



RADIO TEST REPORT

Test Report No. : 10988152S-A

Applicant : SMK Corporation
Type of Equipment : neyya
Model No. : Ring
FCC ID : GT3FC021
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.
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)

Date of test:

October 5 to 7, 2015

Representative test engineer:

h. Morikawa

Hiroyuki Morikawa
Engineer
Consumer Technology Division

Approved by:

T. Imamura

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.

1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

13-EM-F0429

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SECTION 1: Customer information

Company Name : SMK Corporation
Address : 5-5, Togoshi 6-chome, Shinagawa-ku, Tokyo 142-8511, Japan
Telephone Number : +81-3-3785-1110
Facsimile Number : +81-3-3785-2804
Contact Person : Hiroshi Fujikawa

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

2.1 Identification of E.U.T.

Type of Equipment : neyya
Model No. : Ring
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 4.2 V
Receipt Date of Sample : October 5, 2015
Country of Mass-production : Japan
Condition of EUT : Production 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: Ring (referred to as the EUT in this report) is neyya.

General Specification

Clock frequency(ies) in the system : 16 MHz

Radio Specification

Radio Type : Transceiver
Frequency of Operation : 2402 MHz - 2480 MHz
Modulation : GFSK
Power Supply (radio part input) : DC 3.1 V
Antenna type : Monopole (Chip)
Antenna Gain : -11.14 dBi

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2015, final revised on September 8, 2015
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 has been tested for compliance with FCC Part 15 Subpart B. Refer to the test report 10988152S-C.

3.2 Procedures and results

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------|------------|-------------------------------------------------------------------|
| Conducted Emission | FCC: ANSI C63.4-2009 7. AC powerline Conducted Emission measurements 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 v03r03 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 v03r03 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 v03r03 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 v03r03 IC: RSS-Gen 6.13 | FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10 | 1.2 dB 4960.00 MHz, AV, Horizontal. | 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 v03r03 12.2.7.

* In case any questions arise about test procedure, ANSI C 63.10:2013 is also referred.

However, there is one deviation from ANSI C 63.10:2013. (ANSI C63.10:2013 is Non-accreditation)
Measurement height is not 1.5 m, but 0.8 m.

FCC Part 15.31 (e)

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

FCC Part 15.203

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.

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.

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

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 |
| Conducted emission (AC Mains) LISN | 150 kHz-30 MHz | 3.6 dB | 3.4 dB | 3.4 dB |
| Radiated emission (Measurement distance: 3 m) | 9 kHz-30 MHz | 3.7 dB | 3.5 dB | 3.5 dB |
| | 30 MHz-300 MHz | 4.9 dB | 4.9 dB | 4.7 dB |
| | 300 MHz-1 GHz | 5.0 dB | 5.0 dB | 4.8 dB |
| | 1 GHz-13 GHz | 4.9 dB | 4.9 dB | 4.9 dB |
| Radiated emission (Measurement distance: 1 m) | 13 GHz-18 GHz | 5.7 dB | 5.7 dB | 5.7 dB |
| | 18 GHz-40 GHz | 4.5 dB | 4.3 dB | 4.3 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 |

Radiated emission test

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

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

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 | 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.

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

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

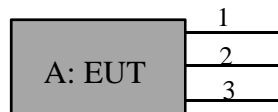
4.1 Operating Mode(s)

| Mode | Remarks* |
|-------------------------------------------------------------------------------------------------------------------------|----------|
| Bluetooth Low Energy | PRBS9 |
| * The worst condition was determined based on the test result of Maximum Peak Output Power. | |
| * Power of the EUT was set by the software as follows; Power settings: Fixed Software: nRFgo Studio ver. 1.21.0.2 | |

*The details of Operating mode(s)

| Test Item | Operating Mode | Tested frequency |
|---------------------------|----------------------|------------------|
| Spurious Emission | Bluetooth Low Energy | 2402 MHz |
| 6dB Bandwidth | | 2440 MHz |
| Maximum Peak Output Power | | 2480 MHz |
| Power Density | | |
| 99% Occupied Bandwidth | | |

4.2 Configuration and peripherals



Description of EUT

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|-----|-------|--------------|-----------------|-----------------|---------|
| A | neyya | Ring | 2 *1) L1 *2) | SMK Corporation | EUT |

*1) Used for Antenna Terminal conducted test

*2) Radiated Emission test

List of cables used

| No. | Name | Length (m) | Shield | | Remarks |
|-----|------|------------|------------|-----------|---------|
| | | | Cable | Connector | |
| 1 | Tx | 0.05 | Unshielded | - | *3) |
| 2 | Rx | 0.05 | Unshielded | - | *3) |
| 3 | GND | 0.05 | Unshielded | - | *3) |

*3) Signal cable for test operation

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 v03r03".

EUT was placed on a polystyrene 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. The height of the measuring antenna varied between 1 m 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 *2) | PK |
| IF Bandwidth | BW 120 kHz | RBW: 1 MHz VBW: 3 MHz | Average Power Method: <u>12.2.5.2</u> 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: 300kHz |
| Test Distance | 3m | 3 m (below 13 GHz), 1 m *1) (above 13 GHz) | | 3 m (below 13 GHz), 1 m *1) (above 13 GHz) |

*1) Distance Factor: $20 \times \log(3.0 \text{ m} / 1.0 \text{ m}) = 9.5 \text{ dB}$

*2) Average Power Measurement was performed based on 6.0 & 12.2.5 of "KDB 558074 D01 DTS Meas Guidance v03r03"

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.

Combinations of the worst case

| Antenna polarization | Frequency | | | |
|----------------------|------------|-----------------|------------------|-----------------|
| | Below 1GHz | 1 GHz - 2.8 GHz | 2.8 GHz - 13 GHz | 13 GHz - 25 GHz |
| Horizontal | Z | X | Y | X |
| Vertical | Z | Y | Y | X |

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

Measurement range : 30 M - 25 GHz
Test data : APPENDIX
Test result : Pass

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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

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 | 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) *4) |
| Conducted Spurious Emission *5) | 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 v03r03".

*4) The test was not performed at RBW:3 kHz however the measurement is to be performed with RBW:3kHz in the regulation, because, the measurement value with RBW:3 kHz is less than the value of RBW:30 kHz and the test data met the limit with RBW:30 kHz.

*5) 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 = 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

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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

APPENDIX 1: Test data

6dB Bandwidth

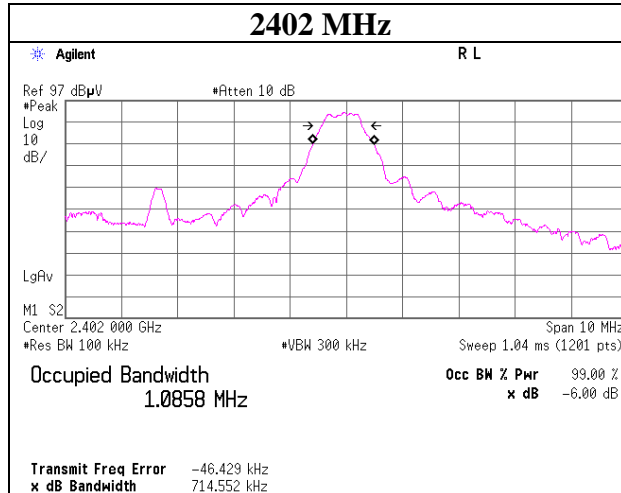
Test place Shonan EMC Lab. No.5 Shielded Room
Report No. 10988152S-A
Date October 7, 2015
Temperature / Humidity 25 deg. C / 43 % RH
Engineer Tomohiro Hara
Mode Tx BT LE

| Mode | Frequency [MHz] | 6dB Bandwidth [MHz] | Limit [kHz] |
|------|--------------------|------------------------|----------------|
| BTLE | 2402 | 0.715 | >500 |
| | 2440 | 0.720 | >500 |
| | 2480 | 0.730 | >500 |

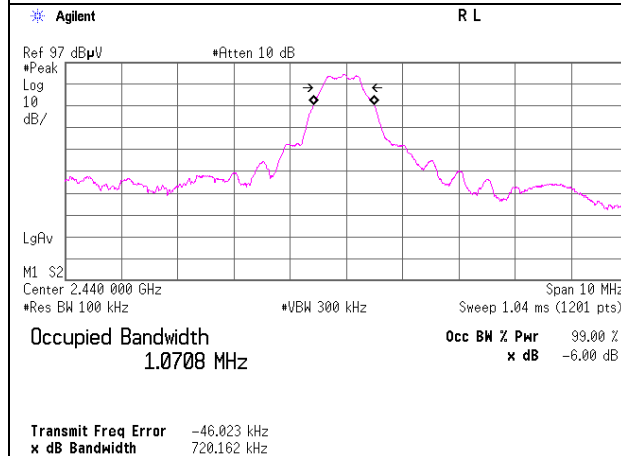
6dB Bandwidth

BTLE

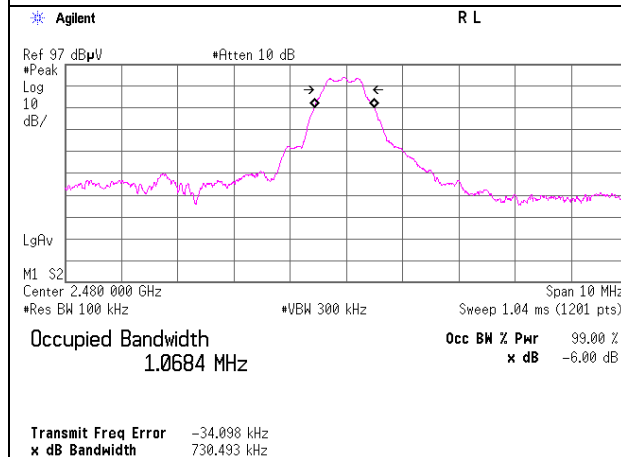
2402 MHz



2440 MHz



2480 MHz



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

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Maximum Peak Output Power

Test place Shonan EMC Lab. No.5 Shielded Room
Report No. 10988152S-A
Date October 7, 2015
Temperature / Humidity 25 deg. C / 43 % RH
Engineer Tomohiro Hara
Mode Tx BT LE

BTLE

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | | Limit | | Margin [dB] |
|----------------|------------------|-----------------------|------------------------|--------|------|-------|------|----------------|
| | | | | [dBm] | [mW] | [dBm] | [mW] | |
| 2402 | -14.99 | 0.62 | 9.63 | -4.74 | 0.34 | 30.00 | 1000 | 34.74 |
| 2440 | -14.97 | 0.63 | 9.63 | -4.71 | 0.34 | 30.00 | 1000 | 34.71 |
| 2480 | -15.13 | 0.64 | 9.63 | -4.86 | 0.33 | 30.00 | 1000 | 34.86 |

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)

Test place Shonan EMC Lab. No.5 Shielded Room
Report No. 10988152S-A
Date October 7, 2015
Temperature / Humidity 25 deg. C / 43 % RH
Engineer Tomohiro Hara
Mode Tx BT LE

BTLE

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Frame power) | | Duty factor [dB] | Result (Burst power) | |
|----------------|------------------|-----------------------|------------------------|-------------------------|------|------------------------|-------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2402 | -17.50 | 0.62 | 9.63 | -7.25 | 0.19 | 1.19 | -6.06 | 0.25 |
| 2440 | -17.42 | 0.63 | 9.63 | -7.16 | 0.19 | 1.19 | -5.97 | 0.25 |
| 2480 | -17.71 | 0.64 | 9.63 | -7.44 | 0.18 | 1.19 | -6.25 | 0.24 |

Sample Calculation:

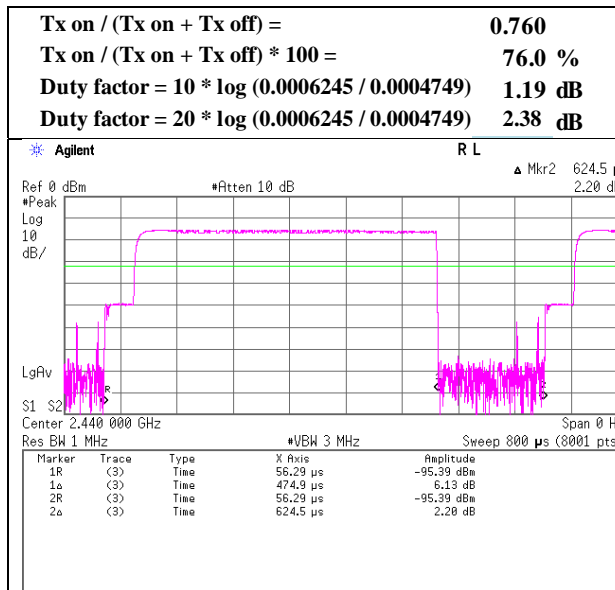
Result (Frame power) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuatc
Result (Burst power) = Frame power + Duty factor

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

Burst rate confirmation

| | |
|------------------------|------------------------------------|
| Test place | Shonan EMC Lab. No.5 Shielded Room |
| Report No. | 10988152S-A |
| Date | October 7, 2015 |
| Temperature / Humidity | 25 deg. C / 43 % RH |
| Engineer | Tomohiro Hara |
| Mode | Tx BT LE |

BTLE



Radiated Spurious Emission

Test place : Shonan EMC Lab. No.2, 3 Semi Anechoic Chamber
Report No. : 10988152S-A
Date : October 5, 2015 October 7, 2015
Temperature / Humidity : 26 deg. C / 46 % RH 26 deg. C / 46 % RH
Engineer : Hiroyuki Morikawa Wataru Kojima
 (1-25 GHz) (30-1000 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. | 167.431 | QP | 22.4 | 15.5 | 8.7 | 31.8 | 0.0 | 14.8 | 43.5 | 28.7 | 200 | 349 | |
| Hori. | 443.974 | QP | 21.8 | 16.8 | 7.5 | 31.6 | 0.0 | 14.5 | 46.0 | 31.5 | 150 | 244 | |
| Hori. | 2390.000 | PK | 45.6 | 27.8 | 13.7 | 41.0 | 3.5 | 49.6 | 73.9 | 24.3 | 100 | 325 | |
| Hori. | 4804.000 | PK | 52.4 | 31.4 | 5.7 | 39.6 | 3.5 | 53.4 | 73.9 | 20.5 | 111 | 341 | |
| Hori. | 7206.000 | PK | 45.0 | 36.9 | 7.1 | 40.1 | 3.5 | 52.4 | 73.9 | 21.5 | 100 | 0 | |
| Hori. | 9608.000 | PK | 44.0 | 38.5 | 8.2 | 39.6 | 3.5 | 54.6 | 73.9 | 19.3 | 100 | 0 | |
| Vert. | 213.336 | QP | 22.1 | 16.5 | 9.0 | 31.7 | 0.0 | 15.9 | 43.5 | 27.6 | 100 | 153 | |
| Vert. | 282.510 | QP | 21.9 | 18.6 | 9.6 | 31.7 | 0.0 | 18.4 | 46.0 | 27.6 | 100 | 241 | |
| Vert. | 623.806 | QP | 21.9 | 19.3 | 8.4 | 31.6 | 0.0 | 18.0 | 46.0 | 28.0 | 100 | 359 | |
| Vert. | 664.455 | QP | 22.0 | 19.9 | 8.6 | 31.5 | 0.0 | 19.0 | 46.0 | 27.0 | 100 | 358 | |
| Vert. | 2390.000 | PK | 46.5 | 27.8 | 13.7 | 41.0 | 3.5 | 50.5 | 73.9 | 23.4 | 184 | 34 | |
| Vert. | 4804.000 | PK | 51.8 | 31.4 | 5.7 | 39.6 | 3.5 | 52.8 | 73.9 | 21.1 | 132 | 0 | |
| Vert. | 7206.000 | PK | 45.1 | 36.9 | 7.1 | 40.1 | 3.5 | 52.5 | 73.9 | 21.4 | 100 | 0 | |
| Vert. | 9608.000 | PK | 44.7 | 38.5 | 8.2 | 39.6 | 3.5 | 55.3 | 73.9 | 18.6 | 100 | 0 | |

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

Distance factor : 1 GHz - 13 GHz : 20log(4.48 m / 3.0 m) = 3.5 dB

13 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 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 | 36.8 | 27.8 | 13.7 | 41.0 | 2.4 | 3.5 | 43.2 | 53.9 | 10.7 | *1) |
| Hori. | 4804.000 | AV | 46.2 | 31.4 | 5.7 | 39.6 | 2.4 | 3.5 | 49.6 | 53.9 | 4.3 | |
| Hori. | 7206.000 | AV | 36.4 | 36.9 | 7.1 | 40.1 | 2.4 | 3.5 | 46.2 | 53.9 | 7.7 | |
| Hori. | 9608.000 | AV | 35.5 | 38.5 | 8.2 | 39.6 | 2.4 | 3.5 | 48.5 | 53.9 | 5.4 | |
| Vert. | 2390.000 | AV | 36.8 | 27.8 | 13.7 | 41.0 | 2.4 | 3.5 | 43.2 | 53.9 | 10.7 | *1) |
| Vert. | 4804.000 | AV | 44.7 | 31.4 | 5.7 | 39.6 | 2.4 | 3.5 | 48.1 | 53.9 | 5.8 | |
| Vert. | 7206.000 | AV | 36.4 | 36.9 | 7.1 | 40.1 | 2.4 | 3.5 | 46.2 | 53.9 | 7.7 | |
| Vert. | 9608.000 | AV | 35.4 | 38.5 | 8.2 | 39.6 | 2.4 | 3.5 | 48.4 | 53.9 | 5.5 | |

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

Distance factor : 1 GHz - 13 GHz : 20log(4.48 m / 3.0 m) = 3.5 dB

13 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 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 | 62.9 | 27.8 | 13.7 | 41.0 | 3.5 | 66.9 | - | - | Carrier |
| Hori. | 2400.000 | PK | 36.4 | 27.8 | 13.7 | 41.0 | 3.5 | 40.4 | 46.9 | 6.5 | |
| Vert. | 2402.000 | PK | 62.8 | 27.8 | 13.7 | 41.0 | 3.5 | 66.8 | - | - | Carrier |
| Vert. | 2400.000 | PK | 37.0 | 27.8 | 13.7 | 41.0 | 3.5 | 41.0 | 46.7 | 5.7 | |

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

Distance factor : 1 GHz - 13 GHz : 20log(4.48 m / 3.0 m) = 3.5 dB

13 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 dB

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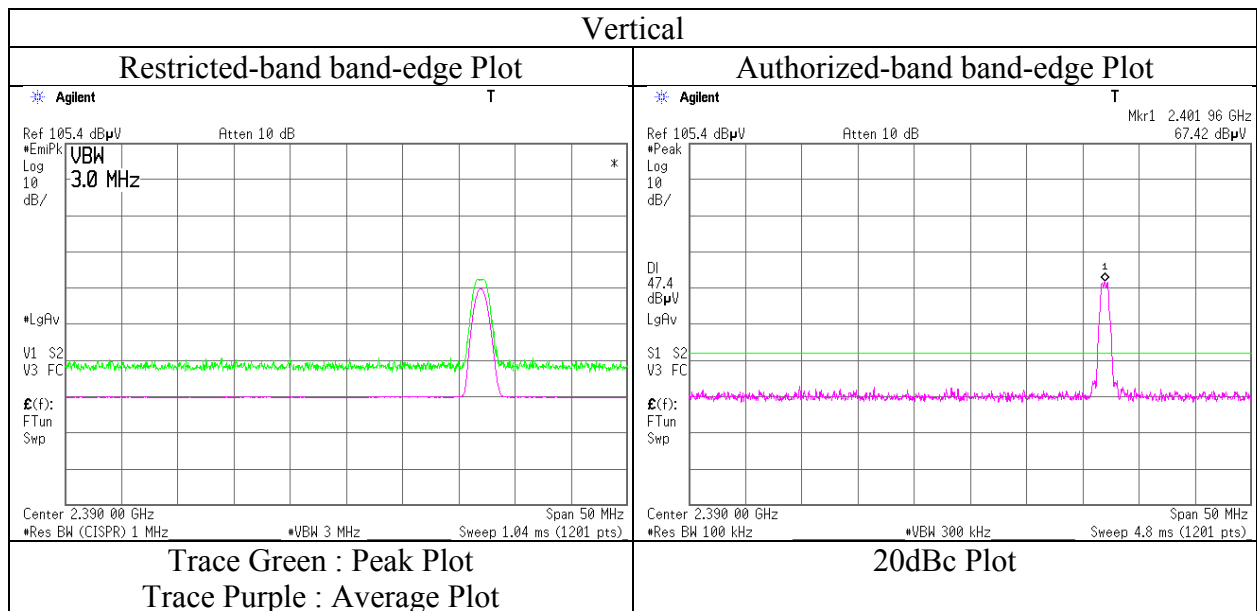
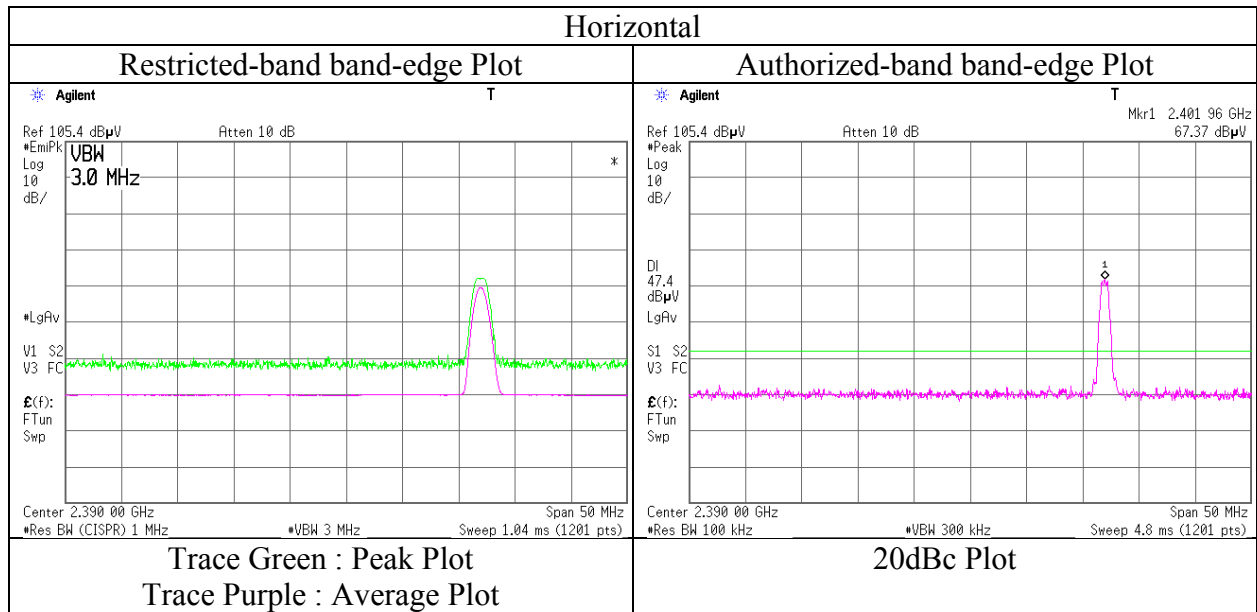
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Radiated Spurious Emission (Reference Plot for band-edge)

| | |
|------------------------|---------------------------------------------|
| Test place | Shonan EMC Lab. No. 3 Semi Anechoic Chamber |
| Report No. | 10988152S-A |
| Date | October 5, 2015 |
| Temperature / Humidity | 26 deg. C / 46 % RH |
| Engineer | Hiroyuki Morikawa |
| Mode | Tx BT LE 2440 MHz |



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

Radiated Spurious Emission

Test place : Shonan EMC Lab. No.2, 3 Semi Anechoic Chamber
Report No. : 10988152S-A
Date : October 5, 2015 October 7, 2015
Temperature / Humidity : 26 deg. C / 46 % RH 26 deg. C / 46 % RH
Engineer : Hiroyuki Morikawa Wataru Kojima
 (1-25 GHz) (30-1000 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. | 77.925 | QP | 28.5 | 6.3 | 8.0 | 31.9 | 0.0 | 10.9 | 40.0 | 29.1 | 150 | 41 | |
| Hori. | 167.417 | QP | 22.4 | 15.5 | 8.7 | 31.8 | 0.0 | 14.8 | 43.5 | 28.7 | 150 | 110 | |
| Hori. | 444.354 | QP | 21.8 | 16.8 | 7.5 | 31.6 | 0.0 | 14.5 | 46.0 | 31.5 | 150 | 264 | |
| Hori. | 4880.000 | PK | 54.5 | 31.7 | 5.8 | 39.5 | 3.5 | 56.0 | 73.9 | 17.9 | 112 | 349 | |
| Hori. | 7320.000 | PK | 45.3 | 36.9 | 7.2 | 40.2 | 3.5 | 52.7 | 73.9 | 21.2 | 100 | 0 | |
| Hori. | 9760.000 | PK | 44.9 | 38.5 | 8.2 | 39.5 | 3.5 | 55.6 | 73.9 | 18.3 | 100 | 0 | |
| Vert. | 65.102 | QP | 30.1 | 7.0 | 7.0 | 31.9 | 0.0 | 12.2 | 40.0 | 27.8 | 100 | 305 | |
| Vert. | 96.182 | QP | 28.3 | 9.4 | 8.0 | 31.9 | 0.0 | 13.8 | 43.5 | 29.7 | 100 | 1 | |
| Vert. | 213.336 | QP | 22.0 | 16.5 | 9.0 | 31.7 | 0.0 | 15.8 | 43.5 | 27.7 | 100 | 119 | |
| Vert. | 282.164 | QP | 22.0 | 18.6 | 9.6 | 31.7 | 0.0 | 18.5 | 46.0 | 27.5 | 100 | 58 | |
| Vert. | 623.673 | QP | 21.9 | 19.3 | 8.4 | 31.6 | 0.0 | 18.0 | 46.0 | 28.0 | 100 | 3 | |
| Vert. | 664.635 | QP | 22.0 | 19.9 | 8.6 | 31.5 | 0.0 | 19.0 | 46.0 | 27.0 | 100 | 11 | |
| Vert. | 4880.000 | PK | 50.4 | 31.7 | 5.8 | 39.5 | 3.5 | 51.9 | 73.9 | 22.0 | 100 | 348 | |
| Vert. | 7320.000 | PK | 45.7 | 36.9 | 7.2 | 40.2 | 3.5 | 53.1 | 73.9 | 20.8 | 100 | 0 | |
| Vert. | 9760.000 | PK | 44.5 | 38.5 | 8.2 | 39.5 | 3.5 | 55.2 | 73.9 | 18.7 | 100 | 0 | |

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

Distance factor : 1 GHz - 13 GHz : $20\log(4.48\text{ m} / 3.0\text{ m}) = 3.5\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Average measurement value with duty factor

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Distance Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|----------------------|-----------------|----------------|-------------|--------|
| Hori. | 4880.000 | AV | 48.1 | 31.7 | 5.8 | 39.5 | 2.4 | 3.5 | 52.0 | 53.9 | 1.9 | |
| Hori. | 7320.000 | AV | 37.1 | 36.9 | 7.2 | 40.2 | 2.4 | 3.5 | 46.9 | 53.9 | 7.0 | |
| Hori. | 9760.000 | AV | 35.8 | 38.5 | 8.2 | 39.5 | 2.4 | 3.5 | 48.9 | 53.9 | 5.0 | |
| Vert. | 4880.000 | AV | 43.4 | 31.7 | 5.8 | 39.5 | 2.4 | 3.5 | 47.3 | 53.9 | 6.6 | |
| Vert. | 7320.000 | AV | 36.8 | 36.9 | 7.2 | 40.2 | 2.4 | 3.5 | 46.6 | 53.9 | 7.3 | |
| Vert. | 9760.000 | AV | 35.9 | 38.5 | 8.2 | 39.5 | 2.4 | 3.5 | 49.0 | 53.9 | 4.9 | |

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

Distance factor : 1 GHz - 13 GHz : $20\log(4.48\text{ m} / 3.0\text{ m}) = 3.5\text{ dB}$

13 GHz - 40 GHz : $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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

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

Radiated Spurious Emission

Test place : Shonan EMC Lab. No.2, 3 Semi Anechoic Chamber
Report No. : 10988152S-A
Date : October 5, 2015 October 7, 2015
Temperature / Humidity : 26 deg. C / 46 % RH 26 deg. C / 46 % RH
Engineer : Hiroyuki Morikawa Wataru Kojima
 (1-25 GHz) (30-1000 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. | 167.437 | QP | 22.4 | 15.5 | 8.7 | 31.8 | 0.0 | 14.8 | 43.5 | 28.7 | 300 | 352 | |
| Hori. | 444.228 | QP | 21.8 | 16.8 | 7.5 | 31.6 | 0.0 | 14.5 | 46.0 | 31.5 | 150 | 355 | |
| Hori. | 2483.500 | PK | 46.1 | 27.9 | 13.8 | 41.0 | 3.5 | 50.3 | 73.9 | 23.6 | 100 | 0 | |
| Hori. | 4960.000 | PK | 56.9 | 32.0 | 5.8 | 39.4 | 3.5 | 58.8 | 73.9 | 15.1 | 108 | 326 | |
| Hori. | 7440.000 | PK | 45.4 | 37.0 | 7.2 | 40.4 | 3.5 | 52.7 | 73.9 | 21.2 | 100 | 0 | |
| Hori. | 9920.000 | PK | 45.0 | 38.4 | 8.2 | 39.4 | 3.5 | 55.7 | 73.9 | 18.2 | 100 | 0 | |
| Vert. | 213.355 | QP | 22.4 | 16.5 | 9.0 | 31.7 | 0.0 | 16.2 | 43.5 | 27.3 | 100 | 351 | |
| Vert. | 282.191 | QP | 22.1 | 18.6 | 9.6 | 31.7 | 0.0 | 18.6 | 46.0 | 27.4 | 100 | 116 | |
| Vert. | 623.096 | QP | 22.2 | 19.3 | 8.4 | 31.6 | 0.0 | 18.3 | 46.0 | 27.7 | 100 | 74 | |
| Vert. | 664.311 | QP | 22.0 | 19.9 | 8.6 | 31.5 | 0.0 | 19.0 | 46.0 | 27.0 | 100 | 238 | |
| Vert. | 2483.500 | PK | 45.0 | 27.9 | 13.8 | 41.0 | 3.5 | 49.2 | 73.9 | 24.7 | 128 | 0 | |
| Vert. | 4960.000 | PK | 55.3 | 32.0 | 5.8 | 39.4 | 3.5 | 57.2 | 73.9 | 16.7 | 130 | 0 | |
| Vert. | 7440.000 | PK | 46.3 | 37.0 | 7.2 | 40.4 | 3.5 | 53.6 | 73.9 | 20.3 | 100 | 0 | |
| Vert. | 9920.000 | PK | 44.4 | 38.4 | 8.2 | 39.4 | 3.5 | 55.1 | 73.9 | 18.8 | 100 | 0 | |

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

Distance factor : 1 GHz - 13 GHz : 20log(4.48 m / 3.0 m) = 3.5 dB

13 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 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 | 36.8 | 27.9 | 13.8 | 41.0 | 2.4 | 3.5 | 43.4 | 53.9 | 10.5 | *1) |
| Hori. | 4960.000 | AV | 48.4 | 32.0 | 5.8 | 39.4 | 2.4 | 3.5 | 52.7 | 53.9 | 1.2 | |
| Hori. | 7440.000 | AV | 37.1 | 37.0 | 7.2 | 40.4 | 2.4 | 3.5 | 46.8 | 53.9 | 7.1 | |
| Hori. | 9920.000 | AV | 36.2 | 38.4 | 8.2 | 39.4 | 2.4 | 3.5 | 49.3 | 53.9 | 4.6 | |
| Vert. | 2483.500 | AV | 36.6 | 27.9 | 13.8 | 41.0 | 2.4 | 3.5 | 43.2 | 53.9 | 10.7 | *1) |
| Vert. | 4960.000 | AV | 45.2 | 32.0 | 5.8 | 39.4 | 2.4 | 3.5 | 49.5 | 53.9 | 4.4 | |
| Vert. | 7440.000 | AV | 37.0 | 37.0 | 7.2 | 40.4 | 2.4 | 3.5 | 46.7 | 53.9 | 7.2 | |
| Vert. | 9920.000 | AV | 36.0 | 38.4 | 8.2 | 39.4 | 2.4 | 3.5 | 49.1 | 53.9 | 4.8 | |

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

Distance factor : 1 GHz - 13 GHz : 20log(4.48 m / 3.0 m) = 3.5 dB

13 GHz - 40 GHz : 20log(1.0 m / 3.0 m) = -9.5 dB

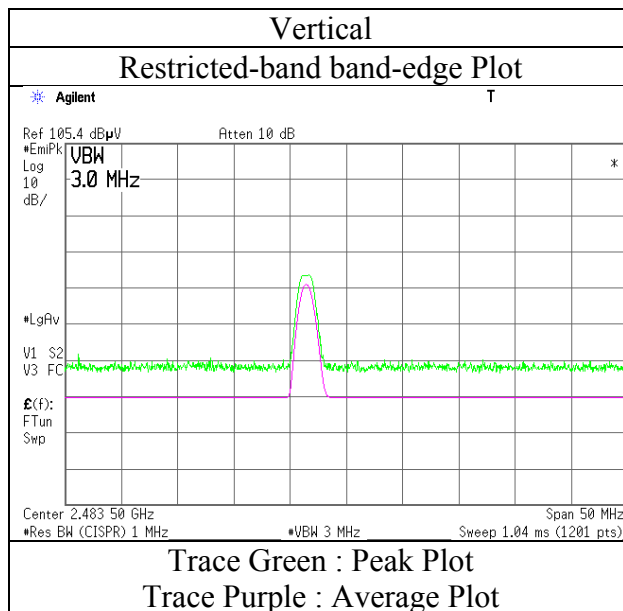
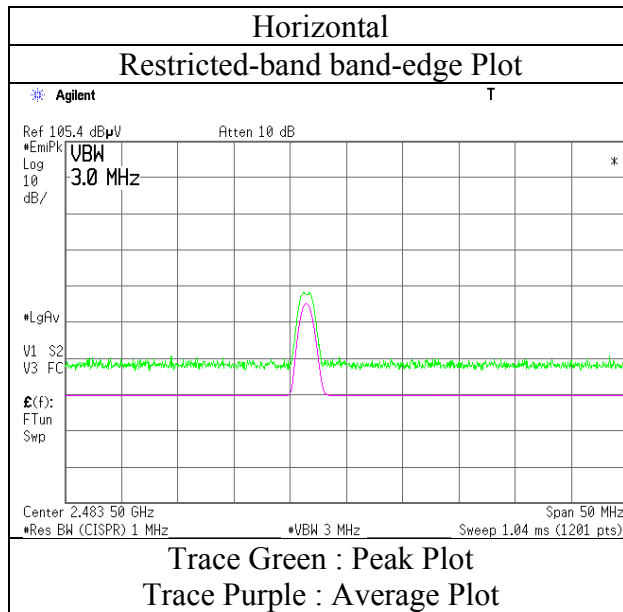
Duty factor refer to "Duty factor Calculation chart" sheet.

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

Radiated Spurious Emission
(Reference Plot for band-edge)

Test place : Shonan EMC Lab. No. 3 Semi Anechoic Chamber
Report No. : 10988152S-A
Date : October 5, 2015
Temperature / Humidity : 26 deg. C / 46 % RH
Engineer : Hiroyuki Morikawa

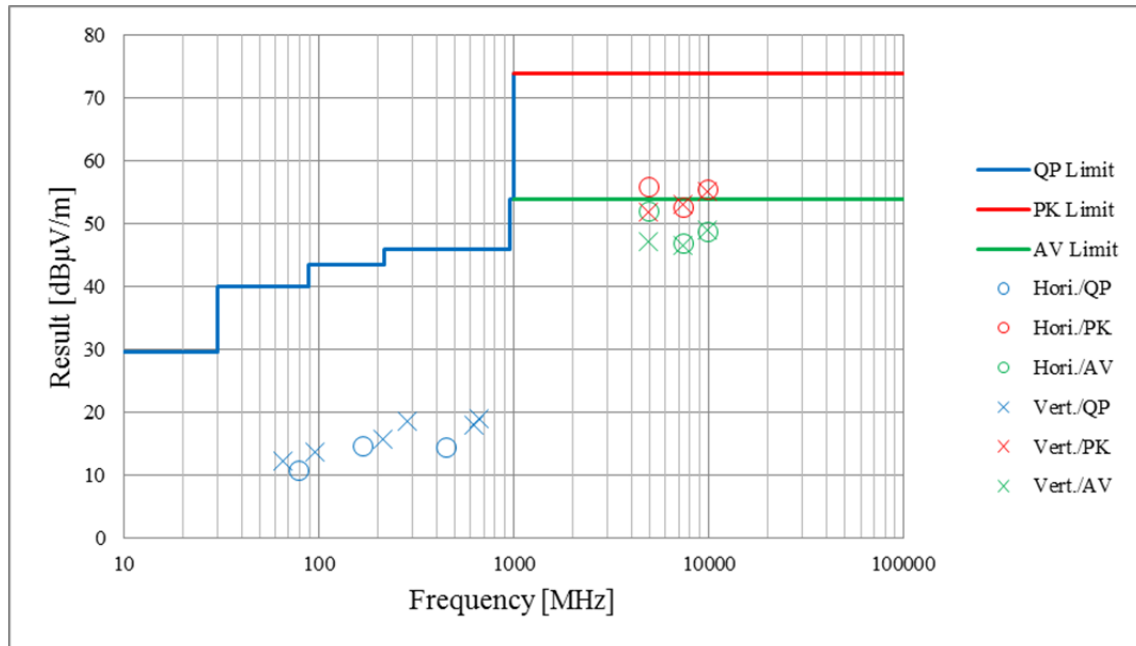
Mode : Tx BT LE 2480 MHz



* 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, 3 Semi Anechoic Chamber | |
| Report No. | 10988152S-A | |
| Date | October 5, 2015 | October 7, 2015 |
| Temperature / Humidity | 26 deg. C / 46 % RH | 26 deg. C / 46 % RH |
| Engineer | Hiroyuki Morikawa (1-25 GHz) | Wataru Kojima (30-1000 MHz) |
| Mode | Tx BT LE 2480 MHz | |



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

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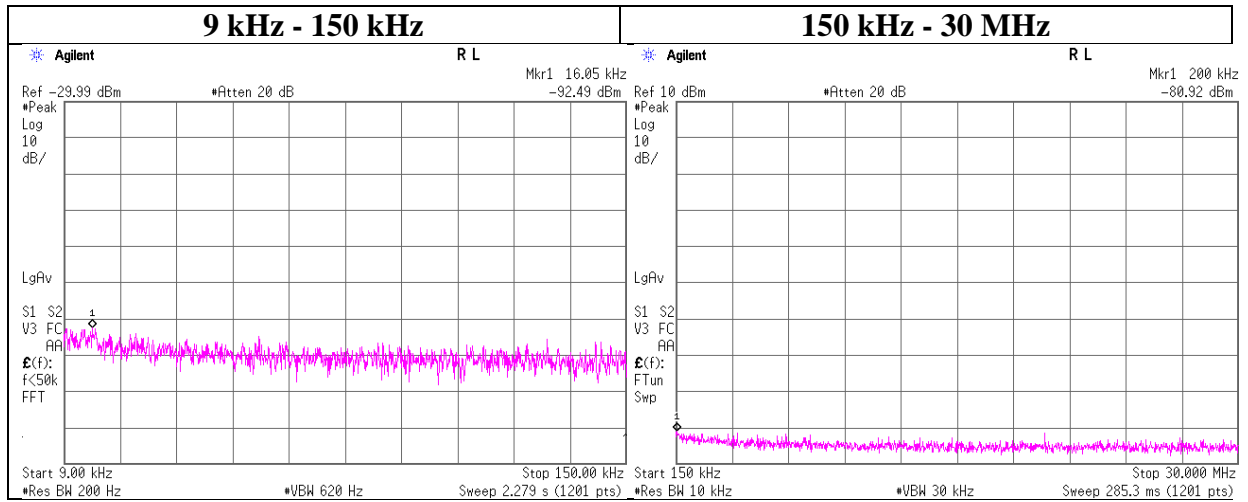
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Shonan EMC Lab. No.5 Shielded Room |
| Report No. | 10988152S-A |
| Date | October 7, 2015 |
| Temperature / Humidity | 25 deg. C / 43 % RH |
| Engineer | Tomohiro Hara |
| Mode | Tx BT LE 2402 MHz |



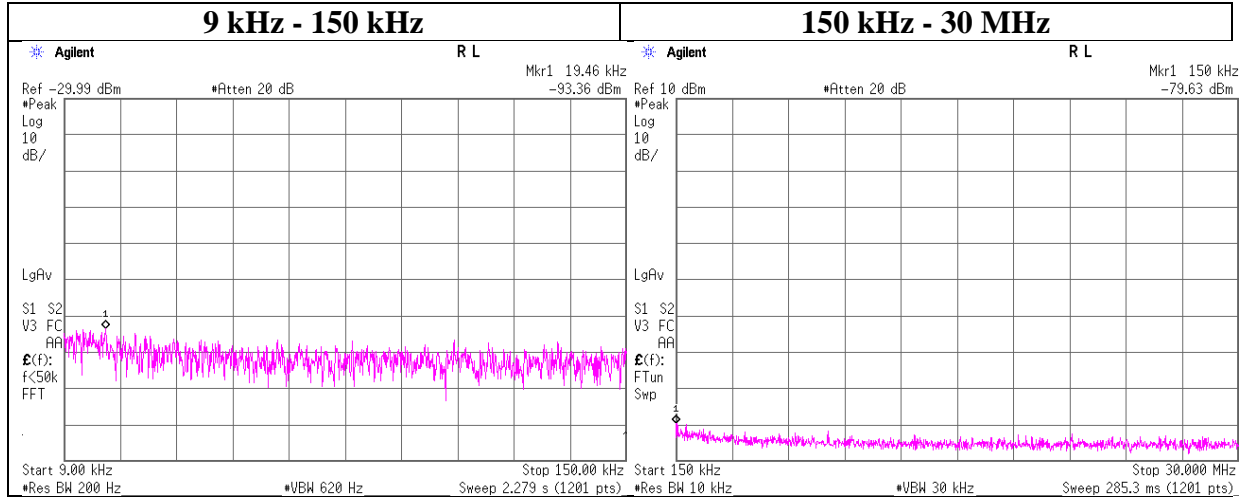
| Frequency [kHz] | Reading [dBm] | Cable Loss [dB] | Attenuator Loss [dB] | Antenna Gain [dBi] | N (Number of Output) | EIRP [dBm] | Distance [m] | Ground bounce [dB] | E (field strength) [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|--------------------|------------------|-----------------------|----------------------------|--------------------------|----------------------------|---------------|-----------------|--------------------------|-----------------------------------|-------------------|----------------|--------|
| 16.05 | -92.5 | 0.01 | 9.5 | 15.2 | 1 | -67.7 | 300 | 6.0 | -6.5 | 43.4 | 49.9 | |
| 200.00 | -80.9 | 0.01 | 9.5 | 15.2 | 1 | -56.1 | 300 | 6.0 | 5.1 | 21.5 | 16.4 | |

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

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

Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Shonan EMC Lab. No.5 Shielded Room |
| Report No. | 10988152S-A |
| Date | October 7, 2015 |
| Temperature / Humidity | 25 deg. C / 43 % RH |
| Engineer | Tomohiro Hara |
| Mode | Tx BT LE 2440 MHz |



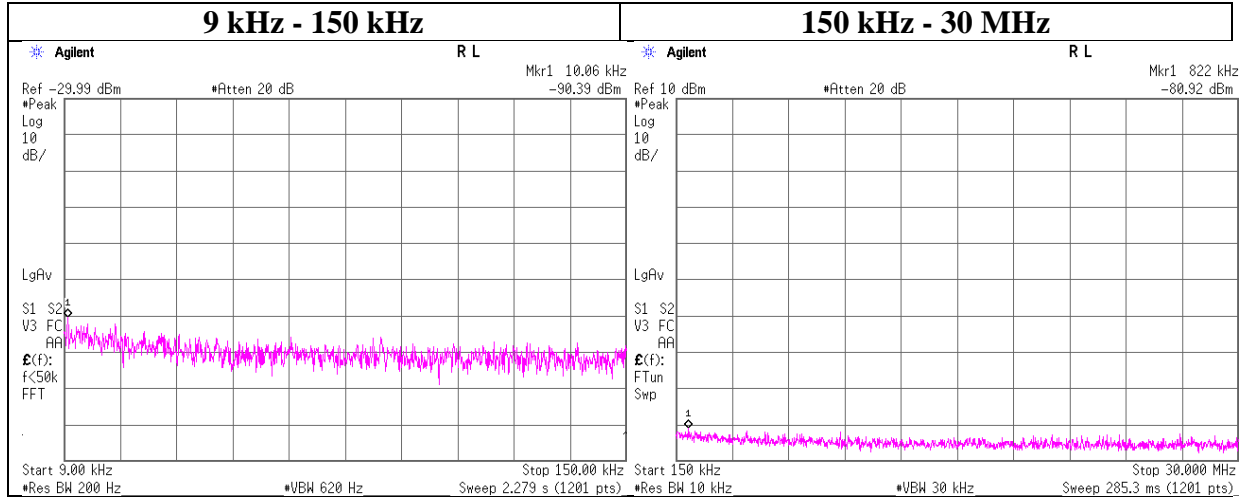
| Frequency [kHz] | Reading [dBm] | Cable Loss [dB] | Attenuator Loss [dB] | Antenna Gain [dBi] | N (Number of Output) | EIRP [dBm] | Distance [m] | Ground bounce [dB] | E (field strength) [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|--------------------|------------------|-----------------------|----------------------------|--------------------------|----------------------------|---------------|-----------------|--------------------------|-----------------------------------|-------------------|----------------|--------|
| 19.46 | -93.4 | 0.01 | 9.5 | 15.2 | 1 | -68.6 | 300 | 6.0 | -7.3 | 41.8 | 49.1 | |
| 150.00 | -79.6 | 0.01 | 9.5 | 15.2 | 1 | -54.9 | 300 | 6.0 | 6.4 | 24.0 | 17.6 | |

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

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

Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Shonan EMC Lab. No.5 Shielded Room |
| Report No. | 10988152S-A |
| Date | October 7, 2015 |
| Temperature / Humidity | 25 deg. C / 43 % RH |
| Engineer | Tomohiro Hara |
| Mode | Tx BT LE 2480 MHz |



| Frequency [kHz] | Reading [dBm] | Cable Loss [dB] | Attenuator Loss [dB] | Antenna Gain [dBi] | N (Number of Output) | EIRP [dBm] | Distance [m] | Ground bounce [dB] | E (field strength) [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|--------------------|------------------|-----------------------|----------------------------|--------------------------|----------------------------|---------------|-----------------|--------------------------|-----------------------------------|-------------------|----------------|--------|
| 10.06 | -90.4 | 0.01 | 9.5 | 15.2 | 1 | -65.6 | 300 | 6.0 | -4.4 | 47.5 | 51.9 | |
| 822.00 | -80.9 | 0.01 | 9.5 | 15.2 | 1 | -56.1 | 30 | 6.0 | 25.1 | 29.3 | 4.2 | |

$E = \text{EIRP} - 20 \log(D) + \text{Ground bounce} + 104.8 \text{ [dBuV/m]}$
 $\text{EIRP} = \text{Reading} + \text{Cable Loss} + \text{Attenuator Loss} + \text{Antenna Gain} + 10 * \log(N)$

Power Density

Test place Shonan EMC Lab. No.5 Shielded Room
Report No. 10988152S-A
Date October 7, 2015
Temperature / Humidity 25 deg. C / 43 % RH
Engineer Tomohiro Hara
Mode Tx BT LE

BTLE

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result [dBm] | Limit [dBm] | Margin [dB] |
|----------------|------------------|-----------------------|------------------------|-----------------|----------------|----------------|
| 2402.00 | -29.88 | 0.62 | 9.63 | -19.63 | 8.00 | 27.63 |
| 2440.00 | -29.28 | 0.63 | 9.63 | -19.02 | 8.00 | 27.02 |
| 2480.00 | -29.11 | 0.64 | 9.63 | -18.84 | 8.00 | 26.84 |

Sample Calculation:

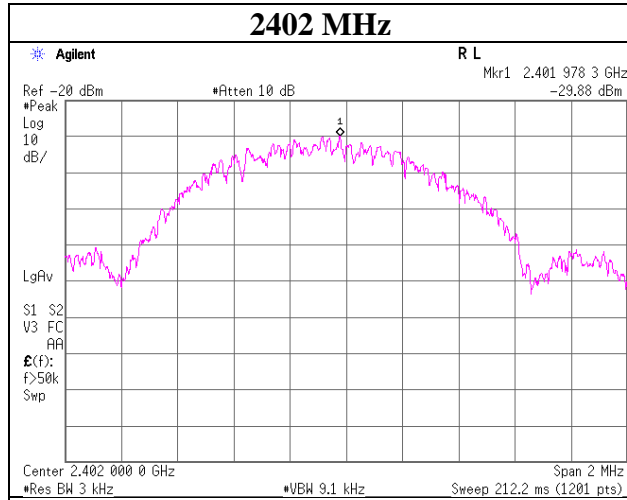
Result = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator

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

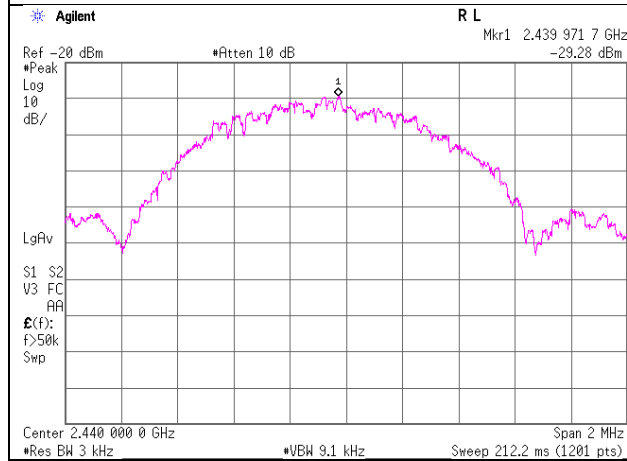
Power Density

BTLE

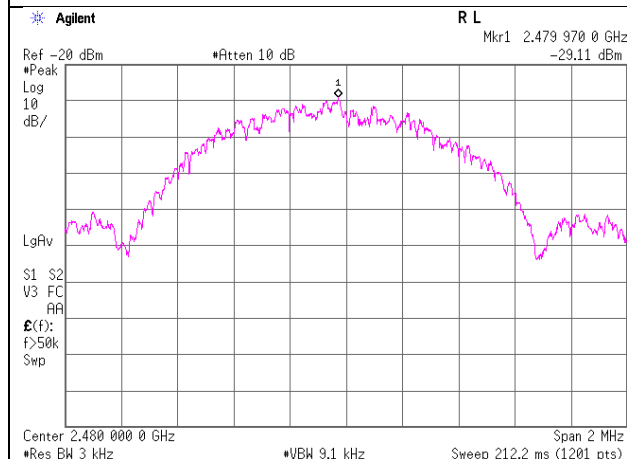
2402 MHz



2440 MHz



2480 MHz



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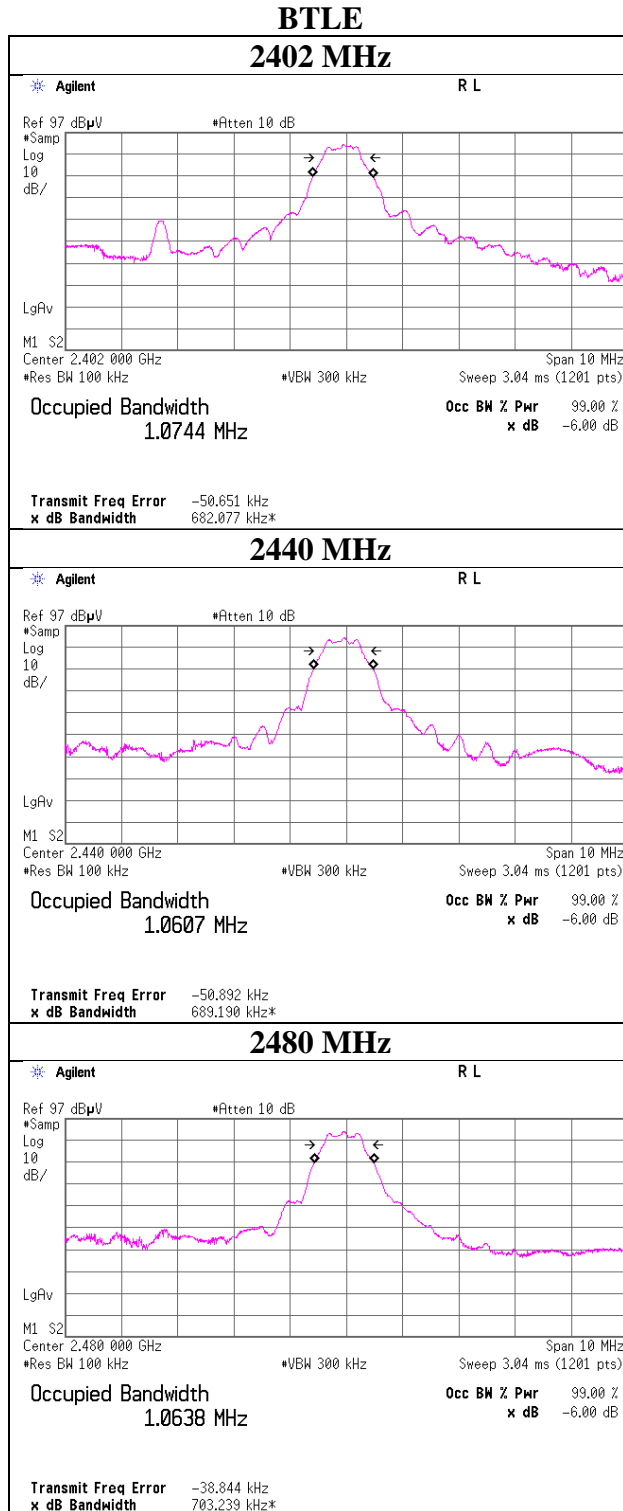
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

99% Occupied Bandwidth

| | |
|------------------------|------------------------------------|
| Test place | Shonan EMC Lab. No.5 Shielded Room |
| Report No. | 10988152S-A |
| Date | October 7, 2015 |
| Temperature / Humidity | 25 deg. C / 43 % RH |
| Engineer | Tomohiro Hara |
| Mode | Tx BT LE |



APPENDIX 2: Test instruments

Test equipment

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|---------------------------------|---------------------------|---------------------------------------------|--------------------------------------------|-------------------------|-----------|---------------------------------------|
| SAF-06 | Pre Amplifier | TOYO Corporation | TPA0118-36 | 1440491 | RE | 2015/05/27 * 12 |
| SCC-G04 | Coaxial Cable | Junkosha | J12J102207-00 | JUN-12-14-018 | RE | 2015/06/08 * 12 |
| SCC-G23 | Coaxial Cable | Suhner | SUCOFLEX 104 | 297342/4 | RE | 2015/05/19 * 12 |
| SHA-03 | Horn Antenna | Schwarzbeck | BBHA9120D | 9120D-739 | RE | 2015/08/11 * 12 |
| SOS-05 | Humidity Indicator | A&D | AD-5681 | 4062518 | RE | 2014/10/30 * 12 |
| KSA-08 | Spectrum Analyzer | Agilent | E4446A | MY46180525 | RE | 2015/03/23 * 12 |
| SJM-15 | Measure | ASKUL | - | - | RE | - |
| SAEC-03(SVS WR) | Semi-Anechoic Chamber | TDK | SAEC-03(SVSWR) | 3 | RE | 2015/08/28 * 12 |
| COTS-SEMI-1 | EMI Software | TSJ | TEPTO-DV(RE,CE,RFI,MF) | - | RE | - |
| SAT10-06 | Attenuator | Agilent | 8493C-010 | 74865 | RE | 2014/11/21 * 12 |
| SFL-02 | Highpass Filter | MICRO-TRONICS | HPM50111 | 051 | RE | 2014/11/21 * 12 |
| SHA-04 | Horn Antenna | ETS LINDGREN | 3160-09 | LM3640 | RE | 2015/03/17 * 12 |
| SAF-08 | Pre Amplifier | TOYO Corporation | HAP18-26W | 00000019 | RE | 2015/03/23 * 12 |
| SCC-G15 | Coaxial Cable | Suhner | SUCOFLEX 102 | 32703/2 | RE | 2015/03/11 * 12 |
| SOS-09 | Humidity Indicator | A&D | AD-5681 | 4061484 | AT | 2014/12/24 * 12 |
| KSA-08 | Spectrum Analyzer | Agilent | E4446A | MY46180525 | AT | 2015/03/23 * 12 |
| SAT10-09 | Attenuator | Weinschel Corp. | 54A-10 | W5692 | AT | 2014/11/21 * 12 |
| SCC-G31 | Coaxial Cable | Junkosha | MWX241-01000K MSKMS | OCT-08-13-046 | AT | 2015/04/09 * 12 |
| SPM-06 | Power Meter | Anritsu | ML2495A | 0850009 | AT | 2015/04/07 * 12 |
| SPSS-03 | Power sensor | Anritsu | MA2411B | 0917063 | AT | 2015/04/07 * 12 |
| SAF-02 | Pre Amplifier | SONOMA | 310N | 290212 | RE | 2015/02/18 * 12 |
| SAT6-02 | Attenuator | JFW | 50HF-006N | - | RE | 2015/02/18 * 12 |
| KAT3-11 | Attenuator | JFW IND. INC. | 50HF-003N | - | RE | 2015/08/31 * 12 |
| SBA-02 | Biconical Antenna | Schwarzbeck | BBA9106 | 91032665 | RE | 2014/11/22 * 12 |
| SCC-B1/B3/B5/B7/B8/B13/SRS E-02 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-270(RF Selector) | RE | 2015/04/17 * 12 |
| SCC-B2/B4/B6/B7/B8/B13/SRS E-02 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-270(RF Selector) | RE | 2015/04/17 * 12 |
| SLA-02 | Logperiodic Antenna | Schwarzbeck | UHALP9108A | UHALP 9108-A 0893 | RE | 2014/11/22 * 12 |
| SOS-03 | Humidity Indicator | A&D | AD-5681 | 4063325 | RE | 2014/10/30 * 12 |
| STR-02 | Test Receiver | Rohde & Schwarz | ESCI | 100575 | RE | 2015/09/11 * 12 |
| SJM-14 | Measure | ASKUL | - | - | RE | - |
| SAEC-02(NSA) | Semi-Anechoic Chamber | TDK | SAEC-02(NSA) | 2 | RE | 2015/07/15 * 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

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