



RADIO TEST REPORT

Test Report No. : 13170804H-A-R1

Applicant : Sony Interactive Entertainment Inc.
Type of EUT : Wireless communication module
Model Number of EUT : J20H100
FCC ID : AK8M19DFR1
Test regulation : FCC Part 15 Subpart C: 2020
*WLAN and Bluetooth Low Energy parts
Test Result : Complied (Refer to SECTION 3.2)

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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 limits of the above standard.
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8. The information provided from the customer for this report is identified in SECTION 1.
9. This report is a revised version of 13170804H-A. 13170804H-A is replaced with this report.

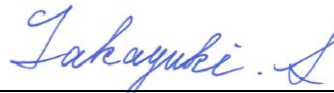
Date of test: December 16, 2019 to April 10, 2020

Representative test engineer:


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Approved by:



Takayuki Shimada
Leader

Consumer Technology Division



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There is no testing item of "Non-accreditation".

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REVISION HISTORY

Original Test Report No.: 13170804H-A

| Revision | Test report No. | Date | Page revised | Contents |
|--------------|-----------------|---------------|--------------|---|
| - (Original) | 13170804H-A | June 3, 2020 | - | - |
| 1 | 13170804H-A-R1 | June 10, 2020 | P17 | Corrected the Test setup; Test Distance of No.2 Semi Anechoic Chamber of frequency range 1 GHz - 10 GHz * Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.75 \text{ m}$ ↓ * Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.7 \text{ m}$ |
| 1 | 13170804H-A-R1 | June 10, 2020 | P60 - 64 | Corrected the Result of table for “Antenna 1 + Antenna 2” |
| 1 | 13170804H-A-R1 | June 10, 2020 | P227 - 228 | Added Item H: DC Power supply and Cable No.7: AC Cable |

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Reference: Abbreviations (Including words undescribed in this report)

| | | | |
|----------------|---|---------|---|
| A2LA | The American Association for Laboratory Accreditation | MCS | Modulation and Coding Scheme |
| AC | Alternating Current | MRA | Mutual Recognition Arrangement |
| AFH | Adaptive Frequency Hopping | N/A | Not Applicable |
| AM | Amplitude Modulation | NIST | National Institute of Standards and Technology |
| Amp, AMP | Amplifier | NS | No signal detect. |
| ANSI | American National Standards Institute | NSA | Normalized Site Attenuation |
| Ant, ANT | Antenna | NVLAP | National Voluntary Laboratory Accreditation Program |
| AP | Access Point | OBW | Occupied Band Width |
| ASK | Amplitude Shift Keying | OFDM | Orthogonal Frequency Division Multiplexing |
| Atten., ATT | Attenuator | P/M | Power meter |
| AV | Average | PCB | Printed Circuit Board |
| BPSK | Binary Phase-Shift Keying | PER | Packet Error Rate |
| BR | Bluetooth Basic Rate | PHY | Physical Layer |
| BT | Bluetooth | PK | Peak |
| BT LE | Bluetooth Low Energy | PN | Pseudo random Noise |
| BW | BandWidth | PRBS | Pseudo-Random Bit Sequence |
| Cal Int | Calibration Interval | PSD | Power Spectral Density |
| CCK | Complementary Code Keying | QAM | Quadrature Amplitude Modulation |
| Ch., CH | Channel | QP | Quasi-Peak |
| CISPR | Comite International Special des Perturbations Radioelectriques | QPSK | Quadri-Phase Shift Keying |
| CW | Continuous Wave | RBW | Resolution Band Width |
| DBPSK | Differential BPSK | RDS | Radio Data System |
| DC | Direct Current | RE | Radio Equipment |
| D-factor | Distance factor | RF | Radio Frequency |
| DFS | Dynamic Frequency Selection | RMS | Root Mean Square |
| DQPSK | Differential QPSK | RSS | Radio Standards Specifications |
| DSSS | Direct Sequence Spread Spectrum | Rx | Receiving |
| EDR | Enhanced Data Rate | SA, S/A | Spectrum Analyzer |
| EIRP, e.i.r.p. | Equivalent Isotropically Radiated Power | SG | Signal Generator |
| EMC | ElectroMagnetic Compatibility | SVSWR | Site-Voltage Standing Wave Ratio |
| EMI | ElectroMagnetic Interference | TR | Test Receiver |
| EN | European Norm | Tx | Transmitting |
| ERP, e.r.p. | Effective Radiated Power | VBW | Video BandWidth |
| EU | European Union | Vert. | Vertical |
| EUT | Equipment Under Test | WLAN | Wireless LAN |
| Fac. | Factor | | |
| FCC | Federal Communications Commission | | |
| FHSS | Frequency Hopping Spread Spectrum | | |
| FM | Frequency Modulation | | |
| Freq. | Frequency | | |
| FSK | Frequency Shift Keying | | |
| GFSK | Gaussian Frequency-Shift Keying | | |
| GNSS | Global Navigation Satellite System | | |
| GPS | Global Positioning System | | |
| Hori. | Horizontal | | |
| ICES | Interference-Causing Equipment Standard | | |
| IEC | International Electrotechnical Commission | | |
| IEEE | Institute of Electrical and Electronics Engineers | | |
| IF | Intermediate Frequency | | |
| ILAC | International Laboratory Accreditation Conference | | |
| ISED | Innovation, Science and Economic Development Canada | | |
| ISO | International Organization for Standardization | | |
| JAB | Japan Accreditation Board | | |
| LAN | Local Area Network | | |
| LIMS | Laboratory Information Management System | | |

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SECTION 1: Customer information

| | |
|------------------|---|
| Company Name | Sony Interactive Entertainment Inc. |
| Brand Name | SONY |
| Address | 1-7-1 Konan, Minato-ku, Tokyo, 108-0075 Japan |
| Telephone Number | +81-50-3807-5639 |
| Facsimile Number | +81-50-3807-9594 |
| Contact Person | Miho Nakamura |

***Remarks:**

Sony Interactive Entertainment Inc. designates Foxconn Industrial Internet Co Ltd as manufacturer of the product (Wireless communication module).

The information provided from the customer is as follows;

- Applicant, Type of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
 - Operating/Test Mode(s) (Mode(s)) on all the relevant pages
 - SECTION 1: Customer information
 - SECTION 2: Equipment under test (EUT) other than the Receipt Date
 - SECTION 4: Operation of EUT during testing
- * The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

| | |
|------------------------|--|
| Type | Wireless communication module |
| Model Number | J20H100 |
| Serial Number | Refer to SECTION 4.2 |
| Country of Manufacture | China |
| Receipt Date | December 16, 2019 |
| Condition | Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.) |
| Modification | No modification by the test lab. |

2.2 Product Description

Model: J20H100 (referred to as the EUT in this report) is a Wireless communication module.

Product Specification

| | |
|-----------------------|------------------------|
| Operating Temperature | -5 deg. C to 85 deg. C |
| Power Supply | DC 3.3 V, DC 1.8 V |

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Radio Specification

WLAN (IEEE802.11b/11g/11n-20/11ax-20)

| | | |
|--------------------------------|--|--|
| Equipment Type | Transceiver | |
| Frequency of Operation | 2412 MHz to 2462 MHz | |
| Type of Modulation | DSSS, OFDM | |
| | OFDMA (IEEE802.11ax only) | 20 MHz: 26/52/106/242-tone RU |
| Bandwidth & Channel spacing | Less than 20 MHz & 5 MHz | |
| Method of frequency generation | Synthesizer | |
| Antenna Type *1) | PIFA | IFA |
| Antenna Gain: G_{ANT} | Antenna 1: 6.0 dBi Antenna 2: 6.0 dBi | Antenna 1: 4.0 dBi Antenna 2: 3.5 dBi |
| Directional Gain *2) | 9.01 dBi | 6.76 dBi |
| Maximum clock frequency | 320 MHz | |

WLAN (IEEE802.11a/11n-20/11ac-20/11ax-20/11n-40/11ac-40/11ax-40/11ac-80/11ax-80)

| | | |
|--------------------------------|---|--|
| Equipment Type | Transceiver | |
| Frequency of Operation | 20 M Band: 5180 MHz to 5240 MHz 5260 MHz to 5320 MHz 5500 MHz to 5720 MHz 5745 MHz to 5825 MHz | |
| | 40 M Band: 5190 MHz to 5230 MHz 5270 MHz to 5310 MHz 5510 MHz to 5710 MHz 5755 MHz to 5795 MHz | |
| | 80 M Band: 5210 MHz 5290 MHz 5530 MHz to 5690 MHz 5775 MHz | |
| Type of Modulation | OFDM | |
| | OFDMA (IEEE802.11ax only) | 20 MHz: 26/52/106/242-tone RU |
| | | 40 MHz: 26/52/106/242/484-tone RU 80 MHz: 26/52/106/242/484/996-tone RU |
| Bandwidth & Channel spacing | Less than 20 MHz / 40 MHz / 80 MHz & 20 MHz / 40 MHz / 80 MHz | |
| Method of frequency generation | Synthesizer | |
| Antenna Type *1) | PIFA | IFA |
| Antenna Gain: G_{ANT} | Antenna 1: 5.0 dBi Antenna 3: 3.5 dBi | Antenna 1: 5.0 dBi Antenna 3: 2.0 dBi |
| Directional Gain *2) | 7.29 dBi | 6.64 dBi |
| Maximum clock frequency | 512 MHz | |

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BT1: Bluetooth (BR / EDR / Low Energy)

| | | |
|--------------------------------|--|--------------------|
| Equipment Type | Transceiver | |
| Frequency of Operation | 2402 MHz to 2480 MHz | |
| Type of Modulation | BT: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) BT LE: GFSK | |
| Bandwidth / Channel spacing | BT: 79 MHz / 1 MHz BT LE: 1 MHz & 2 MHz / 2 MHz | |
| Method of frequency generation | Synthesizer | |
| Antenna Type *1) | PIFA | IFA |
| Antenna Gain | Antenna 3: 5.8 dBi | Antenna 3: 3.0 dBi |
| Maximum clock frequency | 128 MHz | |

BT2: Bluetooth (BR / EDR / Low Energy)

| | | |
|--------------------------------|--|--------------------|
| Equipment Type | Transceiver | |
| Frequency of Operation | 2402 MHz to 2480 MHz | |
| Type of Modulation | BT: FHSS (GFSK, $\pi/4$ DQPSK, 8DPSK) BT LE: GFSK | |
| Bandwidth / Channel spacing | BT: 79 MHz / 1 MHz BT LE: 1 MHz & 2 MHz / 2 MHz | |
| Method of frequency generation | Synthesizer | |
| Antenna Type *1) | PIFA | IFA |
| Antenna Gain | Antenna 4: 5.8 dBi | Antenna 4: 4.0 dBi |
| Maximum clock frequency | 128 MHz | |

*1) Details for the antenna combinations are as follows.

| | WLAN | BT1 | BT2 |
|---------------|------|------|------|
| Combination 1 | PIFA | PIFA | PIFA |
| Combination 2 | IFA | IFA | IFA |

*2) Directional antenna gain = $10 \log \left(\frac{G_{ANT1}}{10^{20}} + \frac{G_{ANT2}}{10^{20}} \right)^2 / 2$

*This test report applies to WLAN (2.4 GHz band) and Bluetooth Low Energy parts.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C
FCC Part 15 final revised on May 26, 2020 and effective July 27, 2020 except 15.258

Title : FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits
Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz,
and 5725-5850 MHz

* The revision does not affect the test result conducted before its effective date.

3.2 Procedures and results

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|--|---|------------------------------------|--|---------------------|
| Conducted Emission | FCC: ANSI C63.10-2013 6. Standard test methods ----- ISED: RSS-Gen 8.8 | FCC: Section 15.207 ----- ISED: RSS-Gen 8.8 | 26.65 dB, 0.98694 MHz, Phase: N | Complied a) | - |
| 6dB Bandwidth | FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ----- ISED: - | FCC: Section 15.247(a)(2) ----- ISED: RSS-247 5.2(a) | See data. | Complied b) | Conducted |
| Maximum Peak Output Power | FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ----- ISED: RSS-Gen 6.12 | FCC: Section 15.247(b)(3) ----- ISED: RSS-247 5.4(d) | | Complied c) | Conducted |
| Power Density | FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ----- ISED: - | FCC: Section 15.247(e) ----- ISED: RSS-247 5.2(b) | | Complied d) | Conducted |
| Spurious Emission Restricted Band Edges | FCC: KDB 558074 D01 15.247 Meas Guidance v05r02 ----- ISED: RSS-Gen 6.13 | FCC: Section 15.247(d) ----- ISED: RSS-247 5.5 RSS-Gen 8.9 RSS-Gen 8.10 | | 3.8 dB 2483.500 MHz, Horizontal, AV (PIFA Antenna4 (BT2)) | Complied# e), f) |

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

*1) Radiated test was selected over 30 MHz based on section 15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02 8.5 and 8.6.

- a) Refer to APPENDIX 1 (data of Conducted Emission)
b) Refer to APPENDIX 1 (data of 6 dB Bandwidth and 99 % Occupied Bandwidth)
c) Refer to APPENDIX 1 (data of Maximum Peak Output Power)
d) Refer to APPENDIX 1 (data of Power Density)
e) Refer to APPENDIX 1 (data of Conducted Spurious Emission)
f) Refer to APPENDIX 1 (data of Radiated Spurious Emission)

Symbols:

Complied The data of this test item has enough margin, more than the measurement uncertainty.
Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.

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

FCC Part 15.31 (e)

The stable voltage will be supplied by the end product, which will be required to have a power supply regulator. Therefore, the EUT complies with the requirement.

FCC Part 15.203/212 Antenna requirement

The EUT has a unique coupling/antenna connector (U.FL). Therefore the equipment complies with the requirement of 15.203.

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3.3 Addition to standard

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|----------------|---------------|--------------|---------|-----------|
| 99% Occupied Bandwidth | RSS-Gen 6.7 | ISED: - | N/A | - a) | Conducted |
| a) Refer to APPENDIX 1 (data of 6 dB Bandwidth and 99 % Occupied Bandwidth) | | | | | |

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

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the results are derived depending on whether or not laboratory uncertainty is applied.

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

| Test Item | Uncertainty (+/-) |
|--|-------------------|
| 20 dB Bandwidth / 99 % Occupied Bandwidth | 0.96 % |
| Maximum Peak Output Power / Average Output Power | 1.4 dB |
| Carrier Frequency Separation | 0.42 % |
| Dwell time / Burst rate | 0.10 % |
| Conducted Spurious Emission | 2.6 dB |

Conducted emission

| using Item | Frequency range | Uncertainty (+/-) |
|------------|-----------------------|-------------------|
| AMN (LISN) | 0.009 MHz to 0.15 MHz | 3.4 dB |
| | 0.15 MHz to 30 MHz | 2.9 dB |

Radiated emission

| Measurement distance | Frequency range | Uncertainty (+/-) |
|----------------------|--|-------------------|
| 3 m | 9 kHz to 30 MHz | 3.3 dB |
| 10 m | | 3.2 dB |
| 3 m | 30 MHz to 200 MHz (Horizontal) (Vertical) | 4.8 dB |
| | | 5.0 dB |
| | 200 MHz to 1000 MHz (Horizontal) (Vertical) | 5.2 dB |
| | | 6.3 dB |
| 10 m | 30 MHz to 200 MHz (Horizontal) (Vertical) | 4.8 dB |
| | | 4.8 dB |
| | 200 MHz to 1000 MHz (Horizontal) (Vertical) | 5.0 dB |
| | | 5.0 dB |
| 3 m | 1 GHz to 6 GHz | 4.9 dB |
| | 6 GHz to 18 GHz | 5.2 dB |
| 1 m | 10 GHz to 26.5 GHz | 5.5 dB |
| | 26.5 GHz to 40 GHz | 5.5 dB |
| 10 m | 1 GHz to 18 GHz | 5.2 dB |

3.5 Test Location

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*NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967 / ISED Lab Company Number: 2973C
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| Test site | 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 | 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 | 7.5 x 5.8 x 5.2 | 4.0 x 4.0 | - | 3 m |
| No.3 semi-anechoic chamber | 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 | 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.5 measurement room | 6.4 x 6.4 x 3.0 | 6.4 x 6.4 | - | - |
| 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 | 3.1 x 5.0 | - | - |
| 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 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 EUT during testing

4.1 Operating Mode(s)

[WLAN]

Test operating mode was determined as follows according to “Section 1 of 6 802.11 a/b/g/n testing - Managing Complex Regulatory Approvals - ” of TCB Council Workshop October 2009.

| Mode | Remarks* |
|--|------------------|
| IEEE 802.11b (11b) | 1 Mbps, PN9 |
| IEEE 802.11g (11g) | 24 Mbps, PN9 |
| IEEE 802.11n MIMO 20 MHz BW (11n-20) | MCS 14, PN9 |
| IEEE 802.11ax MIMO 20 MHz BW (11ax-20) | MCS 6 (1TX), PN9 |
| *The worst condition was determined based on the test result of Maximum Peak Output Power (Mid Channel) | |
| *Power of the EUT was set by the software as follows; Power settings: OFDM: 8.0 dBm OFDMA: -1.5 dBm (26-tone RU), 1.5 dBm (52-tone RU), 4.5 dBm (106-tone RU), 8.0 dBm(242-tone RU) Software: Dut Labtool Version: 1.0.0.101 (Date: December 16, 2019, Storage location: Driven by connected PC) | |
| *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. | |

*Details of Operating mode for WLAN

| Test Item | Operating Mode | Tested Antenna | | Tested frequency |
|---|--|----------------|---|----------------------------------|
| | | Antenna type | Antenna No. | |
| Conducted Emission *1) Radiated Spurious Emission (Below 1 GHz) | 11ax-20 OFDM Tx *2) | PIFA | Antenna 1 + 2 | 2462 MHz |
| Radiated Spurious Emission (Above 1 GHz) | 11b Tx 11ax-20 OFDMA Tx *3) 11ax-20 OFDM Tx *4) | PIFA IFA | Antenna 1 + 2 | 2412 MHz 2437 MHz 2462 MHz |
| Conducted Spurious Emission | 11ax-20 OFDM Tx *2) | - | Antenna 1 + 2 | 2462 MHz |
| Maximum Peak Output Power Power Density | 11b Tx 11g Tx 11n-20 Tx 11ax-20 OFDMA Tx 11ax-20 OFDM Tx | - | Antenna 1 Antenna 2 Antenna 1 + 2 | 2412 MHz 2437 MHz 2462 MHz |
| 6dB Bandwidth 99% Occupied Bandwidth | 11b Tx 11g Tx 11n-20 Tx 11ax-20 OFDMA Tx 11ax-20 OFDM Tx | - | Antenna 2 *5) | 2412 MHz 2437 MHz 2462 MHz |

- *1) The test was conducted with PIFA Antenna which had higher antenna gain.
*2) The mode was tested as a representative, because it had the highest power at antenna terminal test.
*3) OFDMA configuration tests were conducted only at the band edge since they had lower power and density than OFDM.
*4) Since 11g and 11n-20, 11ax-20 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest output power.
*5) After the comparison between Antenna 1 and Antenna 2, the test was performed with the antenna that had higher power as a representative.

[BT LE]

| Mode | Remarks* |
|---|----------------------------|
| Bluetooth Low Energy (BT LE) 1M-PHY Uncoded PHY (1M-PHY) | Maximum Packet Size, PRBS9 |
| Bluetooth Low Energy (BT LE) 2M-PHY Uncoded PHY (2M-PHY) | Maximum Packet Size, PRBS9 |
| <p>*Power of the EUT was set by the software as follows; Power settings: 2 dBm Software: Dut Labtool Version: 1.0.0.101 (Date: December 16, 2019, Storage location: Driven by connected PC)</p> <p>*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> | |

*Details of Operating mode for BT LE

| Test Item | Operating Mode | Tested Antenna | | Tested frequency |
|---|--------------------------------|----------------|------------------------------------|----------------------------------|
| | | Antenna type | Antenna No. | |
| Conducted Emission *1) | BT LE, 1M-PHY BT LE, 2M-PHY | PIFA | Antenna 3 (BT1) Antenna 4 (BT2) | 2402 MHz 2440 MHz 2480 MHz |
| Radiated Spurious Emission | BT LE, 1M-PHY BT LE, 2M-PHY | PIFA IFA | Antenna 3 (BT1) Antenna 4 (BT2) | 2402 MHz 2440 MHz 2480 MHz |
| Maximum Peak Output Power Power Density | BT LE, 1M-PHY BT LE, 2M-PHY | - | Antenna 3 (BT1) Antenna 4 (BT2) | 2402 MHz 2440 MHz 2480 MHz |
| 6dB Bandwidth 99% Occupied Bandwidth Conducted Spurious Emission | BT LE, 1M-PHY BT LE, 2M-PHY | - | Antenna 3 (BT1) Antenna 4 (BT2) | 2402 MHz 2440 MHz 2480 MHz |
| *1) The test was conducted with PIFA Antenna which had higher antenna gain. | | | | |

Simultaneous transmission (Only Antenna 3 simultaneously transmits BT1 and WLAN 5 GHz on a single antenna.)

| Test Item | Mode *1) | Antenna type |
|---|---|--------------|
| Radiated Spurious Emission | Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz Tx BT LE 2M-PHY 2440 MHz + Tx 11ax-40 5755MHz Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz | PIFA IFA |
| *1) The test was performed on the mode as a representative, because it had the highest power of 5GHz band at antenna terminal test. | | |

4.2 Configuration and peripherals

This page has been submitted for a separate exhibit.

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The 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.

For the tests on EUT with other peripherals (as a whole system)

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.

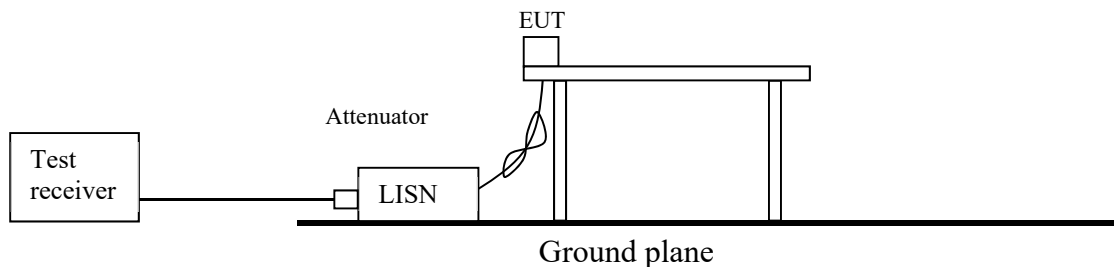
The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber. The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

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

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

Figure 1: Test Setup



SECTION 6: Radiated Spurious Emission

Test Procedure

It was measured based on "8.5 and 8.6 of KDB 558074 D01 15.247 Meas Guidance v05r02".

[For below 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

[For above 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 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 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

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(ISED) and outside the restricted band of FCC15.205 / Table 6 of RSS-Gen 8.10 (ISED).

| | | | | |
|-----------------|---------------|--------------------------|---|------------------------------|
| Frequency | Below 1 GHz | Above 1 GHz | | 20 dBc |
| Instrument used | Test Receiver | Spectrum Analyzer | | Spectrum Analyzer |
| Detector | QP | PK | AV *1) | PK |
| IF Bandwidth | BW 120 kHz | RBW: 1 MHz VBW: 3 MHz | <u>11.12.2.5.1</u> RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: 100 traces <u>11.12.2.5.2</u> The duty cycle was less than 98% for detected noise, a duty factor was added to the 11.12.2.5.1 results. | RBW: 100 kHz VBW: 300 kHz |

*1) Average Power Measurement was performed based on ANSI C63.10-2013.

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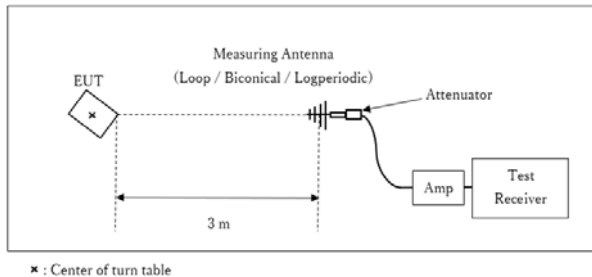
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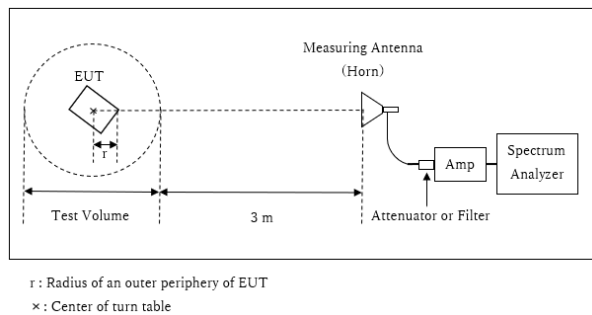
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz - 10 GHz



[Other than IFA Antenna (WLAN)]

(No.3 Semi Anechoic Chamber)

Distance Factor: $20 \times \log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.95 \text{ m}$

Test Volume : 2.0 m

(No.2 Semi Anechoic Chamber)

Distance Factor: $20 \times \log(3.7 \text{ m} / 3.0 \text{ m}) = 1.83 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.7 \text{ m}$

Test Volume : 1.5 m

(Test Volume has been calibrated based on CISPR 16-1-4.)

r = 0.05 m

[IFA Antenna (WLAN)]

(No.3 Semi Anechoic Chamber)

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

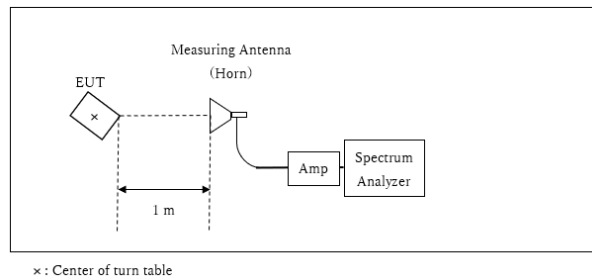
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.9 \text{ m}$

Test Volume : 2.0 m

(Test Volume has been calibrated based on CISPR 16-1-4.)

r = 0.1 m

10 GHz – 26.5 GHz



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

*Test Distance: 1 m

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

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

Measurement range : 30 MHz - 26.5 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 |
|-------------------------------------|---|-----------------|--------------------|------------|----------------------|----------|---------------------------------|
| 6 dB Bandwidth | 3 MHz/5 MHz/6 MHz/ 12 MHz/20 MHz | 100 kHz | 300 kHz | Auto | Peak | Max Hold | Spectrum Analyzer |
| 99 % Occupied Bandwidth *1) | Enough width to display emission skirts | 1 to 5 % of OBW | Three times of RBW | Auto | Peak | Max Hold | Spectrum Analyzer |
| Maximum Peak Output Power | - | - | - | Auto | Peak/ Average *2) | - | Power Meter (Sensor: 50 MHz BW) |
| Peak Power Density | 1.5 times the 6 dB Bandwidth | 3 kHz | 10 kHz | Auto | Peak | Max Hold | Spectrum Analyzer *3) |
| Conducted Spurious Emission *4) *5) | 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 | | | | |

*1) Peak hold was applied as Worst-case measurement.

*2) Reference data

*3) Section 11.10.2 Method PKPSD (peak PSD) of "ANSI C63.10-2013".

*4) In the frequency range below 30 MHz, 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)

*5) The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to $45.5 - 51.5 = -6.0$ dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

The test results and limit are rounded off to two decimals place, so some differences might be observed.
The equipment and cables were not used for factor 0 dB of the data sheets.

Test data : APPENDIX
Test result : Pass

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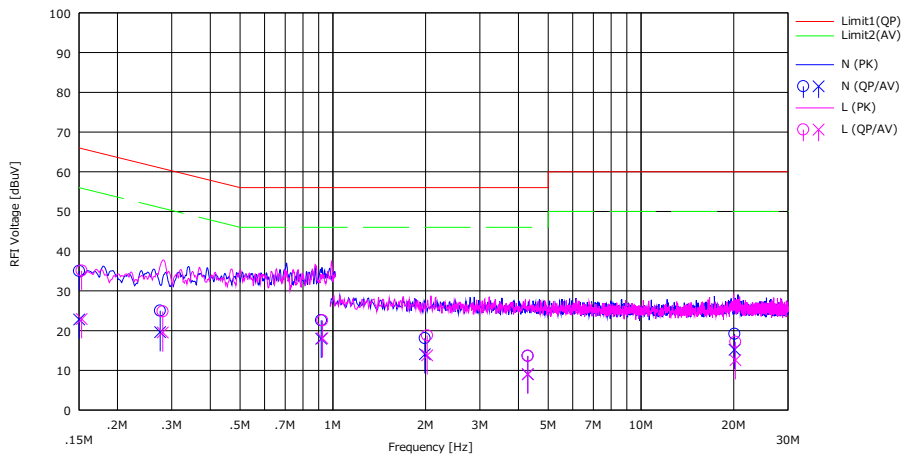
Facsimile : +81 596 24 8124

APPENDIX 1: Test data

Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date January 15, 2020
Temperature / Humidity 20 deg. C / 33 % RH
Engineer Junki Nagatomi
Mode Tx 11ax-20 (OFDM) 2462 MHz

Limit : FCC_Part 15 Subpart C(15.207)



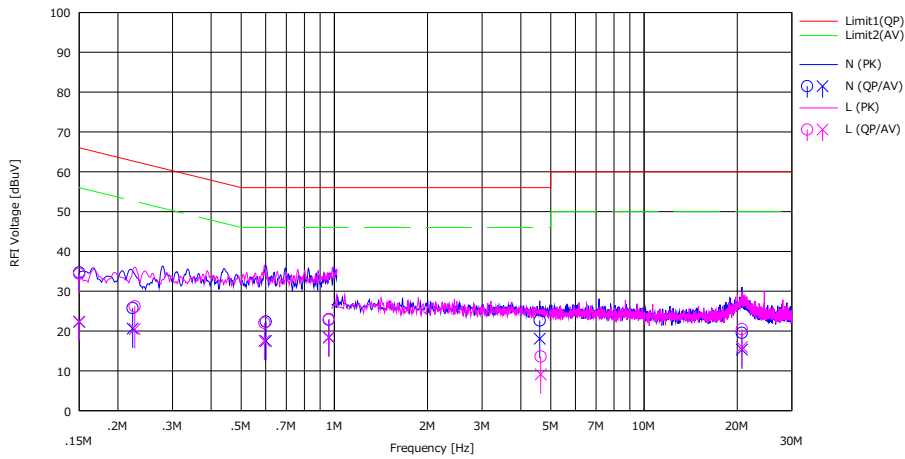
| No. | Freq. [MHz] | Reading | | LISN [dB] | LOSS [dB] | Results | | Limit | | Margin | | Phase | Comment |
|-----|----------------|----------------|----------------|--------------|--------------|----------------|----------------|--------------|--------------|--------|-------|-------|---------|
| | | <QP> [dBuV] | <AV> [dBuV] | | | <QP> [dBuV] | <AV> [dBuV] | <QP> [dB] | <AV> [dB] | | | | |
| | | | | | | | | | | | | | |
| 1 | 0.15032 | 21.80 | 9.60 | 0.07 | 13.14 | 35.01 | 22.81 | 66.00 | 56.00 | 30.99 | 33.19 | N | |
| 2 | 0.27504 | 11.80 | 6.40 | 0.07 | 13.16 | 25.03 | 19.63 | 61.00 | 51.00 | 35.97 | 31.37 | N | |
| 3 | 0.91664 | 9.30 | 4.70 | 0.08 | 13.21 | 22.59 | 17.99 | 56.00 | 46.00 | 33.41 | 28.01 | N | |
| 4 | 1.98923 | 4.70 | 0.70 | 0.09 | 13.28 | 18.07 | 14.07 | 56.00 | 46.00 | 37.93 | 31.93 | N | |
| 5 | 4.28971 | 0.10 | -4.50 | 0.13 | 13.40 | 13.63 | 9.03 | 56.00 | 46.00 | 42.37 | 36.97 | N | |
| 6 | 20.11613 | 5.00 | 1.00 | 0.37 | 13.83 | 19.20 | 15.20 | 60.00 | 50.00 | 40.80 | 34.80 | N | |
| 7 | 0.15310 | 21.90 | 9.70 | 0.07 | 13.14 | 35.11 | 22.91 | 65.80 | 55.80 | 30.69 | 32.89 | L | |
| 8 | 0.28068 | 11.60 | 6.30 | 0.06 | 13.16 | 24.82 | 19.52 | 60.80 | 50.80 | 35.98 | 31.28 | L | |
| 9 | 0.92510 | 9.30 | 4.80 | 0.06 | 13.21 | 22.57 | 18.07 | 56.00 | 46.00 | 33.43 | 27.93 | L | |
| 10 | 2.02520 | 5.40 | 0.40 | 0.10 | 13.28 | 18.78 | 13.78 | 56.00 | 46.00 | 37.22 | 32.22 | L | |
| 11 | 4.29532 | 0.10 | -4.50 | 0.14 | 13.40 | 13.64 | 9.04 | 56.00 | 46.00 | 42.36 | 36.96 | L | |
| 12 | 20.23843 | 2.90 | -1.70 | 0.46 | 13.83 | 17.19 | 12.59 | 60.00 | 50.00 | 42.81 | 37.41 | L | |

CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + LISN + LOSS (CABLE + ATT)
Except for the above table: adequate margin data below the limits.

Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 1M-PHY 2440MHz

Limit : FCC_Part 15 Subpart C(15.207)

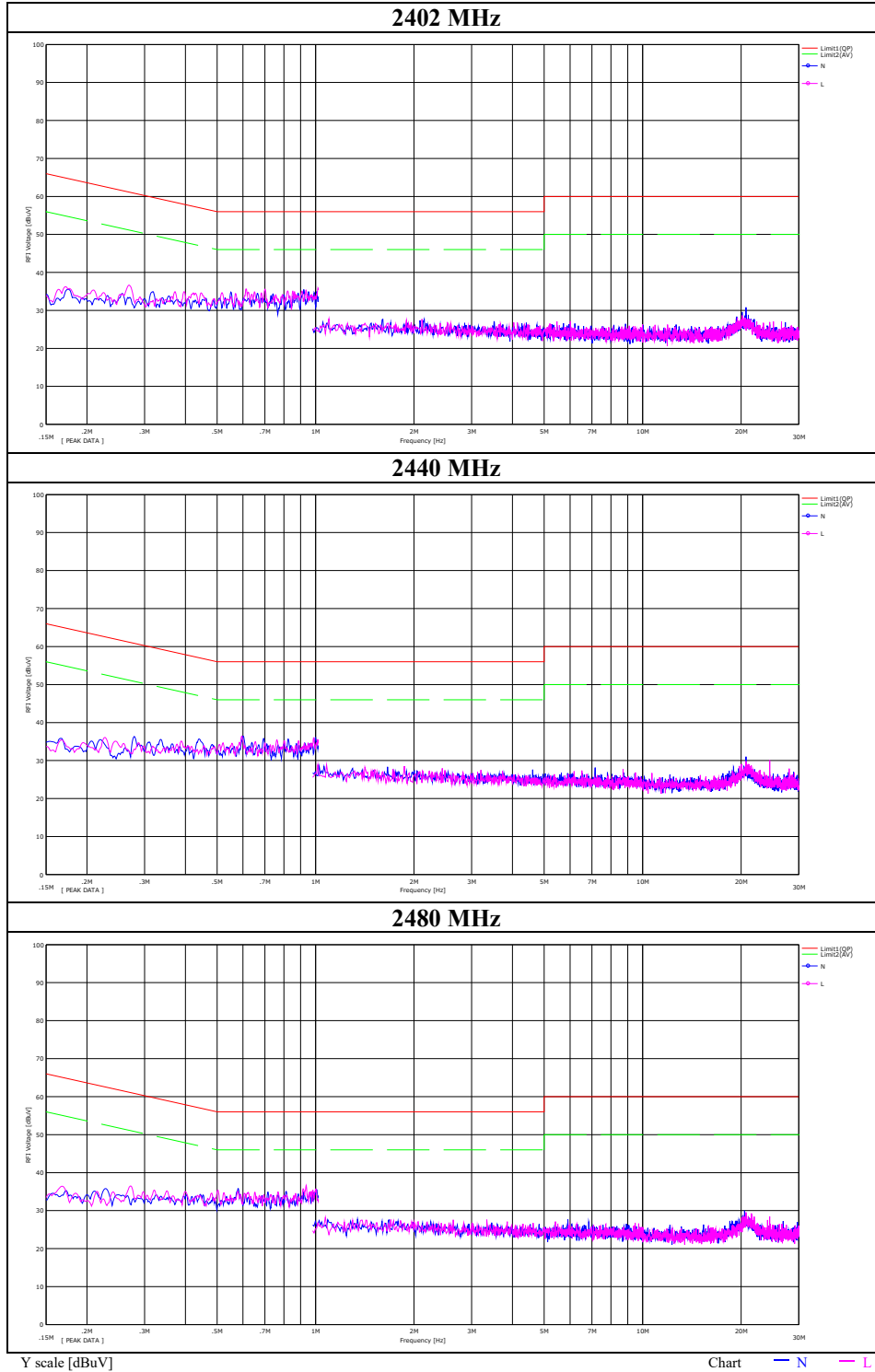


| No. | Freq. [MHz] | Reading | | LISN [dB] | LOSS [dB] | Results | | Limit | | Margin | | Phase | Comment |
|-----|----------------|----------------|----------------|--------------|--------------|----------------|----------------|--------------|--------------|--------|-------|-------|---------|
| | | (QP) [dBuV] | (AV) [dBuV] | | | (QP) [dBuV] | (AV) [dBuV] | (QP) [dB] | (AV) [dB] | | | | |
| | | [dBuV] | [dBuV] | | | [dBuV] | [dBuV] | [dB] | [dB] | | | | |
| 1 | 0.15000 | 21.50 | 9.11 | 0.07 | 13.14 | 34.71 | 22.32 | 66.00 | 56.00 | 31.29 | 33.68 | N | |
| 2 | 0.22308 | 12.56 | 7.38 | 0.07 | 13.14 | 25.77 | 20.59 | 62.70 | 52.70 | 36.93 | 32.11 | N | |
| 3 | 0.60066 | 9.09 | 4.26 | 0.08 | 13.18 | 22.35 | 17.52 | 56.00 | 46.00 | 33.65 | 28.48 | N | |
| 4 | 0.95910 | 9.55 | 5.10 | 0.08 | 13.22 | 22.85 | 18.40 | 56.00 | 46.00 | 33.15 | 27.60 | N | |
| 5 | 4.60800 | 9.09 | 4.52 | 0.14 | 13.41 | 22.64 | 18.07 | 56.00 | 46.00 | 33.36 | 27.93 | N | |
| 6 | 20.69680 | 5.32 | 1.11 | 0.39 | 13.84 | 19.55 | 15.34 | 60.00 | 50.00 | 40.45 | 34.66 | N | |
| 7 | 0.15000 | 21.20 | 9.21 | 0.07 | 13.14 | 34.41 | 22.42 | 66.00 | 56.00 | 31.59 | 33.58 | L | |
| 8 | 0.22656 | 12.95 | 7.26 | 0.07 | 13.15 | 26.17 | 20.48 | 62.60 | 52.60 | 36.43 | 32.12 | L | |
| 9 | 0.59457 | 8.83 | 4.32 | 0.05 | 13.18 | 22.06 | 17.55 | 56.00 | 46.00 | 33.94 | 28.45 | L | |
| 10 | 0.96084 | 9.74 | 5.10 | 0.06 | 13.22 | 23.02 | 18.38 | 56.00 | 46.00 | 32.98 | 27.62 | L | |
| 11 | 4.63521 | 0.05 | -4.45 | 0.15 | 13.41 | 13.61 | 9.11 | 56.00 | 46.00 | 42.39 | 36.89 | L | |
| 12 | 20.69680 | 6.16 | 1.66 | 0.48 | 13.84 | 20.48 | 15.98 | 60.00 | 50.00 | 39.52 | 34.02 | L | |

CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + LISN + LOSS (CABLE + ATT)
Except for the above table: adequate margin data below the limits.

Conducted Emission

| | |
|------------------------|---|
| Report No. | 13170804H |
| Test place | Ise EMC Lab. No.3 Semi Anechoic Chamber |
| Date | February 22, 2020 |
| Temperature / Humidity | 24 deg. C / 32 % RH |
| Engineer | Yuta Moriya |
| Mode | Tx BT LE 1M-PHY |



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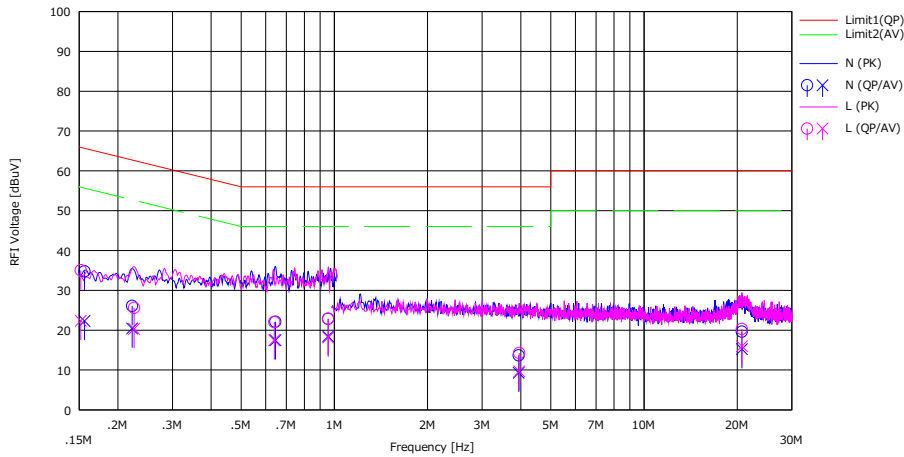
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission

Report No. 13170804H
 Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
 Date February 22, 2020
 Temperature / Humidity 24 deg. C / 32 % RH
 Engineer Yuta Moriya
 Mode Tx BT LE 2M-PHY 2440MHz

Limit : FCC_Part 15 Subpart C(15.207)



| No. | Freq. [MHz] | Reading | | USN | LOSS | Results | | Limit | | Margin | | Phase | Comment |
|-----|----------------|---------|--------|------|-------|---------|-------|--------|--------|--------|-------|-------|---------|
| | | <QP> | <AV> | | | <QP> | <AV> | <QP> | <AV> | <QP> | <AV> | | |
| | | [dBuV] | [dBuV] | | | [dB] | [dB] | [dBuV] | [dBuV] | [dB] | [dB] | | |
| 1 | 0.15609 | 21.56 | 9.11 | 0.07 | 13.14 | 34.77 | 22.32 | 65.70 | 55.70 | 30.93 | 33.38 | N | |
| 2 | 0.22221 | 12.87 | 7.21 | 0.07 | 13.14 | 26.08 | 20.42 | 62.70 | 52.70 | 36.62 | 32.28 | N | |
| 3 | 0.64503 | 8.83 | 4.22 | 0.08 | 13.18 | 22.09 | 17.48 | 56.00 | 46.00 | 33.91 | 28.52 | N | |
| 4 | 0.95475 | 9.55 | 5.16 | 0.08 | 13.22 | 22.85 | 18.46 | 56.00 | 46.00 | 33.15 | 27.54 | N | |
| 5 | 3.93682 | 0.17 | -4.21 | 0.12 | 13.38 | 13.67 | 9.29 | 56.00 | 46.00 | 42.33 | 36.71 | N | |
| 6 | 20.69680 | 5.40 | 1.01 | 0.39 | 13.84 | 19.63 | 15.24 | 60.00 | 50.00 | 40.37 | 34.76 | N | |
| 7 | 0.15174 | 21.81 | 9.14 | 0.07 | 13.14 | 35.02 | 22.35 | 65.90 | 55.90 | 30.88 | 33.55 | L | |
| 8 | 0.22569 | 12.38 | 7.10 | 0.07 | 13.15 | 25.60 | 20.32 | 62.60 | 52.60 | 37.00 | 32.28 | L | |
| 9 | 0.63981 | 8.80 | 4.24 | 0.05 | 13.18 | 22.03 | 17.47 | 56.00 | 46.00 | 33.97 | 28.53 | L | |
| 10 | 0.95562 | 9.62 | 4.89 | 0.06 | 13.22 | 22.90 | 18.17 | 56.00 | 46.00 | 33.10 | 27.83 | L | |
| 11 | 3.95496 | 0.74 | -3.85 | 0.14 | 13.38 | 14.26 | 9.67 | 56.00 | 46.00 | 41.74 | 36.33 | L | |
| 12 | 20.69680 | 5.98 | 1.66 | 0.48 | 13.84 | 20.30 | 15.98 | 60.00 | 50.00 | 39.70 | 34.02 | L | |

CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + LISN + LOSS (CABLE + ATT)
 Except for the above table: adequate margin data below the limits.

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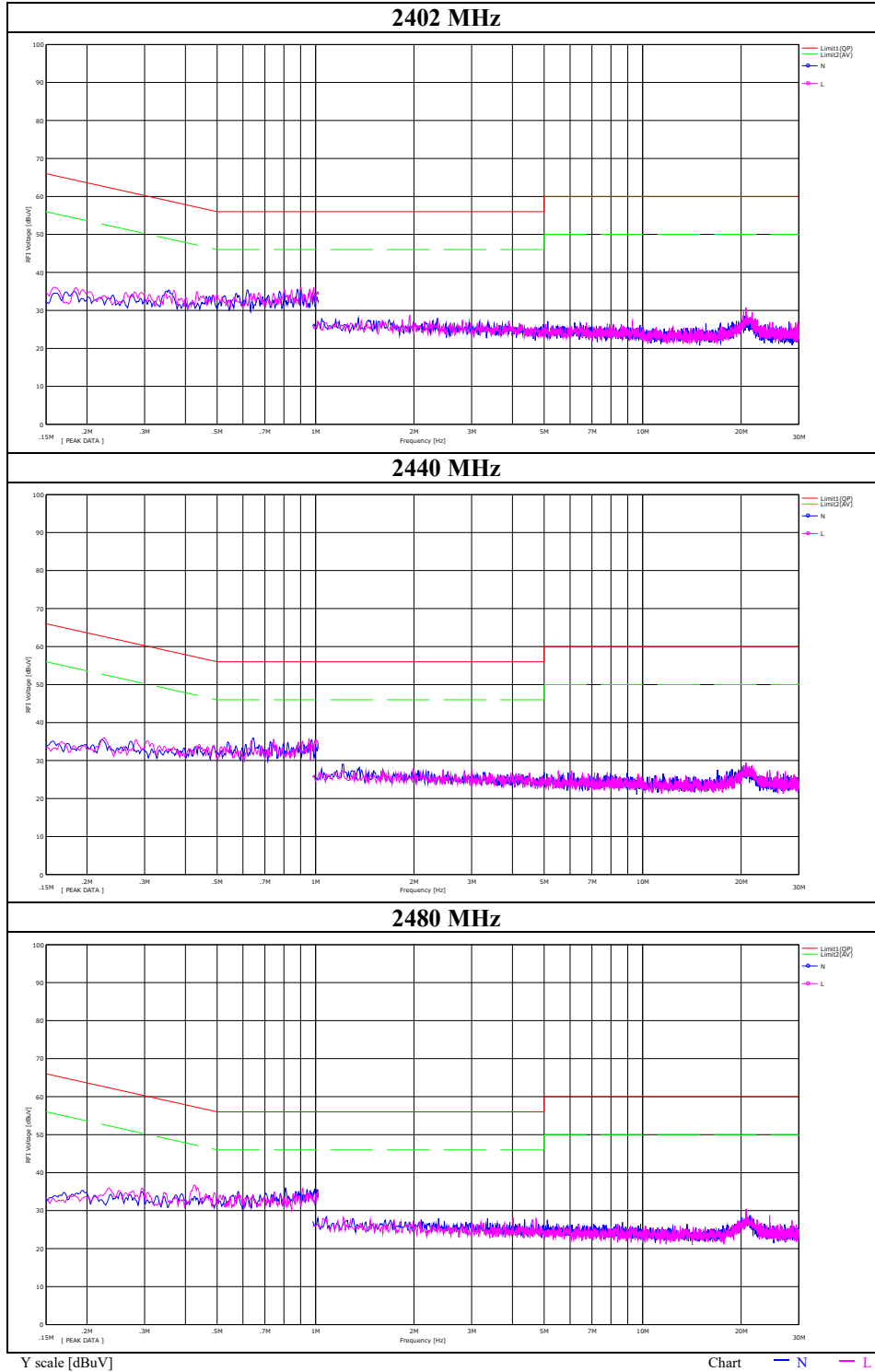
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Facsimile : +81 596 24 8124

Conducted Emission

| | |
|------------------------|---|
| Report No. | 13170804H |
| Test place | Ise EMC Lab. No.3 Semi Anechoic Chamber |
| Date | February 22, 2020 |
| Temperature / Humidity | 24 deg. C / 32 % RH |
| Engineer | Yuta Moriya |
| Mode | Tx BT LE 2M-PHY |



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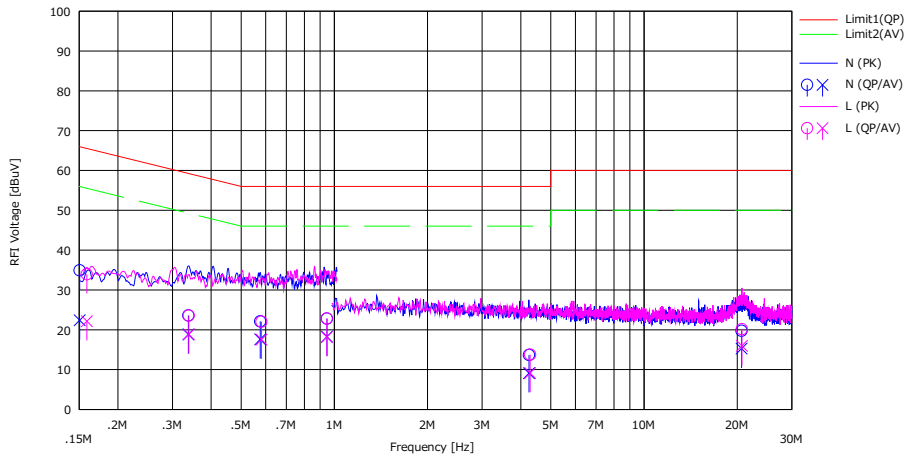
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission

Report No. 13170804H
 Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
 Date February 22, 2020
 Temperature / Humidity 24 deg. C / 32 % RH
 Engineer Yuta Moriya
 Mode Tx BT LE 1M-PHY 2402 MHz

Limit : FCC_Part 15 Subpart C(15.207)



| No. | Freq. [MHz] | Reading | | USN | LOSS | Results | | Limit | | Margin | | Phase | Comment |
|-----|----------------|---------|--------|------|-------|---------|--------|--------|--------|--------|-------|-------|---------|
| | | (QP) | (AV) | | | (QP) | (AV) | (QP) | (AV) | (QP) | (AV) | | |
| | | [dBuV] | [dBuV] | | | [dBuV] | [dBuV] | [dBuV] | [dBuV] | [dB] | [dB] | | |
| 1 | 0.15044 | 21.70 | 9.17 | 0.07 | 13.14 | 34.91 | 22.38 | 66.00 | 56.00 | 31.09 | 33.62 | N | |
| 2 | 0.33792 | 10.36 | 5.60 | 0.07 | 13.16 | 23.59 | 18.83 | 59.30 | 49.30 | 35.71 | 30.47 | N | |
| 3 | 0.57630 | 8.83 | 4.33 | 0.08 | 13.18 | 22.09 | 17.59 | 56.00 | 46.00 | 33.91 | 28.41 | N | |
| 4 | 0.94692 | 9.50 | 4.99 | 0.08 | 13.21 | 22.79 | 18.28 | 56.00 | 46.00 | 33.21 | 27.72 | N | |
| 5 | 4.25427 | 0.12 | -4.43 | 0.13 | 13.40 | 13.65 | 9.10 | 56.00 | 46.00 | 42.35 | 36.90 | N | |
| 6 | 20.65670 | 5.50 | 1.03 | 0.39 | 13.84 | 19.73 | 15.26 | 60.00 | 50.00 | 40.27 | 34.74 | N | |
| 7 | 0.15870 | 20.72 | 8.96 | 0.07 | 13.14 | 33.93 | 22.17 | 65.50 | 55.50 | 31.57 | 33.33 | L | |
| 8 | 0.33879 | 10.34 | 5.63 | 0.06 | 13.16 | 23.56 | 18.85 | 59.20 | 49.20 | 35.64 | 30.35 | L | |
| 9 | 0.58152 | 8.80 | 4.32 | 0.05 | 13.18 | 22.03 | 17.55 | 56.00 | 46.00 | 33.97 | 28.45 | L | |
| 10 | 0.94518 | 9.55 | 4.87 | 0.06 | 13.21 | 22.82 | 18.14 | 56.00 | 46.00 | 33.18 | 27.86 | L | |
| 11 | 4.29055 | 0.21 | -4.41 | 0.14 | 13.40 | 13.75 | 9.13 | 56.00 | 46.00 | 42.25 | 36.87 | L | |
| 12 | 20.69680 | 5.84 | 1.64 | 0.48 | 13.84 | 20.16 | 15.96 | 60.00 | 50.00 | 39.84 | 34.04 | L | |

CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + LISN + LOSS (CABLE + ATT)
 Except for the above table: adequate margin data below the limits.

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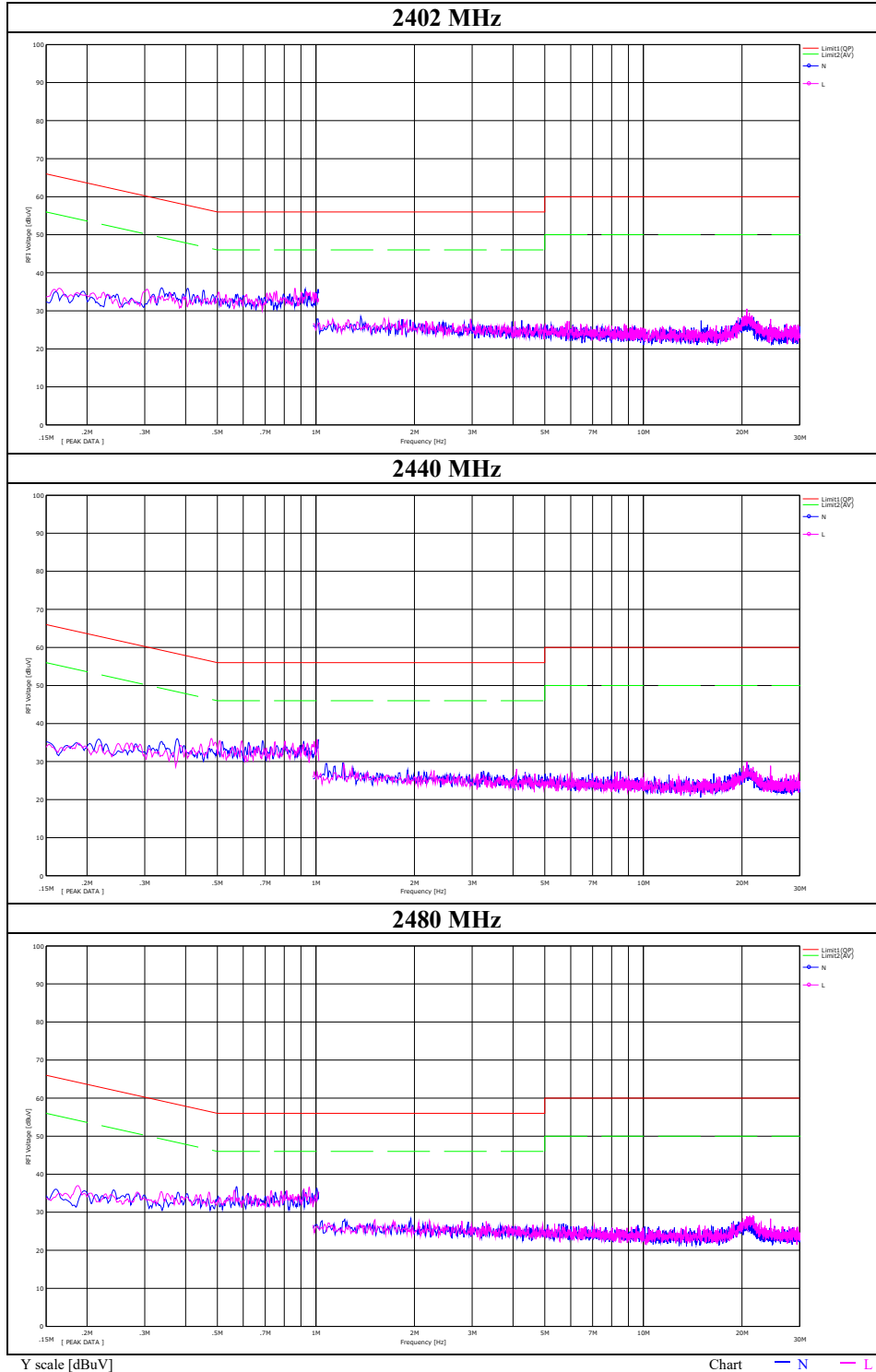
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Conducted Emission

| | |
|------------------------|---|
| Report No. | 13170804H |
| Test place | Ise EMC Lab. No.3 Semi Anechoic Chamber |
| Date | February 22, 2020 |
| Temperature / Humidity | 24 deg. C / 32 % RH |
| Engineer | Yuta Moriya |
| Mode | Tx BT LE 1M-PHY |



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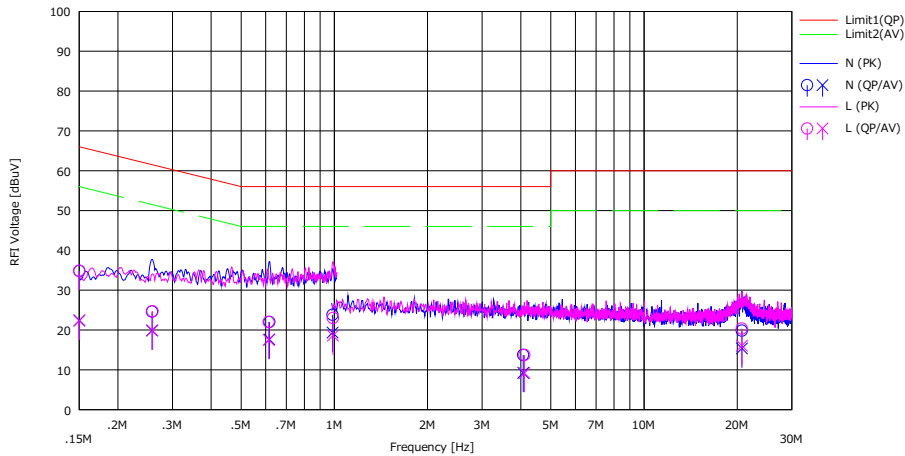
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Facsimile : +81 596 24 8124

Conducted Emission

Report No. 13170804H
Test place Ise EMC Lab. No.3 Semi Anechoic Chamber
Date February 22, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Yuta Moriya
Mode Tx BT LE 2M-PHY 2402 MHz

Limit : FCC_Part 15 Subpart C(15.207)

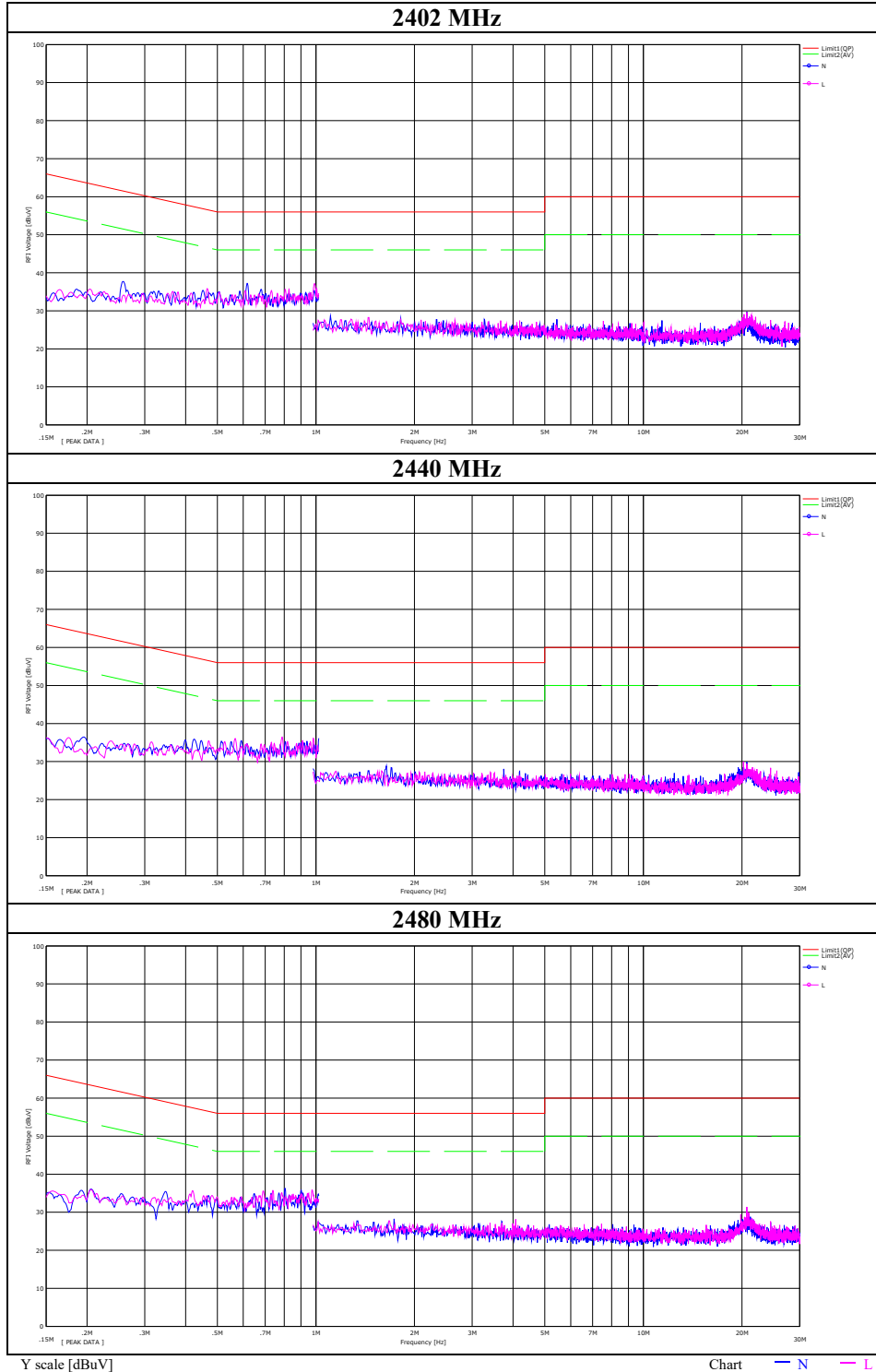


| No. | Freq. [MHz] | Reading | | LISN [dB] | LOSS [dB] | Results | | Limit | | Margin | | Phase | Comment |
|-----|----------------|----------------|----------------|--------------|--------------|----------------|----------------|--------------|--------------|--------|-------|-------|---------|
| | | <QP> [dBuV] | <AV> [dBuV] | | | <QP> [dBuV] | <AV> [dBuV] | <QP> [dB] | <AV> [dB] | | | | |
| | | [dBuV] | [dBuV] | | | [dBuV] | [dBuV] | [dB] | [dB] | | | | |
| 1 | 0.15032 | 21.60 | 9.20 | 0.07 | 13.14 | 34.81 | 22.41 | 66.00 | 56.00 | 31.19 | 33.59 | N | |
| 2 | 0.25788 | 11.41 | 6.64 | 0.07 | 13.15 | 24.63 | 19.86 | 61.50 | 51.50 | 36.87 | 31.64 | N | |
| 3 | 0.61719 | 8.75 | 4.35 | 0.08 | 13.18 | 22.01 | 17.61 | 56.00 | 46.00 | 33.99 | 28.39 | N | |
| 4 | 0.98694 | 10.52 | 6.05 | 0.08 | 13.22 | 23.82 | 19.35 | 56.00 | 46.00 | 32.18 | 26.65 | N | |
| 5 | 4.07287 | 0.23 | -4.28 | 0.13 | 13.39 | 13.75 | 9.24 | 56.00 | 46.00 | 42.25 | 36.76 | N | |
| 6 | 20.69680 | 5.59 | 1.15 | 0.39 | 13.84 | 19.82 | 15.38 | 60.00 | 50.00 | 40.18 | 34.62 | N | |
| 7 | 0.15000 | 21.66 | 9.16 | 0.07 | 13.14 | 34.87 | 22.37 | 66.00 | 56.00 | 31.13 | 33.63 | L | |
| 8 | 0.25875 | 11.49 | 6.68 | 0.06 | 13.15 | 24.70 | 19.89 | 61.50 | 51.50 | 36.80 | 31.61 | L | |
| 9 | 0.61371 | 8.80 | 4.28 | 0.05 | 13.18 | 22.03 | 17.51 | 56.00 | 46.00 | 33.97 | 28.49 | L | |
| 10 | 0.98955 | 9.72 | 5.33 | 0.06 | 13.22 | 23.00 | 18.61 | 56.00 | 46.00 | 33.00 | 27.39 | L | |
| 11 | 4.10915 | 0.19 | -4.33 | 0.14 | 13.39 | 13.72 | 9.20 | 56.00 | 46.00 | 42.28 | 36.80 | L | |
| 12 | 20.69680 | 6.06 | 1.75 | 0.48 | 13.84 | 20.38 | 16.07 | 60.00 | 50.00 | 39.62 | 33.93 | L | |

CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + LISN + LOSS (CABLE + ATT)
Except for the above table: adequate margin data below the limits.

Conducted Emission

| | |
|------------------------|---|
| Report No. | 13170804H |
| Test place | Ise EMC Lab. No.3 Semi Anechoic Chamber |
| Date | February 22, 2020 |
| Temperature / Humidity | 24 deg. C / 32 % RH |
| Engineer | Yuta Moriya |
| Mode | Tx BT LE 2M-PHY |



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6 dB Bandwidth and 99 % Occupied Bandwidth

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019 February 17, 2020
Temperature / Humidity 23 deg. C / 39 % RH 24 deg. C / 41 % RH
Engineer Takafumi Noguchi Yuta Moriya
Mode Tx

| Mode | Frequency [MHz] | 99% Occupied Bandwidth [kHz] | 6dB Bandwidth [MHz] | Limit for 6dB Bandwidth [MHz] |
|-------------------|--------------------|------------------------------------|------------------------|-------------------------------------|
| 11b | 2412 | 13332.4 | 10.066 | > 0.5000 |
| | 2437 | 13358.5 | 10.061 | > 0.5000 |
| | 2462 | 13363.7 | 10.064 | > 0.5000 |
| 11g | 2412 | 16983.8 | 16.481 | > 0.5000 |
| | 2437 | 16990.4 | 16.486 | > 0.5000 |
| | 2462 | 17012.6 | 16.484 | > 0.5000 |
| 11n-20 | 2412 | 17992.2 | 17.690 | > 0.5000 |
| | 2437 | 18011.5 | 17.689 | > 0.5000 |
| | 2462 | 18008.6 | 17.686 | > 0.5000 |
| 11ax-20 (OFDM) | 2412 | 18901.4 | 18.643 | > 0.5000 |
| | 2437 | 18901.8 | 18.797 | > 0.5000 |
| | 2462 | 18869.7 | 18.671 | > 0.5000 |

6 dB Bandwidth and 99 % Occupied Bandwidth

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 17, 2020 March 28, 2020
Temperature / Humidity 24 deg. C / 41 % RH 24 deg. C / 51 % RH
Engineer Yuta Moriya Takafumi Noguchi
Mode Tx

| Mode | Frequency [MHz] | RU Type | RU Index | 99% Occupied Bandwidth [kHz] | 6dB Bandwidth [MHz] | Limit for 6dB Bandwidth [MHz] | | |
|---------|--------------------|-------------|------------|------------------------------------|------------------------|-------------------------------------|----------|----------|
| 11ax-20 | 2412 | 26-tone RU | 0 | 18173.7 | 2.027 | > 0.5000 | | |
| | | | 4 | 16918.6 | 2.647 | > 0.5000 | | |
| | | | 8 | 18383.6 | 2.000 | > 0.5000 | | |
| | 2437 | | 0 | 18316.5 | 2.032 | > 0.5000 | | |
| | | | 4 | 17035.3 | 2.662 | > 0.5000 | | |
| | | | 8 | 18297.2 | 1.988 | > 0.5000 | | |
| | 2462 | | 0 | 17971.5 | 2.055 | > 0.5000 | | |
| | | | 4 | 16909.5 | 2.650 | > 0.5000 | | |
| | | | 8 | 18354.4 | 2.013 | > 0.5000 | | |
| | 2412 | | 52-tone RU | 37 | 17957.1 | 4.020 | > 0.5000 | |
| | | | | 38 | 16924.8 | 4.062 | > 0.5000 | |
| | | | | 40 | 18216.1 | 4.101 | > 0.5000 | |
| | 2437 | | | 37 | 18180.9 | 3.973 | > 0.5000 | |
| | | | | 38 | 16890.2 | 4.076 | > 0.5000 | |
| | | | | 40 | 18232.0 | 4.042 | > 0.5000 | |
| | 2462 | | | 37 | 17848.7 | 4.028 | > 0.5000 | |
| | | | | 38 | 16727.2 | 4.060 | > 0.5000 | |
| | | | | 40 | 18261.0 | 4.001 | > 0.5000 | |
| | 2412 | | | 106-tone RU | 53 | 18049.0 | 8.321 | > 0.5000 |
| | | | | | 54 | 18223.7 | 8.302 | > 0.5000 |
| | | | | | 2437 | 53 | 18179.1 | 8.175 |
| | 54 | | | | | 18071.7 | 8.157 | > 0.5000 |
| | 2462 | | | | | 53 | 17963.6 | 8.244 |
| | | | | | 54 | 18137.5 | 8.150 | > 0.5000 |
| 2412 | | 242-tone RU | | | 61 | 18881.9 | 18.445 | > 0.5000 |
| | 2437 | | | | 61 | 18896.8 | 18.774 | > 0.5000 |
| | | | | | 2462 | 61 | 18863.4 | 18.643 |

6 dB Bandwidth and 99 % Occupied Bandwidth

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019 December 26, 2019
Temperature / Humidity 24 deg. C / 32 % RH 23 deg. C / 38 % RH
Engineer Takafumi Noguchi Koji Yamamoto
Mode Tx BT LE

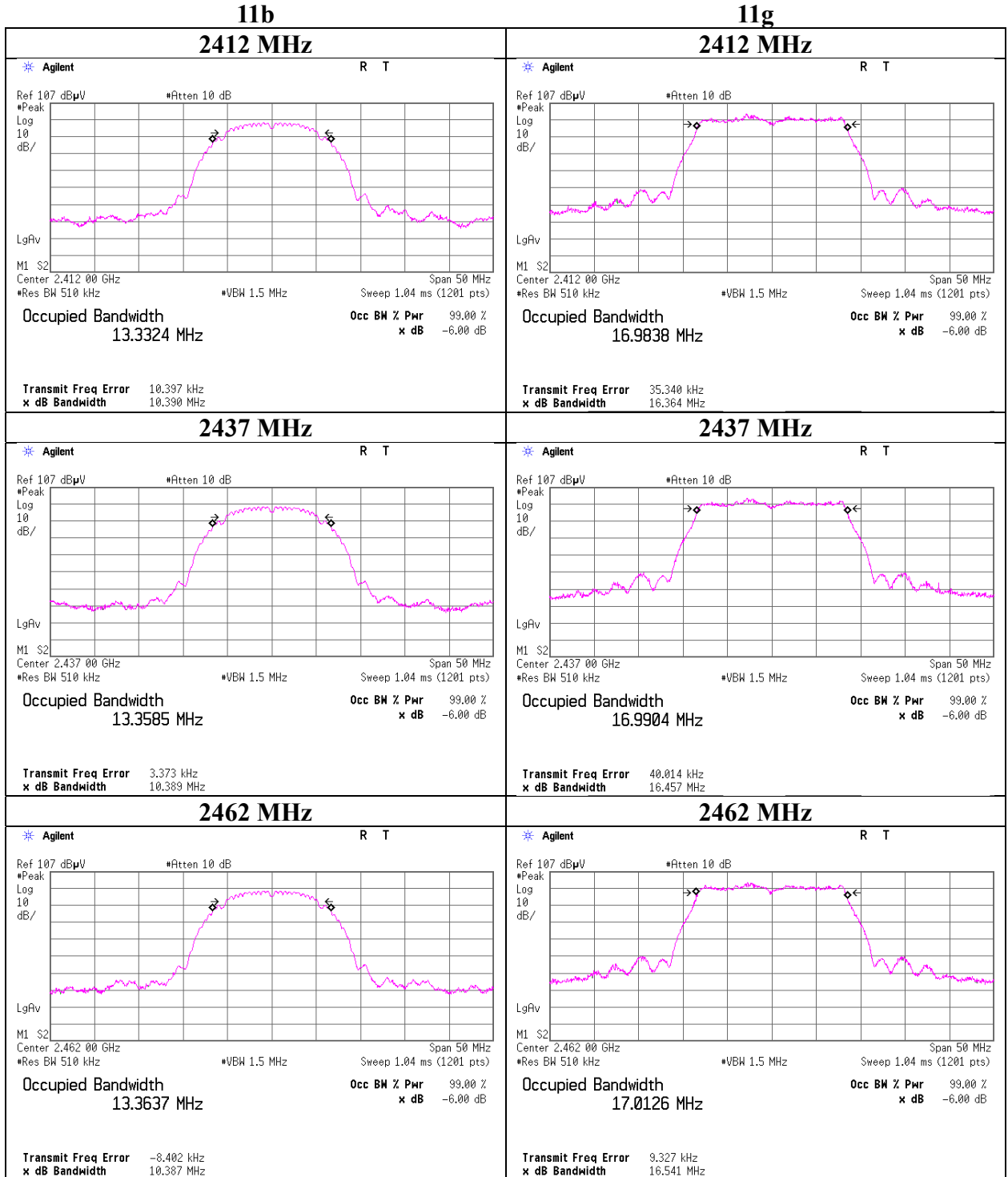
BT1

| Mode | Frequency [MHz] | 99% Occupied Bandwidth [kHz] | 6dB Bandwidth [MHz] | Limit for 6dB Bandwidth [MHz] |
|--------|--------------------|------------------------------------|------------------------|-------------------------------------|
| 1M-PHY | 2402 | 1045.5 | 0.714 | > 0.5000 |
| | 2440 | 1046.2 | 0.715 | > 0.5000 |
| | 2480 | 1044.6 | 0.724 | > 0.5000 |
| 2M-PHY | 2402 | 2058.6 | 1.170 | > 0.5000 |
| | 2440 | 2061.1 | 1.172 | > 0.5000 |
| | 2480 | 2059.8 | 1.172 | > 0.5000 |

BT2

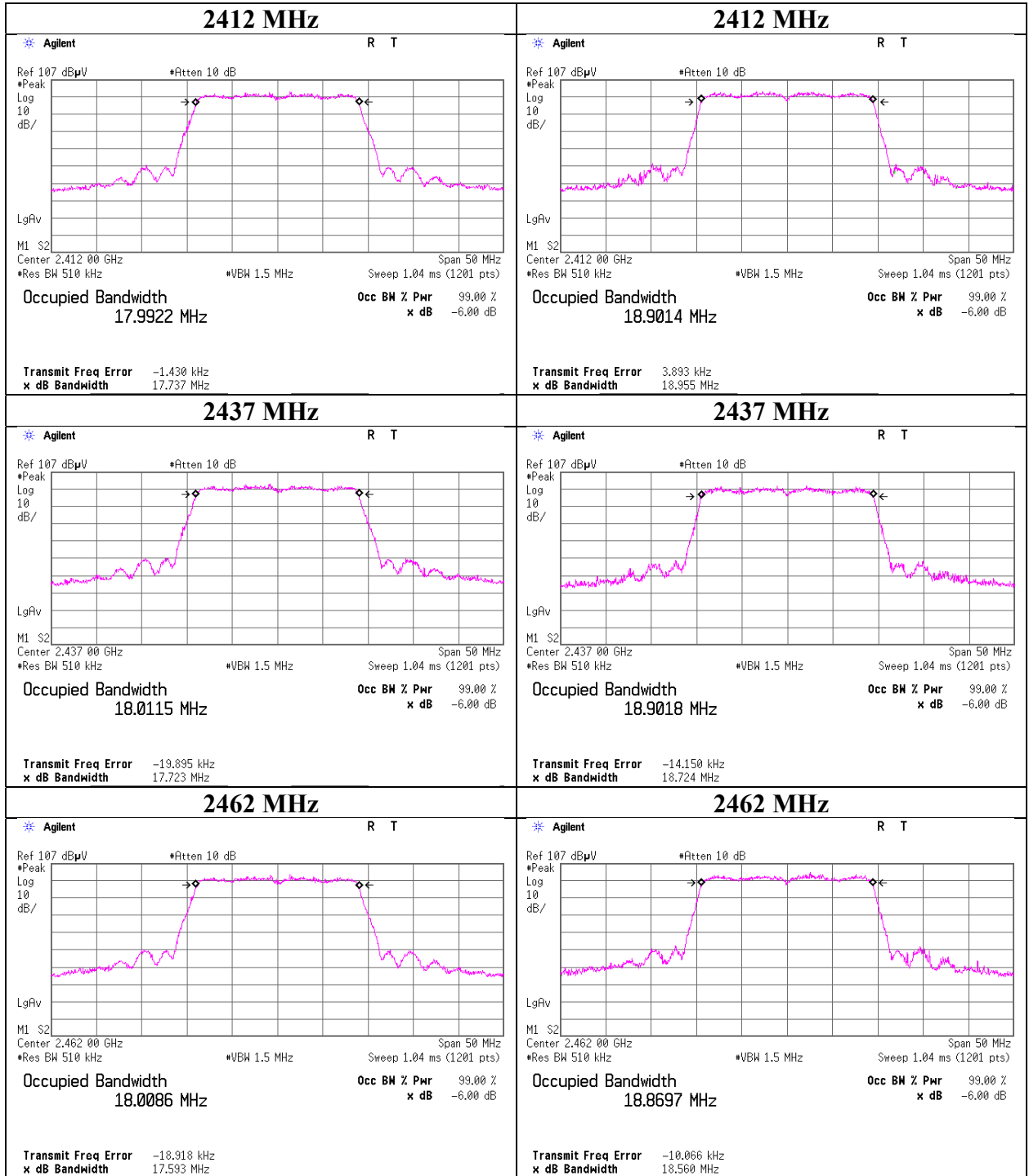
| Mode | Frequency [MHz] | 99% Occupied Bandwidth [kHz] | 6dB Bandwidth [MHz] | Limit for 6dB Bandwidth [MHz] |
|--------|--------------------|------------------------------------|------------------------|-------------------------------------|
| 1M-PHY | 2402 | 1039.0 | 0.687 | > 0.5000 |
| | 2440 | 1039.3 | 0.693 | > 0.5000 |
| | 2480 | 1038.6 | 0.688 | > 0.5000 |
| 2M-PHY | 2402 | 2058.3 | 1.161 | > 0.5000 |
| | 2440 | 2057.6 | 1.166 | > 0.5000 |
| | 2480 | 2060.1 | 1.171 | > 0.5000 |

99% Occupied Bandwidth



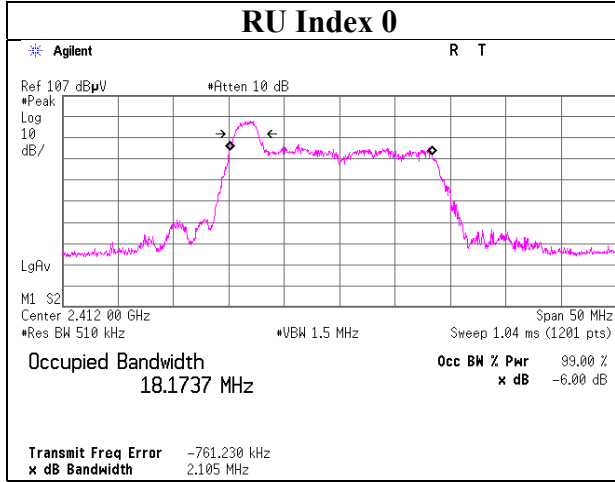
99% Occupied Bandwidth

**11ax-20
OFDM**

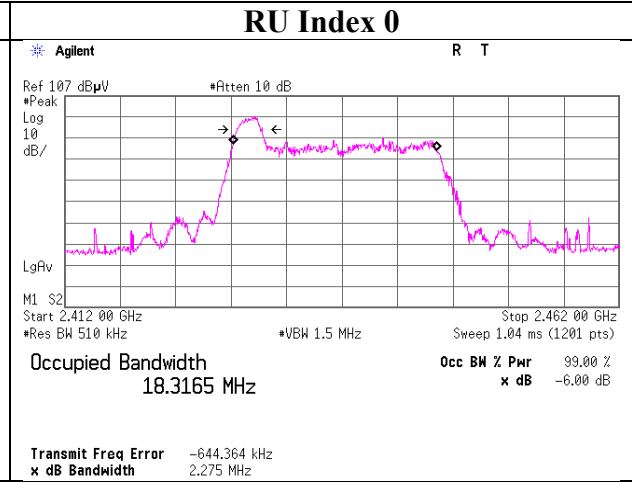


99% Occupied Bandwidth

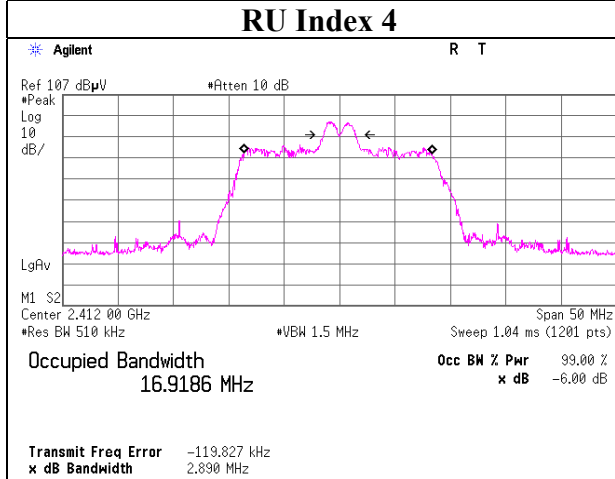
**11ax-20
26-tone RU
2412 MHz
RU Index 0**



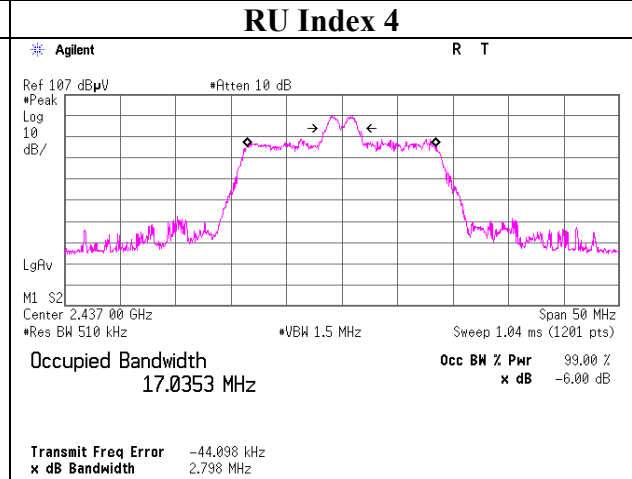
**11ax-20
26-tone RU
2437 MHz
RU Index 0**



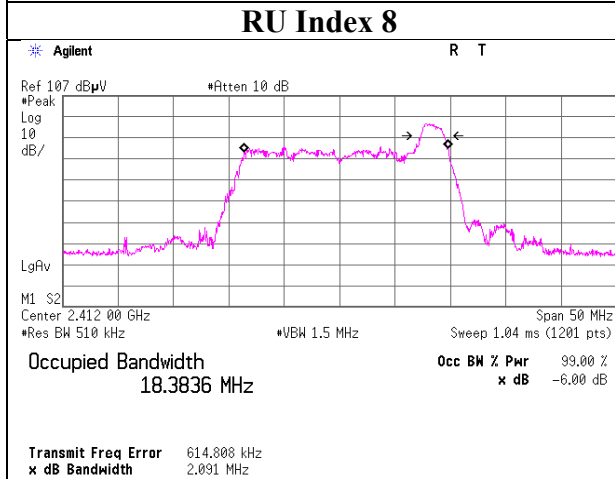
RU Index 4



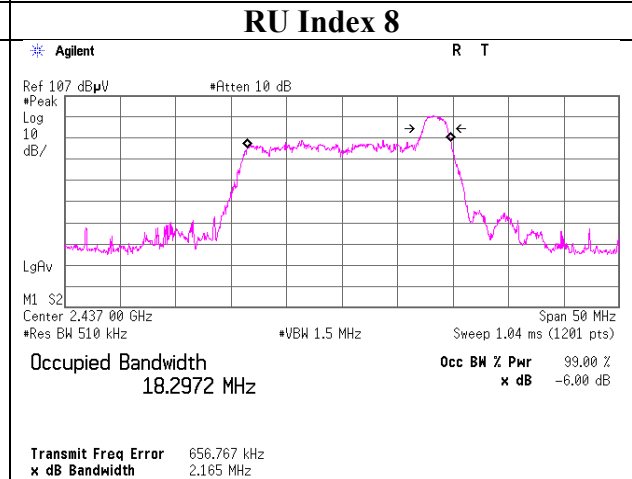
RU Index 4



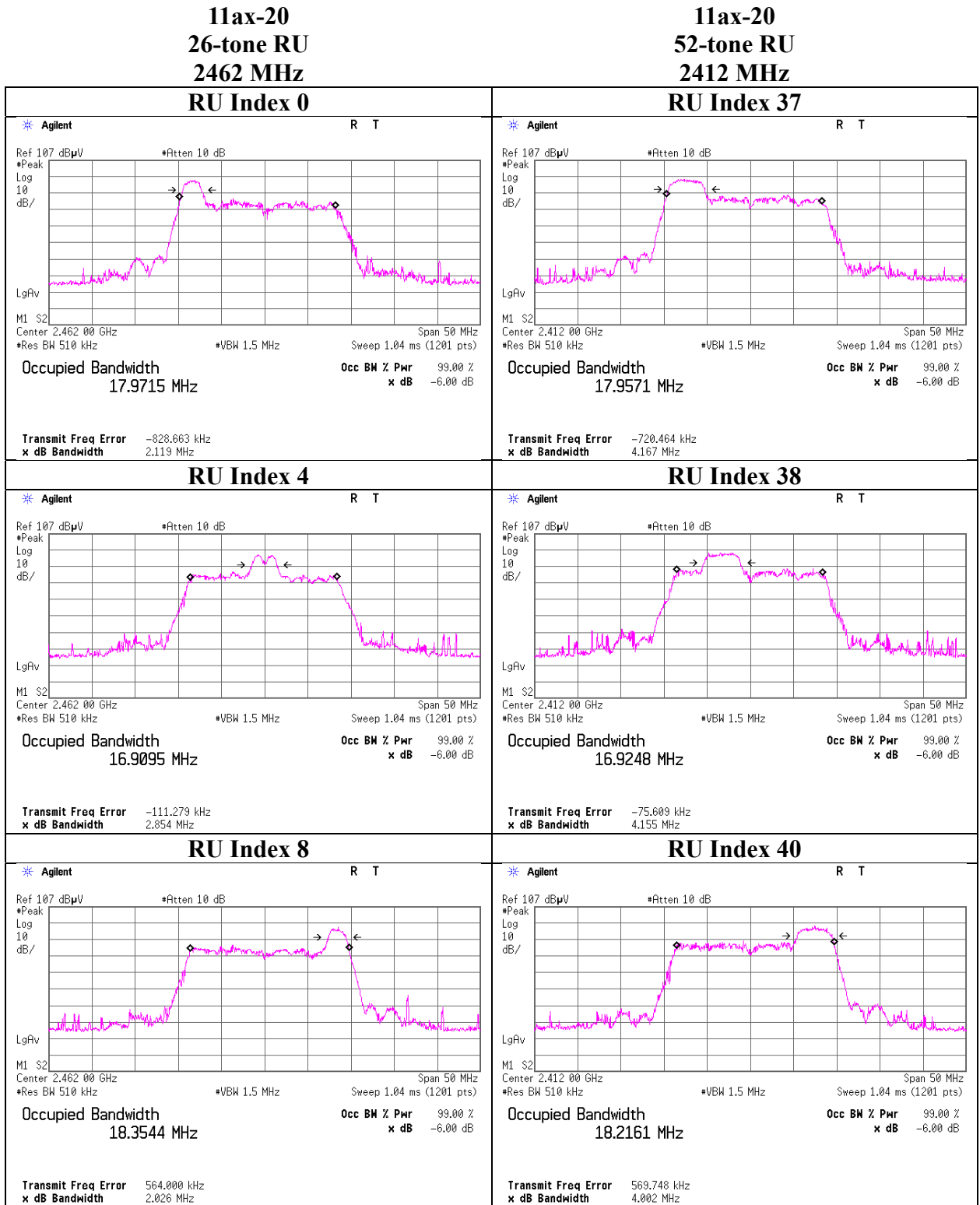
RU Index 8



RU Index 8



99% Occupied Bandwidth



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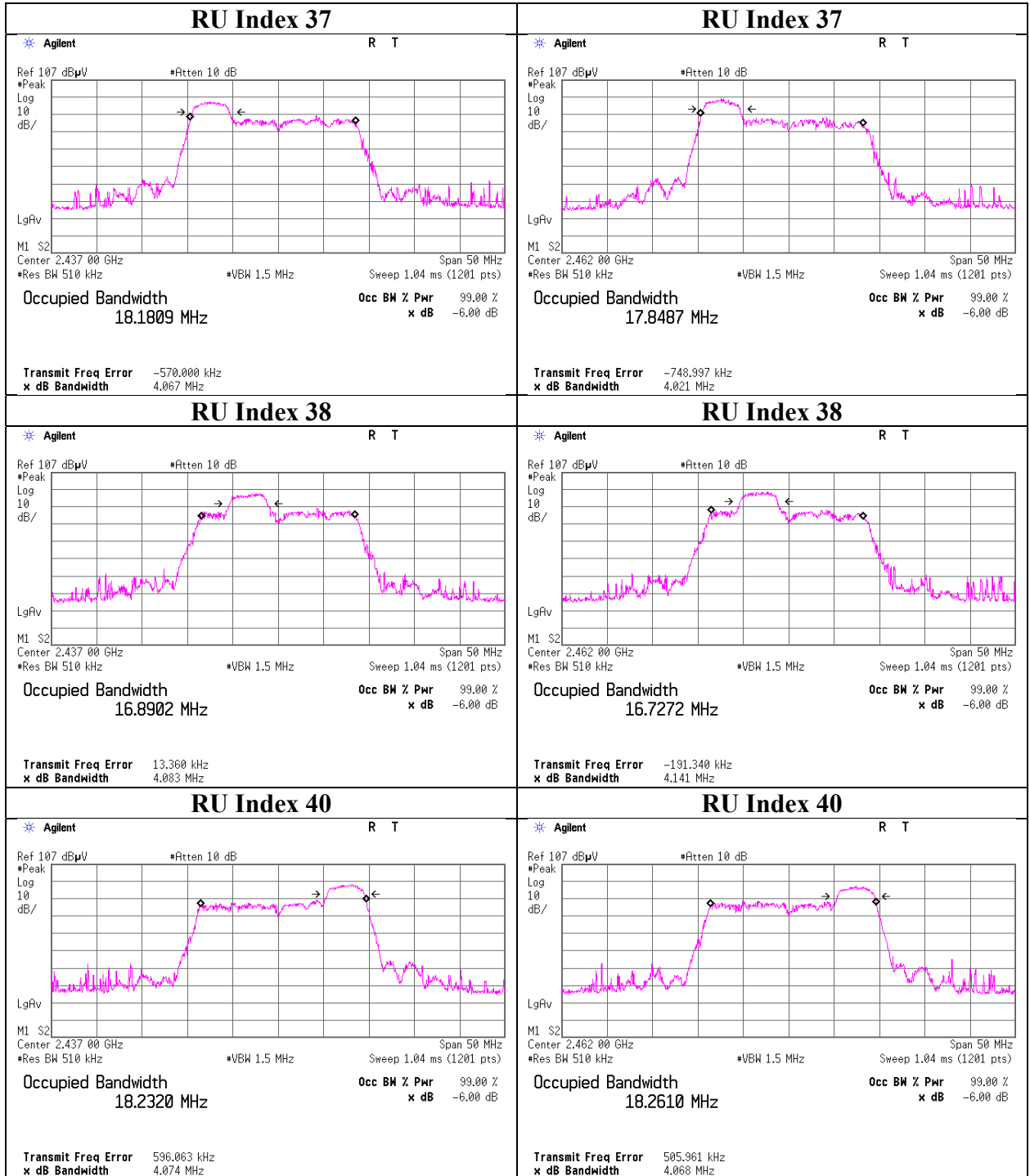
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Facsimile : +81 596 24 8124

99% Occupied Bandwidth

**11ax-20
 52-tone RU
 2437 MHz**

**11ax-20
 52-tone RU
 2462 MHz**

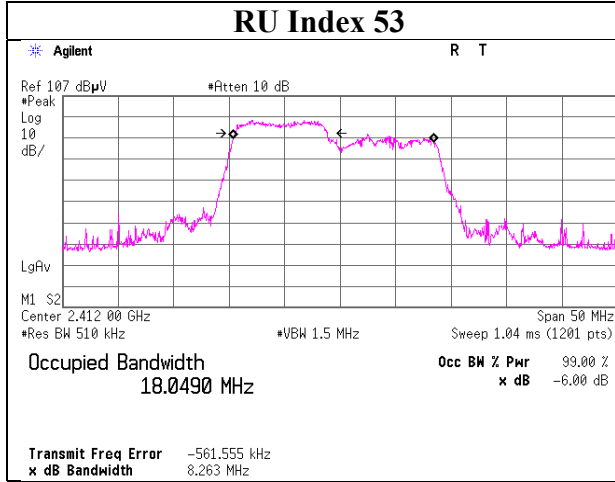


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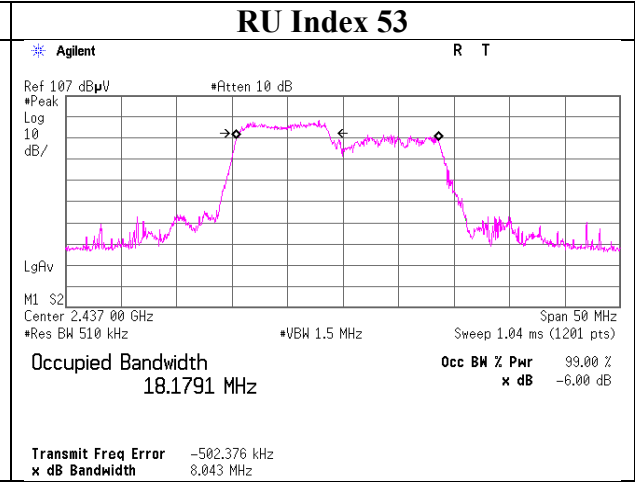
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
 Telephone : +81 596 24 8999
 Facsimile : +81 596 24 8124

99% Occupied Bandwidth

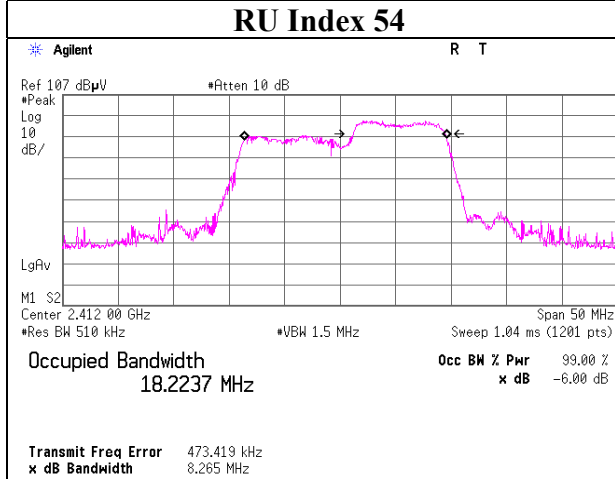
11ax-20
106-tone RU
2412 MHz
RU Index 53



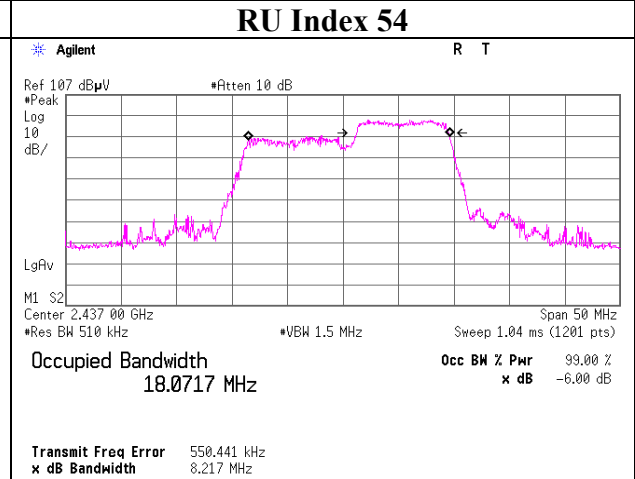
11ax-20
106-tone RU
2437 MHz
RU Index 53



RU Index 54



RU Index 54



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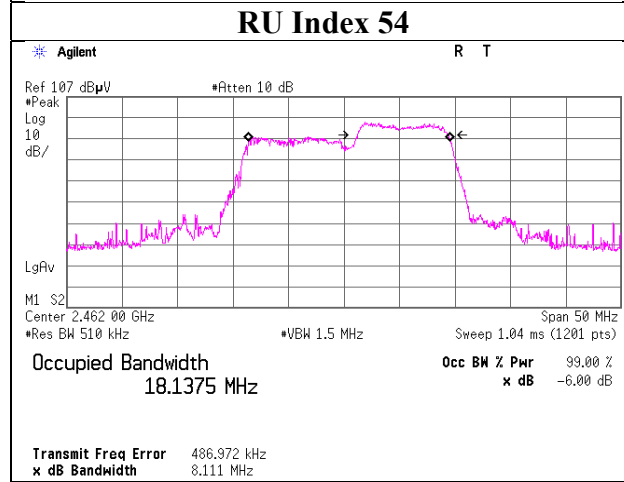
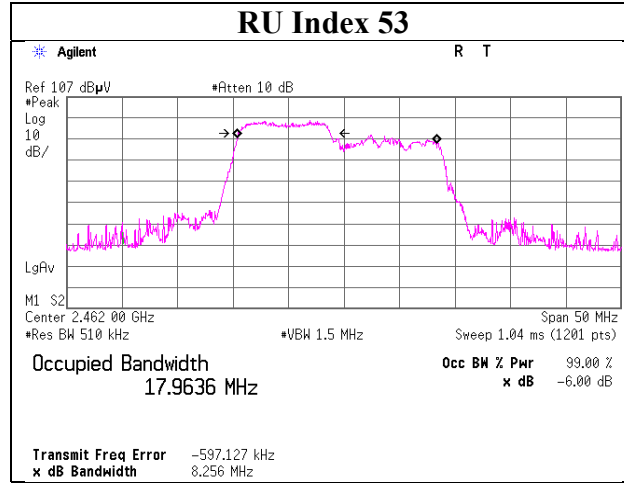
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

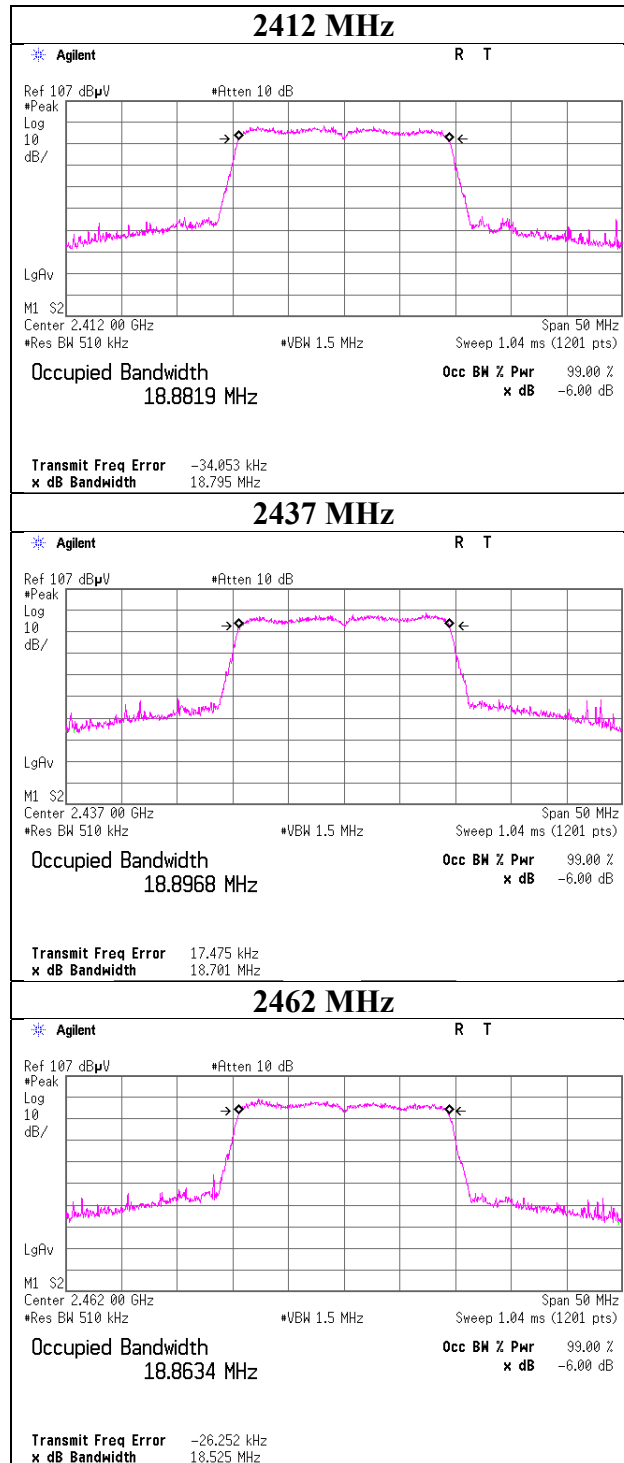
99% Occupied Bandwidth

**11ax-20
106-tone RU
2462 MHz**



99% Occupied Bandwidth

**11ax-20
242-tone RU**



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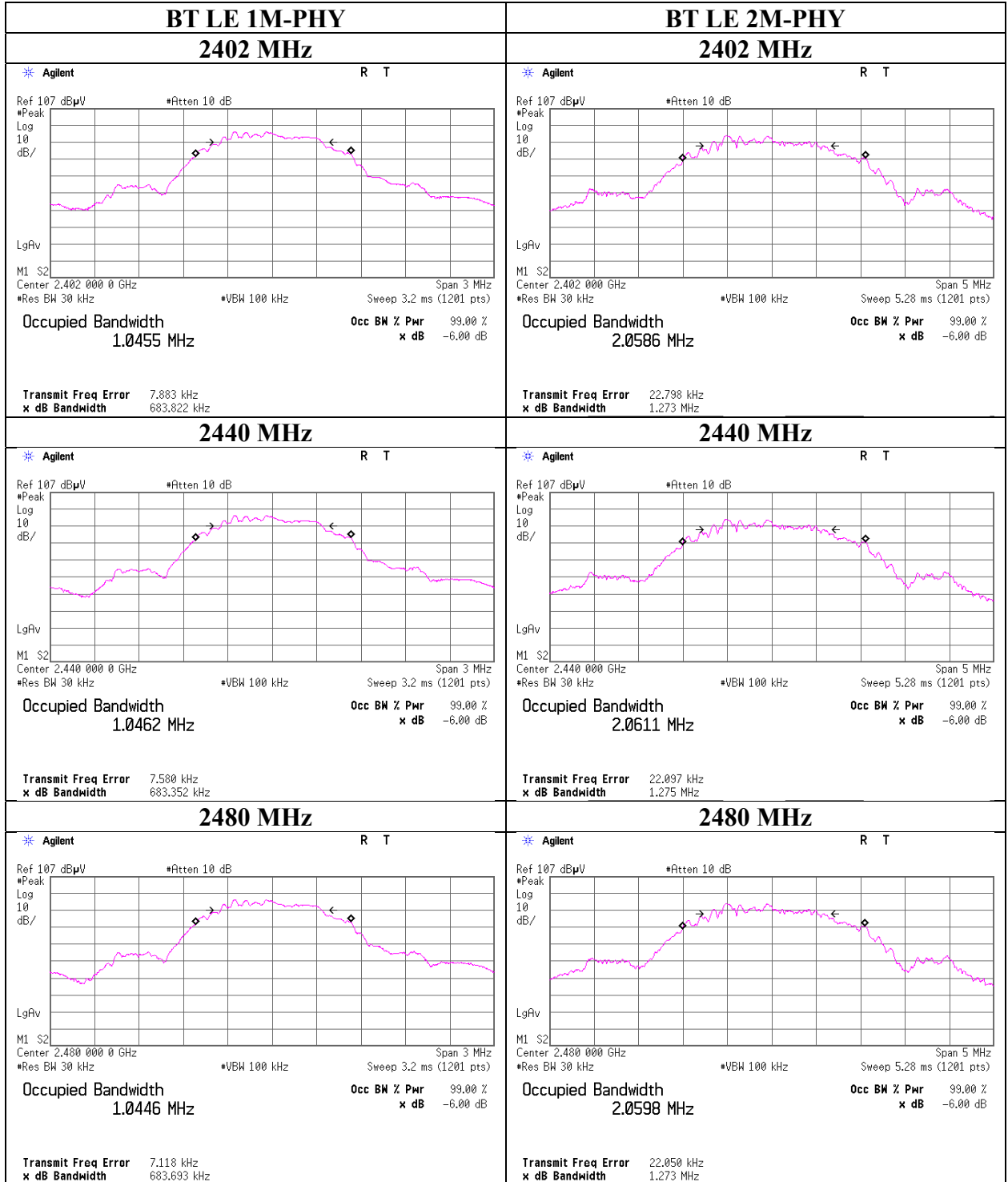
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99% Occupied Bandwidth

BT1



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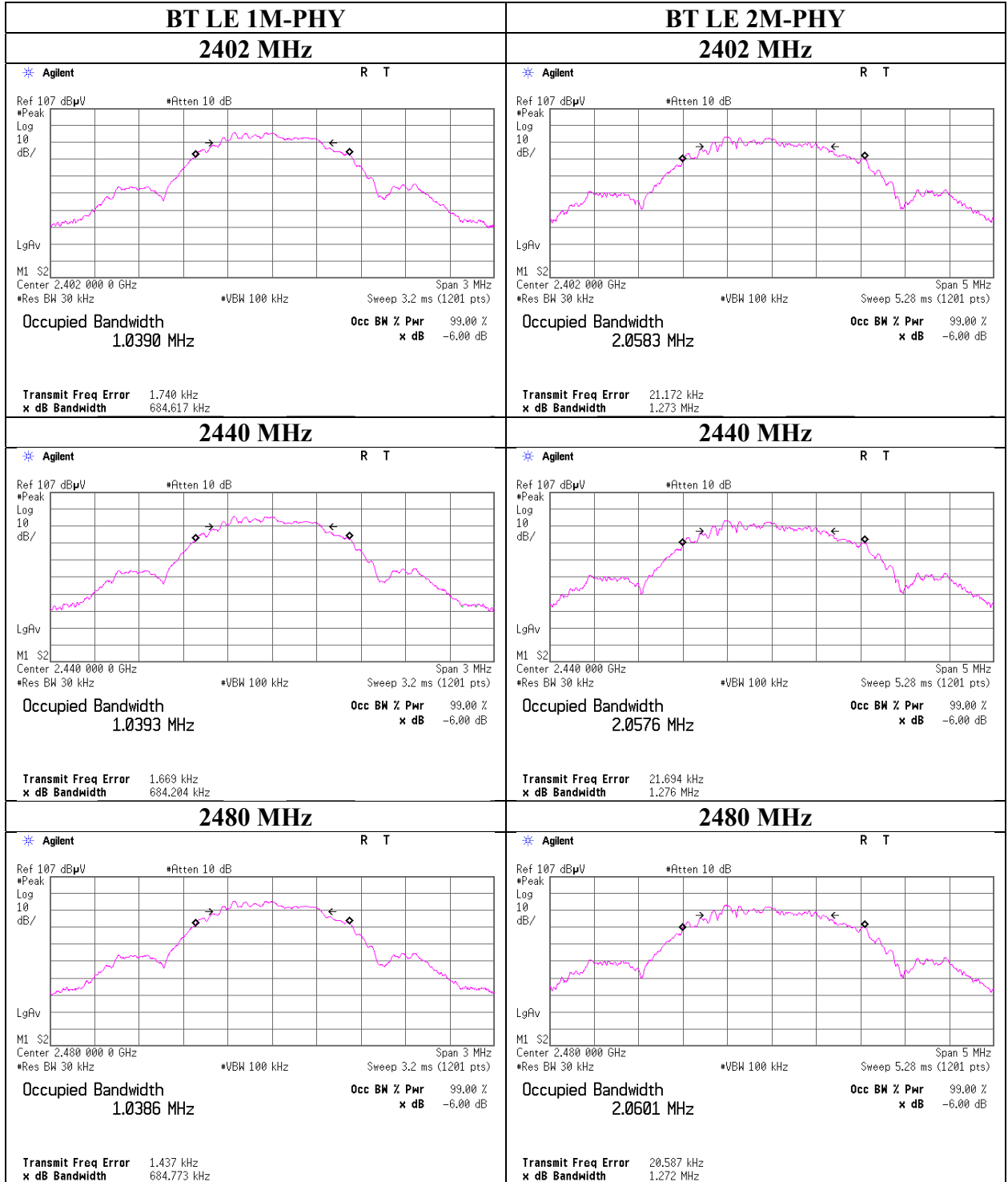
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99% Occupied Bandwidth

BT2



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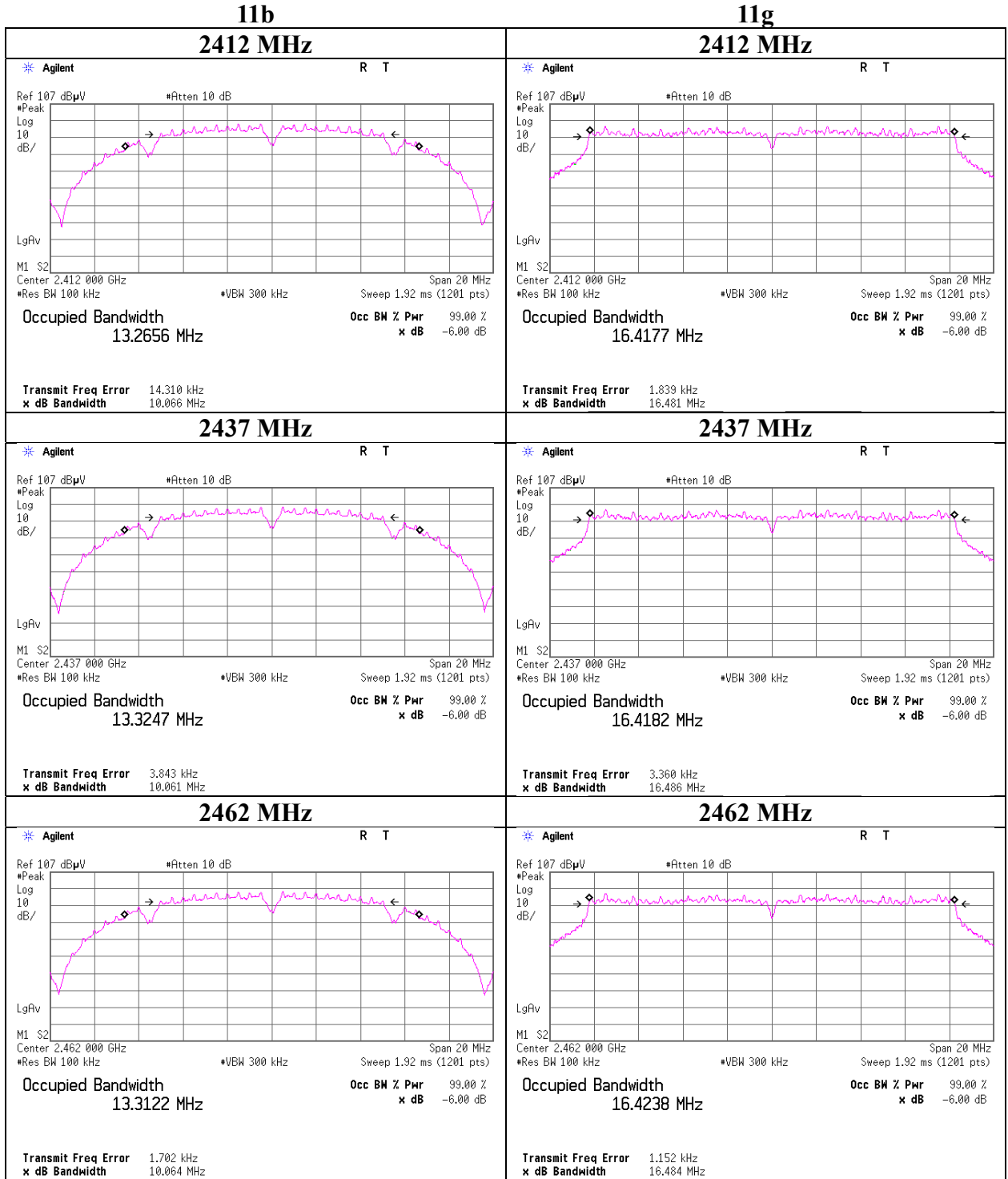
Ise EMC Lab.

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6dB Bandwidth



UL Japan, Inc.

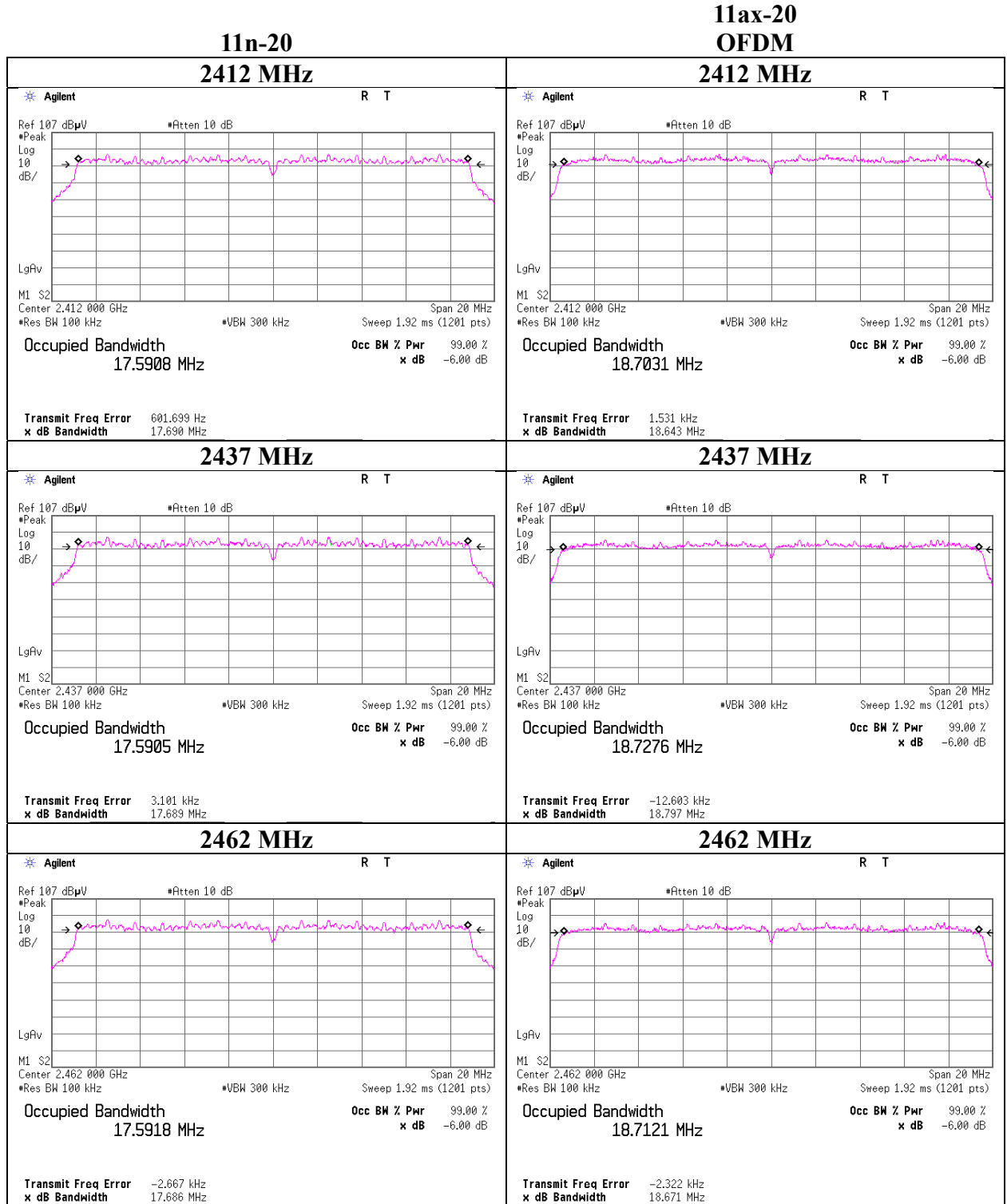
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6dB Bandwidth



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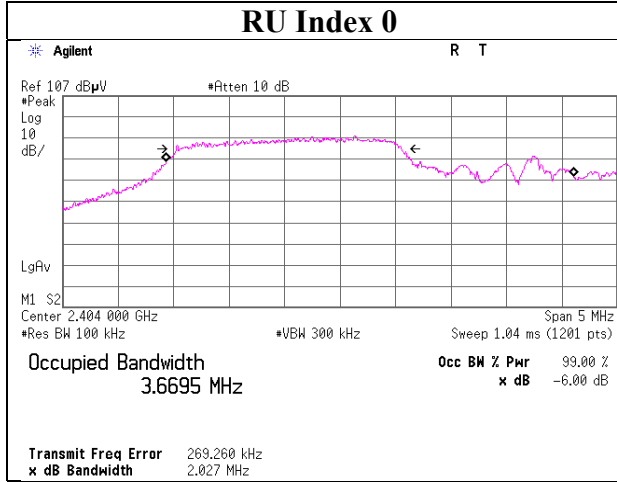
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

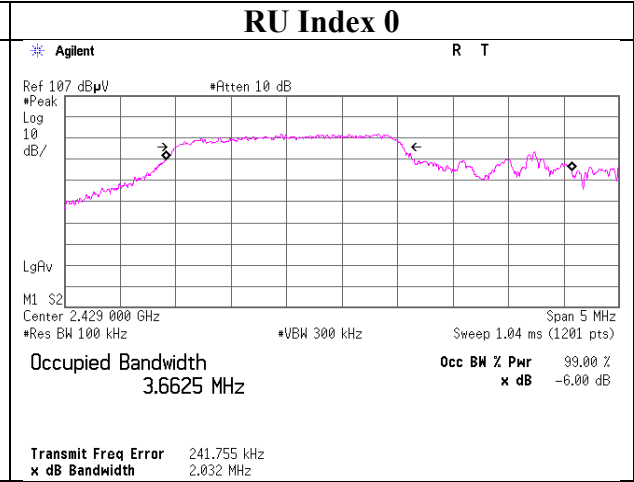
Facsimile : +81 596 24 8124

6dB Bandwidth

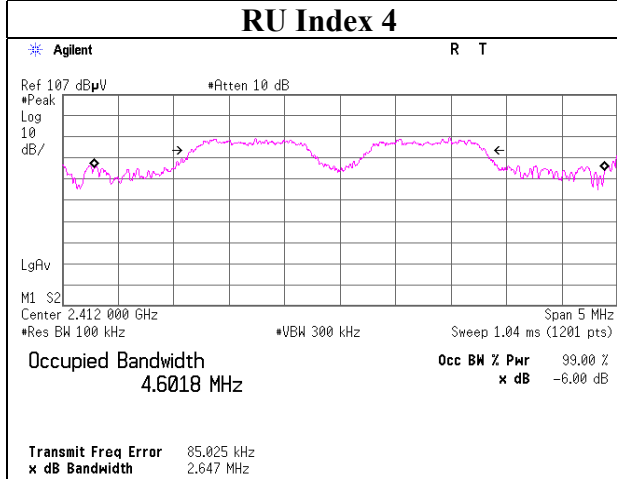
**11ax-20
26-tone RU
2412 MHz
RU Index 0**



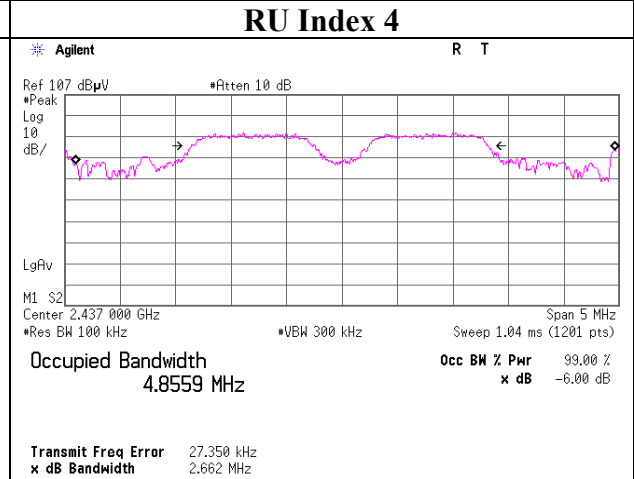
**11ax-20
26-tone RU
2437 MHz
RU Index 0**



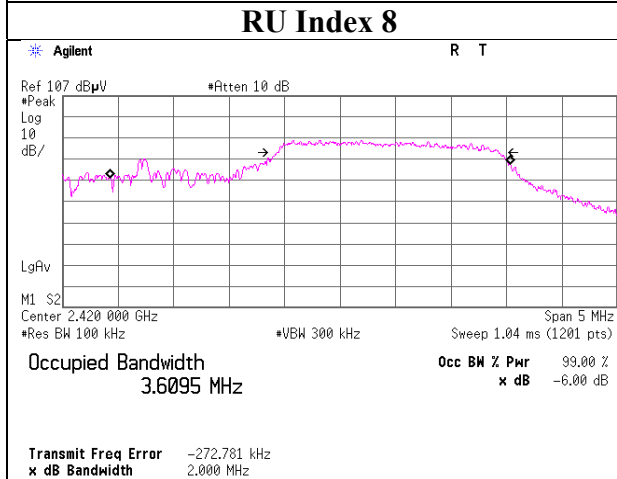
RU Index 4



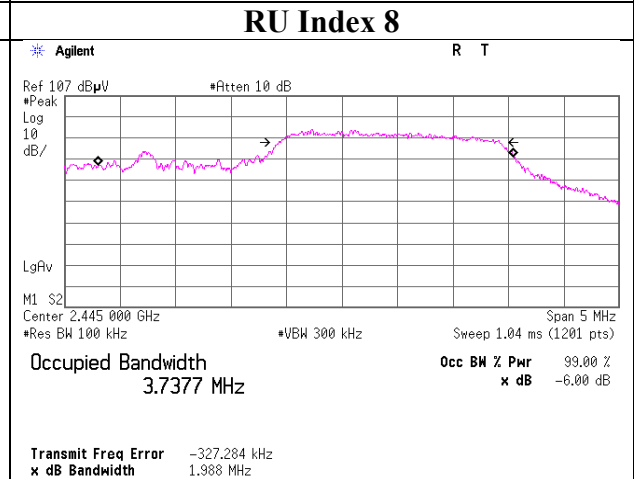
RU Index 4



RU Index 8

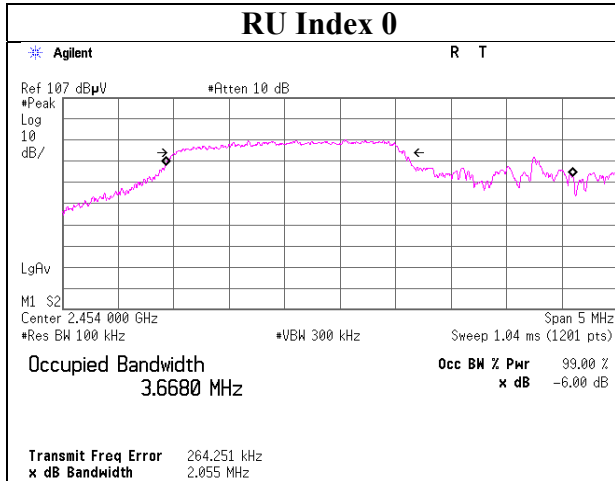


RU Index 8

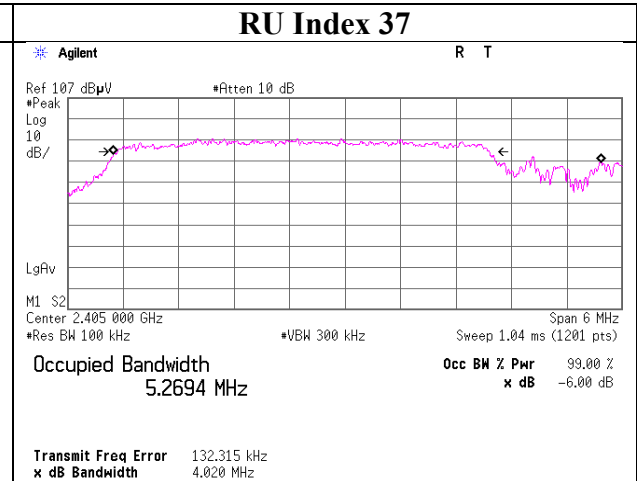


6dB Bandwidth

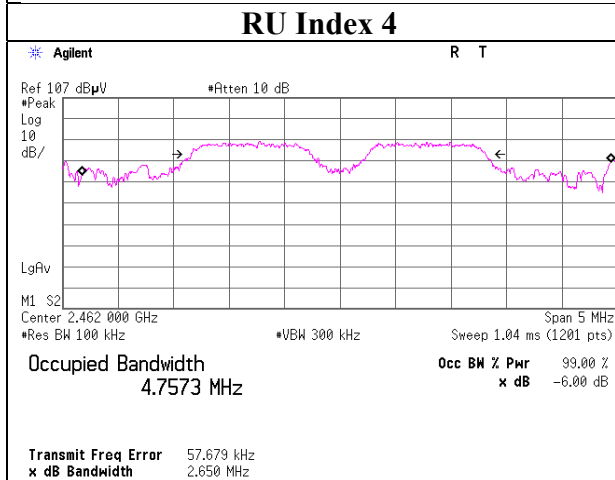
11ax-20
26-tone RU
2462 MHz
RU Index 0



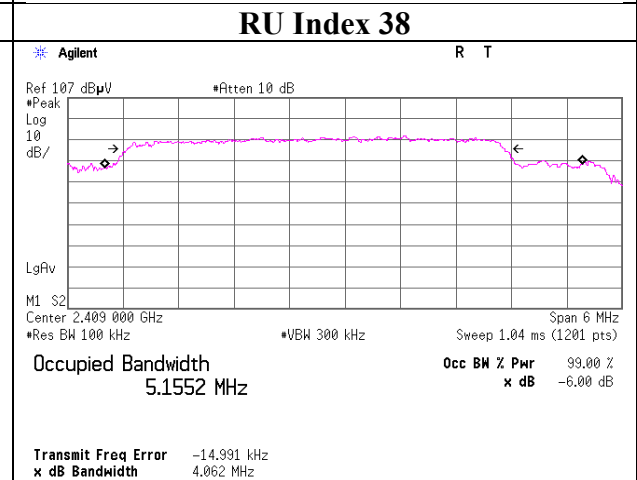
11ax-20
52-tone RU
2412 MHz
RU Index 37



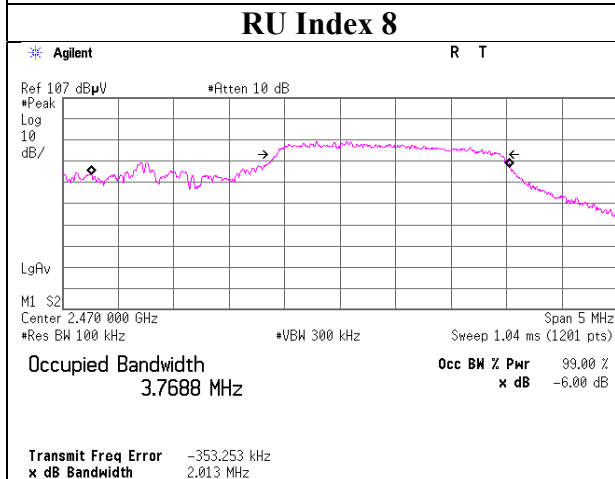
RU Index 4



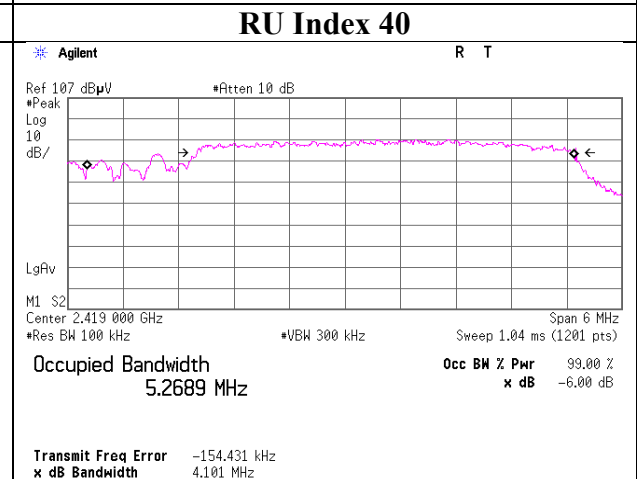
RU Index 38



RU Index 8



RU Index 40



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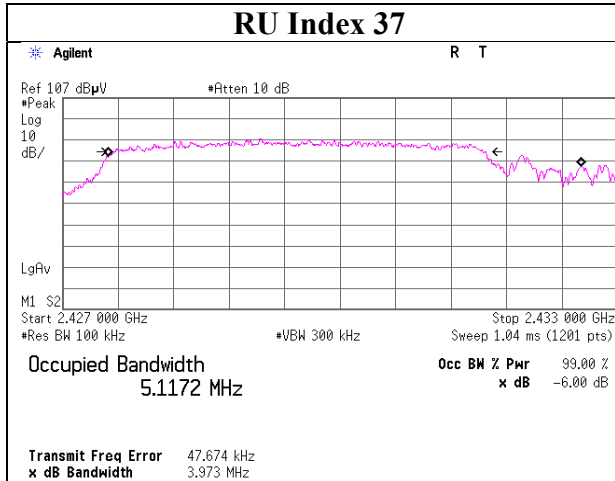
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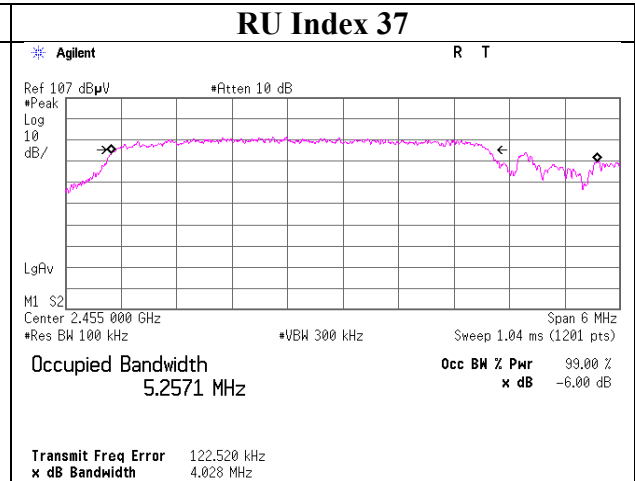
Facsimile : +81 596 24 8124

6dB Bandwidth

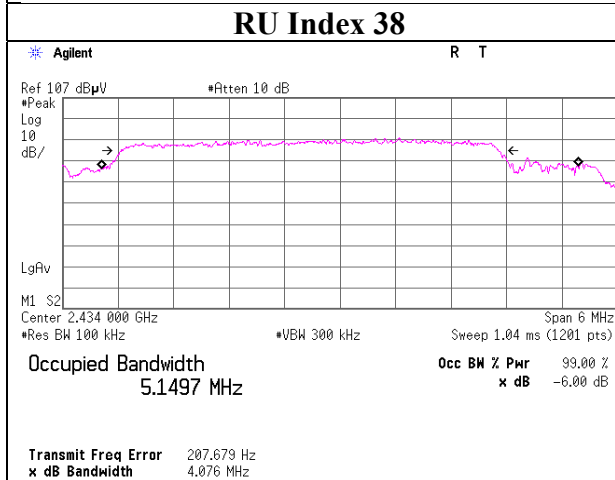
**11ax-20
52-tone RU
2437 MHz
RU Index 37**



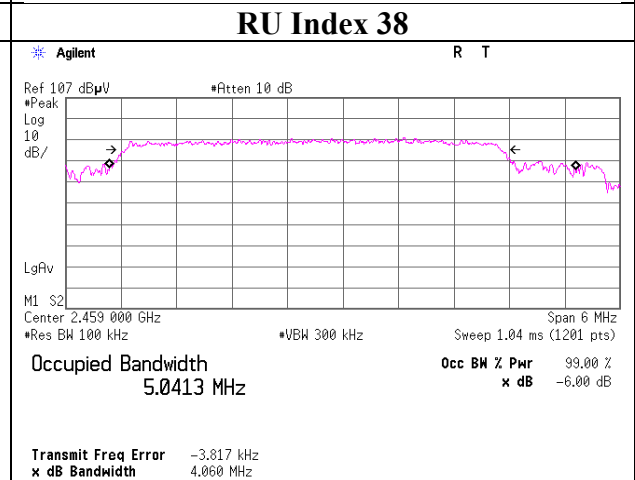
**11ax-20
52-tone RU
2462 MHz
RU Index 37**



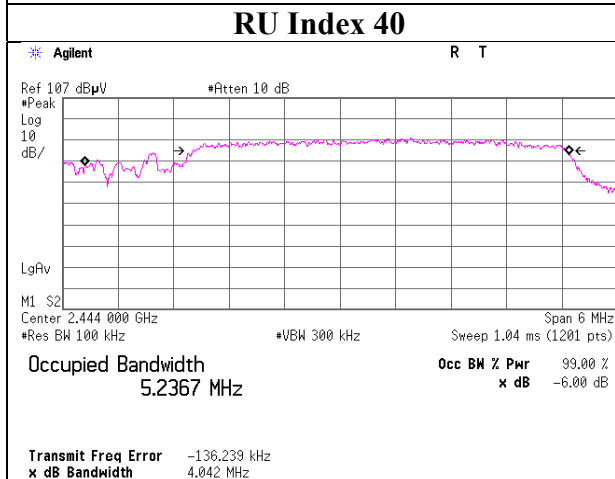
RU Index 38



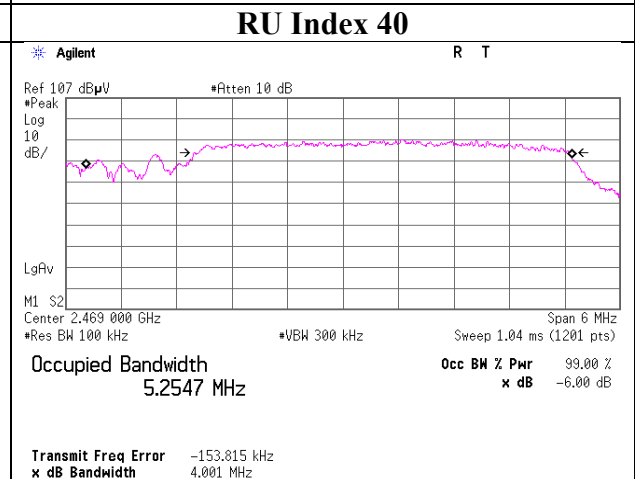
RU Index 38



RU Index 40

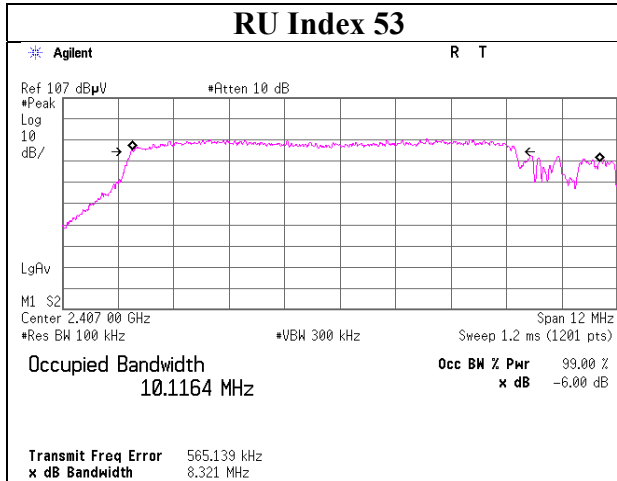


RU Index 40

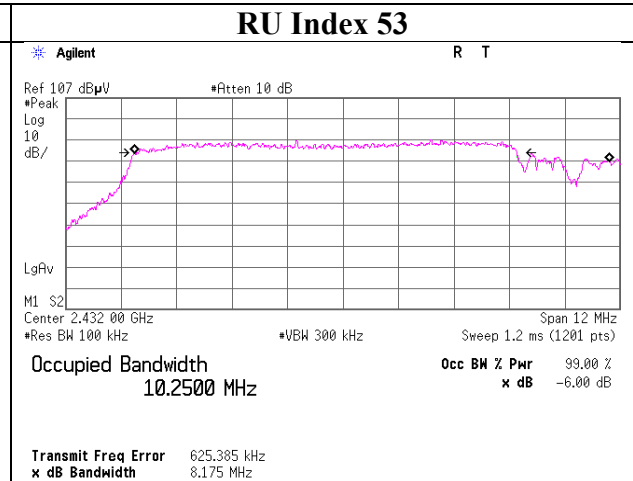


6dB Bandwidth

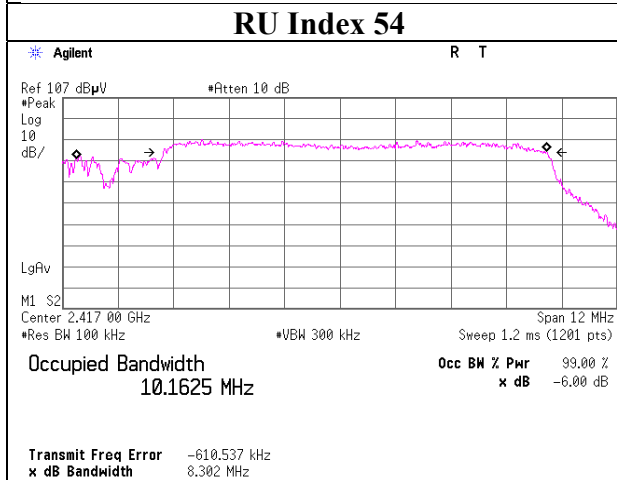
11ax-20
106-tone RU
2412 MHz
RU Index 53



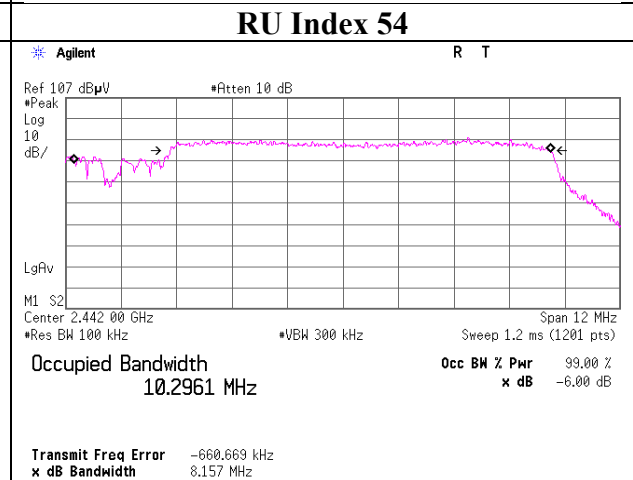
11ax-20
106-tone RU
2437 MHz
RU Index 53



RU Index 54



RU Index 54



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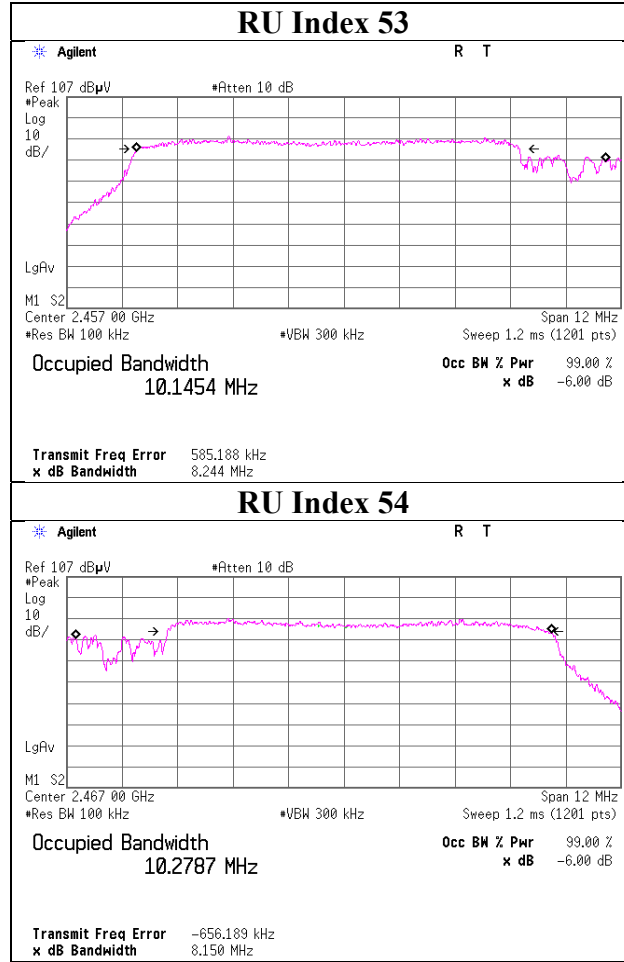
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6dB Bandwidth

11ax-20
106-tone RU
2462 MHz



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Ise EMC Lab.

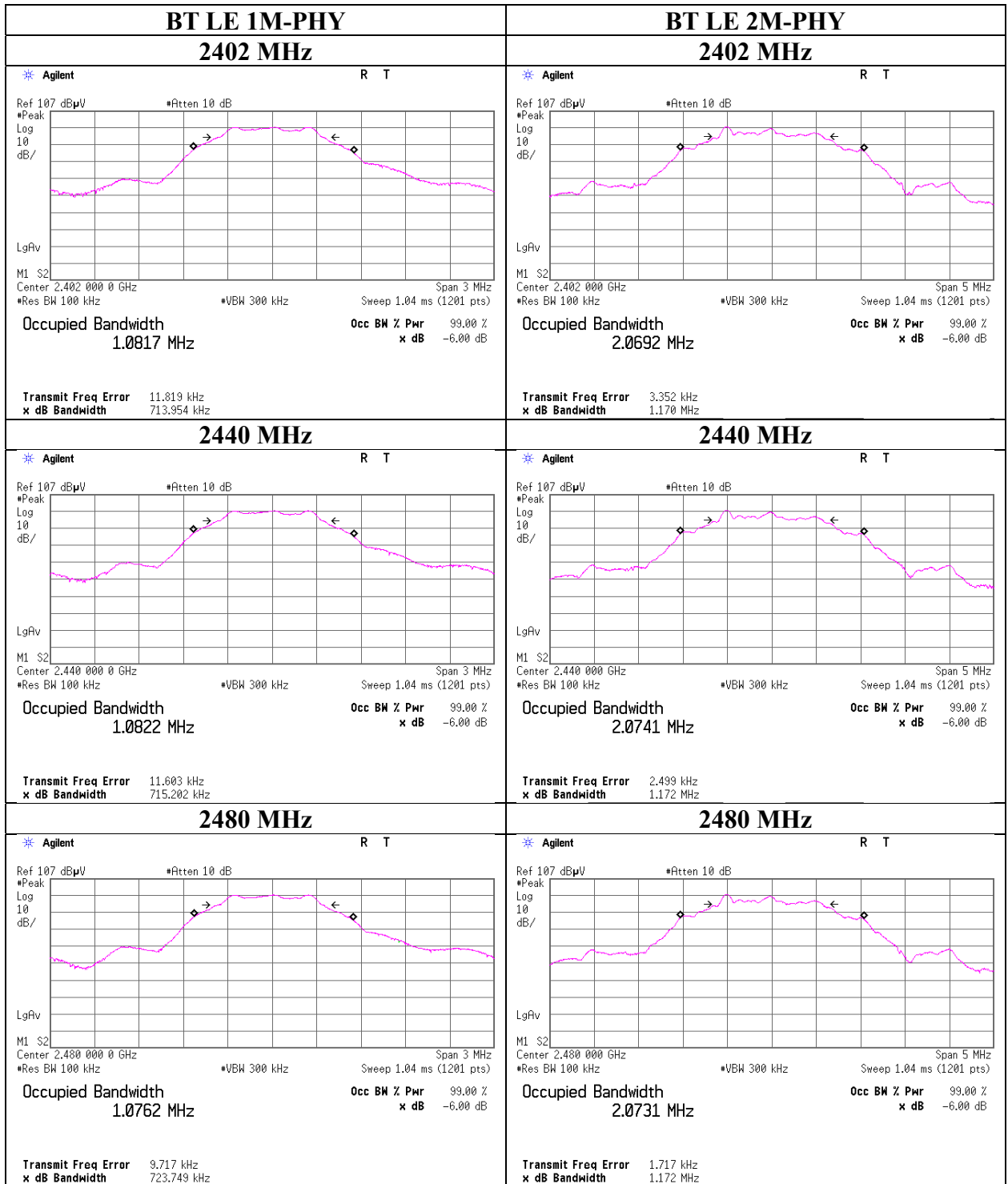
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Facsimile : +81 596 24 8124

6dB Bandwidth

BT1



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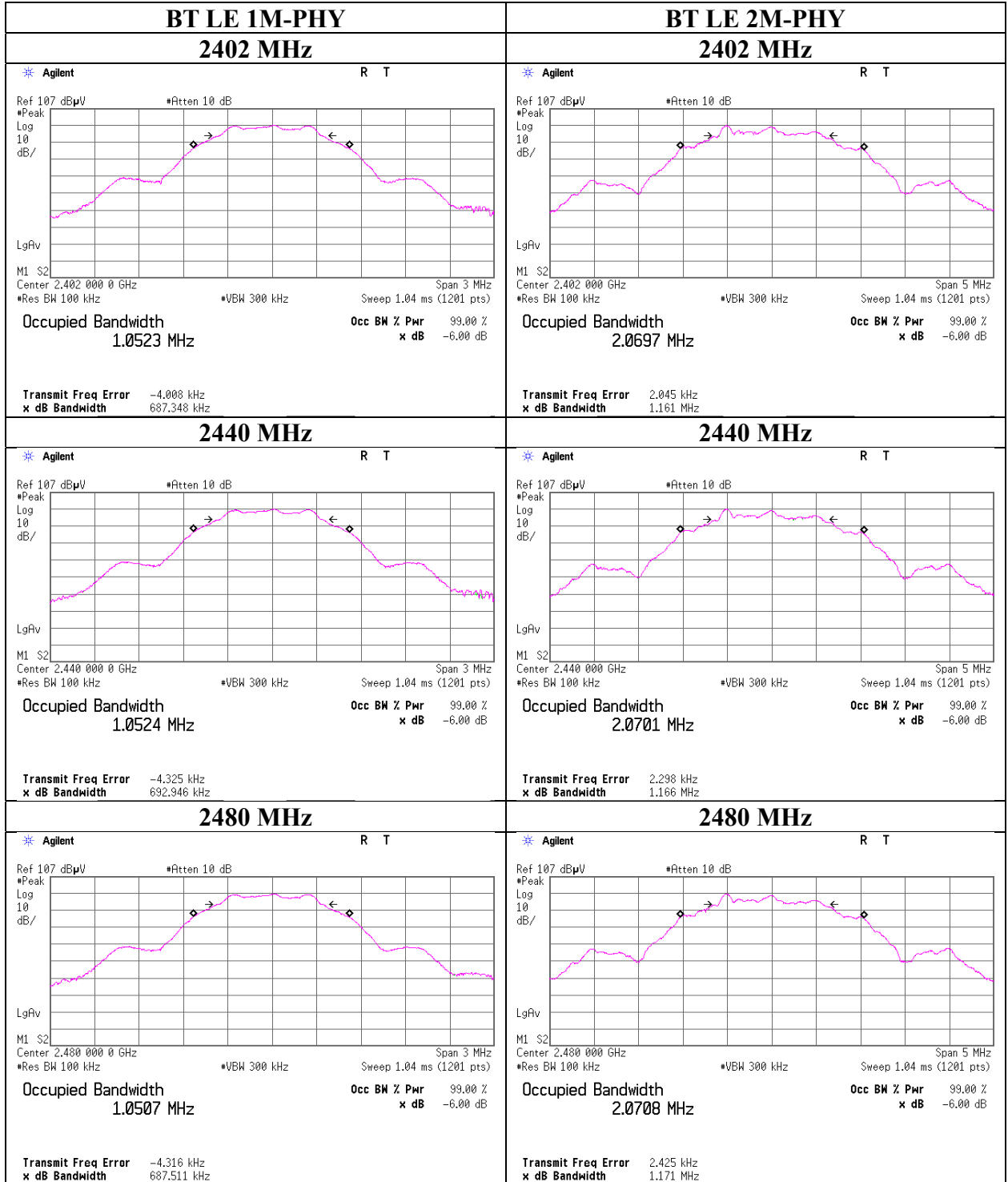
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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

6dB Bandwidth

BT2



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Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11b

| Antenna 1 + Antenna 2 | | | Conducted Power | | | | | | e.i.r.p. | | | | |
|-----------------------|-----------------------------|-----------------------------|-----------------|-------|-------|------|----------------|--------------------------|----------|--------|-------|---------|----------------|
| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 2412 | 8.39 | 10.09 | 12.67 | 18.49 | 26.99 | 500 | 14.32 | 9.01 | 21.68 | 147.19 | 36.02 | 4000.00 | 14.34 |
| 2437 | 8.79 | 10.69 | 12.90 | 19.48 | 26.99 | 500 | 14.09 | 9.01 | 21.91 | 155.10 | 36.02 | 4000.00 | 14.11 |
| 2462 | 8.99 | 10.72 | 12.95 | 19.71 | 26.99 | 500 | 14.04 | 9.01 | 21.96 | 156.92 | 36.02 | 4000.00 | 14.06 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|------|
| | | | | [dBm] | [mW] |
| 2412 | -1.25 | 0.50 | 9.99 | 9.24 | 8.39 |
| 2437 | -1.05 | 0.50 | 9.99 | 9.44 | 8.79 |
| 2462 | -0.95 | 0.50 | 9.99 | 9.54 | 8.99 |

Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | -0.19 | 0.50 | 9.73 | 10.04 | 10.09 |
| 2437 | 0.06 | 0.50 | 9.73 | 10.29 | 10.69 |
| 2462 | 0.07 | 0.50 | 9.73 | 10.30 | 10.72 |

Sample Calculation:

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

2412MHz

| Rate [Mbps] | Antenna 1 Reading Peak | | Antenna 2 Reading Peak | | Total Reading Power | | Remark |
|----------------|---------------------------|------|---------------------------|------|------------------------|------|--------|
| | [dBm] | [mW] | [dBm] | [mW] | [dBm] | [mW] | |
| 1 | -0.60 | 0.87 | -0.18 | 0.96 | 2.63 | 1.83 | * |
| 2 | -0.63 | 0.86 | -0.19 | 0.96 | 2.61 | 1.82 | |
| 5.5 | -0.69 | 0.85 | -0.20 | 0.95 | 2.57 | 1.81 | |
| 11 | -0.69 | 0.85 | -0.20 | 0.95 | 2.57 | 1.81 | |

*Worst Rate

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11g

| Antenna 1 + Antenna 2 | | | Conducted Power | | | | | e.i.r.p. | | | | | |
|-----------------------|-----------------------------|-----------------------------|-----------------|--------|-------|------|----------------|--------------------------|--------|---------|-------|---------|----------------|
| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 2412 | 59.70 | 70.96 | 21.16 | 130.66 | 26.99 | 500 | 5.83 | 9.01 | 30.17 | 1040.27 | 36.02 | 4000.00 | 5.85 |
| 2437 | 59.02 | 71.61 | 21.16 | 130.63 | 26.99 | 500 | 5.83 | 9.01 | 30.17 | 1040.06 | 36.02 | 4000.00 | 5.85 |
| 2462 | 60.39 | 73.79 | 21.28 | 134.19 | 26.99 | 500 | 5.71 | 9.01 | 30.29 | 1068.33 | 36.02 | 4000.00 | 5.73 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 7.27 | 0.50 | 9.99 | 17.76 | 59.70 |
| 2437 | 7.22 | 0.50 | 9.99 | 17.71 | 59.02 |
| 2462 | 7.32 | 0.50 | 9.99 | 17.81 | 60.39 |

Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 8.28 | 0.50 | 9.73 | 18.51 | 70.96 |
| 2437 | 8.32 | 0.50 | 9.73 | 18.55 | 71.61 |
| 2462 | 8.45 | 0.50 | 9.73 | 18.68 | 73.79 |

Sample Calculation:

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

2412MHz

| Rate [Mbps] | Antenna 1 Reading Peak | | Antenna 2 Reading Peak | | Total Reading Power | | Remark |
|----------------|---------------------------|------|---------------------------|------|------------------------|-------|--------|
| | [dBm] | [mW] | [dBm] | [mW] | [dBm] | [mW] | |
| 6 | 7.63 | 5.79 | 8.27 | 6.71 | 10.97 | 12.51 | |
| 9 | 7.66 | 5.83 | 8.24 | 6.67 | 10.97 | 12.50 | |
| 12 | 7.42 | 5.52 | 7.95 | 6.24 | 10.70 | 11.76 | |
| 18 | 7.33 | 5.41 | 8.22 | 6.64 | 10.81 | 12.04 | |
| 24 | 7.67 | 5.85 | 8.27 | 6.71 | 10.99 | 12.56 | * |
| 36 | 7.00 | 5.01 | 7.63 | 5.79 | 10.34 | 10.81 | |
| 48 | 7.53 | 5.66 | 8.19 | 6.59 | 10.88 | 12.25 | |
| 54 | 7.50 | 5.62 | 8.22 | 6.64 | 10.89 | 12.26 | |

*Worst Rate

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11n-20

| Antenna 1 + Antenna 2 | | | Conducted Power | | | | | e.i.r.p. | | | | | |
|-----------------------|-----------------------------|-----------------------------|-----------------|--------|-------|------|----------------|--------------------------|--------|---------|-------|---------|----------------|
| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 2412 | 63.97 | 84.14 | 21.71 | 148.11 | 26.99 | 500 | 5.28 | 9.01 | 30.72 | 1179.22 | 36.02 | 4000.00 | 5.30 |
| 2437 | 66.07 | 90.99 | 21.96 | 157.06 | 26.99 | 500 | 5.03 | 9.01 | 30.97 | 1250.45 | 36.02 | 4000.00 | 5.05 |
| 2462 | 68.87 | 91.41 | 22.05 | 160.28 | 26.99 | 500 | 4.94 | 9.01 | 31.06 | 1276.06 | 36.02 | 4000.00 | 4.96 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 7.57 | 0.50 | 9.99 | 18.06 | 63.97 |
| 2437 | 7.71 | 0.50 | 9.99 | 18.20 | 66.07 |
| 2462 | 7.89 | 0.50 | 9.99 | 18.38 | 68.87 |

Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 9.02 | 0.50 | 9.73 | 19.25 | 84.14 |
| 2437 | 9.36 | 0.50 | 9.73 | 19.59 | 90.99 |
| 2462 | 9.38 | 0.50 | 9.73 | 19.61 | 91.41 |

Sample Calculation:

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

2412MHz

| MCS Number | Antenna 1 Reading Peak | | Antenna 2 Reading Peak | | Total Reading Power | | Remark |
|---------------|---------------------------|------|---------------------------|------|------------------------|-------|--------|
| | [dBm] | [mW] | [dBm] | [mW] | [dBm] | [mW] | |
| 0 | 7.98 | 6.28 | 8.54 | 7.14 | 11.28 | 13.43 | |
| 1 | 7.97 | 6.27 | 8.54 | 7.14 | 11.27 | 13.41 | |
| 2 | 7.82 | 6.05 | 8.55 | 7.16 | 11.21 | 13.21 | |
| 3 | 7.87 | 6.12 | 8.54 | 7.14 | 11.23 | 13.27 | |
| 4 | 7.83 | 6.07 | 8.65 | 7.33 | 11.27 | 13.40 | |
| 5 | 7.92 | 6.19 | 8.67 | 7.36 | 11.32 | 13.56 | |
| 6 | 7.92 | 6.19 | 8.35 | 6.84 | 11.15 | 13.03 | |
| 7 | 7.82 | 6.05 | 8.38 | 6.89 | 11.12 | 12.94 | |
| 8 | 7.73 | 5.93 | 8.45 | 7.00 | 11.12 | 12.93 | |
| 9 | 7.08 | 5.11 | 8.54 | 7.14 | 10.88 | 12.25 | |
| 10 | 7.59 | 5.74 | 8.37 | 6.87 | 11.01 | 12.61 | |
| 11 | 7.93 | 6.21 | 8.62 | 7.28 | 11.30 | 13.49 | |
| 12 | 7.97 | 6.27 | 8.55 | 7.16 | 11.28 | 13.43 | |
| 13 | 7.52 | 5.65 | 7.98 | 6.28 | 10.77 | 11.93 | |
| 14 | 8.06 | 6.40 | 9.00 | 7.94 | 11.57 | 14.34 | * |
| 15 | 7.45 | 5.56 | 8.84 | 7.66 | 11.21 | 13.22 | |

*Worst MCS

All comparison were carried out on same frequency and measurement factors.

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 16, 2019 December 17, 2019
Temperature / Humidity 24 deg. C / 30 % RH 23 deg. C / 39 % RH
Engineer Takafumi Noguchi Takafumi Noguchi
Mode Tx 11ax-20 (OFDM)

| Antenna 1 + Antenna 2 | | | Conducted Power | | | | | e.i.r.p. | | | | | |
|-----------------------|-----------------------------|-----------------------------|-----------------|--------|-------|------|----------------|--------------------------|--------|---------|-------|---------|----------------|
| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 2412 | 73.45 | 89.95 | 22.13 | 163.40 | 26.99 | 500 | 4.86 | 9.01 | 31.14 | 1300.93 | 36.02 | 4000.00 | 4.88 |
| 2437 | 78.16 | 96.38 | 22.42 | 174.55 | 26.99 | 500 | 4.57 | 9.01 | 31.43 | 1389.66 | 36.02 | 4000.00 | 4.59 |
| 2462 | 79.80 | 100.23 | 22.55 | 180.03 | 26.99 | 500 | 4.44 | 9.01 | 31.56 | 1433.33 | 36.02 | 4000.00 | 4.46 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 8.17 | 0.50 | 9.99 | 18.66 | 73.45 |
| 2437 | 8.44 | 0.50 | 9.99 | 18.93 | 78.16 |
| 2462 | 8.53 | 0.50 | 9.99 | 19.02 | 79.80 |

Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|--------|
| | | | | [dBm] | [mW] |
| 2412 | 9.31 | 0.50 | 9.73 | 19.54 | 89.95 |
| 2437 | 9.61 | 0.50 | 9.73 | 19.84 | 96.38 |
| 2462 | 9.78 | 0.50 | 9.73 | 20.01 | 100.23 |

Sample Calculation:

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

2412MHz

| Mode | MCS Number | Antenna 1 Reading Peak | | Antenna 2 Reading Peak | | Total Reading Power | | Remark |
|------|---------------|---------------------------|------|---------------------------|-------|------------------------|-------|--------|
| | | [dBm] | [mW] | [dBm] | [mW] | [dBm] | [mW] | |
| 1TX | 0 | 7.90 | 6.17 | 8.60 | 7.24 | 11.27 | 13.41 | |
| | 1 | 8.66 | 7.35 | 8.93 | 7.82 | 11.81 | 15.16 | |
| | 2 | 8.37 | 6.87 | 8.89 | 7.74 | 11.65 | 14.62 | |
| | 3 | 8.14 | 6.52 | 8.80 | 7.59 | 11.49 | 14.10 | |
| | 4 | 8.05 | 6.38 | 8.95 | 7.85 | 11.53 | 14.23 | |
| | 5 | 8.30 | 6.76 | 8.94 | 7.83 | 11.64 | 14.60 | |
| | 6 | 8.76 | 7.52 | 9.38 | 8.67 | 12.09 | 16.19 | * |
| | 7 | 8.32 | 6.79 | 9.14 | 8.20 | 11.76 | 15.00 | |
| | 8 | 8.32 | 6.79 | 8.90 | 7.76 | 11.63 | 14.55 | |
| | 9 | 7.93 | 6.21 | 8.90 | 7.76 | 11.45 | 13.97 | |
| | 10 | 8.00 | 6.31 | 8.82 | 7.62 | 11.44 | 13.93 | |
| 2TX | 0 | 7.90 | 6.17 | 9.19 | 8.30 | 11.60 | 14.46 | |
| | 1 | 9.44 | 8.79 | 8.59 | 7.23 | 12.05 | 16.02 | |
| | 2 | 7.60 | 5.75 | 8.88 | 7.73 | 11.30 | 13.48 | |
| | 3 | 7.98 | 6.28 | 9.20 | 8.32 | 11.64 | 14.60 | |
| | 4 | 7.64 | 5.81 | 8.65 | 7.33 | 11.18 | 13.14 | |
| | 5 | 7.74 | 5.94 | 8.68 | 7.38 | 11.25 | 13.32 | |
| | 6 | 8.19 | 6.59 | 9.01 | 7.96 | 11.63 | 14.55 | |
| | 7 | 8.08 | 6.43 | 8.86 | 7.69 | 11.50 | 14.12 | |
| | 8 | 7.98 | 6.28 | 8.71 | 7.43 | 11.37 | 13.71 | |
| | 9 | 8.20 | 6.61 | 8.77 | 7.53 | 11.50 | 14.14 | |
| | 10 | 8.31 | 6.78 | 8.90 | 7.76 | 11.63 | 14.54 | |
| 11 | 8.97 | 7.89 | 9.04 | 8.02 | 12.02 | 15.91 | | |

*Worst MCS

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 7, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (26-tone RU)

| Antenna 1 + Antenna 2 | | Conducted Power | | | | | | | | e.i.r.p. | | | | | |
|-----------------------|------------|-----------------|-----------------------------|-----------------------------|--------|-------|-------|------|----------------|--------------------------|--------|--------|-------|---------|----------------|
| Freq. [MHz] | RU Type | RU Index | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | | | |
| 2412 | 26-tone RU | 0 | 7.53 | 8.11 | 11.94 | 15.64 | 26.99 | 500 | 15.05 | 9.01 | 20.95 | 124.54 | 36.02 | 4000.00 | 15.07 |
| | | 4 | 7.94 | 7.98 | 12.02 | 15.92 | 26.99 | 500 | 14.97 | 9.01 | 21.03 | 126.77 | 36.02 | 4001.00 | 14.99 |
| | | 8 | 7.48 | 7.53 | 11.77 | 15.02 | 26.99 | 500 | 15.22 | 9.01 | 20.78 | 119.55 | 36.02 | 4002.00 | 15.25 |
| 2437 | | 0 | 7.28 | 7.33 | 11.65 | 14.61 | 26.99 | 500 | 15.34 | 9.01 | 20.66 | 116.29 | 36.02 | 4000.00 | 15.37 |
| | | 4 | 6.10 | 7.05 | 11.19 | 13.14 | 26.99 | 500 | 15.80 | 9.01 | 20.20 | 104.63 | 36.02 | 4001.00 | 15.82 |
| | | 8 | 6.15 | 7.98 | 11.50 | 14.13 | 26.99 | 500 | 15.49 | 9.01 | 20.51 | 112.51 | 36.02 | 4002.00 | 15.51 |
| 2462 | | 0 | 7.62 | 8.63 | 12.11 | 16.25 | 26.99 | 500 | 14.88 | 9.01 | 21.12 | 129.38 | 36.02 | 4000.00 | 14.90 |
| | | 4 | 8.34 | 8.39 | 12.24 | 16.73 | 26.99 | 500 | 14.75 | 9.01 | 21.25 | 133.21 | 36.02 | 4001.00 | 14.78 |
| | | 8 | 7.91 | 7.93 | 12.00 | 15.83 | 26.99 | 500 | 14.99 | 9.01 | 21.01 | 126.05 | 36.02 | 4002.00 | 15.02 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

| Antenna 1 | | | | | | | |
|----------------|------------|----------|------------------|-----------------------|------------------------|--------|------|
| Freq. [MHz] | RU Type | RU Index | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
| | | | | | | [dBm] | [mW] |
| 2412 | 26-tone RU | 0 | -5.78 | 4.82 | 9.73 | 8.77 | 7.53 |
| | | 4 | -5.55 | 4.82 | 9.73 | 9.00 | 7.94 |
| | | 8 | -5.81 | 4.82 | 9.73 | 8.74 | 7.48 |
| 2437 | | 0 | -5.93 | 4.82 | 9.73 | 8.62 | 7.28 |
| | | 4 | -6.70 | 4.82 | 9.73 | 7.85 | 6.10 |
| | | 8 | -6.66 | 4.82 | 9.73 | 7.89 | 6.15 |
| 2462 | | 0 | -5.72 | 4.81 | 9.73 | 8.82 | 7.62 |
| | | 4 | -5.33 | 4.81 | 9.73 | 9.21 | 8.34 |
| | | 8 | -5.56 | 4.81 | 9.73 | 8.98 | 7.91 |

| Antenna 2 | | | | | | | |
|----------------|------------|----------|------------------|-----------------------|------------------------|--------|------|
| Freq. [MHz] | RU Type | RU Index | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
| | | | | | | [dBm] | [mW] |
| 2412 | 26-tone RU | 0 | -5.46 | 4.82 | 9.73 | 9.09 | 8.11 |
| | | 4 | -5.53 | 4.82 | 9.73 | 9.02 | 7.98 |
| | | 8 | -5.78 | 4.82 | 9.73 | 8.77 | 7.53 |
| 2437 | | 0 | -5.90 | 4.82 | 9.73 | 8.65 | 7.33 |
| | | 4 | -6.07 | 4.82 | 9.73 | 8.48 | 7.05 |
| | | 8 | -5.53 | 4.82 | 9.73 | 9.02 | 7.98 |
| 2462 | | 0 | -5.18 | 4.81 | 9.73 | 9.36 | 8.63 |
| | | 4 | -5.30 | 4.81 | 9.73 | 9.24 | 8.39 |
| | | 8 | -5.55 | 4.81 | 9.73 | 8.99 | 7.93 |

Sample Calculation:

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

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 7, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (52-tone RU)

| Antenna 1 + Antenna 2 | | | Conducted Power | | | | | | | e.i.r.p. | | | | | |
|-----------------------|------------|----------|-----------------------------|-----------------------------|--------|-------|-------|------|----------------|--------------------------|--------|--------|-------|---------|----------------|
| Freq. [MHz] | RU Type | RU Index | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | | | |
| 2412 | 52-tone RU | 37 | 16.11 | 17.26 | 15.23 | 33.36 | 26.99 | 500 | 11.76 | 9.01 | 24.24 | 265.64 | 36.02 | 4000.00 | 11.78 |
| | | 38 | 19.91 | 20.42 | 16.06 | 40.32 | 26.99 | 500 | 10.93 | 9.01 | 25.07 | 321.04 | 36.02 | 4001.00 | 10.96 |
| | | 40 | 16.41 | 16.44 | 15.17 | 32.85 | 26.99 | 500 | 11.82 | 9.01 | 24.18 | 261.54 | 36.02 | 4002.00 | 11.85 |
| 2437 | | 37 | 14.06 | 15.21 | 14.66 | 29.27 | 26.99 | 500 | 12.33 | 9.01 | 23.67 | 233.00 | 36.02 | 4000.00 | 12.35 |
| | | 38 | 15.17 | 15.52 | 14.87 | 30.69 | 26.99 | 500 | 12.12 | 9.01 | 23.88 | 244.38 | 36.02 | 4001.00 | 12.14 |
| | | 40 | 13.06 | 17.06 | 14.79 | 30.12 | 26.99 | 500 | 12.20 | 9.01 | 23.80 | 239.82 | 36.02 | 4002.00 | 12.22 |
| 2462 | | 37 | 16.94 | 18.28 | 15.47 | 35.22 | 26.99 | 500 | 11.52 | 9.01 | 24.48 | 280.44 | 36.02 | 4000.00 | 11.54 |
| | | 38 | 19.86 | 19.91 | 16.00 | 39.77 | 26.99 | 500 | 10.99 | 9.01 | 25.01 | 316.61 | 36.02 | 4001.00 | 11.02 |
| | | 40 | 16.29 | 16.37 | 15.14 | 32.66 | 26.99 | 500 | 11.85 | 9.01 | 24.15 | 260.03 | 36.02 | 4002.00 | 11.87 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

| Antenna 1 | | | | | | | |
|----------------|------------|----------|------------------|-----------------------|------------------------|--------|-------|
| Freq. [MHz] | RU Type | RU Index | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
| | | | | | | [dBm] | [mW] |
| 2412 | 52-tone RU | 37 | -2.48 | 4.82 | 9.73 | 12.07 | 16.11 |
| | | 38 | -1.56 | 4.82 | 9.73 | 12.99 | 19.91 |
| | | 40 | -2.40 | 4.82 | 9.73 | 12.15 | 16.41 |
| 2437 | | 37 | -3.07 | 4.82 | 9.73 | 11.48 | 14.06 |
| | | 38 | -2.74 | 4.82 | 9.73 | 11.81 | 15.17 |
| | | 40 | -3.39 | 4.82 | 9.73 | 11.16 | 13.06 |
| 2462 | | 37 | -2.25 | 4.81 | 9.73 | 12.29 | 16.94 |
| | | 38 | -1.56 | 4.81 | 9.73 | 12.98 | 19.86 |
| | | 40 | -2.42 | 4.81 | 9.73 | 12.12 | 16.29 |

| Antenna 2 | | | | | | | |
|----------------|------------|----------|------------------|-----------------------|------------------------|--------|-------|
| Freq. [MHz] | RU Type | RU Index | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
| | | | | | | [dBm] | [mW] |
| 2412 | 52-tone RU | 37 | -2.18 | 4.82 | 9.73 | 12.37 | 17.26 |
| | | 38 | -1.45 | 4.82 | 9.73 | 13.10 | 20.42 |
| | | 40 | -2.39 | 4.82 | 9.73 | 12.16 | 16.44 |
| 2437 | | 37 | -2.73 | 4.82 | 9.73 | 11.82 | 15.21 |
| | | 38 | -2.64 | 4.82 | 9.73 | 11.91 | 15.52 |
| | | 40 | -2.23 | 4.82 | 9.73 | 12.32 | 17.06 |
| 2462 | | 37 | -1.92 | 4.81 | 9.73 | 12.62 | 18.28 |
| | | 38 | -1.55 | 4.81 | 9.73 | 12.99 | 19.91 |
| | | 40 | -2.40 | 4.81 | 9.73 | 12.14 | 16.37 |

Sample Calculation:

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

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date February 7, 2020
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (106-tone RU)

| Antenna 1 + Antenna 2 | | | | Conducted Power | | | | | | e.i.r.p. | | | | | |
|-----------------------|-------------|----------|-----------------------------|-----------------------------|--------|-------|-------|------|----------------|-------------------------|--------|--------|---------|---------|----------------|
| Freq. [MHz] | RU Type | RU Index | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dB] | Result | | Limit | | Margin [dB] |
| | | | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 2412 | 106-tone RU | 53 | 33.88 | 35.08 | 18.39 | 68.96 | 26.99 | 500 | 8.60 | 9.01 | 27.40 | 549.03 | 36.02 | 4000.00 | 8.62 |
| | | 54 | 31.99 | 31.99 | 18.06 | 63.98 | 26.99 | 500 | 8.93 | 9.01 | 27.07 | 509.37 | 36.02 | 4002.00 | 8.95 |
| 2437 | | 53 | 32.73 | 33.27 | 18.20 | 66.00 | 26.99 | 500 | 8.79 | 9.01 | 27.21 | 525.47 | 36.02 | 4000.00 | 8.82 |
| 54 | | 28.64 | 32.89 | 17.89 | 61.53 | 26.99 | 500 | 9.10 | 9.01 | 26.90 | 489.85 | 36.02 | 4002.00 | 9.12 | |
| 2462 | | 53 | 34.83 | 35.32 | 18.46 | 70.15 | 26.99 | 500 | 8.53 | 9.01 | 27.47 | 558.52 | 36.02 | 4000.00 | 8.55 |
| | | 54 | 33.42 | 34.59 | 18.33 | 68.01 | 26.99 | 500 | 8.66 | 9.01 | 27.34 | 541.50 | 36.02 | 4002.00 | 8.69 |

Sample Calculation:
Result = Antenna 1 + Antenna 2
e.i.r.p. Result = Conducted Power Result + Antenna Gain
*This Limit was reduced by the amount in dB (3.01 dB)
that the directional gain of the antenna/antenna array exceeding 6 dBi.

| Antenna 1 | | | | | | | |
|----------------|-------------|----------|------------------|-----------------------|------------------------|--------|-------|
| Freq. [MHz] | RU Type | RU Index | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
| | | | | | | [dBm] | [mW] |
| 2412 | 106-tone RU | 53 | 0.75 | 4.82 | 9.73 | 15.30 | 33.88 |
| | | 54 | 0.50 | 4.82 | 9.73 | 15.05 | 31.99 |
| 2437 | | 53 | 0.60 | 4.82 | 9.73 | 15.15 | 32.73 |
| 54 | | 0.02 | 4.82 | 9.73 | 14.57 | 28.64 | |
| 2462 | | 53 | 0.88 | 4.81 | 9.73 | 15.42 | 34.83 |
| | | 54 | 0.70 | 4.81 | 9.73 | 15.24 | 33.42 |

| Antenna 2 | | | | | | | |
|----------------|-------------|----------|------------------|-----------------------|------------------------|--------|-------|
| Freq. [MHz] | RU Type | RU Index | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
| | | | | | | [dBm] | [mW] |
| 2412 | 106-tone RU | 53 | 0.90 | 4.82 | 9.73 | 15.45 | 35.08 |
| | | 54 | 0.50 | 4.82 | 9.73 | 15.05 | 31.99 |
| 2437 | | 53 | 0.67 | 4.82 | 9.73 | 15.22 | 33.27 |
| 54 | | 0.62 | 4.82 | 9.73 | 15.17 | 32.89 | |
| 2462 | | 53 | 0.94 | 4.81 | 9.73 | 15.48 | 35.32 |
| | | 54 | 0.85 | 4.81 | 9.73 | 15.39 | 34.59 |

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

The worst antenna gain was applied for e.i.r.p.

Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date March 28, 2020
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (242-tone RU)

| Antenna 1 + Antenna 2 | | | Conducted Power | | | | | e.i.r.p. | | | | | |
|-----------------------|-----------------------------|-----------------------------|-----------------|--------|-------|------|----------------|--------------------------|--------|---------|-------|---------|----------------|
| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | | | |
| 2412 | 73.45 | 73.79 | 21.68 | 147.24 | 26.99 | 500 | 5.31 | 9.01 | 30.69 | 1172.28 | 36.02 | 4000.00 | 5.33 |
| 2437 | 65.16 | 75.16 | 21.47 | 140.33 | 26.99 | 500 | 5.52 | 9.01 | 30.48 | 1117.21 | 36.02 | 4000.00 | 5.54 |
| 2462 | 74.82 | 76.91 | 21.81 | 151.73 | 26.99 | 500 | 5.18 | 9.01 | 30.82 | 1208.01 | 36.02 | 4000.00 | 5.20 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

e.i.r.p. Result = Conducted Power Result + Antenna Gain

*This Limit was reduced by the amount in dB (3.01 dB)

that the directional gain of the antenna/antenna array exceeding 6 dBi.

Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 4.11 | 4.82 | 9.73 | 18.66 | 73.45 |
| 2437 | 3.59 | 4.82 | 9.73 | 18.14 | 65.16 |
| 2462 | 4.20 | 4.81 | 9.73 | 18.74 | 74.82 |

Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | |
|----------------|------------------|-----------------------|------------------------|--------|-------|
| | | | | [dBm] | [mW] |
| 2412 | 4.13 | 4.82 | 9.73 | 18.68 | 73.79 |
| 2437 | 4.21 | 4.82 | 9.73 | 18.76 | 75.16 |
| 2462 | 4.32 | 4.81 | 9.73 | 18.86 | 76.91 |

Sample Calculation:

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

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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Maximum Peak Output Power

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE

| BT1 | | | | | Conducted Power | | | | | e.i.r.p. for RSS-247 | | | | | |
|--------|----------------|------------------|-----------------------|------------------------|-----------------|------|-------|------|----------------|--------------------------|--------|------|-------|------|----------------|
| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 1M-PHY | 2402.0 | -8.73 | 0.50 | 9.73 | 1.50 | 1.41 | 20.96 | 125 | 19.46 | 5.80 | 7.30 | 5.37 | 36.02 | 4000 | 28.72 |
| | 2440.0 | -8.72 | 0.50 | 9.73 | 1.51 | 1.42 | 20.96 | 125 | 19.45 | 5.80 | 7.31 | 5.38 | 36.02 | 4000 | 28.71 |
| | 2480.0 | -8.74 | 0.50 | 9.73 | 1.49 | 1.41 | 20.96 | 125 | 19.47 | 5.80 | 7.29 | 5.36 | 36.02 | 4000 | 28.73 |
| 2M-PHY | 2402.0 | -8.70 | 0.50 | 9.73 | 1.53 | 1.42 | 20.96 | 125 | 19.43 | 5.80 | 7.33 | 5.41 | 36.02 | 4000 | 28.69 |
| | 2440.0 | -8.69 | 0.50 | 9.73 | 1.54 | 1.43 | 20.96 | 125 | 19.42 | 5.80 | 7.34 | 5.42 | 36.02 | 4000 | 28.68 |
| | 2480.0 | -8.71 | 0.50 | 9.73 | 1.52 | 1.42 | 20.96 | 125 | 19.44 | 5.80 | 7.32 | 5.40 | 36.02 | 4000 | 28.70 |

| BT2 | | | | | Conducted Power | | | | | e.i.r.p. for RSS-247 | | | | | |
|--------|----------------|------------------|-----------------------|------------------------|-----------------|------|-------|------|----------------|--------------------------|--------|------|-------|------|----------------|
| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result | | Limit | | Margin [dB] | Antenna Gain [dBi] | Result | | Limit | | Margin [dB] |
| | | | | | [dBm] | [mW] | [dBm] | [mW] | | | [dBm] | [mW] | [dBm] | [mW] | |
| 1M-PHY | 2402.0 | -8.38 | 0.50 | 9.99 | 2.11 | 1.63 | 20.96 | 125 | 18.85 | 5.80 | 7.91 | 6.18 | 36.02 | 4000 | 28.11 |
| | 2440.0 | -8.44 | 0.50 | 9.99 | 2.05 | 1.60 | 20.96 | 125 | 18.91 | 5.80 | 7.85 | 6.10 | 36.02 | 4000 | 28.17 |
| | 2480.0 | -8.57 | 0.50 | 9.99 | 1.92 | 1.56 | 20.96 | 125 | 19.04 | 5.80 | 7.72 | 5.92 | 36.02 | 4000 | 28.30 |
| 2M-PHY | 2402.0 | -8.35 | 0.50 | 9.99 | 2.14 | 1.64 | 20.96 | 125 | 18.82 | 5.80 | 7.94 | 6.22 | 36.02 | 4000 | 28.08 |
| | 2440.0 | -8.42 | 0.50 | 9.99 | 2.07 | 1.61 | 20.96 | 125 | 18.89 | 5.80 | 7.87 | 6.12 | 36.02 | 4000 | 28.15 |
| | 2480.0 | -8.55 | 0.50 | 9.99 | 1.94 | 1.56 | 20.96 | 125 | 19.02 | 5.80 | 7.74 | 5.94 | 36.02 | 4000 | 28.28 |

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.

The worst antenna gain was applied for e.i.r.p.

UL Japan, Inc.

Ise EMC Lab.

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Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11b

Antenna 1 + Antenna 2

| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result (Burst average) | |
|----------------|-----------------------------|-----------------------------|---------------------------|-------|
| | | | [dBm] | [mW] |
| 2412 | 4.38 | 5.27 | 9.84 | 9.65 |
| 2437 | 4.55 | 5.61 | 10.07 | 10.16 |
| 2462 | 4.67 | 5.65 | 10.14 | 10.32 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

11b 1 Mbps Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2412 | -4.08 | 0.50 | 9.99 | 6.41 | 4.38 | 0.00 | 6.41 | 4.38 |
| 2437 | -3.91 | 0.50 | 9.99 | 6.58 | 4.55 | 0.00 | 6.58 | 4.55 |
| 2462 | -3.80 | 0.50 | 9.99 | 6.69 | 4.67 | 0.00 | 6.69 | 4.67 |

11b 1 Mbps Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2412 | -3.01 | 0.50 | 9.73 | 7.22 | 5.27 | 0.00 | 7.22 | 5.27 |
| 2437 | -2.74 | 0.50 | 9.73 | 7.49 | 5.61 | 0.00 | 7.49 | 5.61 |
| 2462 | -2.71 | 0.50 | 9.73 | 7.52 | 5.65 | 0.00 | 7.52 | 5.65 |

Sample Calculation:

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

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11g

Antenna 1 + Antenna 2

| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result (Burst average) | |
|----------------|-----------------------------|-----------------------------|---------------------------|-------|
| | | | [dBm] | [mW] |
| 2412 | 4.66 | 6.03 | 10.29 | 10.68 |
| 2437 | 4.93 | 6.37 | 10.53 | 11.30 |
| 2462 | 5.01 | 6.38 | 10.57 | 11.39 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

11g 6 Mbps Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2412 | -3.83 | 0.50 | 9.99 | 6.66 | 4.63 | 0.02 | 6.68 | 4.66 |
| 2437 | -3.58 | 0.50 | 9.99 | 6.91 | 4.91 | 0.02 | 6.93 | 4.93 |
| 2462 | -3.51 | 0.50 | 9.99 | 6.98 | 4.99 | 0.02 | 7.00 | 5.01 |

11g 6 Mbps Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2412 | -2.45 | 0.50 | 9.73 | 7.78 | 6.00 | 0.02 | 7.80 | 6.03 |
| 2437 | -2.21 | 0.50 | 9.73 | 8.02 | 6.34 | 0.02 | 8.04 | 6.37 |
| 2462 | -2.20 | 0.50 | 9.73 | 8.03 | 6.35 | 0.02 | 8.05 | 6.38 |

Sample Calculation:

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

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11n-20

Antenna 1 + Antenna 2

| Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result (Burst average) | |
|----------------|-----------------------------|-----------------------------|---------------------------|-------|
| | | | [dBm] | [mW] |
| 2412 | 4.67 | 6.04 | 10.30 | 10.71 |
| 2437 | 4.95 | 6.37 | 10.54 | 11.32 |
| 2462 | 5.02 | 6.43 | 10.59 | 11.45 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

11n-20 MCS 0 Antenna 1

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2412 | -3.83 | 0.50 | 9.99 | 6.66 | 4.63 | 0.03 | 6.69 | 4.67 |
| 2437 | -3.57 | 0.50 | 9.99 | 6.92 | 4.92 | 0.03 | 6.95 | 4.95 |
| 2462 | -3.51 | 0.50 | 9.99 | 6.98 | 4.99 | 0.03 | 7.01 | 5.02 |

11n-20 MCS 0 Antenna 2

| Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 2412 | -2.45 | 0.50 | 9.73 | 7.78 | 6.00 | 0.03 | 7.81 | 6.04 |
| 2437 | -2.22 | 0.50 | 9.73 | 8.01 | 6.32 | 0.03 | 8.04 | 6.37 |
| 2462 | -2.18 | 0.50 | 9.73 | 8.05 | 6.38 | 0.03 | 8.08 | 6.43 |

Sample Calculation:

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

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

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (OFDM)

Antenna 1 + Antenna 2

| Mode | Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result (Burst average) | |
|------|----------------|-----------------------------|-----------------------------|---------------------------|-------|
| | | | | [dBm] | [mW] |
| 1TX | 2412 | 4.95 | 6.41 | 10.56 | 11.37 |
| | 2437 | 5.14 | 6.70 | 10.73 | 11.84 |
| | 2462 | 5.24 | 6.71 | 10.77 | 11.95 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

11ax-20 MCS 0 Antenna 1

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|------|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 1TX | 2412 | -3.57 | 0.50 | 9.99 | 6.92 | 4.92 | 0.03 | 6.95 | 4.95 |
| | 2437 | -3.41 | 0.50 | 9.99 | 7.08 | 5.11 | 0.03 | 7.11 | 5.14 |
| | 2462 | -3.33 | 0.50 | 9.99 | 7.16 | 5.20 | 0.03 | 7.19 | 5.24 |

11ax-20 MCS 0 Antenna 2

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|------|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 1TX | 2412 | -2.19 | 0.50 | 9.73 | 8.04 | 6.37 | 0.03 | 8.07 | 6.41 |
| | 2437 | -2.00 | 0.50 | 9.73 | 8.23 | 6.65 | 0.03 | 8.26 | 6.70 |
| | 2462 | -1.99 | 0.50 | 9.73 | 8.24 | 6.67 | 0.03 | 8.27 | 6.71 |

Sample Calculation:

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

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

*) The test on 11ax-20 was performed on OFDM / OFDMA(242-tone RU) was the worst condition.

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date March 28, 2020
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Takafumi Noguchi
Mode Tx 11ax-20 (242-tone RU)

Antenna 1 + Antenna 2

| Mode | Freq. [MHz] | Antenna 1 Result [mW] | Antenna 2 Result [mW] | Result (Burst average) | |
|------|----------------|-----------------------------|-----------------------------|---------------------------|-------|
| | | | | [dBm] | [mW] |
| 1TX | 2412 | 5.36 | 5.40 | 10.32 | 10.75 |
| | 2437 | 4.48 | 5.32 | 9.91 | 9.80 |
| | 2462 | 5.52 | 5.52 | 10.43 | 11.04 |

Sample Calculation:

Result = Antenna 1 + Antenna 2

11ax-20 MCS 0 Antenna 1

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|------|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 1TX | 2412 | -7.77 | 4.82 | 9.73 | 6.78 | 4.76 | 0.51 | 7.29 | 5.36 |
| | 2437 | -8.55 | 4.82 | 9.73 | 6.00 | 3.98 | 0.51 | 6.51 | 4.48 |
| | 2462 | -7.63 | 4.81 | 9.73 | 6.91 | 4.91 | 0.51 | 7.42 | 5.52 |

11ax-20 MCS 0 Antenna 2

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | | Duty factor [dB] | Result (Burst power average) | |
|------|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
| | | | | | [dBm] | [mW] | | [dBm] | [mW] |
| 1TX | 2412 | -7.74 | 4.82 | 9.73 | 6.81 | 4.80 | 0.51 | 7.32 | 5.40 |
| | 2437 | -7.80 | 4.82 | 9.73 | 6.75 | 4.73 | 0.51 | 7.26 | 5.32 |
| | 2462 | -7.63 | 4.81 | 9.73 | 6.91 | 4.91 | 0.51 | 7.42 | 5.52 |

Sample Calculation:

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

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

*) The test on 11ax-20 was performed on OFDM / OFDMA(242-tone RU) was the worst condition.

The average output power was measured with the lowest order modulation and lowest data rate configuration in each IEEE 802.11 mode based on KDB 248227 D01.

Average Output Power
(Reference data for RF Exposure)

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 19, 2019
Temperature / Humidity 24 deg. C / 32 % RH
Engineer Takafumi Noguchi
Mode Tx BT LE

BT1

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | |
|--------|----------------|------------------|-----------------------|------------------------|--------------------------|------|
| | | | | | [dBm] | [mW] |
| 1M-PHY | 2402.0 | -11.14 | 0.50 | 9.73 | -0.91 | 0.81 |
| | 2440.0 | -11.13 | 0.50 | 9.73 | -0.90 | 0.81 |
| | 2480.0 | -11.15 | 0.50 | 9.73 | -0.92 | 0.81 |
| 2M-PHY | 2402.0 | -13.93 | 0.50 | 9.73 | -3.70 | 0.43 |
| | 2440.0 | -13.92 | 0.50 | 9.73 | -3.69 | 0.43 |
| | 2480.0 | -13.94 | 0.50 | 9.73 | -3.71 | 0.43 |

BT2

| Mode | Freq. [MHz] | Reading [dBm] | Cable Loss [dB] | Atten. Loss [dB] | Result (Time average) | |
|--------|----------------|------------------|-----------------------|------------------------|--------------------------|------|
| | | | | | [dBm] | [mW] |
| 1M-PHY | 2402.0 | -10.71 | 0.50 | 9.99 | -0.22 | 0.95 |
| | 2440.0 | -10.79 | 0.50 | 9.99 | -0.30 | 0.93 |
| | 2480.0 | -10.92 | 0.50 | 9.99 | -0.43 | 0.91 |
| 2M-PHY | 2402.0 | -13.49 | 0.50 | 9.99 | -3.00 | 0.50 |
| | 2440.0 | -13.58 | 0.50 | 9.99 | -3.09 | 0.49 |
| | 2480.0 | -13.71 | 0.50 | 9.99 | -3.22 | 0.48 |

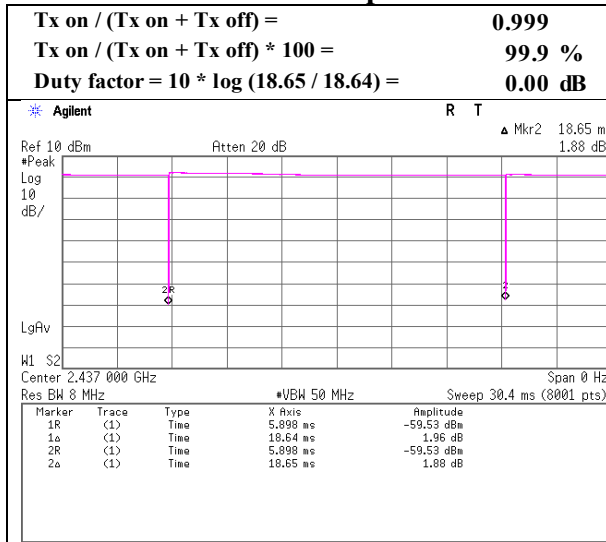
Sample Calculation:

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

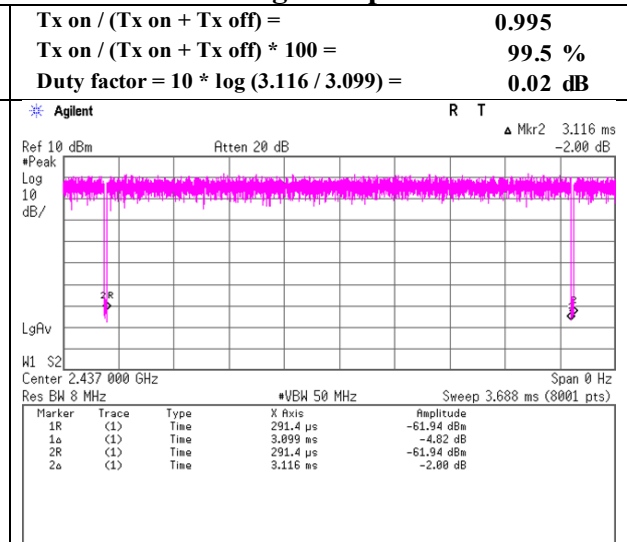
Burst rate confirmation

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx

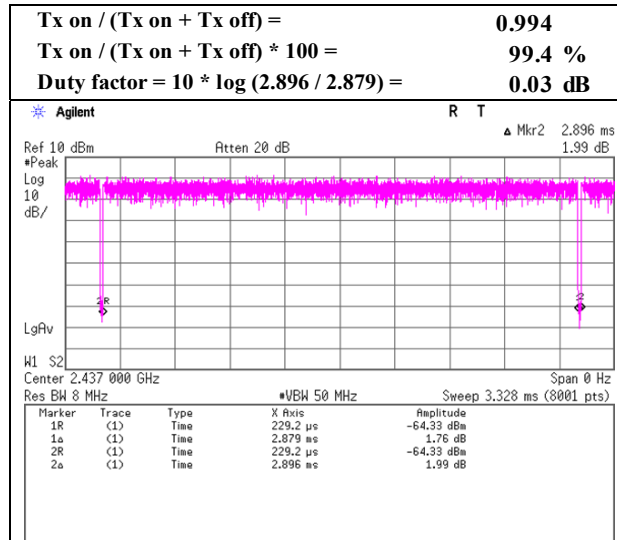
11b 1 Mbps



11g 6 Mbps



11n-20 MCS 0

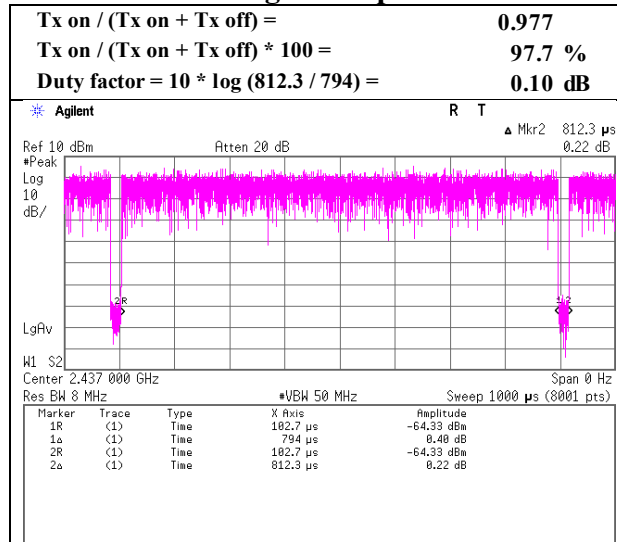


* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

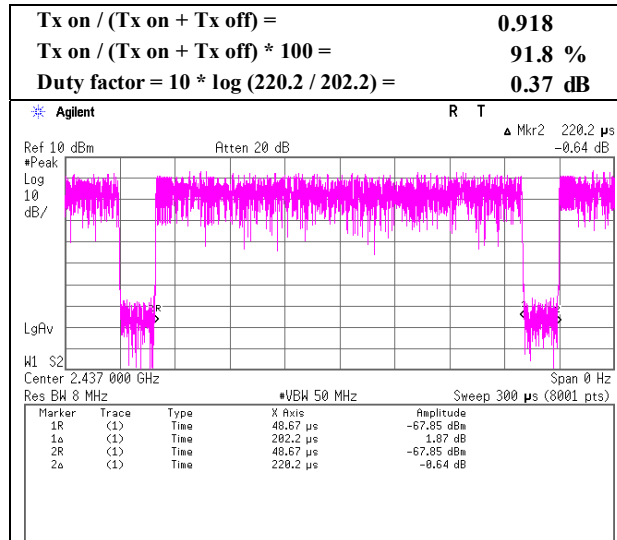
Burst rate confirmation

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date December 17, 2019
Temperature / Humidity 23 deg. C / 39 % RH
Engineer Takafumi Noguchi
Mode Tx

11g 24 Mbps



11n-20 MCS 14



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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Telephone : +81 596 24 8999

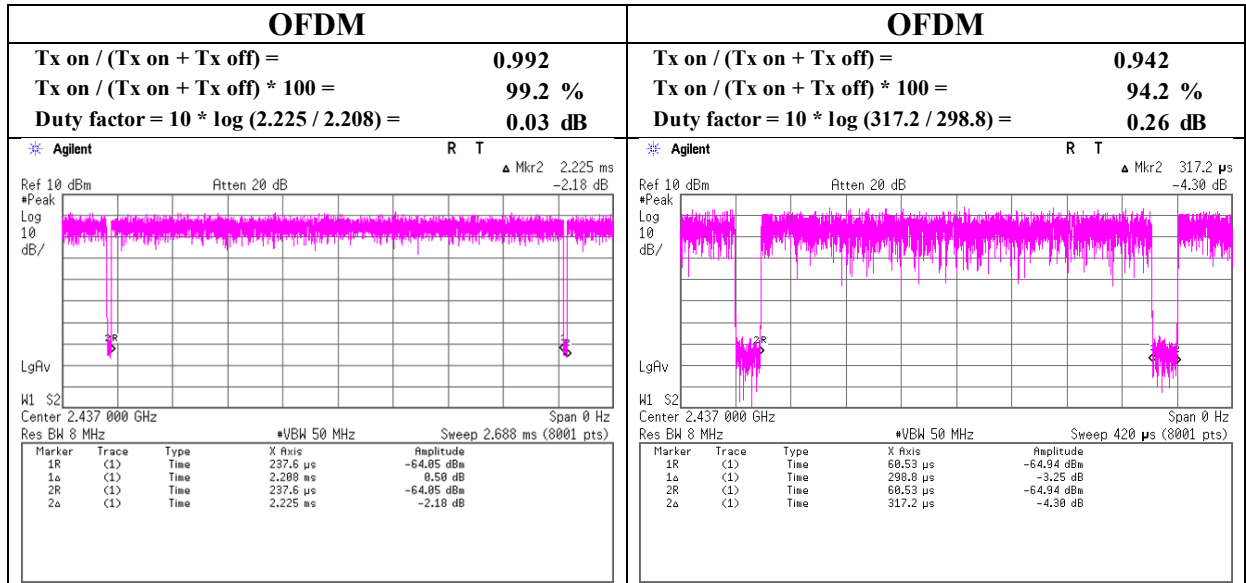
Facsimile : +81 596 24 8124

Burst rate confirmation

Report No. 13170804H
 Test place Ise EMC Lab. No.3 Measurement Room
 Date December 17, 2019
 Temperature / Humidity 23 deg. C / 39 % RH
 Engineer Takafumi Noguchi
 Mode Tx

11ax-20 MCS 0

11ax-20 MCS 6



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Report No. 13170804H
 Test place Ise EMC Lab. No.3 Measurement Room
 Date February 27, 2020
 Temperature / Humidity 20 deg. C / 30 % RH
 Engineer Takafumi Noguchi
 Mode Tx

11ax-20 MCS 6

11ax-20 MCS 6



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

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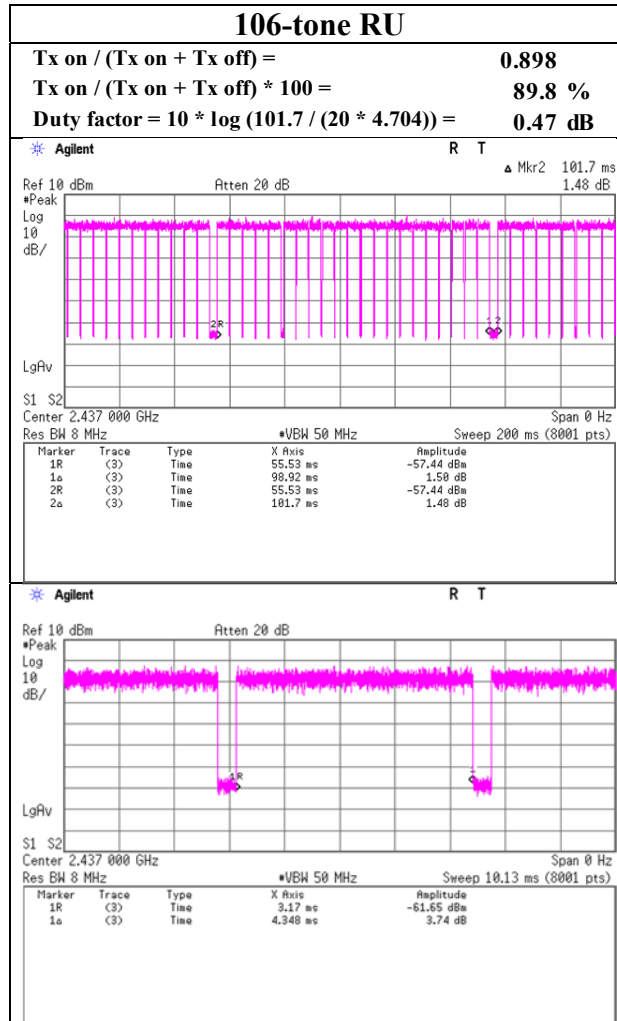
Facsimile : +81 596 24 8124

Burst rate confirmation

Report No. 13170804H
 Test place Ise EMC Lab. No.3 Measurement Room
 Date February 27, 2020
 Temperature / Humidity 20 deg. C / 30 % RH
 Engineer Takafumi Noguchi
 Mode Tx

11ax-20 MCS 6

106-tone RU



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

Burst rate confirmation

Report No. 13170804H
Test place Ise EMC Lab. No.3 Measurement Room
Date March 28, 2020
Temperature / Humidity 24 deg. C / 51 % RH
Engineer Takafumi Noguchi
Mode Tx

11ax-20 MCS 0

11ax-20 MCS 6

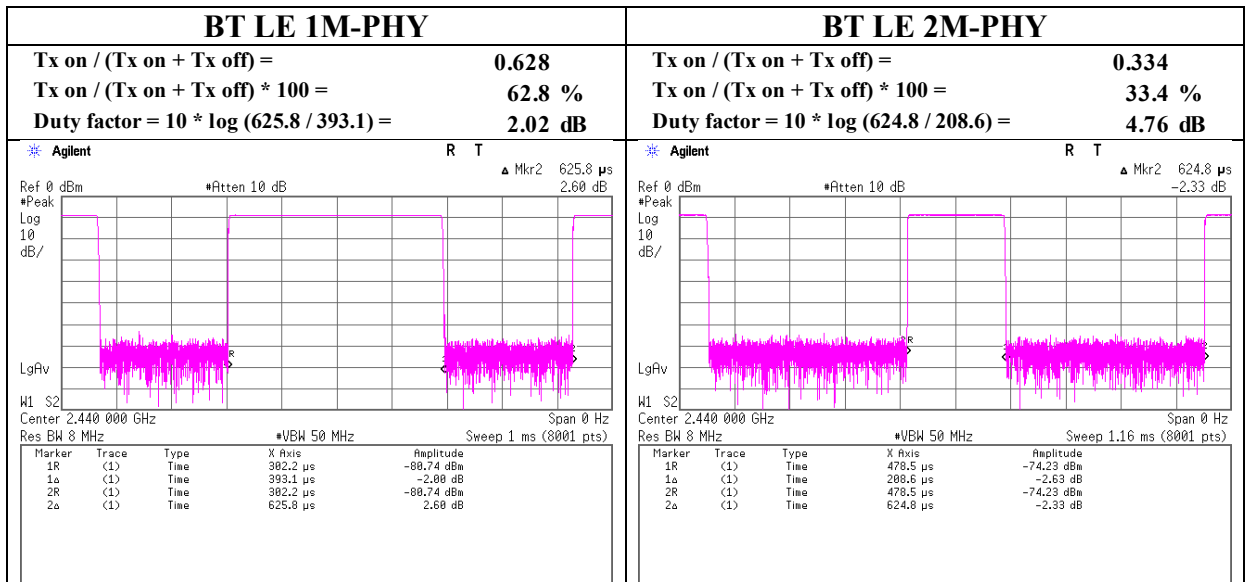


* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

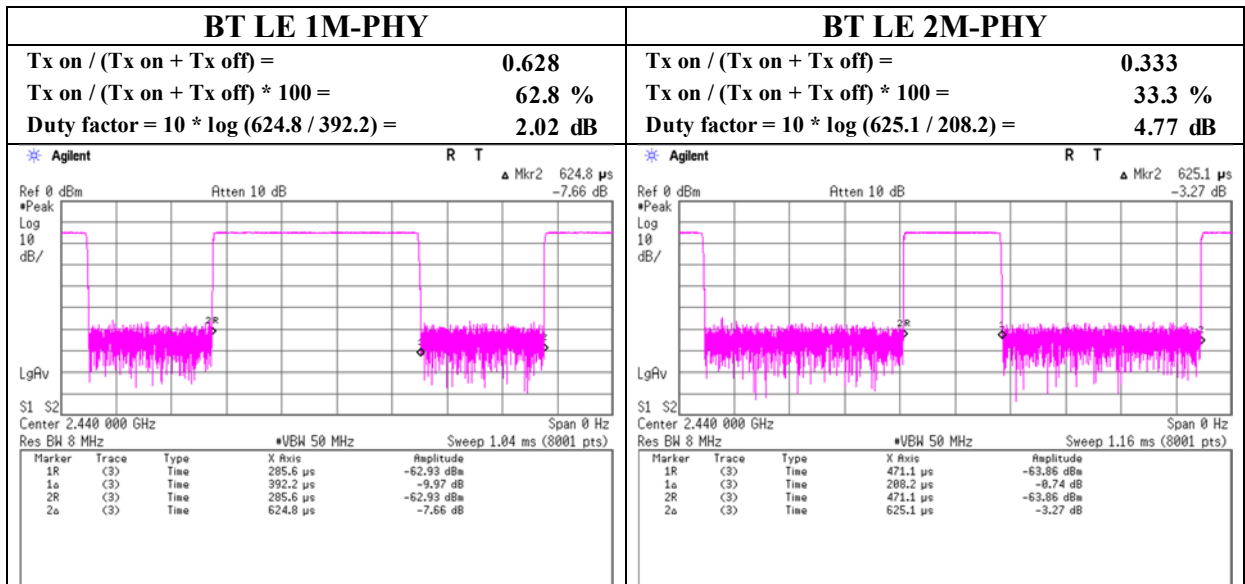
Burst rate confirmation

| | | |
|------------------------|------------------------------------|---------------------|
| Report No. | 13170804H | |
| Test place | Ise EMC Lab. No.3 Measurement Room | |
| Date | December 19, 2019 | December 24, 2019 |
| Temperature / Humidity | 24 deg. C / 32 % RH | 21 deg. C / 41 % RH |
| Engineer | Takafumi Noguchi | Yuta Moriya |
| Mode | Tx BT LE | |

BT1



BT2



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel.

UL Japan, Inc.

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Facsimile : +81 596 24 8124

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 19, 2019 No.3 January 9, 2020 No.3 January 9, 2020
Temperature / Humidity 23 deg. C / 40 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11b 2412 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 2390.000 | PK | 43.9 | 27.7 | 5.4 | 32.8 | - | 44.2 | 73.9 | 29.7 | |
| Hori. | 4824.000 | PK | 39.7 | 31.6 | 7.5 | 31.8 | - | 46.9 | 73.9 | 27.0 | Floor noise |
| Hori. | 7236.000 | PK | 41.2 | 36.0 | 8.9 | 32.7 | - | 53.5 | 73.9 | 20.5 | Floor noise |
| Hori. | 9648.000 | PK | 40.6 | 38.6 | 9.4 | 33.3 | - | 55.3 | 73.9 | 18.6 | Floor noise |
| Hori. | 2390.000 | AV | 34.5 | 27.7 | 5.4 | 32.8 | - | 34.8 | 53.9 | 19.1 | |
| Hori. | 4824.000 | AV | 32.2 | 31.6 | 7.5 | 31.8 | - | 39.5 | 53.9 | 14.4 | Floor noise |
| Hori. | 7236.000 | AV | 31.8 | 36.0 | 8.9 | 32.7 | - | 44.1 | 53.9 | 9.8 | Floor noise |
| Hori. | 9648.000 | AV | 32.9 | 38.6 | 9.4 | 33.3 | - | 47.5 | 53.9 | 6.4 | Floor noise |
| Vert. | 2390.000 | PK | 46.7 | 27.7 | 5.4 | 32.8 | - | 47.1 | 73.9 | 26.8 | |
| Vert. | 4824.000 | PK | 39.9 | 31.6 | 7.5 | 31.8 | - | 47.1 | 73.9 | 26.8 | Floor noise |
| Vert. | 7236.000 | PK | 41.3 | 36.0 | 8.9 | 32.7 | - | 53.5 | 73.9 | 20.4 | Floor noise |
| Vert. | 9648.000 | PK | 40.8 | 38.6 | 9.4 | 33.3 | - | 55.4 | 73.9 | 18.5 | Floor noise |
| Vert. | 2390.000 | AV | 34.7 | 27.7 | 5.4 | 32.8 | - | 35.0 | 53.9 | 18.9 | |
| Vert. | 4824.000 | AV | 32.1 | 31.6 | 7.5 | 31.8 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Vert. | 7236.000 | AV | 31.9 | 36.0 | 8.9 | 32.7 | - | 44.1 | 53.9 | 9.8 | Floor noise |
| Vert. | 9648.000 | AV | 32.9 | 38.6 | 9.4 | 33.3 | - | 47.5 | 53.9 | 6.4 | 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).

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

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. | 2412.000 | PK | 94.3 | 27.6 | 5.4 | 32.7 | 94.6 | - | - | Carrier |
| Hori. | 2400.000 | PK | 37.4 | 27.7 | 5.4 | 32.7 | 37.8 | 74.6 | 36.9 | |
| Vert. | 2412.000 | PK | 95.4 | 27.6 | 5.4 | 32.7 | 95.7 | - | - | Carrier |
| Vert. | 2400.000 | PK | 37.4 | 27.7 | 5.4 | 32.7 | 37.7 | 75.7 | 38.0 | |

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

UL Japan, Inc.

Ise EMC Lab.

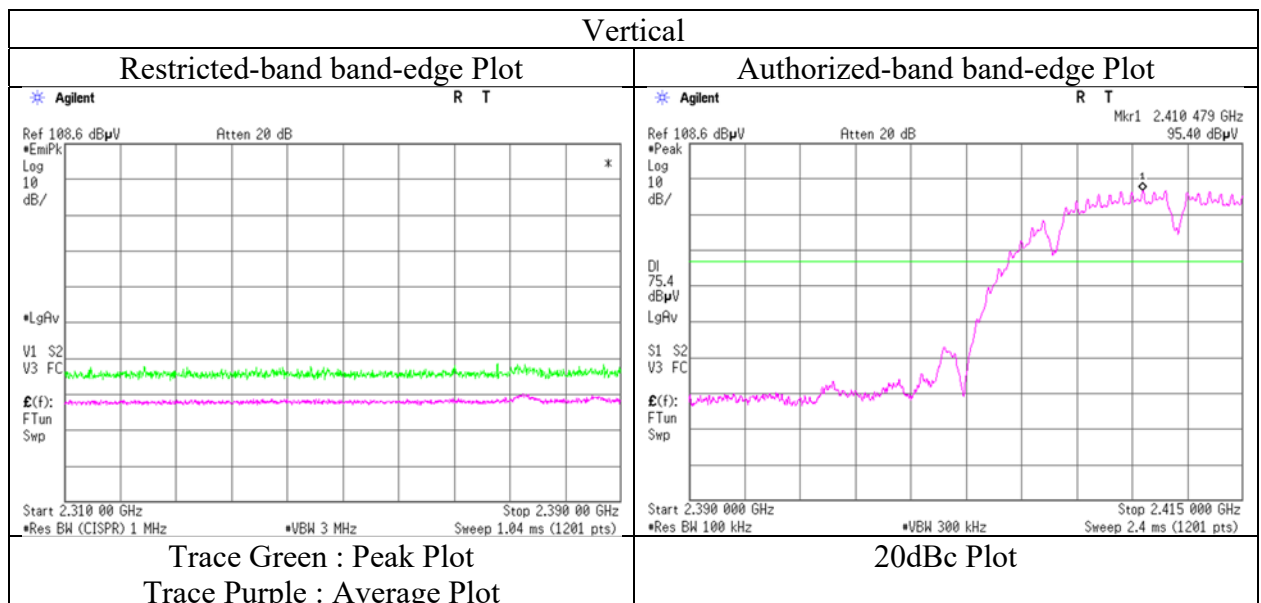
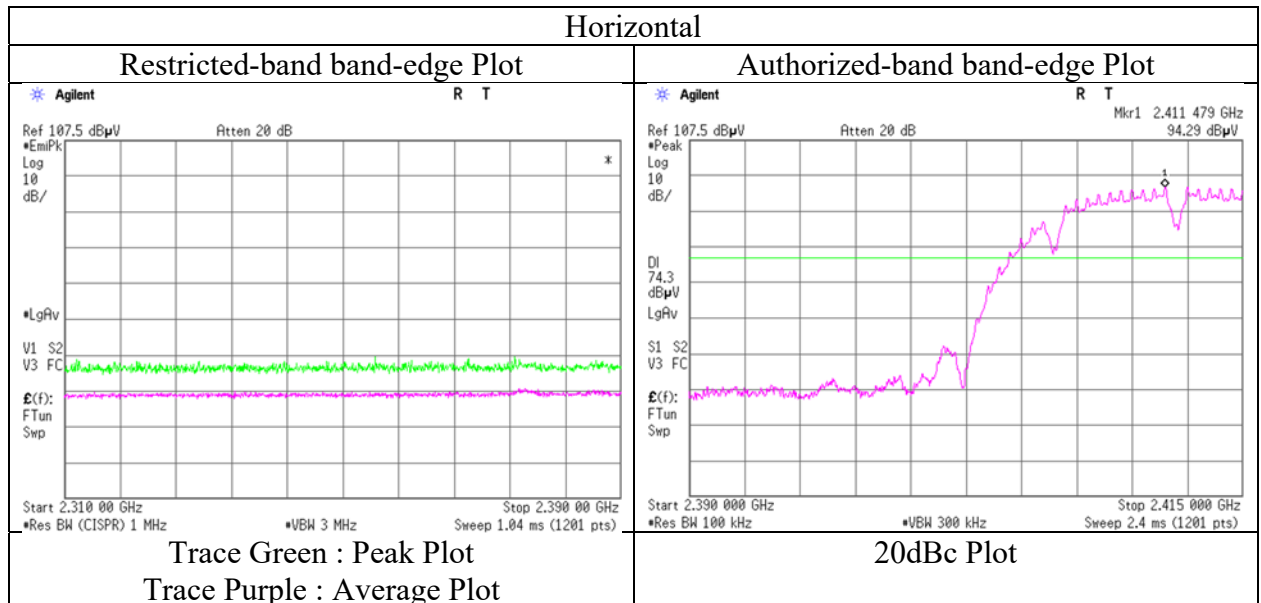
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

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Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

| | |
|------------------------|---------------------|
| Report No. | 13170804H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | December 19, 2019 |
| Temperature / Humidity | 23 deg. C / 40 % RH |
| Engineer | Yuta Moriya |
| | (1 GHz - 10 GHz) |
| Mode | Tx 11b 2412 MHz |



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

| | | | |
|------------------------|---------------------------------|--|---------------------------------------|
| Report No. | 13170804H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | December 19, 2019 | January 9, 2020 | January 9, 2020 |
| Temperature / Humidity | 23 deg. C / 40 % RH | 23 deg. C / 35 % RH | 22 deg. C / 34 % RH |
| Engineer | Yuta Moriya (1 GHz - 10 GHz) | Tomohisa Nakagawa (10 GHz - 18 GHz) | Junki Nagatomi (18 GHz - 26.5 GHz) |
| Mode | Tx 11b 2437 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 4874.000 | PK | 40.6 | 31.6 | 7.5 | 31.8 | - | 47.8 | 73.9 | 26.1 | Floor noise |
| Hori. | 7311.000 | PK | 41.4 | 36.2 | 8.9 | 32.7 | - | 53.8 | 73.9 | 20.1 | Floor noise |
| Hori. | 9748.000 | PK | 41.5 | 38.8 | 9.4 | 33.4 | - | 56.3 | 73.9 | 17.6 | Floor noise |
| Hori. | 4874.000 | AV | 32.1 | 31.6 | 7.5 | 31.8 | - | 39.3 | 53.9 | 14.6 | Floor noise |
| Hori. | 7311.000 | AV | 31.9 | 36.2 | 8.9 | 32.7 | - | 44.3 | 53.9 | 9.6 | Floor noise |
| Hori. | 9748.000 | AV | 32.7 | 38.8 | 9.4 | 33.4 | - | 47.5 | 53.9 | 6.4 | Floor noise |
| Vert. | 4874.000 | PK | 40.5 | 31.6 | 7.5 | 31.8 | - | 47.7 | 73.9 | 26.2 | Floor noise |
| Vert. | 7311.000 | PK | 41.5 | 36.2 | 8.9 | 32.7 | - | 53.9 | 73.9 | 20.0 | Floor noise |
| Vert. | 9748.000 | PK | 41.6 | 38.8 | 9.4 | 33.4 | - | 56.4 | 73.9 | 17.5 | Floor noise |
| Vert. | 4874.000 | AV | 32.1 | 31.6 | 7.5 | 31.8 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Vert. | 7311.000 | AV | 32.0 | 36.2 | 8.9 | 32.7 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Vert. | 9748.000 | AV | 32.6 | 38.8 | 9.4 | 33.4 | - | 47.4 | 53.9 | 6.5 | 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).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(PIFA Antenna)

| | | | |
|------------------------|---------------------------------|--|---------------------------------------|
| Report No. | 13170804H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | December 19, 2019 | January 9, 2020 | January 9, 2020 |
| Temperature / Humidity | 23 deg. C / 40 % RH | 23 deg. C / 35 % RH | 22 deg. C / 34 % RH |
| Engineer | Yuta Moriya (1 GHz - 10 GHz) | Tomohisa Nakagawa (10 GHz - 18 GHz) | Junki Nagatomi (18 GHz - 26.5 GHz) |
| Mode | Tx 11b 2462 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 2483.500 | PK | 43.5 | 27.5 | 5.5 | 32.7 | - | 43.7 | 73.9 | 30.2 | |
| Hori. | 4924.000 | PK | 39.8 | 31.5 | 7.5 | 31.8 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Hori. | 7386.000 | PK | 41.3 | 36.3 | 8.9 | 32.7 | - | 53.8 | 73.9 | 20.1 | Floor noise |
| Hori. | 9848.000 | PK | 40.7 | 39.0 | 9.4 | 33.4 | - | 55.7 | 73.9 | 18.2 | Floor noise |
| Hori. | 2483.500 | AV | 35.0 | 27.5 | 5.5 | 32.7 | - | 35.2 | 53.9 | 18.7 | |
| Hori. | 4924.000 | AV | 32.1 | 31.5 | 7.5 | 31.8 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Hori. | 7386.000 | AV | 32.6 | 36.3 | 8.9 | 32.7 | - | 45.1 | 53.9 | 8.8 | Floor noise |
| Hori. | 9848.000 | AV | 32.6 | 39.0 | 9.4 | 33.4 | - | 47.5 | 53.9 | 6.4 | Floor noise |
| Vert. | 2483.500 | PK | 43.1 | 27.5 | 5.5 | 32.7 | - | 43.3 | 73.9 | 30.6 | |
| Vert. | 4924.000 | PK | 40.0 | 31.5 | 7.5 | 31.8 | - | 47.3 | 73.9 | 26.6 | Floor noise |
| Vert. | 7386.000 | PK | 41.2 | 36.3 | 8.9 | 32.7 | - | 53.7 | 73.9 | 20.2 | Floor noise |
| Vert. | 9848.000 | PK | 40.8 | 39.0 | 9.4 | 33.4 | - | 55.8 | 73.9 | 18.1 | Floor noise |
| Vert. | 2483.500 | AV | 35.5 | 27.5 | 5.5 | 32.7 | - | 35.7 | 53.9 | 18.2 | |
| Vert. | 4924.000 | AV | 32.1 | 31.5 | 7.5 | 31.8 | - | 39.3 | 53.9 | 14.6 | Floor noise |
| Vert. | 7386.000 | AV | 32.4 | 36.3 | 8.9 | 32.7 | - | 44.9 | 53.9 | 9.0 | Floor noise |
| Vert. | 9848.000 | AV | 32.4 | 39.0 | 9.4 | 33.4 | - | 47.4 | 53.9 | 6.5 | Floor noise |

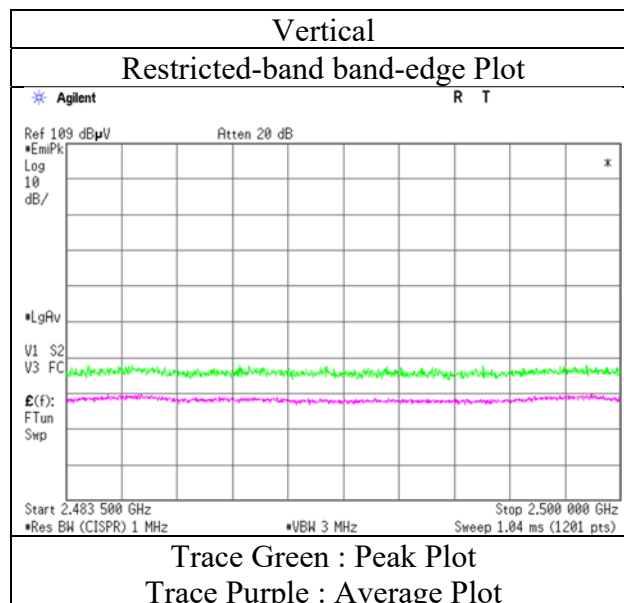
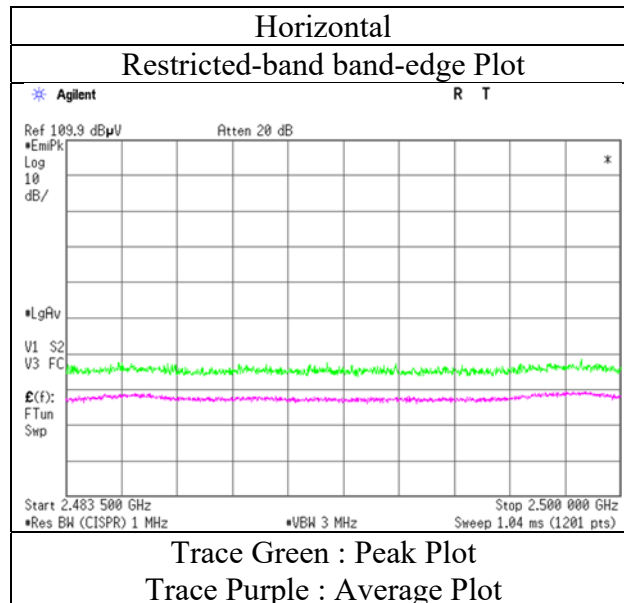
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 19, 2019
Temperature / Humidity 23 deg. C / 40 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx 11b 2462 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 19, 2019 January 9, 2020 No.3
Temperature / Humidity 23 deg. C / 40 % RH 23 deg. C / 35 % RH January 9, 2020
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11ax-20 2412MHz (OFDM)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 2390.000 | PK | 49.9 | 27.7 | 5.4 | 32.8 | - | 50.2 | 73.9 | 23.7 | |
| Hori. | 4824.000 | PK | 39.9 | 31.6 | 7.5 | 31.8 | - | 47.2 | 73.9 | 26.7 | Floor noise |
| Hori. | 7236.000 | PK | 40.8 | 36.0 | 8.9 | 32.7 | - | 53.0 | 73.9 | 20.9 | Floor noise |
| Hori. | 9648.000 | PK | 40.4 | 38.6 | 9.4 | 33.3 | - | 55.1 | 73.9 | 18.8 | Floor noise |
| Hori. | 2390.000 | AV | 38.8 | 27.7 | 5.4 | 32.8 | 0.3 | 39.4 | 53.9 | 14.5 | *1) |
| Hori. | 4824.000 | AV | 31.8 | 31.6 | 7.5 | 31.8 | - | 39.1 | 53.9 | 14.8 | Floor noise |
| Hori. | 7236.000 | AV | 31.9 | 36.0 | 8.9 | 32.7 | - | 44.1 | 53.9 | 9.8 | Floor noise |
| Hori. | 9648.000 | AV | 32.9 | 38.6 | 9.4 | 33.3 | - | 47.5 | 53.9 | 6.4 | Floor noise |
| Vert. | 2390.000 | PK | 49.8 | 27.7 | 5.4 | 32.8 | - | 50.1 | 73.9 | 23.8 | |
| Vert. | 4824.000 | PK | 38.9 | 31.6 | 7.5 | 31.8 | - | 46.1 | 73.9 | 27.8 | Floor noise |
| Vert. | 7236.000 | PK | 40.7 | 36.0 | 8.9 | 32.7 | - | 53.0 | 73.9 | 20.9 | Floor noise |
| Vert. | 9648.000 | PK | 40.6 | 38.6 | 9.4 | 33.3 | - | 55.2 | 73.9 | 18.7 | Floor noise |
| Vert. | 2390.000 | AV | 39.3 | 27.7 | 5.4 | 32.8 | 0.3 | 39.9 | 53.9 | 14.0 | *1) |
| Vert. | 4824.000 | AV | 31.6 | 31.6 | 7.5 | 31.8 | - | 38.9 | 53.9 | 15.0 | Floor noise |
| Vert. | 7236.000 | AV | 31.8 | 36.0 | 8.9 | 32.7 | - | 44.0 | 53.9 | 9.9 | Floor noise |
| Vert. | 9648.000 | AV | 32.6 | 38.6 | 9.4 | 33.3 | - | 47.3 | 53.9 | 6.6 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

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

*1) Not Out of Band emission(Leakage Power)

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. | 2412.000 | PK | 95.4 | 27.6 | 5.4 | 32.7 | 95.7 | - | - | Carrier |
| Hori. | 2400.000 | PK | 45.8 | 27.7 | 5.4 | 32.7 | 46.1 | 75.7 | 29.6 | |
| Vert. | 2412.000 | PK | 95.5 | 27.6 | 5.4 | 32.7 | 95.8 | - | - | Carrier |
| Vert. | 2400.000 | PK | 46.0 | 27.7 | 5.4 | 32.7 | 46.3 | 75.8 | 29.5 | |

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

UL Japan, Inc.

Ise EMC Lab.

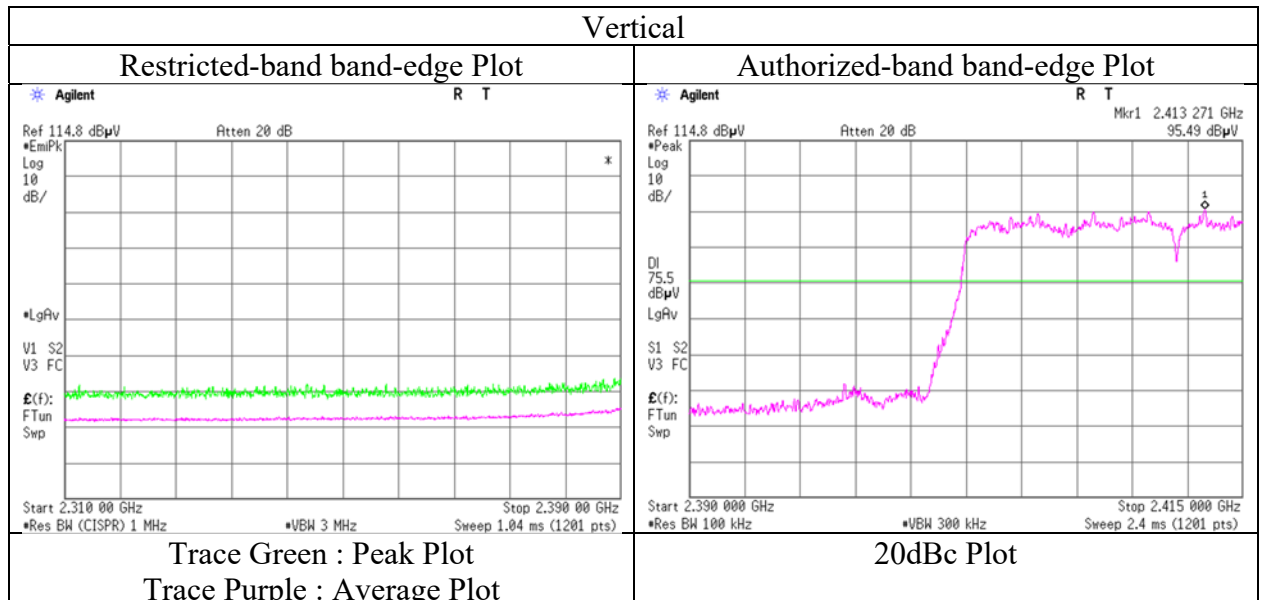
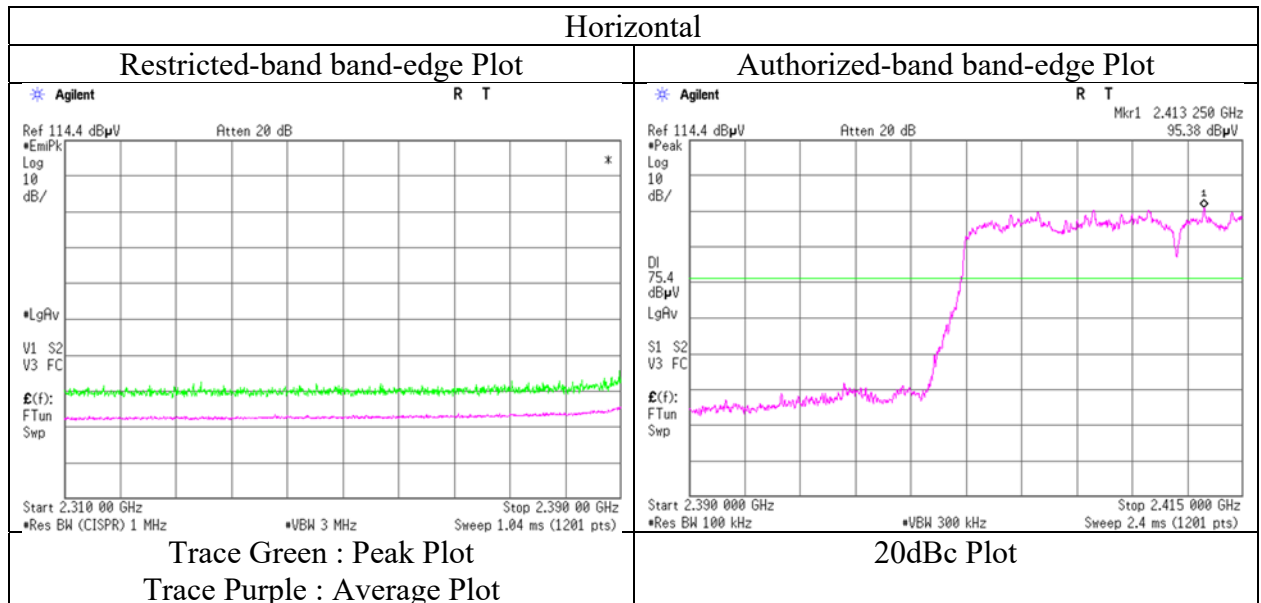
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 19, 2019
Temperature / Humidity 23 deg. C / 40 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx 11ax-20 2412MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (26-tone RU)

RU Index 0

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dBm] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 42.3 | 27.7 | 4.9 | 32.8 | - | 42.1 | 73.9 | 31.8 | |
| Hori. | 2390.000 | AV | 33.8 | 27.7 | 4.9 | 32.8 | 0.4 | 34.1 | 53.9 | 19.8 | *1) |
| Vert. | 2390.000 | PK | 45.5 | 27.7 | 4.9 | 32.8 | - | 45.3 | 73.9 | 28.6 | |
| Vert. | 2390.000 | AV | 33.8 | 27.7 | 4.9 | 32.8 | 0.4 | 34.1 | 53.9 | 19.8 | *1) |

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

*1) Not Out of Band emission(Leakage Power)

20dBc Data Sheet

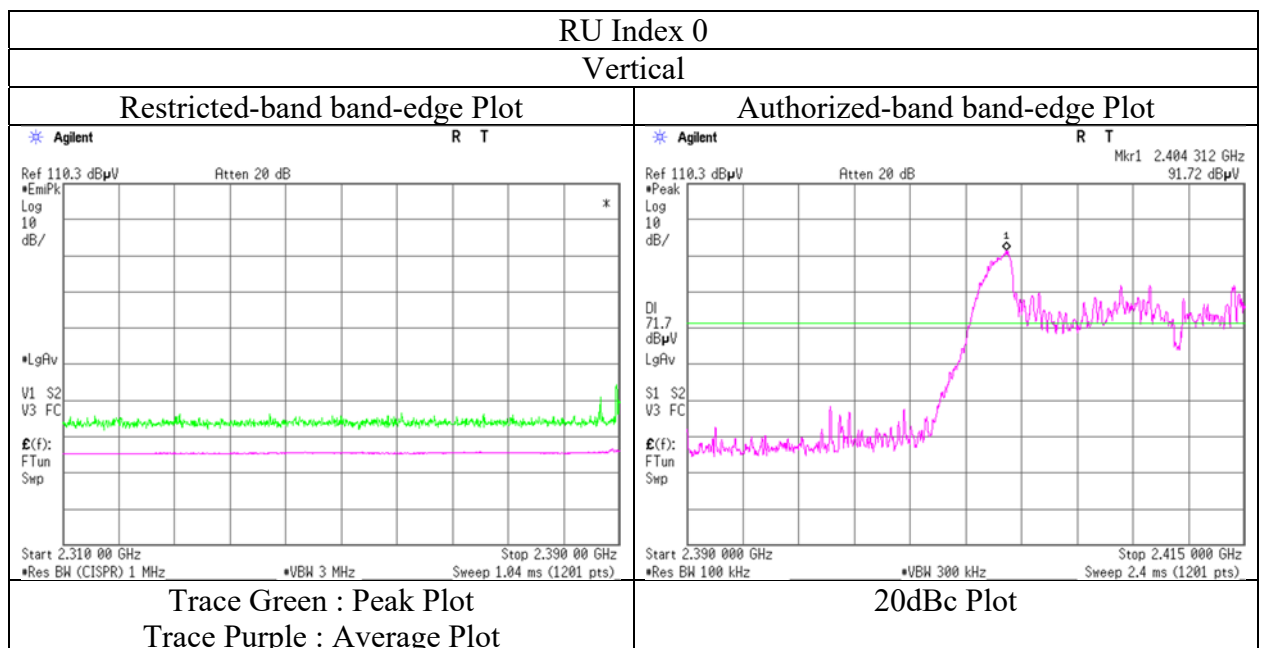
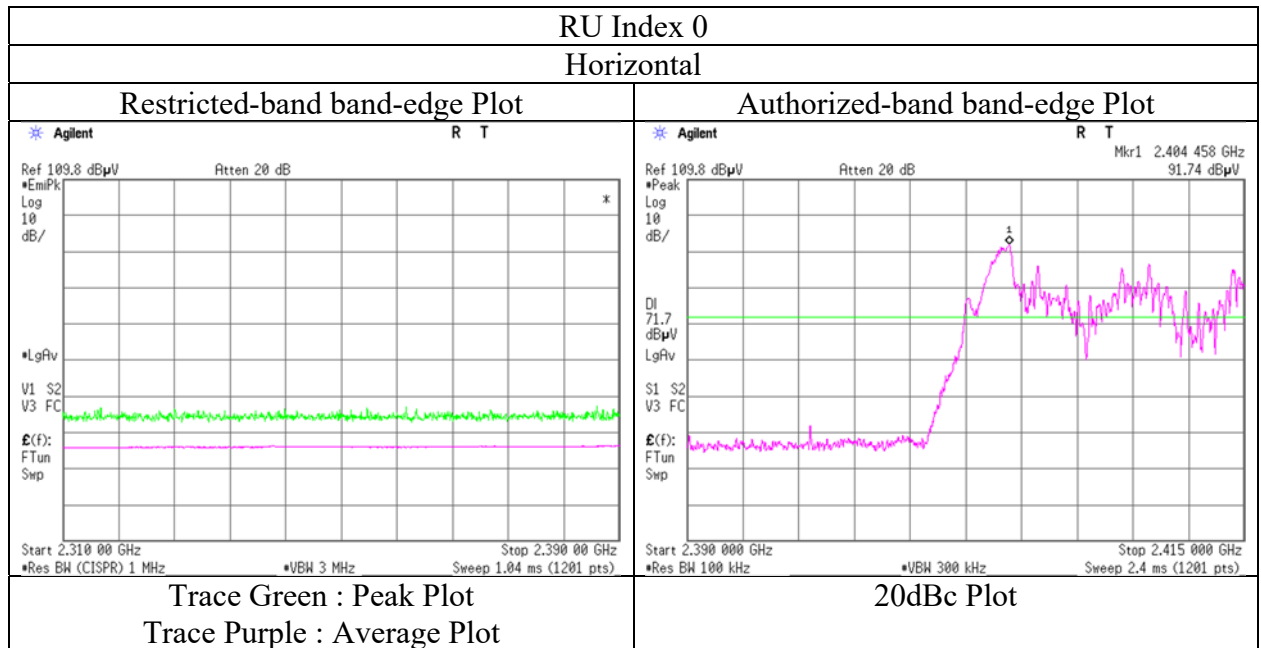
| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dBm] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 91.7 | 27.6 | 4.9 | 32.7 | 91.6 | - | - | Carrier |
| Hori. | 2400.000 | PK | 40.8 | 27.7 | 4.9 | 32.7 | 40.7 | 71.6 | 30.9 | |
| Vert. | 2412.000 | PK | 91.7 | 27.6 | 4.9 | 32.7 | 91.5 | - | - | Carrier |
| Vert. | 2400.000 | PK | 52.4 | 27.7 | 4.9 | 32.7 | 52.2 | 71.5 | 19.3 | |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (26-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (52-tone RU)

RU Index 37

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dBm] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 49.0 | 27.7 | 4.9 | 32.8 | - | 48.8 | 73.9 | 25.1 | |
| Hori. | 2390.000 | AV | 34.1 | 27.7 | 4.9 | 32.8 | 0.5 | 34.4 | 53.9 | 19.5 | *1) |
| Vert. | 2390.000 | PK | 47.3 | 27.7 | 4.9 | 32.8 | - | 47.1 | 73.9 | 26.8 | |
| Vert. | 2390.000 | AV | 34.3 | 27.7 | 4.9 | 32.8 | 0.5 | 34.6 | 53.9 | 19.3 | *1) |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
*1) Not Out of Band emission(Leakage Power)

20dBc Data Sheet

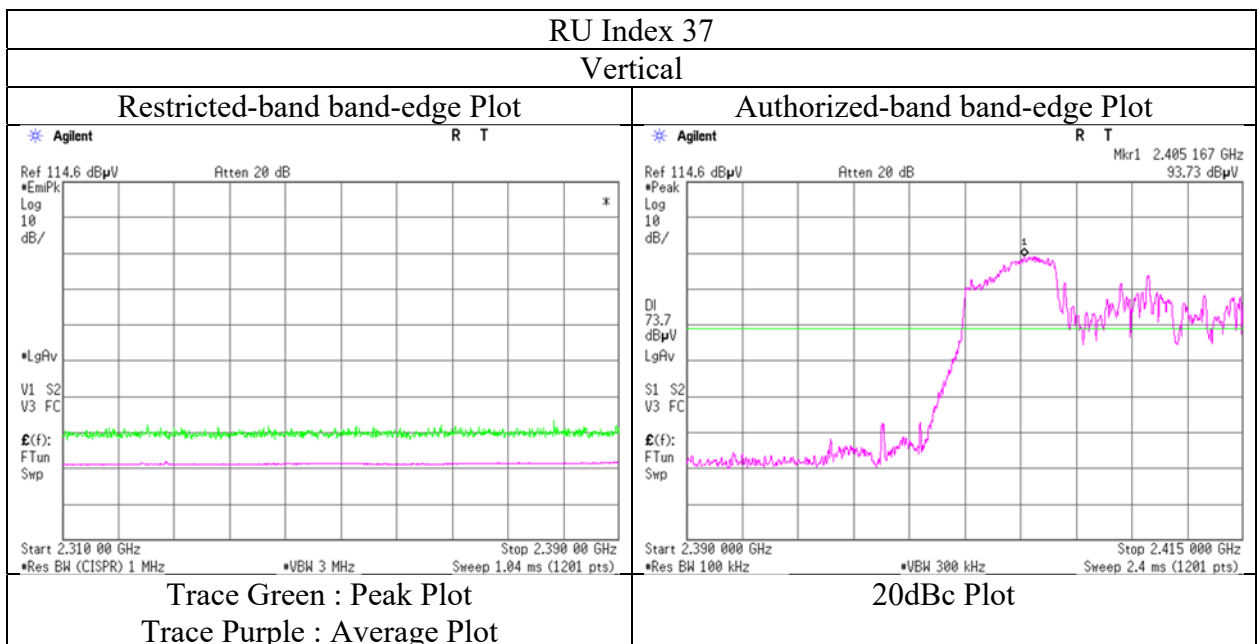
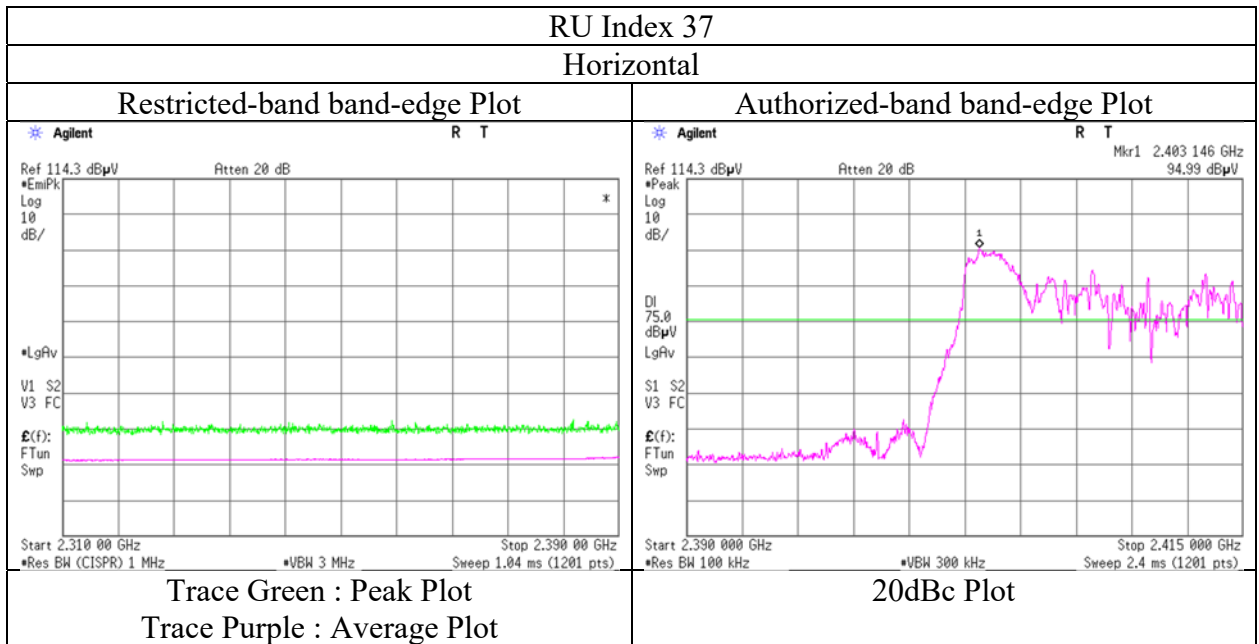
| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dBm] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 95.0 | 27.6 | 4.9 | 32.7 | 94.8 | - | - | Carrier |
| Hori. | 2400.000 | PK | 45.3 | 27.7 | 4.9 | 32.7 | 45.2 | 74.8 | 29.6 | |
| Vert. | 2412.000 | PK | 93.7 | 27.6 | 4.9 | 32.7 | 93.5 | - | - | Carrier |
| Vert. | 2400.000 | PK | 44.9 | 27.7 | 4.9 | 32.7 | 44.8 | 73.5 | 28.8 | |

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

Distance factor: 1 GHz - 10 GHz $20\log(4.45\text{ m} / 3.0\text{ m}) = 3.43\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (52-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (106-tone RU)

RU Index 53

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 49.8 | 27.7 | 4.9 | 32.8 | - | 49.6 | 73.9 | 24.3 | |
| Hori. | 2390.000 | AV | 34.6 | 27.7 | 4.9 | 32.8 | 0.5 | 34.9 | 53.9 | 19.0 | *1) |
| Vert. | 2390.000 | PK | 51.9 | 27.7 | 4.9 | 32.8 | - | 51.7 | 73.9 | 22.2 | |
| Vert. | 2390.000 | AV | 35.7 | 27.7 | 4.9 | 32.8 | 0.5 | 36.0 | 53.9 | 17.9 | *1) |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

20dBc Data Sheet

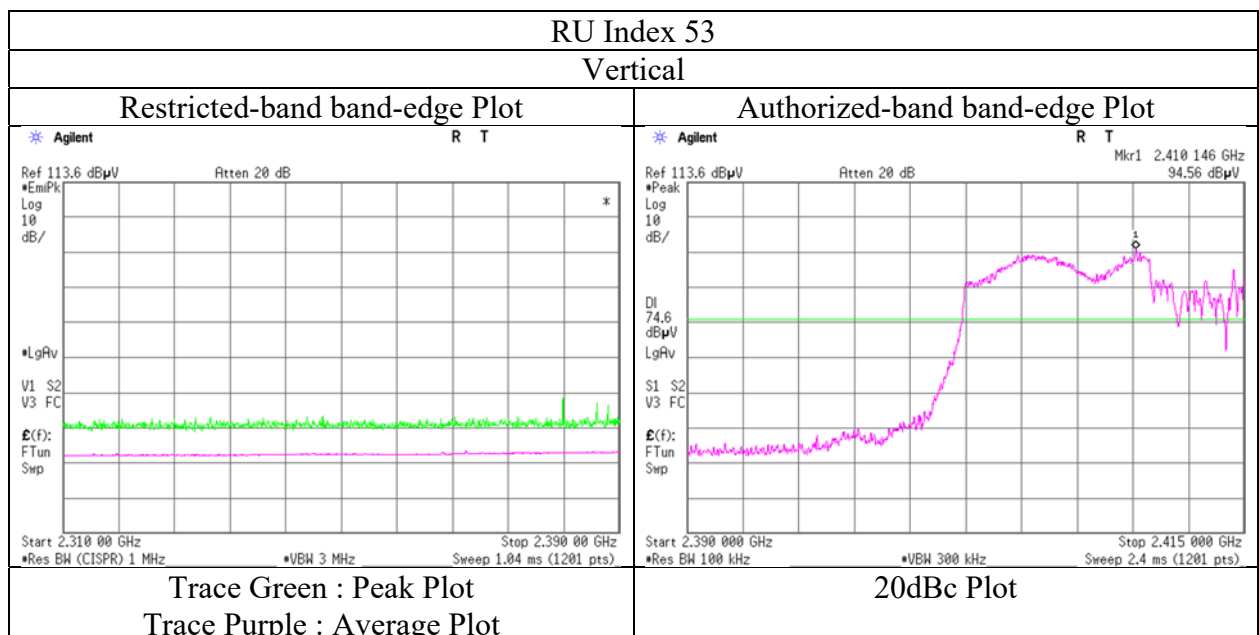
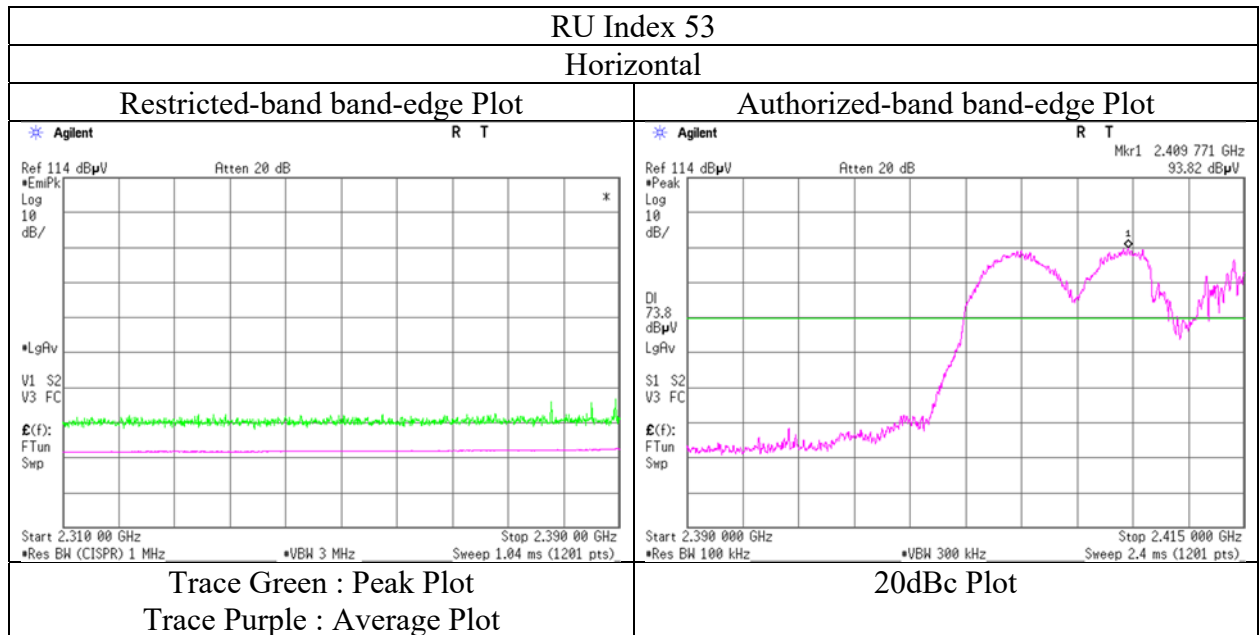
| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 93.8 | 27.6 | 4.9 | 32.7 | 93.6 | - | - | Carrier |
| Hori. | 2400.000 | PK | 46.1 | 27.7 | 4.9 | 32.7 | 46.0 | 73.6 | 27.7 | |
| Vert. | 2412.000 | PK | 94.6 | 27.6 | 4.9 | 32.7 | 94.4 | - | - | Carrier |
| Vert. | 2400.000 | PK | 47.2 | 27.7 | 4.9 | 32.7 | 47.0 | 74.4 | 27.4 | |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2412 MHz (106-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date April 4, 2020
Temperature / Humidity 22 deg. C / 40 % RH
Engineer Takafumi Noguchi
Band edge
Mode Tx 11ax-20 2412 MHz (242-tone RU)

RU Index 61

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2389.033 | PK | 63.8 | 27.7 | 4.9 | 32.7 | - | 63.6 | 73.9 | 10.3 | |
| Hori. | 2390.000 | PK | 59.3 | 27.7 | 4.9 | 32.7 | - | 59.1 | 73.9 | 14.8 | |
| Hori. | 2389.033 | AV | 44.4 | 27.7 | 4.9 | 32.7 | 0.5 | 44.7 | 53.9 | 9.2 | |
| Hori. | 2390.000 | AV | 42.4 | 27.7 | 4.9 | 32.7 | 0.5 | 42.7 | 53.9 | 11.2 | *1) |
| Vert. | 2389.033 | PK | 64.4 | 27.7 | 4.9 | 32.7 | - | 64.3 | 73.9 | 9.6 | |
| Vert. | 2390.000 | PK | 59.4 | 27.7 | 4.9 | 32.7 | - | 59.2 | 73.9 | 14.7 | |
| Vert. | 2389.033 | AV | 44.9 | 27.7 | 4.9 | 32.7 | 0.5 | 45.3 | 53.9 | 8.6 | |
| Vert. | 2390.000 | AV | 43.3 | 27.7 | 4.9 | 32.7 | 0.5 | 43.6 | 53.9 | 10.3 | *1) |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

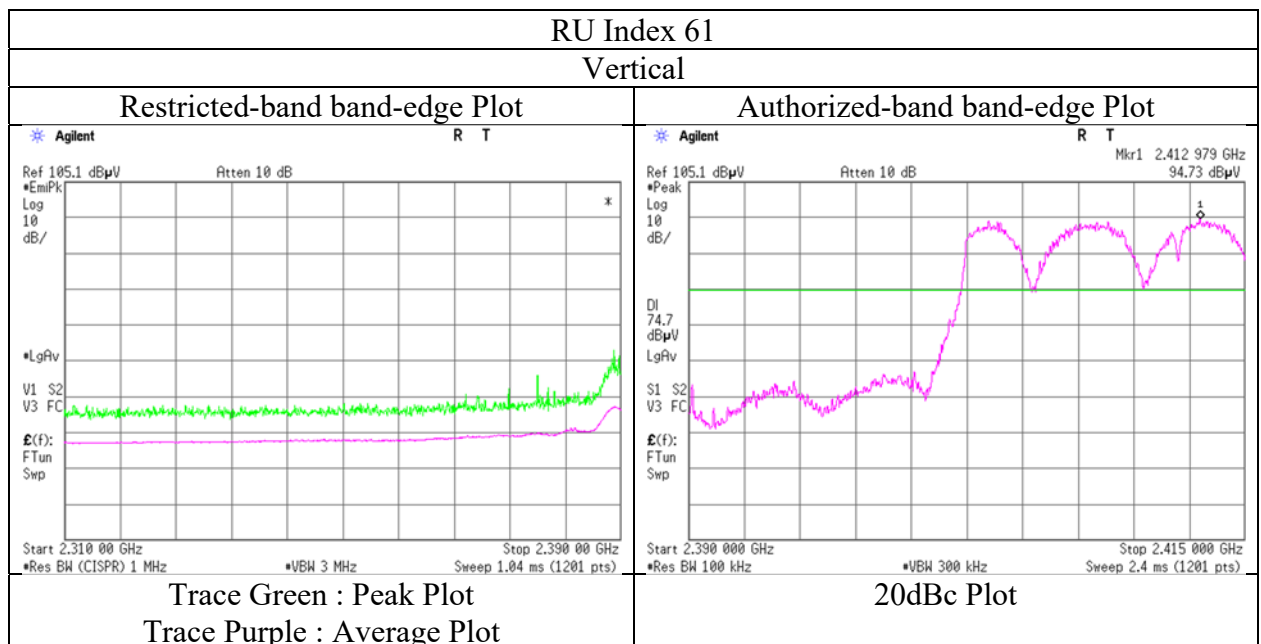
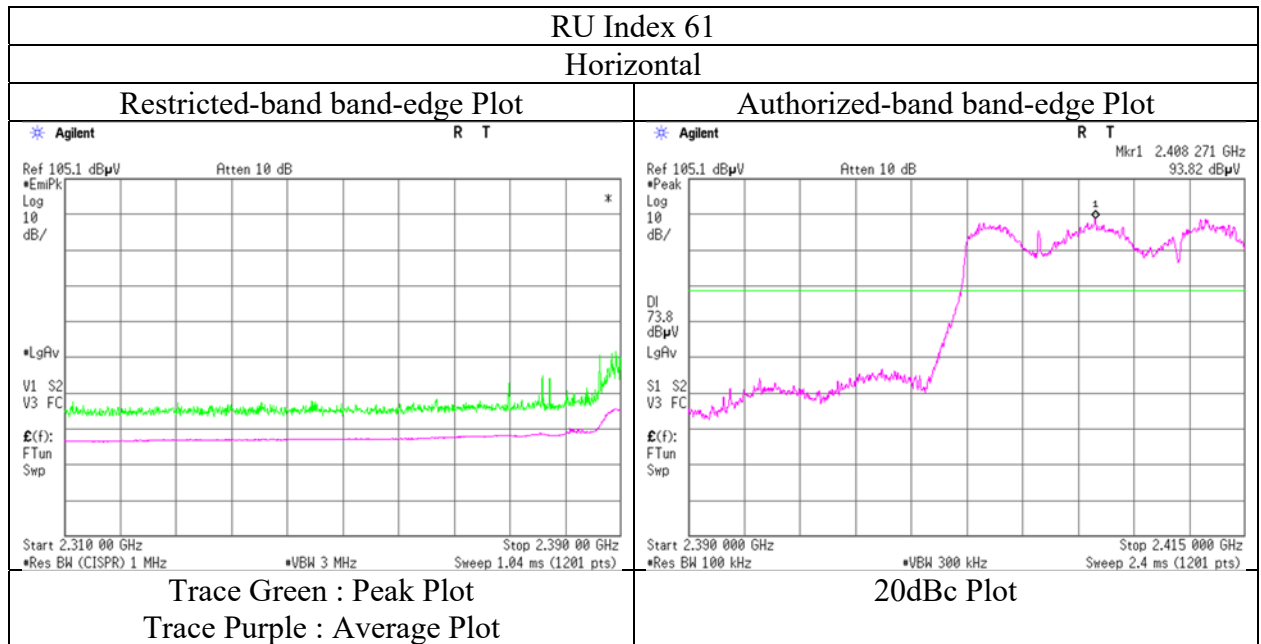
20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 93.8 | 27.6 | 4.9 | 32.7 | 93.6 | - | - | Carrier |
| Hori. | 2398.575 | PK | 52.7 | 27.7 | 4.9 | 32.7 | 52.6 | 73.6 | 21.0 | |
| Hori. | 2400.000 | PK | 50.8 | 27.7 | 4.9 | 32.7 | 50.7 | 73.6 | 23.0 | |
| Vert. | 2412.000 | PK | 94.7 | 27.6 | 4.9 | 32.7 | 94.5 | - | - | Carrier |
| Vert. | 2398.575 | PK | 54.0 | 27.7 | 4.9 | 32.7 | 53.8 | 74.5 | 20.7 | |
| Vert. | 2400.000 | PK | 52.0 | 27.7 | 4.9 | 32.7 | 51.8 | 74.5 | 22.7 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date April 4, 2020
Temperature / Humidity 22 deg. C / 40 % RH
Engineer Takafumi Noguchi
Band edge
Mode Tx 11ax-20 2412 MHz (242-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3 No.3 No.3
Date December 19, 2019 January 9, 2020 January 9, 2020
Temperature / Humidity 23 deg. C / 40 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11ax-20 2437 MHz (OFDM)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 4874.000 | PK | 40.3 | 31.6 | 7.5 | 31.8 | - | 47.5 | 73.9 | 26.4 | Floor noise |
| Hori. | 7311.000 | PK | 41.4 | 36.2 | 8.9 | 32.7 | - | 53.7 | 73.9 | 20.2 | Floor noise |
| Hori. | 9748.000 | PK | 40.3 | 38.8 | 9.4 | 33.4 | - | 55.1 | 73.9 | 18.8 | Floor noise |
| Hori. | 4874.000 | AV | 31.6 | 31.6 | 7.5 | 31.8 | - | 38.8 | 53.9 | 15.1 | Floor noise |
| Hori. | 7311.000 | AV | 32.1 | 36.2 | 8.9 | 32.7 | - | 44.5 | 53.9 | 9.4 | Floor noise |
| Hori. | 9748.000 | AV | 32.2 | 38.8 | 9.4 | 33.4 | - | 46.9 | 53.9 | 7.0 | Floor noise |
| Vert. | 4874.000 | PK | 40.3 | 31.6 | 7.5 | 31.8 | - | 47.6 | 73.9 | 26.3 | Floor noise |
| Vert. | 7311.000 | PK | 41.2 | 36.2 | 8.9 | 32.7 | - | 53.6 | 73.9 | 20.3 | Floor noise |
| Vert. | 9748.000 | PK | 40.3 | 38.8 | 9.4 | 33.4 | - | 55.1 | 73.9 | 18.8 | Floor noise |
| Vert. | 4874.000 | AV | 31.7 | 31.6 | 7.5 | 31.8 | - | 38.9 | 53.9 | 15.0 | Floor noise |
| Vert. | 7311.000 | AV | 32.0 | 36.2 | 8.9 | 32.7 | - | 44.4 | 53.9 | 9.6 | Floor noise |
| Vert. | 9748.000 | AV | 32.3 | 38.8 | 9.4 | 33.4 | - | 47.1 | 53.9 | 6.8 | 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).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(PIFA Antenna)

| | | | |
|------------------------|----------------------------|---------------------|---------------------|
| Report No. | 13170804H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | December 19, 2019 | January 9, 2020 | January 9, 2020 |
| Temperature / Humidity | 23 deg. C / 40 % RH | 23 deg. C / 35 % RH | 22 deg. C / 34 % RH |
| Engineer | Yuta Moriya | Tomohisa Nakagawa | Junki Nagatomi |
| | (1 GHz – 10 GHz) | (10 GHz – 18 GHz) | (18 GHz – 26.5 GHz) |
| Mode | Tx 11ax-20 2462 MHz (OFDM) | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 62.258 | QP | 25.0 | 7.4 | 7.6 | 32.2 | - | 7.7 | 40.0 | 32.3 | |
| Hori. | 104.991 | QP | 22.6 | 11.0 | 8.1 | 32.1 | - | 9.6 | 43.5 | 33.9 | |
| Hori. | 162.303 | QP | 22.6 | 15.5 | 8.8 | 32.1 | - | 14.8 | 43.5 | 28.7 | |
| Hori. | 341.300 | QP | 22.2 | 14.9 | 10.3 | 31.9 | - | 15.4 | 46.0 | 30.6 | |
| Hori. | 576.300 | QP | 22.3 | 18.6 | 11.8 | 32.0 | - | 20.7 | 46.0 | 25.3 | |
| Hori. | 879.600 | QP | 22.1 | 22.0 | 13.4 | 31.1 | - | 26.4 | 46.0 | 19.6 | |
| Hori. | 2483.500 | PK | 51.2 | 27.5 | 5.5 | 32.7 | - | 51.5 | 73.9 | 22.4 | |
| Hori. | 4924.000 | PK | 39.8 | 31.5 | 7.5 | 31.8 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Hori. | 7386.000 | PK | 40.5 | 36.3 | 8.9 | 32.7 | - | 53.0 | 73.9 | 20.9 | Floor noise |
| Hori. | 9848.000 | PK | 41.1 | 39.0 | 9.4 | 33.4 | - | 56.0 | 73.9 | 17.9 | Floor noise |
| Hori. | 2483.500 | AV | 39.5 | 27.5 | 5.5 | 32.7 | 0.3 | 40.0 | 53.9 | 13.9 | *1) |
| Hori. | 4924.000 | AV | 30.9 | 31.5 | 7.5 | 31.8 | - | 38.1 | 53.9 | 15.8 | Floor noise |
| Hori. | 7386.000 | AV | 32.5 | 36.3 | 8.9 | 32.7 | - | 44.9 | 53.9 | 9.0 | Floor noise |
| Hori. | 9848.000 | AV | 32.8 | 39.0 | 9.4 | 33.4 | - | 47.8 | 53.9 | 6.1 | Floor noise |
| Vert. | 62.215 | QP | 33.4 | 7.4 | 7.6 | 32.2 | - | 16.1 | 40.0 | 23.9 | |
| Vert. | 95.634 | QP | 26.6 | 9.5 | 8.0 | 32.2 | - | 11.9 | 43.5 | 31.6 | |
| Vert. | 162.345 | QP | 22.6 | 15.5 | 8.8 | 32.1 | - | 14.8 | 43.5 | 28.7 | |
| Vert. | 341.300 | QP | 22.3 | 14.9 | 10.3 | 31.9 | - | 15.5 | 46.0 | 30.5 | |
| Vert. | 576.200 | QP | 22.1 | 18.6 | 11.8 | 32.0 | - | 20.5 | 46.0 | 25.5 | |
| Vert. | 879.200 | QP | 22.4 | 22.0 | 13.4 | 31.1 | - | 26.7 | 46.0 | 19.3 | |
| Vert. | 2483.500 | PK | 48.8 | 27.5 | 5.5 | 32.7 | - | 49.0 | 73.9 | 24.9 | |
| Vert. | 4924.000 | PK | 39.7 | 31.5 | 7.5 | 31.8 | - | 46.9 | 73.9 | 27.0 | Floor noise |
| Vert. | 7386.000 | PK | 40.8 | 36.3 | 8.9 | 32.7 | - | 53.3 | 73.9 | 20.7 | Floor noise |
| Vert. | 9848.000 | PK | 41.2 | 39.0 | 9.4 | 33.4 | - | 56.2 | 73.9 | 17.7 | Floor noise |
| Vert. | 2483.500 | AV | 37.7 | 27.5 | 5.5 | 32.7 | 0.3 | 38.2 | 53.9 | 15.7 | *1) |
| Vert. | 4924.000 | AV | 31.2 | 31.5 | 7.5 | 31.8 | - | 38.5 | 53.9 | 15.4 | Floor noise |
| Vert. | 7386.000 | AV | 32.4 | 36.3 | 8.9 | 32.7 | - | 44.9 | 53.9 | 9.0 | Floor noise |
| Vert. | 9848.000 | AV | 32.8 | 39.0 | 9.4 | 33.4 | - | 47.7 | 53.9 | 6.2 | Floor noise |

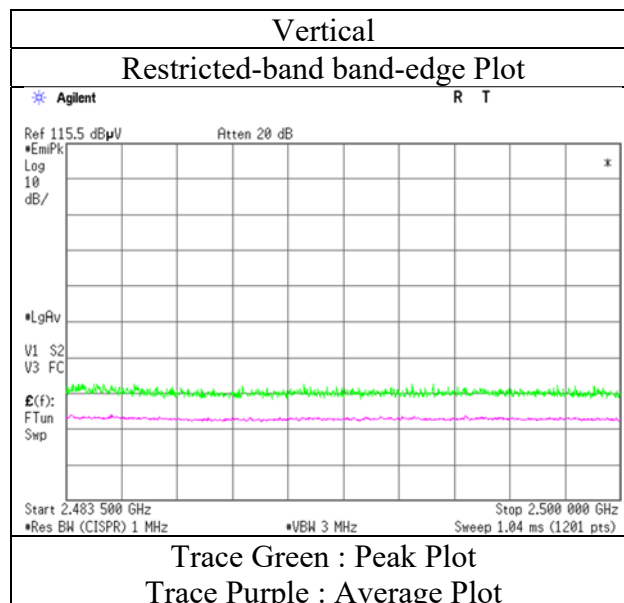
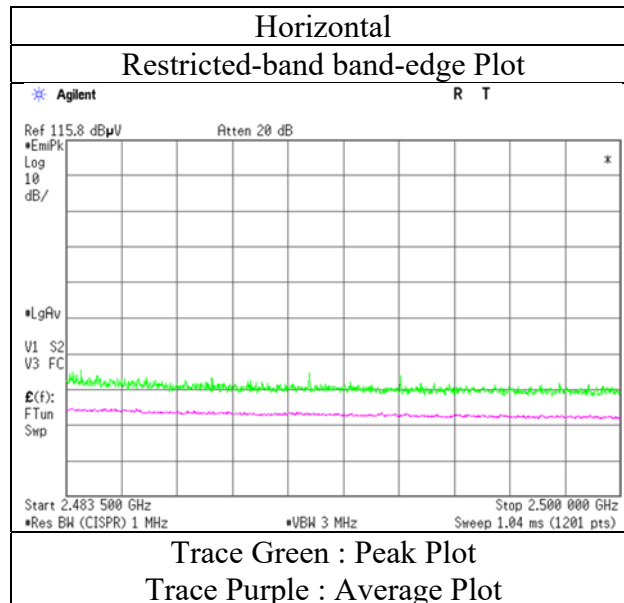
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 19, 2019
Temperature / Humidity 23 deg. C / 40 % RH
Engineer Yuta Moriya
(1 GHz – 10 GHz)
Mode Tx 11ax-20 2462 MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2462 MHz (26-tone RU)

RU Index 8

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2483.500 | PK | 43.0 | 27.5 | 5.0 | 32.7 | - | 42.7 | 73.9 | 31.2 | |
| Hori. | 2483.500 | AV | 34.7 | 27.5 | 5.0 | 32.7 | 0.4 | 34.8 | 53.9 | 19.1 | *1) |
| Vert. | 2483.500 | PK | 48.5 | 27.5 | 5.0 | 32.7 | - | 48.2 | 73.9 | 25.7 | |
| Vert. | 2483.500 | AV | 34.4 | 27.5 | 5.0 | 32.7 | 0.4 | 34.6 | 53.9 | 19.4 | *1) |

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

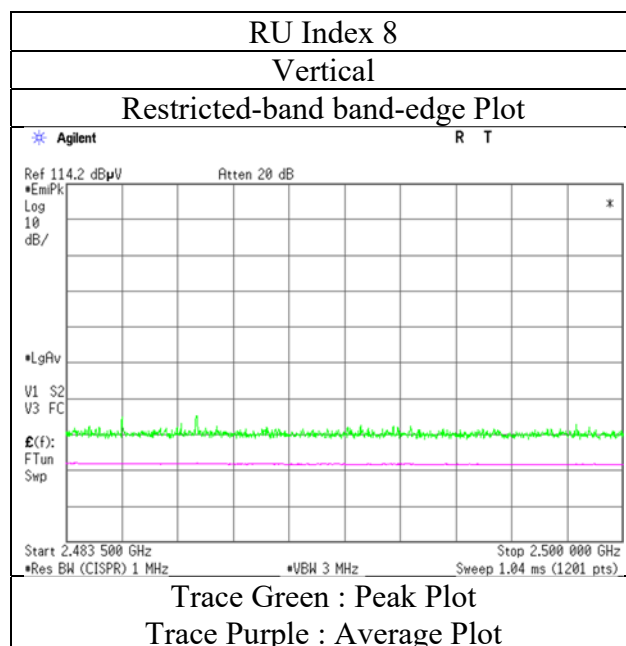
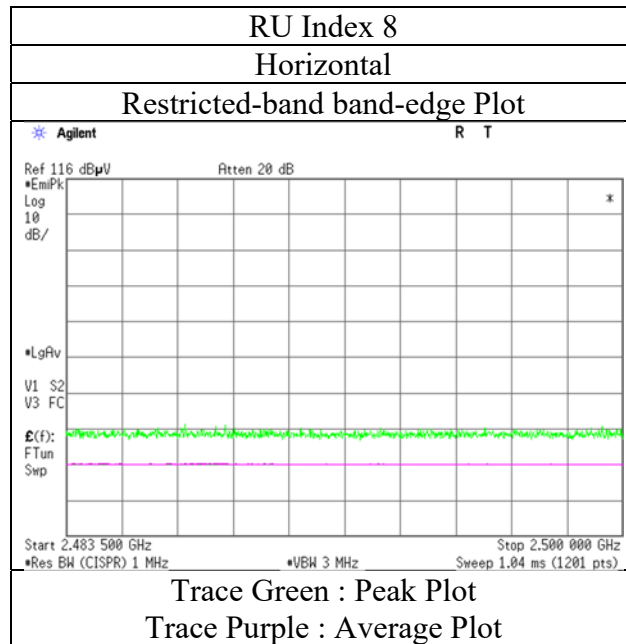
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2462 MHz (26-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2462 MHz (52-tone RU)

RU Index 40

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|---------------------|--------------------|-------------------|----------------|--------|
| Hori. | 2483.500 | PK | 45.3 | 27.5 | 5.0 | 32.7 | - | 45.0 | 73.9 | 28.9 | |
| Hori. | 2483.500 | AV | 36.1 | 27.5 | 5.0 | 32.7 | 0.5 | 36.2 | 53.9 | 17.7 | *1) |
| Vert. | 2483.500 | PK | 48.1 | 27.5 | 5.0 | 32.7 | - | 47.8 | 73.9 | 26.1 | |
| Vert. | 2483.500 | AV | 35.0 | 27.5 | 5.0 | 32.7 | 0.5 | 35.1 | 53.9 | 18.8 | *1) |

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

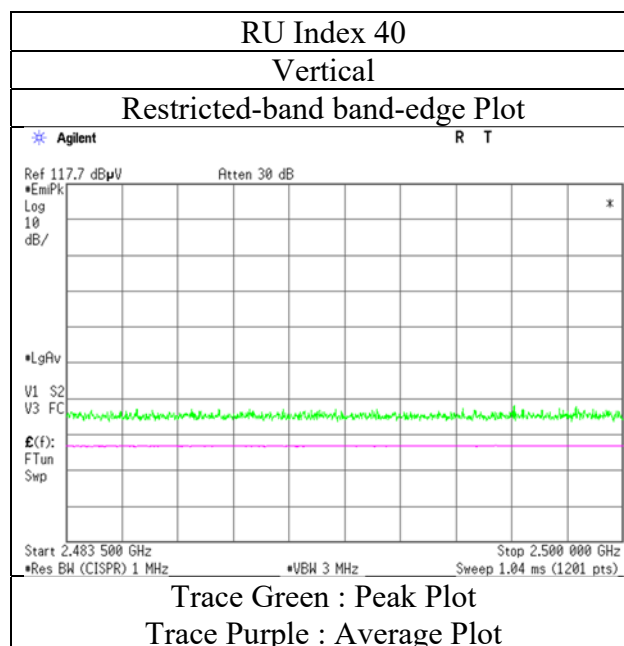
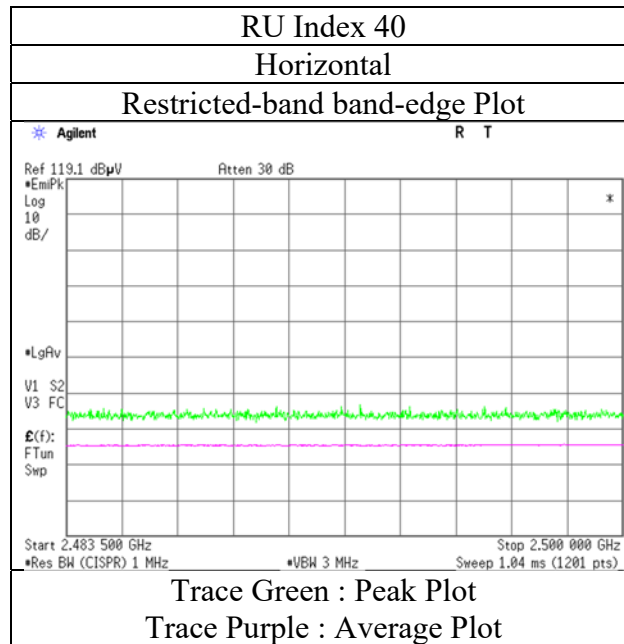
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2462 MHz(52-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2462 MHz (106-tone RU)

RU Index 54

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|---------------------|--------------------|-------------------|----------------|--------|
| Hori. | 2483.500 | PK | 45.3 | 27.5 | 5.0 | 32.7 | - | 45.0 | 73.9 | 28.9 | |
| Hori. | 2483.500 | AV | 36.1 | 27.5 | 5.0 | 32.7 | 0.5 | 36.2 | 53.9 | 17.7 | *1) |
| Vert. | 2483.500 | PK | 46.2 | 27.5 | 5.0 | 32.7 | - | 45.9 | 73.9 | 28.0 | |
| Vert. | 2483.500 | AV | 36.7 | 27.5 | 5.0 | 32.7 | 0.5 | 36.9 | 53.9 | 17.0 | *1) |

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

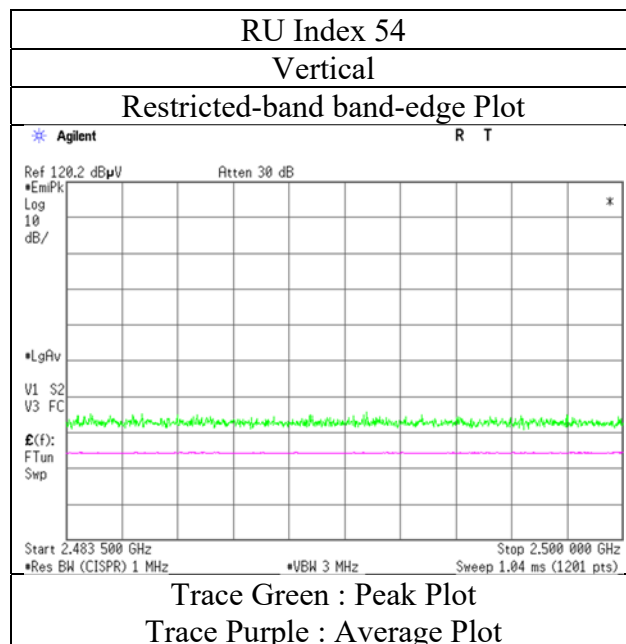
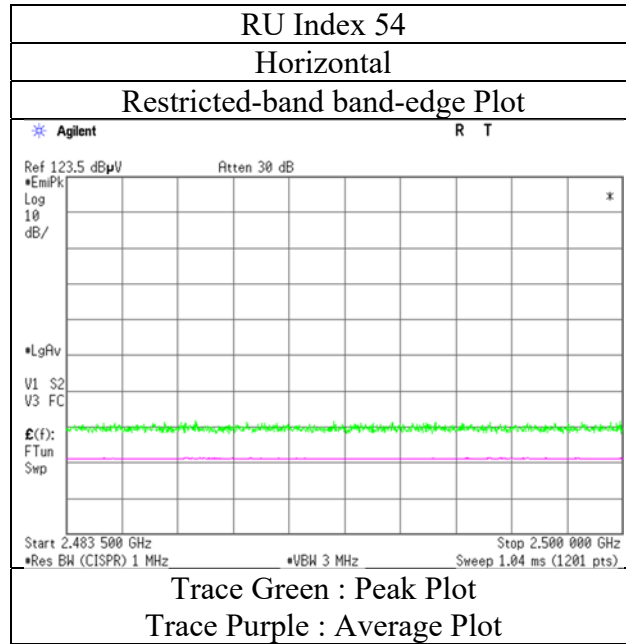
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 9, 2020
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Junki Nagatomi
Band edge
Mode Tx 11ax-20 2462 MHz (106-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date April 4, 2020
Temperature / Humidity 22 deg. C / 40 % RH
Engineer Takafumi Noguchi
Band edge
Mode Tx 11ax-20 2462 MHz (242-tone RU)

RU Index 61

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2483.500 | PK | 67.8 | 27.5 | 4.9 | 32.7 | - | 67.5 | 73.9 | 6.4 | |
| Hori. | 2483.500 | AV | 48.2 | 27.5 | 4.9 | 32.7 | 0.5 | 48.4 | 53.9 | 5.5 | *1) |
| Vert. | 2483.500 | PK | 68.3 | 27.5 | 4.9 | 32.7 | - | 68.0 | 73.9 | 5.9 | |
| Vert. | 2483.500 | AV | 48.3 | 27.5 | 4.9 | 32.7 | 0.5 | 48.5 | 53.9 | 5.4 | *1) |

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

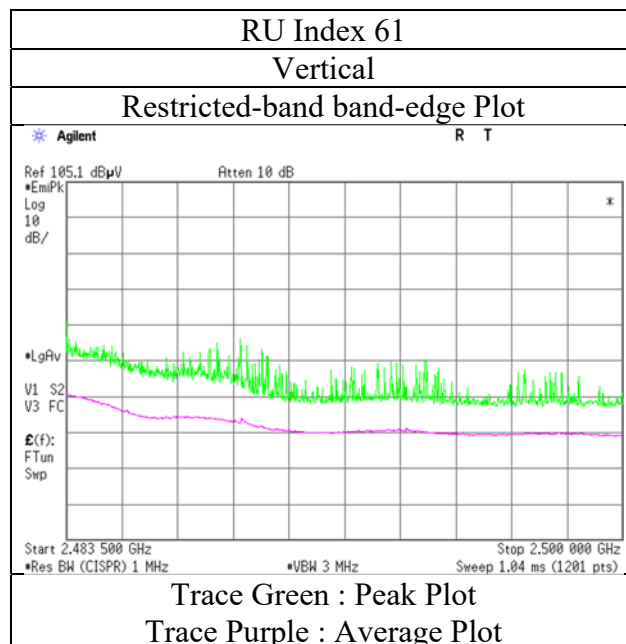
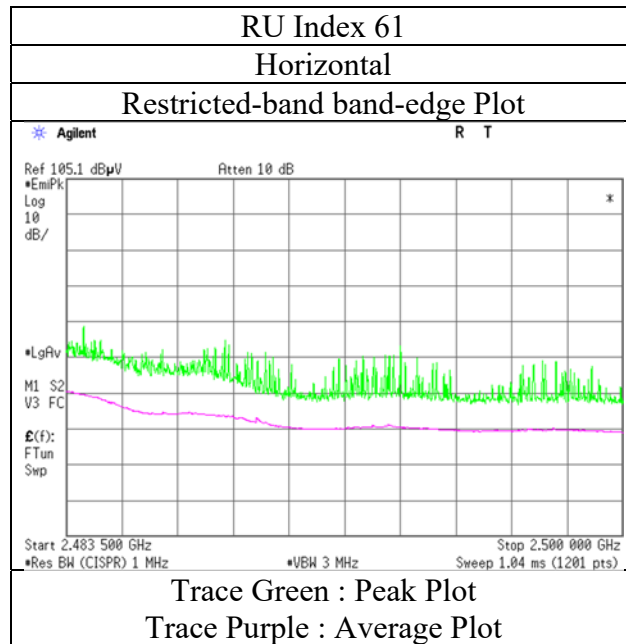
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna)

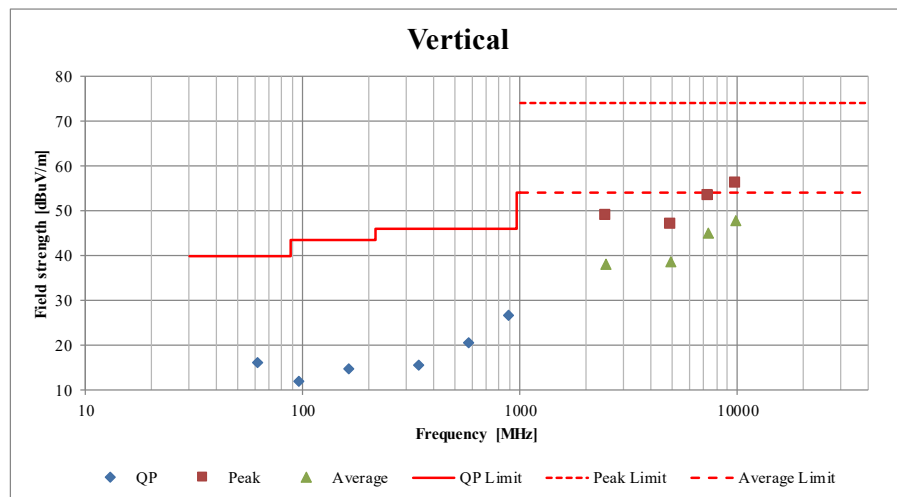
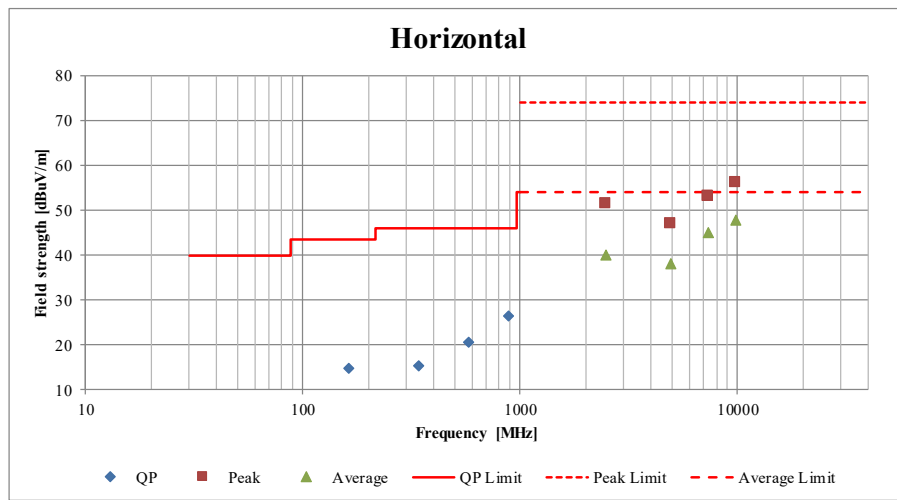
Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date April 4, 2020
Temperature / Humidity 22 deg. C / 40 % RH
Engineer Takafumi Noguchi
Band edge
Mode Tx 11ax-20 2462 MHz (242-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)
(PIFA Antenna WLAN)

| | | | | |
|------------------------|---------------------------------|--|---------------------------------------|-----------------------------------|
| Report No. | 13170804H | | | |
| Test place | Ise EMC Lab. | | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 | No.3 |
| Date | December 19, 2019 | January 9, 2020 | January 9, 2020 | January 10, 2020 |
| Temperature / Humidity | 23 deg. C / 40 % RH | 23 deg. C / 35 % RH | 22 deg. C / 34 % RH | 23 deg. C / 35 % RH |
| Engineer | Yuta Moriya (1 GHz – 10 GHz) | Tomohisa Nakagawa (10 GHz – 18 GHz) | Junki Nagatomi (18 GHz – 26.5 GHz) | Tomohisa Nakagawa (Below 1GHz) |
| Mode | Tx 11ax-20 2462 MHz (OFDM) | | | |



Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 1M-PHY 2402 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.288 | QP | 24.3 | 8.1 | 7.5 | 32.2 | - | 7.7 | 40.0 | 32.3 | |
| Hori. | 62.277 | QP | 23.0 | 7.3 | 7.6 | 32.2 | - | 5.7 | 40.0 | 34.3 | |
| Hori. | 128.949 | QP | 22.8 | 13.8 | 8.4 | 32.1 | - | 12.9 | 43.5 | 30.6 | |
| Hori. | 352.995 | QP | 22.3 | 15.0 | 10.4 | 31.9 | - | 15.8 | 46.0 | 30.3 | |
| Hori. | 590.593 | QP | 22.2 | 19.1 | 11.9 | 32.0 | - | 21.1 | 46.0 | 24.9 | |
| Hori. | 879.126 | QP | 21.7 | 22.0 | 13.4 | 31.1 | - | 26.0 | 46.0 | 20.0 | |
| Hori. | 2339.989 | PK | 47.6 | 27.8 | 5.4 | 32.8 | - | 48.0 | 73.9 | 25.9 | |
| Hori. | 2390.000 | PK | 57.5 | 27.7 | 5.4 | 32.8 | - | 57.9 | 73.9 | 16.0 | |
| Hori. | 4804.000 | PK | 41.3 | 31.6 | 7.5 | 31.8 | - | 48.6 | 73.9 | 25.3 | Floor noise |
| Hori. | 7206.000 | PK | 42.3 | 36.0 | 8.9 | 32.7 | - | 54.5 | 73.9 | 19.4 | Floor noise |
| Hori. | 9608.000 | PK | 42.3 | 38.5 | 9.4 | 33.3 | - | 56.9 | 73.9 | 17.0 | Floor noise |
| Hori. | 2339.989 | AV | 39.1 | 27.8 | 5.4 | 32.8 | 2.0 | 41.5 | 53.9 | 12.4 | *2) |
| Hori. | 2390.000 | AV | 43.2 | 27.7 | 5.4 | 32.8 | 2.0 | 45.5 | 53.9 | 8.4 | *1) |
| Hori. | 4804.000 | AV | 32.5 | 31.6 | 7.5 | 31.8 | - | 39.8 | 53.9 | 14.1 | Floor noise |
| Hori. | 7206.000 | AV | 33.7 | 36.0 | 8.9 | 32.7 | - | 46.0 | 53.9 | 8.0 | Floor noise |
| Hori. | 9608.000 | AV | 32.3 | 38.5 | 9.4 | 33.3 | - | 46.8 | 53.9 | 7.1 | Floor noise |
| Vert. | 59.288 | QP | 29.1 | 8.1 | 7.5 | 32.2 | - | 12.5 | 40.0 | 27.5 | |
| Vert. | 62.277 | QP | 25.8 | 7.3 | 7.6 | 32.2 | - | 8.5 | 40.0 | 31.5 | |
| Vert. | 128.949 | QP | 22.7 | 13.8 | 8.4 | 32.1 | - | 12.8 | 43.5 | 30.7 | |
| Vert. | 352.995 | QP | 22.3 | 15.0 | 10.4 | 31.9 | - | 15.8 | 46.0 | 30.3 | |
| Vert. | 590.593 | QP | 22.1 | 19.1 | 11.9 | 32.0 | - | 21.0 | 46.0 | 25.0 | |
| Vert. | 879.126 | QP | 21.8 | 22.0 | 13.4 | 31.1 | - | 26.1 | 46.0 | 19.9 | |
| Vert. | 2339.989 | PK | 47.5 | 27.8 | 5.4 | 32.8 | - | 47.9 | 73.9 | 26.1 | |
| Vert. | 2390.000 | PK | 55.6 | 27.7 | 5.4 | 32.8 | - | 55.9 | 73.9 | 18.0 | |
| Vert. | 4804.000 | PK | 41.0 | 31.6 | 7.5 | 31.8 | - | 48.3 | 73.9 | 25.6 | Floor noise |
| Vert. | 7206.000 | PK | 42.7 | 36.0 | 8.9 | 32.7 | - | 54.9 | 73.9 | 19.0 | Floor noise |
| Vert. | 9608.000 | PK | 42.1 | 38.5 | 9.4 | 33.3 | - | 56.7 | 73.9 | 17.2 | Floor noise |
| Vert. | 2339.989 | AV | 38.0 | 27.8 | 5.4 | 32.8 | 2.0 | 40.4 | 53.9 | 13.5 | *2) |
| Vert. | 2390.000 | AV | 41.2 | 27.7 | 5.4 | 32.8 | 2.0 | 43.5 | 53.9 | 10.4 | *1) |
| Vert. | 4804.000 | AV | 32.5 | 31.6 | 7.5 | 31.8 | - | 39.8 | 53.9 | 14.1 | Floor noise |
| Vert. | 7206.000 | AV | 34.0 | 36.0 | 8.9 | 32.7 | - | 46.2 | 53.9 | 7.7 | Floor noise |
| Vert. | 9608.000 | AV | 32.1 | 38.5 | 9.4 | 33.3 | - | 46.7 | 53.9 | 7.2 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

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 | 96.7 | 27.7 | 5.4 | 32.7 | 97.0 | - | - | Carrier |
| Hori | 2400.000 | PK | 53.6 | 27.7 | 5.4 | 32.7 | 54.0 | 77.0 | 23.0 | |
| Vert | 2402.000 | PK | 94.0 | 27.7 | 5.4 | 32.7 | 94.3 | - | - | Carrier |
| Vert | 2400.000 | PK | 51.0 | 27.7 | 5.4 | 32.7 | 51.4 | 74.3 | 22.9 | |

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

UL Japan, Inc.

Ise EMC Lab.

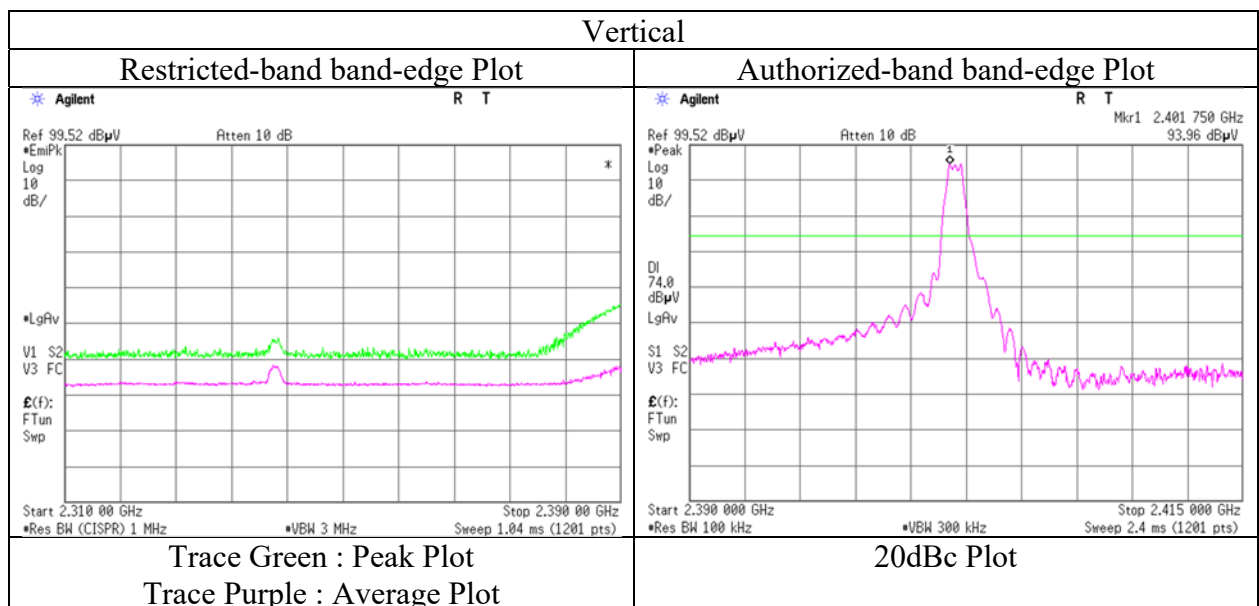
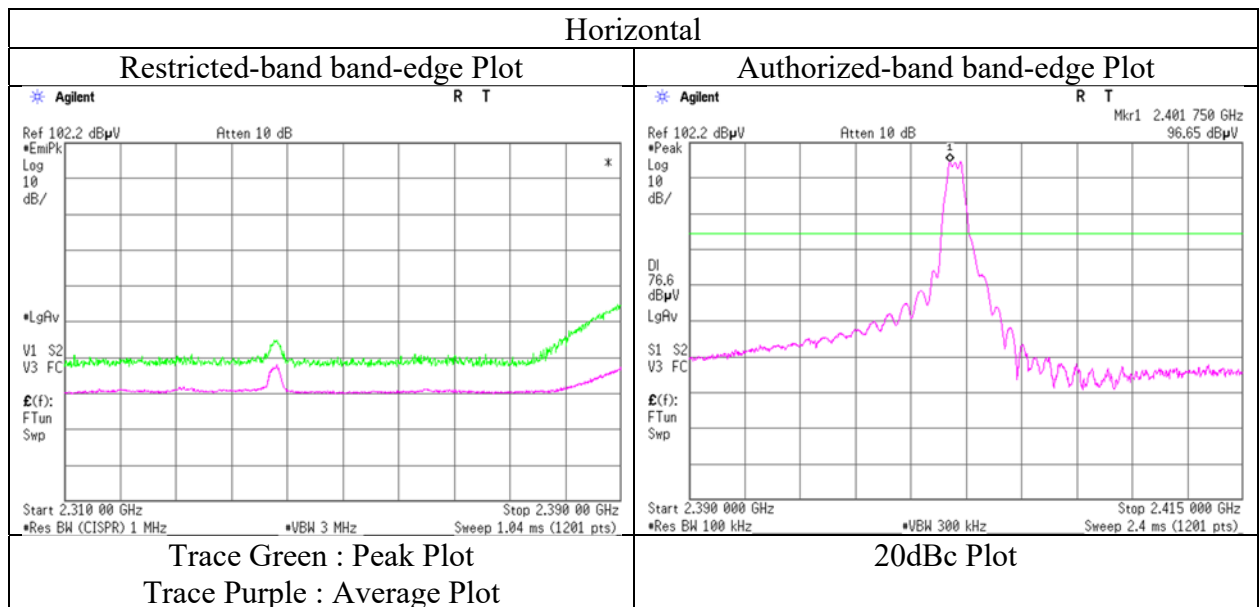
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Akihiko Maeda
(1 GHz -10 GHz)
Mode Tx BT LE 1M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 1M-PHY 2440 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.281 | QP | 24.1 | 8.1 | 7.5 | 32.2 | - | 7.5 | 40.0 | 32.5 | |
| Hori. | 62.268 | QP | 22.9 | 7.4 | 7.6 | 32.2 | - | 5.6 | 40.0 | 34.4 | |
| Hori. | 181.979 | QP | 22.1 | 16.4 | 9.0 | 32.1 | - | 15.4 | 43.5 | 28.1 | |
| Hori. | 337.644 | QP | 22.3 | 14.8 | 10.2 | 31.9 | - | 15.4 | 46.0 | 30.6 | |
| Hori. | 491.358 | QP | 22.2 | 17.6 | 11.3 | 32.0 | - | 19.1 | 46.0 | 26.9 | |
| Hori. | 959.676 | QP | 23.9 | 22.2 | 13.8 | 30.6 | - | 29.2 | 46.0 | 16.8 | |
| Hori. | 2373.968 | PK | 47.9 | 27.7 | 5.4 | 32.8 | - | 48.3 | 73.9 | 25.6 | |
| Hori. | 4880.000 | PK | 42.0 | 31.5 | 7.5 | 31.8 | - | 49.3 | 73.9 | 24.6 | Floor noise |
| Hori. | 7320.000 | PK | 41.7 | 36.2 | 8.9 | 32.7 | - | 54.1 | 73.9 | 19.8 | Floor noise |
| Hori. | 9760.000 | PK | 41.9 | 38.8 | 9.4 | 33.4 | - | 56.7 | 73.9 | 17.2 | Floor noise |
| Hori. | 2373.968 | AV | 39.3 | 27.7 | 5.4 | 32.8 | 2.0 | 41.7 | 53.9 | 12.2 | *1) |
| Hori. | 4880.000 | AV | 32.2 | 31.5 | 7.5 | 31.8 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Hori. | 7320.000 | AV | 33.6 | 36.2 | 8.9 | 32.7 | - | 46.0 | 53.9 | 7.9 | Floor noise |
| Hori. | 9760.000 | AV | 32.3 | 38.8 | 9.4 | 33.4 | - | 47.1 | 53.9 | 6.8 | Floor noise |
| Vert. | 59.281 | QP | 29.2 | 8.1 | 7.5 | 32.2 | - | 12.6 | 40.0 | 27.4 | |
| Vert. | 62.268 | QP | 25.7 | 7.4 | 7.6 | 32.2 | - | 8.4 | 40.0 | 31.6 | |
| Vert. | 181.979 | QP | 22.2 | 16.4 | 9.0 | 32.1 | - | 15.5 | 43.5 | 28.0 | |
| Vert. | 337.644 | QP | 22.4 | 14.8 | 10.2 | 31.9 | - | 15.5 | 46.0 | 30.5 | |
| Vert. | 491.358 | QP | 22.3 | 17.6 | 11.3 | 32.0 | - | 19.2 | 46.0 | 26.8 | |
| Vert. | 959.676 | QP | 23.3 | 22.2 | 13.8 | 30.6 | - | 28.6 | 46.0 | 17.4 | |
| Vert. | 2373.968 | PK | 46.9 | 27.7 | 5.4 | 32.8 | - | 47.2 | 73.9 | 26.7 | |
| Vert. | 4880.000 | PK | 41.2 | 31.5 | 7.5 | 31.8 | - | 48.4 | 73.9 | 25.5 | Floor noise |
| Vert. | 7320.000 | PK | 43.2 | 36.2 | 8.9 | 32.7 | - | 55.5 | 73.9 | 18.4 | Floor noise |
| Vert. | 9760.000 | PK | 41.6 | 38.8 | 9.4 | 33.4 | - | 56.4 | 73.9 | 17.5 | Floor noise |
| Vert. | 2373.968 | AV | 38.8 | 27.7 | 5.4 | 32.8 | 2.0 | 41.2 | 53.9 | 12.8 | *1) |
| Vert. | 4880.000 | AV | 32.4 | 31.5 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Vert. | 7320.000 | AV | 33.6 | 36.2 | 8.9 | 32.7 | - | 46.0 | 53.9 | 7.9 | Floor noise |
| Vert. | 9760.000 | AV | 32.2 | 38.8 | 9.4 | 33.4 | - | 47.0 | 53.9 | 6.9 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 1M-PHY 2480 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.407 | QP | 24.3 | 8.0 | 7.5 | 32.2 | - | 7.7 | 40.0 | 32.3 | |
| Hori. | 62.780 | QP | 22.9 | 7.3 | 7.6 | 32.2 | - | 5.6 | 40.0 | 34.4 | |
| Hori. | 145.199 | QP | 22.6 | 14.8 | 8.6 | 32.1 | - | 13.9 | 43.5 | 29.6 | |
| Hori. | 354.545 | QP | 22.2 | 15.0 | 10.4 | 31.9 | - | 15.7 | 46.0 | 30.3 | |
| Hori. | 500.950 | QP | 22.1 | 17.7 | 11.3 | 32.0 | - | 19.2 | 46.0 | 26.8 | |
| Hori. | 959.794 | QP | 24.0 | 22.2 | 13.8 | 30.6 | - | 29.3 | 46.0 | 16.7 | |
| Hori. | 2483.500 | PK | 59.4 | 27.5 | 5.5 | 32.7 | - | 59.6 | 73.9 | 14.3 | |
| Hori. | 4960.000 | PK | 41.2 | 31.6 | 7.5 | 31.8 | - | 48.5 | 73.9 | 25.4 | Floor noise |
| Hori. | 7440.000 | PK | 43.0 | 36.3 | 8.9 | 32.7 | - | 55.5 | 73.9 | 18.4 | Floor noise |
| Hori. | 9920.000 | PK | 42.1 | 38.9 | 9.4 | 33.4 | - | 57.0 | 73.9 | 16.9 | Floor noise |
| Hori. | 2483.500 | AV | 44.7 | 27.5 | 5.5 | 32.7 | 2.0 | 46.9 | 53.9 | 7.0 | *1) |
| Hori. | 4960.000 | AV | 32.2 | 31.6 | 7.5 | 31.8 | - | 39.5 | 53.9 | 14.4 | Floor noise |
| Hori. | 7440.000 | AV | 34.5 | 36.3 | 8.9 | 32.7 | - | 46.9 | 53.9 | 7.0 | Floor noise |
| Hori. | 9920.000 | AV | 32.4 | 38.9 | 9.4 | 33.4 | - | 47.2 | 53.9 | 6.7 | Floor noise |
| Vert. | 59.407 | QP | 29.2 | 8.0 | 7.5 | 32.2 | - | 12.6 | 40.0 | 27.4 | |
| Vert. | 62.780 | QP | 25.9 | 7.3 | 7.6 | 32.2 | - | 8.6 | 40.0 | 31.4 | |
| Vert. | 145.199 | QP | 22.7 | 14.8 | 8.6 | 32.1 | - | 14.0 | 43.5 | 29.5 | |
| Vert. | 354.545 | QP | 22.3 | 15.0 | 10.4 | 31.9 | - | 15.8 | 46.0 | 30.2 | |
| Vert. | 500.950 | QP | 22.3 | 17.7 | 11.3 | 32.0 | - | 19.4 | 46.0 | 26.6 | |
| Vert. | 959.794 | QP | 23.3 | 22.2 | 13.8 | 30.6 | - | 28.6 | 46.0 | 17.4 | |
| Vert. | 2483.500 | PK | 54.8 | 27.5 | 5.5 | 32.7 | - | 55.0 | 73.9 | 18.9 | |
| Vert. | 4960.000 | PK | 41.2 | 31.6 | 7.5 | 31.8 | - | 48.5 | 73.9 | 25.4 | Floor noise |
| Vert. | 7440.000 | PK | 42.5 | 36.3 | 8.9 | 32.7 | - | 54.9 | 73.9 | 19.0 | Floor noise |
| Vert. | 9920.000 | PK | 42.8 | 38.9 | 9.4 | 33.4 | - | 57.7 | 73.9 | 16.2 | Floor noise |
| Vert. | 2483.500 | AV | 41.5 | 27.5 | 5.5 | 32.7 | 2.0 | 43.8 | 53.9 | 10.1 | *1) |
| Vert. | 4960.000 | AV | 32.5 | 31.6 | 7.5 | 31.8 | - | 39.8 | 53.9 | 14.1 | Floor noise |
| Vert. | 7440.000 | AV | 34.4 | 36.3 | 8.9 | 32.7 | - | 46.9 | 53.9 | 7.0 | Floor noise |
| Vert. | 9920.000 | AV | 32.3 | 38.9 | 9.4 | 33.4 | - | 47.2 | 53.9 | 6.7 | Floor noise |

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

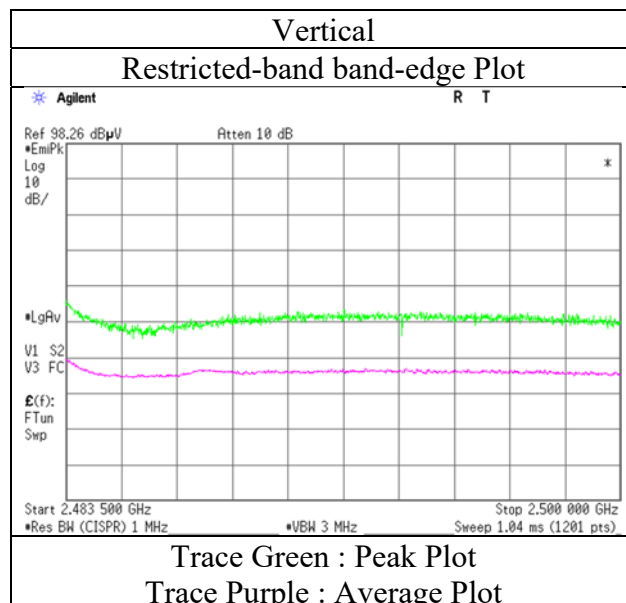
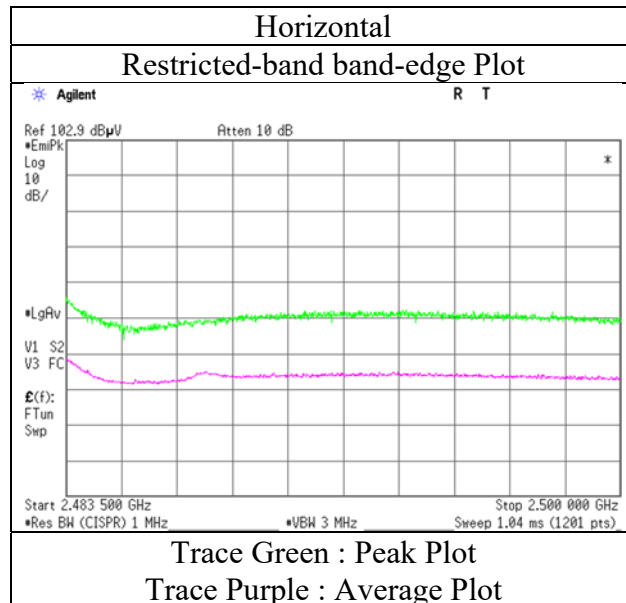
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Akihiko Maeda
(1 GHz -10 GHz)
Mode Tx BT LE 1M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.235 | QP | 24.1 | 8.1 | 7.5 | 32.2 | - | 7.5 | 40.0 | 32.5 | |
| Hori. | 62.991 | QP | 22.8 | 7.3 | 7.6 | 32.2 | - | 5.4 | 40.0 | 34.6 | |
| Hori. | 175.140 | QP | 22.9 | 16.1 | 8.9 | 32.1 | - | 15.9 | 43.5 | 27.7 | |
| Hori. | 341.535 | QP | 22.3 | 14.9 | 10.3 | 31.9 | - | 15.5 | 46.0 | 30.5 | |
| Hori. | 544.779 | QP | 22.1 | 17.8 | 11.6 | 32.0 | - | 19.5 | 46.0 | 26.5 | |
| Hori. | 959.777 | QP | 24.1 | 22.2 | 13.8 | 30.6 | - | 29.4 | 46.0 | 16.6 | |
| Hori. | 2339.989 | PK | 48.9 | 27.8 | 5.4 | 32.8 | - | 49.3 | 73.9 | 24.6 | |
| Hori. | 2390.000 | PK | 57.4 | 27.7 | 5.4 | 32.8 | - | 57.7 | 73.9 | 16.2 | |
| Hori. | 4804.000 | PK | 41.2 | 31.6 | 7.5 | 31.8 | - | 48.5 | 73.9 | 25.4 | Floor noise |
| Hori. | 7206.000 | PK | 42.2 | 36.0 | 8.9 | 32.7 | - | 54.4 | 73.9 | 19.5 | Floor noise |
| Hori. | 9608.000 | PK | 42.0 | 38.5 | 9.4 | 33.3 | - | 56.6 | 73.9 | 17.3 | Floor noise |
| Hori. | 2339.989 | AV | 40.2 | 27.8 | 5.4 | 32.8 | 4.8 | 45.4 | 53.9 | 8.5 | *2) |
| Hori. | 2390.000 | AV | 43.4 | 27.7 | 5.4 | 32.8 | 4.8 | 48.5 | 53.9 | 5.4 | *1) |
| Hori. | 4804.000 | AV | 32.6 | 31.6 | 7.5 | 31.8 | - | 39.9 | 53.9 | 14.0 | Floor noise |
| Hori. | 7206.000 | AV | 33.5 | 36.0 | 8.9 | 32.7 | - | 45.8 | 53.9 | 8.2 | Floor noise |
| Hori. | 9608.000 | AV | 32.2 | 38.5 | 9.4 | 33.3 | - | 46.8 | 53.9 | 7.1 | Floor noise |
| Vert. | 59.235 | QP | 29.0 | 8.1 | 7.5 | 32.2 | - | 12.4 | 40.0 | 27.6 | |
| Vert. | 62.991 | QP | 25.8 | 7.3 | 7.6 | 32.2 | - | 8.4 | 40.0 | 31.6 | |
| Vert. | 175.140 | QP | 22.7 | 16.1 | 8.9 | 32.1 | - | 15.7 | 43.5 | 27.9 | |
| Vert. | 341.535 | QP | 22.1 | 14.9 | 10.3 | 31.9 | - | 15.3 | 46.0 | 30.7 | |
| Vert. | 544.779 | QP | 22.2 | 17.8 | 11.6 | 32.0 | - | 19.6 | 46.0 | 26.4 | |
| Vert. | 959.777 | QP | 23.2 | 22.2 | 13.8 | 30.6 | - | 28.5 | 46.0 | 17.5 | |
| Vert. | 2339.989 | PK | 46.8 | 27.8 | 5.4 | 32.8 | - | 47.2 | 73.9 | 26.7 | |
| Vert. | 2390.000 | PK | 55.1 | 27.7 | 5.4 | 32.8 | - | 55.4 | 73.9 | 18.5 | |
| Vert. | 4804.000 | PK | 41.0 | 31.6 | 7.5 | 31.8 | - | 48.3 | 73.9 | 25.7 | Floor noise |
| Vert. | 7206.000 | PK | 42.3 | 36.0 | 8.9 | 32.7 | - | 54.5 | 73.9 | 19.4 | Floor noise |
| Vert. | 9608.000 | PK | 42.0 | 38.5 | 9.4 | 33.3 | - | 56.6 | 73.9 | 17.3 | Floor noise |
| Vert. | 2339.989 | AV | 36.8 | 27.8 | 5.4 | 32.8 | 4.8 | 42.0 | 53.9 | 11.9 | *2) |
| Vert. | 2390.000 | AV | 40.3 | 27.7 | 5.4 | 32.8 | 4.8 | 45.4 | 53.9 | 8.5 | *1) |
| Vert. | 4804.000 | AV | 32.3 | 31.6 | 7.5 | 31.8 | - | 39.6 | 53.9 | 14.4 | Floor noise |
| Vert. | 7206.000 | AV | 34.1 | 36.0 | 8.9 | 32.7 | - | 46.3 | 53.9 | 7.6 | Floor noise |
| Vert. | 9608.000 | AV | 32.1 | 38.5 | 9.4 | 33.3 | - | 46.7 | 53.9 | 7.2 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

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 | 96.3 | 27.7 | 5.4 | 32.7 | 96.6 | - | - | Carrier |
| Hori. | 2400.000 | PK | 53.2 | 27.7 | 5.4 | 32.7 | 53.6 | 76.6 | 23.1 | |
| Vert. | 2402.000 | PK | 94.3 | 27.7 | 5.4 | 32.7 | 94.6 | - | - | Carrier |
| Vert. | 2400.000 | PK | 51.2 | 27.7 | 5.4 | 32.7 | 51.5 | 74.6 | 23.1 | |

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

UL Japan, Inc.

Ise EMC Lab.

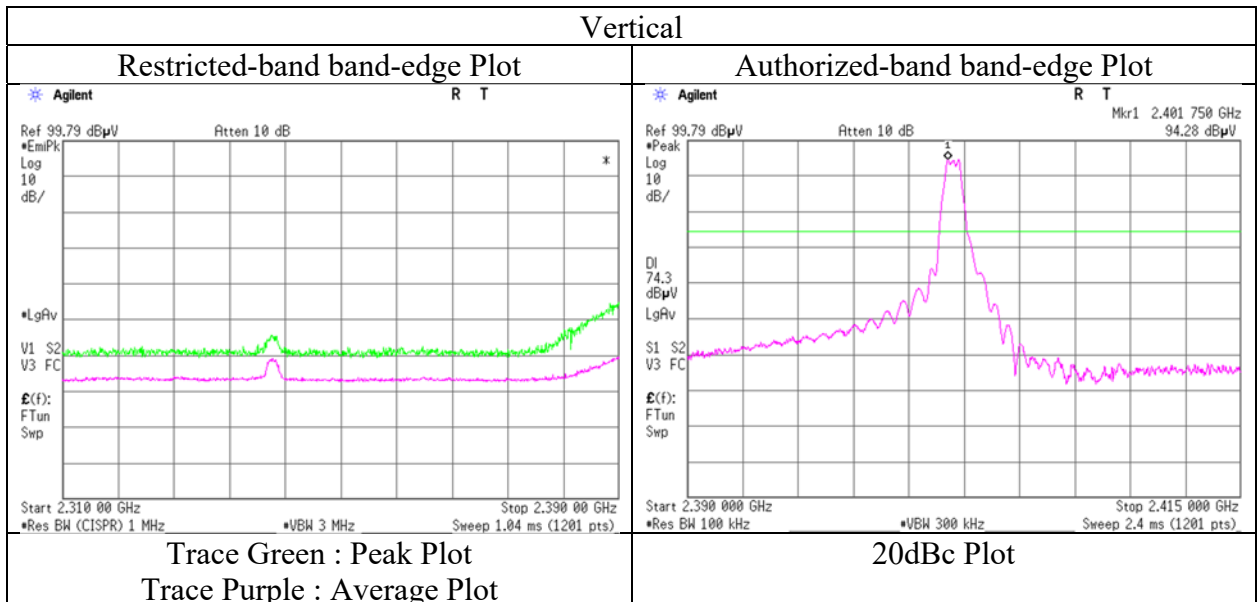
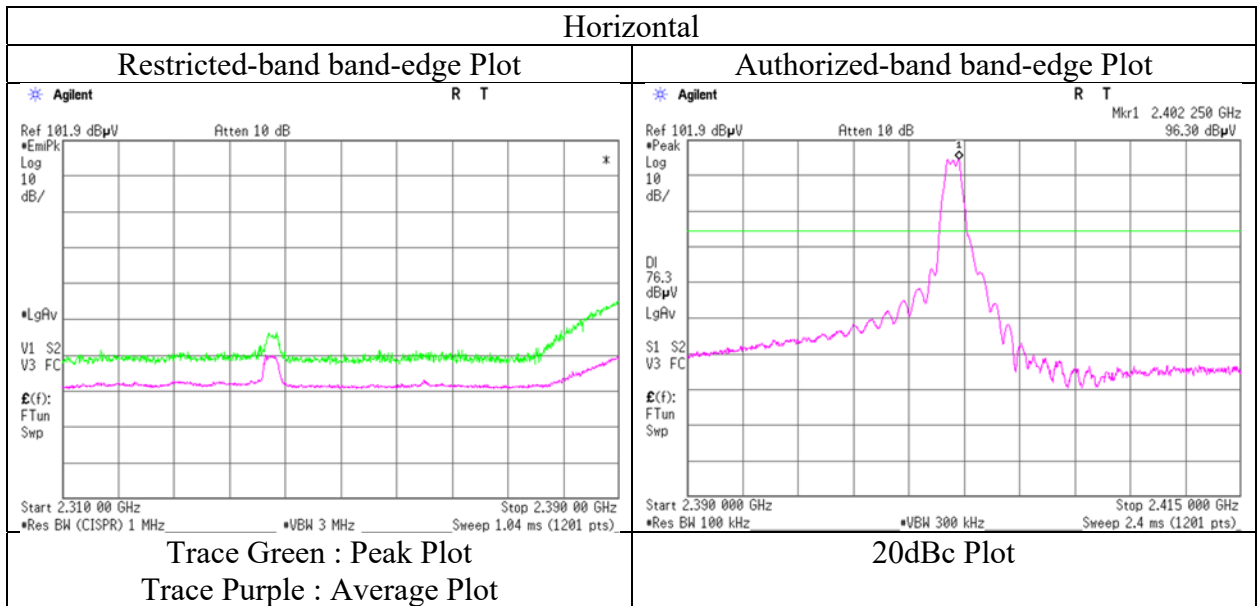
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Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Akihiko Maeda
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.259 | QP | 24.2 | 8.1 | 7.5 | 32.2 | - | 7.6 | 40.0 | 32.4 | |
| Hori. | 62.516 | QP | 22.9 | 7.3 | 7.6 | 32.2 | - | 5.6 | 40.0 | 34.4 | |
| Hori. | 130.109 | QP | 22.1 | 13.8 | 8.4 | 32.1 | - | 12.2 | 43.5 | 31.3 | |
| Hori. | 345.690 | QP | 22.2 | 15.0 | 10.3 | 31.9 | - | 15.5 | 46.0 | 30.5 | |
| Hori. | 502.203 | QP | 22.1 | 17.7 | 11.3 | 32.0 | - | 19.2 | 46.0 | 26.8 | |
| Hori. | 959.846 | QP | 24.5 | 22.2 | 13.8 | 30.6 | - | 29.8 | 46.0 | 16.2 | |
| Hori. | 2373.968 | PK | 47.9 | 27.7 | 5.4 | 32.8 | - | 48.2 | 73.9 | 25.7 | |
| Hori. | 4880.000 | PK | 42.1 | 31.5 | 7.5 | 31.8 | - | 49.4 | 73.9 | 24.6 | Floor noise |
| Hori. | 7320.000 | PK | 41.6 | 36.2 | 8.9 | 32.7 | - | 54.0 | 73.9 | 20.0 | Floor noise |
| Hori. | 9760.000 | PK | 42.0 | 38.8 | 9.4 | 33.4 | - | 56.8 | 73.9 | 17.1 | Floor noise |
| Hori. | 2373.968 | AV | 38.9 | 27.7 | 5.4 | 32.8 | 4.8 | 44.0 | 53.9 | 9.9 | *1) |
| Hori. | 4880.000 | AV | 32.4 | 31.5 | 7.5 | 31.8 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Hori. | 7320.000 | AV | 33.4 | 36.2 | 8.9 | 32.7 | - | 45.8 | 53.9 | 8.1 | Floor noise |
| Hori. | 9760.000 | AV | 32.2 | 38.8 | 9.4 | 33.4 | - | 47.0 | 53.9 | 6.9 | Floor noise |
| Vert. | 59.259 | QP | 29.2 | 8.1 | 7.5 | 32.2 | - | 12.6 | 40.0 | 27.4 | |
| Vert. | 62.516 | QP | 25.7 | 7.3 | 7.6 | 32.2 | - | 8.4 | 40.0 | 31.6 | |
| Vert. | 130.109 | QP | 22.4 | 13.8 | 8.4 | 32.1 | - | 12.5 | 43.5 | 31.0 | |
| Vert. | 345.690 | QP | 22.3 | 15.0 | 10.3 | 31.9 | - | 15.6 | 46.0 | 30.4 | |
| Vert. | 502.203 | QP | 22.3 | 17.7 | 11.3 | 32.0 | - | 19.4 | 46.0 | 26.6 | |
| Vert. | 959.846 | QP | 23.3 | 22.2 | 13.8 | 30.6 | - | 28.6 | 46.0 | 17.4 | |
| Vert. | 2373.968 | PK | 48.0 | 27.7 | 5.4 | 32.8 | - | 48.3 | 73.9 | 25.6 | |
| Vert. | 4880.000 | PK | 41.0 | 31.5 | 7.5 | 31.8 | - | 48.2 | 73.9 | 25.7 | Floor noise |
| Vert. | 7320.000 | PK | 43.3 | 36.2 | 8.9 | 32.7 | - | 55.7 | 73.9 | 18.3 | Floor noise |
| Vert. | 9760.000 | PK | 41.3 | 38.8 | 9.4 | 33.4 | - | 56.1 | 73.9 | 17.8 | Floor noise |
| Vert. | 2373.968 | AV | 39.0 | 27.7 | 5.4 | 32.8 | 4.8 | 44.1 | 53.9 | 9.8 | *1) |
| Vert. | 4880.000 | AV | 32.5 | 31.5 | 7.5 | 31.8 | - | 39.8 | 53.9 | 14.1 | Floor noise |
| Vert. | 7320.000 | AV | 33.5 | 36.2 | 8.9 | 32.7 | - | 45.9 | 53.9 | 8.0 | Floor noise |
| Vert. | 9760.000 | AV | 32.1 | 38.8 | 9.4 | 33.4 | - | 46.9 | 53.9 | 7.0 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$

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

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 23 deg. C / 43 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Akihiko Maeda Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.075 | QP | 24.5 | 8.1 | 7.5 | 32.2 | - | 8.0 | 40.0 | 32.0 | |
| Hori. | 62.278 | QP | 23.2 | 7.3 | 7.6 | 32.2 | - | 5.9 | 40.0 | 34.1 | |
| Hori. | 171.909 | QP | 22.7 | 16.0 | 8.9 | 32.1 | - | 15.4 | 43.5 | 28.1 | |
| Hori. | 356.774 | QP | 22.1 | 15.0 | 10.4 | 31.9 | - | 15.6 | 46.0 | 30.4 | |
| Hori. | 627.392 | QP | 22.1 | 19.5 | 12.1 | 32.0 | - | 21.6 | 46.0 | 24.4 | |
| Hori. | 959.934 | QP | 27.9 | 22.2 | 13.8 | 30.6 | - | 33.2 | 46.0 | 12.8 | |
| Hori. | 2483.500 | PK | 58.3 | 27.5 | 5.5 | 32.7 | - | 58.6 | 73.9 | 15.4 | |
| Hori. | 4960.000 | PK | 41.3 | 31.6 | 7.5 | 31.8 | - | 48.6 | 73.9 | 25.3 | Floor noise |
| Hori. | 7440.000 | PK | 43.1 | 36.3 | 8.9 | 32.7 | - | 55.5 | 73.9 | 18.4 | Floor noise |
| Hori. | 9920.000 | PK | 42.8 | 38.9 | 9.4 | 33.4 | - | 57.6 | 73.9 | 16.3 | Floor noise |
| Hori. | 2483.500 | AV | 45.0 | 27.5 | 5.5 | 32.7 | 4.8 | 50.0 | 53.9 | 3.9 | *1) |
| Hori. | 4960.000 | AV | 32.4 | 31.6 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Hori. | 7440.000 | AV | 34.3 | 36.3 | 8.9 | 32.7 | - | 46.7 | 53.9 | 7.2 | Floor noise |
| Hori. | 9920.000 | AV | 32.2 | 38.9 | 9.4 | 33.4 | - | 47.1 | 53.9 | 6.8 | Floor noise |
| Vert. | 59.075 | QP | 29.5 | 8.1 | 7.5 | 32.2 | - | 13.0 | 40.0 | 27.0 | |
| Vert. | 62.278 | QP | 27.3 | 7.3 | 7.6 | 32.2 | - | 10.0 | 40.0 | 30.0 | |
| Vert. | 171.909 | QP | 22.6 | 16.0 | 8.9 | 32.1 | - | 15.3 | 43.5 | 28.2 | |
| Vert. | 356.774 | QP | 22.3 | 15.0 | 10.4 | 31.9 | - | 15.8 | 46.0 | 30.2 | |
| Vert. | 627.392 | QP | 22.0 | 19.5 | 12.1 | 32.0 | - | 21.5 | 46.0 | 24.5 | |
| Vert. | 959.934 | QP | 23.5 | 22.2 | 13.8 | 30.6 | - | 28.8 | 46.0 | 17.2 | |
| Vert. | 2483.500 | PK | 56.5 | 27.5 | 5.5 | 32.7 | - | 56.7 | 73.9 | 17.2 | |
| Vert. | 4960.000 | PK | 41.5 | 31.6 | 7.5 | 31.8 | - | 48.8 | 73.9 | 25.2 | Floor noise |
| Vert. | 7440.000 | PK | 42.3 | 36.3 | 8.9 | 32.7 | - | 54.8 | 73.9 | 19.1 | Floor noise |
| Vert. | 9920.000 | PK | 42.4 | 38.9 | 9.4 | 33.4 | - | 57.3 | 73.9 | 16.6 | Floor noise |
| Vert. | 2483.500 | AV | 42.1 | 27.5 | 5.5 | 32.7 | 4.8 | 47.1 | 53.9 | 6.8 | *1) |
| Vert. | 4960.000 | AV | 32.5 | 31.6 | 7.5 | 31.8 | - | 39.8 | 53.9 | 14.1 | Floor noise |
| Vert. | 7440.000 | AV | 34.5 | 36.3 | 8.9 | 32.7 | - | 47.0 | 53.9 | 6.9 | Floor noise |
| Vert. | 9920.000 | AV | 32.5 | 38.9 | 9.4 | 33.4 | - | 47.3 | 53.9 | 6.6 | Floor noise |

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

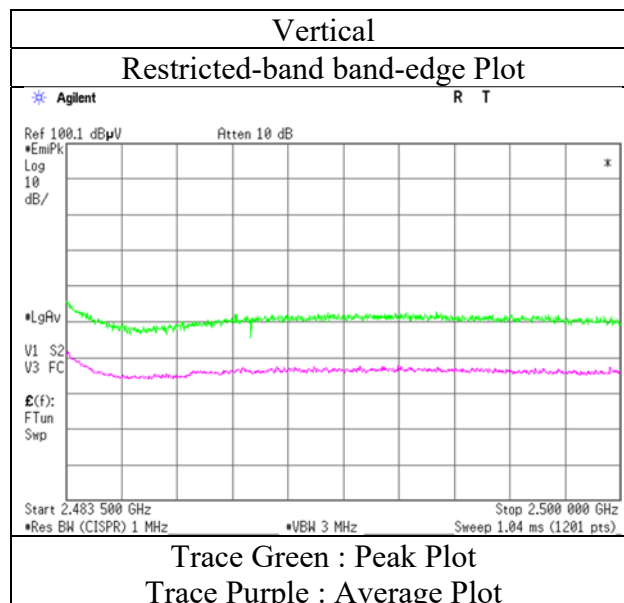
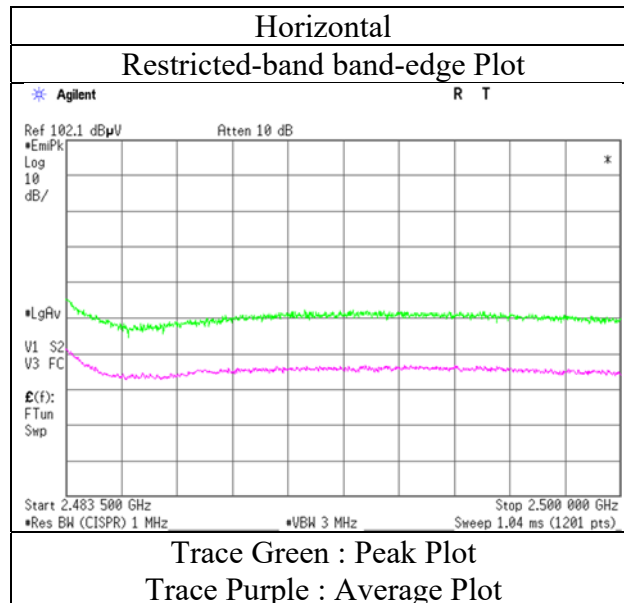
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 22, 2019
Temperature / Humidity 23 deg. C / 43 % RH
Engineer Akihiko Maeda
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 21 deg. C / 41 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 1M-PHY 2402 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.189 | QP | 24.5 | 8.1 | 7.5 | 32.2 | - | 7.9 | 40.0 | 32.1 | |
| Hori. | 62.882 | QP | 23.1 | 7.3 | 7.6 | 32.2 | - | 5.8 | 40.0 | 34.2 | |
| Hori. | 191.870 | QP | 22.3 | 16.5 | 9.0 | 32.1 | - | 15.8 | 43.5 | 27.7 | |
| Hori. | 344.717 | QP | 22.2 | 15.0 | 10.3 | 31.9 | - | 15.5 | 46.0 | 30.5 | |
| Hori. | 543.895 | QP | 22.3 | 17.8 | 11.6 | 32.0 | - | 19.7 | 46.0 | 26.4 | |
| Hori. | 959.485 | QP | 26.7 | 22.1 | 13.8 | 30.6 | - | 32.0 | 46.0 | 14.0 | |
| Hori. | 2339.989 | PK | 46.5 | 27.8 | 5.4 | 32.8 | - | 46.9 | 73.9 | 27.0 | |
| Hori. | 2390.000 | PK | 55.7 | 27.7 | 5.4 | 32.8 | - | 56.1 | 73.9 | 17.8 | |
| Hori. | 4804.000 | PK | 40.5 | 31.6 | 7.5 | 31.8 | - | 47.7 | 73.9 | 26.2 | Floor noise |
| Hori. | 7206.000 | PK | 40.7 | 36.0 | 8.9 | 32.7 | - | 52.9 | 73.9 | 21.0 | Floor noise |
| Hori. | 9608.000 | PK | 40.8 | 38.5 | 9.4 | 33.3 | - | 55.4 | 73.9 | 18.5 | Floor noise |
| Hori. | 2339.989 | AV | 38.0 | 27.8 | 5.4 | 32.8 | 2.0 | 40.4 | 53.9 | 13.5 | *2) |
| Hori. | 2390.000 | AV | 40.7 | 27.7 | 5.4 | 32.8 | 2.0 | 43.1 | 53.9 | 10.8 | *1) |
| Hori. | 4804.000 | AV | 32.4 | 31.6 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Hori. | 7206.000 | AV | 32.4 | 36.0 | 8.9 | 32.7 | - | 44.7 | 53.9 | 9.3 | Floor noise |
| Hori. | 9608.000 | AV | 32.1 | 38.5 | 9.4 | 33.3 | - | 46.7 | 53.9 | 7.2 | Floor noise |
| Vert. | 59.189 | QP | 29.5 | 8.1 | 7.5 | 32.2 | - | 12.9 | 40.0 | 27.1 | |
| Vert. | 62.882 | QP | 25.8 | 7.3 | 7.6 | 32.2 | - | 8.5 | 40.0 | 31.5 | |
| Vert. | 191.870 | QP | 22.5 | 16.5 | 9.0 | 32.1 | - | 16.0 | 43.5 | 27.5 | |
| Vert. | 344.717 | QP | 22.4 | 15.0 | 10.3 | 31.9 | - | 15.7 | 46.0 | 30.3 | |
| Vert. | 543.895 | QP | 22.1 | 17.8 | 11.6 | 32.0 | - | 19.5 | 46.0 | 26.6 | |
| Vert. | 959.485 | QP | 23.5 | 22.1 | 13.8 | 30.6 | - | 28.8 | 46.0 | 17.2 | |
| Vert. | 2339.989 | PK | 45.4 | 27.8 | 5.4 | 32.8 | - | 45.8 | 73.9 | 28.1 | |
| Vert. | 2390.000 | PK | 54.6 | 27.7 | 5.4 | 32.8 | - | 55.0 | 73.9 | 18.9 | |
| Vert. | 4804.000 | PK | 41.5 | 31.6 | 7.5 | 31.8 | - | 48.7 | 73.9 | 25.2 | Floor noise |
| Vert. | 7206.000 | PK | 42.0 | 36.0 | 8.9 | 32.7 | - | 54.2 | 73.9 | 19.7 | Floor noise |
| Vert. | 9608.000 | PK | 40.5 | 38.5 | 9.4 | 33.3 | - | 55.1 | 73.9 | 18.8 | Floor noise |
| Vert. | 2339.989 | AV | 37.2 | 27.8 | 5.4 | 32.8 | 2.0 | 39.6 | 53.9 | 14.3 | *2) |
| Vert. | 2390.000 | AV | 39.7 | 27.7 | 5.4 | 32.8 | 2.0 | 42.0 | 53.9 | 11.9 | *1) |
| Vert. | 4804.000 | AV | 32.5 | 31.6 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Vert. | 7206.000 | AV | 31.8 | 36.0 | 8.9 | 32.7 | - | 44.0 | 53.9 | 9.9 | Floor noise |
| Vert. | 9608.000 | AV | 32.2 | 38.5 | 9.4 | 33.3 | - | 46.8 | 53.9 | 7.1 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

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 | 94.5 | 27.7 | 5.4 | 32.7 | 94.8 | - | - | Carrier |
| Hori. | 2400.000 | PK | 54.0 | 27.7 | 5.4 | 32.7 | 54.4 | 74.8 | 20.4 | |
| Vert. | 2402.000 | PK | 94.0 | 27.7 | 5.4 | 32.7 | 94.4 | - | - | Carrier |
| Vert. | 2400.000 | PK | 53.5 | 27.7 | 5.4 | 32.7 | 53.9 | 74.4 | 20.5 | |

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

UL Japan, Inc.

Ise EMC Lab.

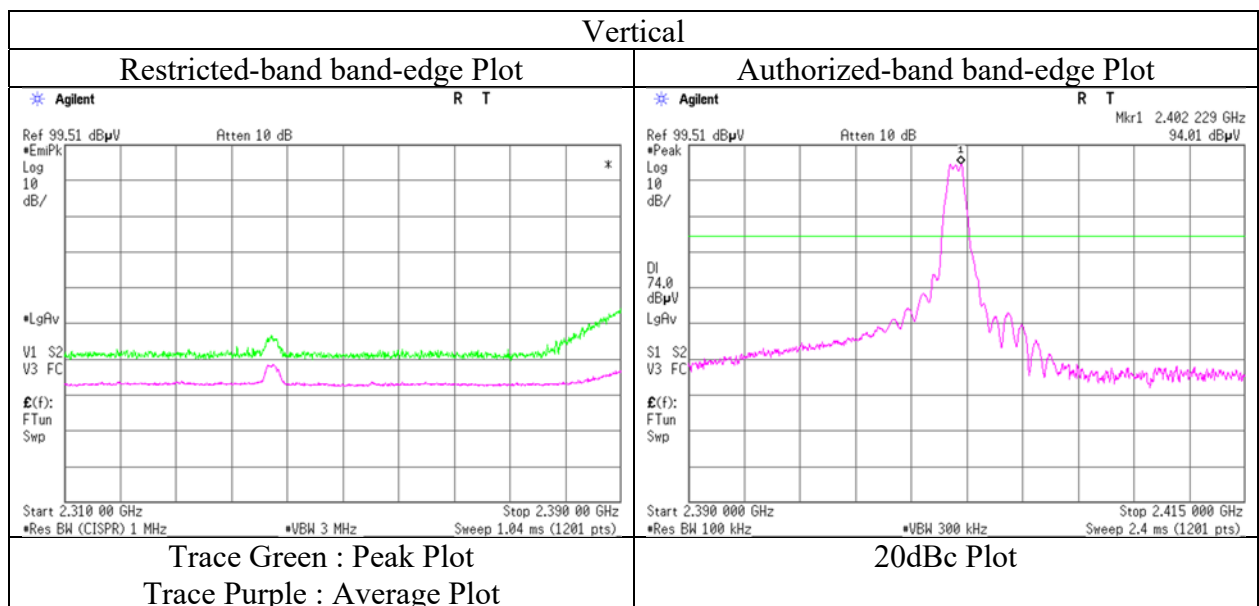
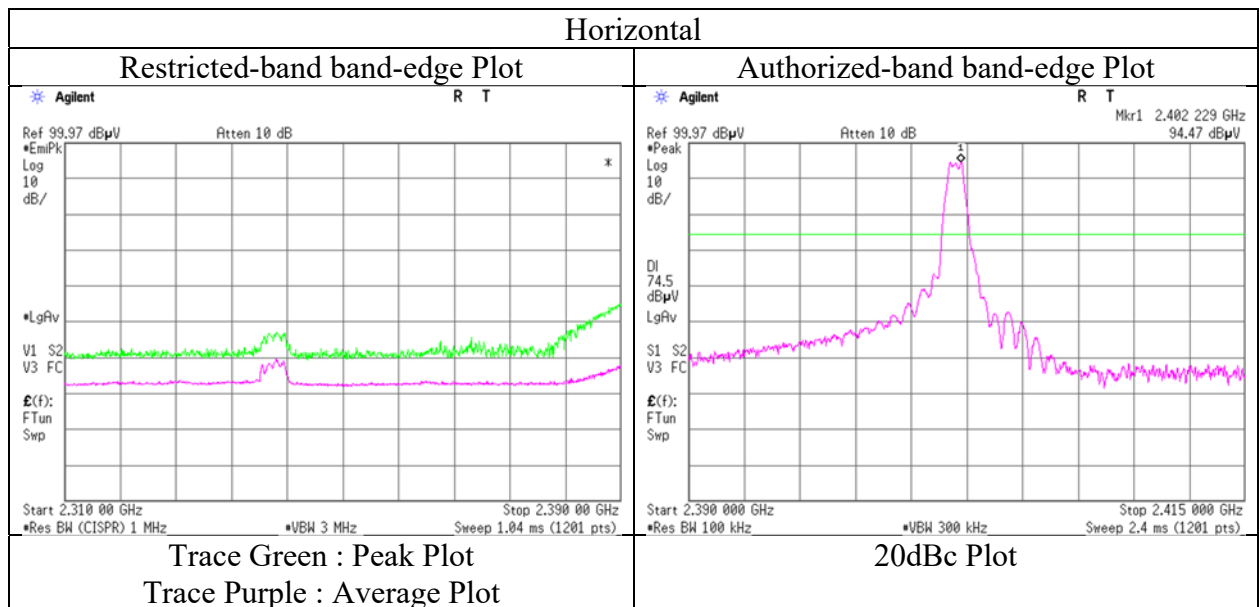
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019
Temperature / Humidity 21 deg. C / 41 % RH
Engineer Yuta Moriya
(1 GHz -10 GHz)
Mode Tx BT LE 1M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 21 deg. C / 41 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 1M-PHY 2440 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.171 | QP | 24.1 | 8.1 | 7.5 | 32.2 | - | 7.5 | 40.0 | 32.5 | |
| Hori. | 62.432 | QP | 22.8 | 7.3 | 7.6 | 32.2 | - | 5.5 | 40.0 | 34.5 | |
| Hori. | 167.730 | QP | 22.3 | 15.7 | 8.8 | 32.1 | - | 14.8 | 43.5 | 28.7 | |
| Hori. | 348.436 | QP | 22.2 | 15.0 | 10.3 | 31.9 | - | 15.6 | 46.0 | 30.4 | |
| Hori. | 581.713 | QP | 21.9 | 18.7 | 11.8 | 32.0 | - | 20.4 | 46.0 | 25.6 | |
| Hori. | 959.915 | QP | 26.5 | 22.2 | 13.8 | 30.6 | - | 31.8 | 46.0 | 14.2 | |
| Hori. | 2373.968 | PK | 47.2 | 27.7 | 5.4 | 32.8 | - | 47.6 | 73.9 | 26.3 | |
| Hori. | 4880.000 | PK | 40.4 | 31.5 | 7.5 | 31.8 | - | 47.7 | 73.9 | 26.2 | Floor noise |
| Hori. | 7320.000 | PK | 41.5 | 36.2 | 8.9 | 32.7 | - | 53.9 | 73.9 | 20.0 | Floor noise |
| Hori. | 9760.000 | PK | 40.5 | 38.8 | 9.4 | 33.4 | - | 55.3 | 73.9 | 18.7 | Floor noise |
| Hori. | 2373.968 | AV | 37.0 | 27.7 | 5.4 | 32.8 | 2.0 | 39.4 | 53.9 | 14.5 | *1) |
| Hori. | 4880.000 | AV | 32.3 | 31.5 | 7.5 | 31.8 | - | 39.6 | 53.9 | 14.4 | Floor noise |
| Hori. | 7320.000 | AV | 32.1 | 36.2 | 8.9 | 32.7 | - | 44.5 | 53.9 | 9.4 | Floor noise |
| Hori. | 9760.000 | AV | 32.2 | 38.8 | 9.4 | 33.4 | - | 47.0 | 53.9 | 6.9 | Floor noise |
| Vert. | 59.171 | QP | 29.2 | 8.1 | 7.5 | 32.2 | - | 12.6 | 40.0 | 27.4 | |
| Vert. | 62.432 | QP | 26.0 | 7.3 | 7.6 | 32.2 | - | 8.7 | 40.0 | 31.3 | |
| Vert. | 167.730 | QP | 22.3 | 15.7 | 8.8 | 32.1 | - | 14.8 | 43.5 | 28.7 | |
| Vert. | 348.436 | QP | 22.4 | 15.0 | 10.3 | 31.9 | - | 15.8 | 46.0 | 30.2 | |
| Vert. | 581.713 | QP | 22.2 | 18.7 | 11.8 | 32.0 | - | 20.7 | 46.0 | 25.3 | |
| Vert. | 959.915 | QP | 23.6 | 22.2 | 13.8 | 30.6 | - | 28.9 | 46.0 | 17.1 | |
| Vert. | 2373.968 | PK | 46.1 | 27.7 | 5.4 | 32.8 | - | 46.5 | 73.9 | 27.4 | |
| Vert. | 4880.000 | PK | 40.6 | 31.5 | 7.5 | 31.8 | - | 47.9 | 73.9 | 26.0 | Floor noise |
| Vert. | 7320.000 | PK | 41.6 | 36.2 | 8.9 | 32.7 | - | 54.0 | 73.9 | 19.9 | Floor noise |
| Vert. | 9760.000 | PK | 40.6 | 38.8 | 9.4 | 33.4 | - | 55.4 | 73.9 | 18.5 | Floor noise |
| Vert. | 2373.968 | AV | 36.4 | 27.7 | 5.4 | 32.8 | 2.0 | 38.7 | 53.9 | 15.2 | *1) |
| Vert. | 4880.000 | AV | 32.4 | 31.5 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Vert. | 7320.000 | AV | 32.1 | 36.2 | 8.9 | 32.7 | - | 44.5 | 53.9 | 9.4 | Floor noise |
| Vert. | 9760.000 | AV | 32.2 | 38.8 | 9.4 | 33.4 | - | 47.0 | 53.9 | 6.9 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(PIFA Antenna BT2)

| | | | |
|------------------------|--------------------------|---------------------|---------------------|
| Report No. | 13170804H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | December 24, 2019 | January 9, 2020 | January 9, 2020 |
| Temperature / Humidity | 21 deg. C / 41 % RH | 23 deg. C / 35 % RH | 22 deg. C / 34 % RH |
| Engineer | Yuta Moriya | Tomohisa Nakagawa | Junki Nagatomi |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 26.5 GHz) |
| Mode | Tx BT LE 1M-PHY 2480 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.226 | QP | 24.3 | 8.1 | 7.5 | 32.2 | - | 7.7 | 40.0 | 32.3 | |
| Hori. | 62.527 | QP | 22.9 | 7.3 | 7.6 | 32.2 | - | 5.6 | 40.0 | 34.4 | |
| Hori. | 172.313 | QP | 22.3 | 16.0 | 8.9 | 32.1 | - | 15.0 | 43.5 | 28.5 | |
| Hori. | 375.315 | QP | 22.3 | 15.1 | 10.5 | 31.9 | - | 16.0 | 46.0 | 30.0 | |
| Hori. | 592.826 | QP | 22.0 | 19.1 | 11.9 | 32.0 | - | 21.0 | 46.0 | 25.0 | |
| Hori. | 959.616 | QP | 26.1 | 22.1 | 13.8 | 30.6 | - | 31.4 | 46.0 | 14.6 | |
| Hori. | 2483.500 | PK | 60.1 | 27.5 | 5.5 | 32.7 | - | 60.3 | 73.9 | 13.6 | |
| Hori. | 4960.000 | PK | 39.9 | 31.6 | 7.5 | 31.8 | - | 47.2 | 73.9 | 26.7 | Floor noise |
| Hori. | 7440.000 | PK | 41.3 | 36.3 | 8.9 | 32.7 | - | 53.8 | 73.9 | 20.1 | Floor noise |
| Hori. | 9920.000 | PK | 40.7 | 38.9 | 9.4 | 33.4 | - | 55.6 | 73.9 | 18.3 | Floor noise |
| Hori. | 2483.500 | AV | 46.9 | 27.5 | 5.5 | 32.7 | 2.0 | 49.1 | 53.9 | 4.8 | *1) |
| Hori. | 4960.000 | AV | 32.1 | 31.6 | 7.5 | 31.8 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Hori. | 7440.000 | AV | 32.8 | 36.3 | 8.9 | 32.7 | - | 45.3 | 53.9 | 8.6 | Floor noise |
| Hori. | 9920.000 | AV | 32.2 | 38.9 | 9.4 | 33.4 | - | 47.1 | 53.9 | 6.8 | Floor noise |
| Vert. | 59.226 | QP | 29.1 | 8.1 | 7.5 | 32.2 | - | 12.5 | 40.0 | 27.5 | |
| Vert. | 62.527 | QP | 26.1 | 7.3 | 7.6 | 32.2 | - | 8.8 | 40.0 | 31.2 | |
| Vert. | 172.313 | QP | 22.3 | 16.0 | 8.9 | 32.1 | - | 15.0 | 43.5 | 28.5 | |
| Vert. | 375.315 | QP | 22.3 | 15.1 | 10.5 | 31.9 | - | 16.0 | 46.0 | 30.0 | |
| Vert. | 592.826 | QP | 22.1 | 19.1 | 11.9 | 32.0 | - | 21.1 | 46.0 | 24.9 | |
| Vert. | 959.616 | QP | 23.3 | 22.1 | 13.8 | 30.6 | - | 28.6 | 46.0 | 17.4 | |
| Vert. | 2483.500 | PK | 57.9 | 27.5 | 5.5 | 32.7 | - | 58.1 | 73.9 | 15.8 | |
| Vert. | 4960.000 | PK | 40.1 | 31.6 | 7.5 | 31.8 | - | 47.4 | 73.9 | 26.5 | Floor noise |
| Vert. | 7440.000 | PK | 41.2 | 36.3 | 8.9 | 32.7 | - | 53.7 | 73.9 | 20.2 | Floor noise |
| Vert. | 9920.000 | PK | 40.9 | 38.9 | 9.4 | 33.4 | - | 55.8 | 73.9 | 18.2 | Floor noise |
| Vert. | 2483.500 | AV | 45.1 | 27.5 | 5.5 | 32.7 | 2.0 | 47.3 | 53.9 | 6.6 | *1) |
| Vert. | 4960.000 | AV | 32.0 | 31.6 | 7.5 | 31.8 | - | 39.3 | 53.9 | 14.6 | Floor noise |
| Vert. | 7440.000 | AV | 32.2 | 36.3 | 8.9 | 32.7 | - | 44.7 | 53.9 | 9.2 | Floor noise |
| Vert. | 9920.000 | AV | 32.1 | 38.9 | 9.4 | 33.4 | - | 47.0 | 53.9 | 6.9 | Floor noise |

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

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

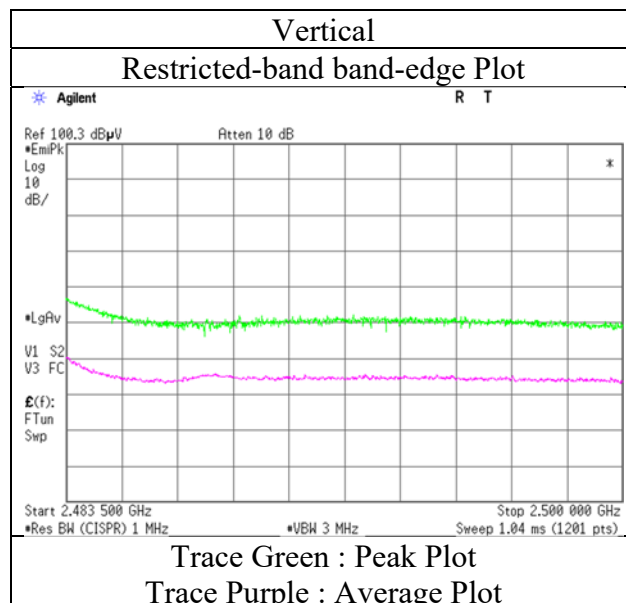
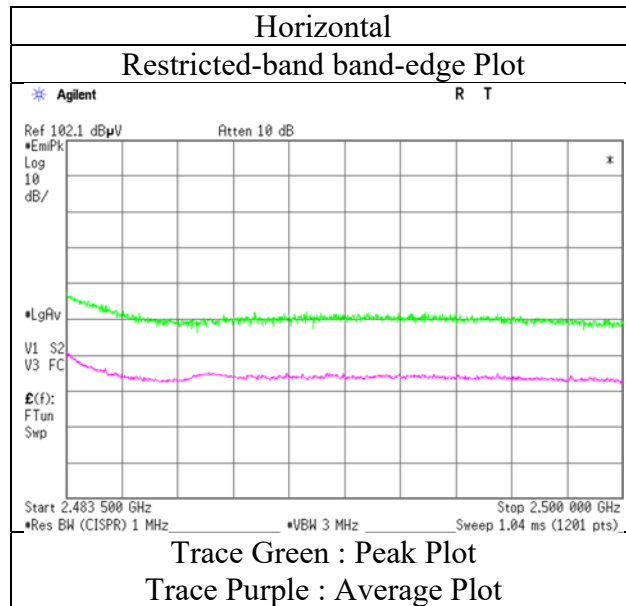
Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019
Temperature / Humidity 21 deg. C / 41 % RH
Engineer Yuta Moriya
(1 GHz -10 GHz)
Mode Tx BT LE 1M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 21 deg. C / 41 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.383 | QP | 24.3 | 8.0 | 7.5 | 32.2 | - | 7.7 | 40.0 | 32.3 | |
| Hori. | 62.531 | QP | 23.0 | 7.3 | 7.6 | 32.2 | - | 5.7 | 40.0 | 34.3 | |
| Hori. | 177.338 | QP | 22.5 | 16.2 | 8.9 | 32.1 | - | 15.6 | 43.5 | 28.0 | |
| Hori. | 352.644 | QP | 22.2 | 15.0 | 10.4 | 31.9 | - | 15.7 | 46.0 | 30.4 | |
| Hori. | 631.873 | QP | 22.1 | 19.4 | 12.1 | 32.0 | - | 21.6 | 46.0 | 24.4 | |
| Hori. | 959.640 | QP | 26.3 | 22.1 | 13.8 | 30.6 | - | 31.6 | 46.0 | 14.4 | |
| Hori. | 2337.277 | PK | 51.4 | 27.8 | 5.4 | 32.8 | - | 51.8 | 73.9 | 22.1 | |
| Hori. | 2390.000 | PK | 56.6 | 27.7 | 5.4 | 32.8 | - | 57.0 | 73.9 | 17.0 | |
| Hori. | 4804.000 | PK | 40.1 | 31.6 | 7.5 | 31.8 | - | 47.4 | 73.9 | 26.5 | Floor noise |
| Hori. | 7206.000 | PK | 41.0 | 36.0 | 8.9 | 32.7 | - | 53.2 | 73.9 | 20.7 | Floor noise |
| Hori. | 9608.000 | PK | 40.7 | 38.5 | 9.4 | 33.3 | - | 55.3 | 73.9 | 18.6 | Floor noise |
| Hori. | 2337.277 | AV | 40.8 | 27.8 | 5.4 | 32.8 | 4.8 | 45.9 | 53.9 | 8.0 | *2) |
| Hori. | 2390.000 | AV | 42.0 | 27.7 | 5.4 | 32.8 | 4.8 | 47.1 | 53.9 | 6.8 | *1) |
| Hori. | 4804.000 | AV | 32.4 | 31.6 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.3 | Floor noise |
| Hori. | 7206.000 | AV | 32.0 | 36.0 | 8.9 | 32.7 | - | 44.3 | 53.9 | 9.7 | Floor noise |
| Hori. | 9608.000 | AV | 31.8 | 38.5 | 9.4 | 33.3 | - | 46.4 | 53.9 | 7.5 | Floor noise |
| Vert. | 59.383 | QP | 29.3 | 8.0 | 7.5 | 32.2 | - | 12.7 | 40.0 | 27.3 | |
| Vert. | 62.531 | QP | 26.1 | 7.3 | 7.6 | 32.2 | - | 8.8 | 40.0 | 31.2 | |
| Vert. | 177.338 | QP | 22.3 | 16.2 | 8.9 | 32.1 | - | 15.4 | 43.5 | 28.2 | |
| Vert. | 352.644 | QP | 22.4 | 15.0 | 10.4 | 31.9 | - | 15.9 | 46.0 | 30.2 | |
| Vert. | 631.873 | QP | 22.2 | 19.4 | 12.1 | 32.0 | - | 21.7 | 46.0 | 24.3 | |
| Vert. | 959.640 | QP | 23.4 | 22.1 | 13.8 | 30.6 | - | 28.7 | 46.0 | 17.3 | |
| Vert. | 2337.277 | PK | 49.7 | 27.8 | 5.4 | 32.8 | - | 50.1 | 73.9 | 23.8 | |
| Vert. | 2390.000 | PK | 56.3 | 27.7 | 5.4 | 32.8 | - | 56.7 | 73.9 | 17.3 | |
| Vert. | 4804.000 | PK | 40.4 | 31.6 | 7.5 | 31.8 | - | 47.7 | 73.9 | 26.2 | Floor noise |
| Vert. | 7206.000 | PK | 40.9 | 36.0 | 8.9 | 32.7 | - | 53.1 | 73.9 | 20.8 | Floor noise |
| Vert. | 9608.000 | PK | 40.7 | 38.5 | 9.4 | 33.3 | - | 55.3 | 73.9 | 18.6 | Floor noise |
| Vert. | 2337.277 | AV | 40.0 | 27.8 | 5.4 | 32.8 | 4.8 | 45.2 | 53.9 | 8.7 | *2) |
| Vert. | 2390.000 | AV | 43.1 | 27.7 | 5.4 | 32.8 | 4.8 | 48.2 | 53.9 | 5.7 | *1) |
| Vert. | 4804.000 | AV | 32.3 | 31.6 | 7.5 | 31.8 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Vert. | 7206.000 | AV | 32.1 | 36.0 | 8.9 | 32.7 | - | 44.3 | 53.9 | 9.6 | Floor noise |
| Vert. | 9608.000 | AV | 31.6 | 38.5 | 9.4 | 33.3 | - | 46.2 | 53.9 | 7.7 | Floor noise |

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)
*2) Noise synchronized with duty of carrier frequency.

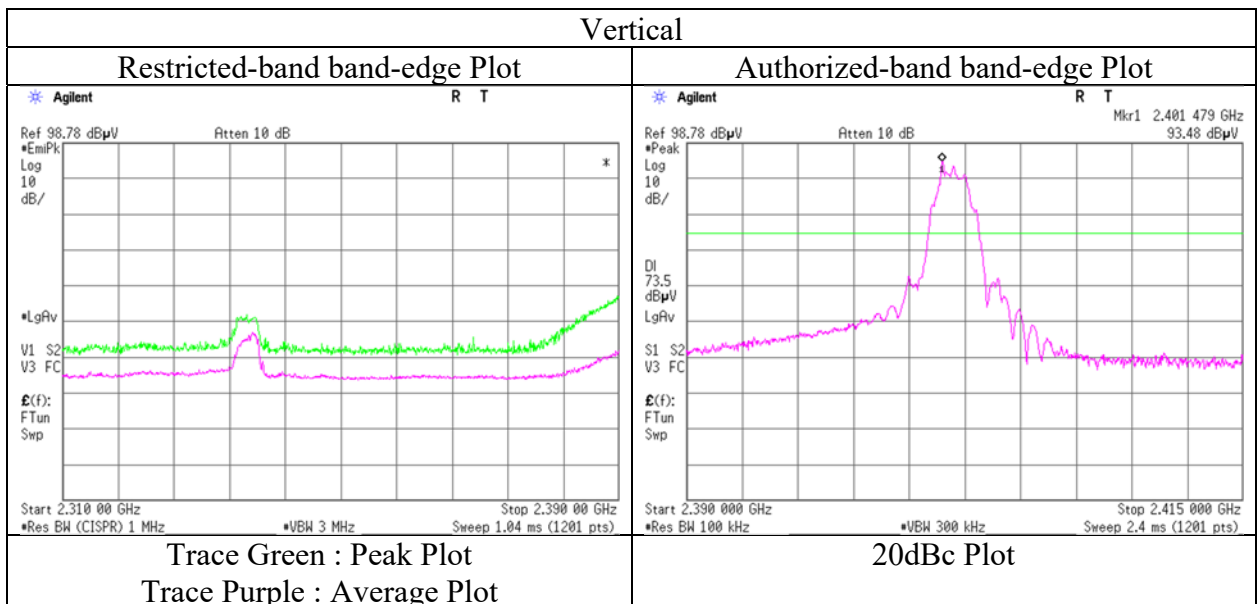
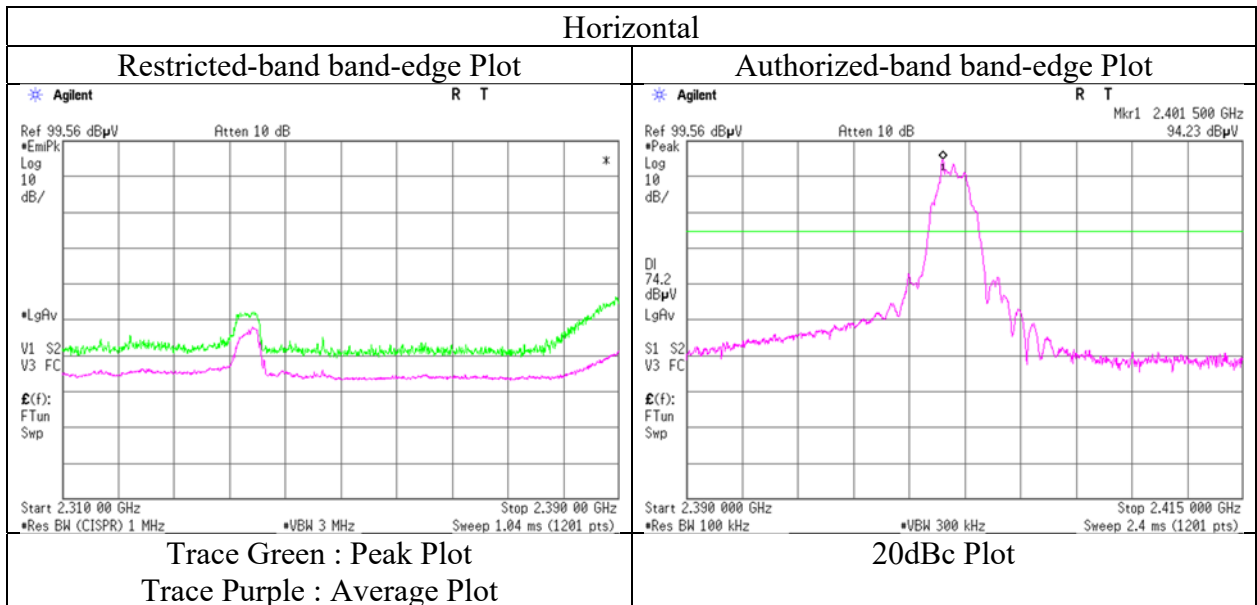
20dBc Data Sheet

| 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 | 94.2 | 27.7 | 5.4 | 32.7 | 94.6 | - | - | Carrier |
| Hori. | 2400.000 | PK | 62.4 | 27.7 | 5.4 | 32.7 | 62.8 | 74.6 | 11.8 | |
| Vert. | 2402.000 | PK | 93.5 | 27.7 | 5.4 | 32.7 | 93.8 | - | - | Carrier |
| Vert. | 2400.000 | PK | 61.4 | 27.7 | 5.4 | 32.7 | 61.8 | 73.8 | 12.0 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019
Temperature / Humidity 21 deg. C / 41 % RH
Engineer Yuta Moriya
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 21 deg. C / 41 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.484 | QP | 24.1 | 8.0 | 7.5 | 32.2 | - | 7.5 | 40.0 | 32.6 | |
| Hori. | 62.617 | QP | 23.1 | 7.3 | 7.6 | 32.2 | - | 5.8 | 40.0 | 34.2 | |
| Hori. | 167.532 | QP | 22.3 | 15.7 | 8.8 | 32.1 | - | 14.8 | 43.5 | 28.8 | |
| Hori. | 345.537 | QP | 22.5 | 15.0 | 10.3 | 31.9 | - | 15.8 | 46.0 | 30.2 | |
| Hori. | 570.883 | QP | 22.2 | 18.4 | 11.8 | 32.0 | - | 20.4 | 46.0 | 25.6 | |
| Hori. | 959.929 | QP | 27.6 | 22.2 | 13.8 | 30.6 | - | 32.9 | 46.0 | 13.1 | |
| Hori. | 2371.427 | PK | 51.9 | 27.7 | 5.4 | 32.8 | - | 52.3 | 73.9 | 21.6 | |
| Hori. | 4880.000 | PK | 39.7 | 31.5 | 7.5 | 31.8 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Hori. | 7320.000 | PK | 40.2 | 36.2 | 8.9 | 32.7 | - | 52.6 | 73.9 | 21.3 | Floor noise |
| Hori. | 9760.000 | PK | 40.4 | 38.8 | 9.4 | 33.4 | - | 55.2 | 73.9 | 18.7 | Floor noise |
| Hori. | 2371.427 | AV | 40.1 | 27.7 | 5.4 | 32.8 | 4.8 | 45.2 | 53.9 | 8.7 | *1) |
| Hori. | 4880.000 | AV | 32.0 | 31.5 | 7.5 | 31.8 | - | 39.2 | 53.9 | 14.7 | Floor noise |
| Hori. | 7320.000 | AV | 31.8 | 36.2 | 8.9 | 32.7 | - | 44.2 | 53.9 | 9.7 | Floor noise |
| Hori. | 9760.000 | AV | 32.3 | 38.8 | 9.4 | 33.4 | - | 47.1 | 53.9 | 6.8 | Floor noise |
| Vert. | 59.484 | QP | 29.4 | 8.0 | 7.5 | 32.2 | - | 12.8 | 40.0 | 27.3 | |
| Vert. | 62.617 | QP | 26.2 | 7.3 | 7.6 | 32.2 | - | 8.9 | 40.0 | 31.1 | |
| Vert. | 167.532 | QP | 22.4 | 15.7 | 8.8 | 32.1 | - | 14.9 | 43.5 | 28.7 | |
| Vert. | 345.537 | QP | 22.4 | 15.0 | 10.3 | 31.9 | - | 15.7 | 46.0 | 30.3 | |
| Vert. | 570.883 | QP | 22.1 | 18.4 | 11.8 | 32.0 | - | 20.3 | 46.0 | 25.7 | |
| Vert. | 959.929 | QP | 23.5 | 22.2 | 13.8 | 30.6 | - | 28.8 | 46.0 | 17.2 | |
| Vert. | 2371.427 | PK | 49.5 | 27.7 | 5.4 | 32.8 | - | 49.8 | 73.9 | 24.1 | |
| Vert. | 4880.000 | PK | 39.7 | 31.5 | 7.5 | 31.8 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Vert. | 7320.000 | PK | 40.2 | 36.2 | 8.9 | 32.7 | - | 52.6 | 73.9 | 21.3 | Floor noise |
| Vert. | 9760.000 | PK | 40.4 | 38.8 | 9.4 | 33.4 | - | 55.2 | 73.9 | 18.7 | Floor noise |
| Vert. | 2371.427 | AV | 38.2 | 27.7 | 5.4 | 32.8 | 4.8 | 43.4 | 53.9 | 10.6 | *1) |
| Vert. | 4880.000 | AV | 31.8 | 31.5 | 7.5 | 31.8 | - | 39.1 | 53.9 | 14.9 | Floor noise |
| Vert. | 7320.000 | AV | 31.8 | 36.2 | 8.9 | 32.7 | - | 44.2 | 53.9 | 9.7 | Floor noise |
| Vert. | 9760.000 | AV | 32.1 | 38.8 | 9.4 | 33.4 | - | 46.9 | 53.9 | 7.0 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019 January 9, 2020 January 9, 2020 January 11, 2020
Temperature / Humidity 21 deg. C / 41 % RH 23 deg. C / 35 % RH 22 deg. C / 34 % RH 22 deg. C / 37 % RH
Engineer Yuta Moriya Tomohisa Nakagawa Junki Nagatomi Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 59.237 | QP | 24.3 | 8.1 | 7.5 | 32.2 | - | 7.7 | 40.0 | 32.3 | |
| Hori. | 62.466 | QP | 23.1 | 7.3 | 7.6 | 32.2 | - | 5.8 | 40.0 | 34.2 | |
| Hori. | 162.921 | QP | 22.2 | 15.5 | 8.8 | 32.1 | - | 14.4 | 43.5 | 29.1 | |
| Hori. | 365.505 | QP | 22.3 | 15.0 | 10.4 | 31.9 | - | 15.8 | 46.0 | 30.2 | |
| Hori. | 498.459 | QP | 22.2 | 17.7 | 11.3 | 32.0 | - | 19.3 | 46.0 | 26.7 | |
| Hori. | 959.919 | QP | 27.4 | 22.2 | 13.8 | 30.6 | - | 32.7 | 46.0 | 13.3 | |
| Hori. | 2483.500 | PK | 61.8 | 27.5 | 5.5 | 32.7 | - | 62.0 | 73.9 | 11.9 | |
| Hori. | 4960.000 | PK | 40.2 | 31.6 | 7.5 | 31.8 | - | 47.5 | 73.9 | 26.4 | Floor noise |
| Hori. | 7440.000 | PK | 41.6 | 36.3 | 8.9 | 32.7 | - | 54.1 | 73.9 | 19.8 | Floor noise |
| Hori. | 9920.000 | PK | 41.9 | 38.9 | 9.4 | 33.4 | - | 56.8 | 73.9 | 17.1 | Floor noise |
| Hori. | 2483.500 | AV | 45.1 | 27.5 | 5.5 | 32.7 | 4.8 | 50.1 | 53.9 | 3.8 | *1) |
| Hori. | 4960.000 | AV | 32.1 | 31.6 | 7.5 | 31.8 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Hori. | 7440.000 | AV | 32.9 | 36.3 | 8.9 | 32.7 | - | 45.4 | 53.9 | 8.6 | Floor noise |
| Hori. | 9920.000 | AV | 32.8 | 38.9 | 9.4 | 33.4 | - | 47.7 | 53.9 | 6.2 | Floor noise |
| Vert. | 59.237 | QP | 29.3 | 8.1 | 7.5 | 32.2 | - | 12.7 | 40.0 | 27.3 | |
| Vert. | 62.466 | QP | 26.1 | 7.3 | 7.6 | 32.2 | - | 8.8 | 40.0 | 31.2 | |
| Vert. | 162.921 | QP | 22.3 | 15.5 | 8.8 | 32.1 | - | 14.5 | 43.5 | 29.0 | |
| Vert. | 365.505 | QP | 22.3 | 15.0 | 10.4 | 31.9 | - | 15.8 | 46.0 | 30.2 | |
| Vert. | 498.459 | QP | 22.1 | 17.7 | 11.3 | 32.0 | - | 19.2 | 46.0 | 26.8 | |
| Vert. | 959.919 | QP | 23.3 | 22.2 | 13.8 | 30.6 | - | 28.6 | 46.0 | 17.4 | |
| Vert. | 2483.500 | PK | 61.6 | 27.5 | 5.5 | 32.7 | - | 61.8 | 73.9 | 12.1 | |
| Vert. | 4960.000 | PK | 40.3 | 31.6 | 7.5 | 31.8 | - | 47.6 | 73.9 | 26.3 | Floor noise |
| Vert. | 7440.000 | PK | 41.7 | 36.3 | 8.9 | 32.7 | - | 54.2 | 73.9 | 19.7 | Floor noise |
| Vert. | 9920.000 | PK | 41.5 | 38.9 | 9.4 | 33.4 | - | 56.4 | 73.9 | 17.5 | Floor noise |
| Vert. | 2483.500 | AV | 43.7 | 27.5 | 5.5 | 32.7 | 4.8 | 48.7 | 53.9 | 5.2 | *1) |
| Vert. | 4960.000 | AV | 32.2 | 31.6 | 7.5 | 31.8 | - | 39.5 | 53.9 | 14.4 | Floor noise |
| Vert. | 7440.000 | AV | 32.8 | 36.3 | 8.9 | 32.7 | - | 45.3 | 53.9 | 8.6 | Floor noise |
| Vert. | 9920.000 | AV | 32.8 | 38.9 | 9.4 | 33.4 | - | 47.7 | 53.9 | 6.2 | Floor noise |

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

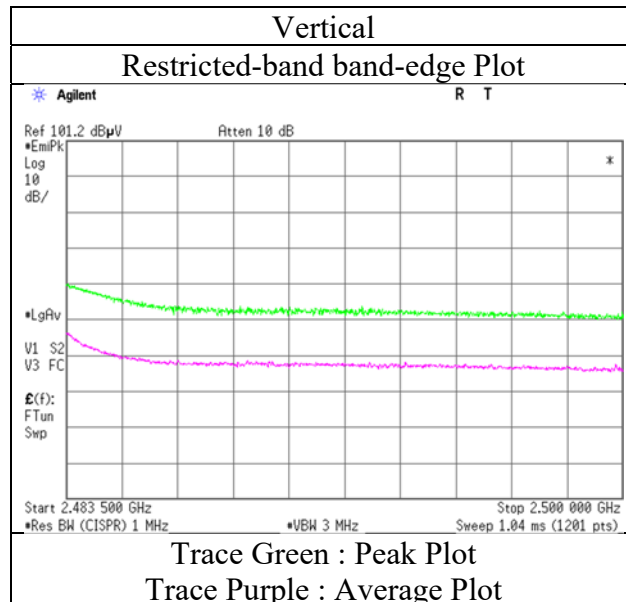
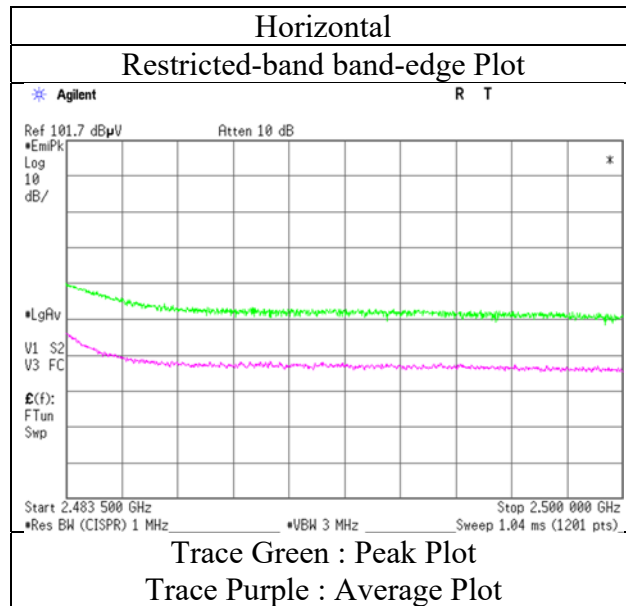
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz 20log(3.95 m / 3.0 m) = 2.39 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT2)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 24, 2019
Temperature / Humidity 21 deg. C / 41 % RH
Engineer Yuta Moriya
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020
Temperature / Humidity 22 deg. C / 30 % RH
Engineer Koji Yamamoto
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz (OFDM)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant. Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|------------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2336.881 | PK | 55.6 | 27.8 | 5.1 | 35.3 | - | 53.2 | 73.9 | 20.7 | |
| Hori. | 2390.000 | PK | 50.7 | 27.6 | 5.2 | 35.2 | - | 48.3 | 73.9 | 25.6 | |
| Hori. | 2336.881 | AV | 44.9 | 27.8 | 5.1 | 35.3 | 4.8 | 47.3 | 53.9 | 6.7 | *2) |
| Hori. | 2390.000 | AV | 38.7 | 27.6 | 5.2 | 35.2 | 4.8 | 41.0 | 53.9 | 12.9 | *1) |
| Vert. | 2336.881 | PK | 55.5 | 27.8 | 5.1 | 35.3 | - | 53.1 | 73.9 | 20.8 | |
| Vert. | 2390.000 | PK | 50.0 | 27.6 | 5.2 | 35.2 | - | 47.6 | 73.9 | 26.3 | |
| Vert. | 2336.881 | AV | 42.5 | 27.8 | 5.1 | 35.3 | 4.8 | 44.8 | 53.9 | 9.1 | *2) |
| Vert. | 2390.000 | AV | 38.8 | 27.6 | 5.2 | 35.2 | 4.8 | 41.1 | 53.9 | 12.8 | *1) |

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 1.83\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

*2) Noise synchronized with duty of carrier frequency.

20dBc Data Sheet

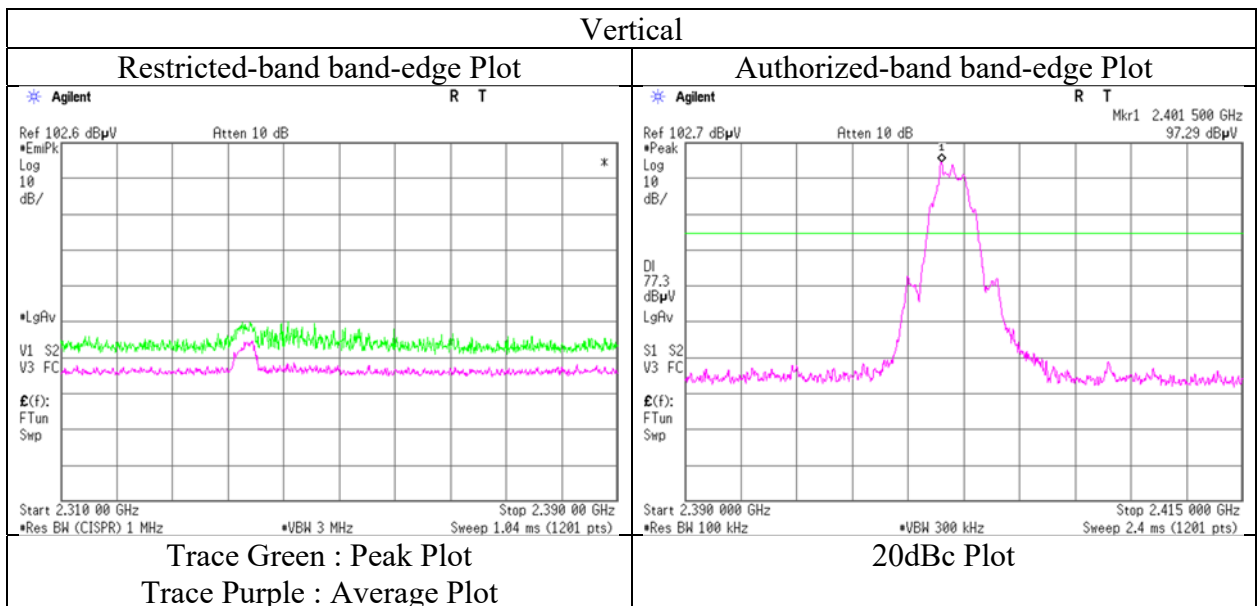
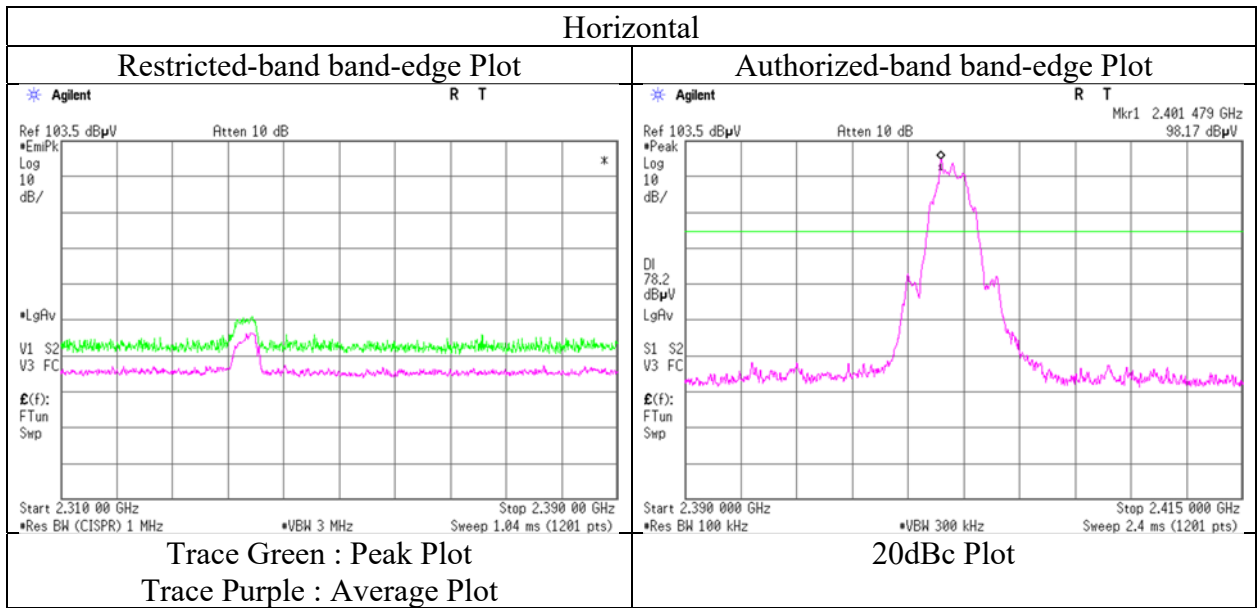
| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori | 2402.000 | PK | 98.2 | 27.6 | 5.2 | 35.2 | 95.7 | - | - | Carrier |
| Hori | 2400.000 | PK | 66.2 | 27.6 | 5.2 | 35.2 | 63.7 | 75.7 | 12.0 | |
| Vert | 2402.000 | PK | 97.3 | 27.6 | 5.2 | 35.2 | 94.8 | - | - | Carrier |
| Vert | 2400.000 | PK | 65.5 | 27.6 | 5.2 | 35.2 | 63.0 | 74.8 | 11.8 | |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 2.5\text{ dB}$

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020
Temperature / Humidity 22 deg. C / 30 % RH
Engineer Koji Yamamoto
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2402 MHz + Tx 11ax-40 5755MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

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Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2 No.2
Date January 20, 2020 January 21, 2020 January 22, 2020
Temperature / Humidity 22 deg. C / 30 % RH 22 deg. C / 30 % RH 21 deg. C / 41 % RH
Engineer Koji Yamamoto Koji Yamamoto Takumi Shimada
(1 GHz -10 GHz) (10 GHz -26.5 GHz) (Below 1 GHz)
Mode Tx BT LE 2M-PHY 2440 MHz + Tx 11ax-40 5755MHz (OFDM)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 31.854 | QP | 27.1 | 17.7 | 7.0 | 30.5 | - | 21.4 | 40.0 | 18.6 | |
| Hori. | 54.472 | QP | 25.0 | 9.7 | 7.4 | 30.4 | - | 11.7 | 40.0 | 28.3 | |
| Hori. | 91.656 | QP | 25.8 | 8.8 | 7.9 | 30.2 | - | 12.3 | 43.5 | 31.2 | |
| Hori. | 343.829 | QP | 25.2 | 14.9 | 10.1 | 29.4 | - | 20.8 | 46.0 | 25.2 | |
| Hori. | 503.935 | QP | 23.8 | 17.5 | 11.1 | 30.0 | - | 22.3 | 46.0 | 23.7 | |
| Hori. | 985.547 | QP | 22.1 | 22.3 | 13.3 | 27.8 | - | 29.9 | 54.0 | 24.1 | |
| Hori. | 2371.475 | PK | 55.7 | 27.6 | 5.2 | 35.2 | - | 53.3 | 73.9 | 20.6 | |
| Hori. | 4880.000 | PK | 46.4 | 31.6 | 7.5 | 34.4 | - | 51.0 | 73.9 | 22.9 | Floor noise |
| Hori. | 7320.000 | PK | 46.3 | 36.1 | 8.4 | 34.4 | - | 56.4 | 73.9 | 17.6 | Floor noise |
| Hori. | 9760.000 | PK | 46.2 | 39.2 | 9.6 | 34.9 | - | 60.1 | 73.9 | 13.8 | Floor noise |
| Hori. | 2371.475 | AV | 45.1 | 27.6 | 5.2 | 35.2 | 4.8 | 47.5 | 53.9 | 6.4 | *1) |
| Hori. | 4880.000 | AV | 34.1 | 31.6 | 7.5 | 34.4 | - | 38.7 | 53.9 | 15.2 | Floor noise |
| Hori. | 7320.000 | AV | 33.3 | 36.1 | 8.4 | 34.4 | - | 43.4 | 53.9 | 10.5 | Floor noise |
| Hori. | 9760.000 | AV | 33.4 | 39.2 | 9.6 | 34.9 | - | 47.3 | 53.9 | 6.6 | Floor noise |
| Vert. | 31.854 | QP | 28.9 | 17.7 | 7.0 | 30.5 | - | 23.2 | 40.0 | 16.8 | |
| Vert. | 54.472 | QP | 30.3 | 9.7 | 7.4 | 30.4 | - | 17.0 | 40.0 | 23.0 | |
| Vert. | 91.656 | QP | 32.2 | 8.8 | 7.9 | 30.2 | - | 18.7 | 43.5 | 24.8 | |
| Vert. | 343.829 | QP | 24.0 | 14.9 | 10.1 | 29.4 | - | 19.6 | 46.0 | 26.4 | |
| Vert. | 503.935 | QP | 23.8 | 17.5 | 11.1 | 30.0 | - | 22.3 | 46.0 | 23.7 | |
| Vert. | 985.547 | QP | 22.0 | 22.3 | 13.3 | 27.8 | - | 29.8 | 54.0 | 24.2 | |
| Vert. | 2371.475 | PK | 54.6 | 27.6 | 5.2 | 35.2 | - | 52.2 | 73.9 | 21.7 | |
| Vert. | 4880.000 | PK | 48.3 | 31.6 | 7.5 | 34.4 | - | 52.9 | 73.9 | 21.0 | Floor noise |
| Vert. | 7320.000 | PK | 47.1 | 36.1 | 8.4 | 34.4 | - | 57.2 | 73.9 | 16.7 | Floor noise |
| Vert. | 9760.000 | PK | 46.3 | 39.2 | 9.6 | 34.9 | - | 60.2 | 73.9 | 13.8 | Floor noise |
| Vert. | 2371.475 | AV | 43.4 | 27.6 | 5.2 | 35.2 | 4.8 | 45.7 | 53.9 | 8.2 | *1) |
| Vert. | 4880.000 | AV | 36.4 | 31.6 | 7.5 | 34.4 | - | 41.0 | 53.9 | 12.9 | Floor noise |
| Vert. | 7320.000 | AV | 34.2 | 36.1 | 8.4 | 34.4 | - | 44.3 | 53.9 | 9.6 | Floor noise |
| Vert. | 9760.000 | AV | 33.2 | 39.2 | 9.6 | 34.9 | - | 47.1 | 53.9 | 6.8 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.7 m / 3.0 m) = 1.83 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(PIFA Antenna BT1)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020
Temperature / Humidity 22 deg. C / 30 % RH
Engineer Koji Yamamoto
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz (OFDM)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2483.500 | PK | 62.3 | 27.5 | 5.2 | 35.2 | - | 59.9 | 73.9 | 14.1 | |
| Hori. | 2483.500 | AV | 45.6 | 27.5 | 5.2 | 35.2 | 4.8 | 47.8 | 53.9 | 6.1 | *1) |
| Vert. | 2483.500 | PK | 63.7 | 27.5 | 5.2 | 35.2 | - | 61.3 | 73.9 | 12.7 | |
| Vert. | 2483.500 | AV | 47.6 | 27.5 | 5.2 | 35.2 | 4.8 | 49.8 | 53.9 | 4.1 | *1) |

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

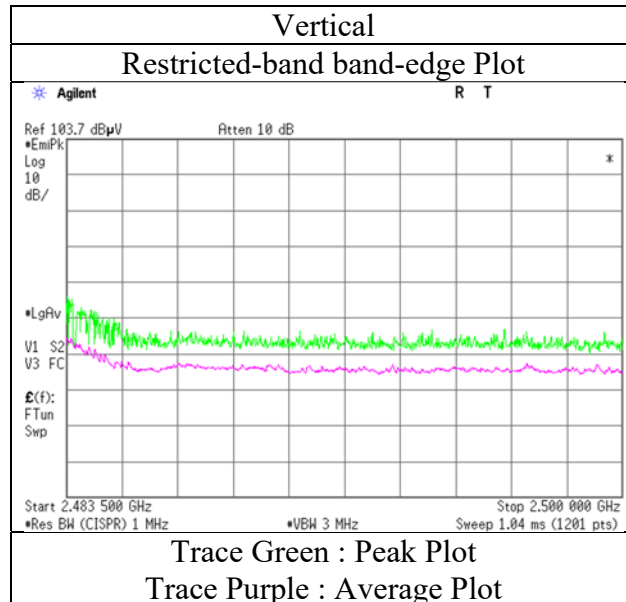
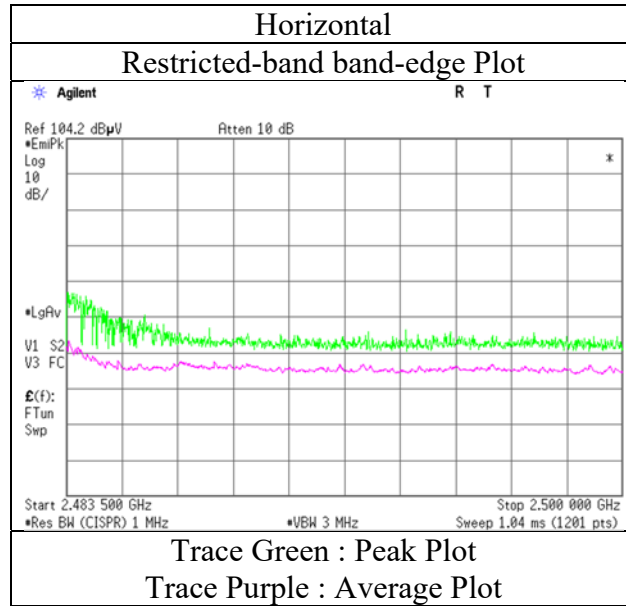
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

Distance factor: 1 GHz - 10 GHz $20\log(3.7\text{ m} / 3.0\text{ m}) = 1.83\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

Radiated Spurious Emission
(Reference Plot for band-edge)
(PIFA Antenna BT1)

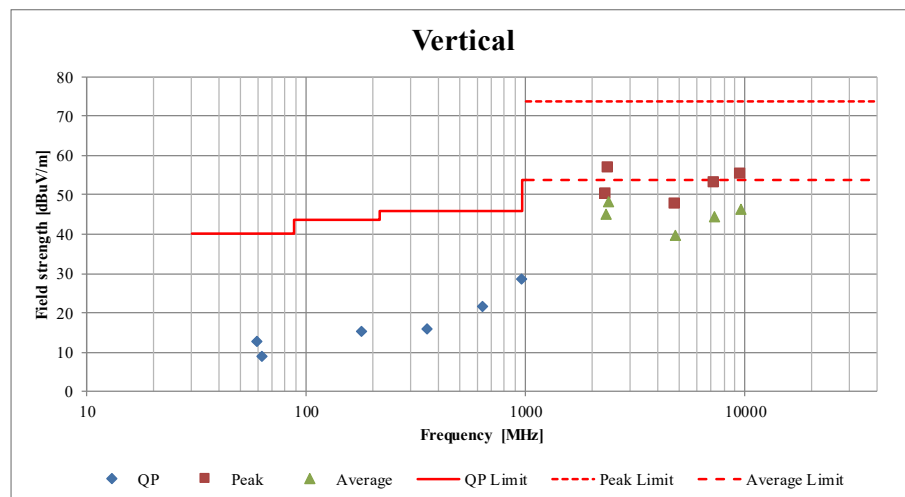
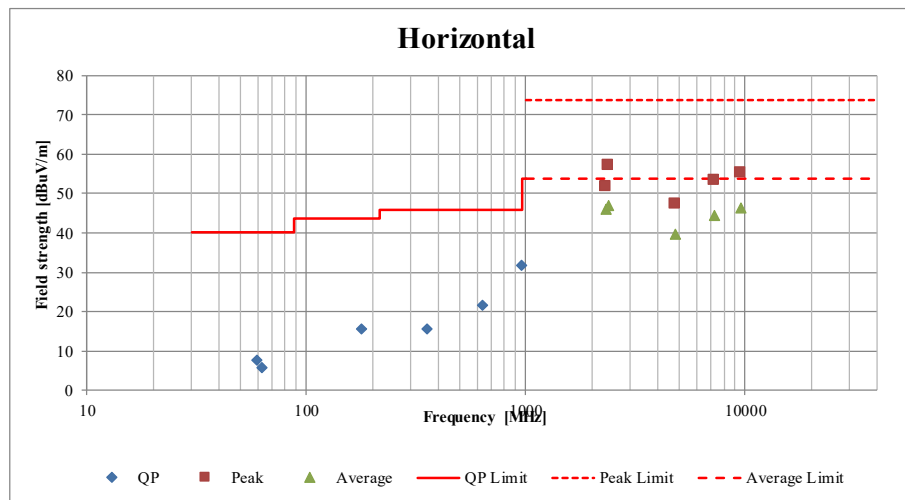
Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date January 20, 2020
Temperature / Humidity 22 deg. C / 30 % RH
Engineer Koji Yamamoto
(1 GHz -10 GHz)
Mode Tx BT LE 2M-PHY 2480 MHz + Tx 11ax-40 5755MHz (OFDM)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(Plot data, Worst case)
(PIFA Antenna BT2)

| | | | |
|------------------------|--------------------------------|--|---|
| Report No. | 13170804H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | December 24, 2019 | January 9, 2020 | January 9, 2020 |
| Temperature / Humidity | 21 deg. C / 41 % RH | 23 deg. C / 35 % RH | 22 deg. C / 34 % RH |
| Engineer | Yuta Moriya (1 GHz -10 GHz) | Tomohisa Nakagawa (10 GHz - 18 GHz) | Junki Nagatomi (18 GHz - 26.5 GHz) Koji Yamamoto (Below 1 GHz) |
| Mode | Tx BT LE 2M-PHY 2402 MHz | | |



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

Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019 No.3 January 8, 2020 No.3 January 8, 2020
Temperature / Humidity 21 deg. C / 41 % RH 22 deg. C / 39 % RH 23 deg. C / 35 % RH
Engineer Yuta Moriya Junki Nagatomi Tomohisa Nakagawa
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11b 2412 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 2390.000 | PK | 46.1 | 27.7 | 5.4 | 32.8 | - | 46.4 | 73.9 | 27.5 | |
| Hori. | 4824.000 | PK | 40.2 | 31.6 | 7.5 | 31.8 | - | 47.5 | 73.9 | 26.4 | Floor noise |
| Hori. | 7236.000 | PK | 41.2 | 36.0 | 8.9 | 32.7 | - | 53.5 | 73.9 | 20.4 | Floor noise |
| Hori. | 9648.000 | PK | 41.3 | 38.6 | 9.4 | 33.3 | - | 56.0 | 73.9 | 17.9 | Floor noise |
| Hori. | 2390.000 | AV | 34.8 | 27.7 | 5.4 | 32.8 | - | 35.2 | 53.9 | 18.7 | |
| Hori. | 4824.000 | AV | 32.2 | 31.6 | 7.5 | 31.8 | - | 39.5 | 53.9 | 14.4 | Floor noise |
| Hori. | 7236.000 | AV | 32.0 | 36.0 | 8.9 | 32.7 | - | 44.3 | 53.9 | 9.6 | Floor noise |
| Hori. | 9648.000 | AV | 32.3 | 38.6 | 9.4 | 33.3 | - | 46.9 | 53.9 | 7.0 | Floor noise |
| Vert. | 2390.000 | PK | 53.2 | 27.7 | 5.4 | 32.8 | - | 53.5 | 73.9 | 20.4 | |
| Vert. | 4824.000 | PK | 40.3 | 31.6 | 7.5 | 31.8 | - | 47.6 | 73.9 | 26.4 | Floor noise |
| Vert. | 7236.000 | PK | 41.3 | 36.0 | 8.9 | 32.7 | - | 53.6 | 73.9 | 20.3 | Floor noise |
| Vert. | 9648.000 | PK | 41.4 | 38.6 | 9.4 | 33.3 | - | 56.1 | 73.9 | 17.8 | Floor noise |
| Vert. | 2390.000 | AV | 38.2 | 27.7 | 5.4 | 32.8 | - | 38.5 | 53.9 | 15.4 | |
| Vert. | 4824.000 | AV | 32.3 | 31.6 | 7.5 | 31.8 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Vert. | 7236.000 | AV | 32.0 | 36.0 | 8.9 | 32.7 | - | 44.3 | 53.9 | 9.6 | Floor noise |
| Vert. | 9648.000 | AV | 32.3 | 38.6 | 9.4 | 33.3 | - | 47.0 | 53.9 | 6.9 | 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).

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

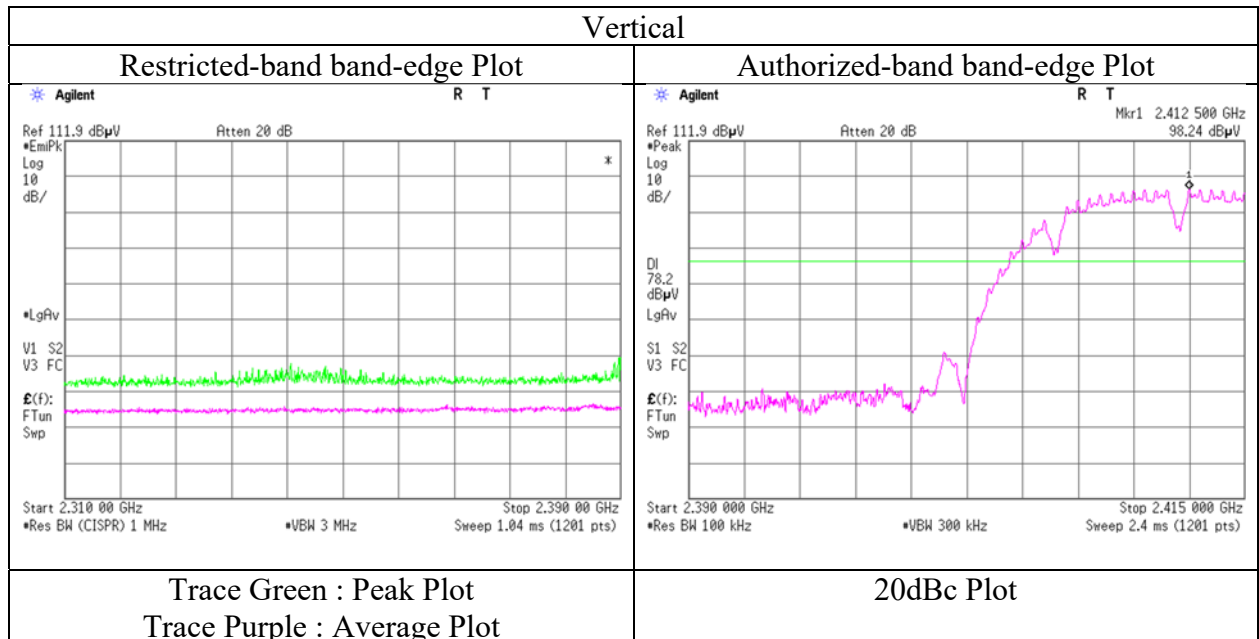
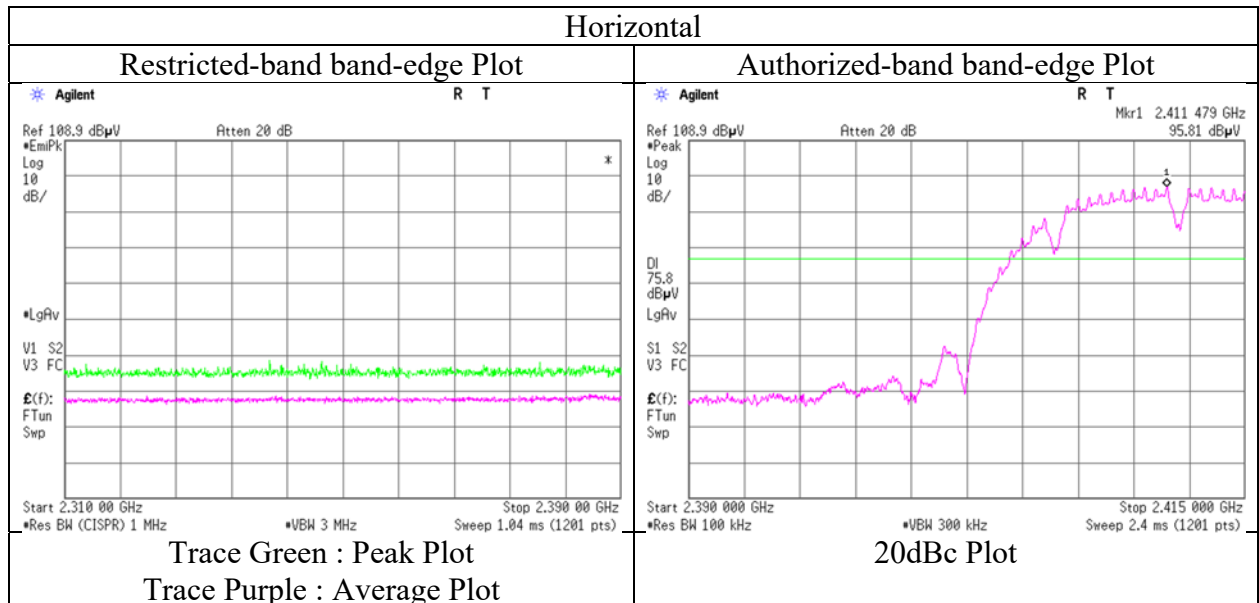
20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 95.8 | 27.6 | 5.4 | 32.7 | 96.1 | - | - | Carrier |
| Hori. | 2400.000 | PK | 38.4 | 27.7 | 5.4 | 32.7 | 38.8 | 76.1 | 37.4 | |
| Vert. | 2412.000 | PK | 98.2 | 27.6 | 5.4 | 32.7 | 98.6 | - | - | Carrier |
| Vert. | 2400.000 | PK | 38.6 | 27.7 | 5.4 | 32.7 | 39.0 | 78.6 | 39.6 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019
Temperature / Humidity 21 deg. C / 41 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx 11b 2412 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(IFA Antenna)

| | | | |
|------------------------|---------------------------------|-------------------------------------|--|
| Report No. | 13170804H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | December 25, 2019 | January 8, 2020 | January 8, 2020 |
| Temperature / Humidity | 21 deg. C / 41 % RH | 22 deg. C / 39 % RH | 23 deg. C / 35 % RH |
| Engineer | Yuta Moriya (1 GHz - 10 GHz) | Junki Nagatomi (10 GHz - 18 GHz) | Tomohisa Nakagawa (18 GHz - 26.5 GHz) |
| Mode | Tx 11b 2437 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 4874.000 | PK | 41.3 | 31.6 | 7.5 | 31.8 | - | 48.6 | 73.9 | 25.3 | Floor noise |
| Hori. | 7311.000 | PK | 41.5 | 36.2 | 8.9 | 32.7 | - | 53.9 | 73.9 | 20.0 | Floor noise |
| Hori. | 9748.000 | PK | 41.3 | 38.8 | 9.4 | 33.4 | - | 56.1 | 73.9 | 17.8 | Floor noise |
| Hori. | 4874.000 | AV | 32.3 | 31.6 | 7.5 | 31.8 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Hori. | 7311.000 | AV | 32.0 | 36.2 | 8.9 | 32.7 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Hori. | 9748.000 | AV | 32.7 | 38.8 | 9.4 | 33.4 | - | 47.5 | 53.9 | 6.4 | Floor noise |
| Vert. | 4874.000 | PK | 41.3 | 31.6 | 7.5 | 31.8 | - | 48.5 | 73.9 | 25.4 | Floor noise |
| Vert. | 7311.000 | PK | 41.5 | 36.2 | 8.9 | 32.7 | - | 53.8 | 73.9 | 20.1 | Floor noise |
| Vert. | 9748.000 | PK | 41.3 | 38.8 | 9.4 | 33.4 | - | 56.1 | 73.9 | 17.8 | Floor noise |
| Vert. | 4874.000 | AV | 32.5 | 31.6 | 7.5 | 31.8 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Vert. | 7311.000 | AV | 31.9 | 36.2 | 8.9 | 32.7 | - | 44.3 | 53.9 | 9.6 | Floor noise |
| Vert. | 9748.000 | AV | 32.7 | 38.8 | 9.4 | 33.4 | - | 47.5 | 53.9 | 6.4 | 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).

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019 No.3 January 8, 2020 No.3 January 8, 2020
Temperature / Humidity 21 deg. C / 41 % RH 22 deg. C / 39 % RH 23 deg. C / 35 % RH
Engineer Yuta Moriya Junki Nagatomi Tomohisa Nakagawa
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11b 2462 MHz

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 2483.500 | PK | 43.5 | 27.5 | 5.5 | 32.7 | - | 43.8 | 73.9 | 30.1 | |
| Hori. | 4924.000 | PK | 39.9 | 31.5 | 7.5 | 31.8 | - | 47.1 | 73.9 | 26.8 | Floor noise |
| Hori. | 7386.000 | PK | 41.3 | 36.3 | 8.9 | 32.7 | - | 53.8 | 73.9 | 20.2 | Floor noise |
| Hori. | 9848.000 | PK | 40.7 | 39.0 | 9.4 | 33.4 | - | 55.7 | 73.9 | 18.2 | Floor noise |
| Hori. | 2483.500 | AV | 36.5 | 27.5 | 5.5 | 32.7 | - | 36.7 | 53.9 | 17.2 | *1) |
| Hori. | 4924.000 | AV | 32.0 | 31.5 | 7.5 | 31.8 | - | 39.2 | 53.9 | 14.7 | Floor noise |
| Hori. | 7386.000 | AV | 32.8 | 36.3 | 8.9 | 32.7 | - | 45.3 | 53.9 | 8.6 | Floor noise |
| Hori. | 9848.000 | AV | 32.8 | 39.0 | 9.4 | 33.4 | - | 47.7 | 53.9 | 6.2 | Floor noise |
| Vert. | 2483.500 | PK | 45.5 | 27.5 | 5.5 | 32.7 | - | 45.7 | 73.9 | 28.2 | |
| Vert. | 4924.000 | PK | 39.8 | 31.5 | 7.5 | 31.8 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Vert. | 7386.000 | PK | 41.6 | 36.3 | 8.9 | 32.7 | - | 54.0 | 73.9 | 19.9 | Floor noise |
| Vert. | 9848.000 | PK | 40.6 | 39.0 | 9.4 | 33.4 | - | 55.6 | 73.9 | 18.3 | Floor noise |
| Vert. | 2483.500 | AV | 38.5 | 27.5 | 5.5 | 32.7 | - | 38.7 | 53.9 | 15.2 | *1) |
| Vert. | 4924.000 | AV | 32.0 | 31.5 | 7.5 | 31.8 | - | 39.2 | 53.9 | 14.7 | Floor noise |
| Vert. | 7386.000 | AV | 32.8 | 36.3 | 8.9 | 32.7 | - | 45.3 | 53.9 | 8.6 | Floor noise |
| Vert. | 9848.000 | AV | 32.9 | 39.0 | 9.4 | 33.4 | - | 47.8 | 53.9 | 6.1 | 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).

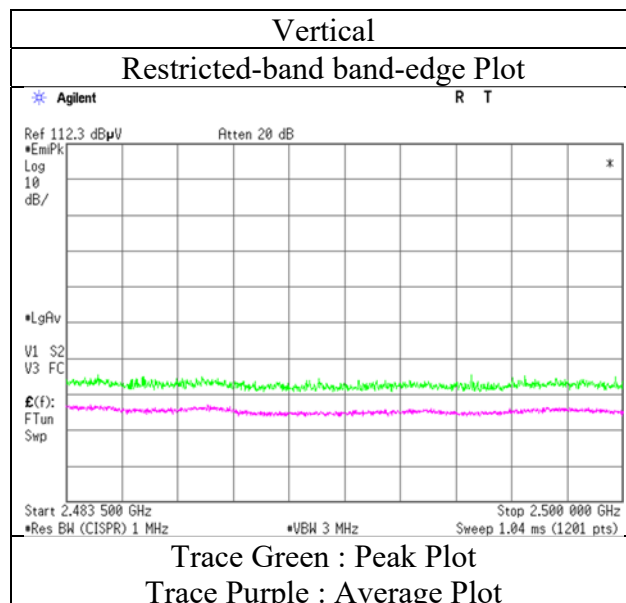
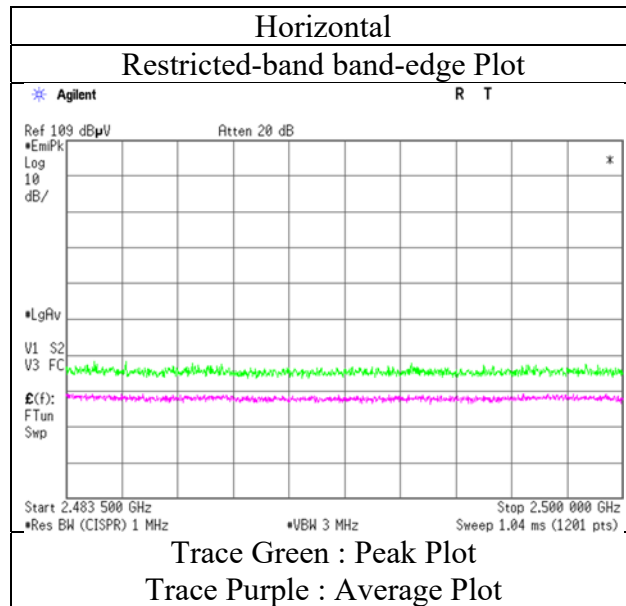
Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB

10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Noise synchronized with duty of carrier frequency.

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019
Temperature / Humidity 21 deg. C / 41 % RH
Engineer Yuta Moriya
(1 GHz - 10 GHz)
Mode Tx 11b 2462 MHz



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date December 25, 2019 January 8, 2020 No.3
Temperature / Humidity 21 deg. C / 41 % RH 22 deg. C / 39 % RH January 8, 2020
Engineer Yuta Moriya Junki Nagatomi Tomohisa Nakagawa
(1 GHz - 10 GHz) (10 GHz - 18 GHz) (18 GHz - 26.5 GHz)
Mode Tx 11ax-20 2412 MHz (OFDM)

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 2390.000 | PK | 52.8 | 27.7 | 5.4 | 32.8 | - | 53.2 | 73.9 | 20.7 | |
| Hori. | 4824.000 | PK | 40.1 | 31.6 | 7.5 | 31.8 | - | 47.3 | 73.9 | 26.6 | Floor noise |
| Hori. | 7236.000 | PK | 42.1 | 36.0 | 8.9 | 32.7 | - | 54.4 | 73.9 | 19.5 | Floor noise |
| Hori. | 9648.000 | PK | 41.4 | 38.6 | 9.4 | 33.3 | - | 56.0 | 73.9 | 17.9 | Floor noise |
| Hori. | 2390.000 | AV | 42.2 | 27.7 | 5.4 | 32.8 | - | 42.5 | 53.9 | 11.4 | |
| Hori. | 4824.000 | AV | 32.2 | 31.6 | 7.5 | 31.8 | - | 39.5 | 53.9 | 14.5 | Floor noise |
| Hori. | 7236.000 | AV | 32.2 | 36.0 | 8.9 | 32.7 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Hori. | 9648.000 | AV | 32.5 | 38.6 | 9.4 | 33.3 | - | 47.1 | 53.9 | 6.8 | Floor noise |
| Vert. | 2390.000 | PK | 53.3 | 27.7 | 5.4 | 32.8 | - | 53.6 | 73.9 | 20.3 | |
| Vert. | 4824.000 | PK | 40.0 | 31.6 | 7.5 | 31.8 | - | 47.3 | 73.9 | 26.6 | Floor noise |
| Vert. | 7236.000 | PK | 42.1 | 36.0 | 8.9 | 32.7 | - | 54.4 | 73.9 | 19.6 | Floor noise |
| Vert. | 9648.000 | PK | 41.5 | 38.6 | 9.4 | 33.3 | - | 56.2 | 73.9 | 17.7 | Floor noise |
| Vert. | 2390.000 | AV | 40.8 | 27.7 | 5.4 | 32.8 | - | 41.2 | 53.9 | 12.8 | |
| Vert. | 4824.000 | AV | 32.2 | 31.6 | 7.5 | 31.8 | - | 39.5 | 53.9 | 14.5 | Floor noise |
| Vert. | 7236.000 | AV | 32.2 | 36.0 | 8.9 | 32.7 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Vert. | 9648.000 | AV | 32.5 | 38.6 | 9.4 | 33.3 | - | 47.1 | 53.9 | 6.8 | 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).

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

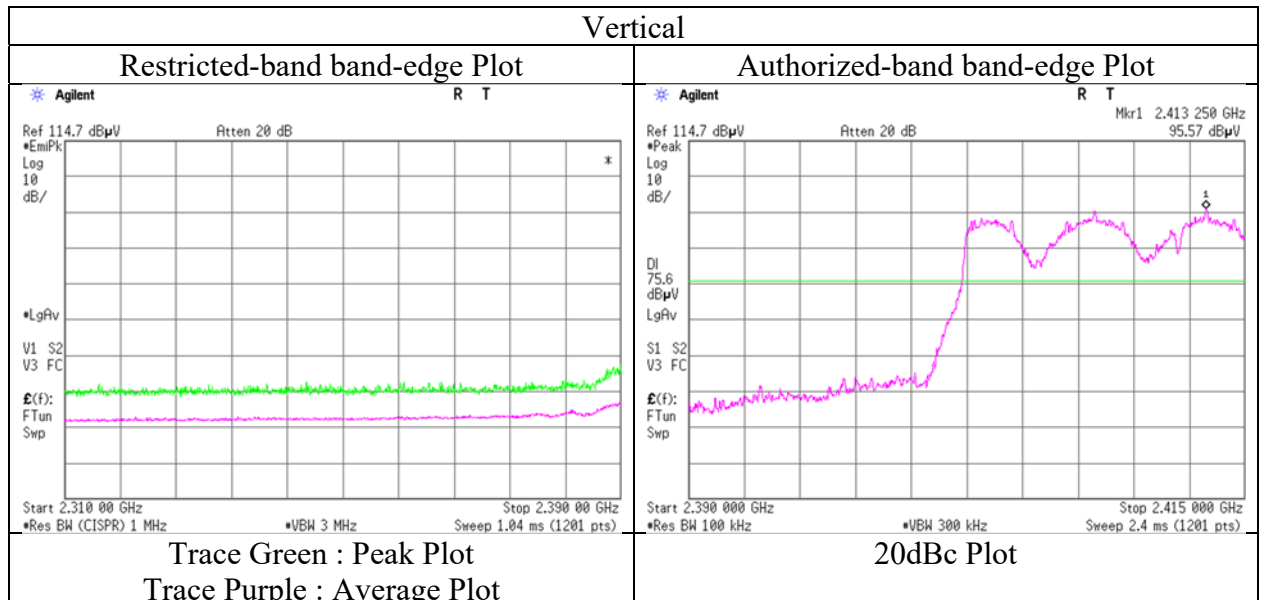
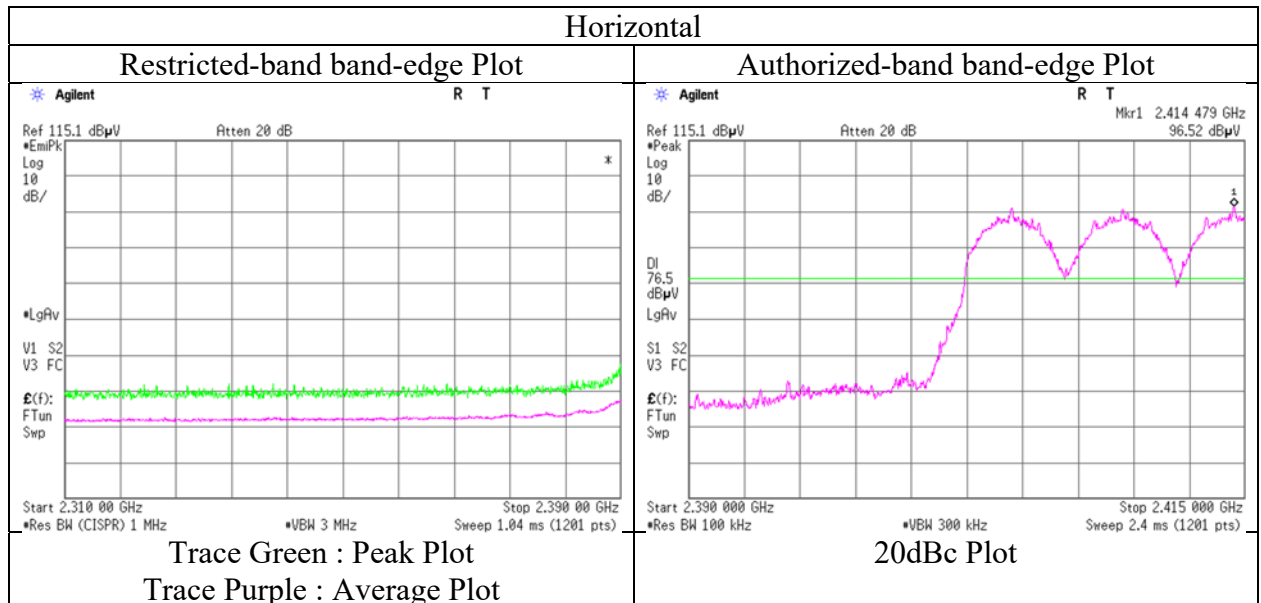
20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 96.5 | 27.6 | 5.4 | 32.7 | 96.8 | - | - | Carrier |
| Hori. | 2400.000 | PK | 50.9 | 27.7 | 5.4 | 32.7 | 51.3 | 76.8 | 25.6 | |
| Vert. | 2412.000 | PK | 95.6 | 27.6 | 5.4 | 32.7 | 95.9 | - | - | Carrier |
| Vert. | 2400.000 | PK | 48.2 | 27.7 | 5.4 | 32.7 | 48.6 | 75.9 | 27.3 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

| | |
|------------------------|----------------------------|
| Report No. | 13170804H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | December 25, 2019 |
| Temperature / Humidity | 21 deg. C / 41 % RH |
| Engineer | Yuta Moriya |
| | (1 GHz - 10 GHz) |
| Mode | Tx 11ax-20 2412 MHz (OFDM) |



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 21 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (26-tone RU)

RU Index 0

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 45.8 | 27.7 | 4.7 | 32.8 | - | 45.4 | 73.9 | 28.5 | |
| Hori. | 2390.000 | AV | 34.8 | 27.7 | 4.7 | 32.8 | 0.4 | 34.9 | 53.9 | 19.0 | *1) |
| Vert. | 2390.000 | PK | 43.2 | 27.7 | 4.7 | 32.8 | - | 42.8 | 73.9 | 31.1 | |
| Vert. | 2390.000 | AV | 32.5 | 27.7 | 4.7 | 32.8 | 0.4 | 32.6 | 53.9 | 21.4 | *1) |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

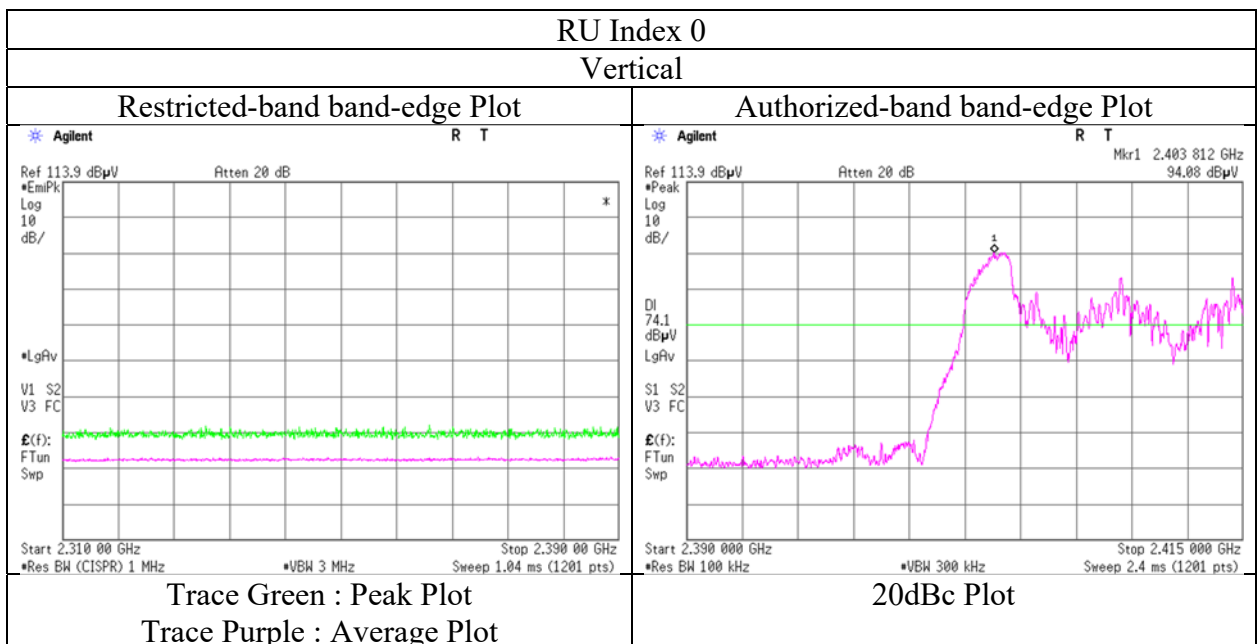
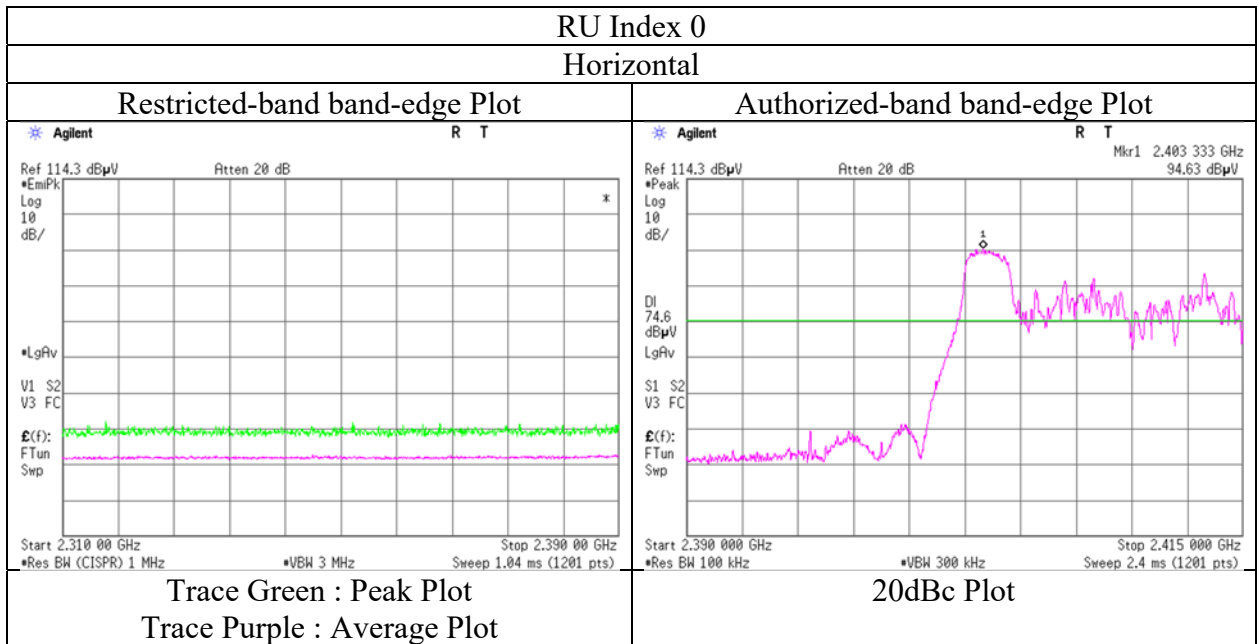
20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 94.6 | 27.6 | 4.7 | 32.7 | 94.2 | - | - | Carrier |
| Hori. | 2400.000 | PK | 45.0 | 27.7 | 4.7 | 32.7 | 44.6 | 74.2 | 29.6 | |
| Vert. | 2412.000 | PK | 94.1 | 27.6 | 4.7 | 32.7 | 93.7 | - | - | Carrier |
| Vert. | 2390.000 | AV | 32.5 | 27.7 | 4.7 | 32.8 | 32.1 | 73.7 | 41.6 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 23 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (26-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 21 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (52-tone RU)

RU Index 37

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 47.1 | 27.7 | 4.7 | 32.8 | - | 46.7 | 73.9 | 27.2 | |
| Hori. | 2390.000 | AV | 32.7 | 27.7 | 4.7 | 32.8 | 0.5 | 32.8 | 53.9 | 21.1 | *1) |
| Vert. | 2390.000 | PK | 47.2 | 27.7 | 4.7 | 32.8 | - | 46.8 | 73.9 | 27.1 | |
| Vert. | 2390.000 | AV | 33.5 | 27.7 | 4.7 | 32.8 | 0.5 | 33.6 | 53.9 | 20.3 | *1) |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$
10 GHz - 26.5 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

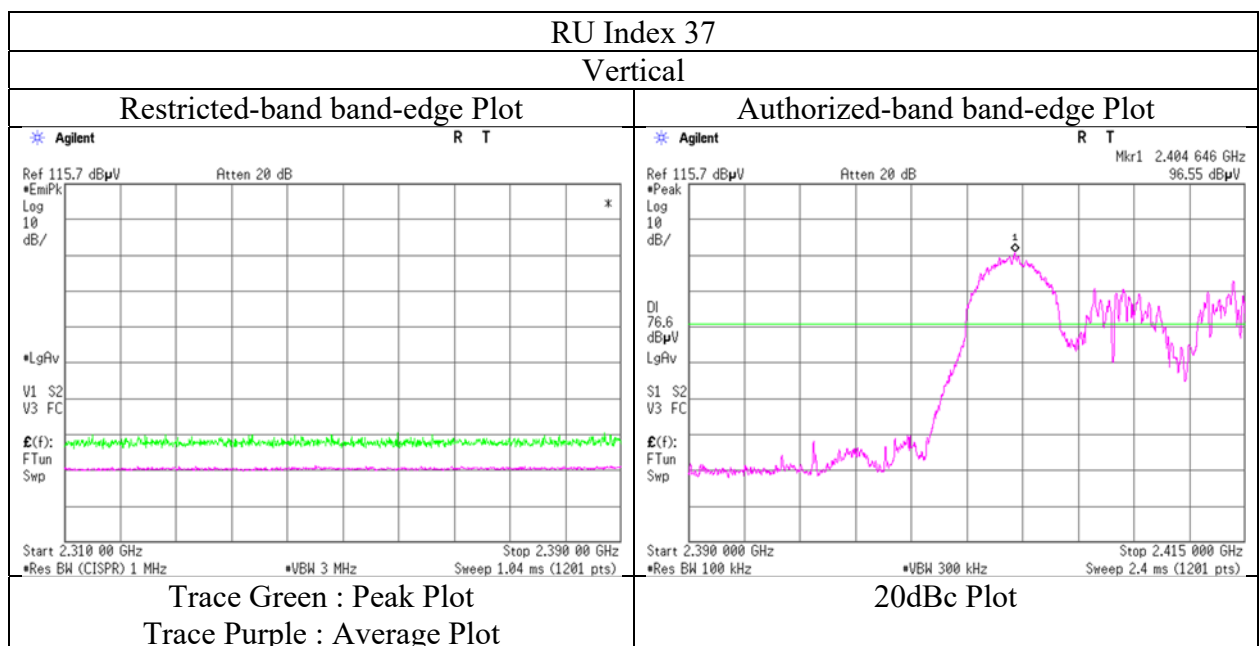
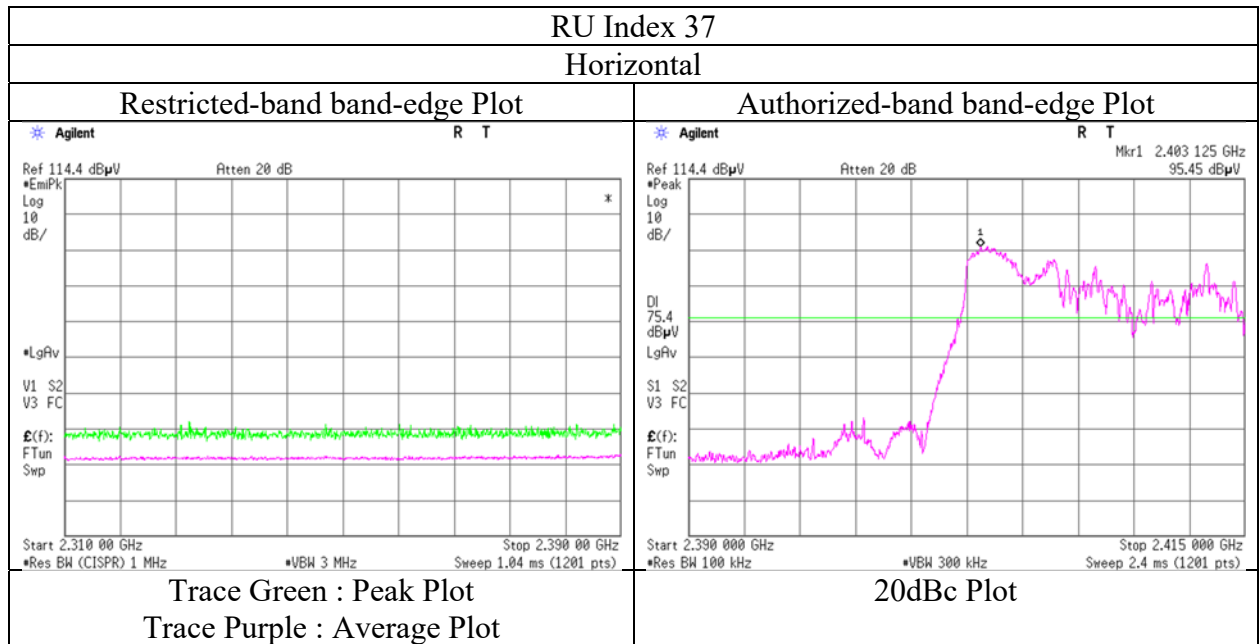
20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 95.5 | 27.6 | 4.7 | 32.7 | 95.0 | - | - | Carrier |
| Hori. | 2400.000 | PK | 45.9 | 27.7 | 4.7 | 32.7 | 45.5 | 75.0 | 29.5 | |
| Vert. | 2412.000 | PK | 96.6 | 27.6 | 4.7 | 32.7 | 96.1 | - | - | Carrier |
| Vert. | 2400.000 | PK | 45.8 | 27.7 | 4.7 | 32.7 | 45.4 | 76.1 | 30.7 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 23 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (52-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.
Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 21 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (106-tone RU)

RU index 53

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 50.4 | 27.7 | 4.7 | 32.8 | - | 50.0 | 73.9 | 23.9 | |
| Hori. | 2390.000 | AV | 34.3 | 27.7 | 4.7 | 32.8 | 0.5 | 34.4 | 53.9 | 19.5 | *1) |
| Vert. | 2390.000 | PK | 53.0 | 27.7 | 4.7 | 32.8 | - | 52.6 | 73.9 | 21.3 | |
| Vert. | 2390.000 | AV | 33.7 | 27.7 | 4.7 | 32.8 | 0.5 | 33.8 | 53.9 | 20.1 | *1) |

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

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

Distance factor: 1 GHz - 10 GHz 20log(3.9 m / 3.0 m) = 2.28 dB
10 GHz - 26.5 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

*1) Not Out of Band emission(Leakage Power)

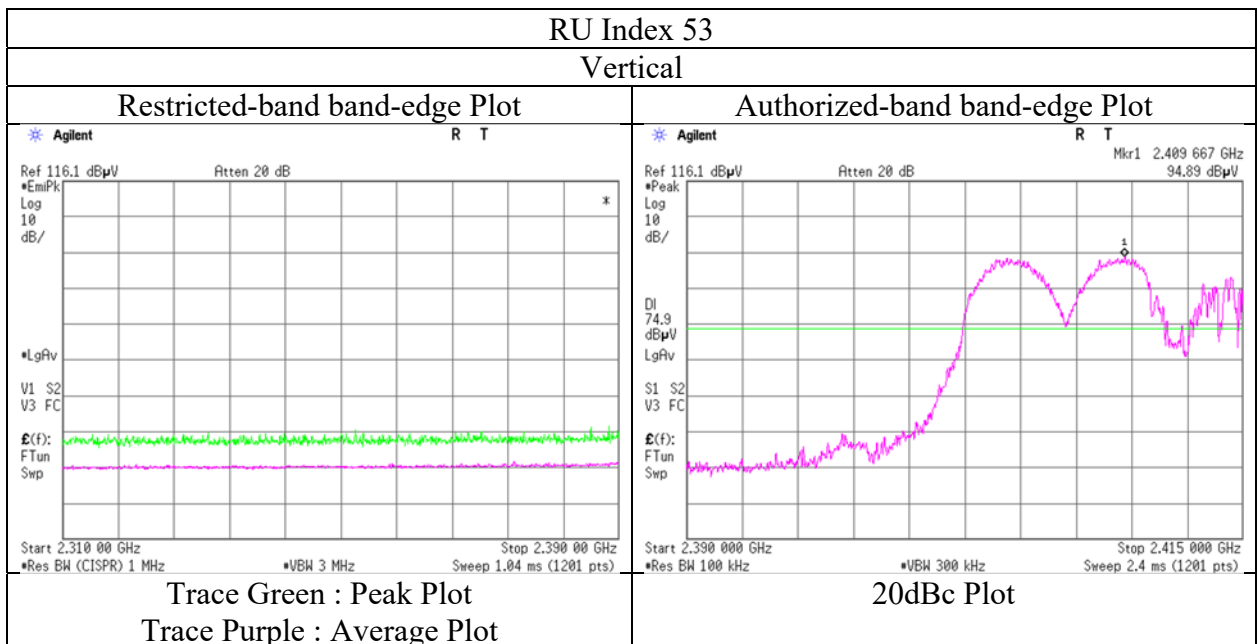
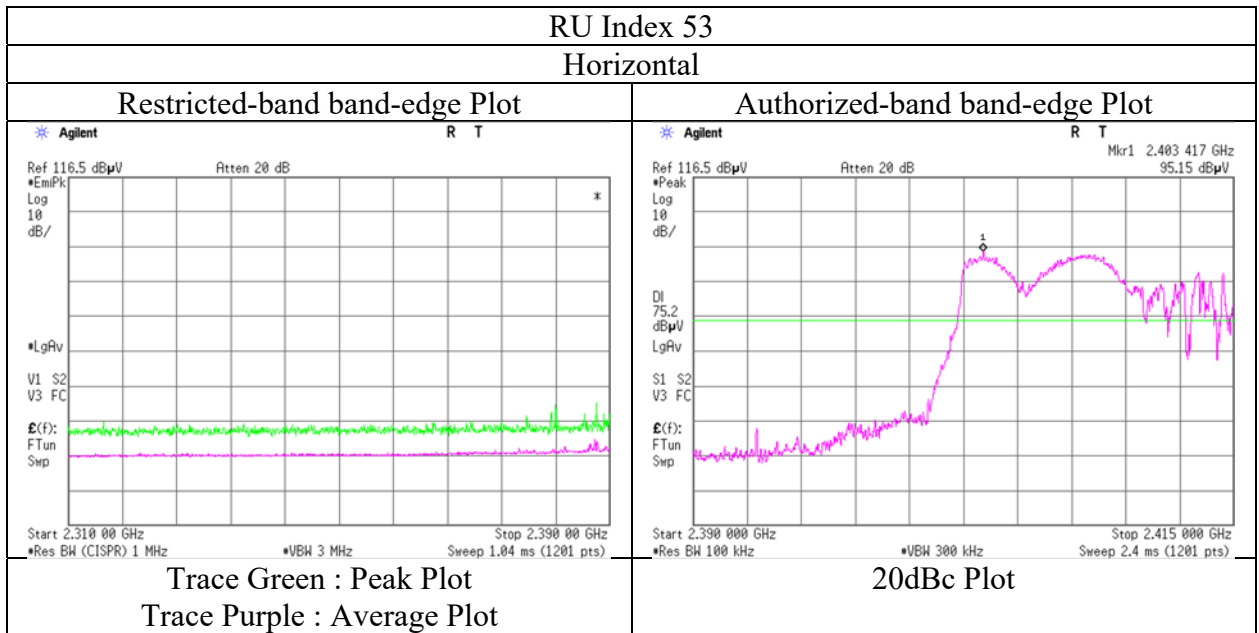
20dBc Data Sheet

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-------------------|-----------|-----------|-----------------|----------------|-------------|---------|
| Hori. | 2412.000 | PK | 95.2 | 27.6 | 4.7 | 32.7 | 94.7 | - | - | Carrier |
| Hori. | 2400.000 | PK | 49.8 | 27.7 | 4.7 | 32.7 | 49.4 | 74.7 | 25.3 | |
| Vert. | 2412.000 | PK | 94.9 | 27.6 | 4.7 | 32.7 | 94.5 | - | - | Carrier |
| Vert. | 2400.000 | PK | 46.9 | 27.7 | 4.7 | 32.7 | 46.5 | 74.5 | 28.0 | |

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

Radiated Spurious Emission
(Reference Plot for band-edge)
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.3
Date February 2, 2020
Temperature / Humidity 23 deg. C / 34 % RH
Engineer Tomohisa Nakagawa
Band edge
Mode Tx 11ax-20 2412 MHz (106-tone RU)



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions. Final result of restricted band edge was shown in tabular data.

UL Japan, Inc.

Ise EMC Lab.

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Facsimile : +81 596 24 8124

Radiated Spurious Emission
(IFA Antenna)

Report No. 13170804H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.4
Date April 10, 2020
Temperature / Humidity 20 deg. C / 28 % RH
Engineer Yuta Moriya
Band edge
Mode Tx 11ax-20 2412 MHz (242-tone RU)

RU Index 61

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|--------|
| Hori. | 2390.000 | PK | 59.6 | 27.9 | 5.0 | 31.9 | - | 60.6 | 73.9 | 13.3 | |
| Hori. | 2390.000 | AV | 45.3 | 27.9 | 5.0 | 31.9 | 0.5 | 46.8 | 53.9 | 7.1 | *1) |
| Vert. | 2390.000 | PK | 59.0 | 27.9 | 5.0 | 31.9 | - | 60.0 | 73.9 | 13.9 | |
| Vert. | 2390.000 | AV | 45.2 | 27.9 | 5.0 | 31.9 | 0.5 | 46.7 | 53.9 | 7.2 | *1) |

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

Distance factor: 1 GHz - 10 GHz $20\log(3.9\text{ m} / 3.0\text{ m}) = 2.28\text{ dB}$

*1) Not Out of Band emission(Leakage Power)

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. | 2412.000 | PK | 94.8 | 27.9 | 5.0 | 31.9 | 95.8 | - | - | Carrier |
| Hori. | 2400.000 | PK | 52.8 | 27.9 | 5.0 | 31.9 | 53.8 | 75.8 | 22.0 | |
| Vert. | 2412.000 | PK | 95.8 | 27.9 | 5.0 | 31.9 | 96.8 | - | - | Carrier |
| Vert. | 2400.000 | PK | 53.0 | 27.9 | 5.0 | 31.9 | 54.0 | 76.8 | 22.8 | |

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