



RADIO TEST REPORT

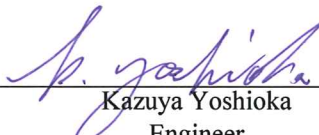
Test Report No. : 11081928H-A

Applicant : DENSO CORPORATION
Type of Equipment : Control Box
Model No. : DNNS087
FCC ID : HYQDNNS087
Test regulation : FCC Part 15 Subpart C: 2015
(Bluetooth part)
Test Result : Complied

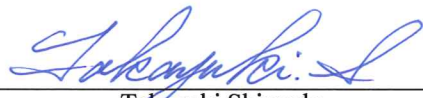
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6. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)

Date of test: February 12 and 13, 2016

Representative test engineer:


Kazuya Yoshioka
Engineer
Consumer Technology Division

Approved by:


Takayuki Shimada
Engineer
Consumer Technology Division



NVLAP LAB CODE: 200572-0

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13-EM-F0429

REVISION HISTORY

Original Test Report No.: 11081928H-A

| Revision | Test report No. | Date | Page revised | Contents |
|-----------------|-----------------|-------------------|--------------|----------|
| - (Original) | 11081928H-A | March 22, 2016 | - | - |
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SECTION 1: Customer information

Company Name : DENSO CORPORATION
Address : 1-1 Showa-cho, Kariya-shi, Aichi-ken, 448-8661 Japan
Telephone Number : +81-566-26-5919
Facsimile Number : +81-566-25-4920
Contact Person : Isamu Suzuki

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

2.1 Identification of E.U.T.

Type of Equipment : Control Box
Model No. : DNNS087
Serial No. : Refer to Section 4, Clause 4.2
Rating : DC 12 V
Receipt Date of Sample : February 11, 2016
Country of Mass-production : United States of America
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model: DNNS087 (referred to as the EUT in this report) is a Control Box.

General Specification

Clock frequency(ies) in the system : 533 MHz
32.768 kHz, 37.4 MHz (Crystal)
Operating Temperature : -30 deg. C - +70 deg. C

Radio Specification

Radio Type : Transceiver
Power Supply (inner) : DC 3.3 V (VDD)
DC 1.8 V (VIO)

| | IEEE802.11b | IEEE802.11g/n (20 M band) | IEEE802.11a/n/ac (20 M band) | IEEE802.11n/ac (40 M band) | IEEE802.11ac (80 M band) |
|------------------------|-----------------------------|----------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Frequency of operation | 2412 MHz - 2462 MHz | 2412 MHz - 2462 MHz | 5180 MHz - 5240 MHz 5260 MHz - 5320 MHz 5500 MHz - 5720 MHz 5745 MHz - 5825 MHz | 5190 MHz - 5230 MHz 5270 MHz - 5310 MHz 5510 MHz - 5710 MHz 5755 MHz - 5795 MHz | 5210 MHz 5290 MHz 5530 MHz - 5690 MHz 5775 MHz |
| Type of modulation | DSSS (CCK, DQPSK, DBPSK) | OFDM-CCK (64QAM, 16QAM, QPSK, BPSK) | OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM(IEEE802.11ac only)) | | |
| Channel spacing | 5MHz | | 20MHz | 40MHz | 80MHz |
| Antenna type | ASSEMBLY WiFi Antenna | | | | |
| Antenna Connector type | MHF PLUG | | | | |
| Antenna Gain | -3.2 dBi | | | | |

| | GPS | Bluetooth Ver.4.1 with EDR function *1) |
|------------------------|-------------------|-----------------------------------------------------|
| Frequency of operation | 1575.42 MHz | 2402 MHz - 2480 MHz |
| Type of modulation | BPSK | BT: FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK) LE: GFSK |
| Channel spacing | - | BT: 1 MHz LE: 2 MHz |
| Antenna type | ANTENNA ASSY, GPS | ASSEMBLY WiFi Antenna |
| Antenna Connector type | FAKRA | MHF PLUG |
| Antenna Gain | 26.5 dBi | -3.2 dBi |

*1) This test report applies to Bluetooth Ver.4.1 with EDR function (2402 MHz - 2480 MHz).
*Wireless LAN and Bluetooth do not transmit simultaneously.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

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

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

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

3.2 Procedures and results

| Item | Test Procedure | Specification | Worst Margin | Results | Remarks |
|------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------|----------|-------------------------------------------------|
| Conducted Emission | FCC: ANSI C63.10-2013 6. Standard test methods IC: RSS-Gen 8.8 | FCC: Section 15.207 IC: RSS-Gen 8.8 | N/A | N/A *1) | - |
| Carrier Frequency Separation | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1) IC: RSS-247 5.1 (2) | See data. | Complied | Conducted |
| 20dB Bandwidth | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1) IC: RSS-247 5.1 (1) | | Complied | Conducted |
| Number of Hopping Frequency | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (4) | | Complied | Conducted |
| Dwell time | FCC: FCC Public Notice DA 00-705 IC: - | FCC: Section15.247(a)(1)(iii) IC: RSS-247 5.1 (4) | | Complied | Conducted |
| Maximum Peak Output Power | FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 6.12 | FCC: Section15.247(a)(b)(1) IC: RSS-247 5.4 (2) | | Complied | Conducted |
| Spurious Emission & Band Edge Compliance | FCC: FCC Public Notice DA 00-705 IC: RSS-Gen 6.13 | FCC: Section15.247(d) IC: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10 | 6.6 dB 207.920 MHz, QP, Vert. | Complied | Conducted/ Radiated (above 30 MHz) *2) |

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

*2) 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 15.31 (e)

The EUT provides stable voltage (DC 1.8 V / DC 3.3.V) constantly to the wireless transmitter regardless of input voltage.

Instead of a new battery, DC power supply was used for the test.

That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

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

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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

EMI

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.
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| Antenna terminal test Uncertainty (+/-) | | | | | | | |
|-----------------------------------------|-------------|--------------------------------------|---------------|----------------|--------------------|-------------------|---------------|
| Power meter | | Conducted emission and Power density | | | Conducted emission | | Channel power |
| Below 1 GHz | Above 1 GHz | Below 1 GHz | 1 GHz - 3 GHz | 3 GHz - 18 GHz | 18 GHz - 26.5 GHz | 26.5 GHz - 40 GHz | |
| 0.9 dB | 1.0 dB | 1.4 dB | 1.7 dB | 2.8 dB | 2.8 dB | 2.9 dB | 2.6 dB |

| Polarity | Radiated emission (Below 1GHz) | | | |
|------------|--------------------------------|---------------|--------------|---------------|
| | (3 m*)(+dB) | | (10 m*)(+dB) | |
| | 30 – 300 MHz | 300 – 1000MHz | 30 – 300 MHz | 300 – 1000MHz |
| Horizontal | 4.8 dB | 5.2 dB | 4.8 dB | 5.0 dB |
| Vertical | 4.5 dB | 5.9 dB | 4.8 dB | 5.1 dB |

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

*Measurement distance

Radiated emission test

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

3.5 Test Location

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

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

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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

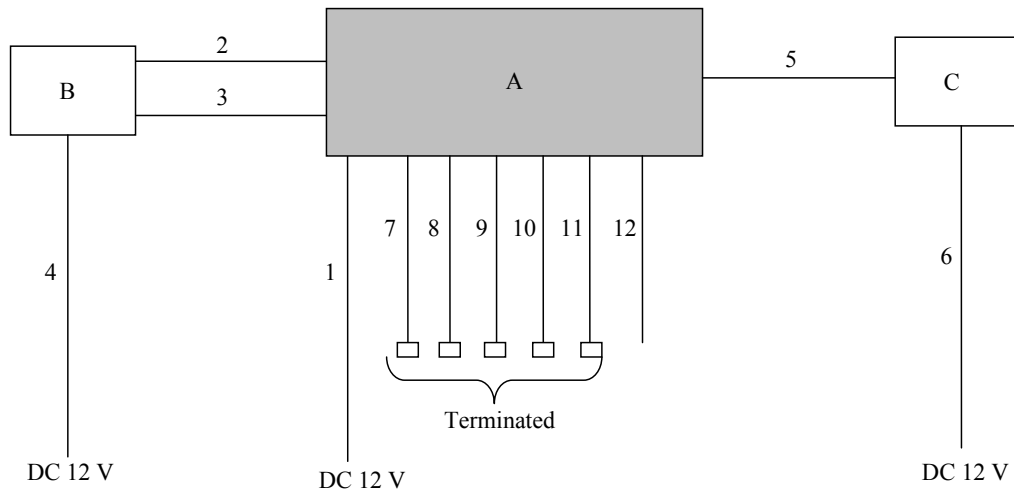
4.1 Operating Mode(s)

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

Details of Operating Mode(s)

| Test Item | Mode | Tested frequency |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------|
| Spurious Emission (Conducted/Radiated) | Tx (Hopping Off) DH5, 3DH5 | 2402 MHz 2441 MHz 2480 MHz |
| Carrier Frequency Separation | Tx (Hopping On) DH5, 3DH5 | 2402 MHz 2441 MHz 2480 MHz |
| 20dB Bandwidth | Tx (Hopping Off) DH5, 3DH5 | 2402 MHz 2441 MHz 2480 MHz |
| Number of Hopping Frequency | Tx (Hopping On) DH5, 3DH5 | - |
| Dwell time | Tx (Hopping On), -DH1, DH3, DH5 -3DH1, 3DH3, 3DH5 | - |
| Maximum Peak Output Power | Tx (Hopping Off) DH5, 2DH5, 3DH5 | 2402 MHz 2441 MHz 2480 MHz |
| Band Edge Compliance (Conducted) | Tx DH5, 3DH5 -Hopping On -Hopping Off | 2402 MHz 2480 MHz |
| 99% Occupied Bandwidth | Tx DH5, 3DH5 -Hopping On -Hopping Off | 2402 MHz 2441 MHz 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 test items based on Bluetooth Core specification.</p> <p>*EUT has the power settings by the software as follows; Power settings: 0dBm Software: Bluetool Ver 1.8.7.3 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product.</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 | Control Box | DNNS087 | 002 *1) 001 *2) | DENSO CORPORATION | EUT |
| B | Jig | - | - | - | - |
| C | Display | 703748 | AUO-1507019 | SPECTRUM DIGITAL INCORPORATED | - |

*1) Used for Antenna Terminal conducted tests

*2) Used for Conducted Emission and Radiated Spurious Emission tests

List of cables used

| No. | Name | Length (m) | Shield | | Remarks |
|-----|--------------------|------------|------------|------------|---------|
| | | | Cable | Connector | |
| 1 | DC Cable | 2.0 | Unshielded | Unshielded | - |
| 2 | MOST Cable (Red) | 2.0 | Shielded | Shielded | - |
| 3 | MOST Cable (Green) | 2.0 | Shielded | Shielded | - |
| 4 | DC Cable | 2.0 | Unshielded | Unshielded | - |
| 5 | LVDS Cable | 2.0 | Shielded | Shielded | - |
| 6 | DC Cable | 2.0 | Unshielded | Unshielded | - |
| 7 | GPS Cable | 2.0 | Shielded | Shielded | - |
| 8 | Camera Cable | 2.0 | Unshielded | Unshielded | - |
| 9 | USB Cable | 2.0 | Shielded | Shielded | - |
| 10 | USB Cable | 2.0 | Shielded | Shielded | - |
| 11 | USB Cable | 2.0 | Shielded | Shielded | - |
| 12 | HDMI Cable | 2.0 | Shielded | Shielded | - |

SECTION 5: Radiated Spurious Emission

Test Procedure

[For below 1GHz]

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.

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

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

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

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

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

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

Test Antennas are used as below;

| | | | |
|--------------|-------------------|------------------|-------------|
| Frequency | 30 MHz to 300 MHz | 300 MHz to 1 GHz | Above 1 GHz |
| Antenna Type | Biconical | Logperiodic | Horn |

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

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

| | | | | |
|-----------------|---------------|----------------------------------------------------|------------------------------|----------------------------------------------------|
| Frequency | Below 1 GHz | Above 1 GHz | | 20 dBc |
| Instrument used | Test Receiver | Spectrum Analyzer | | Spectrum Analyzer |
| Detector | QP | PK | AV | PK |
| IF Bandwidth | BW 120 kHz | RBW: 1 MHz VBW: 3 MHz | RBW: 1 MHz VBW: 10 Hz *1) | RBW: 100 kHz VBW: 300 kHz |
| Test Distance | 3 m | 4.4 m *2) (below 10 GHz), 1 m*3) (above 10 GHz) | | 4.4 m *2) (below 10 GHz), 1 m*3) (above 10 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: $20 \times \log(4.4 \text{ m} / 3.0 \text{ m}) = 3.3 \text{ dB}$

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

The test was made on EUT at the normal use position.

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

Measurement range : 30 M - 26.5 GHz
Test data : APPENDIX
Test result : Pass

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SECTION 6: Antenna Terminal Conducted Tests

Test Procedure

The tests were made with below setting connected to the antenna port.

| Test | Span | RBW | VBW | Sweep time | Detector | Trace | Instrument used |
|--------------------------------------------------|-----------------------------------------|-----------------|--------------------|----------------------------------------------------------------|------------------|-------------|--------------------------------|
| 20dB 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 | Peak | Max Hold | Spectrum Analyzer |
| Maximum Peak Output Power | - | - | - | Auto | Peak Average *3) | - | Power Meter (Sensor: 50MHz BW) |
| Carrier Frequency Separation | 3 MHz | 30 kHz | 100 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 | 9.1 kHz | 27 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) Peak hold was applied as Worst-case measurement.

*2) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents. Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart. (9 kHz -150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 9.1 kHz)

*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

20dB Bandwidth and Carrier Frequency Separation

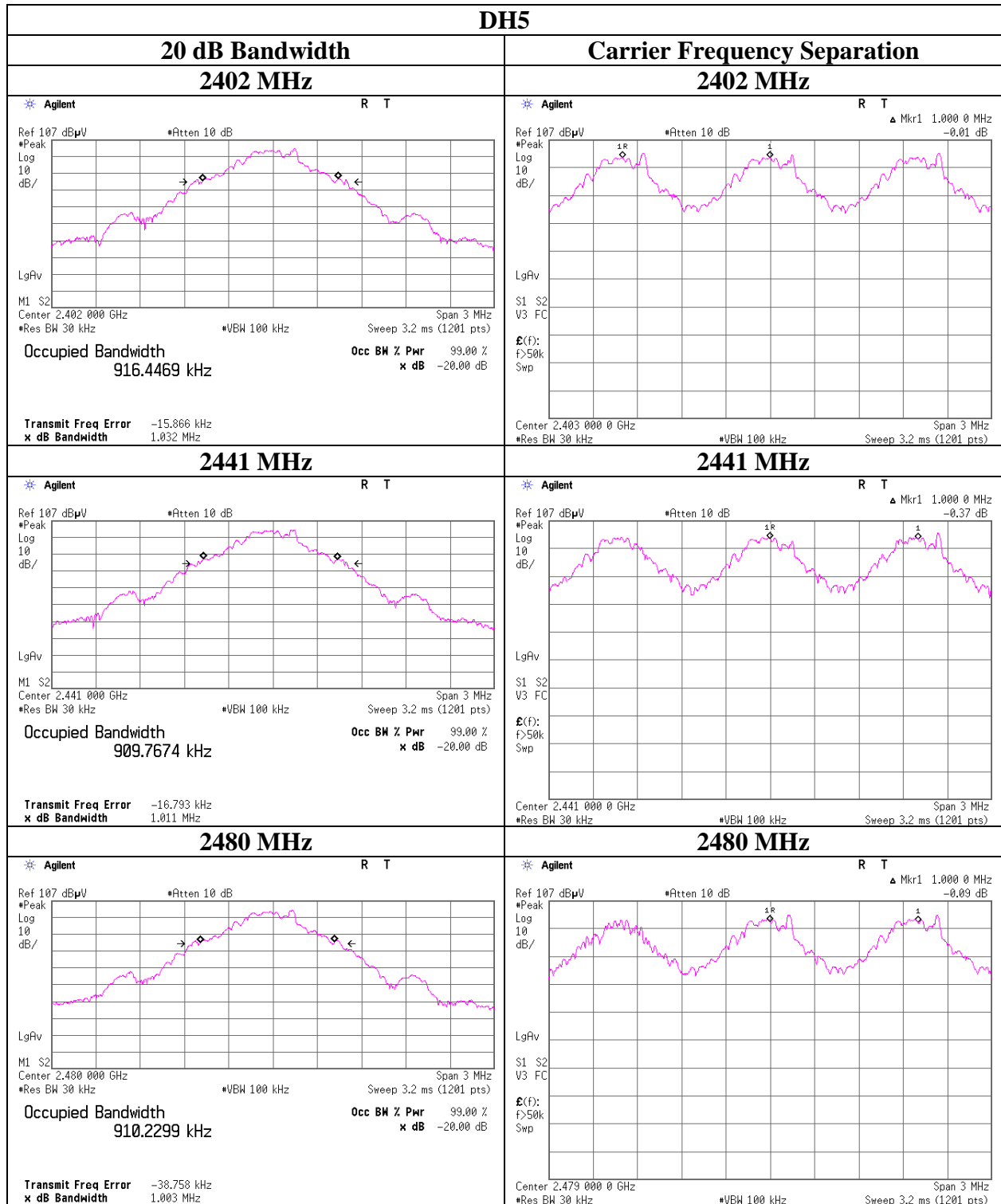
Test place Ise EMC Lab. No.6 Measurement Room
Report No. 11081928H
Date February 13, 2016
Temperature / Humidity 23 deg. C / 37 % RH
Engineer Kazuya Yoshioka
Mode Tx, Hopping Off/On, DH5/3DH5

| Mode | Freq. [MHz] | 20dB Bandwidth [MHz] | Carrier Frequency Separation [MHz] | Limit for Carrier Frequency separation [MHz] |
|------|----------------|-------------------------|------------------------------------------|----------------------------------------------------|
| DH5 | 2402.0 | 1.032 | 1.000 | ≥ 0.688 |
| DH5 | 2441.0 | 1.011 | 1.000 | ≥ 0.674 |
| DH5 | 2480.0 | 1.003 | 1.000 | ≥ 0.669 |
| 3DH5 | 2402.0 | 1.339 | 1.000 | ≥ 0.893 |
| 3DH5 | 2441.0 | 1.316 | 1.000 | ≥ 0.877 |
| 3DH5 | 2480.0 | 1.321 | 1.000 | ≥ 0.881 |

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

No limit applies to 20dB Bandwidth.

20dB Bandwidth and Carrier Frequency Separation



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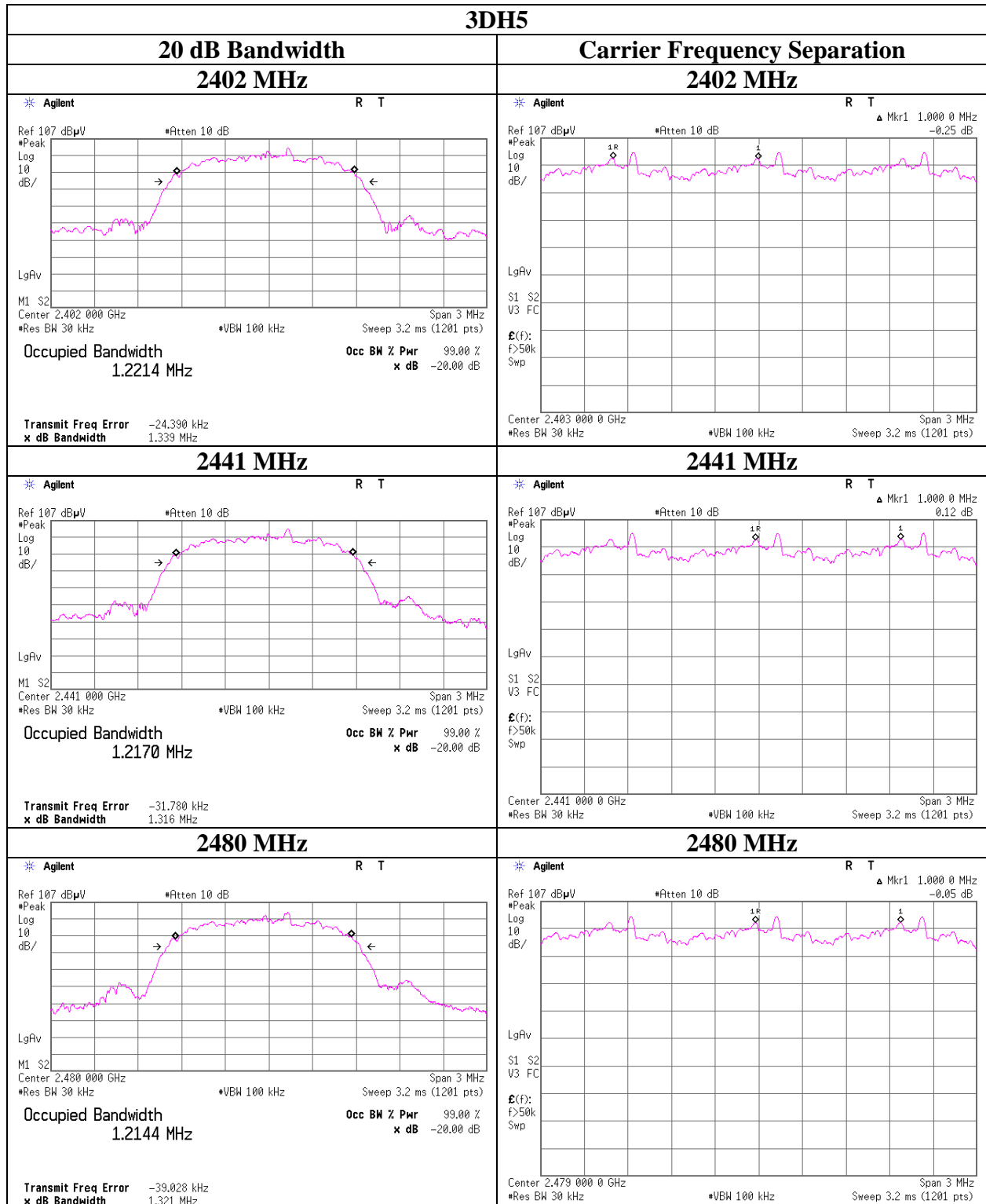
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20dB Bandwidth and Carrier Frequency Separation



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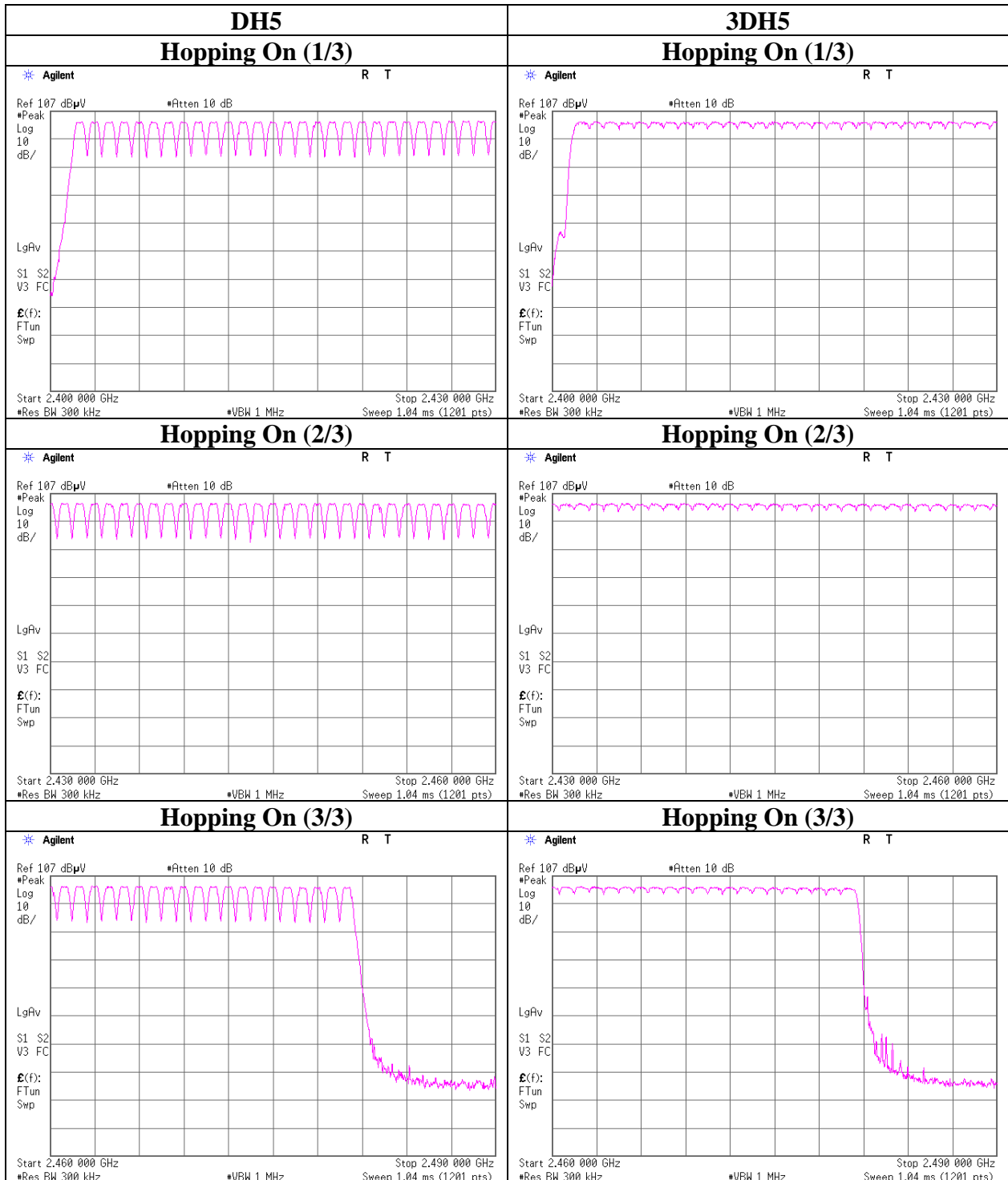
Number of Hopping Frequency

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 11081928H
Date February 13, 2016
Temperature / Humidity 23 deg. C / 37 % RH
Engineer Kazuya Yoshioka
Mode Tx, Hopping On

| Mode | Number of channel [channels] | Limit [channels] |
|------|---------------------------------|---------------------|
| DH5 | 79 | >= 15 |
| 3DH5 | 79 | >= 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



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Dwell time

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 11081928H
Date : February 13, 2016
Temperature / Humidity : 23 deg. C / 37 % RH
Engineer : Kazuya Yoshioka
Mode : Tx, Hopping On

| Mode | Number of transmission in a 31.6(79 Hopping x 0.4) / 12.8 (32 Hopping x 0.4) second period | | | | Length of transmission [msec] | Result [msec] | Limit [msec] |
|------|--------------------------------------------------------------------------------------------------|---|-------------|-----------|-------------------------------------|------------------|-----------------|
| | 50.8 times / 5 sec. | x | 31.6 sec. = | 322 times | | | |
| DH1 | 50.8 times / 5 sec. | x | 31.6 sec. = | 322 times | 0.421 | 136 | 400 |
| DH3 | 26.8 times / 5 sec. | x | 31.6 sec. = | 170 times | 1.681 | 286 | 400 |
| DH5 | 18.8 times / 5 sec. | x | 31.6 sec. = | 119 times | 2.932 | 349 | 400 |
| 3DH1 | 51.0 times / 5 sec. | x | 31.6 sec. = | 323 times | 0.427 | 138 | 400 |
| 3DH3 | 25.8 times / 5 sec. | x | 31.6 sec. = | 164 times | 1.679 | 275 | 400 |
| 3DH5 | 18.6 times / 5 sec. | x | 31.6 sec. = | 118 times | 2.936 | 346 | 400 |

Sample Calculation

Result = Number of transmission x Length of transmission

*Average data of 5 tests.(except Inquiry)

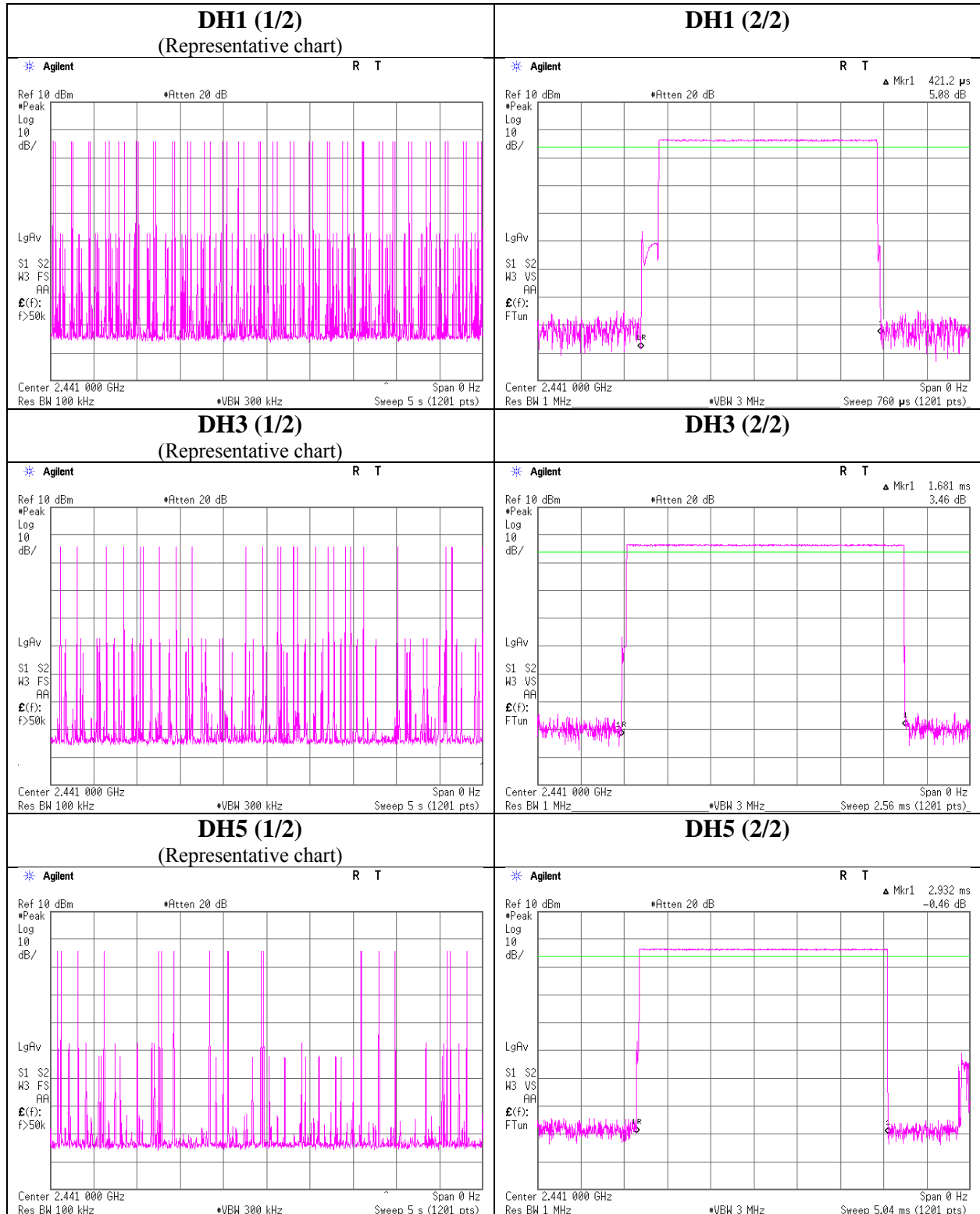
| Mode | Sampling [times] | | | | | Average [times] |
|------|------------------|----|----|----|----|--------------------|
| | 1 | 2 | 3 | 4 | 5 | |
| DH1 | 52 | 52 | 49 | 51 | 50 | 50.8 |
| DH3 | 25 | 27 | 27 | 27 | 28 | 26.8 |
| DH5 | 19 | 19 | 18 | 19 | 19 | 18.8 |
| 3DH1 | 50 | 52 | 51 | 52 | 50 | 51.0 |
| 3DH3 | 26 | 28 | 26 | 24 | 25 | 25.8 |
| 3DH5 | 19 | 18 | 18 | 20 | 18 | 18.6 |

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



UL Japan, Inc.

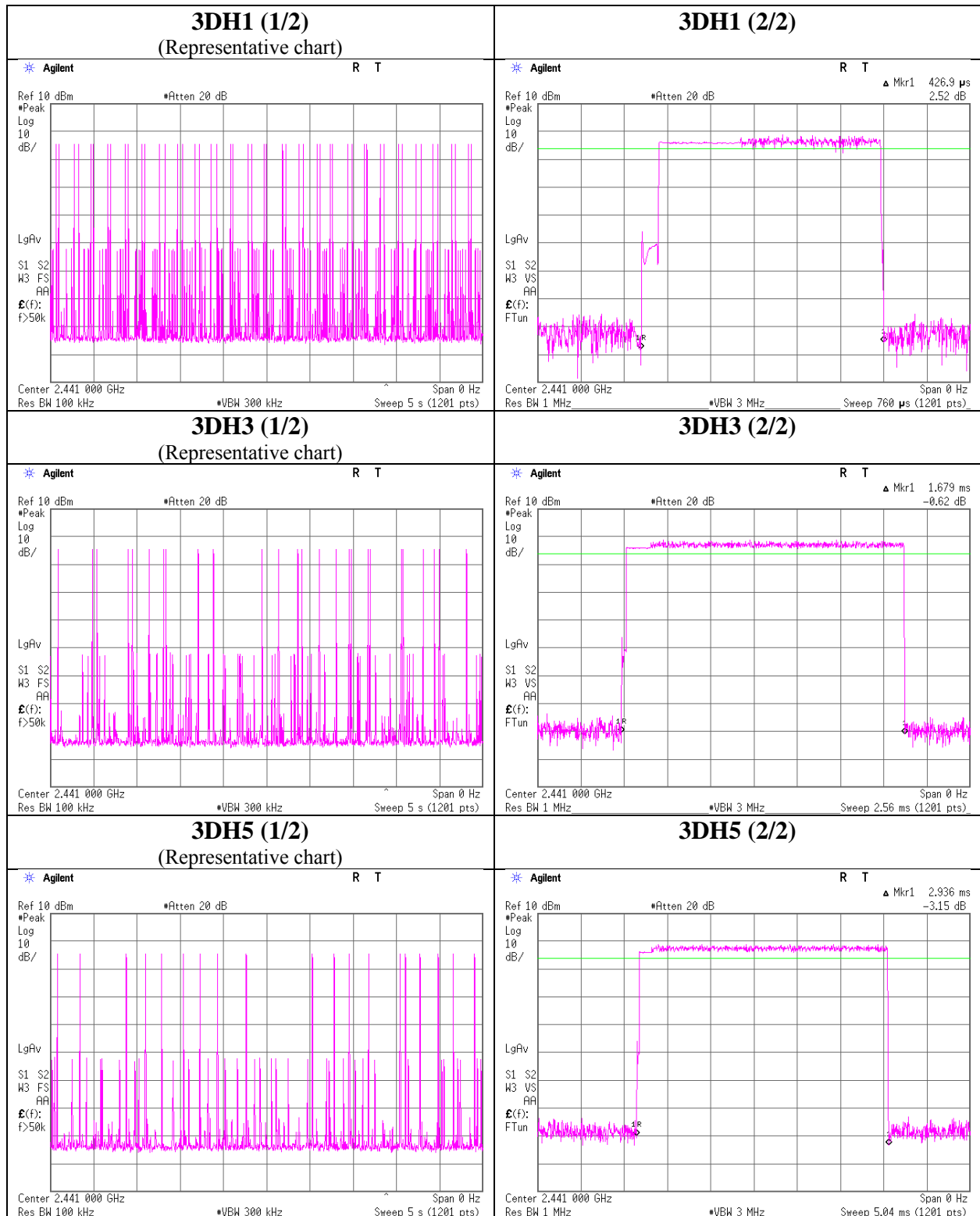
Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Dwell time



UL Japan, Inc.

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4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Maximum Peak Output Power

Test place : Ise EMC Lab. No.6 Measurement Room
Report No. : 11081928H
Date : February 13, 2016
Temperature / Humidity : 23 deg. C / 37 % RH
Engineer : Kazuya Yoshioka
Mode : Tx, Hopping Off

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | | Limit | | Margin [dB] |
|------|----------------|------------------|-----------------------|------------------------|--------|------|-------|------|----------------|
| | | | | | [dBm] | [mW] | [dBm] | [mW] | |
| DH5 | 2402.0 | -4.42 | 3.42 | 0.00 | -1.00 | 0.79 | 20.96 | 125 | 21.96 |
| DH5 | 2441.0 | -4.05 | 3.50 | 0.00 | -0.55 | 0.88 | 20.96 | 125 | 21.51 |
| DH5 | 2480.0 | -4.47 | 3.52 | 0.00 | -0.95 | 0.80 | 20.96 | 125 | 21.91 |
| 2DH5 | 2402.0 | -1.75 | 3.42 | 0.00 | 1.67 | 1.47 | 20.96 | 125 | 19.29 |
| 2DH5 | 2441.0 | -1.55 | 3.50 | 0.00 | 1.95 | 1.57 | 20.96 | 125 | 19.01 |
| 2DH5 | 2480.0 | -2.08 | 3.52 | 0.00 | 1.44 | 1.39 | 20.96 | 125 | 19.52 |
| 3DH5 | 2402.0 | -1.61 | 3.42 | 0.00 | 1.81 | 1.52 | 20.96 | 125 | 19.15 |
| 3DH5 | 2441.0 | -1.37 | 3.50 | 0.00 | 2.13 | 1.63 | 20.96 | 125 | 18.83 |
| 3DH5 | 2480.0 | -1.88 | 3.52 | 0.00 | 1.64 | 1.46 | 20.96 | 125 | 19.32 |

Sample Calculation:

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

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

Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) 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 20dB BW without 2/3 relaxation, 125mW power limit was applied to it.

Average Output Power
(Reference data)

Test place Ise EMC Lab. No.6 Measurement Room
Report No. 11081928H
Date February 13, 2016
Temperature / Humidity 23 deg. C / 37 % RH
Engineer Kazuya Yoshioka
Mode Tx, Hopping Off

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Frame power) | |
|------|----------------|------------------|-----------------------|------------------------|-------------------------|------|
| | | | | | [dBm] | [mW] |
| DH5 | 2402.0 | -5.58 | 3.42 | 0.00 | -2.16 | 0.61 |
| DH5 | 2441.0 | -5.25 | 3.50 | 0.00 | -1.75 | 0.67 |
| DH5 | 2480.0 | -5.74 | 3.52 | 0.00 | -2.22 | 0.60 |
| 2DH5 | 2402.0 | -5.61 | 3.42 | 0.00 | -2.19 | 0.60 |
| 2DH5 | 2441.0 | -5.44 | 3.50 | 0.00 | -1.94 | 0.64 |
| 2DH5 | 2480.0 | -6.02 | 3.52 | 0.00 | -2.50 | 0.56 |
| 3DH5 | 2402.0 | -5.60 | 3.42 | 0.00 | -2.18 | 0.61 |
| 3DH5 | 2441.0 | -5.43 | 3.50 | 0.00 | -1.93 | 0.64 |
| 3DH5 | 2480.0 | -6.00 | 3.52 | 0.00 | -2.48 | 0.56 |

Sample Calculation:

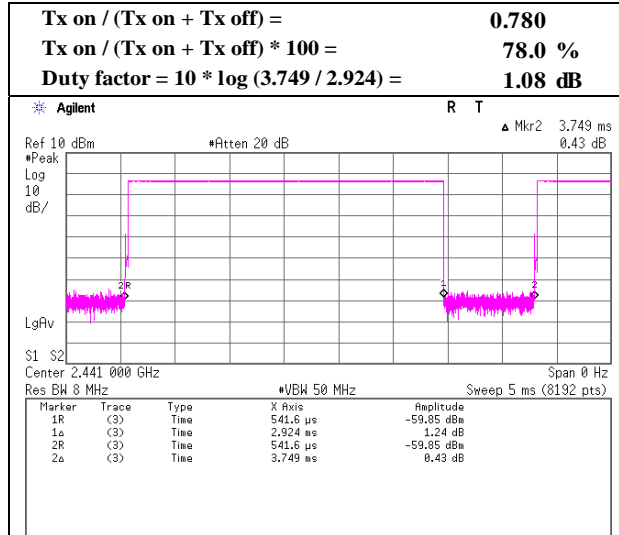
Result (Frame power) = Reading + Cable Loss (including the cable(s) customer supplied) + Attenuator Loss

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

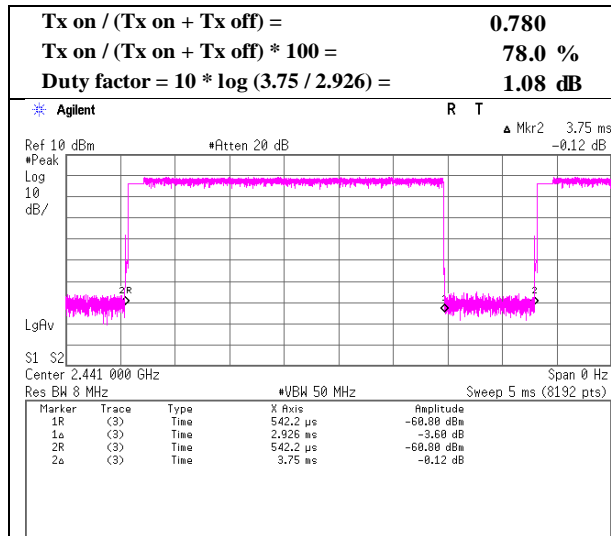
Burst Rate Confirmation

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off |

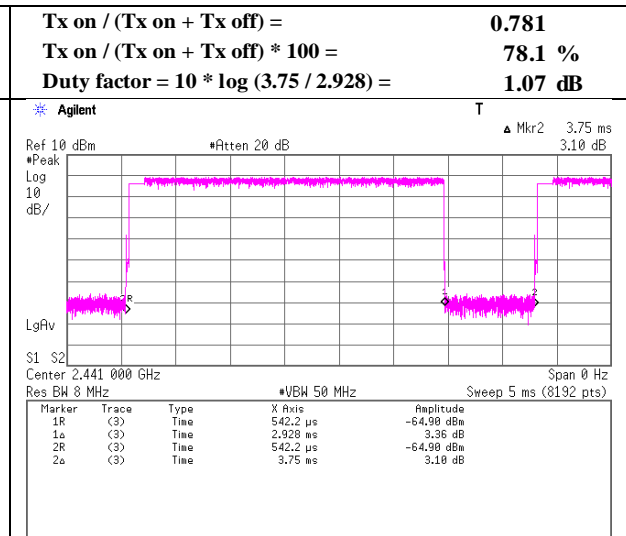
DH5



2DH5



3DH5



Radiated Spurious Emission

Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016 February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH 23 deg. C / 30 % RH
Engineer : Kazuya Yoshioka Shinichi Miyazono
(1 GHz - 26.5 GHz) (30 MHz - 1000 MHz)
Mode : Tx, Hopping Off, DH5 2402 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|
| Hori | 61.444 | QP | 35.9 | 7.3 | 7.6 | 32.0 | 18.8 | 40.0 | 21.2 | |
| Hori | 207.913 | QP | 41.2 | 16.6 | 9.2 | 31.8 | 35.2 | 43.5 | 8.3 | |
| Hori | 540.685 | QP | 36.7 | 19.9 | 11.4 | 32.0 | 36.0 | 46.0 | 10.0 | |
| Hori | 589.836 | QP | 38.2 | 20.4 | 11.7 | 32.1 | 38.2 | 46.0 | 7.8 | |
| Hori | 762.489 | QP | 32.7 | 22.8 | 12.6 | 31.8 | 36.3 | 46.0 | 9.7 | |
| Hori | 900.911 | QP | 30.6 | 24.2 | 13.3 | 31.2 | 36.9 | 46.0 | 9.1 | |
| Hori | 2390.000 | PK | 40.3 | 27.9 | 6.6 | 32.1 | 42.7 | 73.9 | 31.2 | |
| Hori | 4804.000 | PK | 39.3 | 32.8 | 9.0 | 31.3 | 49.8 | 73.9 | 24.1 | Floor noise |
| Hori | 7206.000 | PK | 40.0 | 36.8 | 10.2 | 32.6 | 54.4 | 73.9 | 19.5 | Floor noise |
| Hori | 9608.000 | PK | 40.9 | 38.1 | 10.9 | 32.6 | 57.3 | 73.9 | 16.6 | Floor noise |
| Hori | 2390.000 | AV | 27.3 | 27.9 | 6.6 | 32.1 | 29.7 | 53.9 | 24.2 | |
| Hori | 4804.000 | AV | 25.6 | 32.8 | 9.0 | 31.3 | 36.1 | 53.9 | 17.8 | Floor noise |
| Hori | 7206.000 | AV | 27.0 | 36.8 | 10.2 | 32.6 | 41.4 | 53.9 | 12.5 | Floor noise |
| Hori | 9608.000 | AV | 27.3 | 38.1 | 10.9 | 32.6 | 43.7 | 53.9 | 10.2 | Floor noise |
| Vert | 49.781 | QP | 44.8 | 10.7 | 7.4 | 32.1 | 30.8 | 40.0 | 9.2 | |
| Vert | 207.911 | QP | 42.7 | 16.6 | 9.2 | 31.8 | 36.7 | 43.5 | 6.8 | |
| Vert | 589.836 | QP | 39.1 | 20.4 | 11.7 | 32.1 | 39.1 | 46.0 | 6.9 | |
| Vert | 699.693 | QP | 34.8 | 22.4 | 12.3 | 32.2 | 37.3 | 46.0 | 8.7 | |
| Vert | 762.190 | QP | 31.6 | 22.8 | 12.6 | 31.8 | 35.2 | 46.0 | 10.8 | |
| Vert | 900.817 | QP | 33.4 | 24.2 | 13.3 | 31.2 | 39.7 | 46.0 | 6.3 | |
| Vert | 2390.000 | PK | 41.0 | 27.9 | 6.6 | 32.1 | 43.4 | 73.9 | 30.5 | |
| Vert | 4804.000 | PK | 39.1 | 32.8 | 9.0 | 31.3 | 49.6 | 73.9 | 24.3 | Floor noise |
| Vert | 7206.000 | PK | 40.2 | 36.8 | 10.2 | 32.6 | 54.6 | 73.9 | 19.3 | Floor noise |
| Vert | 9608.000 | PK | 41.0 | 38.1 | 10.9 | 32.6 | 57.4 | 73.9 | 16.5 | Floor noise |
| Vert | 2390.000 | AV | 28.7 | 27.9 | 6.6 | 32.1 | 31.1 | 53.9 | 22.8 | |
| Vert | 4804.000 | AV | 25.6 | 32.8 | 9.0 | 31.3 | 36.1 | 53.9 | 17.8 | Floor noise |
| Vert | 7206.000 | AV | 27.0 | 36.8 | 10.2 | 32.6 | 41.4 | 53.9 | 12.5 | Floor noise |
| Vert | 9608.000 | AV | 27.3 | 38.1 | 10.9 | 32.6 | 43.7 | 53.9 | 10.2 | Floor noise |

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

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 1 GHz - 10 GHz 20log (4.4 m / 3.0 m) = 3.3 dB
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori | 2402.000 | PK | 88.2 | 28.0 | 6.6 | 32.1 | 90.7 | - | - | Carrier |
| Hori | 2400.000 | PK | 32.0 | 28.0 | 6.6 | 32.1 | 34.5 | 70.7 | 36.2 | |
| Vert | 2402.000 | PK | 89.8 | 28.0 | 6.6 | 32.1 | 92.3 | - | - | Carrier |
| Vert | 2400.000 | PK | 33.1 | 28.0 | 6.6 | 32.1 | 35.6 | 72.3 | 36.7 | |

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

Distance factor: 1GHz-10GHz 20log (4.4 m / 3.0 m) = 3.3 dB
 10GHz-26.5GHz 20log(1.0m / 3.0m)= -9.5dB

***These results have sufficient margin without taking account Dwell time factor.**

UL Japan, Inc.

Ise EMC Lab.

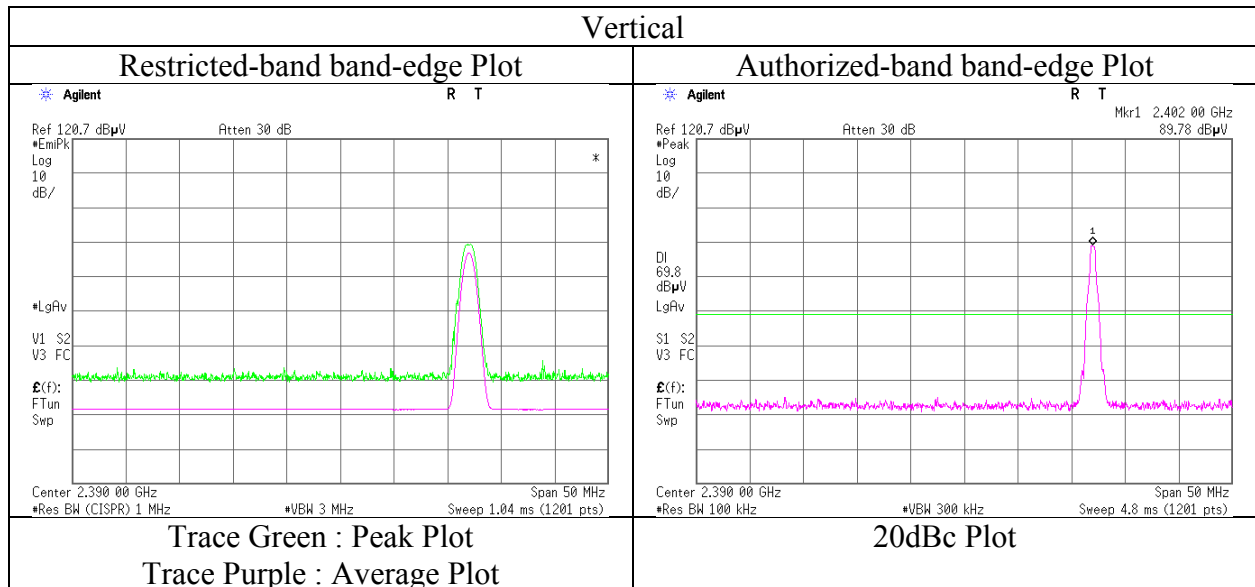
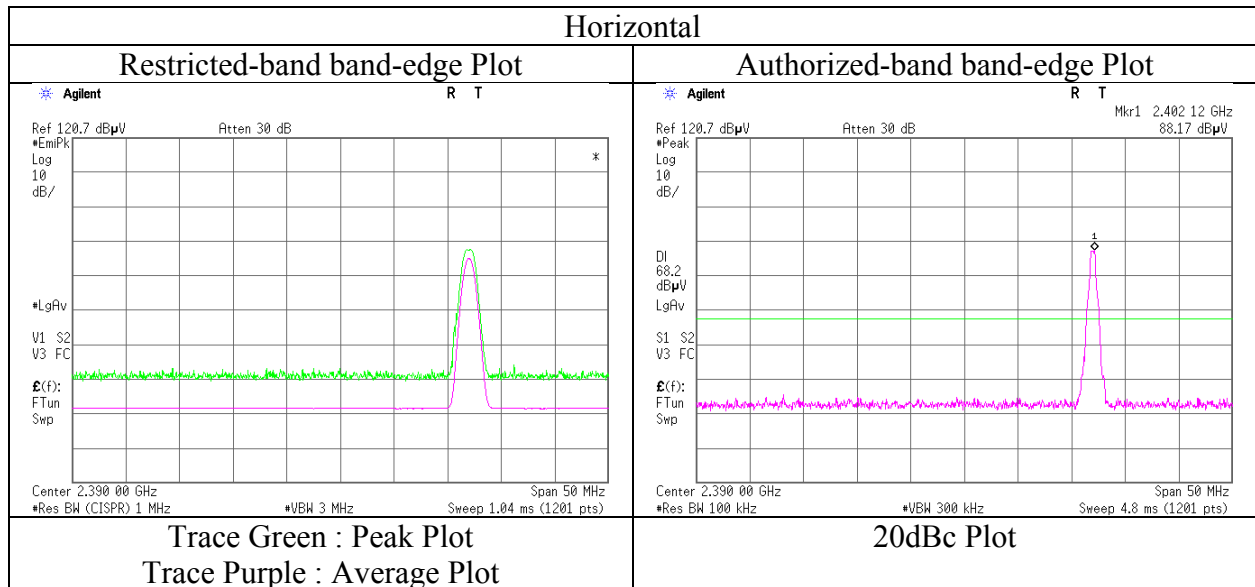
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated Spurious Emission (Reference Plot for band-edge)

| | |
|------------------------|-----------------------------------------|
| Test place | Ise EMC Lab. No.4 Semi Anechoic Chamber |
| Report No. | 11081928H |
| Date | February 12, 2016 |
| Temperature / Humidity | 23 deg. C / 39 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, DH5 2402 MHz |



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

Radiated Spurious Emission

Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016 February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH 23 deg. C / 30 % RH
Engineer : Kazuya Yoshioka Shinichi Miyazono
(1 GHz - 26.5 GHz) (30 MHz - 1000 MHz)
Mode : Tx, Hopping Off, DH5 2441 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|
| Hori | 61.450 | QP | 36.0 | 7.3 | 7.6 | 32.0 | 18.9 | 40.0 | 21.1 | |
| Hori | 207.913 | QP | 41.3 | 16.6 | 9.2 | 31.8 | 35.3 | 43.5 | 8.2 | |
| Hori | 540.679 | QP | 36.8 | 19.9 | 11.4 | 32.0 | 36.1 | 46.0 | 9.9 | |
| Hori | 589.844 | QP | 38.1 | 20.4 | 11.7 | 32.1 | 38.1 | 46.0 | 7.9 | |
| Hori | 737.287 | QP | 31.3 | 22.7 | 12.5 | 32.0 | 34.5 | 46.0 | 11.5 | |
| Hori | 884.749 | QP | 31.5 | 24.0 | 13.2 | 31.2 | 37.5 | 46.0 | 8.5 | |
| Hori | 4882.000 | PK | 39.0 | 33.1 | 9.1 | 31.3 | 49.9 | 73.9 | 24.0 | Floor noise |
| Hori | 7323.000 | PK | 40.7 | 36.8 | 10.2 | 32.6 | 55.1 | 73.9 | 18.8 | Floor noise |
| Hori | 9764.000 | PK | 41.4 | 38.2 | 11.0 | 32.7 | 57.9 | 73.9 | 16.0 | Floor noise |
| Hori | 4882.000 | AV | 27.1 | 33.1 | 9.1 | 31.3 | 38.0 | 53.9 | 15.9 | Floor noise |
| Hori | 7323.000 | AV | 28.7 | 36.8 | 10.2 | 32.6 | 43.1 | 53.9 | 10.8 | Floor noise |
| Hori | 9764.000 | AV | 29.0 | 38.2 | 11.0 | 32.7 | 45.5 | 53.9 | 8.4 | Floor noise |
| Vert | 49.801 | QP | 44.9 | 10.7 | 7.4 | 32.1 | 30.9 | 40.0 | 9.1 | |
| Vert | 207.915 | QP | 42.8 | 16.6 | 9.2 | 31.8 | 36.8 | 43.5 | 6.7 | |
| Vert | 589.841 | QP | 39.3 | 20.4 | 11.7 | 32.1 | 39.3 | 46.0 | 6.7 | |
| Vert | 726.456 | QP | 30.6 | 22.6 | 12.4 | 32.0 | 33.6 | 46.0 | 12.4 | |
| Vert | 762.113 | QP | 31.5 | 22.8 | 12.6 | 31.8 | 35.1 | 46.0 | 10.9 | |
| Vert | 884.751 | QP | 28.1 | 24.0 | 13.2 | 31.2 | 34.1 | 46.0 | 11.9 | |
| Vert | 4882.000 | PK | 39.6 | 33.1 | 9.1 | 31.3 | 50.5 | 73.9 | 23.4 | Floor noise |
| Vert | 7323.000 | PK | 40.9 | 36.8 | 10.2 | 32.6 | 55.3 | 73.9 | 18.6 | Floor noise |
| Vert | 9764.000 | PK | 41.6 | 38.2 | 11.0 | 32.7 | 58.1 | 73.9 | 15.8 | Floor noise |
| Vert | 4882.000 | AV | 27.1 | 33.1 | 9.1 | 31.3 | 38.0 | 53.9 | 15.9 | Floor noise |
| Vert | 7323.000 | AV | 28.7 | 36.8 | 10.2 | 32.6 | 43.1 | 53.9 | 10.8 | Floor noise |
| Vert | 9764.000 | AV | 29.0 | 38.2 | 11.0 | 32.7 | 45.5 | 53.9 | 8.4 | Floor noise |

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

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 1 GHz - 10 GHz $20\log(4.4 \text{ m} / 3.0 \text{ m}) = 3.3 \text{ dB}$
 10 GHz - 26.5 GHz $20\log(1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

***These results have sufficient margin without taking account Dwell time factor.**

Radiated Spurious Emission

Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016 February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH 23 deg. C / 30 % RH
Engineer : Kazuya Yoshioka Shinichi Miyazono
(1 GHz - 26.5 GHz) (30 MHz - 1000 MHz)
Mode : Tx, Hopping Off, DH5 2480 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|
| Hori | 61.422 | QP | 35.9 | 7.3 | 7.6 | 32.0 | 18.8 | 40.0 | 21.2 | |
| Hori | 207.907 | QP | 41.1 | 16.6 | 9.2 | 31.8 | 35.1 | 43.5 | 8.4 | |
| Hori | 540.679 | QP | 36.5 | 19.9 | 11.4 | 32.0 | 35.8 | 46.0 | 10.2 | |
| Hori | 589.841 | QP | 38.3 | 20.4 | 11.7 | 32.1 | 38.3 | 46.0 | 7.7 | |
| Hori | 737.291 | QP | 31.6 | 22.7 | 12.5 | 32.0 | 34.8 | 46.0 | 11.2 | |
| Hori | 884.751 | QP | 31.6 | 24.0 | 13.2 | 31.2 | 37.6 | 46.0 | 8.4 | |
| Hori | 2483.500 | PK | 41.2 | 28.1 | 6.7 | 32.1 | 43.9 | 73.9 | 30.0 | |
| Hori | 4960.000 | PK | 38.5 | 33.4 | 9.1 | 31.2 | 49.8 | 73.9 | 24.1 | Floor noise |
| Hori | 7440.000 | PK | 41.5 | 36.8 | 10.2 | 32.7 | 55.8 | 73.9 | 18.1 | Floor noise |
| Hori | 9920.000 | PK | 40.0 | 38.3 | 11.0 | 32.8 | 56.5 | 73.9 | 17.4 | Floor noise |
| Hori | 2483.500 | AV | 27.8 | 28.1 | 6.7 | 32.1 | 30.5 | 53.9 | 23.4 | |
| Hori | 4960.000 | AV | 25.4 | 33.4 | 9.1 | 31.2 | 36.7 | 53.9 | 17.2 | Floor noise |
| Hori | 7440.000 | AV | 27.5 | 36.8 | 10.2 | 32.7 | 41.8 | 53.9 | 12.1 | Floor noise |
| Hori | 9920.000 | AV | 27.0 | 38.3 | 11.0 | 32.8 | 43.5 | 53.9 | 10.4 | Floor noise |
| Vert | 49.811 | QP | 44.9 | 10.7 | 7.4 | 32.1 | 30.9 | 40.0 | 9.1 | |
| Vert | 207.902 | QP | 42.8 | 16.6 | 9.2 | 31.8 | 36.8 | 43.5 | 6.7 | |
| Vert | 589.885 | QP | 39.2 | 20.4 | 11.7 | 32.1 | 39.2 | 46.0 | 6.8 | |
| Vert | 726.452 | QP | 30.7 | 22.6 | 12.4 | 32.0 | 33.7 | 46.0 | 12.3 | |
| Vert | 762.190 | QP | 31.5 | 22.8 | 12.6 | 31.8 | 35.1 | 46.0 | 10.9 | |
| Vert | 884.749 | QP | 29.0 | 24.0 | 13.2 | 31.2 | 35.0 | 46.0 | 11.0 | |
| Vert | 2483.500 | PK | 39.9 | 28.1 | 6.7 | 32.1 | 42.6 | 73.9 | 31.3 | |
| Vert | 4960.000 | PK | 38.8 | 33.4 | 9.1 | 31.2 | 50.1 | 73.9 | 23.8 | Floor noise |
| Vert | 7440.000 | PK | 41.7 | 36.8 | 10.2 | 32.7 | 56.0 | 73.9 | 17.9 | Floor noise |
| Vert | 9920.000 | PK | 40.3 | 38.3 | 11.0 | 32.8 | 56.8 | 73.9 | 17.1 | Floor noise |
| Vert | 2483.500 | AV | 28.9 | 28.1 | 6.7 | 32.1 | 31.6 | 53.9 | 22.3 | |
| Vert | 4960.000 | AV | 25.4 | 33.4 | 9.1 | 31.2 | 36.7 | 53.9 | 17.2 | Floor noise |
| Vert | 7440.000 | AV | 27.5 | 36.8 | 10.2 | 32.7 | 41.8 | 53.9 | 12.1 | Floor noise |
| Vert | 9920.000 | AV | 27.0 | 38.3 | 11.0 | 32.8 | 43.5 | 53.9 | 10.4 | Floor noise |

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

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

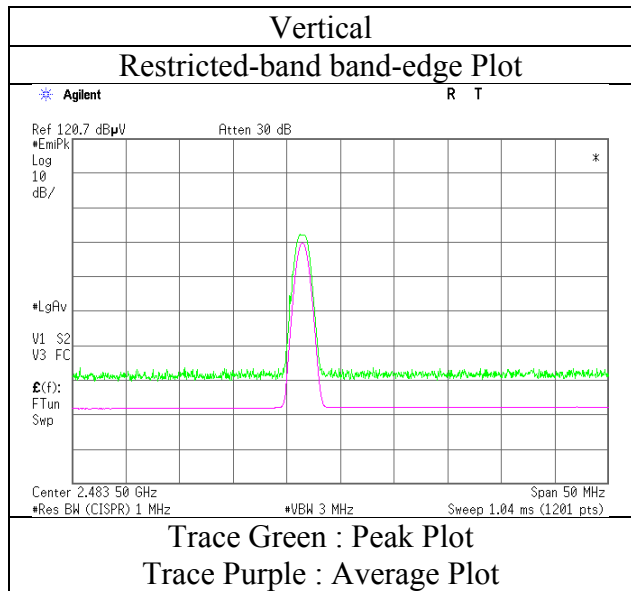
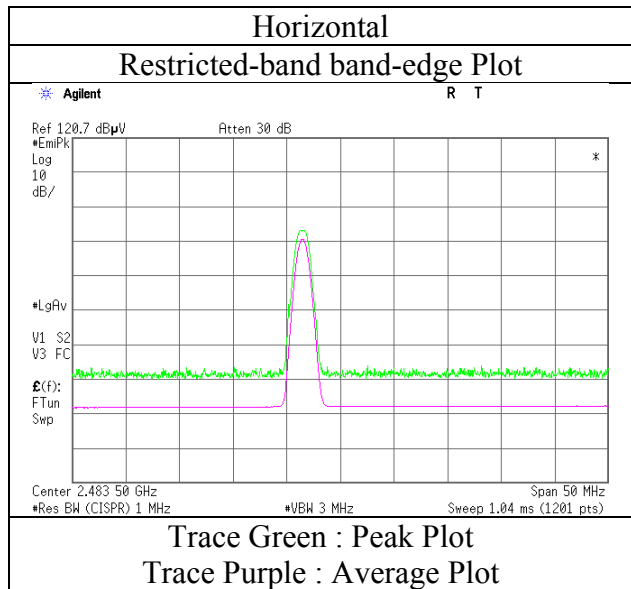
*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 1 GHz - 10 GHz 20log(4.4 m / 3.0 m) = 3.3 dB
 10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*These results have sufficient margin without taking account Dwell time factor.

Radiated Spurious Emission
(Reference Plot for band-edge)

| | |
|------------------------|-----------------------------------------|
| Test place | Ise EMC Lab. No.4 Semi Anechoic Chamber |
| Report No. | 11081928H |
| Date | February 12, 2016 |
| Temperature / Humidity | 23 deg. C / 39 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, DH5 2480 MHz |



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

Radiated Spurious Emission

Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016 February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH 23 deg. C / 30 % RH
Engineer : Kazuya Yoshioka Shinichi Miyazono
(1 GHz - 26.5 GHz) (30 MHz - 1000 MHz)
Mode : Tx, Hopping Off, 3DH5 2402 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|
| Hori | 61.439 | QP | 36.0 | 7.3 | 7.6 | 32.0 | 18.9 | 40.0 | 21.1 | |
| Hori | 207.923 | QP | 41.0 | 16.6 | 9.2 | 31.8 | 35.0 | 43.5 | 8.5 | |
| Hori | 540.694 | QP | 36.6 | 19.9 | 11.4 | 32.0 | 35.9 | 46.0 | 10.1 | |
| Hori | 589.839 | QP | 38.3 | 20.4 | 11.7 | 32.1 | 38.3 | 46.0 | 7.7 | |
| Hori | 737.295 | QP | 31.6 | 22.7 | 12.5 | 32.0 | 34.8 | 46.0 | 11.2 | |
| Hori | 884.738 | QP | 31.5 | 24.0 | 13.2 | 31.2 | 37.5 | 46.0 | 8.5 | |
| Hori | 2390.000 | PK | 40.4 | 27.9 | 6.6 | 32.1 | 42.8 | 73.9 | 31.1 | |
| Hori | 4804.000 | PK | 40.0 | 32.8 | 9.0 | 31.3 | 50.5 | 73.9 | 23.4 | Floor noise |
| Hori | 7206.000 | PK | 40.2 | 36.8 | 10.2 | 32.6 | 54.6 | 73.9 | 19.3 | Floor noise |
| Hori | 9608.000 | PK | 40.4 | 38.1 | 10.9 | 32.6 | 56.8 | 73.9 | 17.1 | Floor noise |
| Hori | 2390.000 | AV | 27.3 | 27.9 | 6.6 | 32.1 | 29.7 | 53.9 | 24.2 | |
| Hori | 4804.000 | AV | 25.6 | 32.8 | 9.0 | 31.3 | 36.1 | 53.9 | 17.8 | Floor noise |
| Hori | 7206.000 | AV | 27.0 | 36.8 | 10.2 | 32.6 | 41.4 | 53.9 | 12.5 | Floor noise |
| Hori | 9608.000 | AV | 27.3 | 38.1 | 10.9 | 32.6 | 43.7 | 53.9 | 10.2 | Floor noise |
| Vert | 49.782 | QP | 44.9 | 10.7 | 7.4 | 32.1 | 30.9 | 40.0 | 9.1 | |
| Vert | 207.920 | QP | 42.9 | 16.6 | 9.2 | 31.8 | 36.9 | 43.5 | 6.6 | |
| Vert | 589.844 | QP | 39.3 | 20.4 | 11.7 | 32.1 | 39.3 | 46.0 | 6.7 | |
| Vert | 726.445 | QP | 30.7 | 22.6 | 12.4 | 32.0 | 33.7 | 46.0 | 12.3 | |
| Vert | 762.188 | QP | 31.7 | 22.8 | 12.6 | 31.8 | 35.3 | 46.0 | 10.7 | |
| Vert | 884.799 | QP | 29.0 | 24.0 | 13.2 | 31.2 | 35.0 | 46.0 | 11.0 | |
| Vert | 2390.000 | PK | 40.4 | 27.9 | 6.6 | 32.1 | 42.8 | 73.9 | 31.1 | |
| Vert | 4804.000 | PK | 40.3 | 32.8 | 9.0 | 31.3 | 50.8 | 73.9 | 23.1 | Floor noise |
| Vert | 7206.000 | PK | 40.5 | 36.8 | 10.2 | 32.6 | 54.9 | 73.9 | 19.0 | Floor noise |
| Vert | 9608.000 | PK | 40.0 | 38.1 | 10.9 | 32.6 | 56.4 | 73.9 | 17.5 | Floor noise |
| Vert | 2390.000 | AV | 28.7 | 27.9 | 6.6 | 32.1 | 31.1 | 53.9 | 22.8 | |
| Vert | 4804.000 | AV | 25.6 | 32.8 | 9.0 | 31.3 | 36.1 | 53.9 | 17.8 | Floor noise |
| Vert | 7206.000 | AV | 27.0 | 36.8 | 10.2 | 32.6 | 41.4 | 53.9 | 12.5 | Floor noise |
| Vert | 9608.000 | AV | 27.3 | 38.1 | 10.9 | 32.6 | 43.7 | 53.9 | 10.2 | Floor noise |

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

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 1 GHz - 10 GHz 20log (4.4 m / 3.0 m) = 3.3 dB
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori | 2402.000 | PK | 88.8 | 28.0 | 6.6 | 32.1 | 91.3 | - | - | Carrier |
| Hori | 2400.000 | PK | 32.5 | 28.0 | 6.6 | 32.1 | 35.0 | 71.3 | 36.3 | |
| Vert | 2402.000 | PK | 90.4 | 28.0 | 6.6 | 32.1 | 92.9 | - | - | Carrier |
| Vert | 2400.000 | PK | 32.7 | 28.0 | 6.6 | 32.1 | 35.2 | 72.9 | 37.7 | |

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

Distance factor: 1GHz-10GHz 20log (4.4 m / 3.0 m) = 3.3 dB
 10GHz-26.5GHz 20log(1.0m / 3.0m)= -9.5dB

***These results have sufficient margin without taking account Dwell time factor.**

UL Japan, Inc.

Ise EMC Lab.

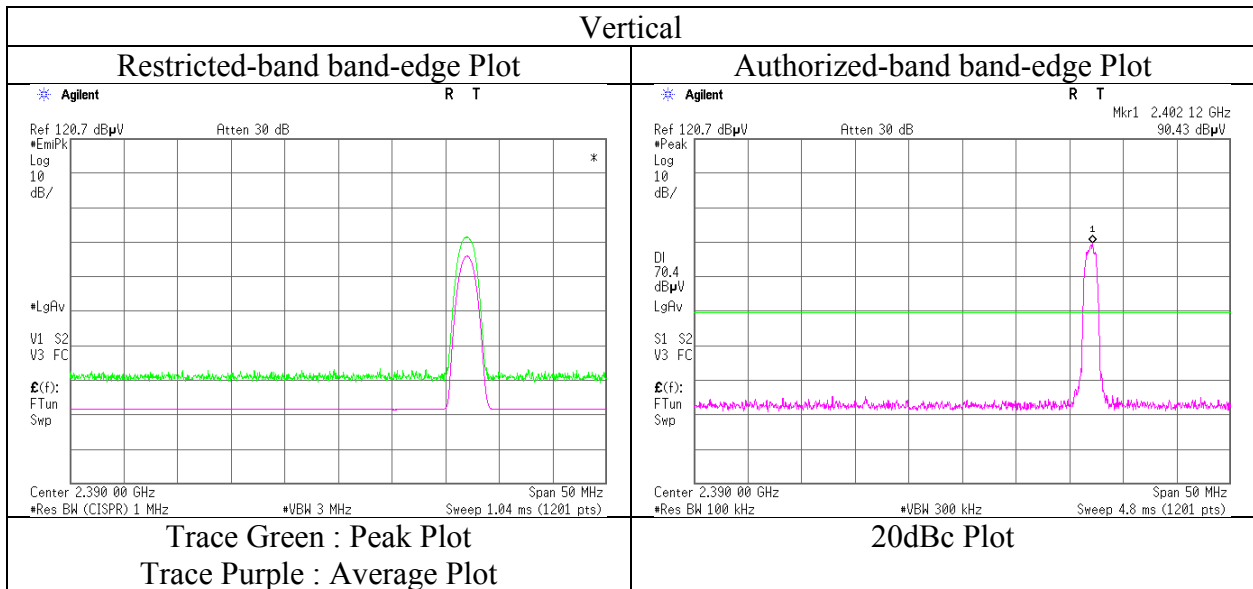
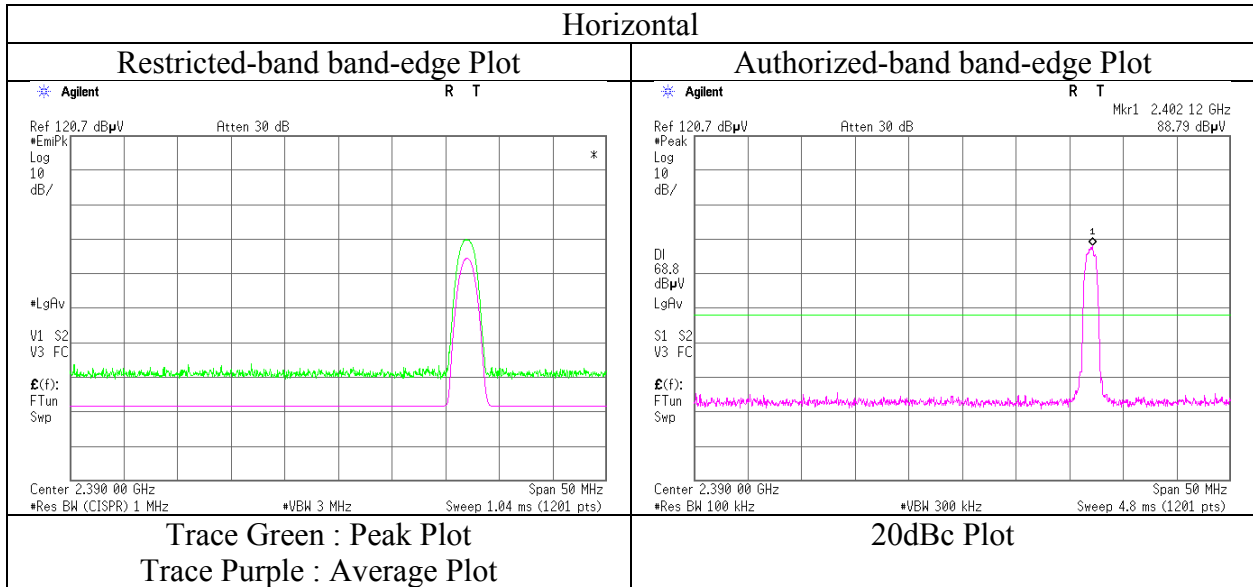
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)

| | |
|------------------------|-----------------------------------------|
| Test place | Ise EMC Lab. No.4 Semi Anechoic Chamber |
| Report No. | 11081928H |
| Date | February 12, 2016 |
| Temperature / Humidity | 23 deg. C / 39 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, 3DH5 2402 MHz |



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

Radiated Spurious Emission

Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016 February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH 23 deg. C / 30 % RH
Engineer : Kazuya Yoshioka Shinichi Miyazono
(1 GHz - 26.5 GHz) (30 MHz - 1000 MHz)
Mode : Tx, Hopping Off, 3DH5 2441 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|
| Hori | 61.449 | QP | 36.0 | 7.3 | 7.6 | 32.0 | 18.9 | 40.0 | 21.1 | |
| Hori | 207.915 | QP | 41.5 | 16.6 | 9.2 | 31.8 | 35.5 | 43.5 | 8.0 | |
| Hori | 540.669 | QP | 36.5 | 19.9 | 11.4 | 32.0 | 35.8 | 46.0 | 10.2 | |
| Hori | 589.840 | QP | 38.1 | 20.4 | 11.7 | 32.1 | 38.1 | 46.0 | 7.9 | |
| Hori | 737.299 | QP | 31.7 | 22.7 | 12.5 | 32.0 | 34.9 | 46.0 | 11.1 | |
| Hori | 884.761 | QP | 31.5 | 24.0 | 13.2 | 31.2 | 37.5 | 46.0 | 8.5 | |
| Hori | 4882.000 | PK | 38.6 | 33.1 | 9.1 | 31.3 | 49.5 | 73.9 | 24.4 | Floor noise |
| Hori | 7323.000 | PK | 39.1 | 36.8 | 10.2 | 32.6 | 53.5 | 73.9 | 20.4 | Floor noise |
| Hori | 9764.000 | PK | 40.6 | 38.2 | 11.0 | 32.7 | 57.1 | 73.9 | 16.8 | Floor noise |
| Hori | 4882.000 | AV | 27.1 | 33.1 | 9.1 | 31.3 | 38.0 | 53.9 | 15.9 | Floor noise |
| Hori | 7323.000 | AV | 28.7 | 36.8 | 10.2 | 32.6 | 43.1 | 53.9 | 10.8 | Floor noise |
| Hori | 9764.000 | AV | 29.0 | 38.2 | 11.0 | 32.7 | 45.5 | 53.9 | 8.4 | Floor noise |
| Vert | 49.695 | QP | 44.9 | 10.8 | 7.4 | 32.1 | 31.0 | 40.0 | 9.0 | |
| Vert | 207.915 | QP | 42.8 | 16.6 | 9.2 | 31.8 | 36.8 | 43.5 | 6.7 | |
| Vert | 589.841 | QP | 39.2 | 20.4 | 11.7 | 32.1 | 39.2 | 46.0 | 6.8 | |
| Vert | 726.477 | QP | 30.8 | 22.6 | 12.4 | 32.0 | 33.8 | 46.0 | 12.2 | |
| Vert | 762.186 | QP | 31.5 | 22.8 | 12.6 | 31.8 | 35.1 | 46.0 | 10.9 | |
| Vert | 884.773 | QP | 28.9 | 24.0 | 13.2 | 31.2 | 34.9 | 46.0 | 11.1 | |
| Vert | 4882.000 | PK | 38.9 | 33.1 | 9.1 | 31.3 | 49.8 | 73.9 | 24.1 | Floor noise |
| Vert | 7323.000 | PK | 39.1 | 36.8 | 10.2 | 32.6 | 53.5 | 73.9 | 20.4 | Floor noise |
| Vert | 9764.000 | PK | 40.8 | 38.2 | 11.0 | 32.7 | 57.3 | 73.9 | 16.6 | Floor noise |
| Vert | 4882.000 | AV | 27.1 | 33.1 | 9.1 | 31.3 | 38.0 | 53.9 | 15.9 | Floor noise |
| Vert | 7323.000 | AV | 28.7 | 36.8 | 10.2 | 32.6 | 43.1 | 53.9 | 10.8 | Floor noise |
| Vert | 9764.000 | AV | 29.0 | 38.2 | 11.0 | 32.7 | 45.5 | 53.9 | 8.4 | Floor noise |

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

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 1 GHz - 10 GHz $20\log(4.4\text{ m} / 3.0\text{ m}) = 3.3\text{ dB}$

10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

***These results have sufficient margin without taking account Dwell time factor.**

Radiated Spurious Emission

Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016 February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH 23 deg. C / 30 % RH
Engineer : Kazuya Yoshioka Shinichi Miyazono
(1 GHz - 26.5 GHz) (30 MHz - 1000 MHz)
Mode : Tx, Hopping Off, 3DH5 2480 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|-----------------|----------------|-------------|-------------|
| Hori | 61.451 | QP | 36.0 | 7.3 | 7.6 | 32.0 | 18.9 | 40.0 | 21.1 | |
| Hori | 207.915 | QP | 41.1 | 16.6 | 9.2 | 31.8 | 35.1 | 43.5 | 8.4 | |
| Hori | 540.691 | QP | 36.5 | 19.9 | 11.4 | 32.0 | 35.8 | 46.0 | 10.2 | |
| Hori | 589.833 | QP | 38.2 | 20.4 | 11.7 | 32.1 | 38.2 | 46.0 | 7.8 | |
| Hori | 737.291 | QP | 31.7 | 22.7 | 12.5 | 32.0 | 34.9 | 46.0 | 11.1 | |
| Hori | 884.749 | QP | 31.5 | 24.0 | 13.2 | 31.2 | 37.5 | 46.0 | 8.5 | |
| Hori | 2483.500 | PK | 41.1 | 28.1 | 6.7 | 32.1 | 43.8 | 73.9 | 30.1 | |
| Hori | 4960.000 | PK | 38.3 | 33.4 | 9.1 | 31.2 | 49.6 | 73.9 | 24.3 | Floor noise |
| Hori | 7440.000 | PK | 40.4 | 36.8 | 10.2 | 32.7 | 54.7 | 73.9 | 19.2 | Floor noise |
| Hori | 9920.000 | PK | 39.6 | 38.3 | 11.0 | 32.8 | 56.1 | 73.9 | 17.8 | Floor noise |
| Hori | 2483.500 | AV | 27.7 | 28.1 | 6.7 | 32.1 | 30.4 | 53.9 | 23.5 | |
| Hori | 4960.000 | AV | 25.5 | 33.4 | 9.1 | 31.2 | 36.8 | 53.9 | 17.1 | Floor noise |
| Hori | 7440.000 | AV | 27.4 | 36.8 | 10.2 | 32.7 | 41.7 | 53.9 | 12.2 | Floor noise |
| Hori | 9920.000 | AV | 27.0 | 38.3 | 11.0 | 32.8 | 43.5 | 53.9 | 10.4 | Floor noise |
| Vert | 49.677 | QP | 44.9 | 10.8 | 7.4 | 32.1 | 31.0 | 40.0 | 9.0 | |
| Vert | 207.916 | QP | 42.8 | 16.6 | 9.2 | 31.8 | 36.8 | 43.5 | 6.7 | |
| Vert | 589.839 | QP | 39.2 | 20.4 | 11.7 | 32.1 | 39.2 | 46.0 | 6.8 | |
| Vert | 726.440 | QP | 30.6 | 22.6 | 12.4 | 32.0 | 33.6 | 46.0 | 12.4 | |
| Vert | 762.211 | QP | 31.7 | 22.8 | 12.6 | 31.8 | 35.3 | 46.0 | 10.7 | |
| Vert | 884.749 | QP | 28.6 | 24.0 | 13.2 | 31.2 | 34.6 | 46.0 | 11.4 | |
| Vert | 2483.500 | PK | 40.4 | 28.1 | 6.7 | 32.1 | 43.1 | 73.9 | 30.8 | |
| Vert | 4960.000 | PK | 38.7 | 33.4 | 9.1 | 31.2 | 50.0 | 73.9 | 23.9 | Floor noise |
| Vert | 7440.000 | PK | 40.7 | 36.8 | 10.2 | 32.7 | 55.0 | 73.9 | 18.9 | Floor noise |
| Vert | 9920.000 | PK | 39.8 | 38.3 | 11.0 | 32.8 | 56.3 | 73.9 | 17.6 | Floor noise |
| Vert | 2483.500 | AV | 29.0 | 28.1 | 6.7 | 32.1 | 31.7 | 53.9 | 22.2 | |
| Vert | 4960.000 | AV | 25.5 | 33.4 | 9.1 | 31.2 | 36.8 | 53.9 | 17.1 | Floor noise |
| Vert | 7440.000 | AV | 27.4 | 36.8 | 10.2 | 32.7 | 41.7 | 53.9 | 12.2 | Floor noise |
| Vert | 9920.000 | AV | 27.0 | 38.3 | 11.0 | 32.8 | 43.5 | 53.9 | 10.4 | Floor noise |

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

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

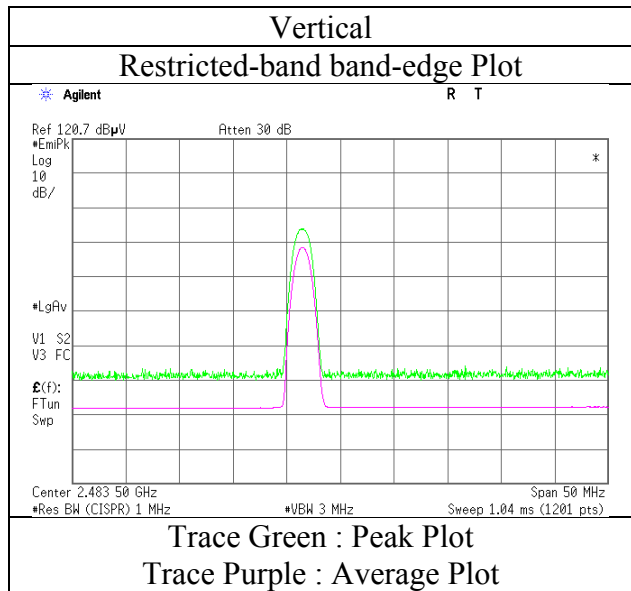
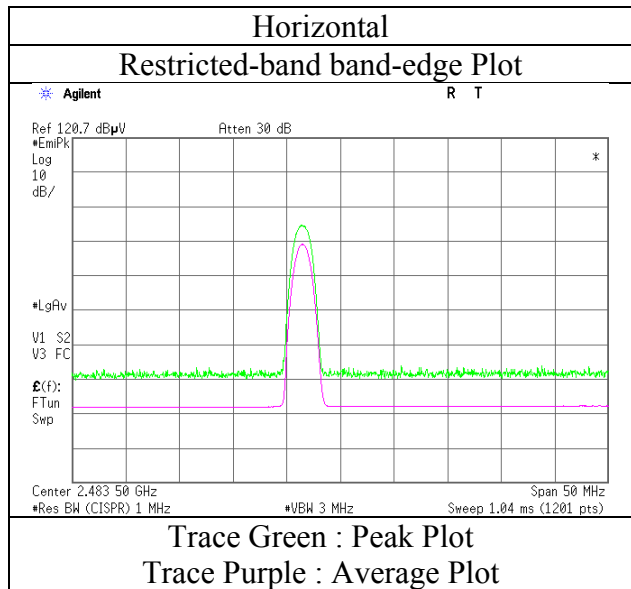
*The 10th harmonic was not seen so the result was its base noise level.

Distance factor: 1 GHz - 10 GHz 20log (4.4 m / 3.0 m) = 3.3 dB
 10 GHz - 26.5 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

***These results have sufficient margin without taking account Dwell time factor.**

Radiated Spurious Emission
(Reference Plot for band-edge)

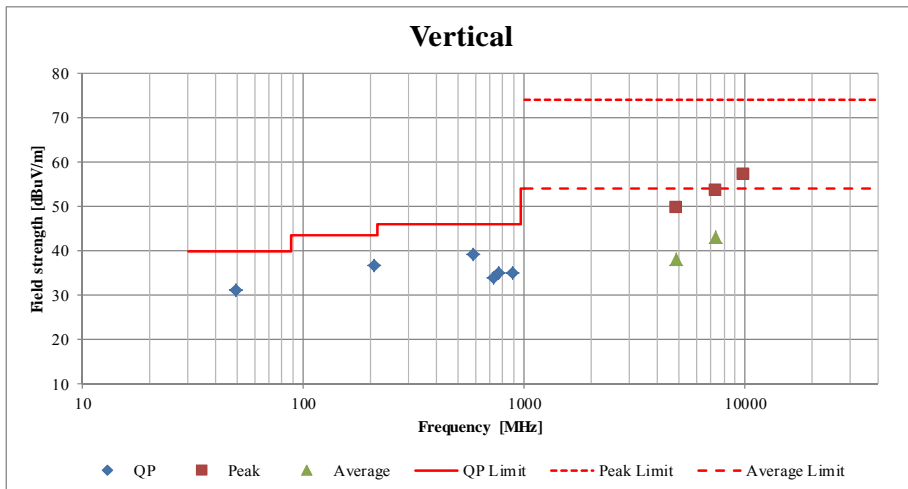
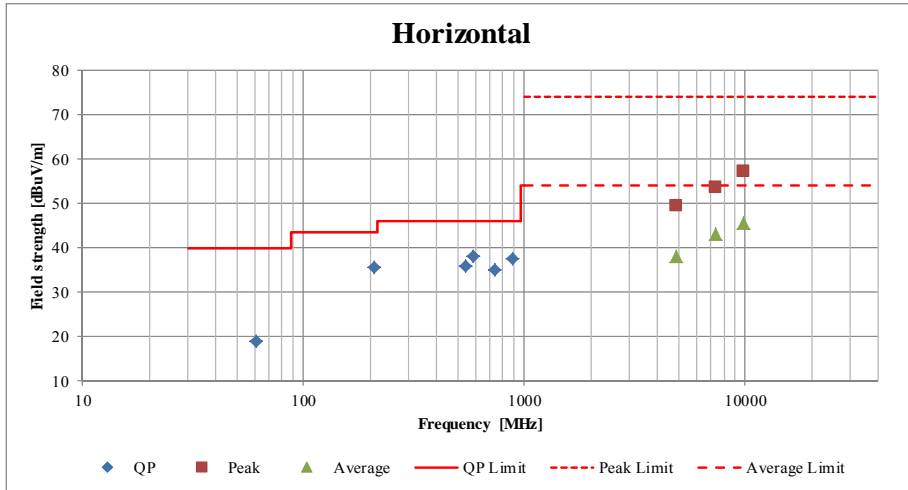
Test place : Ise EMC Lab. No.4 Semi Anechoic Chamber
Report No. : 11081928H
Date : February 12, 2016
Temperature / Humidity : 23 deg. C / 39 % RH
Engineer : Kazuya Yoshioka
Mode : Tx, Hopping Off, 3DH5 2480 MHz



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

Radiated Spurious Emission
(Plot data, Worst case)

| | | |
|------------------------|-----------------------------------------|---------------------|
| Test place | Ise EMC Lab. No.4 Semi Anechoic Chamber | |
| Report No. | 11081928H | |
| Date | February 12, 2016 | February 12, 2016 |
| Temperature / Humidity | 23 deg. C / 39 % RH | 23 deg. C / 30 % RH |
| Engineer | Kazuya Yoshioka | Shinichi Miyazono |
| | (1 GHz - 26.5 GHz) | (30 MHz - 1000 MHz) |
| Mode | Tx, Hopping Off, 3DH5 2441 MHz | |

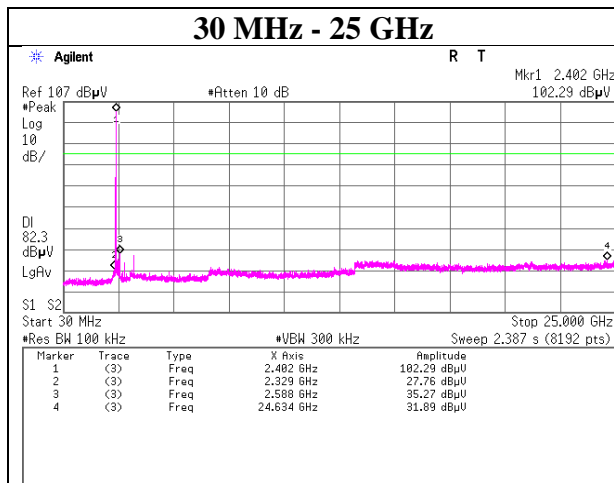
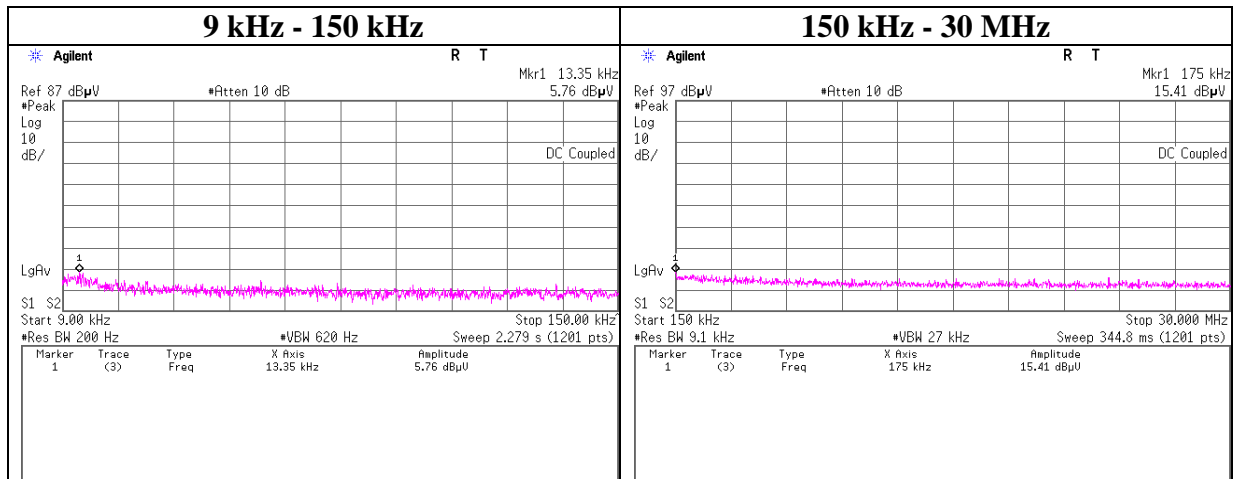


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, DH5 |

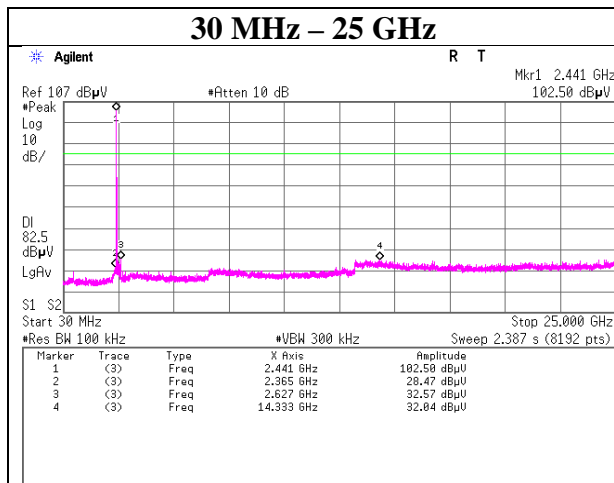
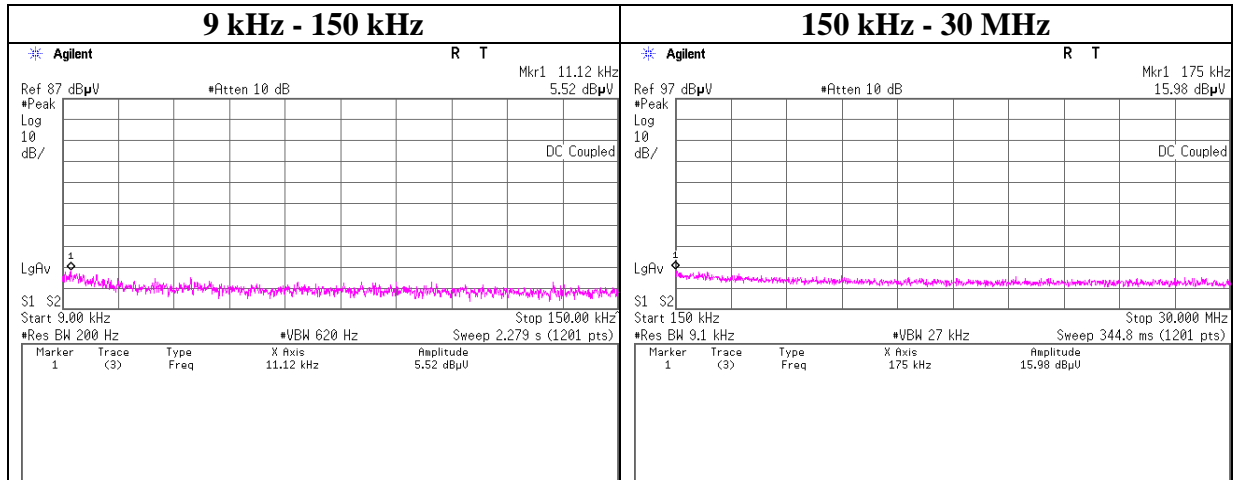
2402 MHz



Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, DH5 |

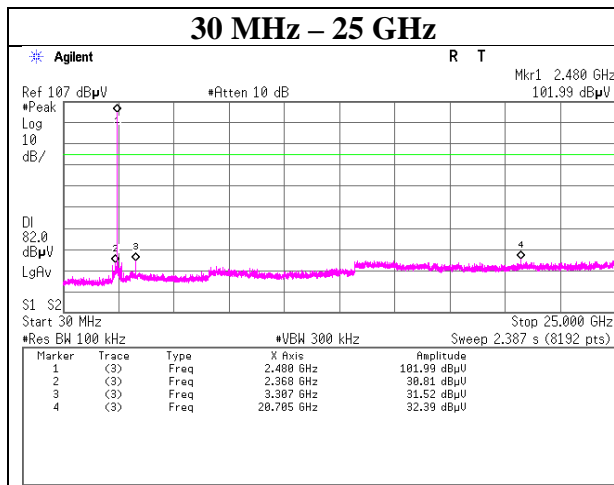
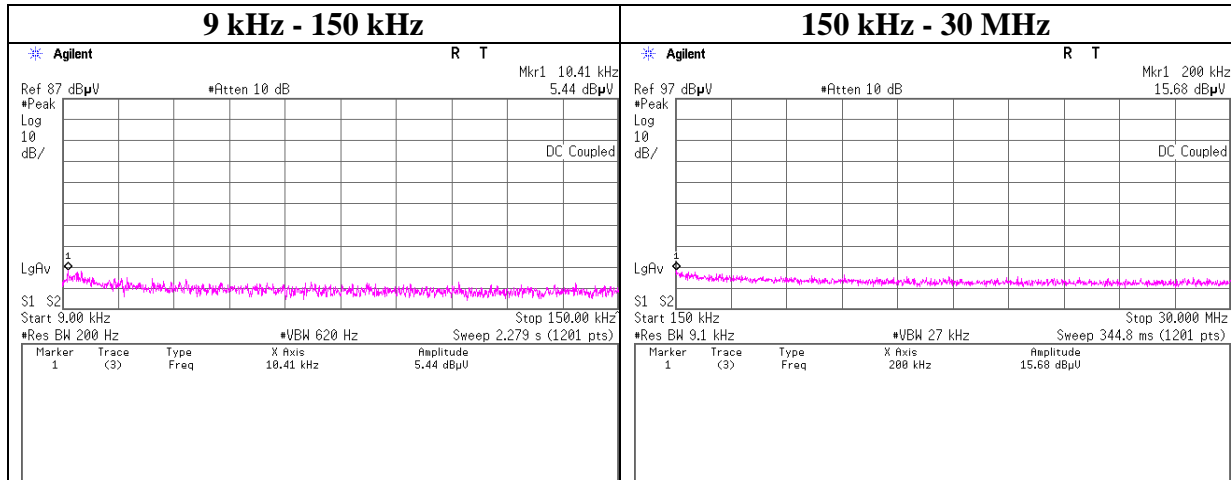
2441 MHz



Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, DH5 |

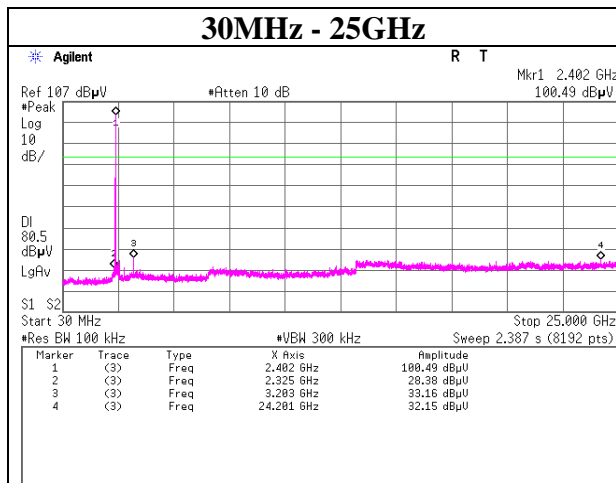
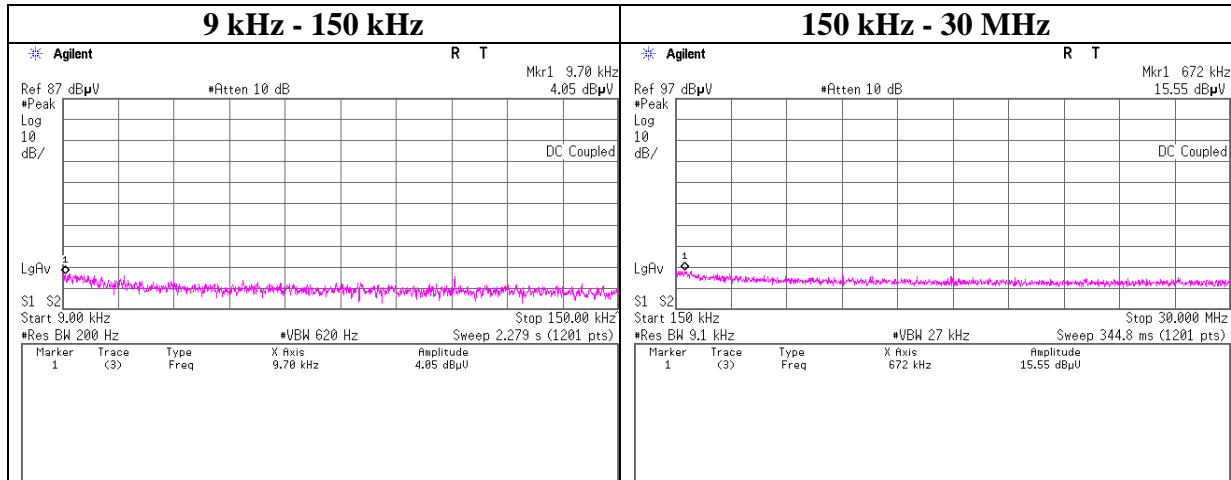
2480 MHz



Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, 3DH5 |

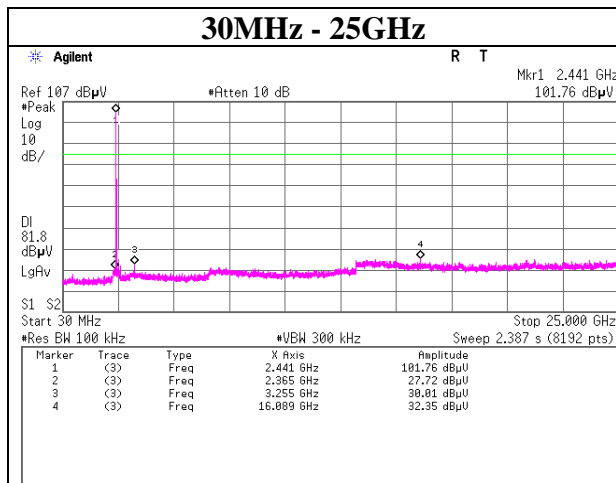
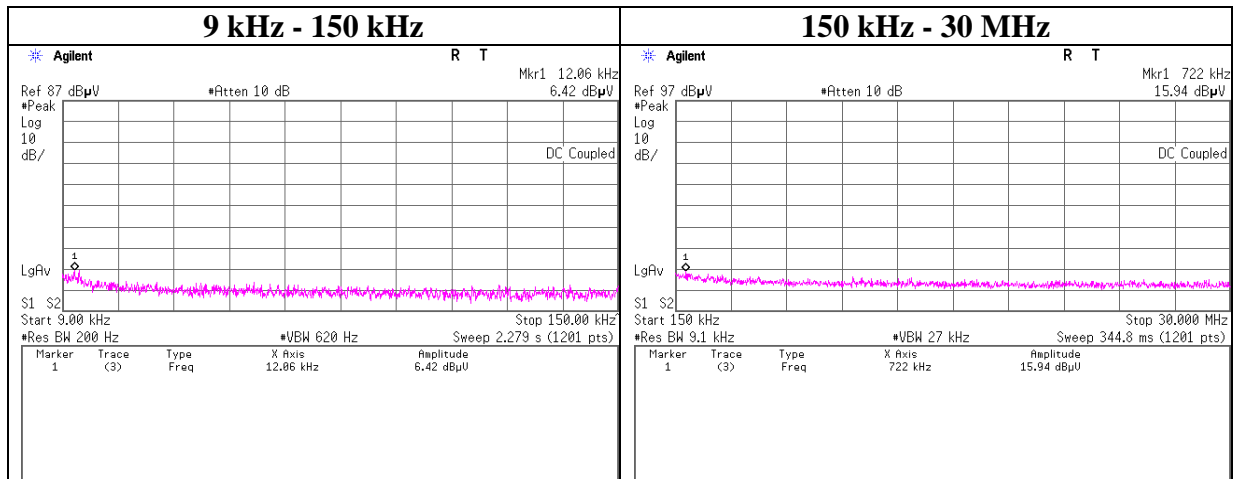
2402 MHz



Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, 3DH5 |

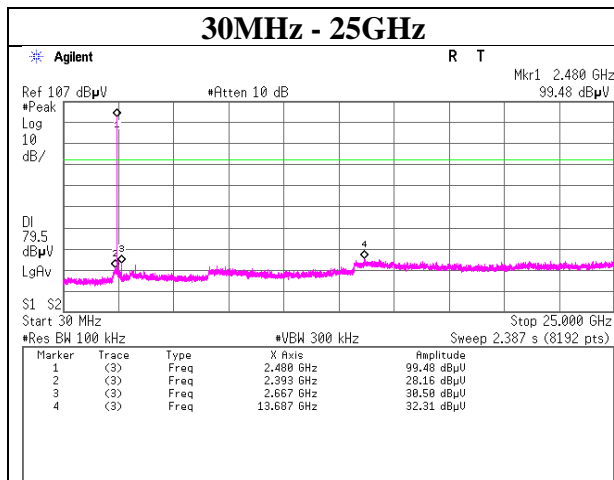
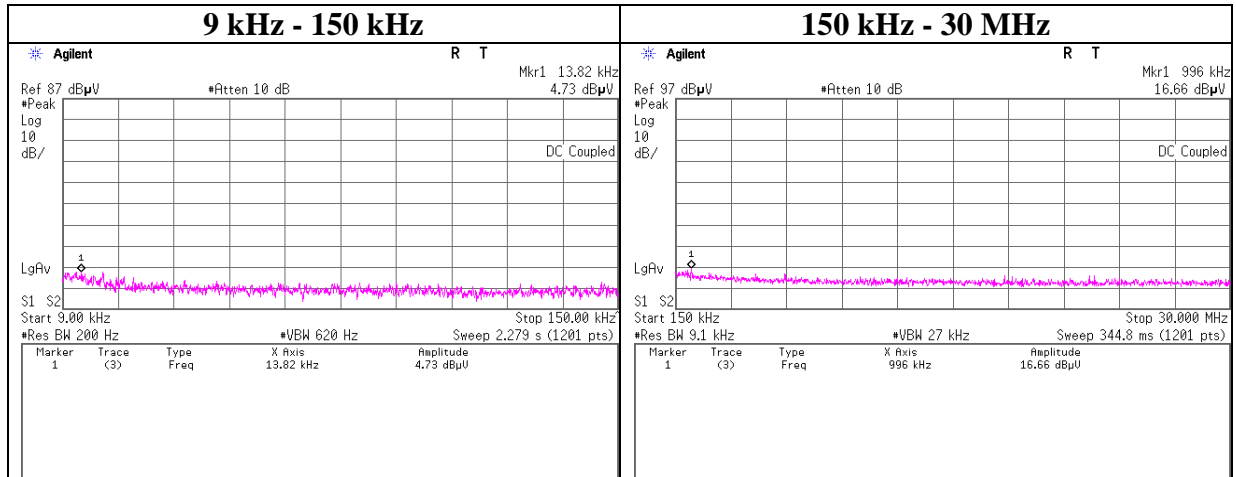
2441 MHz



Conducted Spurious Emission

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx, Hopping Off, 3DH5 |

2480 MHz



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Ise EMC Lab.

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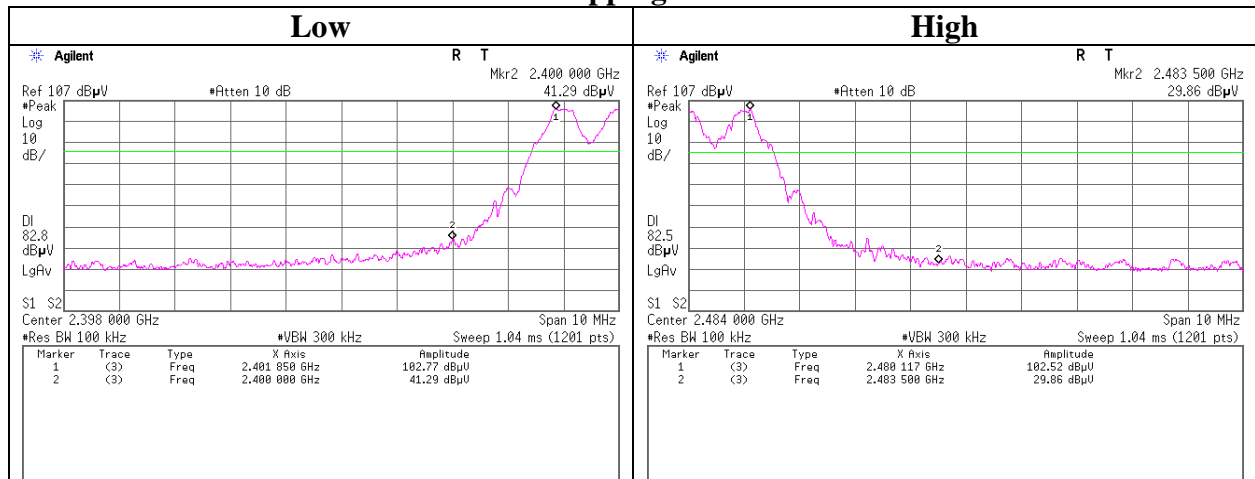
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

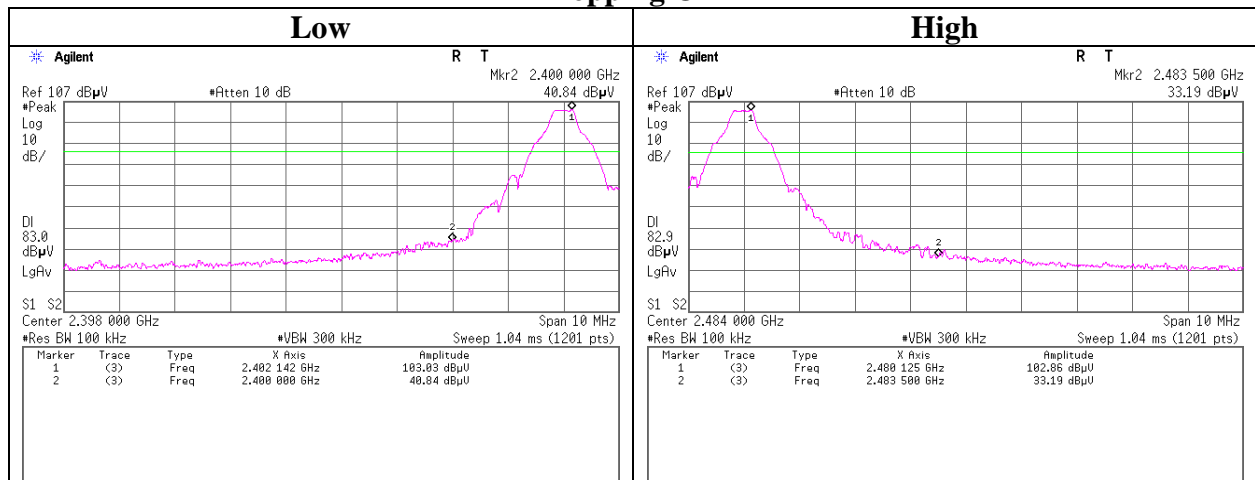
Conducted Emission Band Edge compliance

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx DH5 |

Hopping On



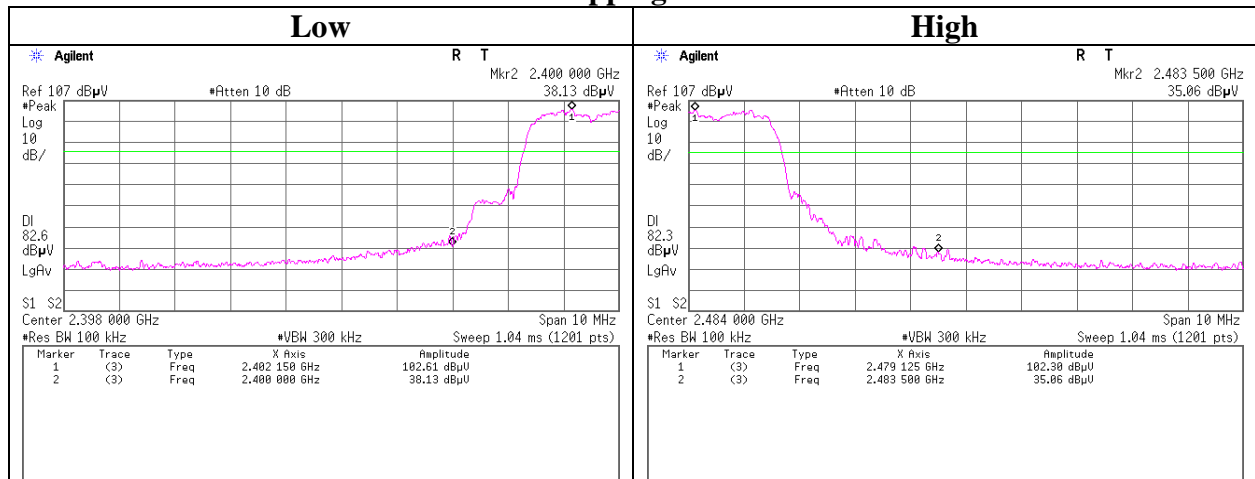
Hopping Off



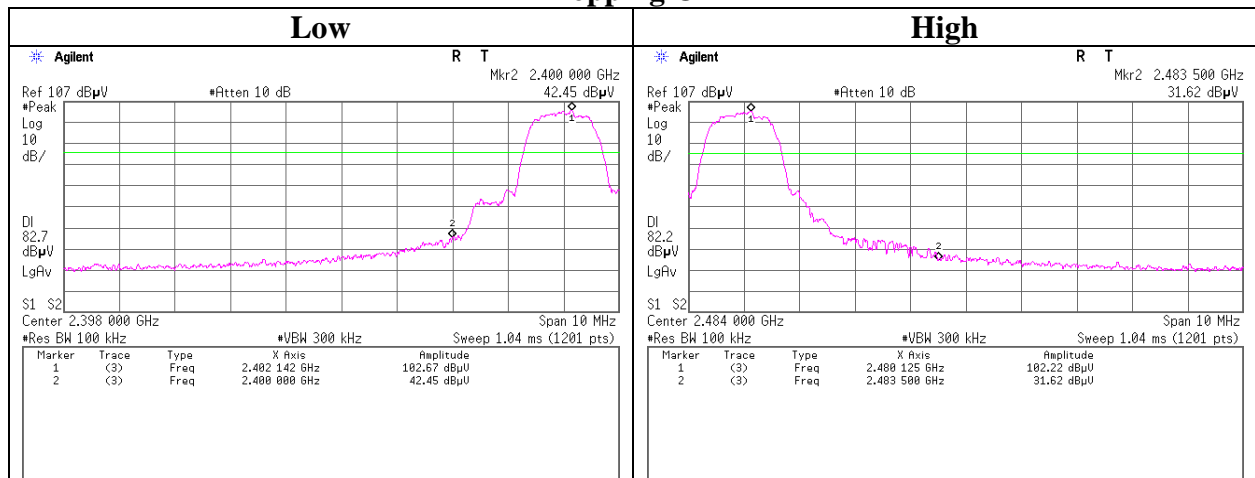
Conducted Emission Band Edge compliance

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx 3DH5 |

Hopping On



Hopping Off



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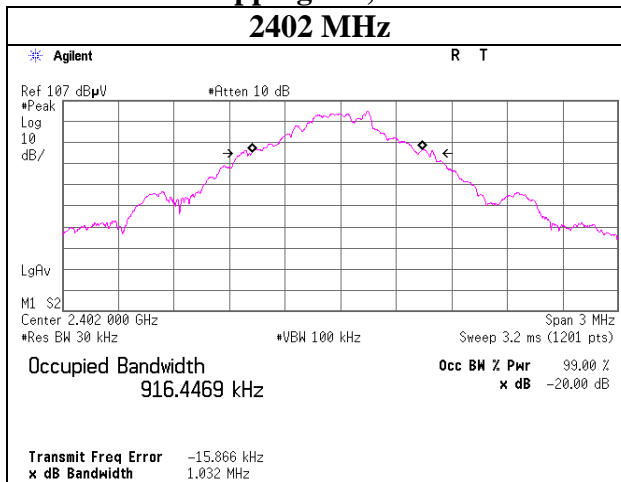
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

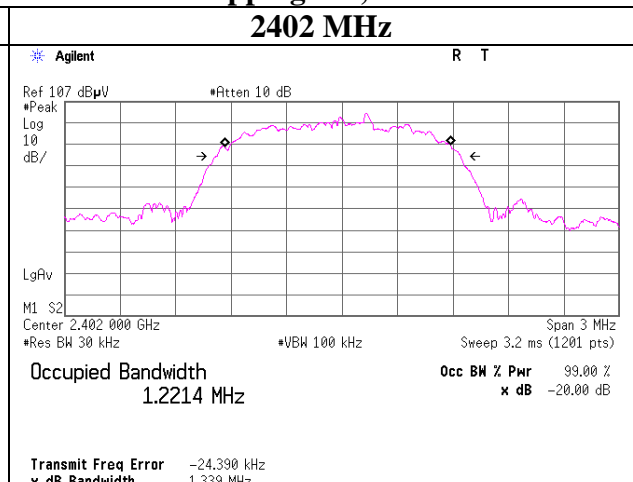
99% Occupied Bandwidth

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx Hopping Off |

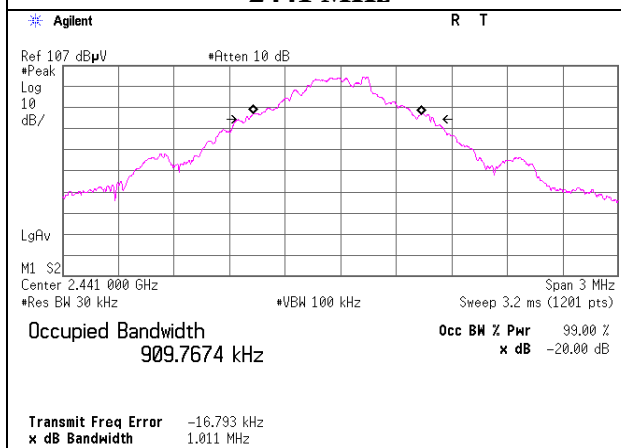
Hopping Off, DH5



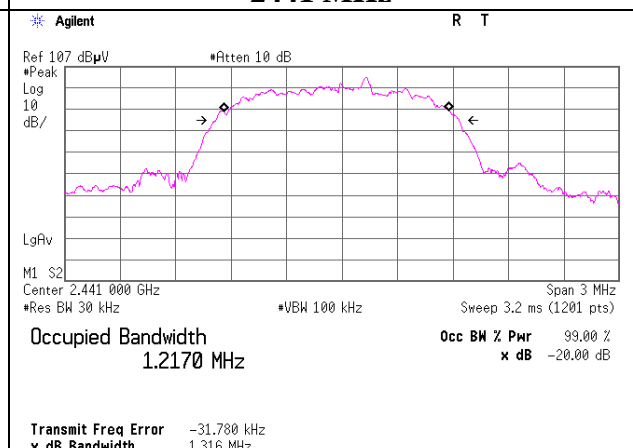
Hopping Off, 3DH5



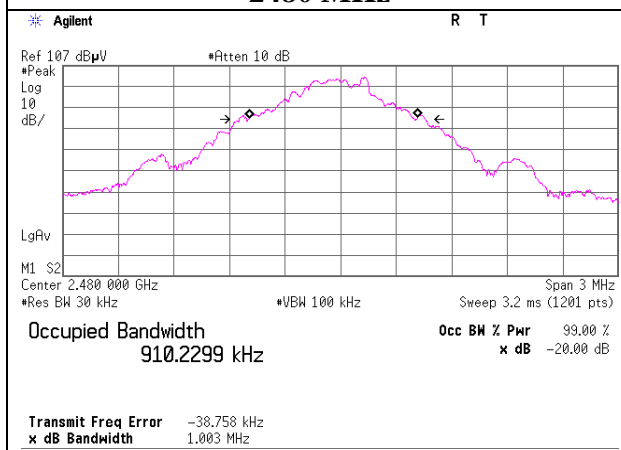
2441 MHz



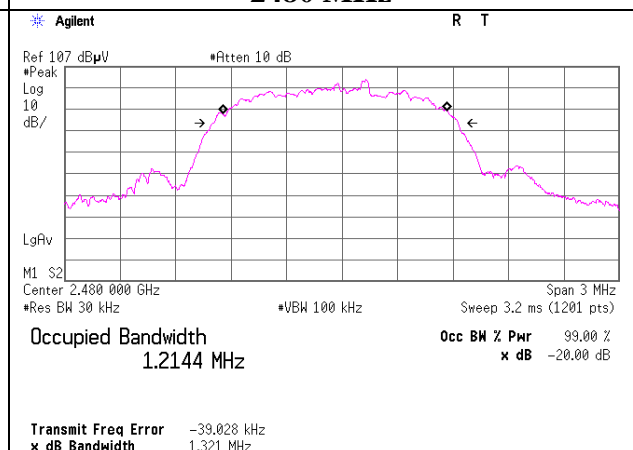
2441 MHz



2480 MHz



2480 MHz



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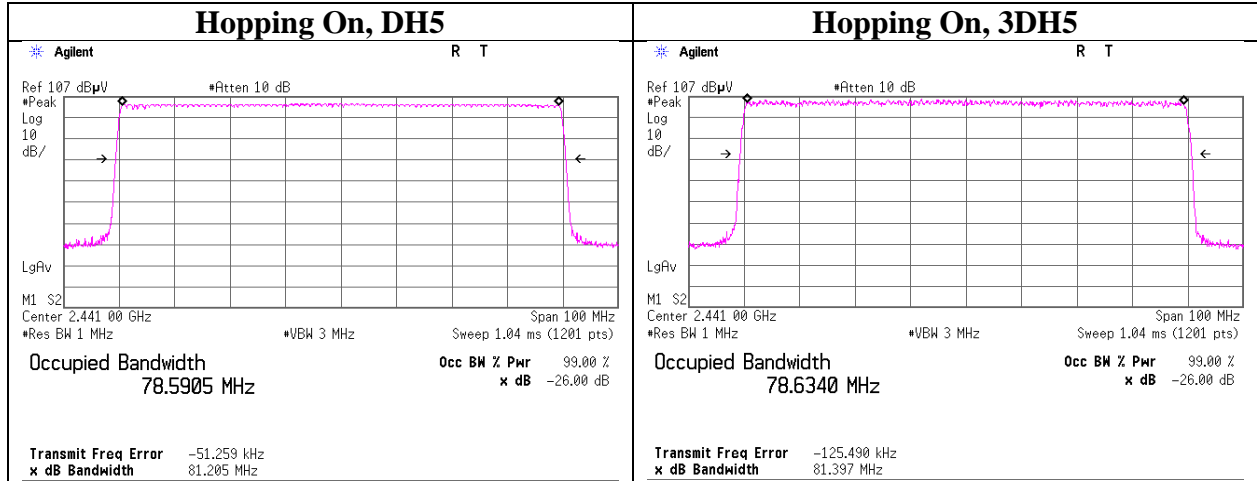
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99% Occupied Bandwidth

| | |
|------------------------|------------------------------------|
| Test place | Ise EMC Lab. No.6 Measurement Room |
| Report No. | 11081928H |
| Date | February 13, 2016 |
| Temperature / Humidity | 23 deg. C / 37 % RH |
| Engineer | Kazuya Yoshioka |
| Mode | Tx Hopping On |



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APPENDIX 2: Test instruments

Test equipment

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|-------------|------------------------------|-------------------|--------------------------|---------------------------------|-----------|---------------------------------------|
| MAEC-04 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-10005 | RE | 2015/10/02 * 12 |
| MOS-15 | Thermo-Hygrometer | Custom | CTH-180 | 1501 | RE | 2016/01/21 * 12 |
| MJM-26 | Measure | KOMELON | KMC-36 | - | RE | - |
| COTS-MEMI | EMI measurement program | TSJ | TEPTO-DV | - | RE | - |
| MSA-13 | Spectrum Analyzer | Agilent | E4440A | MY46185823 | RE | 2015/06/02 * 12 |
| MHA-21 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 9120D-557 | RE | 2015/08/10 * 12 |
| MCC-141 | Microwave Cable | Junkosha | MWX221 | 1305S002R(1m) / 1405S146(5m) | RE | 2015/06/22 * 12 |
| MPA-12 | MicroWave System Amplifier | Agilent | 83017A | 00650 | RE | 2015/10/01 * 12 |
| MHA-17 | Horn Antenna 15-40GHz | Schwarzbeck | BBHA9170 | BBHA9170307 | RE | 2015/06/06 * 12 |
| MMM-10 | DIGITAL HiTESTER | Hioki | 3805 | 051201148 | RE | 2016/01/18 * 12 |
| MHF-26 | High Pass Filter 3.5-18.0GHz | UL Japan | HPF SELECTOR | 002 | RE | 2015/09/17 * 12 |
| MTR-01 | Test Receiver | Rohde & Schwarz | ESI40 | 100084 | RE | 2015/11/28 * 12 |
| MBA-05 | Biconical Antenna | Schwarzbeck | BBA9106 | 1302 | RE | 2015/11/02 * 12 |
| MLA-08 | Logperiodic Antenna | Schwarzbeck | UKLP9140-A | N/A | RE | 2015/11/03 * 12 |
| MCC-50 | Coaxial Cable | UL Japan | - | - | RE | 2015/06/19 * 12 |
| MAT-68 | Attenuator | Anritsu | MP721B | 6200961025 | RE | 2015/11/12 * 12 |
| MPA-14 | Pre Amplifier | SONOMA INSTRUMENT | 310 | 260833 | RE | 2015/03/09 * 12 |
| MSA-14 | Spectrum Analyzer | Agilent | E4440A | MY48250080 | AT | 2015/10/07 * 12 |
| MCC-66 | Microwave Cable 1G-40GHz | Suhner | SUCOFLEX102 | 28636/2 | AT | 2015/04/02 * 12 |
| MPM-08 | Power Meter | Anritsu | ML2495A | 6K00003338 | AT | 2015/10/08 * 12 |
| MPSE-11 | Power sensor | Anritsu | MA2411B | 011737 | AT | 2015/10/08 * 12 |
| MOS-14 | Thermo-Hygrometer | Custom | CTH-201 | 1401 | AT | 2016/01/21 * 12 |
| MMM-12 | DIGITAL HiTESTER | Hioki | 3805 | 060500120 | AT | 2015/02/05 * 12 |

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

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

**Test Item: RE: Radiated Emission test
AT: Antenna Terminal Conducted test**

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