



# **RADIO TEST REPORT**

**Test Report No. : 11334871S-C-R1**

**Applicant** : Nintendo Co., Ltd.  
**Type of Equipment** : Game Console  
**Model No.** : HAC-001  
(for Bluetooth part)  
**FCC ID** : BKEHAC001  
**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 11334871S-C. 11334871S-C is replaced with this report.

**Date of test:** October 17 to November 11, 2016

**Representative test engineer:**

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**Approved by:**

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Akio Hayashi  
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Consumer Technology Division



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

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13-EM-F0429

## REVISION HISTORY

**Original Test Report No.: 11334871S-C**

[illegible]

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| <b>CONTENTS</b>                                                     | <b>PAGE</b> |
|---------------------------------------------------------------------|-------------|
| <b>SECTION 1: Customer information.....</b>                         | <b>4</b>    |
| <b>SECTION 2: Equipment under test (E.U.T.).....</b>                | <b>4</b>    |
| <b>SECTION 3: Test specification, procedures &amp; results.....</b> | <b>5</b>    |
| <b>SECTION 4: Operation of E.U.T. during testing.....</b>           | <b>8</b>    |
| <b>SECTION 5: Conducted Emission.....</b>                           | <b>11</b>   |
| <b>SECTION 6: Radiated Spurious Emission .....</b>                  | <b>12</b>   |
| <b>SECTION 7: Antenna Terminal Conducted Tests.....</b>             | <b>13</b>   |
| <b>APPENDIX 1: Test data .....</b>                                  | <b>14</b>   |
| Conducted Emission .....                                            | 14          |
| 20 dB Bandwidth and Carrier Frequency Separation.....               | 18          |
| Number of Hopping Frequency .....                                   | 21          |
| Dwell time.....                                                     | 23          |
| Maximum Peak Output Power .....                                     | 30          |
| Average Output Power .....                                          | 31          |
| Burst Rate Confirmation .....                                       | 32          |
| Radiated Spurious Emission .....                                    | 33          |
| Conducted Spurious Emission .....                                   | 45          |
| Conducted Emission Band Edge compliance .....                       | 51          |
| 99 %Occupied Bandwidth .....                                        | 53          |
| <b>APPENDIX 2: Test instruments .....</b>                           | <b>55</b>   |
| <b>APPENDIX 3: Photographs of test setup .....</b>                  | <b>57</b>   |
| Conducted Emission .....                                            | 57          |
| Radiated Spurious Emission .....                                    | 58          |
| Pre-check of Worst Case Position.....                               | 59          |

## **SECTION 1: Customer information**

|                  |   |                                                               |
|------------------|---|---------------------------------------------------------------|
| Company Name     | : | Nintendo Co., Ltd.                                            |
| Address          | : | 11-1 Hokotate-cho, Kamitoba, Minami-ku, Kyoto 601-8501, Japan |
| Telephone Number | : | +81-75-662-9600                                               |
| Facsimile Number | : | +81-75-662-9624                                               |
| Contact Person   | : | Kazuya Kuramoto                                               |

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

### **2.1 Identification of E.U.T.**

|                            |   |                                                                                                                         |
|----------------------------|---|-------------------------------------------------------------------------------------------------------------------------|
| Type of Equipment          | : | Game Console                                                                                                            |
| Model No.                  | : | HAC-001                                                                                                                 |
| Serial No.                 | : | Refer to Section 4, Clause 4.2                                                                                          |
| Rating                     | : | DC 3.7 V (battery),<br>AC Adapter input: AC 100 – 240 V, 50 / 60 Hz, 1 A,<br>AC Adapter output: DC 5 V – DC 15 V, 2.6 A |
| Receipt Date of Sample     | : | September 3, 2016                                                                                                       |
| Country of Mass-production | : | China                                                                                                                   |
| Condition of EUT           | : | Production prototype<br>(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: HAC-001 (referred to as the EUT in this report) is an Game Console.

### **General Specification**

Clock frequency(ies) in the system : 37.4 MHz

### **Radio Specification**

|                        |   |                                                                                                                                                                                                                      |
|------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radio Type             | : | Transceiver                                                                                                                                                                                                          |
| Frequency of Operation | : | Wireless LAN part: 2412 MHz - 2472 MHz,<br>W52: 5180 MHz - 5240 MHz,<br>W53: 5260 MHz - 5320 MHz,<br>W56: 5500 MHz - 5700 MHz *,<br>W58: 5745 MHz - 5825 MHz *,<br>Bluetooth part: 2402 MHz - 2480 MHz               |
| Modulation             | : | Wireless LAN part:<br>2.4 GHz bands: DBPSK, DQPSK, CCK, OFDM<br>5 GHz bands: OFDM<br>Bluetooth part:<br>BDR (Basic Data Rate): GFSK<br>EDR (Enhanced Data Rate): $\pi/4$ -DQPSK, 8DPSK<br>LE (Low Energy mode): GFSK |
| Antenna type           | : | PCB Antenna (Dipole)                                                                                                                                                                                                 |
| Antenna connector      | : | (Ant: 0): MHF 4L, (Ant: 1): MHF II                                                                                                                                                                                   |
| Antenna Gain           | : | 2.4 GHz band:<br>-0.70 dBi max (ANT0: Wireless LAN & Bluetooth), -8.38 dBi max (ANT1: Wireless LAN)<br>5 GHz band:<br>+3.31 dBi max (ANT0: Wireless LAN), -0.96 dBi max (ANT1: Wireless LAN)                         |
| Operation temperature  | : | +5 deg.C to +35 deg.C                                                                                                                                                                                                |

Remarks: This Wireless Module consists of 1 chip each of 5 GHz band and 2.4 GHz band.

\*This model does not have 40 MHz Bandwidth mode on W56 and W58.

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## **SECTION 3: Test specification, procedures & results**

### **3.1 Test Specification**

Test Specification : FCC Part 15 Subpart C  
FCC Part 15 final revised on November 14, 2016 and effective December 14, 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

\* The revision on November 14, 2016, does not affect the test specification applied to the EUT.

\*\* The EUT has been tested for compliance with FCC Part 15 Subpart B / ICES-003 Issue 6: 2016.

### **3.2 Procedures and results**

| Item                                     | Test Procedure                                                       | Specification                                                           | Worst Margin                                           | Results  | Remarks                                         |
|------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------|----------|-------------------------------------------------|
| Conducted Emission                       | FCC: ANSI C63.10-2013<br>6. Standard test methods<br>IC: RSS-Gen 8.8 | FCC: Section 15.207<br>IC: RSS-Gen 8.8                                  | 9.2 dB, AV,<br>(0.47180 MHz, N<br>Tx 2480 MHz, 3-DH5)  | Complied | -                                               |
| Carrier Frequency Separation             | FCC: FCC Public Notice<br>DA 00-705<br>IC: -                         | FCC: Section15.247(a)(1)<br>IC: RSS-247 5.1 (2)                         | See data.                                              | Complied | Conducted                                       |
| 20 dB Bandwidth                          | FCC: FCC Public Notice<br>DA 00-705<br>IC: -                         | FCC: Section15.247(a)(1)<br>IC: RSS-247 5.1 (1)                         |                                                        | Complied | Conducted                                       |
| Number of Hopping Frequency              | FCC: FCC Public Notice<br>DA 00-705<br>IC: -                         | FCC: Section15.247(a)(1)(iii)<br>IC: RSS-247 5.1 (4)                    |                                                        | Complied | Conducted                                       |
| Dwell time                               | FCC: FCC Public Notice<br>DA 00-705<br>IC: -                         | FCC: Section15.247(a)(1)(iii)<br>IC: RSS-247 5.1 (4)                    |                                                        | Complied | Conducted                                       |
| Maximum Peak Output Power                | FCC: FCC Public Notice<br>DA 00-705<br>IC: RSS-Gen 6.12              | FCC: Section15.247(a)(1),(b)(1)<br>IC: RSS-247 5.4 (2)                  |                                                        | Complied | Conducted                                       |
| Spurious Emission & Band Edge Compliance | FCC: FCC Public Notice<br>DA 00-705<br>IC: RSS-Gen 6.13              | FCC: Section15.247(d)<br>IC: RSS-247 5.5<br>RSS-Gen 8.9<br>RSS-Gen 8.10 | 7.5 dB<br>(215.989 MHz, QP, Hori.<br>Tx 2402 MHz, DH5) | Complied | Conducted/<br>Radiated<br>(above 30 MHz)<br>*1) |
| 99 % Occupied Bandwidth                  | IC: RSS-Gen 6.6                                                      | IC: -                                                                   | N/A                                                    | Complied | Conducted                                       |

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).

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

### **FCC Part 15.31 (e)**

This EUT provides stable voltage (DC 3.3 V) constantly to RF Part regardless of input voltage. 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 EUT complies with the 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  | 2.6 dB            | 2.5 dB         | 2.6 dB         | 2.5 dB         |
| Radiated emission<br>(Measurement distance: 3 m) | 9 kHz-30 MHz    | 3.1 dB            | 3.1 dB         | 3.1 dB         | -              |
|                                                  | 30 MHz-200 MHz  | 4.6 dB            | 4.4 dB         | 4.6 dB         | -              |
|                                                  | 200 MHz-1 GHz   | 5.8 dB            | 5.7 dB         | 5.8 dB         | -              |
|                                                  | 1 GHz-13 GHz    | 4.9 dB            | 4.9 dB         | 4.9 dB         | -              |
| Radiated emission<br>(Measurement distance: 1 m) | 13 GHz-18 GHz   | 4.6 dB            | 4.6 dB         | 4.6 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 | 0.72 dB           |
| Power Measurement above 1 GHz (Peak Detector)_SPM-06    | 0.85 dB           |
| Power Measurement above 1 GHz (Average Detector)_SPM-07 | 0.74 dB           |
| Power Measurement above 1 GHz (Peak Detector)_SPM-07    | 0.91 dB           |
| Spurious emission (Conducted) below 1GHz                | 1.6 dB            |
| Spurious emission (Conducted) 1 GHz-3 GHz               | 1.3 dB            |
| Spurious emission (Conducted) 3 GHz-18 GHz              | 2.2 dB            |
| Spurious emission (Conducted) 18 GHz-26.5 GHz           | 2.3 dB            |
| Spurious emission (Conducted) 26.5 GHz-40 GHz           | 2.4 dB            |
| Bandwidth Measurement                                   | 1.01 %            |
| 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                                                      | 10 m                         |
| No.2 Semi-anechoic chamber | 2973D-2                | 20.6 x 11.3 x 7.65         | 20.6 x 11.3                                                      | 10 m                         |
| No.3 Semi-anechoic chamber | 2973D-3                | 12.7 x 7.7 x 5.35          | 12.7 x 7.7                                                       | 5 m                          |
| No.4 Semi-anechoic chamber | -                      | 8.1 x 5.1 x 3.55           | 8.1 x 5.1                                                        | -                            |
| No.1 Shielded room         | -                      | 6.8 x 4.1 x 2.7            | 6.8 x 4.1                                                        | -                            |
| No.2 Shielded room         | -                      | 6.8 x 4.1 x 2.7            | 6.8 x 4.1                                                        | -                            |
| No.3 Shielded room         | -                      | 6.3 x 4.7 x 2.7            | 6.3 x 4.7                                                        | -                            |
| No.4 Shielded room         | -                      | 4.4 x 4.7 x 2.7            | 4.4 x 4.7                                                        | -                            |
| No.5 Shielded room         | -                      | 7.8 x 6.4 x 2.7            | 7.8 x 6.4                                                        | -                            |
| No.6 Shielded room         | -                      | 7.8 x 6.4 x 2.7            | 7.8 x 6.4                                                        | -                            |
| No.8 shielded room         | -                      | 3.45 x 5.5 x 2.4           | 3.45 x 5.5                                                       | -                            |
| No.1 Measurement room      | -                      | 2.55 x 4.1 x 2.5           | -                                                                | -                            |

### 3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

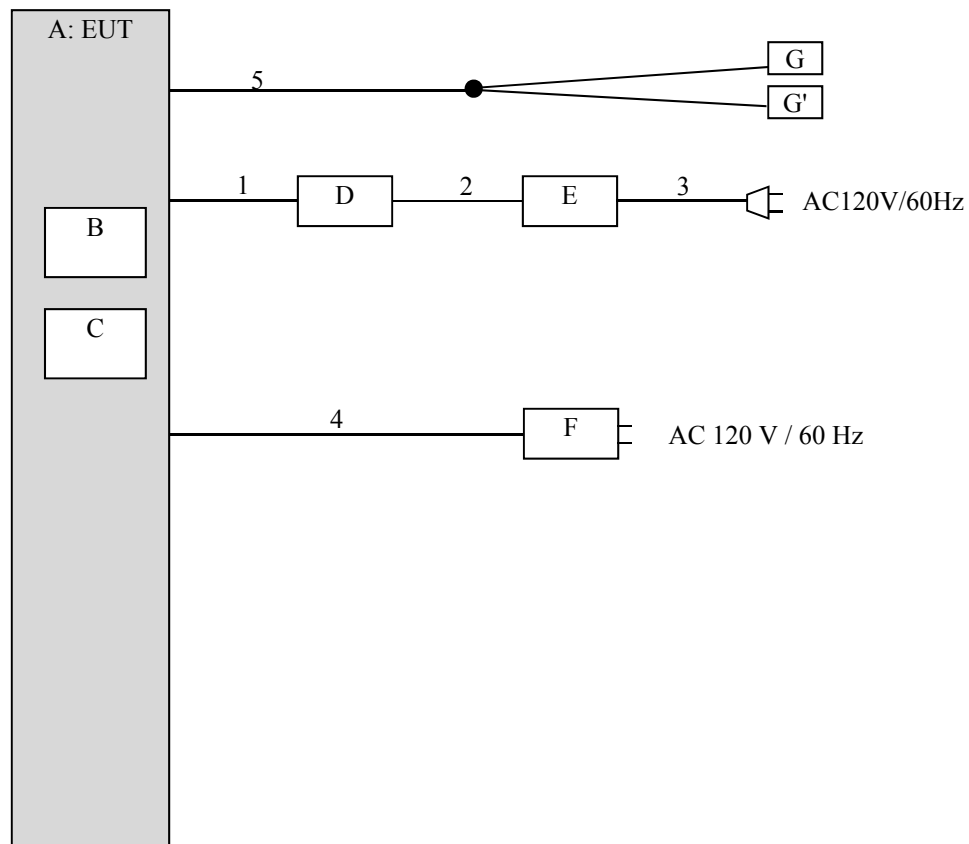
### **4.1 Operating Mode(s)**

Bluetooth (BT): Transmitting (Tx), Payload: PRBS9

Details of Operating Mode(s)

| Test Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Mode                                                    | Tested frequency                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------|
| Conducted Emission,<br>Spurious Emission<br>(Conducted/Radiated)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Tx (Hopping Off) DH5, 3DH5                              | 2402 MHz<br>2441 MHz<br>2480 MHz |
| Carrier Frequency Separation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Tx (Hopping On) DH5, 3DH5                               | 2402 MHz<br>2441 MHz<br>2480 MHz |
| 20 dB Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Tx (Hopping Off) DH5, 3DH5                              | 2402 MHz<br>2441 MHz<br>2480 MHz |
| Number of Hopping Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Tx (Hopping On) DH5, 3DH5                               | -                                |
| Dwell time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Tx (Hopping On),<br>-DH1, DH3, DH5<br>-3DH1, 3DH3, 3DH5 | -                                |
| Maximum Peak Output Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Tx (Hopping Off) DH5, 2DH5, 3DH5                        | 2402 MHz<br>2441 MHz<br>2480 MHz |
| Band Edge Compliance<br>(Conducted)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Tx DH5, 3DH5<br>-Hopping On<br>-Hopping Off             | 2402 MHz<br>2480 MHz             |
| 99 % Occupied Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Tx DH5, 3DH5<br>-Hopping On<br>-Hopping Off             | 2402 MHz<br>2441 MHz<br>2480 MHz |
| <p>*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test)</p> <p>* 2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative.</p> <p>* It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.</p> <p>*EUT has the power settings by the software as follows;<br/>Power settings: Fixed<br/>Software: cmd.exe, Ver. 6.3.9600.17415,<br/>Bluetool.exe, Ver.1.9.3.0</p> <p>*This setting of software is the worst case.<br/>Any conditions under the normal use do not exceed the condition of setting.<br/>In addition, end users cannot change the settings of the output power of the product.</p> |                                                         |                                  |

## 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        | Game Console    | HAC-001            | XAW0150000359 *1)<br>XAW0150000723 *2) | Nintendo     | EUT     |
| B        | Game Card       | HAC-008            | 001                                    | Nintendo     | -       |
| C        | Micro SD Memory | RP-SMEB08GJK       | UJ3AA005855                            | Panasonic    | -       |
| D        | Laptop PC       | HP EliteBook 820G1 | JPA416GD4K                             | hp           | -       |
| E        | AC Adapter      | HSTNN-LA35         | WCWVT0A1R5SORI                         | hp           | -       |
| F        | AC Adapter      | HAC-002            | -                                      | Nintendo     | -       |
| G,<br>G' | Headphone       | -                  | -                                      | Nintendo     | -       |

\*1) Used for Antenna Terminal conducted test (Type A).

\*2) Used for Conducted Emission test and Radiated Emission test (Type B).

\* The EUT for final test was selected based on following preliminary test.

- Radiated Emission: Comparison of Type A and Type B on Band Edges, Harmonics and Spurious emission.
- Conducted Emission: Comparison of Type A and Type B on representative mode.
- Antenna Terminal Conducted test: Comparison of Type A and Type B on Output Power

#### Accessory and model differences

The difference between Type A and Type B is as following table.

The two crystals are compatible and are electrically identical having same radio parameters.

| Parts          | Manufacturer |           |
|----------------|--------------|-----------|
|                | Type A       | Type B    |
| Crystal (X501) | TXC          | DAISHINKU |

So, for the all tests, the EUT was selected worse type by preliminary tests.

#### List of cables used

| No. | Name      | Length (m) | Shield     |            | Remarks |
|-----|-----------|------------|------------|------------|---------|
|     |           |            | Cable      | Connector  |         |
| 1   | USB       | 1.8        | Shielded   | Shielded   | -       |
| 2   | DC        | 1.8        | Unshielded | Unshielded | -       |
| 3   | AC        | 0.9        | Unshielded | Unshielded | -       |
| 4   | USB       | 1.8        | Shielded   | Shielded   | -       |
| 5   | Headphone | 0.5 + 0.3  | 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 80cm 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.

I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. All unused 50ohm connectors of the LISN (AMN) were resistivity terminated in 50 ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT via AC adapter in a Shielded room.

The EUT via AC adapter 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.

|                          |                            |
|--------------------------|----------------------------|
| <b>Detector</b>          | <b>: QP and CISPR AV</b>   |
| <b>Measurement range</b> | <b>: 0.15 MHz - 30 MHz</b> |
| <b>Test data</b>         | <b>: APPENDIX</b>          |
| <b>Test result</b>       | <b>: Pass</b>              |

## **SECTION 6: Radiated Spurious Emission**

### **Test Procedure**

[For below 1 GHz]

EUT was placed on a platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The table is made of Styrofoam and covered with polyvinyl chloride. That has very low permittivity.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]

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

The height of the measuring antenna varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).

The test was made with the detector (RBW/VBW) in the following table.

When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

### **Test Antennas are used as below;**

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

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

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

|                 |               |                                                     |                              |                                                     |
|-----------------|---------------|-----------------------------------------------------|------------------------------|-----------------------------------------------------|
| Frequency       | Below 1 GHz   | Above 1 GHz                                         |                              | 20 dBc                                              |
| Instrument used | Test Receiver | Spectrum Analyzer                                   |                              | Spectrum Analyzer                                   |
| Detector        | QP            | PK                                                  | AV                           | PK                                                  |
| IF Bandwidth    | BW 120 kHz    | RBW: 1 MHz<br>VBW: 3 MHz                            | RBW: 1 MHz<br>VBW: 10 Hz *1) | RBW: 100 kHz<br>VBW: 300 kHz                        |
| Test Distance   | 3 m           | 3.9 m*2) (1 GHz – 13 GHz),<br>1 m (13 GHz – 26 GHz) |                              | 3.9 m*2) (1 GHz – 13 GHz),<br>1 m (13 GHz – 26 GHz) |

\*1) Although DA 00-705 accepts VBW = 10 Hz for AV measurements, it was confirmed that superfluous smoothing was not performed.

\*2) Distance Factor:  $20 \times \log(3.9 \text{ m}/3.0 \text{ m}) = 2.28 \text{ dB}$

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

| Antenna polarization | Carrier | Spurious (Below 1 GHz) | Spurious (1 GHz – 2.8 GHz) | Spurious (2.8 GHz - 13 GHz) | Spurious (Above 13 GHz) |
|----------------------|---------|------------------------|----------------------------|-----------------------------|-------------------------|
| Horizontal           | X       | X                      | X                          | X                           | X                       |
| Vertical             | Y       | X                      | Y                          | Y                           | X                       |

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

**Measurement range** : 30 MHz - 26 GHz

**Test data** : APPENDIX

**Test result** : Pass

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## **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                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-----------------|--------------------|----------------------------------------------------------------|------------------|--------------|----------------------------------|
| 20 dB Bandwidth                                                                                                                                                                                                                                                                                                                                                                                   | 3 MHz                                   | 30 kHz          | 100 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 *1) | Spectrum Analyzer                |
| Maximum Peak Output Power                                                                                                                                                                                                                                                                                                                                                                         | -                                       | -               | -                  | Auto                                                           | Peak Average *3) | -            | Power Meter (Sensor: 160 MHz BW) |
| Carrier Frequency Separation                                                                                                                                                                                                                                                                                                                                                                      | 3 MHz                                   | 100 kHz         | 300 kHz            | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
| Number of Hopping Frequency                                                                                                                                                                                                                                                                                                                                                                       | 30 MHz                                  | 300 kHz         | 1 MHz              | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
| Dwell Time                                                                                                                                                                                                                                                                                                                                                                                        | Zero Span                               | 100 kHz, 1 MHz  | 300 kHz, 3 MHz     | As necessary capture the entire dwell time per hopping channel | Peak             | Clear Write  | Spectrum Analyzer                |
| Conducted Spurious Emission *2)                                                                                                                                                                                                                                                                                                                                                                   | 9 kHz to 150 kHz                        | 200 Hz          | 620 Hz             | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
|                                                                                                                                                                                                                                                                                                                                                                                                   | 150 kHz to 30 MHz                       | 10 kHz          | 30 kHz             |                                                                |                  |              |                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                   | 30 MHz to 25 GHz                        | 100 kHz         | 300 kHz            |                                                                |                  |              |                                  |
| Conducted Spurious Emission Band Edge compliance                                                                                                                                                                                                                                                                                                                                                  | 10 MHz                                  | 100 kHz         | 300 kHz            | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
| *1) The measurement was performed with Max Hold since the duty cycle was not 100 %.<br>*2) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.<br>Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.<br>(9 kHz -150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz)<br>*3) Reference data |                                         |                 |                    |                                                                |                  |              |                                  |

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

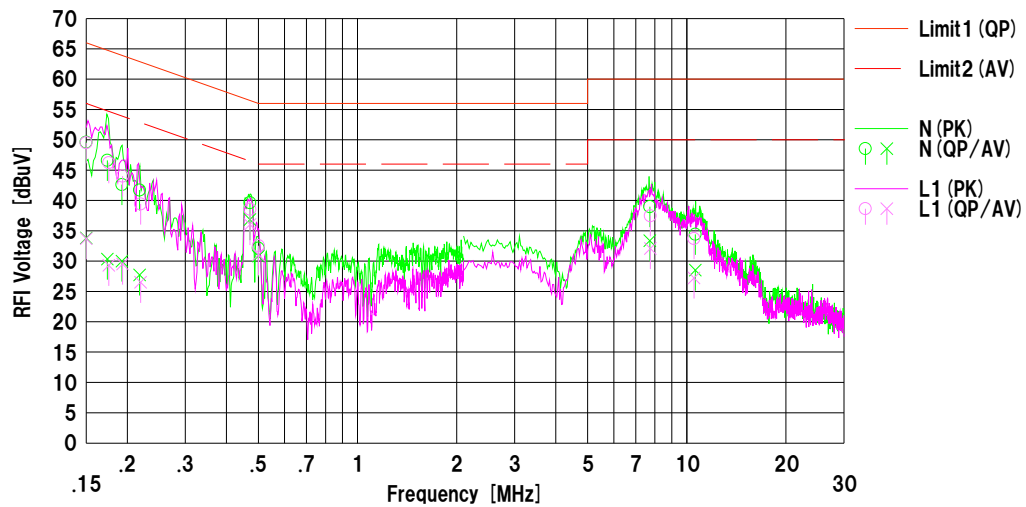
UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2016/11/10

Mode : Tx DH5 2480 MHz  
Power : AC 120 V / 60 Hz  
Temp./Humi. : 20 deg.C / 30 %RH

Remarks : -

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

Engineer : Kazutaka Takeyama



| No. | Freq.<br>[MHz] | Reading        |                | C.Fac<br>[dB] | Results        |                | Limit          |                | Margin       |              | Phase | Comment |
|-----|----------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|--------------|--------------|-------|---------|
|     |                | <QP><br>[dBuV] | <AV><br>[dBuV] |               | <QP><br>[dBuV] | <AV><br>[dBuV] | <QP><br>[dBuV] | <AV><br>[dBuV] | <QP><br>[dB] | <AV><br>[dB] |       |         |
| 1   | 0.15000        | 37.10          | 21.30          | 12.51         | 49.61          | 33.81          | 66.00          | 56.00          | 16.3         | 22.1         | N     |         |
| 2   | 0.17392        | 34.10          | 17.80          | 12.52         | 46.62          | 30.32          | 64.77          | 54.77          | 18.1         | 24.4         | N     |         |
| 3   | 0.19260        | 30.10          | 17.50          | 12.51         | 42.61          | 30.01          | 63.92          | 53.92          | 21.3         | 23.9         | N     |         |
| 4   | 0.21792        | 29.20          | 15.20          | 12.52         | 41.72          | 27.72          | 62.90          | 52.90          | 21.1         | 25.1         | N     |         |
| 5   | 0.47120        | 27.10          | 24.30          | 12.54         | 39.64          | 36.84          | 56.49          | 46.49          | 16.8         | 9.6          | N     |         |
| 6   | 0.50012        | 19.60          | 18.30          | 12.54         | 32.14          | 30.84          | 56.00          | 46.00          | 23.8         | 15.1         | N     |         |
| 7   | 7.71800        | 25.60          | 20.00          | 13.37         | 38.97          | 33.37          | 60.00          | 50.00          | 21.0         | 16.6         | N     |         |
| 8   | 10.60931       | 20.70          | 14.80          | 13.72         | 34.42          | 28.52          | 60.00          | 50.00          | 25.5         | 21.4         | N     |         |
| 9   | 0.15000        | 37.00          | 21.20          | 12.51         | 49.51          | 33.71          | 66.00          | 56.00          | 16.4         | 22.2         | L1    |         |
| 10  | 0.17564        | 33.70          | 16.80          | 12.52         | 46.22          | 29.32          | 64.69          | 54.69          | 18.4         | 25.3         | L1    |         |
| 11  | 0.19340        | 31.50          | 17.00          | 12.51         | 44.01          | 29.51          | 63.89          | 53.89          | 19.8         | 24.3         | L1    |         |
| 12  | 0.21940        | 26.90          | 14.00          | 12.52         | 39.42          | 26.52          | 62.84          | 52.84          | 23.4         | 26.3         | L1    |         |
| 13  | 0.47160        | 26.00          | 23.50          | 12.54         | 38.54          | 36.04          | 56.49          | 46.49          | 17.9         | 10.4         | L1    |         |
| 14  | 0.50050        | 20.00          | 18.50          | 12.54         | 32.54          | 31.04          | 56.00          | 46.00          | 23.4         | 14.9         | L1    |         |
| 15  | 7.74770        | 24.10          | 18.70          | 13.37         | 37.47          | 32.07          | 60.00          | 50.00          | 22.5         | 17.9         | L1    |         |
| 16  | 10.51660       | 20.00          | 13.50          | 13.71         | 33.71          | 27.21          | 60.00          | 50.00          | 26.2         | 22.7         | L1    |         |

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

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Shonan EMC Lab.

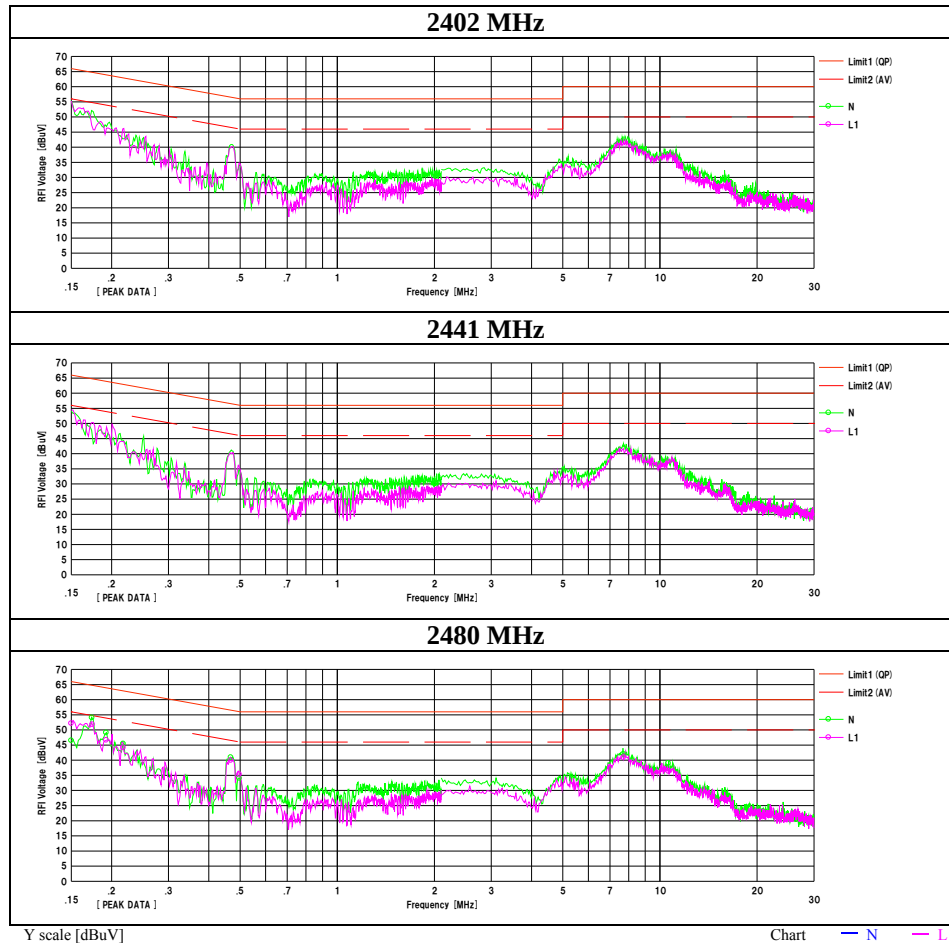
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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## Conducted Emission

Test place : Shonan EMC Lab. No.3 Shielded Room  
Report No. : 11334871S-C-R1  
Date : November 10, 2016  
Temperature / Humidity : 20 deg. C / 30 % RH  
Engineer : Kazutaka Takeyama  
Mode : Tx, Hopping Off, DH5



## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Shielded Room  
Date : 2016/11/10

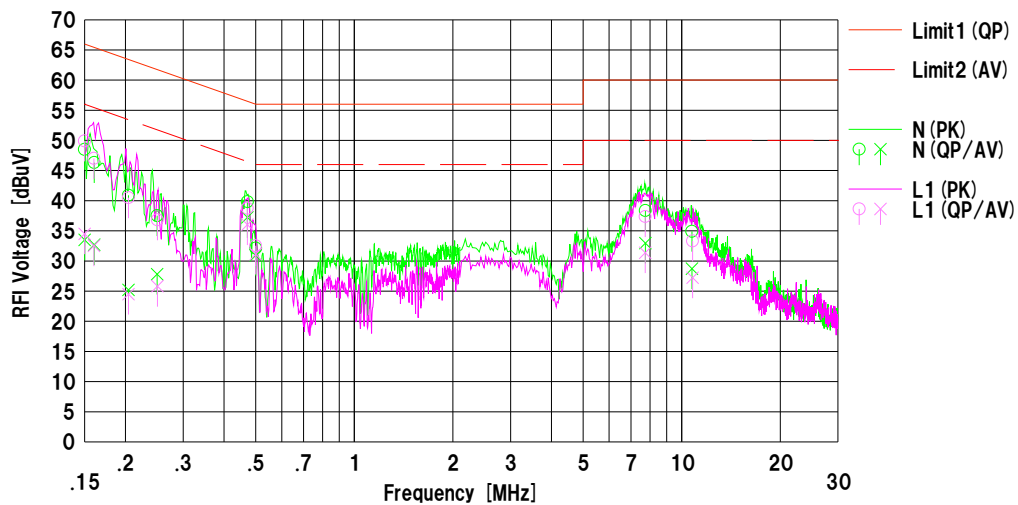
Mode : Tx 3-DH5 2480 MHz

Power : AC 120 V / 60 Hz  
Temp./Humi. : 20 deg.C / 30 %RH

Remarks : -

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

Engineer : Kazutaka Takeyama



| No. | Freq.<br>[MHz] | Reading        |                | C.Fac | Results        |                | Limit          |                | Margin       |              | Phase | Comment |
|-----|----------------|----------------|----------------|-------|----------------|----------------|----------------|----------------|--------------|--------------|-------|---------|
|     |                | <QP><br>[dBuV] | <AV><br>[dBuV] |       | <QP><br>[dBuV] | <AV><br>[dBuV] | <QP><br>[dBuV] | <AV><br>[dBuV] | <QP><br>[dB] | <AV><br>[dB] |       |         |
| 1   | 0.15000        | 36.00          | 21.00          | 12.51 | 48.51          | 33.51          | 66.00          | 56.00          | 17.4         | 22.4         | N     |         |
| 2   | 0.16055        | 33.80          | 20.20          | 12.52 | 46.32          | 32.72          | 65.44          | 55.44          | 19.1         | 22.7         | N     |         |
| 3   | 0.20440        | 28.40          | 12.70          | 12.51 | 40.91          | 25.21          | 63.43          | 53.43          | 22.5         | 28.2         | N     |         |
| 4   | 0.24990        | 25.00          | 15.30          | 12.53 | 37.53          | 27.83          | 61.76          | 51.76          | 24.2         | 23.9         | N     |         |
| 5   | 0.47180        | 27.30          | 24.70          | 12.54 | 39.84          | 37.24          | 56.48          | 46.48          | 16.6         | 9.2          | N     |         |
| 6   | 0.50010        | 19.60          | 18.40          | 12.54 | 32.14          | 30.94          | 56.00          | 46.00          | 23.8         | 15.0         | N     |         |
| 7   | 7.74100        | 25.00          | 19.60          | 13.37 | 38.37          | 32.97          | 60.00          | 50.00          | 21.6         | 17.0         | N     |         |
| 8   | 10.74813       | 21.20          | 15.00          | 13.73 | 34.93          | 28.73          | 60.00          | 50.00          | 25.0         | 21.2         | N     |         |
| 9   | 0.15000        | 37.40          | 22.00          | 12.51 | 49.91          | 34.51          | 66.00          | 56.00          | 16.0         | 21.4         | L1    |         |
| 10  | 0.16020        | 34.50          | 20.00          | 12.52 | 47.02          | 32.52          | 65.45          | 55.45          | 18.4         | 22.9         | L1    |         |
| 11  | 0.20430        | 28.00          | 12.00          | 12.51 | 40.51          | 24.51          | 63.43          | 53.43          | 22.9         | 28.9         | L1    |         |
| 12  | 0.25030        | 24.30          | 13.30          | 12.53 | 36.83          | 25.83          | 61.75          | 51.75          | 24.9         | 25.9         | L1    |         |
| 13  | 0.47130        | 26.20          | 23.50          | 12.54 | 38.74          | 36.04          | 56.49          | 46.49          | 17.7         | 10.4         | L1    |         |
| 14  | 0.49980        | 20.00          | 18.60          | 12.54 | 32.54          | 31.14          | 56.00          | 46.00          | 23.4         | 14.8         | L1    |         |
| 15  | 7.73561        | 24.00          | 18.00          | 13.37 | 37.37          | 31.37          | 60.00          | 50.00          | 22.6         | 18.6         | L1    |         |
| 16  | 10.79600       | 19.60          | 13.50          | 13.73 | 33.33          | 27.23          | 60.00          | 50.00          | 26.6         | 22.7         | L1    |         |

Calculation: Result [dBuV] = Reading [dBuV] + C.Fac (LISN+Cable+ATT) [dB]  
LISN: SLS-02

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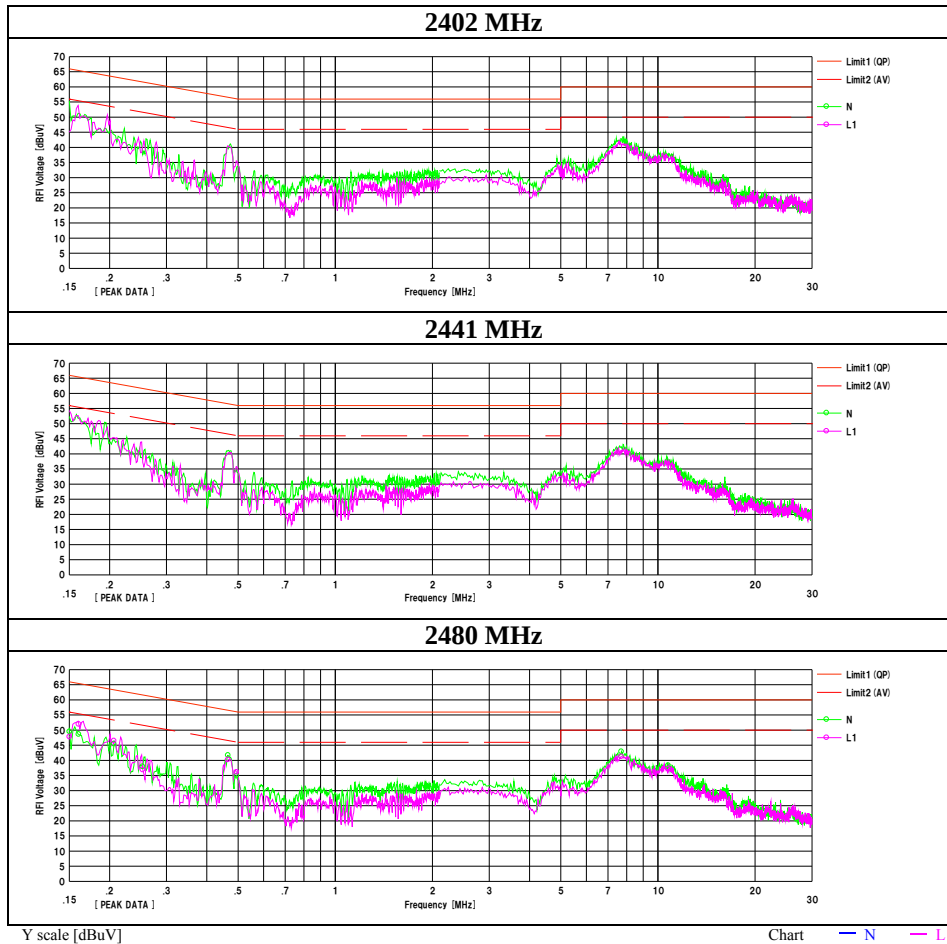
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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Facsimile : +81 463 50 6401

## Conducted Emission

Test place : Shonan EMC Lab. No.3 Shielded Room  
Report No. : 11334871S-C-R1  
Date : November 10, 2016  
Temperature / Humidity : 20 deg. C / 30 % RH  
Engineer : Kazutaka Takeyama  
Mode : Tx, Hopping Off, 3DH5



## **20 dB Bandwidth and Carrier Frequency Separation**

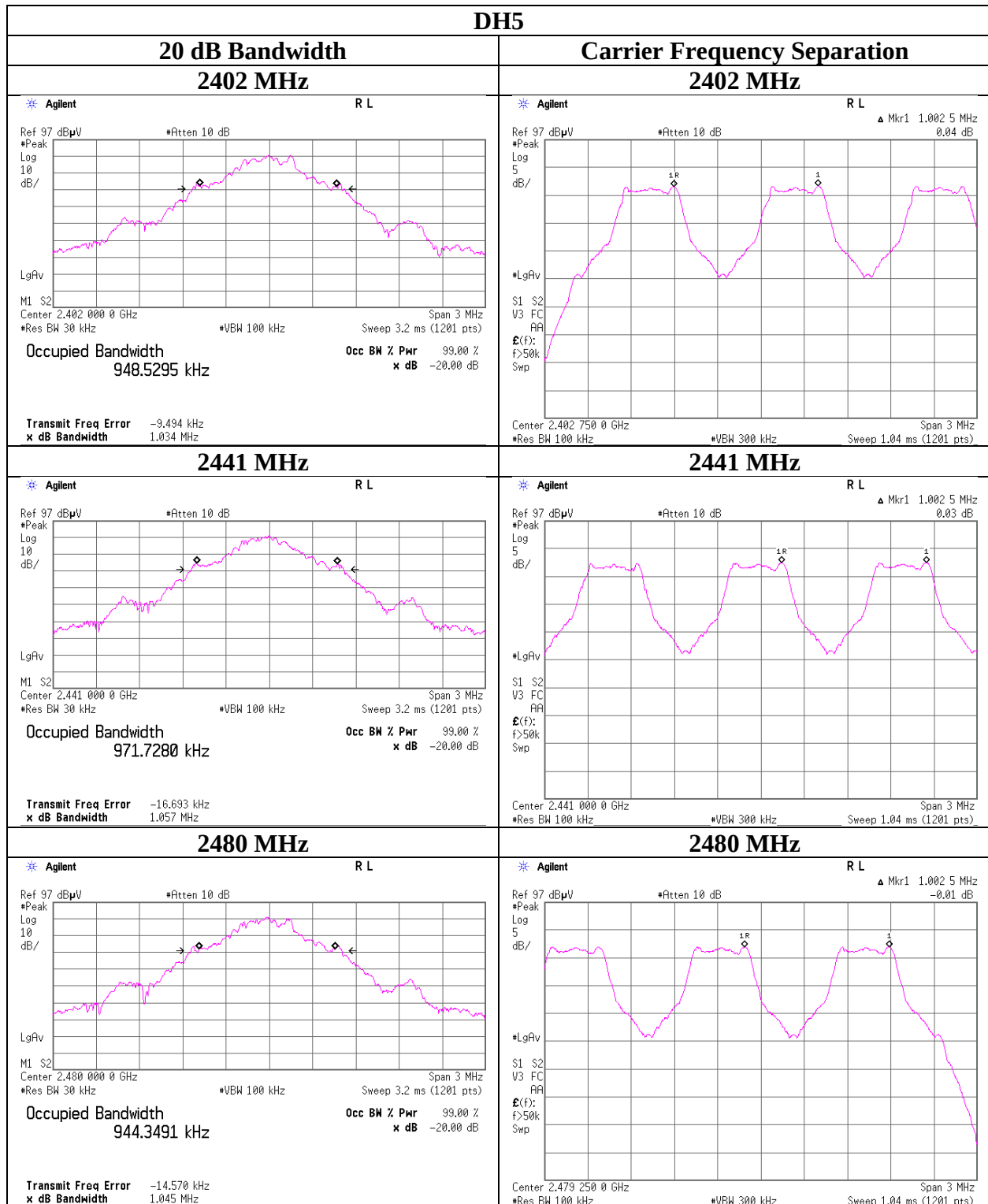
Test place Shonan EMC Lab. No.1 Measurement Room  
Report No. 11334871S-C-R1  
Date November 11, 2016  
Temperature / Humidity 25 deg. C / 33 % RH  
Engineer Hikaru Shirasawa  
Mode Tx, Hopping Off, On

| Mode | Freq.<br>[MHz] | 20 dB Bandwidth<br>[MHz] | Carrier Frequency<br>Separation<br>[MHz] | Limit for Carrier<br>Frequency separation<br>[MHz] |
|------|----------------|--------------------------|------------------------------------------|----------------------------------------------------|
| DH5  | 2402.0         | 1.034                    | 1.003                                    | $\geq 0.689$                                       |
| DH5  | 2441.0         | 1.057                    | 1.003                                    | $\geq 0.704$                                       |
| DH5  | 2480.0         | 1.045                    | 1.003                                    | $\geq 0.697$                                       |
| 3DH5 | 2402.0         | 1.311                    | 1.003                                    | $\geq 0.874$                                       |
| 3DH5 | 2441.0         | 1.314                    | 1.003                                    | $\geq 0.876$                                       |
| 3DH5 | 2480.0         | 1.315                    | 1.003                                    | $\geq 0.877$                                       |

Limit: Two-thirds of 20 dB Bandwidth or 25 kHz (whichever is greater).

No limit applies to 20 dB Bandwidth.

## 20 dB Bandwidth and Carrier Frequency Separation



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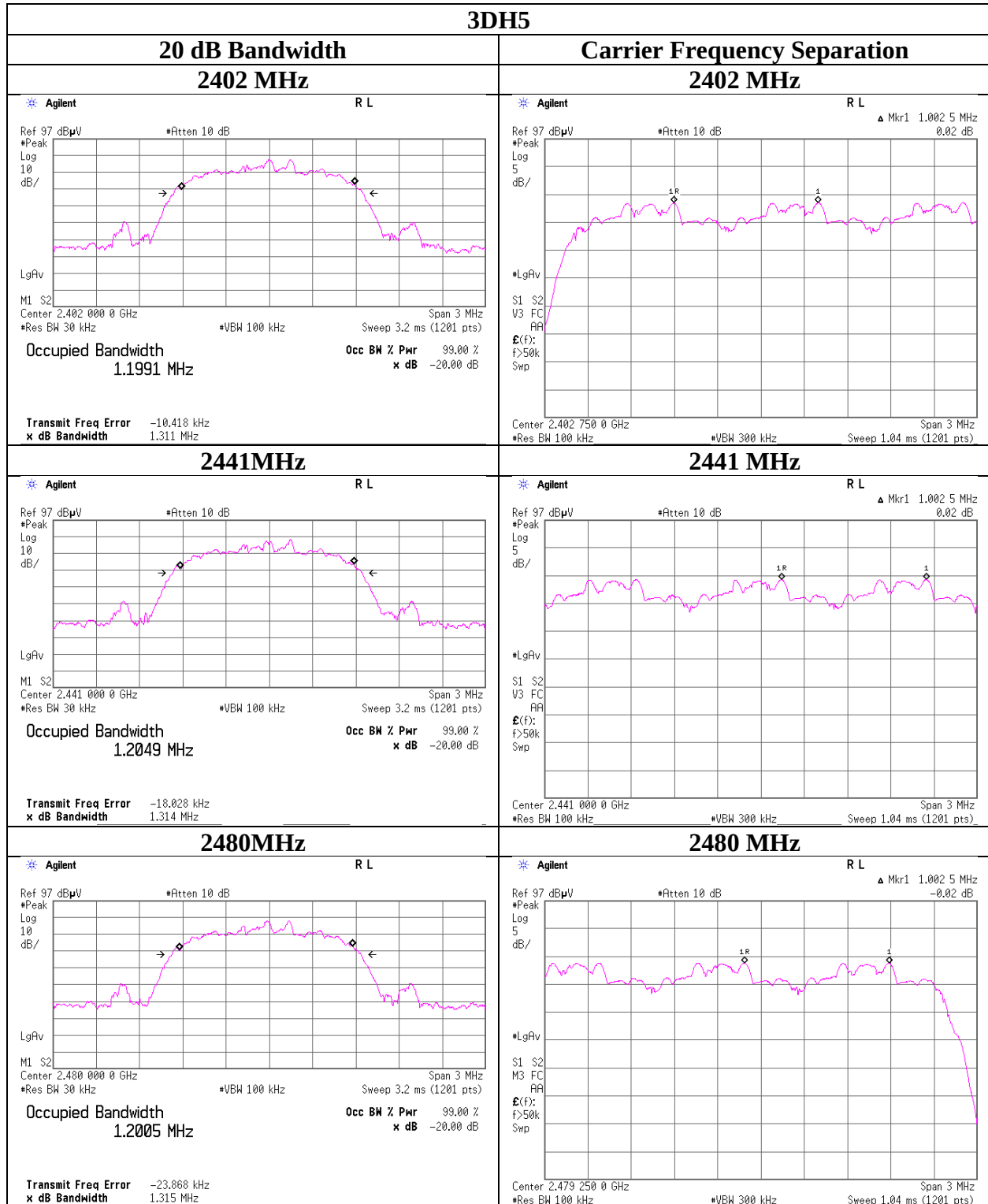
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## 20 dB Bandwidth and Carrier Frequency Separation



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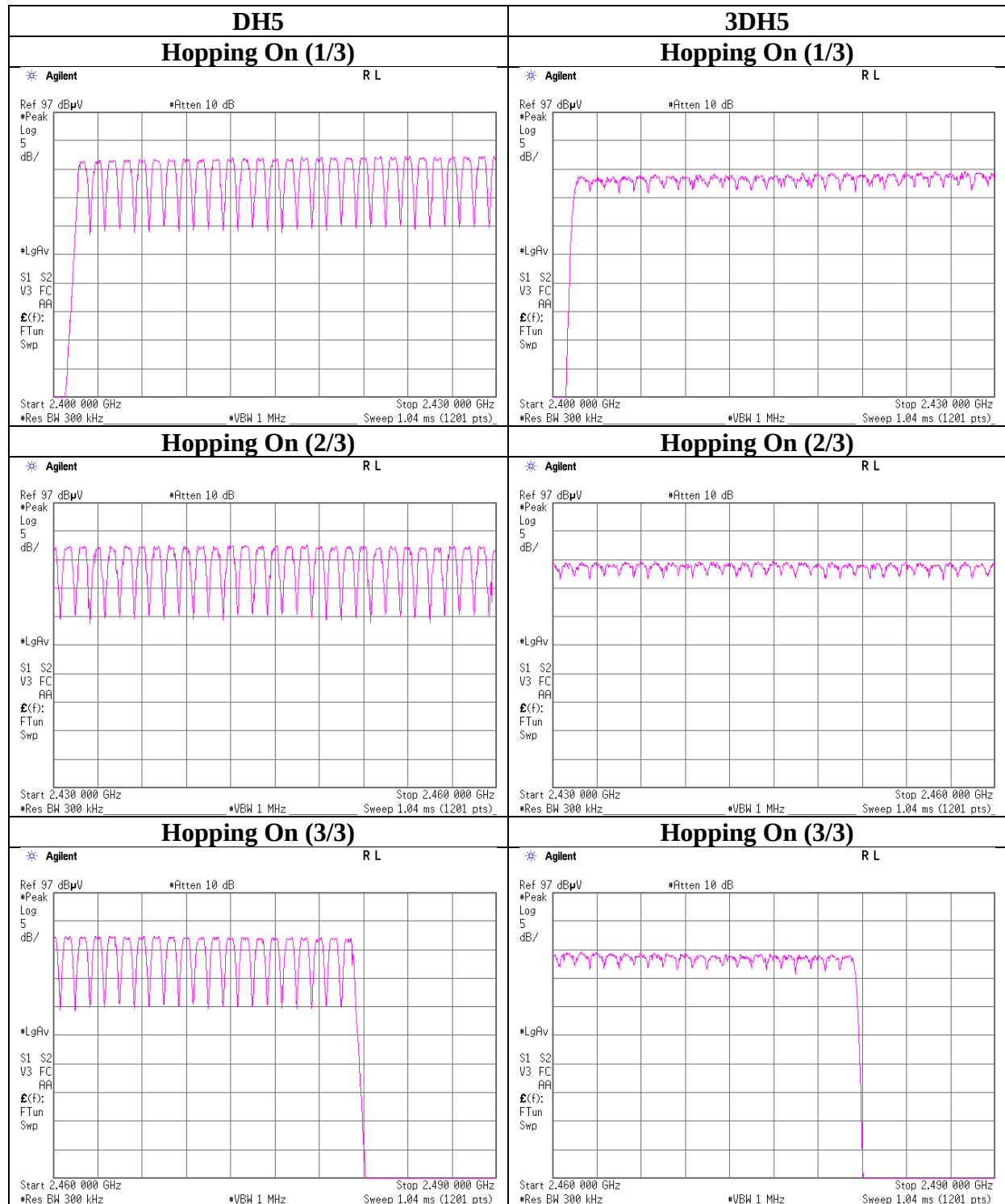
### **Number of Hopping Frequency**

|                        |                                       |
|------------------------|---------------------------------------|
| Test place             | Shonan EMC Lab. No.1 Measurement Room |
| Report No.             | 11334871S-C-R1                        |
| Date                   | November 11, 2016                     |
| Temperature / Humidity | 25 deg. C / 33 % RH                   |
| Engineer               | Hikaru Shirasawa                      |
| Mode                   | Tx, Hopping On                        |

| Mode | Number of channel<br>[channels] | Limit<br>[channels] |
|------|---------------------------------|---------------------|
| DH5  | 79                              | $\geq 15$           |
| 3DH5 | 79                              | $\geq 15$           |

Test was not performed at AFH mode whose number of hopping channel is 20 channels because this Bluetooth radio is in compliance of Bluetooth Specification.

## Number of Hopping Frequency



## Dwell time

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping On

| Mode | Number of transmission<br>in a 31.6 (79 Hopping x 0.4)<br>/ 12.8 (32 Hopping x 0.4) s period | Length of<br>transmission<br>[ms] | Result<br>[ms] | Limit<br>[ms] |
|------|----------------------------------------------------------------------------------------------|-----------------------------------|----------------|---------------|
| DH1  | 49.4 times / 5 s x 31.6 s = 313 times                                                        | 0.421                             | 132            | 400           |
| DH3  | 24.4 times / 5 s x 31.6 s = 155 times                                                        | 1.678                             | 260            | 400           |
| DH5  | 18.4 times / 5 s x 31.6 s = 117 times                                                        | 2.926                             | 342            | 400           |
| 3DH1 | 50.4 times / 5 s x 31.6 s = 319 times                                                        | 0.427                             | 136            | 400           |
| 3DH3 | 28.0 times / 5 s x 31.6 s = 177 times                                                        | 1.679                             | 297            | 400           |
| 3DH5 | 19.2 times / 5 s x 31.6 s = 122 times                                                        | 2.932                             | 358            | 400           |

Sample Calculation

Result = Number of transmission x Length of transmission

\*Average data of 5 tests.(except Inquiry)

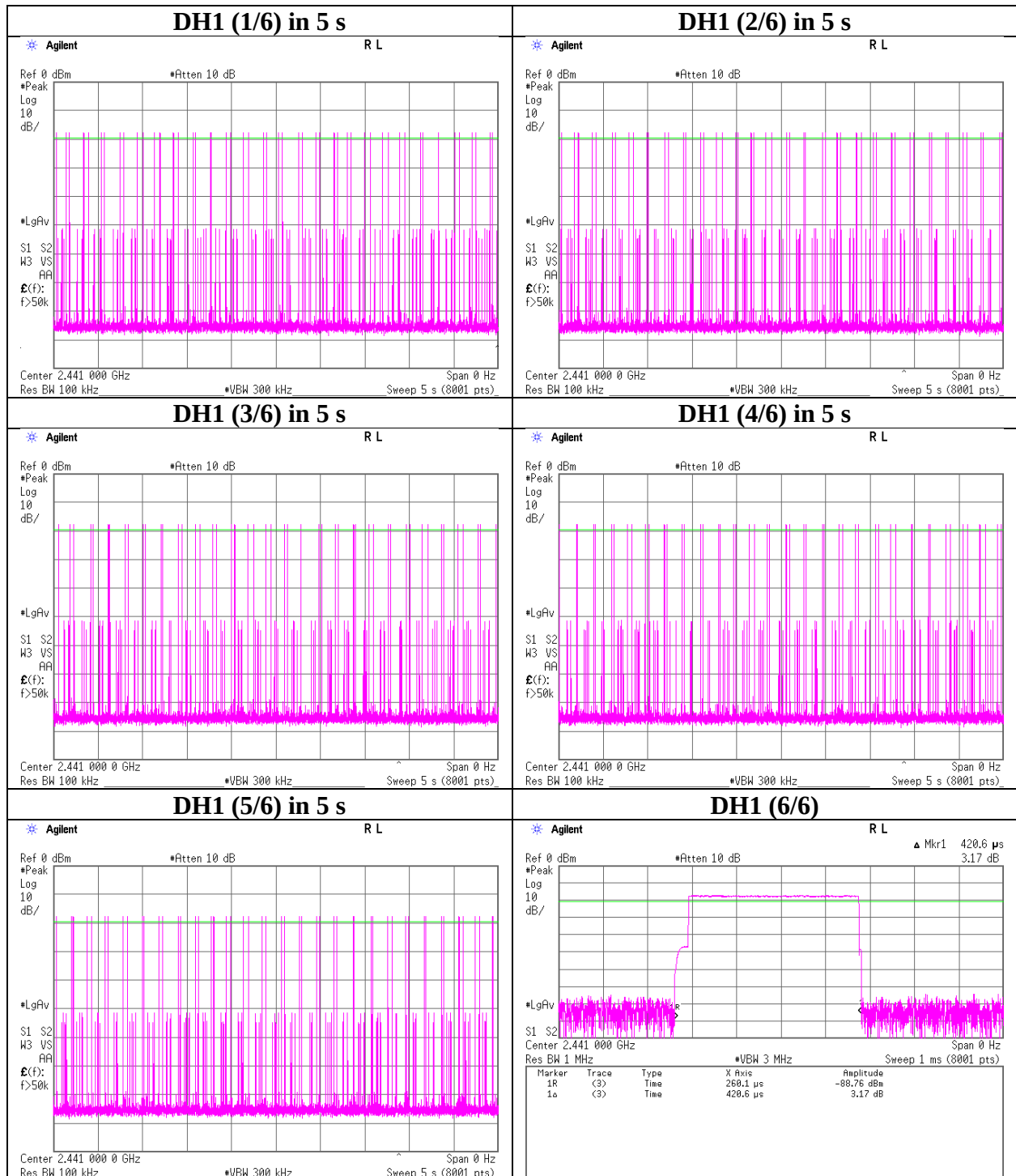
| Mode | Sampling [times] |    |    |    |    | Average<br>[times] |
|------|------------------|----|----|----|----|--------------------|
|      | 1                | 2  | 3  | 4  | 5  |                    |
| DH1  | 49               | 51 | 49 | 49 | 49 | 49.4               |
| DH3  | 23               | 25 | 19 | 27 | 28 | 24.4               |
| DH5  | 22               | 18 | 16 | 17 | 19 | 18.4               |
| 3DH1 | 50               | 51 | 51 | 50 | 50 | 50.4               |
| 3DH3 | 30               | 29 | 27 | 27 | 27 | 28.0               |
| 3DH5 | 19               | 20 | 24 | 12 | 21 | 19.2               |

Sample Calculation

Average = Summation (Sampling 1 to 5) / 5

This device complies with the Bluetooth protocol for FHSS operation, employing a pseudo random channel selection and hopping rate to ensure that the occupancy time in  $N \times 0.4s$ , where  $N$  is the number of channels being used in the hopping sequence ( $20 \leq N \leq 79$ ), is always less than  $0.4s$  regardless of packet size. This is confirmed in the test report for  $N = 79$ .

## Dwell time



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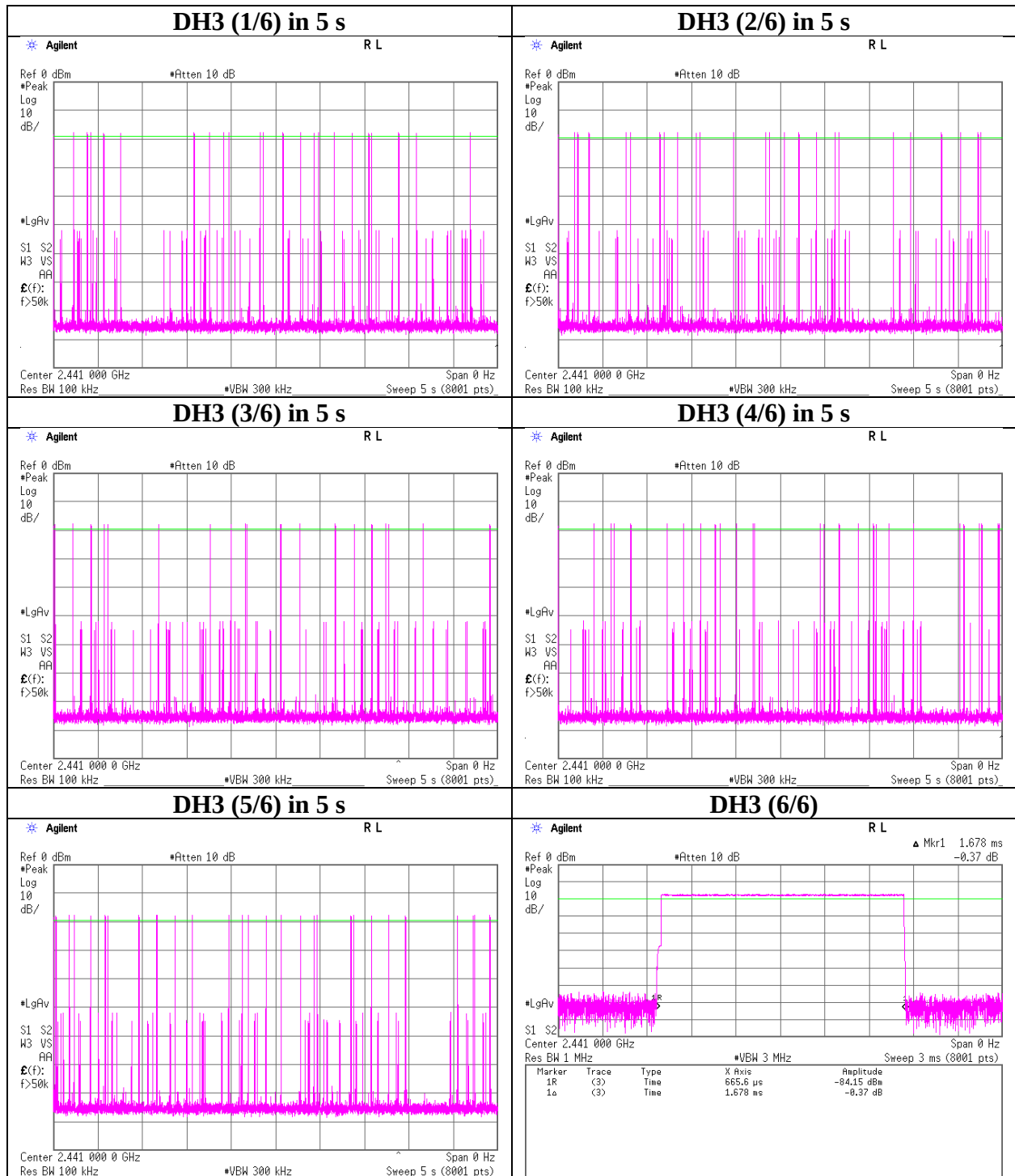
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## Dwell time



**UL Japan, Inc.**

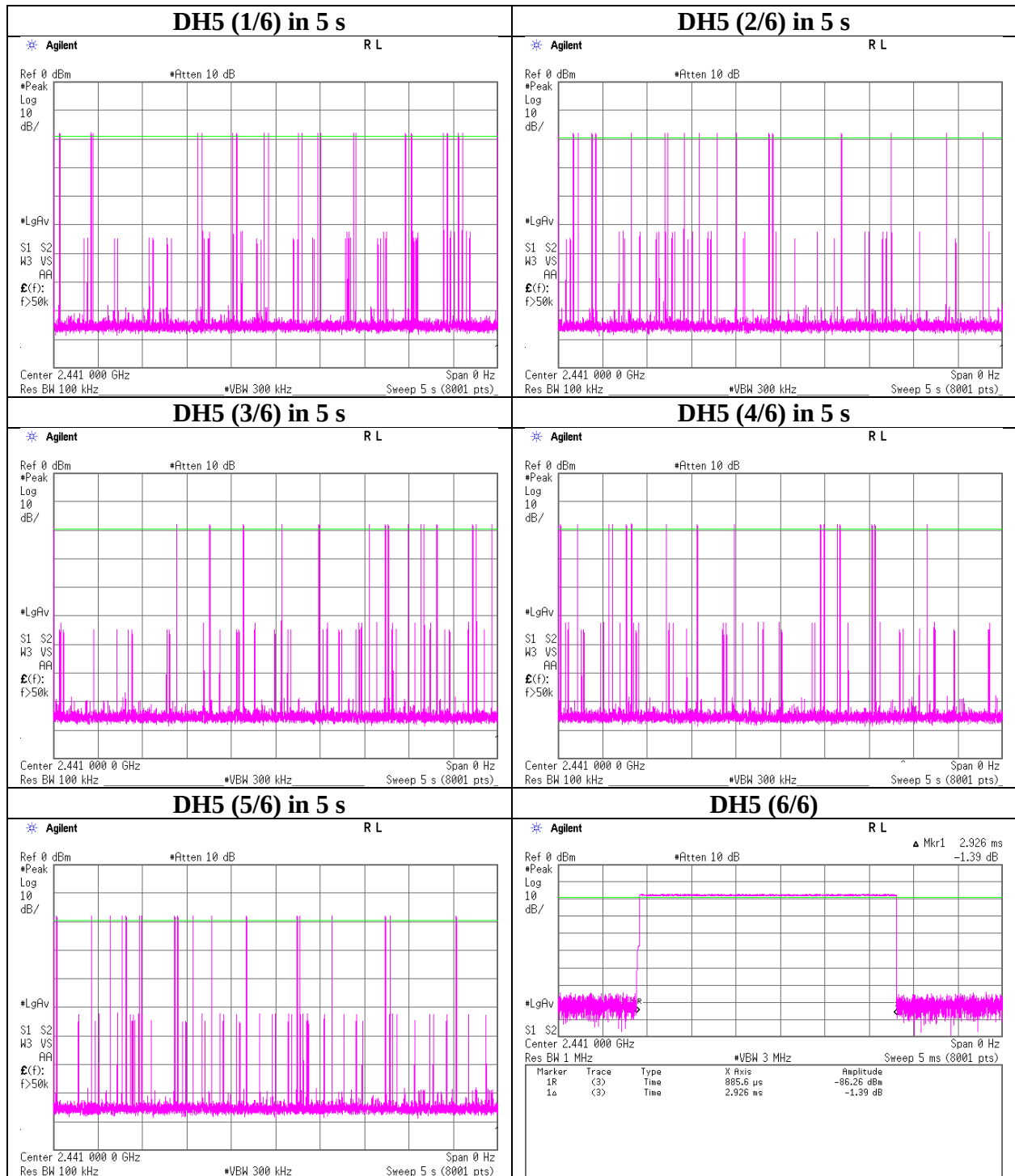
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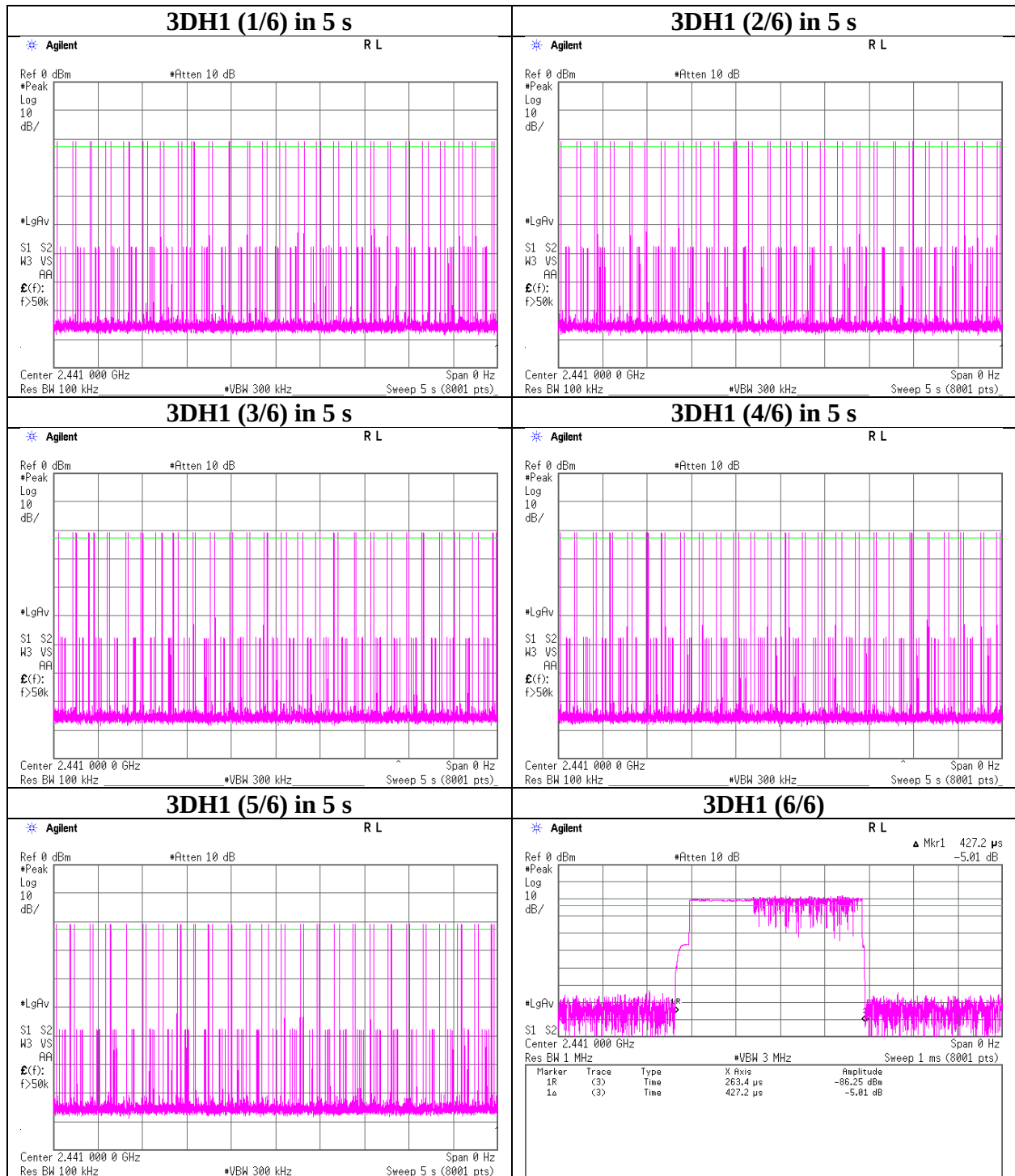
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## Dwell time



## Dwell time



**UL Japan, Inc.**

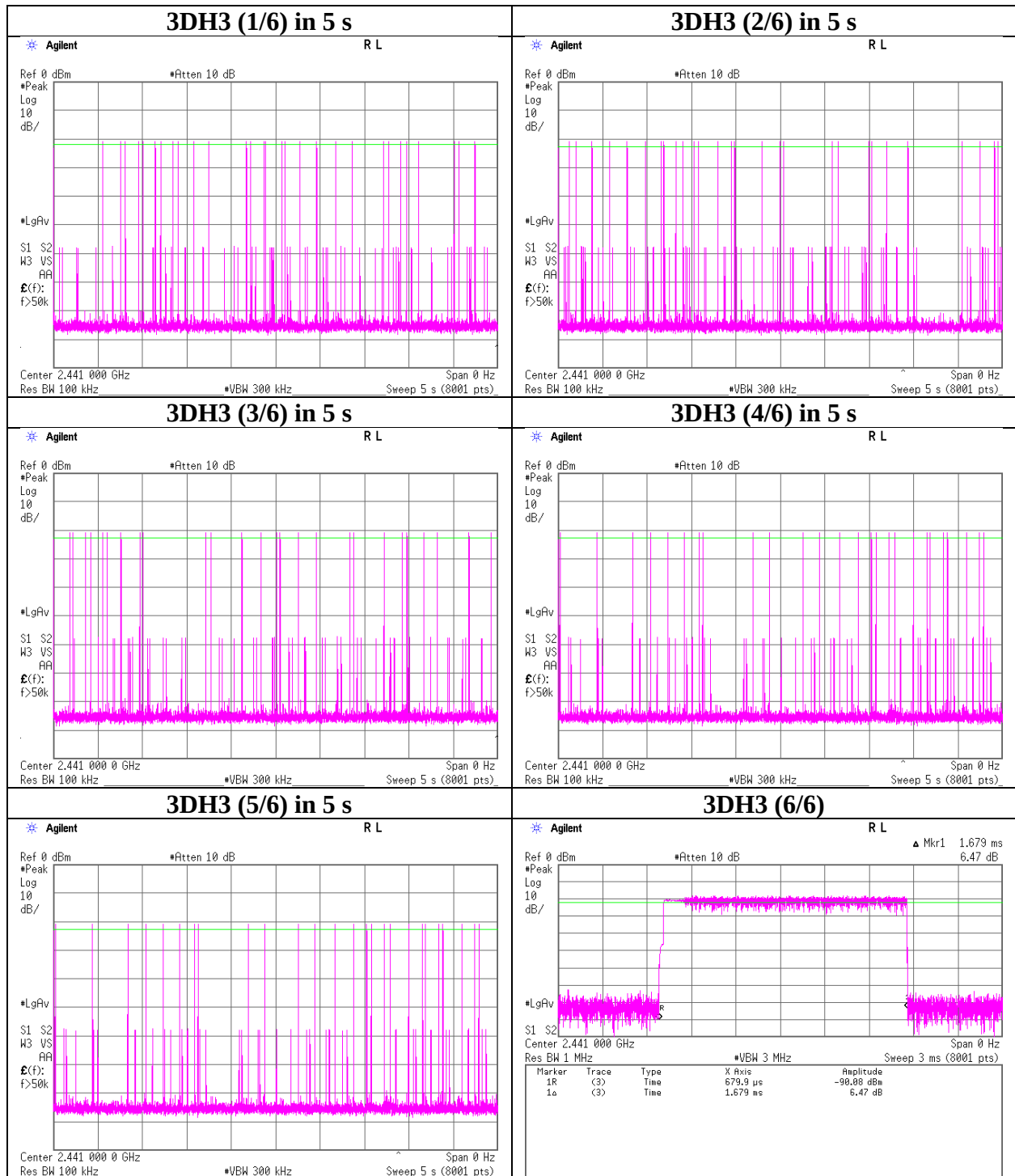
**Shonan EMC Lab.**

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time



**UL Japan, Inc.**

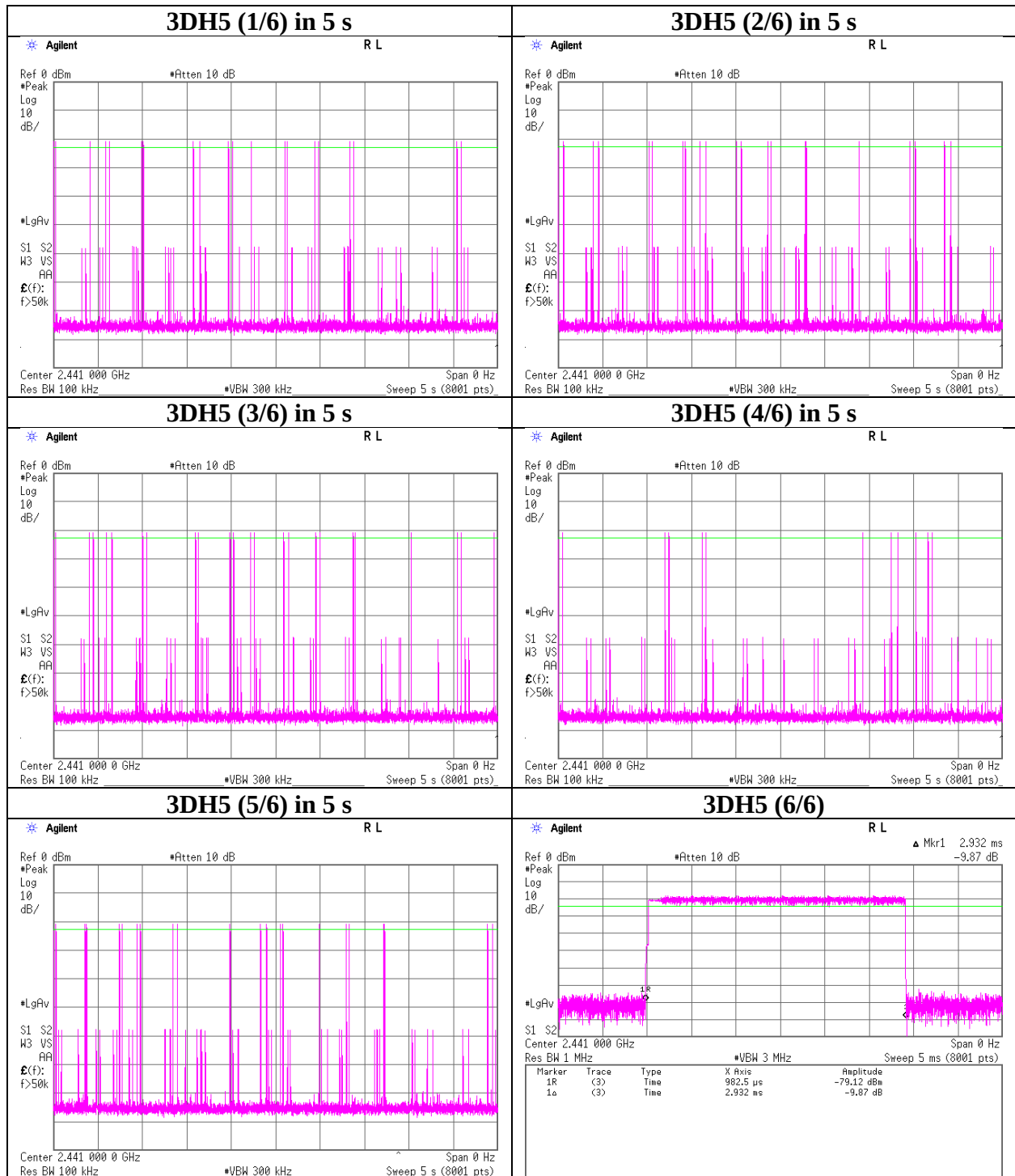
**Shonan EMC Lab.**

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

## Dwell time



**UL Japan, Inc.**

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Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

### Maximum Peak Output Power

Test place Shonan EMC Lab. No.1 Measurement Room  
Report No. 11334871S-C-R1  
Date November 11, 2016  
Temperature / Humidity 25 deg. C / 33 % RH  
Engineer Hikaru Shirasawa  
Mode Tx, Hopping Off

| Mode | Freq.  | Reading | Cable<br>Loss | Atten.<br>Loss | Result      |             | Limit |      | Margin       |
|------|--------|---------|---------------|----------------|-------------|-------------|-------|------|--------------|
|      | [MHz]  | [dBm]   | [dB]          | [dB]           | [dBm]       | [mW]        | [dBm] | [mW] | [dB]         |
| DH5  | 2402.0 | -9.37   | 2.11          | 9.67           | 2.41        | 1.74        | 20.96 | 125  | 18.55        |
| DH5  | 2441.0 | -8.97   | 2.11          | 9.67           | 2.81        | 1.91        | 20.96 | 125  | 18.15        |
| DH5  | 2480.0 | -9.25   | 2.12          | 9.67           | 2.54        | 1.79        | 20.96 | 125  | 18.42        |
| 2DH5 | 2402.0 | -6.56   | 2.11          | 9.67           | 5.22        | 3.33        | 20.96 | 125  | 15.74        |
| 2DH5 | 2441.0 | -6.45   | 2.11          | 9.67           | 5.33        | 3.41        | 20.96 | 125  | 15.63        |
| 2DH5 | 2480.0 | -6.39   | 2.12          | 9.67           | 5.40        | 3.47        | 20.96 | 125  | 15.56        |
| 3DH5 | 2402.0 | -6.31   | 2.11          | 9.67           | 5.47        | 3.52        | 20.96 | 125  | 15.49        |
| 3DH5 | 2441.0 | -6.18   | 2.11          | 9.67           | 5.60        | 3.63        | 20.96 | 125  | 15.36        |
| 3DH5 | 2480.0 | -6.11   | 2.12          | 9.67           | <b>5.68</b> | <b>3.70</b> | 20.96 | 125  | <b>15.28</b> |

Sample Calculation:

Result = Reading + Cable Loss + Attenuator Loss

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

Test was not performed at AFH mode, because the decrease of number of channel (min: 20 ch) at AFH mode does not influence on the output power and bandwidth of the EUT.

As this device had AFH mode and frequency separation could not meet the requirement of over 20 dB BW without 2/3 relaxation, 125 mW power limit was applied to it.

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

|                        |                                       |
|------------------------|---------------------------------------|
| Test place             | Shonan EMC Lab. No.1 Measurement Room |
| Report No.             | 11334871S-C-R1                        |
| Date                   | November 11, 2016                     |
| Temperature / Humidity | 25 deg. C / 33 % RH                   |
| Engineer               | Hikaru Shirasawa                      |
| Mode                   | Tx, Hopping Off                       |

| Mode | Freq.<br>[MHz] | Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Result<br>(Time average) |      | Duty<br>factor<br>[dB] | Result<br>(Burst power average) |             |
|------|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|-------------|
|      |                |                  |                       |                        | [dBm]                    | [mW] |                        | [dBm]                           | [mW]        |
| DH5  | 2402.0         | -10.90           | 2.11                  | 9.67                   | 0.88                     | 1.22 | 1.08                   | 1.96                            | 1.57        |
| DH5  | 2441.0         | -10.46           | 2.11                  | 9.67                   | 1.32                     | 1.36 | 1.08                   | 2.40                            | 1.74        |
| DH5  | 2480.0         | -10.73           | 2.12                  | 9.67                   | 1.06                     | 1.28 | 1.08                   | 2.14                            | 1.64        |
| 2DH5 | 2402.0         | -10.64           | 2.11                  | 9.67                   | 1.14                     | 1.30 | 1.07                   | 2.21                            | 1.66        |
| 2DH5 | 2441.0         | -10.47           | 2.11                  | 9.67                   | 1.31                     | 1.35 | 1.07                   | 2.38                            | 1.73        |
| 2DH5 | 2480.0         | -10.45           | 2.12                  | 9.67                   | 1.34                     | 1.36 | 1.07                   | 2.41                            | 1.74        |
| 3DH5 | 2402.0         | -10.65           | 2.11                  | 9.67                   | 1.13                     | 1.30 | 1.07                   | 2.20                            | 1.66        |
| 3DH5 | 2441.0         | -10.50           | 2.11                  | 9.67                   | 1.28                     | 1.34 | 1.07                   | 2.35                            | 1.72        |
| 3DH5 | 2480.0         | -10.44           | 2.12                  | 9.67                   | 1.35                     | 1.36 | 1.07                   | <b>2.42</b>                     | <b>1.75</b> |

Sample Calculation:

Result (Time average) = Reading + Cable Loss + Attenuator Loss

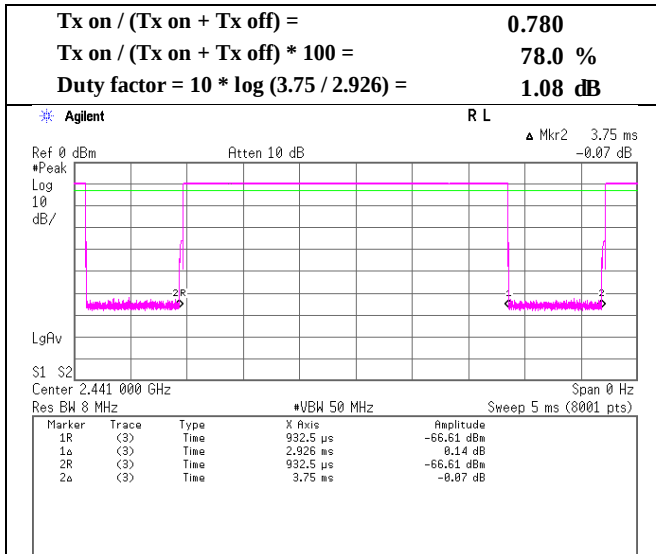
Result (Burst power average) = Time average power + Duty factor

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

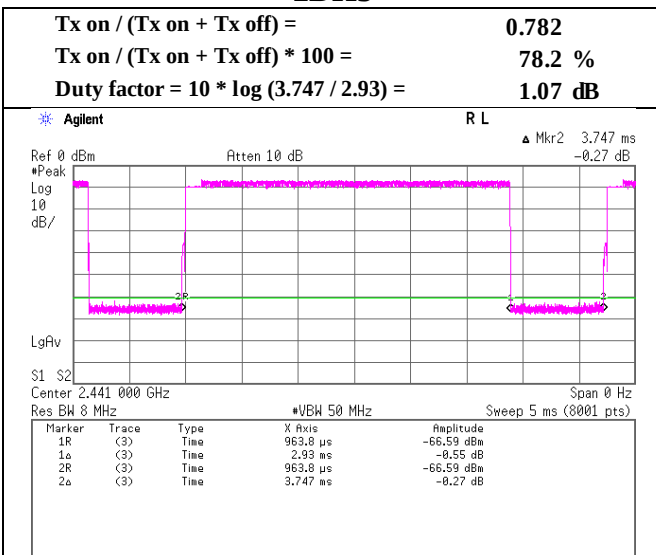
## Burst Rate Confirmation

|                        |                                       |
|------------------------|---------------------------------------|
| Test place             | Shonan EMC Lab. No.1 Measurement Room |
| Report No.             | 11334871S-C-R1                        |
| Date                   | November 11, 2016                     |
| Temperature / Humidity | 25 deg. C / 33 % RH                   |
| Engineer               | Hikaru Shirasawa                      |
| Mode                   | Tx, Hopping Off                       |

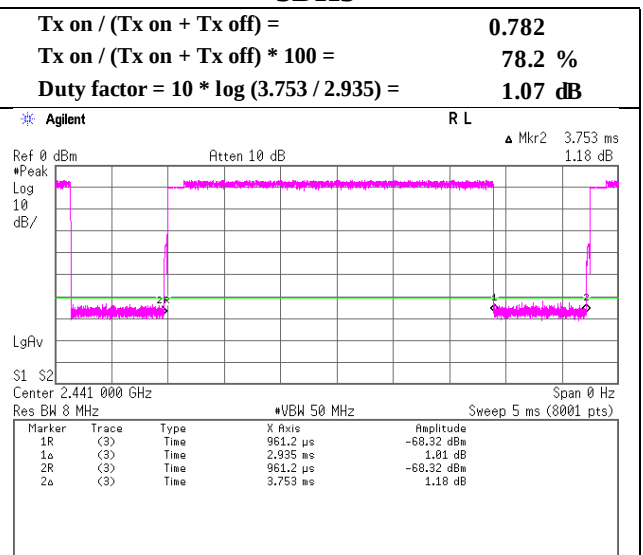
### DH5



### 2DH5



### 3DH5



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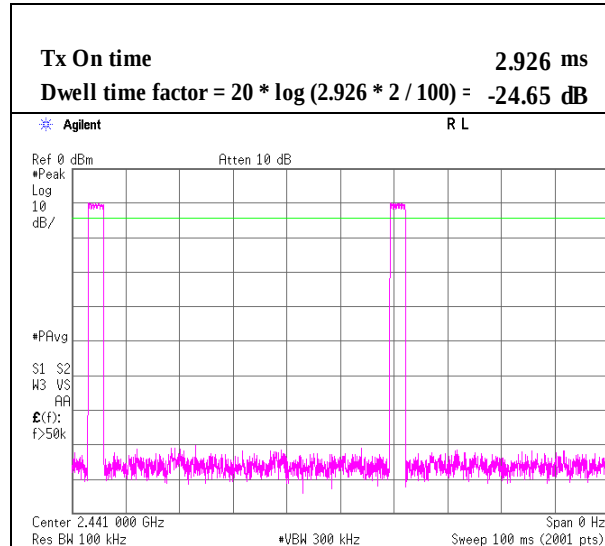
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

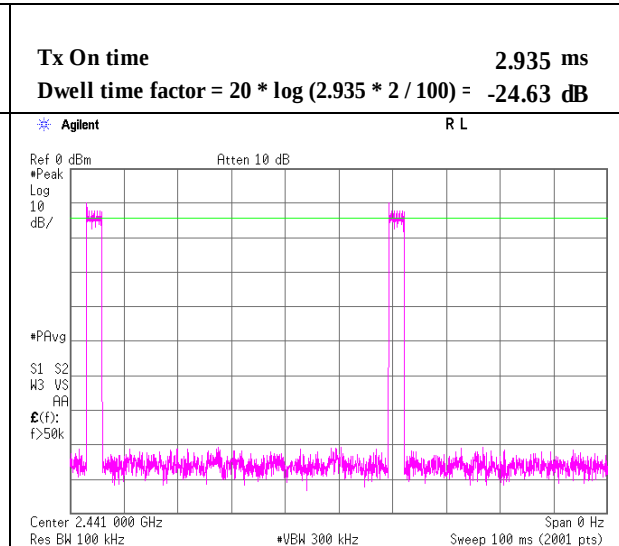
## Dwell time factor

|                        |                                       |
|------------------------|---------------------------------------|
| Test place             | Shonan EMC Lab. No.1 Measurement Room |
| Report No.             | 11334871S-C-R1                        |
| Date                   | November 11, 2016                     |
| Temperature / Humidity | 25 deg. C / 33 % RH                   |
| Engineer               | Hikaru Shirasawa                      |
| Mode                   | Tx, Hopping On                        |

### DH5



### 3DH5



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## Radiated Spurious Emission

Test place : Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. : 11334871S-C-R1  
Date : October 17, 2016      November 8, 2016      November 9, 2016      November 6, 2016  
Temperature / Humidity : 24 deg.C / 45 %RH      24 deg.C / 30 %RH      22 deg.C / 36 %RH      20 deg.C / 42 %RH  
Engineer : Hikaru Shirasawa      Shinichi Takano      Hikaru Shirasawa      Kazutaka Takeyama  
(1 GHz - 2.8 GHz),      (13 GHz - 18 GHz)      (18 GHz - 26 GHz)      (30 MHz - 1000 MHz)  
(2.8 GHz - 13 GHz)  
Mode : Tx, Hopping Off, DH5 2402 MHz

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Factor [dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 167.999            | QP       | 39.70             | 15.72              | 8.92         | 31.77        | 0.00                    | 32.57              | 43.50             | 10.9           | 150            | 251            |        |
| Hori.    | 192.007            | QP       | 38.90             | 16.39              | 8.94         | 31.76        | 0.00                    | 32.47              | 43.50             | 11.0           | 150            | 277            |        |
| Hori.    | 215.989            | QP       | 50.20             | 11.65              | 5.90         | 31.75        | 0.00                    | 36.00              | 43.50             | 7.5            | 150            | 179            |        |
| Hori.    | 229.999            | QP       | 50.00             | 11.63              | 6.02         | 31.74        | 0.00                    | 35.91              | 46.00             | 10.0           | 150            | 183            |        |
| Hori.    | 252.173            | QP       | 43.40             | 11.67              | 6.21         | 31.73        | 0.00                    | 29.55              | 46.00             | 16.4           | 150            | 234            |        |
| Hori.    | 384.394            | QP       | 40.00             | 15.32              | 7.16         | 31.80        | 0.00                    | 30.68              | 46.00             | 15.3           | 100            | 286            |        |
| Hori.    | 2390.000           | PK       | 45.38             | 27.41              | 13.82        | 36.87        | 2.28                    | 52.02              | 73.97             | 21.9           | 154            | 138            |        |
| Hori.    | 3202.669           | PK       | 49.86             | 28.56              | 5.51         | 36.83        | 2.28                    | 49.38              | 73.97             | 24.5           | 153            | 0              |        |
| Hori.    | 4804.000           | PK       | 58.81             | 31.13              | 6.01         | 36.53        | 2.28                    | 61.70              | 73.97             | 12.2           | 129            | 179            |        |
| Hori.    | 7206.000           | PK       | 48.79             | 36.44              | 7.55         | 36.57        | 2.28                    | 58.49              | 73.97             | 15.4           | 150            | 0              |        |
| Hori.    | 9608.000           | PK       | 48.59             | 38.63              | 8.40         | 36.54        | 2.28                    | 61.36              | 73.97             | 12.6           | 150            | 0              |        |
| Hori.    | 12010.000          | PK       | 49.25             | 39.28              | 9.82         | 35.89        | 2.28                    | 64.74              | 73.97             | 9.2            | 150            | 0              |        |
| Hori.    | 2390.000           | AV       | 31.56             | 27.41              | 13.82        | 36.87        | 2.28                    | 38.20              | 53.97             | 15.7           | 154            | 138            |        |
| Hori.    | 3202.669           | AV       | 37.94             | 28.56              | 5.51         | 36.83        | 2.28                    | 37.46              | 53.97             | 16.5           | 153            | 0              |        |
| Vert.    | 37.481             | QP       | 33.30             | 15.32              | 7.18         | 31.83        | 0.00                    | 23.97              | 40.00             | 16.0           | 100            | 272            |        |
| Vert.    | 48.024             | QP       | 37.20             | 11.50              | 7.41         | 31.82        | 0.00                    | 24.29              | 40.00             | 15.7           | 100            | 205            |        |
| Vert.    | 119.887            | QP       | 36.50             | 13.00              | 8.16         | 31.79        | 0.00                    | 25.87              | 43.50             | 17.6           | 100            | 280            |        |
| Vert.    | 144.127            | QP       | 36.60             | 14.64              | 8.66         | 31.78        | 0.00                    | 28.12              | 43.50             | 15.3           | 100            | 305            |        |
| Vert.    | 168.004            | QP       | 39.65             | 15.72              | 8.92         | 31.77        | 0.00                    | 32.52              | 43.50             | 10.9           | 100            | 217            |        |
| Vert.    | 252.196            | QP       | 49.40             | 11.67              | 6.21         | 31.73        | 0.00                    | 35.55              | 46.00             | 10.4           | 100            | 189            |        |
| Vert.    | 799.764            | QP       | 35.00             | 20.77              | 9.30         | 31.88        | 0.00                    | 33.19              | 46.00             | 12.8           | 100            | 131            |        |
| Vert.    | 2390.000           | PK       | 47.02             | 27.41              | 13.82        | 36.87        | 2.28                    | 53.66              | 73.97             | 20.3           | 144            | 209            |        |
| Vert.    | 3202.657           | PK       | 49.32             | 28.56              | 5.51         | 36.83        | 2.28                    | 48.84              | 73.97             | 25.1           | 105            | 101            |        |
| Vert.    | 4804.000           | PK       | 59.12             | 31.13              | 6.01         | 36.53        | 2.28                    | 62.01              | 73.97             | 11.9           | 150            | 259            |        |
| Vert.    | 7206.000           | PK       | 44.02             | 36.44              | 7.55         | 36.57        | 2.28                    | 53.72              | 73.97             | 20.2           | 150            | 0              |        |
| Vert.    | 9608.000           | PK       | 45.29             | 38.63              | 8.40         | 36.54        | 2.28                    | 58.06              | 73.97             | 15.9           | 150            | 0              |        |
| Vert.    | 12010.000          | PK       | 44.91             | 39.28              | 9.82         | 35.89        | 2.28                    | 60.40              | 73.97             | 13.5           | 150            | 0              |        |
| Vert.    | 2390.000           | AV       | 33.53             | 27.41              | 13.82        | 36.87        | 2.28                    | 40.17              | 53.97             | 13.8           | 144            | 209            |        |
| Vert.    | 3202.657           | AV       | 38.63             | 28.56              | 5.51         | 36.83        | 2.28                    | 38.15              | 53.97             | 15.8           | 105            | 101            |        |

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

Distance factor : 1 GHz - 13 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

### Dwell time factor relaxation

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Dwell<br>Factor<br>[dB] | Distance<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|----------------------------|--------------------|-------------------|----------------|--------|
| Hori.    | 4804.000           | AV       | 51.33             | 31.13              | 6.01         | 36.53        | -24.65                  | 2.28                       | 29.57              | 53.97             | 24.4           |        |
| Hori.    | 7206.000           | AV       | 34.58             | 36.44              | 7.55         | 36.57        | -24.65                  | 2.28                       | 19.63              | 53.97             | 34.3           |        |
| Hori.    | 9608.000           | AV       | 33.71             | 38.63              | 8.40         | 36.54        | -24.65                  | 2.28                       | 21.83              | 53.97             | 32.1           |        |
| Hori.    | 12010.000          | AV       | 34.31             | 39.28              | 9.82         | 35.89        | -24.65                  | 2.28                       | 25.15              | 53.97             | 28.8           |        |
| Vert.    | 4804.000           | AV       | 51.61             | 31.13              | 6.01         | 36.53        | -24.65                  | 2.28                       | 29.85              | 53.97             | 24.1           |        |
| Vert.    | 7206.000           | AV       | 31.00             | 36.44              | 7.55         | 36.57        | -24.65                  | 2.28                       | 16.05              | 53.97             | 37.9           |        |
| Vert.    | 9608.000           | AV       | 31.72             | 38.63              | 8.40         | 36.54        | -24.65                  | 2.28                       | 19.84              | 53.97             | 34.1           |        |
| Vert.    | 12010.000          | AV       | 30.93             | 39.28              | 9.82         | 35.89        | -24.65                  | 2.28                       | 21.77              | 53.97             | 32.2           |        |

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

Distance factor : 1 GHz - 13 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

Dwell (time) factor refer to "Dwell time factor Calculation chart" sheet.

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Factor [dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark  |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|--------------------|-------------------|----------------|---------|
| Hori.    | 2402.000           | PK       | 89.20             | 27.46              | 13.83        | 36.87        | 2.28                    | 95.90              | -                 | -              | Carrier |
| Hori.    | 2400.000           | PK       | 37.71             | 27.45              | 13.83        | 36.87        | 2.28                    | 44.40              | 75.90             | 31.5           |         |
| Vert.    | 2402.000           | PK       | 86.48             | 27.46              | 13.83        | 36.87        | 2.28                    | 93.18              | -                 | -              | Carrier |
| Vert.    | 2400.000           | PK       | 38.87             | 27.45              | 13.83        | 36.87        | 2.28                    | 45.56              | 73.18             | 27.6           |         |

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

Distance factor : 1 GHz - 13 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

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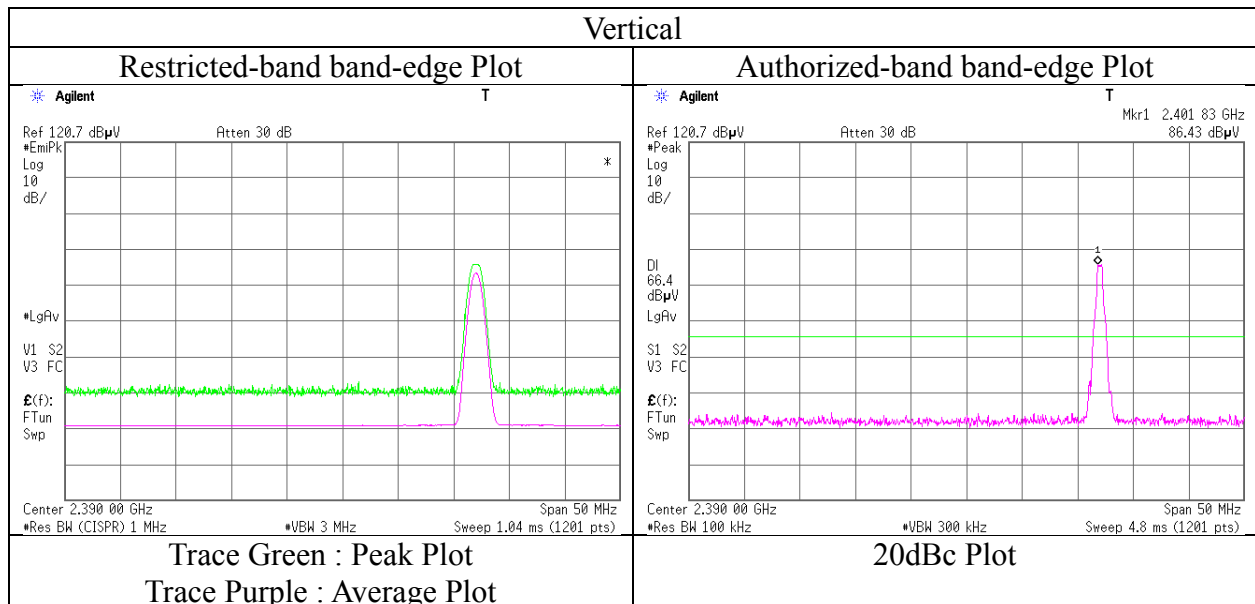
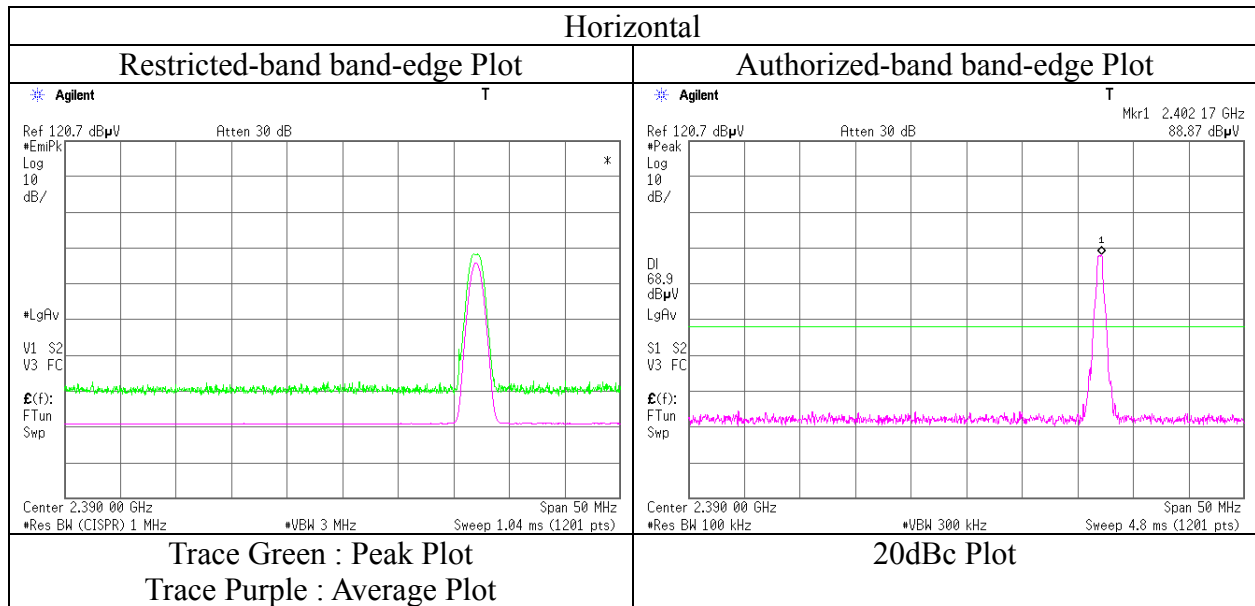
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN

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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.             | 11334871S-C-R1                             |
| Date                   | October 17, 2016                           |
| Temperature / Humidity | 24 deg.C / 45 %RH                          |
| Engineer               | Hikaru Shirasawa                           |
| Mode                   | Tx, Hopping Off, DH5 2402 MHz              |



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

## Radiated Spurious Emission

Test place Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. 11334871S-C-R1  
Date October 17, 2016 November 8, 2016 November 9, 2016 November 6, 2016  
Temperature / Humidity 24 deg.C / 45 %RH 24 deg.C / 30 %RH 22 deg.C / 36 %RH 20 deg.C / 42 %RH  
Engineer Hikaru Shirasawa Shinichi Takano Hikaru Shirasawa Kazutaka Takeyama  
(1 GHz - 2.8 GHz) (2.8 GHz - 13 GHz), (18 GHz - 26 GHz) (30 MHz - 1000 MHz)

Mode Tx, Hopping Off, DH5 2441 MHz

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Factor [dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 168.115            | QP       | 38.60             | 15.73              | 8.92         | 31.77        | 0.00                    | 31.48              | 43.50             | 12.0           | 150            | 252            |        |
| Hori.    | 192.008            | QP       | 38.50             | 16.39              | 8.94         | 31.76        | 0.00                    | 32.07              | 43.50             | 11.4           | 150            | 280            |        |
| Hori.    | 215.949            | QP       | 50.00             | 11.65              | 5.90         | 31.75        | 0.00                    | 35.80              | 43.50             | 7.7            | 150            | 166            |        |
| Hori.    | 221.245            | QP       | 43.40             | 11.64              | 5.94         | 31.75        | 0.00                    | 29.23              | 46.00             | 16.7           | 153            | 171            |        |
| Hori.    | 230.087            | QP       | 44.00             | 11.63              | 6.02         | 31.74        | 0.00                    | 29.91              | 46.00             | 16.0           | 150            | 178            |        |
| Hori.    | 252.147            | QP       | 43.60             | 11.67              | 6.21         | 31.73        | 0.00                    | 29.75              | 46.00             | 16.2           | 150            | 232            |        |
| Hori.    | 384.299            | QP       | 39.60             | 15.32              | 7.16         | 31.80        | 0.00                    | 30.28              | 46.00             | 15.7           | 100            | 275            |        |
| Hori.    | 3254.653           | PK       | 47.22             | 28.59              | 5.52         | 36.81        | 2.28                    | 46.80              | 73.90             | 27.1           | 125            | 208            |        |
| Hori.    | 4882.000           | PK       | 60.37             | 31.29              | 6.04         | 37.16        | 2.28                    | 62.82              | 73.90             | 11.0           | 104            | 343            |        |
| Hori.    | 7323.000           | PK       | 43.19             | 36.77              | 7.59         | 37.92        | 2.28                    | 51.91              | 73.90             | 21.9           | 150            | 0              |        |
| Hori.    | 9764.000           | PK       | 46.24             | 38.75              | 8.49         | 39.20        | 2.28                    | 56.56              | 73.90             | 17.3           | 150            | 0              |        |
| Hori.    | 12205.000          | PK       | 46.00             | 39.30              | 9.97         | 39.39        | 2.28                    | 58.16              | 73.90             | 15.7           | 150            | 0              |        |
| Hori.    | 3254.653           | AV       | 39.80             | 28.59              | 5.52         | 36.81        | 2.28                    | 39.38              | 53.90             | 14.5           | 125            | 208            |        |
| Vert.    | 37.523             | QP       | 33.00             | 15.31              | 7.19         | 31.83        | 0.00                    | 23.67              | 40.00             | 16.3           | 100            | 271            |        |
| Vert.    | 48.028             | QP       | 37.10             | 11.49              | 7.41         | 31.82        | 0.00                    | 24.18              | 40.00             | 15.8           | 100            | 200            |        |
| Vert.    | 96.008             | QP       | 45.70             | 9.33               | 8.28         | 31.80        | 0.00                    | 31.51              | 43.50             | 11.9           | 100            | 297            |        |
| Vert.    | 144.124            | QP       | 36.50             | 14.64              | 8.66         | 31.78        | 0.00                    | 28.02              | 43.50             | 15.4           | 100            | 292            |        |
| Vert.    | 168.002            | QP       | 39.70             | 15.72              | 8.92         | 31.77        | 0.00                    | 32.57              | 43.50             | 10.9           | 100            | 292            |        |
| Vert.    | 252.189            | QP       | 46.40             | 11.67              | 6.21         | 31.73        | 0.00                    | 32.55              | 46.00             | 13.4           | 100            | 183            |        |
| Vert.    | 799.766            | QP       | 35.00             | 20.77              | 9.30         | 31.88        | 0.00                    | 33.19              | 46.00             | 12.8           | 100            | 132            |        |
| Vert.    | 3254.643           | PK       | 46.67             | 28.59              | 5.52         | 36.81        | 2.28                    | 46.25              | 73.90             | 27.6           | 148            | 274            |        |
| Vert.    | 4882.000           | PK       | 59.05             | 31.29              | 6.04         | 37.16        | 2.28                    | 61.50              | 73.90             | 12.4           | 151            | 279            |        |
| Vert.    | 7323.000           | PK       | 43.65             | 36.77              | 7.59         | 37.92        | 2.28                    | 52.37              | 73.90             | 21.5           | 150            | 0              |        |
| Vert.    | 9764.000           | PK       | 45.66             | 38.75              | 8.49         | 39.20        | 2.28                    | 55.98              | 73.90             | 17.9           | 150            | 0              |        |
| Vert.    | 12205.000          | PK       | 45.15             | 39.30              | 9.97         | 39.39        | 2.28                    | 57.31              | 73.90             | 16.5           | 150            | 0              |        |
| Vert.    | 3254.643           | AV       | 40.08             | 28.59              | 5.52         | 36.81        | 2.28                    | 39.66              | 53.90             | 14.2           | 148            | 274            |        |

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

Distance factor : 1 GHz - 13 GHz :  $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

### Dwell time factor relaxation

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Dwell<br>Factor<br>[dB] | Distance<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|----------------------------|--------------------|-------------------|----------------|--------|
| Hori.    | 4882.000           | AV       | 55.99             | 31.29              | 6.04         | 37.16        | -24.65                  | 2.28                       | 33.79              | 53.90             | 20.1           |        |
| Hori.    | 7323.000           | AV       | 32.36             | 36.77              | 7.59         | 37.92        | -24.65                  | 2.28                       | 16.43              | 53.90             | 37.5           |        |
| Hori.    | 9764.000           | AV       | 33.66             | 38.75              | 8.49         | 39.20        | -24.65                  | 2.28                       | 19.33              | 53.90             | 34.6           |        |
| Hori.    | 12205.000          | AV       | 33.63             | 39.30              | 9.97         | 39.39        | -24.65                  | 2.28                       | 21.14              | 53.90             | 32.8           |        |
| Vert.    | 4882.000           | AV       | 54.80             | 31.29              | 6.04         | 37.16        | -24.65                  | 2.28                       | 32.60              | 53.90             | 21.3           |        |
| Vert.    | 7323.000           | AV       | 32.31             | 36.77              | 7.59         | 37.92        | -24.65                  | 2.28                       | 16.38              | 53.90             | 37.5           |        |
| Vert.    | 9764.000           | AV       | 33.48             | 38.75              | 8.49         | 39.20        | -24.65                  | 2.28                       | 19.15              | 53.90             | 34.7           |        |
| Vert.    | 12205.000          | AV       | 33.51             | 39.30              | 9.97         | 39.39        | -24.65                  | 2.28                       | 21.02              | 53.90             | 32.9           |        |

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

Distance factor : 1 GHz - 13 GHz :  $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

Dwell (time) factor refer to "Dwell time factor Calculation chart" sheet.

## Radiated Spurious Emission

Test place : Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. : 11334871S-C-R1  
Date : October 17, 2016      November 8, 2016      November 9, 2016      November 6, 2016  
Temperature / Humidity : 24 deg.C / 45 %RH      24 deg.C / 30 %RH      22 deg.C / 36 %RH      20 deg.C / 42 %RH  
Engineer : Hikaru Shirasawa      Shinichi Takano      Hikaru Shirasawa      Kazutaka Takeyama  
(1 GHz - 2.8 GHz)      (2.8 GHz - 13 GHz),      (18 GHz - 26 GHz)      (30 MHz - 1000 MHz)  
(13 GHz - 18 GHz)

Mode : Tx, Hopping Off, DH5 2480 MHz

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Factor [dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 168.010            | QP       | 40.00             | 15.72              | 8.92         | 31.77        | 0.00                    | 32.87              | 43.50             | 10.6           | 152            | 254            |        |
| Hori.    | 191.992            | QP       | 39.00             | 16.39              | 8.94         | 31.76        | 0.00                    | 32.57              | 43.50             | 10.9           | 147            | 275            |        |
| Hori.    | 215.987            | QP       | 49.90             | 11.65              | 5.90         | 31.75        | 0.00                    | 35.70              | 43.50             | 7.8            | 150            | 177            |        |
| Hori.    | 231.301            | QP       | 45.60             | 11.62              | 6.03         | 31.74        | 0.00                    | 31.51              | 46.00             | 14.4           | 150            | 162            |        |
| Hori.    | 240.000            | QP       | 49.00             | 11.61              | 6.10         | 31.74        | 0.00                    | 34.97              | 46.00             | 11.0           | 150            | 295            |        |
| Hori.    | 384.678            | QP       | 39.40             | 15.33              | 7.16         | 31.80        | 0.00                    | 30.09              | 46.00             | 15.9           | 100            | 290            |        |
| Hori.    | 2483.500           | PK       | 45.83             | 27.79              | 13.91        | 36.85        | 2.28                    | 52.96              | 73.97             | 21.0           | 140            | 129            |        |
| Hori.    | 3306.638           | PK       | 48.41             | 28.63              | 5.53         | 36.80        | 2.28                    | 48.05              | 73.90             | 25.8           | 117            | 217            |        |
| Hori.    | 4960.000           | PK       | 55.25             | 31.45              | 6.06         | 37.19        | 2.28                    | 57.85              | 73.90             | 16.0           | 171            | 347            |        |
| Hori.    | 7440.000           | PK       | 44.12             | 37.11              | 7.63         | 37.99        | 2.28                    | 53.15              | 73.90             | 20.7           | 150            | 0              |        |
| Hori.    | 9920.000           | PK       | 44.40             | 38.87              | 8.57         | 39.26        | 2.28                    | 54.86              | 73.90             | 19.0           | 150            | 0              |        |
| Hori.    | 12400.000          | PK       | 45.12             | 39.32              | 10.10        | 39.40        | 2.28                    | 57.42              | 73.90             | 16.4           | 150            | 0              |        |
| Hori.    | 2483.500           | AV       | 33.15             | 27.79              | 13.91        | 36.85        | 2.28                    | 40.28              | 53.97             | 13.6           | 140            | 129            |        |
| Hori.    | 3306.638           | AV       | 40.75             | 28.63              | 5.53         | 36.80        | 2.28                    | 40.39              | 53.90             | 13.5           | 117            | 217            |        |
| Vert.    | 37.651             | QP       | 33.30             | 15.26              | 7.19         | 31.83        | 0.00                    | 23.92              | 40.00             | 16.0           | 100            | 282            |        |
| Vert.    | 96.016             | QP       | 46.30             | 9.34               | 8.28         | 31.80        | 0.00                    | 32.12              | 43.50             | 11.3           | 100            | 293            |        |
| Vert.    | 144.088            | QP       | 36.60             | 14.64              | 8.66         | 31.78        | 0.00                    | 28.12              | 43.50             | 15.3           | 100            | 302            |        |
| Vert.    | 168.014            | QP       | 39.50             | 15.72              | 8.92         | 31.77        | 0.00                    | 32.37              | 43.50             | 11.1           | 100            | 215            |        |
| Vert.    | 215.996            | QP       | 48.20             | 11.65              | 5.90         | 31.75        | 0.00                    | 34.00              | 43.50             | 9.5            | 100            | 223            |        |
| Vert.    | 252.204            | QP       | 46.60             | 11.67              | 6.21         | 31.73        | 0.00                    | 32.75              | 46.00             | 13.2           | 100            | 251            |        |
| Vert.    | 799.758            | QP       | 34.70             | 20.77              | 9.30         | 31.88        | 0.00                    | 32.89              | 46.00             | 13.1           | 100            | 127            |        |
| Vert.    | 2483.500           | PK       | 45.91             | 27.79              | 13.91        | 36.85        | 2.28                    | 53.04              | 73.97             | 20.9           | 154            | 260            |        |
| Vert.    | 3306.408           | PK       | 48.05             | 28.63              | 5.53         | 36.80        | 2.28                    | 47.69              | 73.90             | 26.2           | 159            | 224            |        |
| Vert.    | 4960.000           | PK       | 55.07             | 31.45              | 6.06         | 37.19        | 2.28                    | 57.67              | 73.90             | 16.2           | 255            | 23             |        |
| Vert.    | 7440.000           | PK       | 44.25             | 37.11              | 7.63         | 37.99        | 2.28                    | 53.28              | 73.90             | 20.6           | 150            | 0              |        |
| Vert.    | 9920.000           | PK       | 44.79             | 38.87              | 8.57         | 39.26        | 2.28                    | 55.25              | 73.90             | 18.6           | 150            | 0              |        |
| Vert.    | 12400.000          | PK       | 44.59             | 39.32              | 10.10        | 39.40        | 2.28                    | 56.89              | 73.90             | 17.0           | 150            | 0              |        |
| Vert.    | 2483.500           | AV       | 31.57             | 27.79              | 13.91        | 36.85        | 2.28                    | 38.70              | 53.97             | 15.2           | 154            | 260            |        |
| Vert.    | 3306.408           | AV       | 39.72             | 28.63              | 5.53         | 36.80        | 2.28                    | 39.36              | 53.90             | 14.5           | 159            | 224            |        |

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

Distance factor : 1 GHz - 13 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

### Dwell time factor relaxation

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Dwell<br>Factor<br>[dB] | Distance<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|----------------------------|--------------------|-------------------|----------------|--------|
| Hori.    | 4960.000           | AV       | 50.31             | 31.45              | 6.06         | 37.19        | -24.65                  | 2.28                       | 28.26              | 53.90             | 25.6           |        |
| Hori.    | 7440.000           | AV       | 32.44             | 37.11              | 7.63         | 37.99        | -24.65                  | 2.28                       | 16.82              | 53.90             | 37.1           |        |
| Hori.    | 9920.000           | AV       | 33.41             | 38.87              | 8.57         | 39.26        | -24.65                  | 2.28                       | 19.22              | 53.90             | 34.7           |        |
| Hori.    | 12400.000          | AV       | 33.56             | 39.32              | 10.10        | 39.40        | -24.65                  | 2.28                       | 21.21              | 53.90             | 32.7           |        |
| Vert.    | 4960.000           | AV       | 50.13             | 31.45              | 6.06         | 37.19        | -24.65                  | 2.28                       | 28.08              | 53.90             | 25.8           |        |
| Vert.    | 7440.000           | AV       | 32.26             | 37.11              | 7.63         | 37.99        | -24.65                  | 2.28                       | 16.64              | 53.90             | 37.3           |        |
| Vert.    | 9920.000           | AV       | 33.30             | 38.87              | 8.57         | 39.26        | -24.65                  | 2.28                       | 19.11              | 53.90             | 34.8           |        |
| Vert.    | 12400.000          | AV       | 33.54             | 39.32              | 10.10        | 39.40        | -24.65                  | 2.28                       | 21.19              | 53.90             | 32.7           |        |

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

Distance factor : 1 GHz - 13 GHz : 20log (3.90 m / 3.0 m) = 2.28 dB

Dwell (time) factor refer to "Dwell time factor Calculation chart" sheet.

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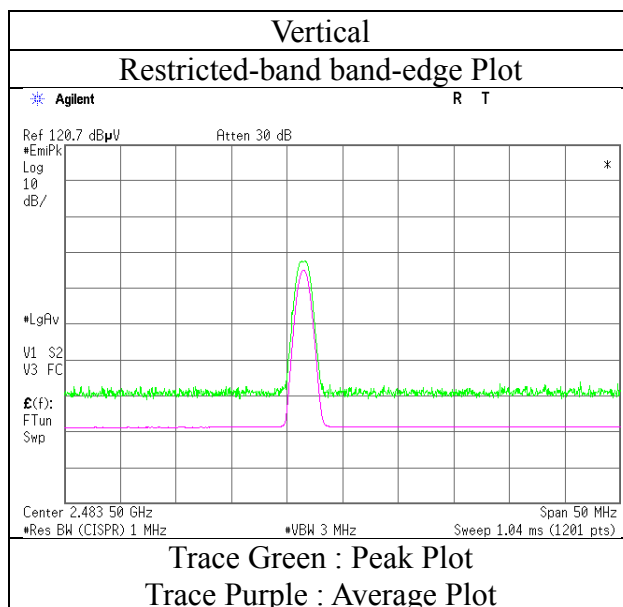
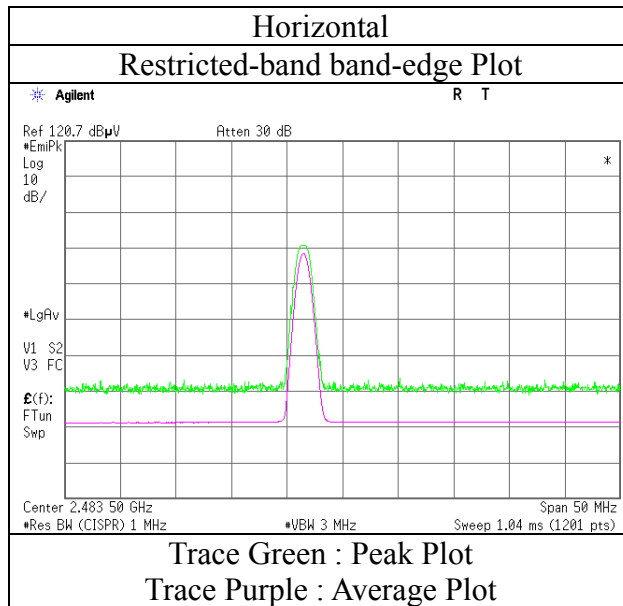
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## **Radiated Spurious Emission** **(Reference Plot for band-edge)**

Test place Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. 11334871S-C-R1  
Date October 17, 2016  
Temperature / Humidity 24 deg.C / 45 %RH  
Engineer Hikaru Shirasawa  
Mode Tx, Hopping Off, DH5 2480 MHz



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

## Radiated Spurious Emission

Test place : Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. : 11334871S-C-R1  
Date : October 17, 2016      November 8, 2016      November 9, 2016      November 6, 2016  
Temperature / Humidity : 24 deg.C / 45 %RH      24 deg.C / 30 %RH      22 deg.C / 36 %RH      20 deg.C / 42 %RH  
Engineer : Hikaru Shirasawa      Shinichi Takano      Hikaru Shirasawa      Kazutaka Takeyama  
(1 GHz - 2.8 GHz)      (2.8 GHz - 13 GHz),      (18 GHz - 26 GHz)      (30 MHz - 1000 MHz)

Mode : Tx, Hopping Off, 3DH5 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.    | 168.011         | QP       | 40.40          | 15.72           | 8.92      | 31.77     | 0.00                 | 33.27           | 43.50          | 10.2        | 162         | 260         |        |
| Hori.    | 191.996         | QP       | 38.80          | 16.39           | 8.94      | 31.76     | 0.00                 | 32.37           | 43.50          | 11.1        | 150         | 267         |        |
| Hori.    | 215.997         | QP       | 49.80          | 11.65           | 5.90      | 31.75     | 0.00                 | 35.60           | 43.50          | 7.9         | 150         | 174         |        |
| Hori.    | 231.092         | QP       | 42.40          | 11.62           | 6.03      | 31.74     | 0.00                 | 28.31           | 46.00          | 17.6        | 151         | 161         |        |
| Hori.    | 240.527         | QP       | 48.90          | 11.61           | 6.11      | 31.74     | 0.00                 | 34.88           | 46.00          | 11.1        | 150         | 290         |        |
| Hori.    | 383.959         | QP       | 39.50          | 15.31           | 7.16      | 31.80     | 0.00                 | 30.17           | 46.00          | 15.8        | 100         | 284         |        |
| Hori.    | 2390.000        | PK       | 46.01          | 27.41           | 13.82     | 36.87     | 2.28                 | 52.65           | 73.97          | 21.3        | 151         | 133         |        |
| Hori.    | 3202.679        | PK       | 46.96          | 28.56           | 5.51      | 36.82     | 2.28                 | 46.49           | 73.90          | 27.4        | 148         | 214         |        |
| Hori.    | 4804.000        | PK       | 60.55          | 31.13           | 6.01      | 37.12     | 2.28                 | 62.85           | 73.90          | 11.0        | 111         | 343         |        |
| Hori.    | 7206.000        | PK       | 44.73          | 36.44           | 7.55      | 37.84     | 2.28                 | 53.16           | 73.90          | 20.7        | 150         | 0           |        |
| Hori.    | 9608.000        | PK       | 44.74          | 38.63           | 8.40      | 39.13     | 2.28                 | 54.92           | 73.90          | 18.9        | 150         | 0           |        |
| Hori.    | 12010.000       | PK       | 45.43          | 39.28           | 9.82      | 39.38     | 2.28                 | 57.43           | 73.90          | 16.4        | 150         | 0           |        |
| Hori.    | 2390.000        | AV       | 33.01          | 27.41           | 13.82     | 36.87     | 2.28                 | 39.65           | 53.97          | 14.3        | 151         | 133         |        |
| Hori.    | 3202.679        | AV       | 39.56          | 28.56           | 5.51      | 36.82     | 2.28                 | 39.09           | 53.90          | 14.8        | 148         | 214         |        |
| Vert.    | 37.482          | QP       | 33.20          | 15.32           | 7.18      | 31.83     | 0.00                 | 23.87           | 40.00          | 16.1        | 100         | 272         |        |
| Vert.    | 96.010          | QP       | 46.40          | 9.33            | 8.28      | 31.80     | 0.00                 | 32.21           | 43.50          | 11.2        | 100         | 295         |        |
| Vert.    | 168.002         | QP       | 39.70          | 15.72           | 8.92      | 31.77     | 0.00                 | 32.57           | 43.50          | 10.9        | 103         | 275         |        |
| Vert.    | 252.192         | QP       | 46.50          | 11.67           | 6.21      | 31.73     | 0.00                 | 32.65           | 46.00          | 13.3        | 100         | 252         |        |
| Vert.    | 799.774         | QP       | 34.60          | 20.77           | 9.30      | 31.88     | 0.00                 | 32.79           | 46.00          | 13.2        | 100         | 131         |        |
| Vert.    | 2390.000        | PK       | 44.60          | 27.41           | 13.82     | 36.87     | 2.28                 | 51.24           | 73.97          | 22.7        | 233         | 218         |        |
| Vert.    | 3202.672        | PK       | 47.88          | 28.56           | 5.51      | 36.82     | 2.28                 | 47.41           | 73.90          | 26.4        | 165         | 213         |        |
| Vert.    | 4804.000        | PK       | 60.20          | 31.13           | 6.01      | 37.12     | 2.28                 | 62.50           | 73.90          | 11.4        | 150         | 24          |        |
| Vert.    | 7206.000        | PK       | 43.46          | 36.44           | 7.55      | 37.84     | 2.28                 | 51.89           | 73.90          | 22.0        | 150         | 0           |        |
| Vert.    | 9608.000        | PK       | 45.30          | 38.63           | 8.40      | 39.13     | 2.28                 | 55.48           | 73.90          | 18.4        | 150         | 0           |        |
| Vert.    | 12010.000       | PK       | 44.99          | 39.28           | 9.82      | 39.38     | 2.28                 | 56.99           | 73.90          | 16.9        | 150         | 0           |        |
| Vert.    | 2390.000        | AV       | 32.98          | 27.41           | 13.82     | 36.87     | 2.28                 | 39.62           | 53.97          | 14.3        | 233         | 218         |        |
| Vert.    | 3202.672        | AV       | 38.93          | 28.56           | 5.51      | 36.82     | 2.28                 | 38.46           | 53.90          | 15.4        | 165         | 213         |        |

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

Distance factor : 1 GHz - 13 GHz : 20log(3.90 m / 3.0 m) = 2.28 dB

### Dwell time factor relaxation

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Dwell Factor [dB] | Distance Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-------------------|----------------------|-----------------|----------------|-------------|--------|
| Hori.    | 4804.000        | AV       | 52.67          | 31.13           | 6.01      | 37.12     | -24.63            | 2.28                 | 30.34           | 53.90          | 23.6        |        |
| Hori.    | 7206.000        | AV       | 32.21          | 36.44           | 7.55      | 37.84     | -24.63            | 2.28                 | 16.01           | 53.90          | 37.9        |        |
| Hori.    | 9608.000        | AV       | 33.15          | 38.63           | 8.40      | 39.13     | -24.63            | 2.28                 | 18.70           | 53.90          | 35.2        |        |
| Hori.    | 12010.000       | AV       | 33.79          | 39.28           | 9.82      | 39.38     | -24.63            | 2.28                 | 21.16           | 53.90          | 32.7        |        |
| Vert.    | 4804.000        | AV       | 52.24          | 31.13           | 6.01      | 37.12     | -24.63            | 2.28                 | 29.91           | 53.90          | 24.0        |        |
| Vert.    | 7206.000        | AV       | 32.22          | 36.44           | 7.55      | 37.84     | -24.63            | 2.28                 | 16.02           | 53.90          | 37.9        |        |
| Vert.    | 9608.000        | AV       | 33.09          | 38.63           | 8.40      | 39.13     | -24.63            | 2.28                 | 18.64           | 53.90          | 35.3        |        |
| Vert.    | 12010.000       | AV       | 33.29          | 39.28           | 9.82      | 39.38     | -24.63            | 2.28                 | 20.66           | 53.90          | 33.2        |        |

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

Distance factor : 1 GHz - 13 GHz : 20log(3.90 m / 3.0 m) = 2.28 dB

Dwell (time) factor refer to "Dwell time factor Calculation chart" sheet.

### 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       | 88.93          | 27.46           | 13.83     | 36.87     | 2.28                 | 95.63           | -              | -           | Carrier |
| Hori.    | 2400.000        | PK       | 37.00          | 27.45           | 13.83     | 36.87     | 2.28                 | 43.69           | 75.63          | 31.9        |         |
| Vert.    | 2402.000        | PK       | 86.71          | 27.46           | 13.83     | 36.87     | 2.28                 | 93.41           | -              | -           | Carrier |
| Vert.    | 2400.000        | PK       | 36.88          | 27.45           | 13.83     | 36.87     | 2.28                 | 43.57           | 73.41          | 29.8        |         |

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

Distance factor : 1 GHz - 13 GHz : 20log(3.90 m / 3.0 m) = 2.28 dB

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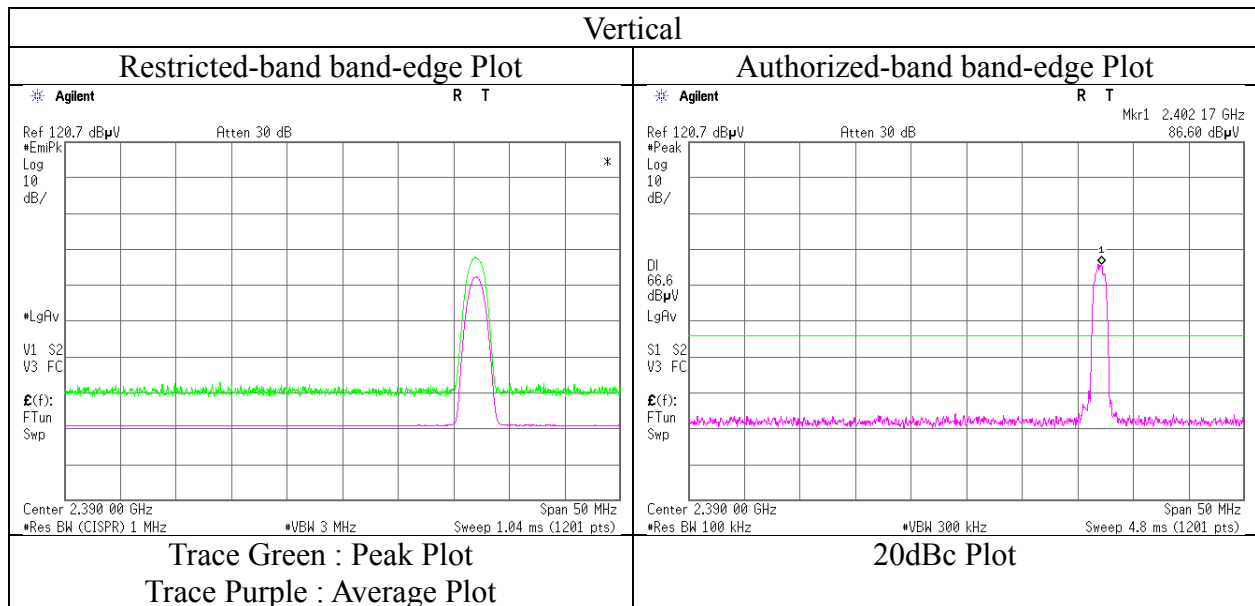
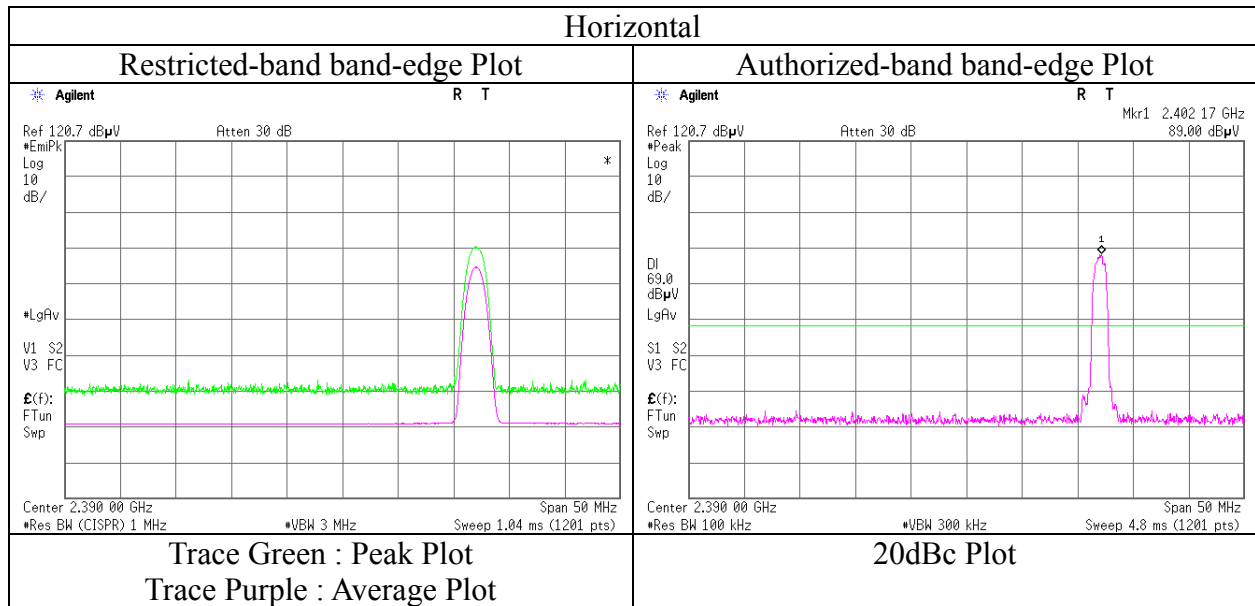
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## Radiated Spurious Emission (Reference Plot for band-edge)

|                        |                                            |
|------------------------|--------------------------------------------|
| Test place             | Shonan EMC Lab. No.3 Semi Anechoic Chamber |
| Report No.             | 11334871S-C-R1                             |
| Date                   | October 17, 2016                           |
| Temperature / Humidity | 24 deg.C / 45 %RH                          |
| Engineer               | Hikaru Shirasawa                           |
| Mode                   | Tx, Hopping Off, 3DH5 2402 MHz             |



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

## Radiated Spurious Emission

Test place Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. 11334871S-C-R1  
Date October 17, 2016 November 8, 2016 November 9, 2016 November 6, 2016  
Temperature / Humidity 24 deg.C / 45 %RH 24 deg.C / 30 %RH 22 deg.C / 36 %RH 20 deg.C / 42 %RH  
Engineer Hikaru Shirasawa Shinichi Takano Hikaru Shirasawa Kazutaka Takeyama  
(1 GHz - 2.8 GHz) (2.8 GHz - 13 GHz), (18 GHz - 26 GHz) (30 MHz - 1000 MHz)

Mode Tx, Hopping Off, 3DH5 2441 MHz

(\* PK: Peak, AV: Average, QP: Quasi-Peak)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Factor [dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| Hori.    | 168.035            | QP       | 39.00             | 15.73              | 8.92         | 31.77        | 0.00                    | 31.88              | 43.50             | 11.6           | 150            | 257            |        |
| Hori.    | 192.009            | QP       | 38.50             | 16.39              | 8.94         | 31.76        | 0.00                    | 32.07              | 43.50             | 11.4           | 150            | 279            |        |
| Hori.    | 215.999            | QP       | 49.90             | 11.65              | 5.90         | 31.75        | 0.00                    | 35.70              | 43.50             | 7.8            | 150            | 179            |        |
| Hori.    | 240.008            | QP       | 48.20             | 11.61              | 6.10         | 31.74        | 0.00                    | 34.17              | 46.00             | 11.8           | 151            | 279            |        |
| Hori.    | 384.360            | QP       | 39.70             | 15.32              | 7.16         | 31.80        | 0.00                    | 30.38              | 46.00             | 15.6           | 100            | 278            |        |
| Hori.    | 3254.639           | PK       | 46.93             | 28.59              | 5.52         | 36.81        | 2.28                    | 46.51              | 73.90             | 27.3           | 123            | 213            |        |
| Hori.    | 4882.000           | PK       | 62.31             | 31.29              | 6.04         | 37.16        | 2.28                    | 64.76              | 73.90             | 9.1            | 106            | 342            |        |
| Hori.    | 7323.000           | PK       | 44.42             | 36.77              | 7.59         | 37.92        | 2.28                    | 53.14              | 73.90             | 20.7           | 150            | 0              |        |
| Hori.    | 9764.000           | PK       | 44.53             | 38.75              | 8.49         | 39.20        | 2.28                    | 54.85              | 73.90             | 19.0           | 150            | 0              |        |
| Hori.    | 12205.000          | PK       | 44.92             | 39.30              | 9.97         | 39.39        | 2.28                    | 57.08              | 73.90             | 16.8           | 150            | 0              |        |
| Hori.    | 3254.639           | AV       | 39.93             | 28.59              | 5.52         | 36.81        | 2.28                    | 39.51              | 53.90             | 14.3           | 123            | 213            |        |
| Vert.    | 37.582             | QP       | 33.70             | 15.29              | 7.19         | 31.83        | 0.00                    | 24.35              | 40.00             | 15.6           | 100            | 270            |        |
| Vert.    | 96.015             | QP       | 46.60             | 9.33               | 8.28         | 31.80        | 0.00                    | 32.41              | 43.50             | 11.0           | 100            | 286            |        |
| Vert.    | 168.011            | QP       | 39.60             | 15.72              | 8.92         | 31.77        | 0.00                    | 32.47              | 43.50             | 11.0           | 100            | 286            |        |
| Vert.    | 252.205            | QP       | 46.80             | 11.67              | 6.21         | 31.73        | 0.00                    | 32.95              | 46.00             | 13.0           | 100            | 234            |        |
| Vert.    | 799.763            | QP       | 34.80             | 20.77              | 9.30         | 31.88        | 0.00                    | 32.99              | 46.00             | 13.0           | 100            | 135            |        |
| Vert.    | 3254.653           | PK       | 47.51             | 28.59              | 5.52         | 36.81        | 2.28                    | 47.09              | 73.90             | 26.8           | 148            | 272            |        |
| Vert.    | 4882.000           | PK       | 60.68             | 31.29              | 6.04         | 37.16        | 2.28                    | 63.13              | 73.90             | 10.7           | 154            | 18             |        |
| Vert.    | 7323.000           | PK       | 43.89             | 36.77              | 7.59         | 37.92        | 2.28                    | 52.61              | 73.90             | 21.2           | 150            | 0              |        |
| Vert.    | 9764.000           | PK       | 45.50             | 38.75              | 8.49         | 39.20        | 2.28                    | 55.82              | 73.90             | 18.0           | 150            | 0              |        |
| Vert.    | 12205.000          | PK       | 45.94             | 39.30              | 9.97         | 39.39        | 2.28                    | 58.10              | 73.90             | 15.8           | 150            | 0              |        |
| Vert.    | 3254.653           | AV       | 39.99             | 28.59              | 5.52         | 36.81        | 2.28                    | 39.57              | 53.90             | 14.3           | 148            | 272            |        |

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

Distance factor : 1 GHz - 13 GHz :  $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

### Dwell time factor relaxation

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Dwell<br>Factor<br>[dB] | Distance<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|-------------------------|----------------------------|--------------------|-------------------|----------------|--------|
| Hori.    | 4882.000           | AV       | 54.23             | 31.29              | 6.04         | 37.16        | -24.63                  | 2.28                       | 32.05              | 53.90             | 21.9           |        |
| Hori.    | 7323.000           | AV       | 32.32             | 36.77              | 7.59         | 37.92        | -24.63                  | 2.28                       | 16.41              | 53.90             | 37.5           |        |
| Hori.    | 9764.000           | AV       | 33.58             | 38.75              | 8.49         | 39.20        | -24.63                  | 2.28                       | 19.27              | 53.90             | 34.6           |        |
| Hori.    | 12205.000          | AV       | 33.57             | 39.30              | 9.97         | 39.39        | -24.63                  | 2.28                       | 21.10              | 53.90             | 32.8           |        |
| Vert.    | 4882.000           | AV       | 52.92             | 31.29              | 6.04         | 37.16        | -24.63                  | 2.28                       | 30.74              | 53.90             | 23.2           |        |
| Vert.    | 7323.000           | AV       | 32.32             | 36.77              | 7.59         | 37.92        | -24.63                  | 2.28                       | 16.41              | 53.90             | 37.5           |        |
| Vert.    | 9764.000           | AV       | 33.67             | 38.75              | 8.49         | 39.20        | -24.63                  | 2.28                       | 19.36              | 53.90             | 34.5           |        |
| Vert.    | 12205.000          | AV       | 33.63             | 39.30              | 9.97         | 39.39        | -24.63                  | 2.28                       | 21.16              | 53.90             | 32.7           |        |

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

Distance factor : 1 GHz - 13 GHz :  $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

Dwell (time) factor refer to "Dwell time factor Calculation chart" sheet.

## Radiated Spurious Emission

Test place : Shonan EMC Lab. No.3 Semi Anechoic Chamber  
Report No. : 11334871S-C-R1  
Date : October 17, 2016      November 8, 2016      November 9, 2016      November 6, 2016  
Temperature / Humidity : 24 deg.C / 45 %RH      24 deg.C / 30 %RH      22 deg.C / 36 %RH      20 deg.C / 42 %RH  
Engineer : Hikaru Shirasawa      Shinichi Takano      Hikaru Shirasawa      Kazutaka Takeyama  
(1 GHz - 2.8 GHz)      (2.8 GHz - 13 GHz),      (18 GHz - 26 GHz)      (30 MHz - 1000 MHz)  
(13 GHz - 18 GHz)

Mode : Tx, Hopping Off, 3DH5 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.    | 168.003         | QP       | 40.10          | 15.72           | 8.92      | 31.77     | 0.00                 | 32.97           | 43.50          | 10.5        | 165         | 263         |        |
| Hori.    | 192.012         | QP       | 39.30          | 16.39           | 8.94      | 31.76     | 0.00                 | 32.87           | 43.50          | 10.6        | 165         | 268         |        |
| Hori.    | 215.998         | QP       | 49.90          | 11.65           | 5.90      | 31.75     | 0.00                 | 35.70           | 43.50          | 7.8         | 148         | 167         |        |
| Hori.    | 240.284         | QP       | 48.20          | 11.61           | 6.11      | 31.74     | 0.00                 | 34.18           | 46.00          | 11.8        | 151         | 278         |        |
| Hori.    | 384.054         | QP       | 39.70          | 15.31           | 7.16      | 31.80     | 0.00                 | 30.37           | 46.00          | 15.6        | 100         | 286         |        |
| Hori.    | 2483.500        | PK       | 45.22          | 27.79           | 13.91     | 36.85     | 2.28                 | 52.35           | 73.97          | 21.6        | 140         | 127         |        |
| Hori.    | 3306.656        | PK       | 47.60          | 28.63           | 5.53      | 36.80     | 2.28                 | 47.24           | 73.90          | 26.6        | 117         | 219         |        |
| Hori.    | 4960.000        | PK       | 56.90          | 31.45           | 6.06      | 37.19     | 2.28                 | 59.50           | 73.90          | 14.4        | 173         | 347         |        |
| Hori.    | 7440.000        | PK       | 44.23          | 37.11           | 7.63      | 37.99     | 2.28                 | 53.26           | 73.90          | 20.6        | 100         | 0           |        |
| Hori.    | 9920.000        | PK       | 44.58          | 38.87           | 8.57      | 39.26     | 2.28                 | 55.04           | 73.90          | 18.8        | 100         | 0           |        |
| Hori.    | 12400.000       | PK       | 45.70          | 39.32           | 10.10     | 39.40     | 2.28                 | 58.00           | 73.90          | 15.9        | 100         | 0           |        |
| Hori.    | 2483.500        | AV       | 33.16          | 27.79           | 13.91     | 36.85     | 2.28                 | 40.29           | 53.97          | 13.6        | 140         | 127         |        |
| Hori.    | 3306.656        | AV       | 40.68          | 28.63           | 5.53      | 36.80     | 2.28                 | 40.32           | 53.90          | 13.5        | 117         | 219         |        |
| Vert.    | 37.538          | QP       | 33.80          | 15.30           | 7.19      | 31.83     | 0.00                 | 24.46           | 40.00          | 15.5        | 100         | 271         |        |
| Vert.    | 96.047          | QP       | 46.40          | 9.34            | 8.28      | 31.80     | 0.00                 | 32.22           | 43.50          | 11.2        | 100         | 287         |        |
| Vert.    | 144.108         | QP       | 36.20          | 14.64           | 8.66      | 31.78     | 0.00                 | 27.72           | 43.50          | 15.7        | 100         | 299         |        |
| Vert.    | 168.002         | QP       | 39.50          | 15.72           | 8.92      | 31.77     | 0.00                 | 32.37           | 43.50          | 11.1        | 100         | 203         |        |
| Vert.    | 252.211         | QP       | 48.20          | 11.67           | 6.21      | 31.73     | 0.00                 | 34.35           | 46.00          | 11.6        | 100         | 236         |        |
| Vert.    | 799.765         | QP       | 35.10          | 20.77           | 9.30      | 31.88     | 0.00                 | 33.29           | 46.00          | 12.7        | 100         | 118         |        |
| Vert.    | 2483.500        | PK       | 45.42          | 27.79           | 13.91     | 36.85     | 2.28                 | 52.55           | 73.97          | 21.4        | 167         | 257         |        |
| Vert.    | 3306.397        | PK       | 46.19          | 28.63           | 5.53      | 36.80     | 2.28                 | 45.83           | 73.90          | 28.0        | 159         | 226         |        |
| Vert.    | 4960.000        | PK       | 55.90          | 31.45           | 6.06      | 37.19     | 2.28                 | 58.50           | 73.90          | 15.4        | 155         | 32          |        |
| Vert.    | 7440.000        | PK       | 44.74          | 37.11           | 7.63      | 37.99     | 2.28                 | 53.77           | 73.90          | 20.1        | 150         | 0           |        |
| Vert.    | 9920.000        | PK       | 44.99          | 38.87           | 8.57      | 39.26     | 2.28                 | 55.45           | 73.90          | 18.4        | 150         | 0           |        |
| Vert.    | 12400.000       | PK       | 45.14          | 39.32           | 10.10     | 39.40     | 2.28                 | 57.44           | 73.90          | 16.4        | 150         | 0           |        |
| Vert.    | 2483.500        | AV       | 33.03          | 27.79           | 13.91     | 36.85     | 2.28                 | 40.16           | 53.97          | 13.8        | 167         | 257         |        |
| Vert.    | 3306.397        | AV       | 38.79          | 28.63           | 5.53      | 36.80     | 2.28                 | 38.43           | 53.90          | 15.4        | 159         | 226         |        |

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

Distance factor : 1 GHz - 13 GHz :  $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

### Dwell time factor relaxation

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Dwell Factor [dB] | Distance Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-------------------|----------------------|-----------------|----------------|-------------|--------|
| Hori.    | 4960.000        | AV       | 48.70          | 31.45           | 6.06      | 37.19     | -24.63            | 2.28                 | 26.68           | 53.90          | 27.1        |        |
| Hori.    | 7440.000        | AV       | 32.40          | 37.11           | 7.63      | 37.99     | -24.63            | 2.28                 | 16.81           | 53.90          | 37.0        |        |
| Hori.    | 9920.000        | AV       | 33.43          | 38.87           | 8.57      | 39.26     | -24.63            | 2.28                 | 19.27           | 53.90          | 34.5        |        |
| Hori.    | 12400.000       | AV       | 33.59          | 39.32           | 10.10     | 39.40     | -24.63            | 2.28                 | 21.27           | 53.90          | 32.5        |        |
| Vert.    | 4960.000        | AV       | 47.69          | 31.45           | 6.06      | 37.19     | -24.63            | 2.28                 | 25.67           | 53.90          | 28.1        |        |
| Vert.    | 7440.000        | AV       | 32.41          | 37.11           | 7.63      | 37.99     | -24.63            | 2.28                 | 16.82           | 53.90          | 37.0        |        |
| Vert.    | 9920.000        | AV       | 33.46          | 38.87           | 8.57      | 39.26     | -24.63            | 2.28                 | 19.30           | 53.90          | 34.5        |        |
| Vert.    | 12400.000       | AV       | 33.57          | 39.32           | 10.10     | 39.40     | -24.63            | 2.28                 | 21.25           | 53.90          | 32.6        |        |

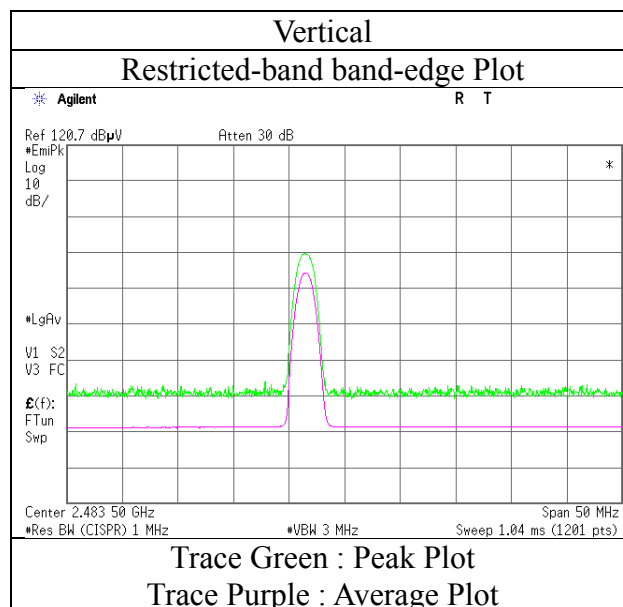
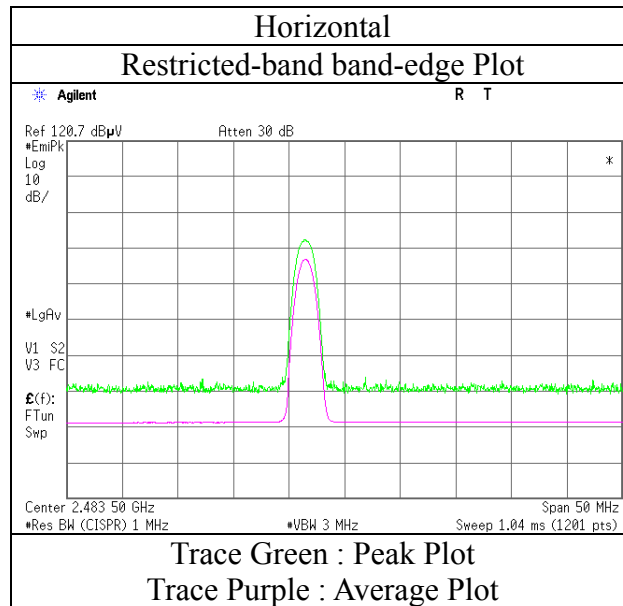
Result = Reading + Ant.Fac. + Loss (Cable+ (Attenuator or Filter)(below 18 GHz)) - Gain(Amplifier) + Dwell(time)factor + Distance factor

Distance factor : 1 GHz - 13 GHz :  $20\log(3.90\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

Dwell (time) factor refer to "Dwell time factor Calculation chart" sheet.

## **Radiated Spurious Emission** **(Reference Plot for band-edge)**

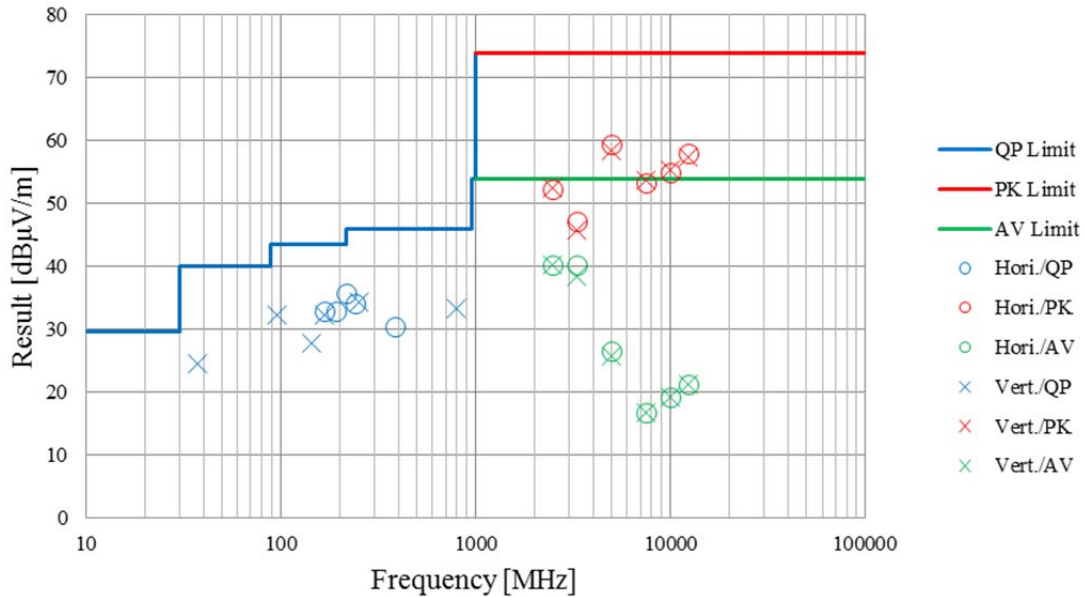
|                        |                                            |
|------------------------|--------------------------------------------|
| Test place             | Shonan EMC Lab. No.3 Semi Anechoic Chamber |
| Report No.             | 11334871S-C-R1                             |
| Date                   | October 17, 2016                           |
| Temperature / Humidity | 24 deg.C / 45 %RH                          |
| Engineer               | Hikaru Shirasawa                           |
| Mode                   | Tx, Hopping Off, 3DH5 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.3 Semi Anechoic Chamber |                                                             |                                       |                                          |
| Report No.             | 11334871S-C-R1                             |                                                             |                                       |                                          |
| Date                   | October 17, 2016                           | November 8, 2016                                            | November 9, 2016                      | November 6, 2016                         |
| Temperature / Humidity | 24 deg.C / 45 %RH                          | 24 deg.C / 30 %RH                                           | 22 deg.C / 36 %RH                     | 20 deg.C / 42 %RH                        |
| Engineer               | Hikaru Shirasawa<br>(1 GHz - 2.8 GHz)      | Shinichi Takano<br>(2.8 GHz - 13 GHz),<br>(13 GHz - 18 GHz) | Hikaru Shirasawa<br>(18 GHz - 26 GHz) | Kazutaka Takeyama<br>(30 MHz - 1000 MHz) |
| Mode                   | Tx, Hopping Off, 3DH5 2480 MHz             |                                                             |                                       |                                          |

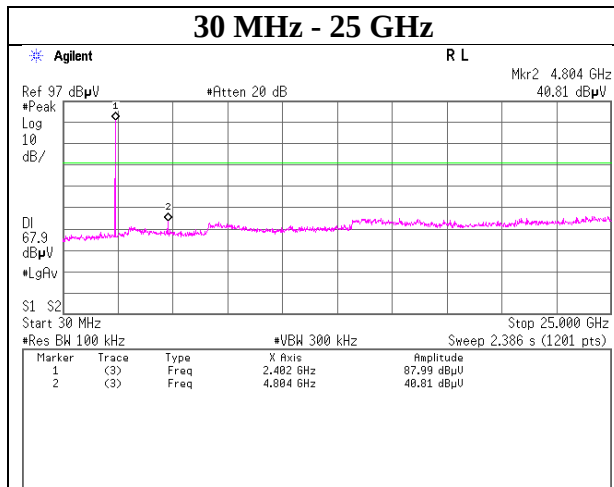
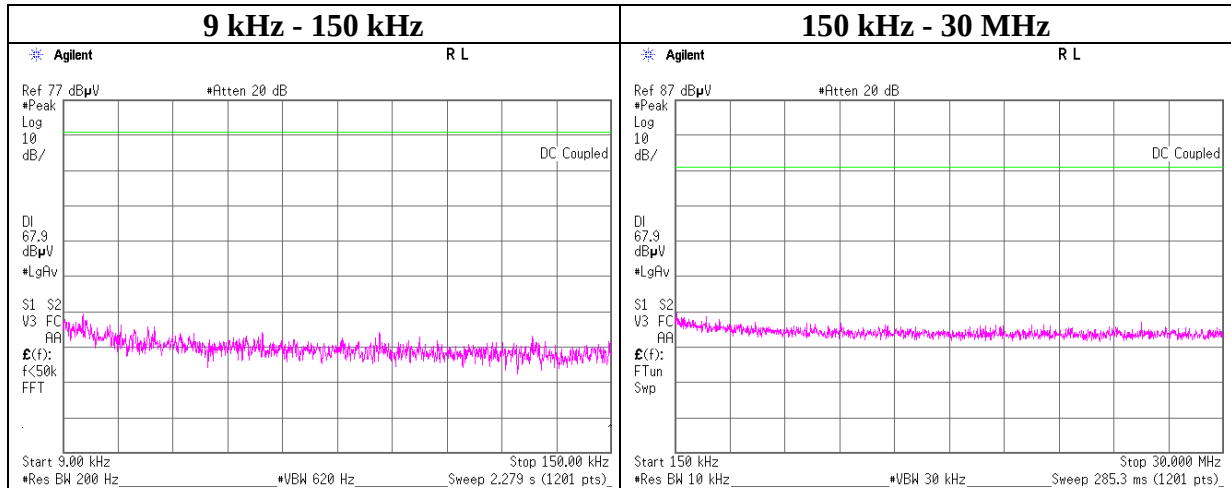


\*These plots data contains sufficient number to show the trend of characteristic features for EUT.

## Conducted Spurious Emission

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping Off, DH5

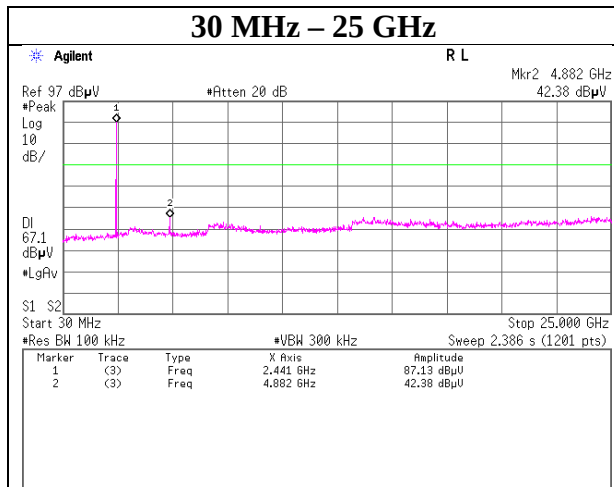
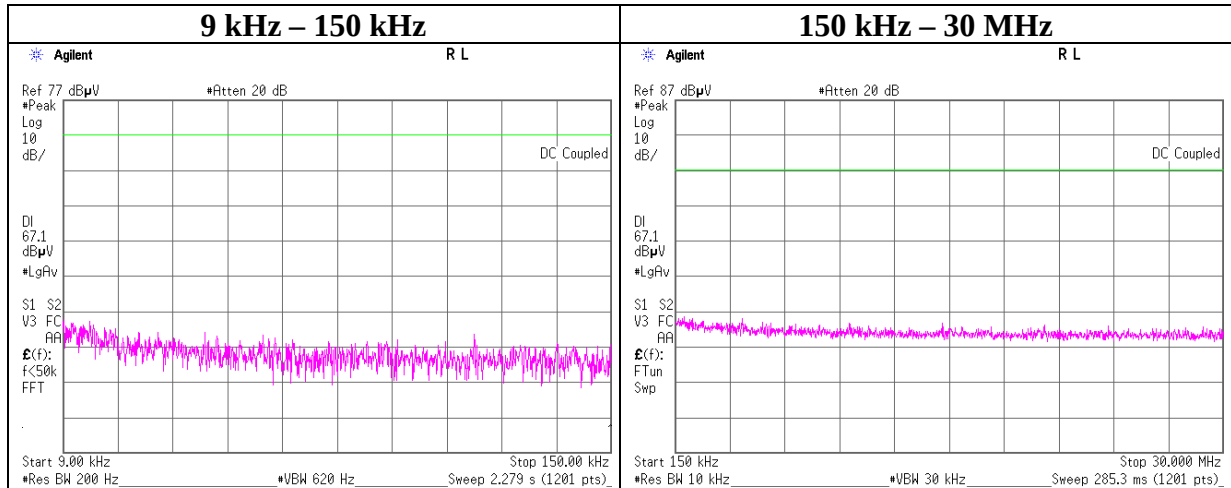
### 2402 MHz



## Conducted Spurious Emission

|                        |                                       |
|------------------------|---------------------------------------|
| Test place             | Shonan EMC Lab. No.1 Measurement Room |
| Report No.             | 11334871S-C-R1                        |
| Date                   | November 11, 2016                     |
| Temperature / Humidity | 25 deg. C / 33 % RH                   |
| Engineer               | Hikaru Shirasawa                      |
| Mode                   | Tx, Hopping Off, DH5                  |

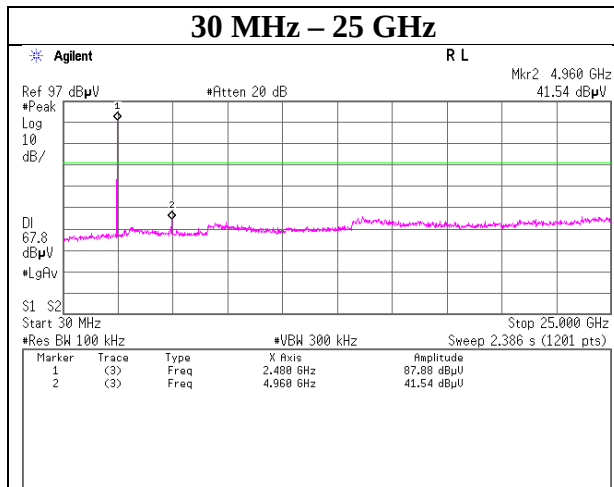
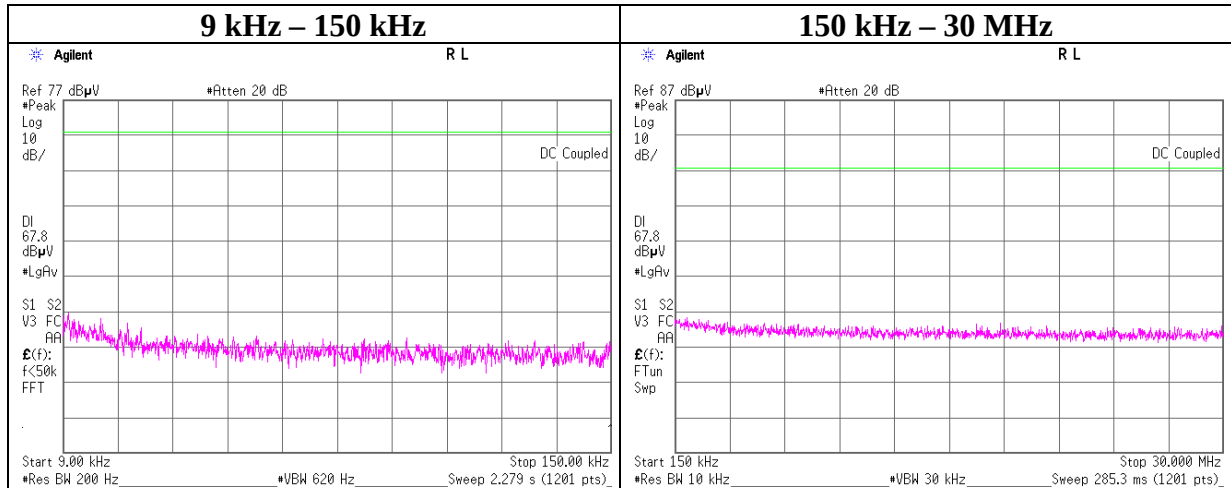
### 2441 MHz



## Conducted Spurious Emission

|                        |                                       |
|------------------------|---------------------------------------|
| Test place             | Shonan EMC Lab. No.1 Measurement Room |
| Report No.             | 11334871S-C-R1                        |
| Date                   | November 11, 2016                     |
| Temperature / Humidity | 25 deg. C / 33 % RH                   |
| Engineer               | Hikaru Shirasawa                      |
| Mode                   | Tx, Hopping Off, DH5                  |

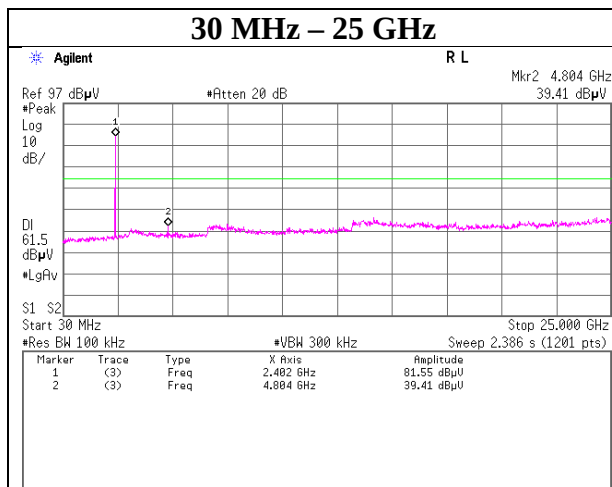
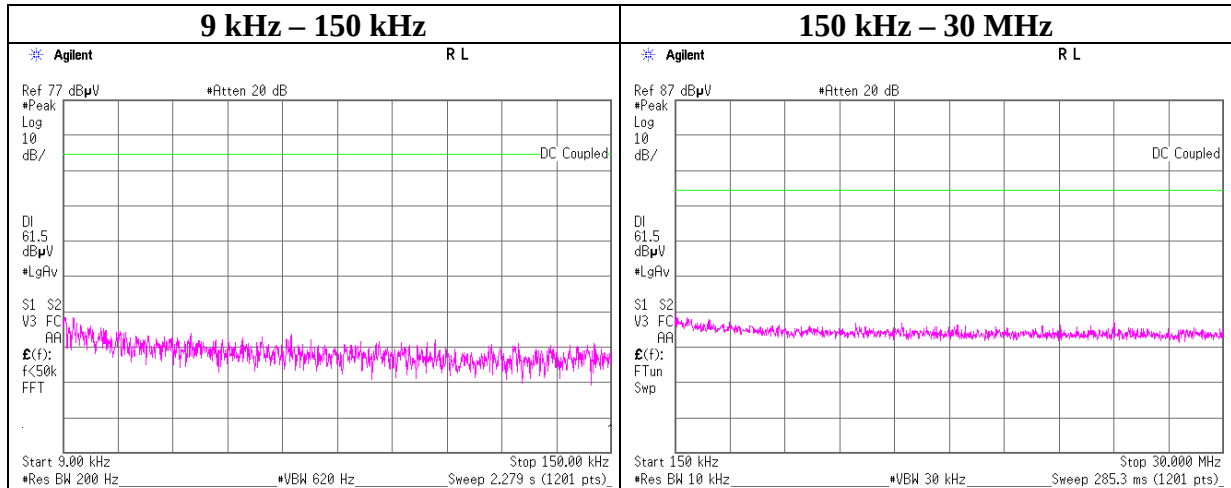
### 2480 MHz



## Conducted Spurious Emission

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping Off, 3DH5

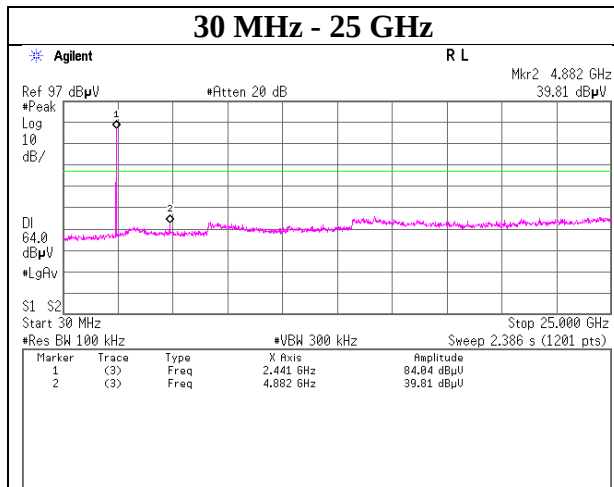
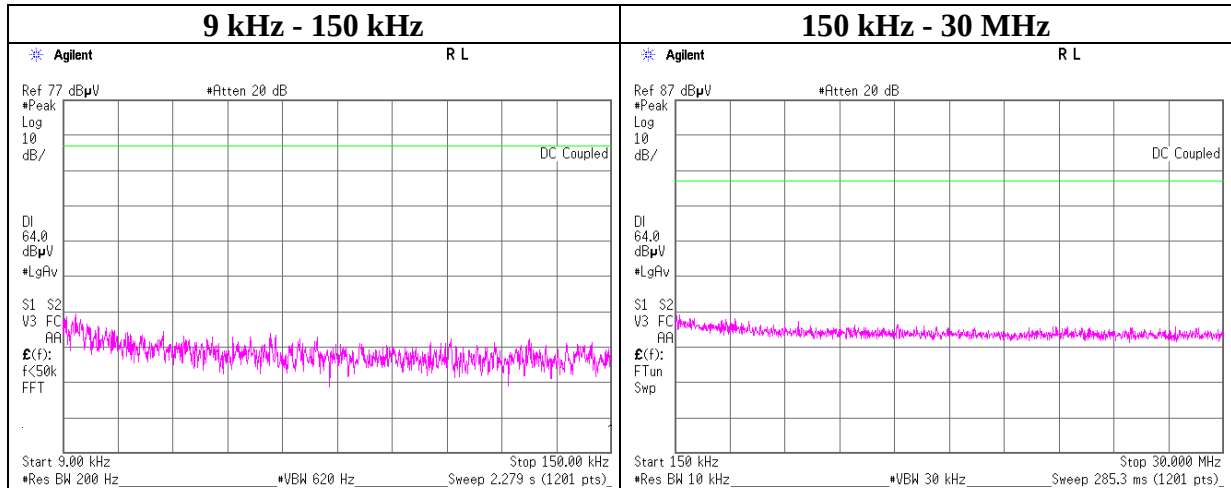
### 2402 MHz



## Conducted Spurious Emission

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping Off, 3DH5

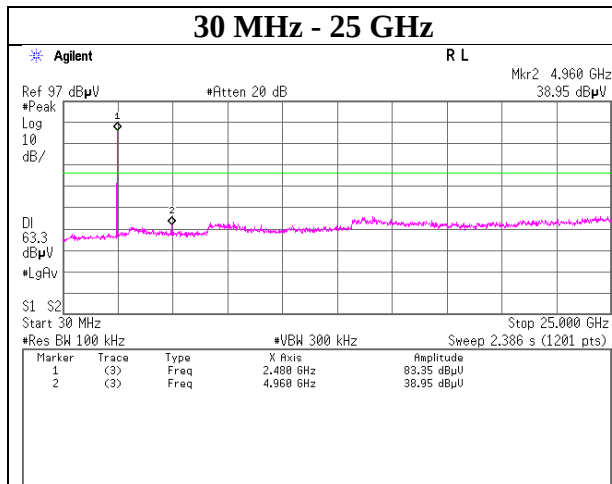
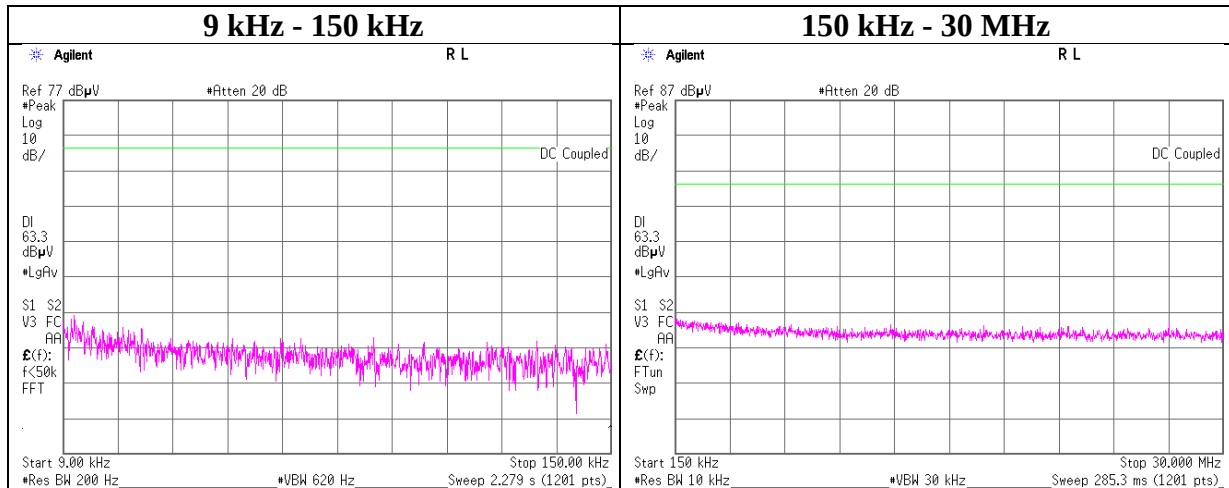
### 2441 MHz



## Conducted Spurious Emission

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping Off, 3DH5

### 2480 MHz



UL Japan, Inc.

Shonan EMC Lab.

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

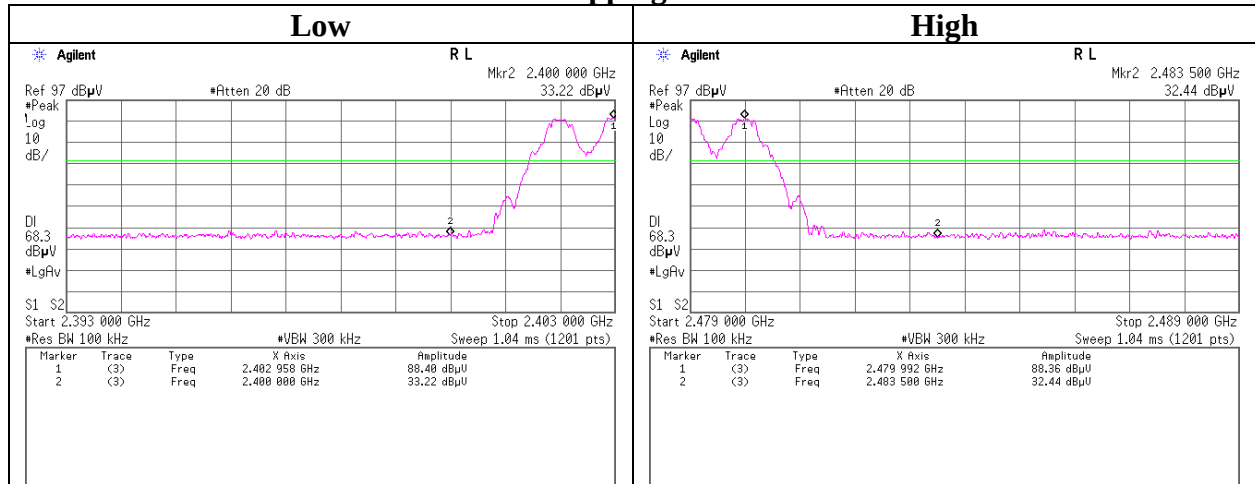
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

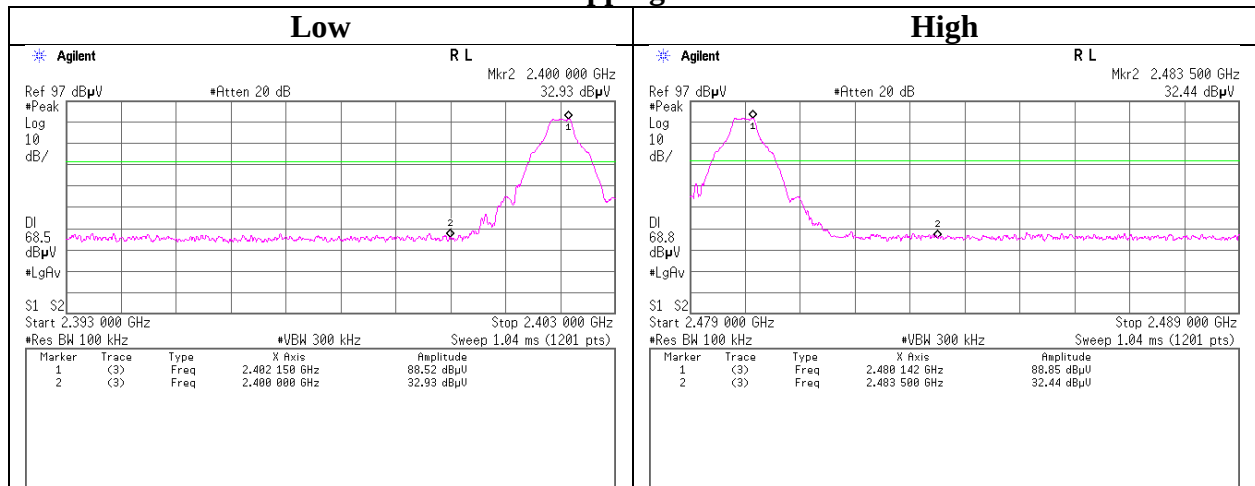
## Conducted Emission Band Edge compliance

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping On, Off, DH5

### Hopping On



### Hopping Off



UL Japan, Inc.

Shonan EMC Lab.

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

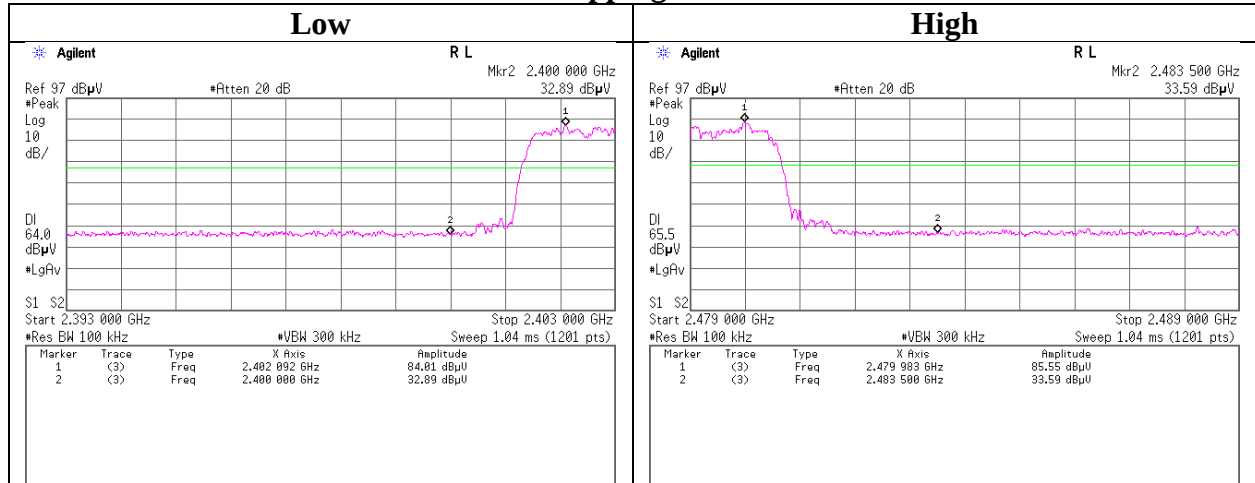
Telephone : +81 463 50 6400

Facsimile : +81 463 50 6401

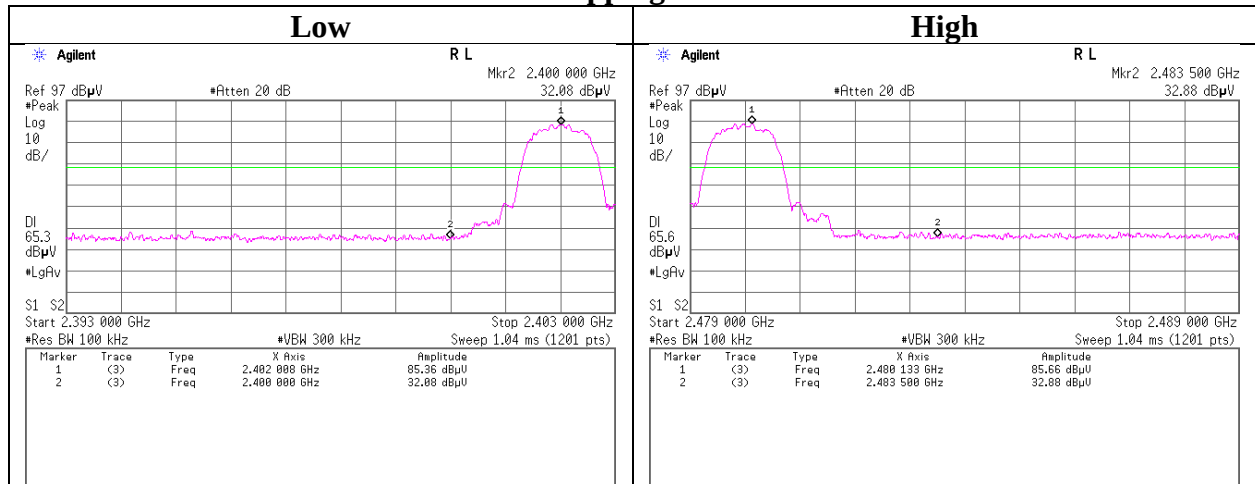
## Conducted Emission Band Edge compliance

Test place : Shonan EMC Lab. No.1 Measurement Room  
Report No. : 11334871S-C-R1  
Date : November 11, 2016  
Temperature / Humidity : 25 deg. C / 33 % RH  
Engineer : Hikaru Shirasawa  
Mode : Tx, Hopping On, Off, 3DH5

### Hopping On



### Hopping Off

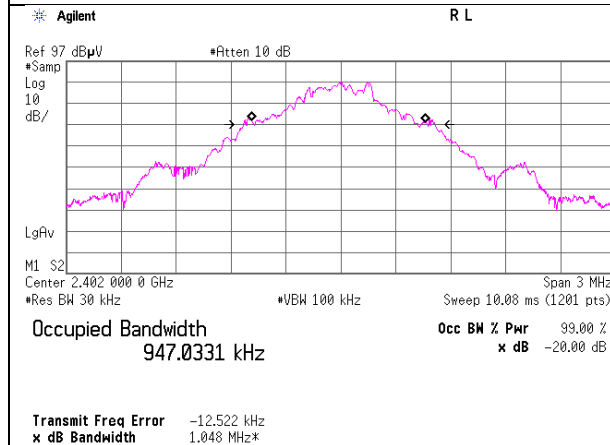


## 99 %Occupied Bandwidth

|                        |                                    |
|------------------------|------------------------------------|
| Test place             | Shonan EMC Lab. No.5 Shielded Room |
| Report No.             | 11334871S-C-R1                     |
| Date                   | November 11, 2016                  |
| Temperature / Humidity | 25 deg. C / 33 % RH                |
| Engineer               | Hikaru Shirasawa                   |
| Mode                   | Tx, Hopping Off                    |

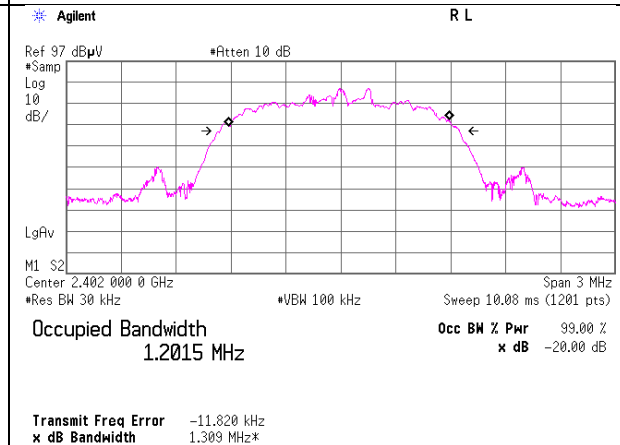
### Hopping Off, DH5

**2402 MHz**

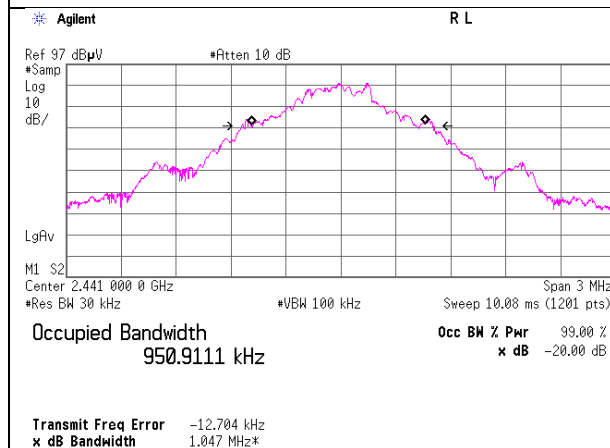


### Hopping Off, 3DH5

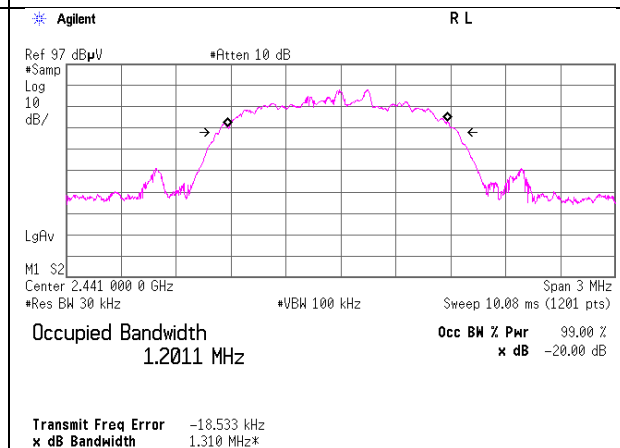
**2402 MHz**



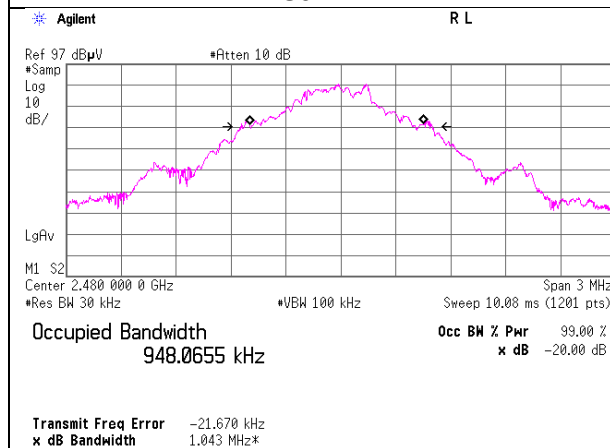
**2441 MHz**



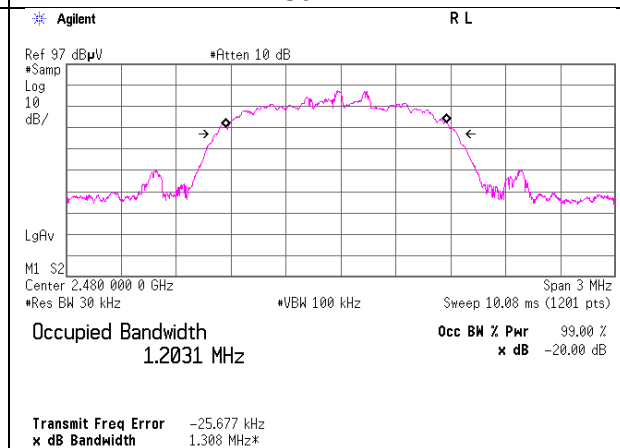
**2441 MHz**



**2480 MHz**



**2480 MHz**



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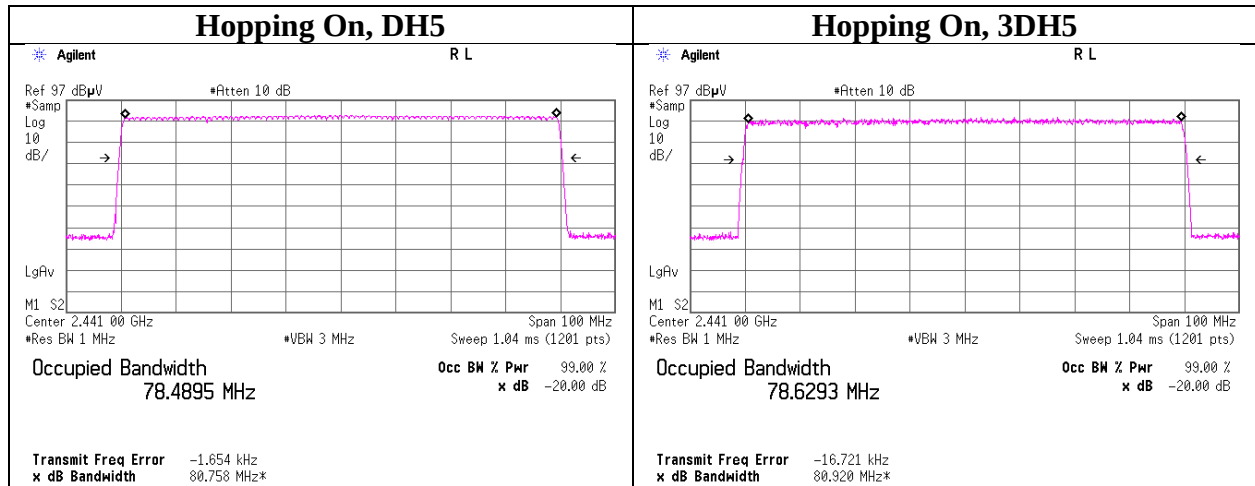
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## 99 % Occupied Bandwidth

Test place Shonan EMC Lab. No.1 Measurement Room  
Report No. 11334871S-C-R1  
Date November 11, 2016  
Temperature / Humidity 25 deg. C / 33 % RH  
Engineer Hikaru Shirasawa  
Mode Tx, Hopping On



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## APPENDIX 2: Test instruments

### Test equipment (1/2)

| Control No.                    | Instrument                | Manufacturer                                | Model No                                   | Serial No               | Test Item | Calibration Date * Interval(month) |
|--------------------------------|---------------------------|---------------------------------------------|--------------------------------------------|-------------------------|-----------|------------------------------------|
| KAF-02                         | Pre Amplifier             | Hewlett Packard                             | 8449B                                      | 3008A01268              | RE        | 2016/04/22 * 12                    |
| SCC-G04                        | Coaxial Cable             | Junkosha                                    | J12J102207-00                              | JUN-12-14-018           | RE        | 2016/06/23 * 12                    |
| SCC-G23                        | Coaxial Cable             | Suhner                                      | SUCOFLEX 104                               | 297342/4                | RE        | 2016/05/11 * 12                    |
| SHA-03                         | Horn Antenna              | Schwarzbeck                                 | BBHA9120D                                  | 9120D-739               | RE        | 2016/08/22 * 12                    |
| SOS-05                         | Humidity Indicator        | A&D                                         | AD-5681                                    | 4062518                 | RE        | 2016/10/12 * 12                    |
| MSA-16                         | Spectrum Analyzer         | Agilent                                     | E4440A                                     | MY46186390              | RE        | 2016/02/08 * 12                    |
| SJM-02                         | Measure                   | KOMELON                                     | KMC-36                                     | -                       | RE        | -                                  |
| SAEC-03(SVSWR)                 | Semi-Anechoic Chamber     | TDK                                         | SAEC-03(SVSWR)                             | 3                       | RE        | 2016/07/25 * 12                    |
| COTS-SEMI-1                    | EMI Software              | TSJ                                         | TEPTO-DV(RE,CE,RF, MF)                     | -                       | RE,CE     | -                                  |
| STS-02                         | Digital Hitester          | Hioki                                       | 3805-50                                    | 080997819               | RE        | 2016/03/22 * 12                    |
| SAT10-05                       | Attenuator(above1GHz)     | Agilent                                     | 8493C-010                                  | 74864                   | RE,AT     | 2015/11/04 * 12                    |
| SFL-02                         | Highpass Filter           | MICRO-TRONICS                               | HPM50111                                   | 051                     | RE        | 2015/11/16 * 12                    |
| SAF-01                         | Pre Amplifier             | SONOMA                                      | 310N                                       | 290211                  | RE        | 2016/02/19 * 12                    |
| KAT6-04                        | Attenuator                | INMET                                       | 18N-6dB                                    | -                       | RE        | 2015/12/18 * 12                    |
| SAT3-09                        | Attenuator                | JFW                                         | 50HF-003N                                  | -                       | RE        | 2016/08/04 * 12                    |
| SBA-01                         | Biconical Antenna         | Schwarzbeck                                 | BBA9106                                    | 91032664                | RE        | 2016/10/15 * 12                    |
| SCC-A1/A3/A5/A7/A8/A13/SRSE-01 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-269(RF Selector) | RE        | 2016/04/22 * 12                    |
| SCC-A2/A4/A6/A7/A8/A13/SRSE-01 | Coaxial Cable&RF Selector | Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO | 8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906 | -/0901-269(RF Selector) | RE        | 2016/04/22 * 12                    |
| SLA-05                         | Logperiodic Antenna       | Schwarzbeck                                 | VUSLP9111B                                 | 193                     | RE        | 2016/01/30 * 12                    |
| SOS-01                         | Humidity Indicator        | A&D                                         | AD-5681                                    | 4062555                 | RE        | 2016/10/12 * 12                    |
| STR-01                         | Test Receiver             | Rohde & Schwarz                             | ESU40                                      | 100093                  | RE        | 2015/11/06 * 12                    |
| KJM-09                         | Measure                   | KOMELON                                     | KMC-36                                     | -                       | RE        | -                                  |
| SAEC-01(NSA)                   | Semi-Anechoic Chamber     | TDK                                         | SAEC-01(NSA)                               | 1                       | RE        | 2016/07/14 * 12                    |
| STS-01                         | Digital Hitester          | Hioki                                       | 3805-50                                    | 080997812               | RE        | 2016/10/17 * 12                    |
| SAF-05                         | Pre Amplifier             | TOYO Corporation                            | TPA0118-36                                 | 1440490                 | RE        | 2016/02/10 * 12                    |
| SRENT-08                       | Spectrum Analyzer         | Agilent                                     | E4448A                                     | MY50180019              | RE        | 2016/10/24 * 12                    |
| SHA-04                         | Horn Antenna              | ETS LINDGREN                                | 3160-09                                    | LM3640                  | RE        | 2016/03/15 * 12                    |
| SAF-08                         | Pre Amplifier             | TOYO Corporation                            | HAP18-26W                                  | 00000019                | RE        | 2016/03/23 * 12                    |
| SCC-G15                        | Coaxial Cable             | Suhner                                      | SUCOFLEX 102                               | 32703/2                 | RE        | 2016/03/08 * 12                    |
| SCC-G33                        | Coaxial Cable             | Junkosha                                    | MWX241-01000KMS                            | -                       | RE        | 2016/04/18 * 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

Tested date:  
- Conducted emission test : November 10, 2016  
- Radiated emissions test : October 17 to November 9, 2016  
- Antenna Terminal Conducted test : November 11, 2016

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## Test equipment (2/2)

| Control No.            | Instrument                   | Manufacturer       | Model No                | Serial No                  | Test Item | Calibration Date * Interval(month) |
|------------------------|------------------------------|--------------------|-------------------------|----------------------------|-----------|------------------------------------|
| SPM-07                 | Power Meter                  | Agilent            | 8990B                   | MY5100272                  | AT        | 2016/04/04 * 12                    |
| SPSS-04                | Power sensor                 | Agilent            | N1923A                  | MY5326009                  | AT        | 2016/04/04 * 12                    |
| SRENT-05               | Spectrum Analyzer            | KEYSIGHT           | E4440A                  | MY46187752                 | AT        | 2016/11/04 * 12                    |
| SCC-G31                | Coaxial Cable                | Junkosha           | MWX241-01000KMS<br>KMS  | OCT-08-13-046              | AT        | 2016/04/18 * 12                    |
| STM-G5                 | Terminator                   | Weinschel          | M1459A                  | U6594                      | AT        | 2016/07/27 * 12                    |
| SOS-13                 | Humidity Indicator           | Custom             | CTH-202                 | Q.C.17                     | AT        | 2015/12/07 * 12                    |
| KTS-08                 | Digital Tester               | SANWA              | PC500                   | 7019224                    | AT        | 2016/03/15 * 12                    |
| STS-03                 | Digital Hitester             | Hioki              | 3805-50                 | 080997823                  | CE        | 2016/10/17 * 12                    |
| STR-06                 | Test Receiver                | Rohde & Schwarz    | ESCI                    | 101259                     | CE        | 2016/03/28 * 12                    |
| SCC-C9/C10/SRS<br>E-03 | Coaxial Cable&RF<br>Selector | Suhner/Suhner/TOYO | RG223U/141PE/NS490<br>6 | -/0901-271(RF<br>Selector) | CE        | 2016/04/22 * 12                    |
| SLS-05                 | LISN                         | Rohde & Schwarz    | ENV216                  | 100516                     | CE(AE)    | 2016/02/09 * 12                    |
| SAT3-07                | Attenuator                   | JFW                | 50HF-003N               | -                          | CE        | 2016/09/23 * 12                    |
| SOS-06                 | Humidity Indicator           | A&D                | AD-5681                 | 4062118                    | CE        | 2015/12/07 * 12                    |
| STM-05                 | Terminator                   | TME                | CT-01 BP                | -                          | CE        | 2015/12/18 * 12                    |
| SLS-02                 | LISN                         | Rohde & Schwarz    | ENV216                  | 100512                     | CE(EUT)   | 2016/02/08 * 12                    |
| SJM-02                 | Measure                      | KOMELON            | KMC-36                  | -                          | CE        | -                                  |

The expiration date of the calibration is the end of the expired month.

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- Antenna Terminal Conducted test : November 11, 2016

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