57	-	-	Carrier
Hori.	2400.000	PK	39.45	27.20	13.71	37.05	2.48	45.79	71.57	25.8	
Vert.	2402.000	PK	86.23	27.21	13.71	37.05	2.48	92.58	-	-	Carrier
Vert.	2400.000	PK	40.12	27.20	13.71	37.05	2.48	46.46	72.58	26.1	

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

Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB

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

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Shonan EMC Lab.

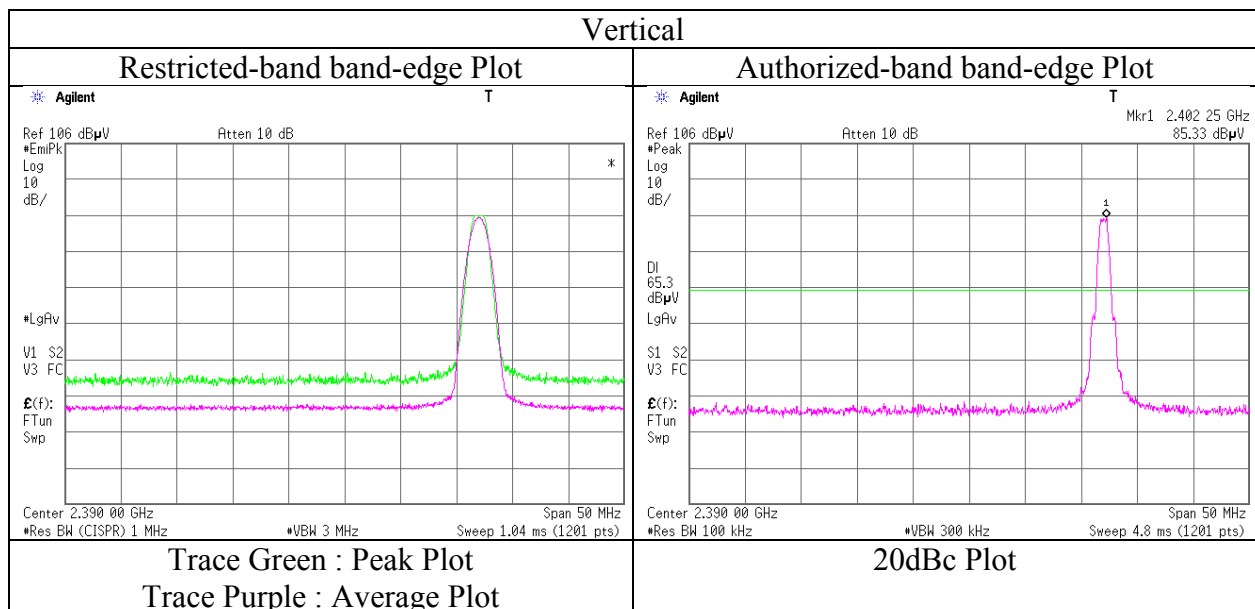
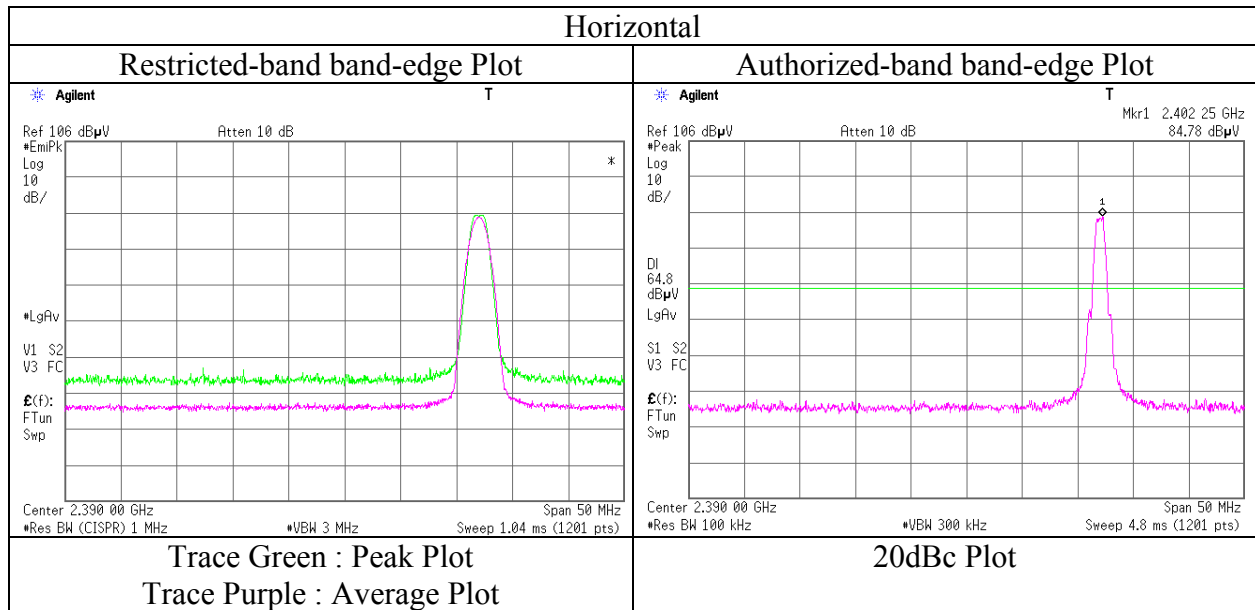
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11425425S-A-R1
Date	September 6, 2016
Temperature / Humidity	22 deg. C / 66 % RH
Engineer	Hiroyuki Morikawa (1 GHz-26.5 GHz)
Mode	Tx BT LE 2402 MHz



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

Radiated Spurious Emission

Test place : Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 11425425S-A-R1
Date : September 6, 2016 September 8, 2016
Temperature / Humidity : 22 deg. C / 66 % RH 22 deg. C / 65 % RH
Engineer : Hiroyuki Morikawa Hiroyuki Morikawa
(1 GHz-26.5 GHz) (30 MHz-1000 MHz)
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.	180.000	QP	32.10	15.92	8.76	31.78	0.00	25.00	43.50	18.5	152	206	
Hori.	186.000	QP	32.30	16.06	8.82	31.77	0.00	25.41	43.50	18.0	163	216	
Hori.	913.836	QP	22.50	22.15	9.89	30.76	0.00	23.78	46.00	22.2	100	312	
Hori.	4880.000	PK	44.37	31.29	5.97	37.15	2.48	46.96	73.90	26.9	147	251	
Hori.	7320.000	PK	44.46	36.63	7.31	37.91	2.48	52.97	73.90	20.9	153	0	
Hori.	9760.000	PK	45.87	38.52	7.98	39.19	2.48	55.66	73.90	18.2	153	0	
Hori.	4880.000	AV	35.32	31.29	5.97	37.15	2.48	37.91	53.90	15.9	147	251	
Hori.	7320.000	AV	35.43	36.63	7.31	37.91	2.48	43.94	53.90	9.9	153	0	
Hori.	9760.000	AV	36.67	38.52	7.98	39.19	2.48	46.46	53.90	7.4	153	0	
Vert.	39.000	QP	27.50	14.76	7.07	31.91	0.00	17.42	40.00	22.5	100	277	
Vert.	74.000	QP	38.20	6.18	7.59	31.88	0.00	20.09	40.00	19.9	100	61	
Vert.	78.000	QP	39.70	6.15	7.64	31.87	0.00	21.62	40.00	18.3	100	159	
Vert.	80.000	QP	37.30	6.13	7.67	31.87	0.00	19.23	40.00	20.7	100	164	
Vert.	4880.000	PK	43.37	31.29	5.97	37.15	2.48	45.96	73.90	27.9	164	152	
Vert.	7320.000	PK	44.37	36.63	7.31	37.91	2.48	52.88	73.90	21.0	153	0	
Vert.	9760.000	PK	45.86	38.52	7.98	39.19	2.48	55.65	73.90	18.2	153	0	
Vert.	4880.000	AV	34.84	31.29	5.97	37.15	2.48	37.43	53.90	16.4	164	152	
Vert.	7320.000	AV	35.33	36.63	7.31	37.91	2.48	43.84	53.90	10.0	153	0	
Vert.	9760.000	AV	36.42	38.52	7.98	39.19	2.48	46.21	53.90	7.6	153	0	

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

Distance factor : 1 GHz - 13 GHz : $20\log(3.99\text{ m} / 3.0\text{ m}) = 2.48\text{ dB}$

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

Radiated Spurious Emission

Test place : Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No. : 11425425S-A-R1
Date : September 6, 2016 September 8, 2016
Temperature / Humidity : 22 deg. C / 66 % RH 22 deg. C / 65 % RH
Engineer : Hiroyuki Morikawa Hiroyuki Morikawa
(1 GHz-26.5 GHz) (30 MHz-1000 MHz)
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.	180.000	QP	32.00	15.92	8.76	31.78	0.00	24.90	43.50	18.6	178	47	
Hori.	185.987	QP	32.20	16.06	8.82	31.77	0.00	25.31	43.50	18.1	163	211	
Hori.	873.344	QP	22.10	21.76	9.69	30.97	0.00	22.58	46.00	23.4	100	112	
Hori.	2483.500	PK	45.86	27.49	13.79	37.01	2.48	52.61	73.90	21.2	174	135	
Hori.	4960.000	PK	44.65	31.46	6.02	37.19	2.48	47.42	73.90	26.4	186	181	
Hori.	7440.000	PK	44.11	36.84	7.39	37.99	2.48	52.83	73.90	21.0	153	0	
Hori.	9920.000	PK	44.68	38.76	8.13	39.26	2.48	54.79	73.90	19.1	153	0	
Hori.	2483.500	AV	36.43	27.49	13.79	37.01	2.48	43.18	53.90	10.7	174	135	
Hori.	4960.000	AV	35.76	31.46	6.02	37.19	2.48	38.53	53.90	15.3	186	181	
Hori.	7440.000	AV	34.53	36.84	7.39	37.99	2.48	43.25	53.90	10.6	153	0	
Hori.	9920.000	AV	35.83	38.76	8.13	39.26	2.48	45.94	53.90	7.9	153	0	
Vert.	38.672	QP	25.70	14.87	7.07	31.91	0.00	15.73	40.00	24.2	100	26	
Vert.	74.000	QP	38.10	6.18	7.59	31.88	0.00	19.99	40.00	20.0	100	160	
Vert.	78.000	QP	39.60	6.15	7.64	31.87	0.00	21.52	40.00	18.4	100	151	
Vert.	80.000	QP	37.60	6.13	7.67	31.87	0.00	19.53	40.00	20.4	100	173	
Vert.	2483.500	PK	45.38	27.49	13.79	37.01	2.48	52.13	73.90	21.7	139	233	
Vert.	4960.000	PK	44.25	31.46	6.02	37.19	2.48	47.02	73.90	26.8	132	146	
Vert.	7440.000	PK	44.38	36.84	7.39	37.99	2.48	53.10	73.90	20.8	153	0	
Vert.	9920.000	PK	45.18	38.76	8.13	39.26	2.48	55.29	73.90	18.6	153	0	
Vert.	2483.500	AV	36.28	27.49	13.79	37.01	2.48	43.03	53.90	10.8	139	233	
Vert.	4960.000	AV	35.62	31.46	6.02	37.19	2.48	38.39	53.90	15.5	132	146	
Vert.	7440.000	AV	35.12	36.84	7.39	37.99	2.48	43.84	53.90	10.0	153	0	
Vert.	9920.000	AV	35.42	38.76	8.13	39.26	2.48	45.53	53.90	8.3	153	0	

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

Distance factor : 1 GHz - 13 GHz : 20log (3.99 m / 3.0 m) = 2.48 dB

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

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Shonan EMC Lab.

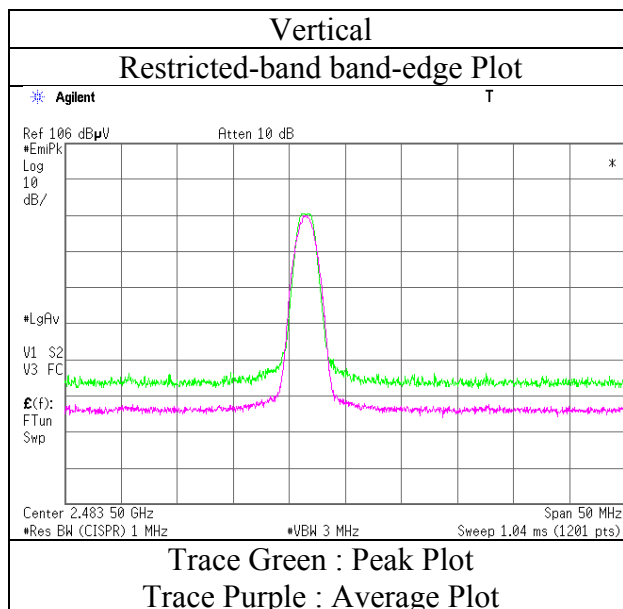
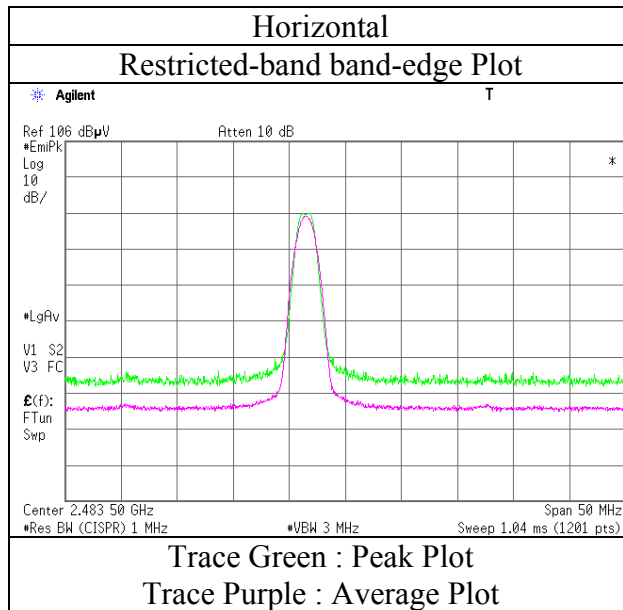
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

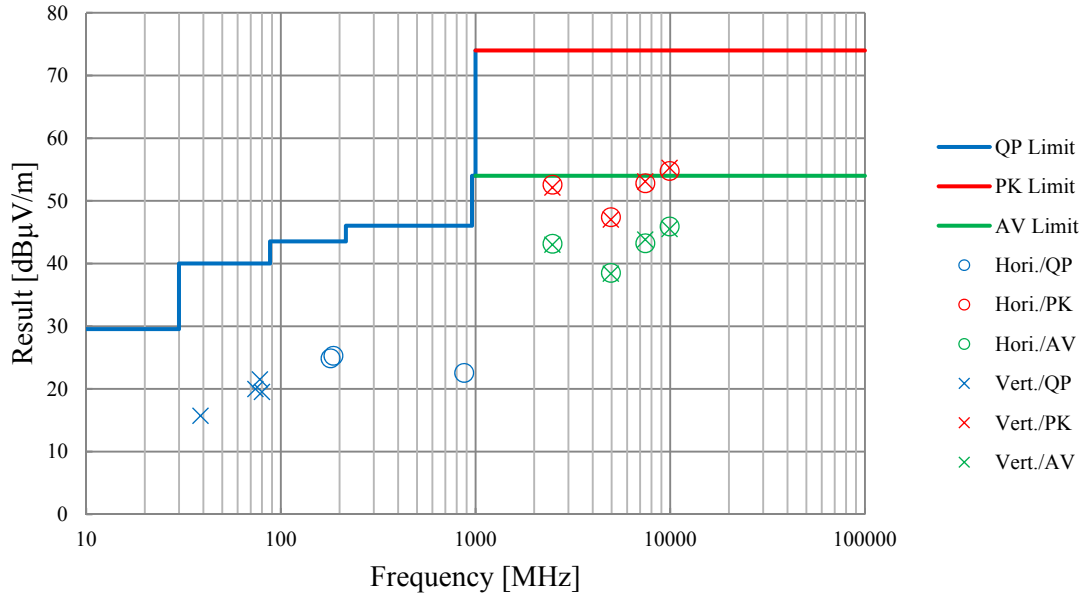
Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber
Report No.	11425425S-A-R1
Date	September 6, 2016
Temperature / Humidity	22 deg. C / 66 % RH
Engineer	Hiroyuki Morikawa (1 GHz-26.5 GHz)
Mode	Tx BT LE 2480 MHz



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

Radiated Spurious Emission (Plot data, Worst case)

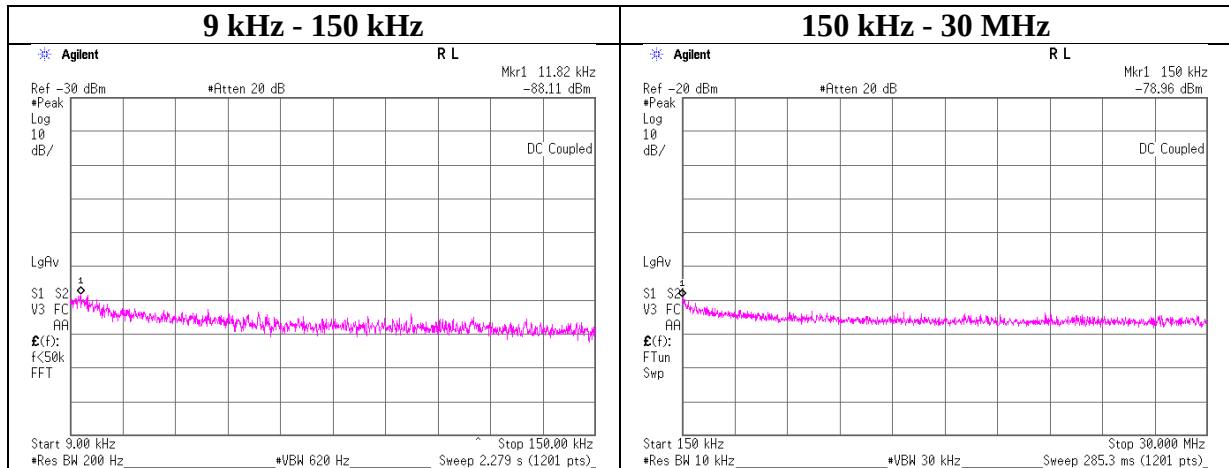
Test place	Shonan EMC Lab. No.2 Semi Anechoic Chamber	
Report No.	11425425S-A-R1	
Date	September 6, 2016	September 8, 2016
Temperature / Humidity	22 deg. C / 66 % RH	22 deg. C / 65 % RH
Engineer	Hiroyuki Morikawa (1 GHz-26.5 GHz)	Hiroyuki Morikawa (30 MHz-1000 MHz)
Mode	Tx BT LE 2480 MHz	



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

Conducted Spurious Emission

Test place	Shonan EMC Lab. No.6 Shielded Room
Report No.	11425425S-A-R1
Date	September 8, 2016
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Yosuke Ishikawa
Mode	Tx BT LE 2402 MHz



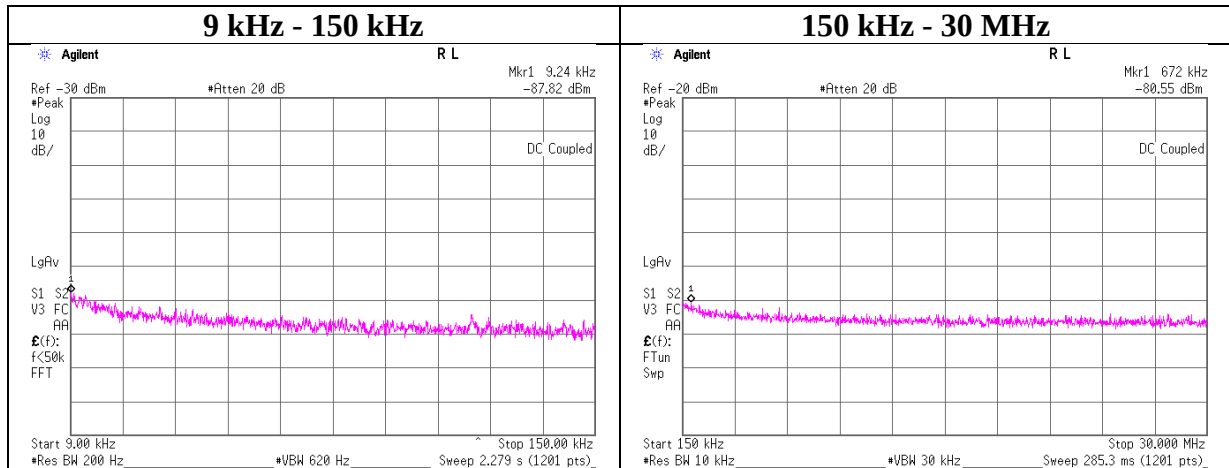
Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
11.82	-88.1	0.01	9.9	0.23	1	-77.9	300	6.0	-16.7	46.1	62.8	
150.00	-79.0	0.01	9.9	0.23	1	-68.8	300	6.0	-7.5	24.0	31.5	

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

$\text{EIRP} = \text{Reading} + \text{Cable Loss} + \text{Attenuator Loss} + \text{Antenna Gain} + 10 * \log(N)$

Conducted Spurious Emission

Test place	Shonan EMC Lab. No.6 Shielded Room
Report No.	11425425S-A-R1
Date	September 8, 2016
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Yosuke Ishikawa
Mode	Tx BT LE 2440 MHz



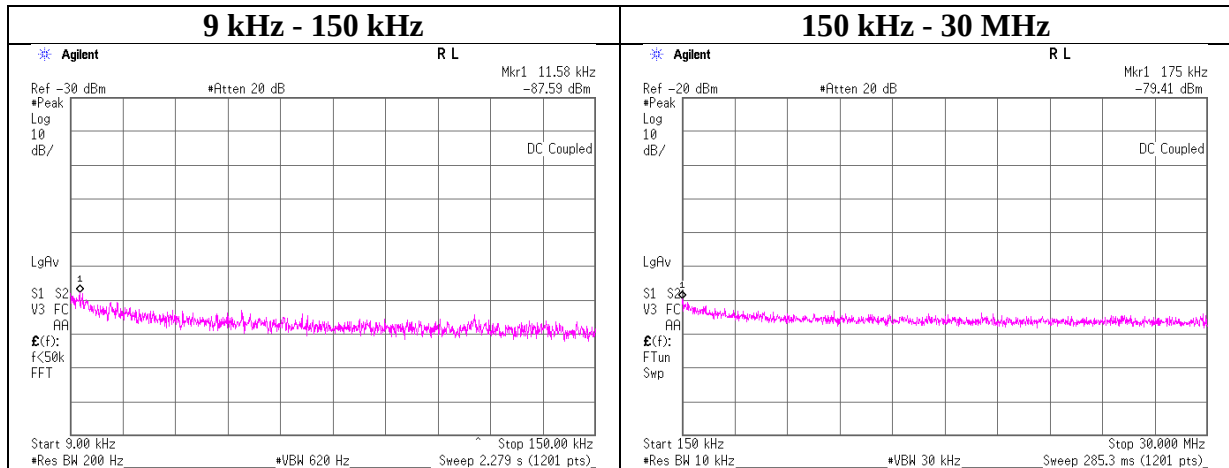
Frequency [kHz]	Reading [dBm]	Cable Loss [dB]	Attenuator Loss [dB]	Antenna Gain [dBi]	N (Number of Output)	EIRP [dBm]	Distance [m]	Ground bounce [dB]	E (field strength) [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
9.24	-87.8	0.01	9.9	0.23	1	-77.7	300	6.0	-16.4	48.2	64.6	
672.00	-80.6	0.01	9.9	0.23	1	-70.4	30	6.0	10.9	31.0	20.1	

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

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

Conducted Spurious Emission

Test place	Shonan EMC Lab. No.6 Shielded Room
Report No.	11425425S-A-R1
Date	September 8, 2016
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Yosuke Ishikawa
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
11.58	-87.6	0.01	9.9	0.23	1	-77.4	300	6.0	-16.2	46.3	62.5	
175.00	-79.4	0.01	9.9	0.23	1	-69.2	300	6.0	-8.0	22.7	30.7	

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

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

Power Density

Test place Shonan EMC Lab. No.6 Shielded Room
Report No. 11425425S-A-R1
Date September 8, 2016
Temperature / Humidity 24 deg. C / 50 % RH
Engineer Yosuke Ishikawa
Mode Tx BT LE

Freq.	Reading	Cable Loss	Atten. Loss	Result	Limit	Margin
[MHz]	[dBm]	[dB]	[dB]	[dBm]	[dBm]	[dB]
2402	-30.01	1.28	10.01	-18.72	8.00	26.72
2440	-29.91	1.29	10.01	-18.61	8.00	26.61
2480	-29.81	1.29	10.01	-18.51	8.00	26.51

Sample Calculation:

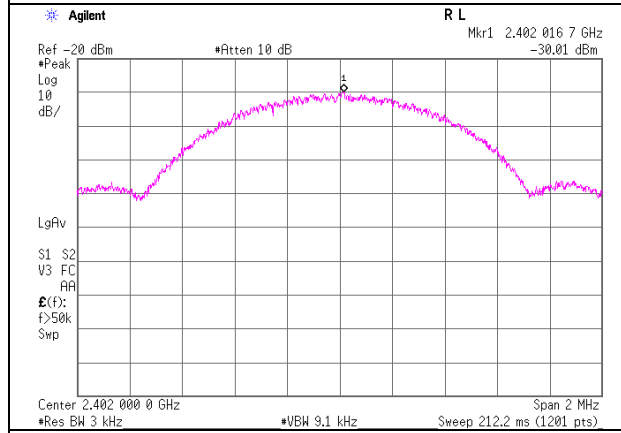
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator l

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

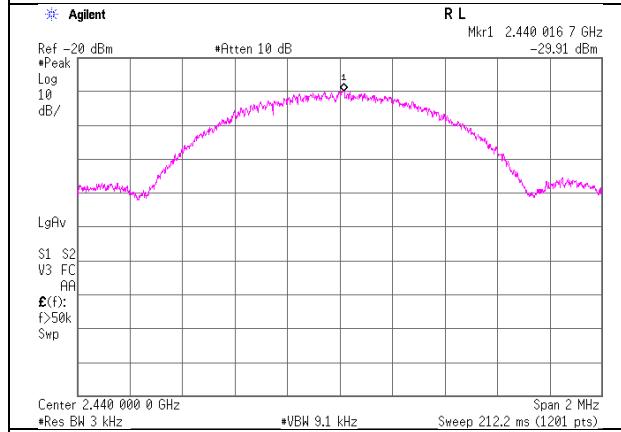
Power Density

BT LE

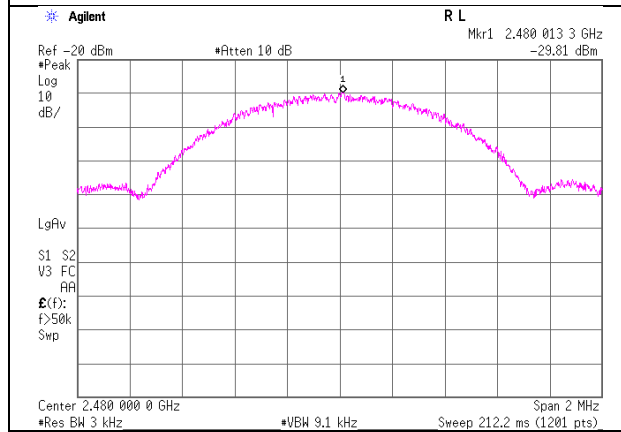
2402 MHz



2440 MHz



2480 MHz

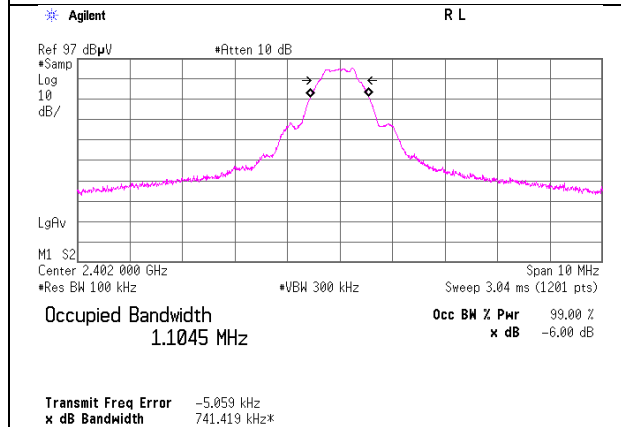


99% Occupied Bandwidth

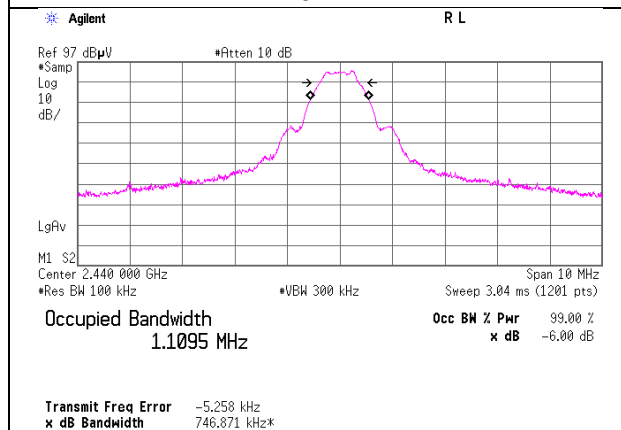
Test place	Shonan EMC Lab. No.6 Shielded Room
Report No.	11425425S-A-R1
Date	September 8, 2016
Temperature / Humidity	24 deg. C / 50 % RH
Engineer	Yosuke Ishikawa
Mode	Tx BT LE

BT LE

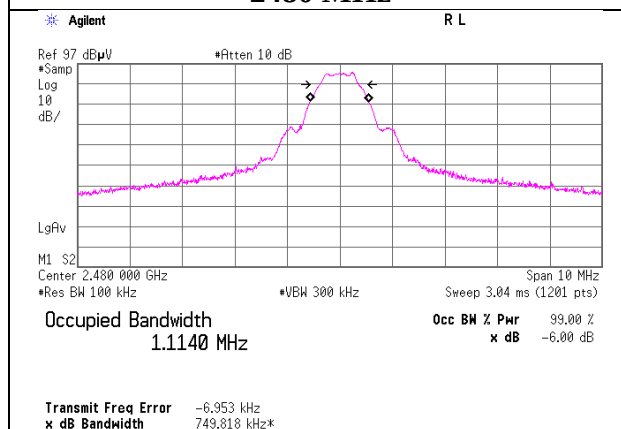
2402 MHz



2440 MHz



2480 MHz



APPENDIX 2: Test instruments

Test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
SAF-05	Pre Amplifier	TOYO Corporation	TPA0118-36	1440490	RE	2016/02/10 * 12
SCC-G05	Coaxial Cable	Junkosha	J12J102207-00	APR-30-15-037	RE	2016/05/24 * 12
SCC-G22	Coaxial Cable	Suhner	SUCOFLEX 104	296199/4	RE	2016/05/11 * 12
SHA-02	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-726	RE	2016/08/09 * 12
SOS-03	Humidity Indicator	A&D	AD-5681	4063325	RE	2015/10/22 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2016/03/23 * 12
SJM-09	Measure	PROMART	SEN1935	-	RE,CE	-
SAEC-02(SVS WR)	Semi-Anechoic Chamber	TDK	SAEC-02(SVSWR)	2	RE	2016/07/22 * 12
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE,CE	-
STS-02	Digital Hitester	Hioki	3805-50	080997819	RE,CE	2016/03/22 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	RE	2015/11/04 * 12
SFL-18	Highpass Filter	MICRO-TRONICS	HPM50111	119	RE	2016/04/18 * 12
SHA-05	Horn Antenna	ETS LINDGREN	3160-09	LM4210	RE	2016/03/24 * 12
SAF-09	Pre Amplifier	TOYO Corporation	HAP18-26W	00000018	RE	2015/09/07 * 12
SCC-G33	Coaxial Cable	Junkosha	MWX241-01000K MSKMS	-	RE	2016/04/18 * 12
SCC-G19	Coaxial Cable	Suhner	SUCOFLEX 102A	1188/2A	RE	2016/03/08 * 12
SRENT-06	Spectrum Analyzer	KEYSIGHT	E4440A	MY48250921	AT	2016/08/07 * 12
SPM-07	Power Meter	Agilent	8990B	MY5100272	AT	2016/04/04 * 12
SPSS-04	Power sensor	Agilent	N1923A	MY5326009	AT	2016/04/04 * 12
STS-06	Digital Hitester	Hioki	3805-50	080997830	AT	2016/03/22 * 12
SCC-G12	Coaxial Cable	Suhner	SUCOFLEX 102	30790/2	AT	2016/03/23 * 12
SAT10-05	Attenuator(above1GHz)	Agilent	8493C-010	74864	AT	2015/11/04 * 12
SOS-10	Humidity Indicator	A&D	AD-5681	4064561	AT	2015/10/22 * 12
SAF-02	Pre Amplifier	SONOMA	310N	290212	RE	2016/02/19 * 12
SAT6-02	Attenuator	JFW	50HF-006N	-	RE	2016/02/25 * 12
KAT3-10	Attenuator	JFW IND. INC.	50HF-003N	-	RE	2016/07/26 * 12
SBA-02	Biconical Antenna	Schwarzbeck	BBA9106	91032665	RE	2015/11/02 * 12
SCC-B1/B3/B5/ B7/B8/B13/SRS E-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhne r/Suhner/Suhner/Suhner/ TOYO	8D2W/12DSFA/141 PE/141PE/141PE/14 1PE/NS4906	-/0901-270(RF Selector)	RE	2016/04/22 * 12
SCC-B2/B4/B6/ B7/B8/B13/SRS E-02	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhne r/Suhner/Suhner/Suhner/ TOYO	8D2W/12DSFA/141 PE/141PE/141PE/14 1PE/NS4906	-/0901-270(RF Selector)	RE	2016/04/22 * 12
SLA-02	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0893	RE	2015/11/03 * 12
STR-07	Test Receiver	Rohde & Schwarz	ESU26	100484	RE,CE	2015/09/04 * 12
SAEC-02(NSA)	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	RE	2016/07/13 * 12
SCC-B12/B13/S RSE-02	Coaxial Cable&RF Selector	Suhner/Suhner/TOYO	RG223U/141PE/NS 4906	-/0901-270(RF Selector)	CE	2016/04/22 * 12
SLS-03	LISN	Rohde & Schwarz	ENV216	100513	CE	2016/02/08 * 12
SAT3-06	Attenuator	JFW	50HF-003N	-	CE	2016/02/25 * 12
SOS-04	Humidity Indicator	A&D	AD-5681	4061512	CE	2015/12/07 * 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: CE: Conducted Emission test
RE: Radiated Emission test
AT: Antenna Terminal Conducted test

UL Japan, Inc.

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