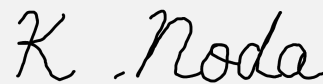


# RADIO TEST REPORT

## Test Report No. 15655899S-B-R1

|                     |                            |
|---------------------|----------------------------|
| Customer            | JVCKENWOOD Corporation     |
| Description of EUT  | Monitor with receiver      |
| Model Number of EUT | DMX1058XR                  |
| FCC ID              | IOMJ5304                   |
| Test Regulation     | FCC Part 15 Subpart C      |
| Test Result         | Complied                   |
| Issue Date          | March 11, 2025             |
| Remarks             | Bluetooth (BR / EDR) parts |

**Representative Test Engineer**Makoto Hosaka  
Engineer**Approved By**Kazuya Noda  
Leader

CERTIFICATE 1266.03

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

Report Cover Page - Form-ULID-003532 (DCS:13-EM-F0429) Issue# 24.0

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- The results in this report apply only to the sample tested. (Laboratory was not involved in sampling.)
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- This test report covers Radio technical requirements.  
It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
- The all test items in this test report are conducted by UL Japan, Inc. Shonan EMC Lab.
- The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan, Inc. has been accredited.
- The information provided by the customer for this report is identified in SECTION 1.
- The laboratory is not responsible for information provided by the customer which can impact the validity of the results.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

## **REVISION HISTORY**

### **Original Test Report No. 15655899S-B**

This report is a revised version of 15655899S-B. 15655899S-B is replaced with this report.

| Revision        | Test Report No. | Date              | Page Revised Contents                                                                                                                            |
|-----------------|-----------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| -<br>(Original) | 15655899S-B     | February 20, 2025 | -                                                                                                                                                |
| 1               | 15655899S-B-R1  | March 11, 2025    | P.14 List of Cables Used<br><For Antenna Terminal Conducted test><br>No.1 to No.13 From: 0.1 m To: 0.15 m<br>No.13 From: Unshielded To: Shielded |

## Reference: Abbreviations (Including words undescribed in this report)

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

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## **SECTION 1: Customer Information**

|                  |                                                                   |
|------------------|-------------------------------------------------------------------|
| Company Name     | JVCKENWOOD Corporation                                            |
| Address          | 3-12, Moriya-cho, Kanagawa-ku, Yokohama, Kanagawa, 221-0022 Japan |
| Telephone Number | +81-45-450-2769                                                   |
| Contact Person   | Seigo Tsutsumi                                                    |

The information provided by the customer is as follows;

- Customer, Description 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 and Test Date
- SECTION 4: Operation of EUT during testing

## **SECTION 2: Equipment Under Test (EUT)**

### **2.1 Identification of EUT**

|               |                                                                                           |
|---------------|-------------------------------------------------------------------------------------------|
| Description   | Monitor with receiver                                                                     |
| Model Number  | DMX1058XR                                                                                 |
| Serial Number | Refer to SECTION 4.2                                                                      |
| Condition     | Production prototype<br>(Not for Sale: This sample is equivalent to mass-produced items.) |
| Modification  | No Modification by the test lab                                                           |
| Receipt Date  | January 15, 2025                                                                          |
| Test Date     | January 17 to 30, 2025                                                                    |

### **2.2 Product Description**

#### **General Specification**

|                       |                          |
|-----------------------|--------------------------|
| Rating                | DC 12 V                  |
| Operating temperature | -10 deg. C to +60 deg. C |

#### **Radio Specification**

This report contains data provided by the customer which can impact the validity of results. UL Japan, Inc. is only responsible for the validity of results after the integration of the data provided by the customer. The data provided by the customer is marked "a)" in the table below.

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

|                            |                      |
|----------------------------|----------------------|
| Equipment Type             | Transceiver          |
| Frequency of Operation     | 2412 MHz to 2462 MHz |
| Type of Modulation         | DSSS, OFDM           |
| Antenna Gain <sup>a)</sup> | -7.4 dBi             |

#### **Bluetooth (BR / EDR)**

|                            |                      |
|----------------------------|----------------------|
| Equipment Type             | Transceiver          |
| Frequency of Operation     | 2402 MHz to 2480 MHz |
| Type of Modulation         | FHSS                 |
| Antenna Gain <sup>a)</sup> | -16.1 dBi            |

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

|                            |                |                      |
|----------------------------|----------------|----------------------|
| Equipment Type             | Transceiver    |                      |
| Frequency of Operation     | 20 MHz Band    | 5745 MHz to 5805 MHz |
|                            | 40 MHz Band    | 5755 MHz to 5795 MHz |
|                            | 80 MHz Band    | 5775 MHz             |
| Type of Modulation         | OFDM           |                      |
| Antenna Gain <sup>a)</sup> | ANT0: -9.1 dBi |                      |
|                            | ANT1: -0.8 dBi |                      |

**2.3 Valiant models**

| Model Number | Brand   | Difference                            |
|--------------|---------|---------------------------------------|
| DMX1058XR    | KENWOOD | Base                                  |
| DMX1038S     | KENWOOD | None Digital Audio output             |
| KW-Z1001W    | JVC     | Key Volume, None Digital Audio output |

## SECTION 3: Test Specification, Procedures & Results

### 3.1 Test Specification

|                    |                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Specification | FCC Part 15 Subpart C<br>The latest version on the first day of the testing period                                                                                                                           |
| Title              | FCC 47 CFR Part 15 Radio Frequency Device Subpart C Intentional Radiators<br>Section 15.207 Conducted limits<br>Section 15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz,<br>and 5725-5850 MHz |

\*The customer has declared that the EUT has complies with FCC Part 15 Subpart B as SDoC.

### 3.2 Procedures and Results

| Item                                                                                                                                                                                                                                                                                                                                                          | Test Procedure                                                           | Specification                                                             | Worst Margin                                                          | Results  | Remarks                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------|----------|-------------------------------------------------|
| Conducted Emission                                                                                                                                                                                                                                                                                                                                            | FCC: ANSI C63.10-2013<br>6. Standard test methods<br>ISED: RSS-Gen 8.8   | FCC: Section 15.207<br>ISED: RSS-Gen 8.8                                  | -                                                                     | N/A      | *1)                                             |
| Carrier Frequency Separation                                                                                                                                                                                                                                                                                                                                  | FCC: KDB 558074 D01 15.247<br>Meas Guidance v05r02<br>ISED: -            | FCC: Section15.247(a)(1)<br>ISED: RSS-247 5.1 (b)                         | See data.                                                             | Complied | Conducted                                       |
| 20dB Bandwidth                                                                                                                                                                                                                                                                                                                                                | FCC: KDB 558074 D01 15.247<br>Meas Guidance v05r02<br>ISED: -            | FCC: Section15.247(a)(1)<br>ISED: RSS-247 5.1 (a)                         |                                                                       | Complied | Conducted                                       |
| Number of Hopping Frequency                                                                                                                                                                                                                                                                                                                                   | FCC: KDB 558074 D01 15.247<br>Meas Guidance v05r02<br>ISED: -            | FCC: Section15.247(a)(1)(iii)<br>ISED: RSS-247 5.1 (d)                    |                                                                       | Complied | Conducted                                       |
| Dwell time                                                                                                                                                                                                                                                                                                                                                    | FCC: KDB 558074 D01 15.247<br>Meas Guidance v05r02<br>ISED: -            | FCC: Section15.247(a)(1)(iii)<br>ISED: RSS-247 5.1 (d)                    |                                                                       | Complied | Conducted                                       |
| Maximum Peak Output Power                                                                                                                                                                                                                                                                                                                                     | FCC: KDB 558074 D01 15.247<br>Meas Guidance v05r02<br>ISED: RSS-Gen 6.12 | FCC: Section15.247(b)(1)<br>ISED: RSS-247 5.4 (b)                         |                                                                       | Complied | Conducted                                       |
| Spurious Emission & Band Edge Compliance                                                                                                                                                                                                                                                                                                                      | FCC: KDB 558074 D01 15.247<br>Meas Guidance v05r02<br>ISED: RSS-Gen 6.13 | FCC: Section15.247(d)<br>ISED: RSS-247 5.5<br>RSS-Gen 8.9<br>RSS-Gen 8.10 | 6.9 dB<br>442.368 MHz,<br>QP, Horizontal<br>Mode: Tx, DH5<br>2441 MHz | Complied | Conducted/<br>Radiated<br>(above 30 MHz)<br>*2) |
| Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.<br>* In case any questions arise about test procedure, ANSI C63.10: 2013 is also referred.<br><br>*1) The test is not applicable since the EUT does not have AC Mains.<br>*2) Radiated test was selected over 30 MHz based on section 15.247(d). |                                                                          |                                                                           |                                                                       |          |                                                 |

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

This EUT provides the stable voltage constantly to RF Module regardless of input voltage. Instead of a new battery, DC power supply was used for the test. That does not affect the test result, therefore, this EUT complies with the requirement.

#### **FCC Part 15.203 Antenna requirement**

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

### 3.3 Addition to Standard

| Item                   | Test Procedure    | Specification | Worst Margin | Results | Remarks   |
|------------------------|-------------------|---------------|--------------|---------|-----------|
| 99% Occupied Bandwidth | ISED: RSS-Gen 6.7 | ISED: -       | N/A          | -       | Conducted |

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

### 3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.  
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor  $k = 2$ .

| Item                                             | Frequency range   | Uncertainty (+/-) |
|--------------------------------------------------|-------------------|-------------------|
| Conducted Emission (AC Mains) LISN               | 150 kHz to 30 MHz | 3.0 dB            |
| Radiated Emission<br>(Measurement distance: 3 m) | 9 kHz to 30 MHz   | 3.3 dB            |
|                                                  | 30 MHz to 200 MHz | 4.8 dB            |
|                                                  | 200 MHz to 1 GHz  | 6.1 dB            |
|                                                  | 1 GHz to 6 GHz    | 4.7 dB            |
|                                                  | 6 GHz to 18 GHz   | 5.3 dB            |
|                                                  | 18 GHz to 40 GHz  | 5.5 dB            |
| Radiated Emission<br>(Measurement distance: 1 m) | 1 GHz to 18 GHz   | 5.6 dB            |
|                                                  | 18 GHz to 40 GHz  | 5.8 dB            |

| Antenna terminal test                                         | Uncertainty (+/-) |
|---------------------------------------------------------------|-------------------|
| Power Measurement above 1 GHz (Average Detector)              | 1.3 dB            |
| Power Measurement above 1 GHz (Peak Detector)                 | 1.5 dB            |
| Spurious Emission (Conducted) below 1 GHz                     | 0.93 dB           |
| Conducted Emissions Power Density Measurement 1 GHz to 3 GHz  | 0.93 dB           |
| Conducted Emissions Power Density Measurement 3 GHz to 18 GHz | 3.0 dB            |
| Spurious Emission (Conducted) 18 GHz to 26.5 GHz              | 2.8 dB            |
| Spurious Emission (Conducted) 26.5 GHz to 40 GHz              | 2.3 dB            |
| Bandwidth Measurement                                         | 0.012 %           |
| Duty Cycle and Time Measurement                               | 0.27 %            |
| Temperature                                                   | 2.2 deg.C.        |
| Humidity                                                      | 3.4 %             |
| Voltage                                                       | 0.92 %            |

### 3.5 Test Location

UL Japan, Inc. Shonan EMC Lab.

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

Telephone: +81-463-50-6400

A2LA Certificate Number: 1266.03

(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

| Test room                          | Width x Depth x Height (m) | Size of reference ground plane (m) / horizontal conducting plane | Maximum measurement distance |
|------------------------------------|----------------------------|------------------------------------------------------------------|------------------------------|
| No.1 Semi-anechoic chamber (SAC1)  | 20.6 x 11.3 x 7.65         | 20.6 x 11.3                                                      | 10 m                         |
| No.2 Semi-anechoic chamber (SAC2)  | 20.6 x 11.3 x 7.65         | 20.6 x 11.3                                                      | 10 m                         |
| No.3 Semi-anechoic chamber (SAC3)  | 12.7 x 7.7 x 5.35          | 12.7 x 7.7                                                       | 5 m                          |
| No.4 Semi-anechoic chamber (SAC4)  | 8.1 x 5.1 x 3.55           | 8.1 x 5.1                                                        | -                            |
| Wireless anechoic chamber 1 (WAC1) | 9.5 x 6.0 x 5.4            | 9.5 x 6.0                                                        | 3 m                          |
| Wireless anechoic chamber 2 (WAC2) | 9.5 x 6.0 x 5.4            | 9.5 x 6.0                                                        | 3 m                          |
| No.1 Shielded room                 | 6.8 x 4.1 x 2.7            | 6.8 x 4.1                                                        | -                            |
| No.2 Shielded room                 | 6.8 x 4.1 x 2.7            | 6.8 x 4.1                                                        | -                            |
| No.3 Shielded room                 | 6.3 x 4.7 x 2.7            | 6.3 x 4.7                                                        | -                            |
| No.4 Shielded room                 | 4.4 x 4.7 x 2.7            | 4.4 x 4.7                                                        | -                            |
| No.5 Shielded room                 | 7.8 x 6.4 x 2.7            | 7.8 x 6.4                                                        | -                            |
| No.6 Shielded room                 | 7.8 x 6.4 x 2.7            | 7.8 x 6.4                                                        | -                            |
| No.8 Shielded room                 | 3.45 x 5.5 x 2.4           | 3.45 x 5.5                                                       | -                            |
| No.1 Measurement room              | 2.55 x 4.1 x 2.5           | -                                                                | -                            |
| No.2 Measurement room              | 4.5 x 3.5 x 2.5            | -                                                                | -                            |
| Wireless shielded room 1           | 3.0 x 4.5 x 2.7            | 3.0 x 4.5                                                        | -                            |
| Wireless shielded room 2           | 3.0 x 4.5 x 2.7            | 3.0 x 4.5                                                        | -                            |

### 3.6 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

## SECTION 4: Operation of EUT during testing

### 4.1 Operating Mode(s)

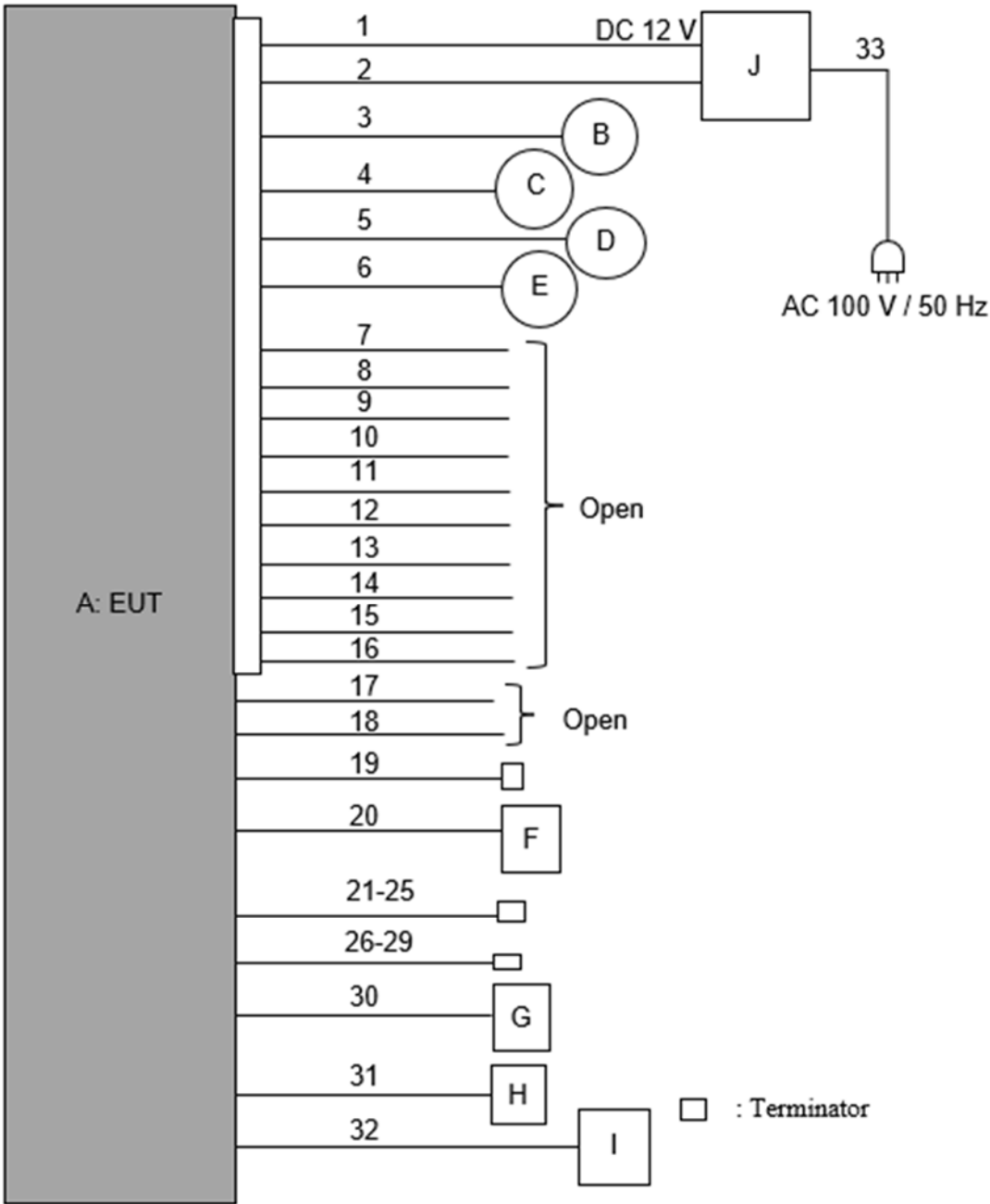
| Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Remarks*                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Bluetooth (BT)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | BR / EDR, Payload: PRBS9 |
| <p>*EUT has the power settings by the software as follows;<br/> Power Setting: Fixed<br/> Software: SoC : Version 0.0.1306.3200<br/> System : Version 0.0.0059.4000<br/> Panel : Version 0.0.0079.4000<br/> (Date: 2025.01.16, Storage location: EUT memory)</p> <p>*This setting of software is the worst case.<br/> Any conditions under the normal use do not exceed the condition of setting.<br/> In addition, end users cannot change the settings of the output power of the product.</p> |                          |

#### Details of Operating Mode(s)

| Test Item                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Mode                                    | Hopping            | Tested Frequency                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|--------------------|----------------------------------|
| Radiated Spurious Emission (Below 1 GHz)                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Tx DH5 *1)                              | Off                | 2441 MHz                         |
| Radiated Spurious Emission (Above 1 GHz),<br>Conducted Spurious Emission                                                                                                                                                                                                                                                                                                                                                                                                                    | Tx DH5<br>Tx 3DH5                       | Off                | 2402 MHz<br>2441 MHz<br>2480 MHz |
| Radiated Spurious Emission                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tx 3DH5 with 11ac-80<br>5775 MHz        | Off                | 2402 MHz                         |
| Carrier Frequency Separation                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Tx DH5<br>Tx 3DH5                       | On                 | 2402 MHz<br>2441 MHz<br>2480 MHz |
| 20dB Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Tx DH5<br>Tx 3DH5                       | Off                | 2402 MHz<br>2441 MHz<br>2480 MHz |
| Number of Hopping Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Tx DH5<br>Tx 3DH5                       | On                 | -                                |
| Dwell time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Tx DH1, DH3, DH5<br>Tx 3DH1, 3DH3, 3DH5 | On                 | -                                |
| Maximum Peak Output Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Tx DH5<br>Tx 2DH5<br>Tx 3DH5            | Off                | 2402 MHz<br>2441 MHz<br>2480 MHz |
| Band Edge Compliance<br>(Conducted)                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Tx DH5<br>Tx 3DH5                       | On<br>-----<br>Off | 2402 MHz<br>2480 MHz             |
| 99% Occupied Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Tx DH5<br>Tx 3DH5                       | On<br>-----<br>Off | 2402 MHz<br>2441 MHz<br>2480 MHz |
| <p>*As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload length (except Dwell time test)<br/> *2DH mode (2Mb/s EDR: pi/4DQPSK) was excluded for other tests than power measurement by using 3DH mode (3 Mb/s EDR: 8DPSK) as a representative.<br/> *It is considered that the non-tested packet type (e.g. inquiry) can be omitted as it is complied with above all the test items based on Bluetooth Core specification.</p> |                                         |                    |                                  |
| <p>*1) Spurious emissions for frequencies below 1 GHz were limited to the channel that had the highest power during the antenna terminal test, as preliminary testing indicated that changing the operating frequency had no significant impact on the emissions in those frequency bands.</p>                                                                                                                                                                                              |                                         |                    |                                  |

4.2 Configuration and Peripherals

<For Radiated Emission test>



\* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

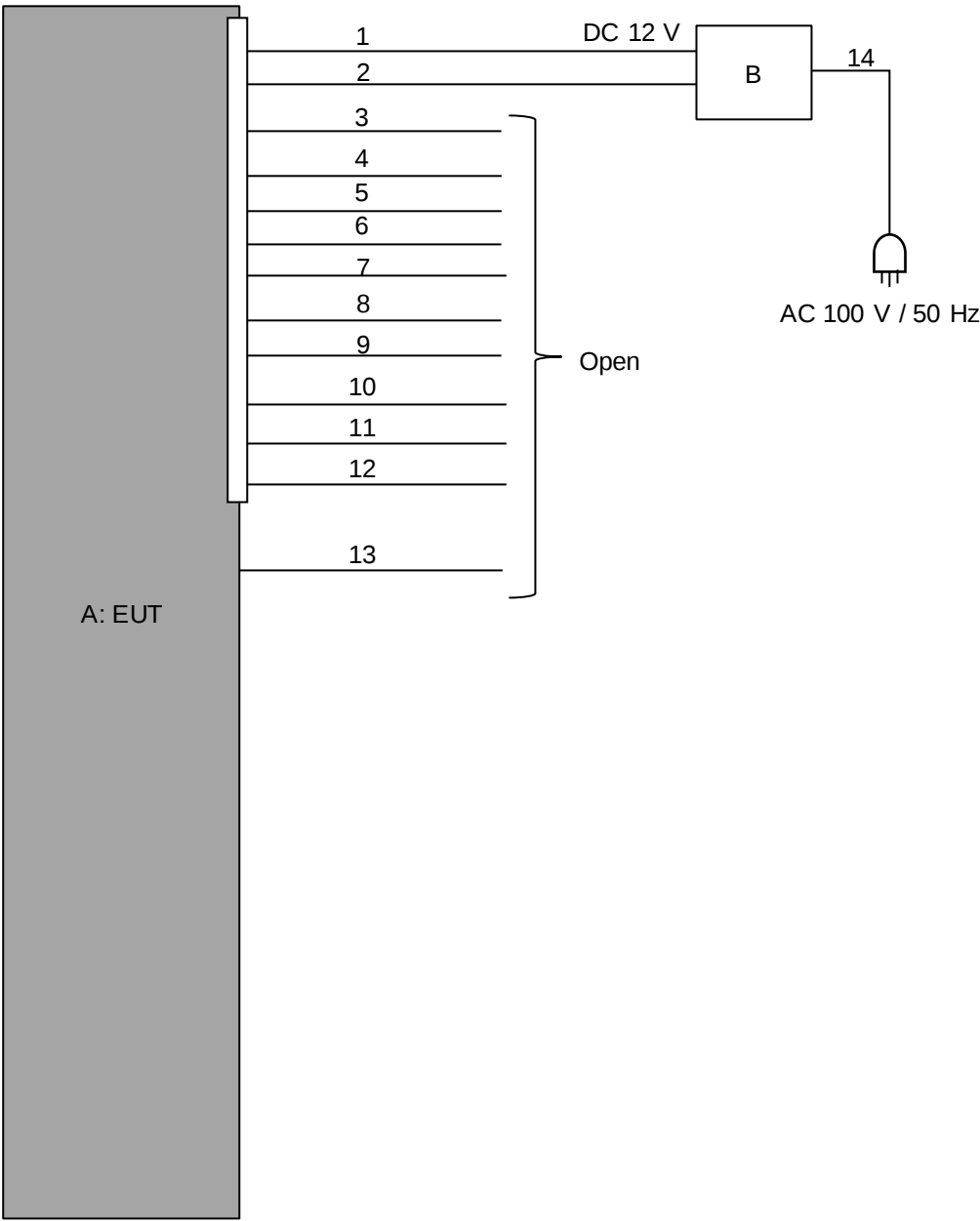
#### Description of EUT and Support Equipment

| No. | Item                  | Model number | Serial number | Manufacturer              | Remark |
|-----|-----------------------|--------------|---------------|---------------------------|--------|
| A   | Monitor with Receiver | DMX1058XR    | PK-X0014      | JVCKENWOOD                | EUT    |
| B   | Speaker(car)          | LV-002       | S11014200775  | L&V                       | -      |
| C   | Speaker(car)          | LV-002       | S11014200775  | L&V                       | -      |
| D   | Speaker(car)          | LV-002       | S11014200773  | L&V                       | -      |
| E   | Speaker(car)          | LV-002       | S11014200773  | L&V                       | -      |
| F   | Microphone            | GD-VHM421C   | -             | JVCKENWOOD                | -      |
| G   | GPS ANTENNA           | GPA-GS211    | -             | JVCKENWOOD                | -      |
| H   | USB Memory            | SDCZ810 383  | BN22120037344 | SanDisk                   | -      |
| I   | iPhone                | MQ792J/A     | C8PY95XLJC6H  | APPLE INC.                | -      |
| J   | Power Supply (DC)     | PAN35-10A    | CY003459      | Kikusui Electronics Corp. | -      |

#### List of Cables Used

| No. | Name                  | Length (m)       | Shield     |            | Remarks |
|-----|-----------------------|------------------|------------|------------|---------|
|     |                       |                  | Cable      | Connector  |         |
| 1   | DC (ACC, B+)          | 0.2 + 1.4        | Unshielded | Unshielded | -       |
| 2   | DC (GND)              | 0.2 + 1.4        | Unshielded | Unshielded | -       |
| 3   | Speaker (Front-L) +/- | 0.15 + 1.6 + 2.8 | Unshielded | Unshielded | -       |
| 4   | Speaker (Front-R) +/- | 0.15 + 1.6 + 2.8 | Unshielded | Unshielded | -       |
| 5   | Speaker (Rear-L) +/-  | 0.15 + 1.6 + 2.8 | Unshielded | Unshielded | -       |
| 6   | Speaker (Rear-R) +/-  | 0.15 + 1.6 + 2.8 | Unshielded | Unshielded | -       |
| 7   | ILLUMI                | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 8   | ANT Cont              | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 9   | P.CONT                | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 10  | REMOTE Cont           | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 11  | PRK SW                | 2.0              | Unshielded | Unshielded | -       |
| 12  | REVERSE               | 2.0              | Unshielded | Unshielded | -       |
| 13  | CAM+                  | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 14  | CAM-                  | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 15  | MUTE                  | 0.15 + 0.9       | Unshielded | Unshielded | -       |
| 16  | S.SENS                | 2.0              | Unshielded | Unshielded | -       |
| 17  | SXM IF                | 1.0              | Shielded   | Shielded   | -       |
| 18  | IF                    | 1.0              | Unshielded | Unshielded | -       |
| 19  | FM/AM                 | 0.15 + 1.8       | Shielded   | Shielded   | -       |
| 20  | Mic                   | 3.0              | Unshielded | Unshielded | -       |
| 21  | Front View Camera     | 0.15 + 2.1       | Shielded   | Shielded   | -       |
| 22  | Rear View Camera      | 0.15 + 1.5       | Shielded   | Shielded   | -       |
| 23  | 3rd View Camera       | 0.15 + 3.6       | Shielded   | Shielded   | -       |
| 24  | VIDEO IN              | 0.15 + 3.6       | Shielded   | Shielded   | -       |
| 25  | VIDEO OUT             | 0.2 + 3.6        | Shielded   | Shielded   | -       |
| 26  | AUDIO IN              | 0.2 + 3.5        | Shielded   | Shielded   | -       |
| 27  | AUDIO OUT Front       | 0.3 + 3.6        | Shielded   | Shielded   | -       |
| 28  | AUDIO OUT Rear        | 0.3 + 1.5        | Shielded   | Shielded   | -       |
| 29  | AUDIO OUT Subwoofer   | 0.3 + 1.5        | Shielded   | Shielded   | -       |
| 30  | GPS                   | 3.4              | Shielded   | Shielded   | -       |
| 31  | USB                   | 1.0              | Shielded   | Shielded   | -       |
| 32  | HDMI                  | 1.7              | Shielded   | Shielded   | -       |
| 33  | AC                    | 2.0              | Unshielded | Unshielded | -       |

<For Antenna Terminal Conducted test>



#### Description of EUT and Support Equipment

| No. | Item                  | Model number | Serial number | Manufacturer              | Remark |
|-----|-----------------------|--------------|---------------|---------------------------|--------|
| A   | Monitor with Receiver | DMX1058XR    | PK-X0024      | JVCKENWOOD                | EUT    |
| B   | Power Supply (DC)     | PNA16-10A    | ER001077      | Kikusui Electronics Corp. | -      |

#### List of Cables Used

| No. | Name                  | Length (m) | Shield     |            | Remarks |
|-----|-----------------------|------------|------------|------------|---------|
|     |                       |            | Cable      | Connector  |         |
| 1   | DC (ACC, B+)          | 0.15+0.5   | Unshielded | Unshielded | -       |
| 2   | DC (GND)              | 0.15+0.5   | Unshielded | Unshielded | -       |
| 3   | Speaker (Front-L) +/- | 0.15       | Unshielded | Unshielded | -       |
| 4   | Speaker (Front-R) +/- | 0.15       | Unshielded | Unshielded | -       |
| 5   | Speaker (Rear-L) +/-  | 0.15       | Unshielded | Unshielded | -       |
| 6   | Speaker (Rear-R) +/-  | 0.15       | Unshielded | Unshielded | -       |
| 7   | ILLUMI                | 0.15       | Unshielded | Unshielded | -       |
| 8   | ANT Cont              | 0.15       | Unshielded | Unshielded | -       |
| 9   | Mute                  | 0.15       | Unshielded | Unshielded | -       |
| 10  | REMOTE Cont           | 0.15       | Unshielded | Unshielded | -       |
| 11  | Reverse               | 0.15       | Unshielded | Unshielded | -       |
| 12  | P.Cont                | 0.15       | Unshielded | Unshielded | -       |
| 13  | FM/AM                 | 0.15       | Shielded   | Shielded   | -       |
| 14  | AC                    | 2.0        | Unshielded | Unshielded | -       |

## **SECTION 5: Radiated Spurious Emission**

### **Test Procedure**

[For below 1 GHz]

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

[For above 1 GHz]

EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane. 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 height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

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

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

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

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

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

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

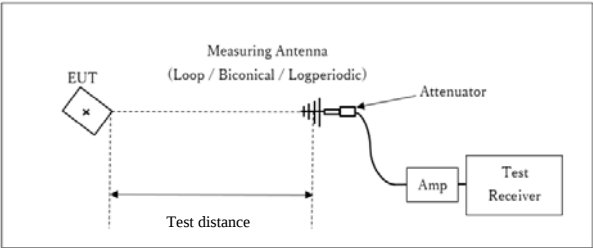
In any 100 kHz bandwidth outside the restricted band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired 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                                                                                                    | PK                           |
| IF Bandwidth    | BW 120 kHz    | RBW: 1 MHz<br>VBW: 3 MHz | RBW: 1 MHz<br>VBW: 1/T<br>(T: burst length, refer to Burst rate confirmation sheet)<br>Detector: Peak | RBW: 100 kHz<br>VBW: 300 kHz |

Figure 2: Test Setup

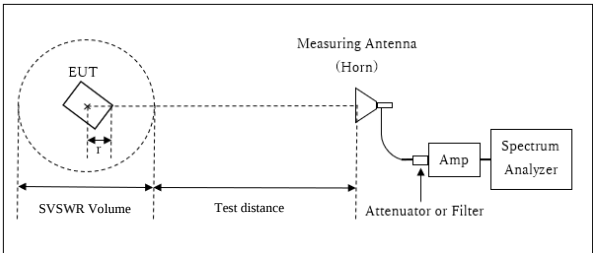
Below 1 GHz



\* : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

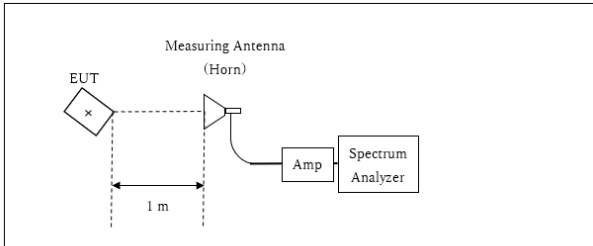


r : Radius of an outer periphery of EUT  
\* : Center of turn table

Distance Factor:  $20 \times \log (3.86 \text{ m}^* / 3.0 \text{ m}) = 2.19 \text{ dB}$   
\*(Test Distance + SVSWR Volume / 2) - r = 3.86 m

Test Distance: 3 m  
SVSWR Volume: 2 m  
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)  
r: 0.14 m

10 GHz to 26.5 GHz



\* : Center of turn table

Distance Factor:  $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$   
\*Test Distance: 1 m

The carrier level and noise levels were confirmed at each position of 0 deg. and 40 deg. of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

| Antenna polarization | Carrier | Spurious (30 MHz - 1 GHz) | Spurious (1 GHz - 2.8 GHz) | Spurious (2.8 GHz - 10 GHz) | Spurious (10 GHz - 18 GHz) | Spurious (18 GHz - 26.5 GHz) |
|----------------------|---------|---------------------------|----------------------------|-----------------------------|----------------------------|------------------------------|
| Horizontal           | 0 deg.  | 0 deg.                    | 40 deg.                    | 40 deg.                     | 0 deg.                     | 0 deg.                       |
| Vertical             | 0 deg.  | 0 deg.                    | 40 deg.                    | 40 deg.                     | 0 deg.                     | 0 deg.                       |

Test results are rounded off and limit are rounded down, so some differences might be observed.

Measurement Range : 30 MHz to 26.5 GHz  
Test Data : APPENDIX  
Test Result : Pass

## SECTION 6: Antenna Terminal Conducted Tests

### Test Procedure

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

| Test                                             | Span                                    | RBW             | VBW                | Sweep time                                                     | Detector         | Trace        | Instrument Used                  |
|--------------------------------------------------|-----------------------------------------|-----------------|--------------------|----------------------------------------------------------------|------------------|--------------|----------------------------------|
| 20 dB Bandwidth                                  | 3 MHz                                   | 30 kHz          | 100 kHz            | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
| 99 % Occupied Bandwidth *1)                      | Enough width to display emission skirts | 1 to 5 % of OBW | Three times of RBW | Auto                                                           | Peak             | Max Hold *1) | Spectrum Analyzer                |
| Maximum Peak Output Power                        | -                                       | -               | -                  | Auto                                                           | Peak/Average *2) | -            | Power Meter (Sensor: 160 MHz BW) |
| Carrier Frequency Separation                     | 3 MHz                                   | 100 kHz         | 300 kHz            | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
| Number of Hopping Frequency                      | 30 MHz                                  | 100 kHz         | 300 kHz            | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
| Dwell Time                                       | Zero Span                               | 100 kHz, 1 MHz  | 300 kHz, 3 MHz     | As necessary capture the entire dwell time per hopping channel | Peak             | Clear Write  | Spectrum Analyzer                |
| Conducted Spurious Emission *3) *4)              | 9 kHz to 150 kHz                        | 200 Hz          | 620 Hz             | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |
|                                                  | 150 kHz to 30 MHz                       | 10 kHz          | 30 kHz             |                                                                |                  |              |                                  |
|                                                  | 30 MHz to 25 GHz                        | 100 kHz         | 300 kHz            |                                                                |                  |              |                                  |
| Conducted Spurious Emission Band Edge compliance | 10 MHz                                  | 100 kHz         | 300 kHz            | Auto                                                           | Peak             | Max Hold     | Spectrum Analyzer                |

\*1) The measurement was performed with Max Hold since the duty cycle was not 100 %. Peak hold was applied as Worst-case measurement.

\*2) Reference data

\*3) In the frequency range below 30MHz, RBW was narrowed to separate the noise contents.

Then, wide-band noise near the limit was checked separately, however the noise was not detected as shown in the chart.

(9 kHz -150 kHz: RBW = 200 Hz, 150 kHz - 30 MHz: RBW = 10 kHz) \*4) 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.

Test results are rounded off and limit are rounded down, 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

## **APPENDIX 1: Test data**

### **20dB Bandwidth, 99%Occupied Bandwidth and Carrier Frequency Separation**

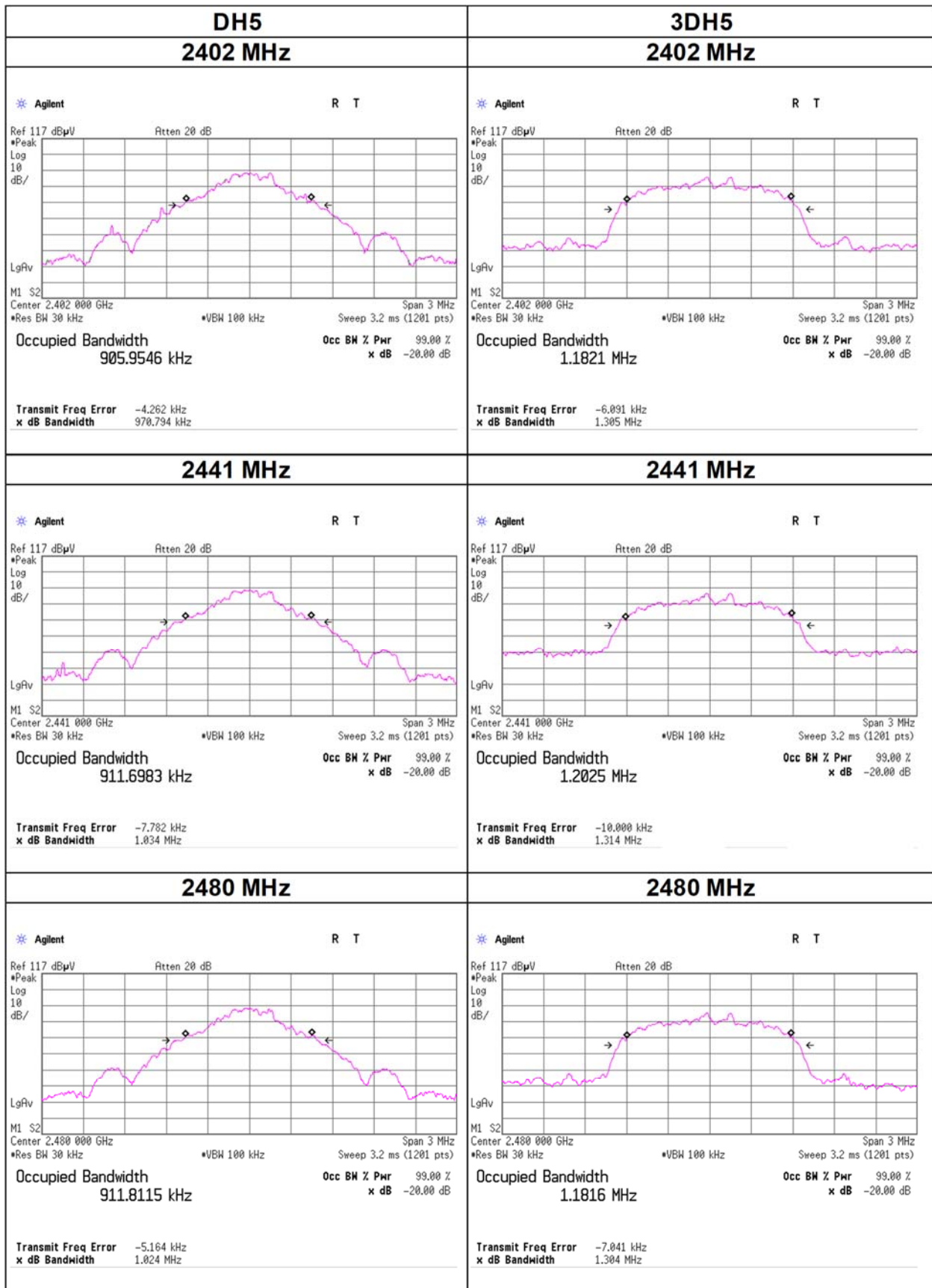
|                        |                                   |
|------------------------|-----------------------------------|
| Test place             | Shonan EMC Lab. No.5Shielded Room |
| Date                   | January 19, 2025                  |
| Temperature / Humidity | 17 deg. C / 31 % RH               |
| Engineer               | Yohsuke Matsuzawa                 |
| Mode                   | Tx, Hopping Off, Tx, Hopping On   |

| Mode | Freq.<br>[MHz] | 20 dB Bandwidth<br>[MHz] | 99 % Occupied<br>Bandwidth<br>[kHz] | Carrier Frequency<br>Separation<br>[MHz] | Limit for Carrier<br>Frequency separation<br>[MHz] |
|------|----------------|--------------------------|-------------------------------------|------------------------------------------|----------------------------------------------------|
| DH5  | 2402.0         | 0.971                    | 906.0                               | 1.018                                    | >= 0.647                                           |
| DH5  | 2441.0         | 1.034                    | 911.7                               | 1.010                                    | >= 0.689                                           |
| DH5  | 2480.0         | 1.024                    | 911.8                               | 1.008                                    | >= 0.683                                           |
| DH5  | Hopping On     | -                        | 78576.6                             | -                                        | -                                                  |
| 3DH5 | 2402.0         | 1.305                    | 1182.1                              | 1.000                                    | >= 0.870                                           |
| 3DH5 | 2441.0         | 1.314                    | 1202.5                              | 1.000                                    | >= 0.876                                           |
| 3DH5 | 2480.0         | 1.304                    | 1181.6                              | 1.005                                    | >= 0.869                                           |
| 3DH5 | Hopping On     | -                        | 78624.3                             | -                                        | -                                                  |

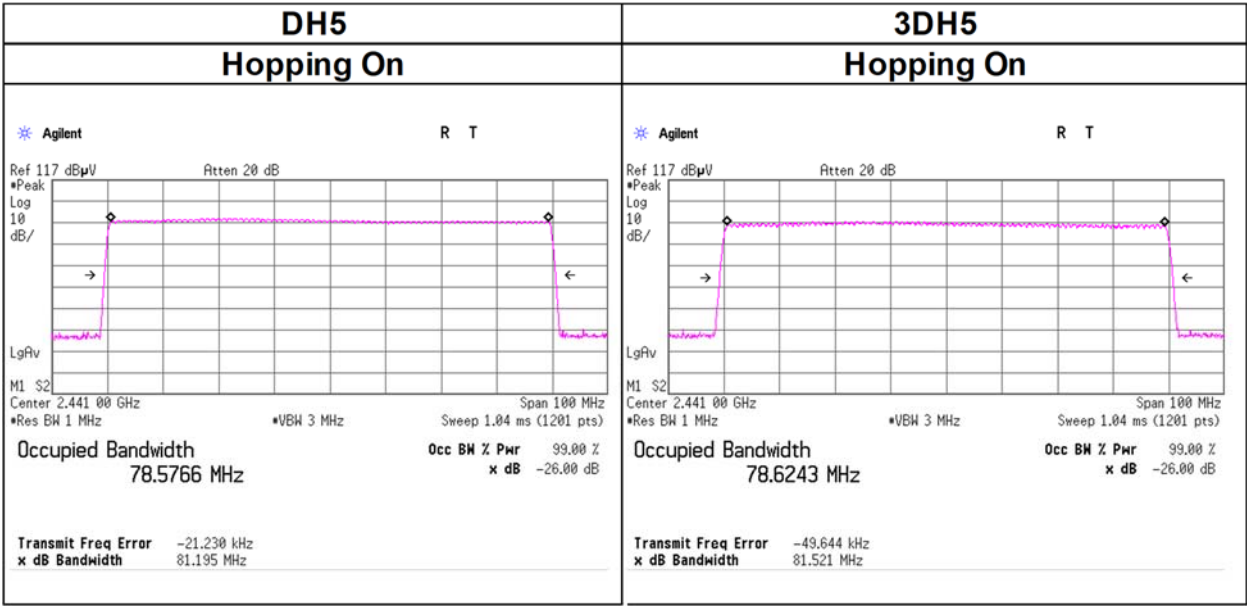
Limit: Two-thirds of 20 dB Bandwidth or 25 kHz (whichever is greater).

No limit applies to 20 dB Bandwidth.

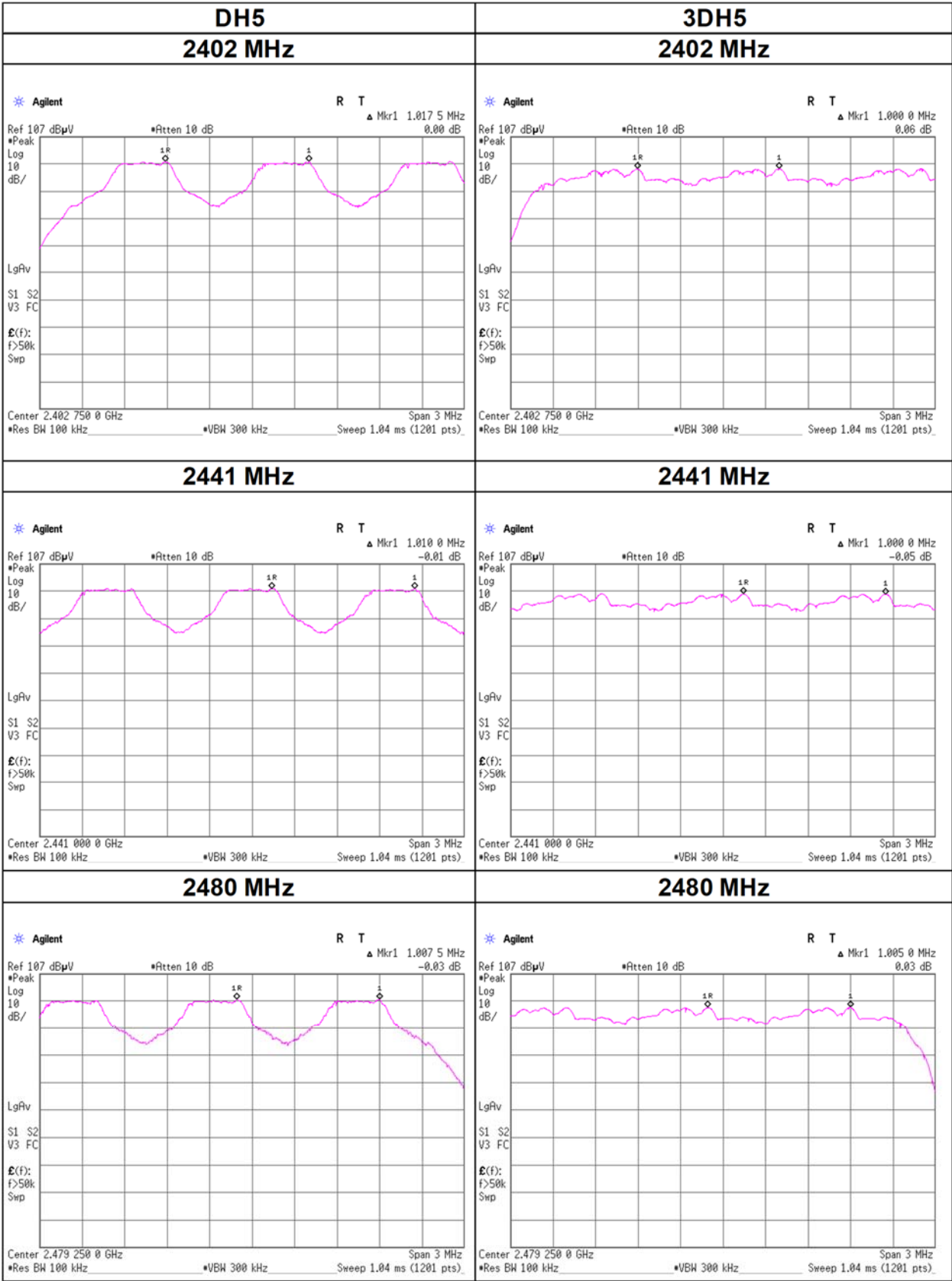
## 20dB Bandwidth and 99% Occupied Bandwidth



20dB Bandwidth and 99% Occupied Bandwidth



Carrier Frequency Separation



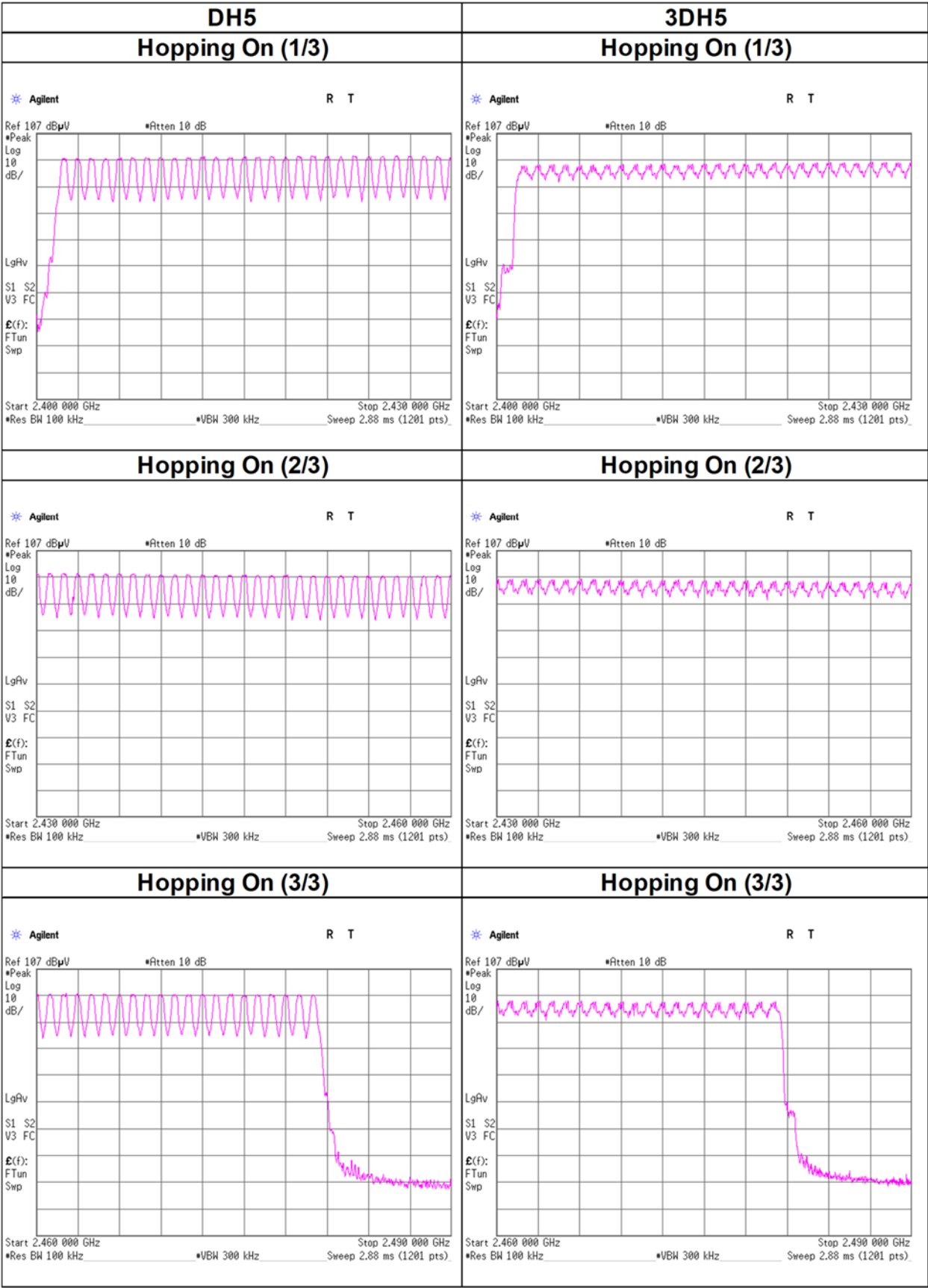
### **Number of Hopping Frequency**

Test place                      Shonan EMC Lab. No.5Shielded Room  
Date                              January 19, 2025  
Temperature / Humidity      17 deg. C / 31 % RH  
Engineer                        Yohsuke Matsuzawa  
Mode                              Tx, Hopping On

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

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

**Number of Hopping Frequency**



## Dwell time

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping On

| Mode | Number of transmission<br>in a 31.6 (79 Hopping x 0.4) |   |     |                      | Length of<br>transmission<br>[ms] | Result<br>[ms] | Limit<br>[ms] |
|------|--------------------------------------------------------|---|-----|----------------------|-----------------------------------|----------------|---------------|
| DH1  | 51.0 times                                             | / | 5 s | x 31.6 s = 323 times | 0.401                             | 129            | 400           |
| DH3  | 26.8 times                                             | / | 5 s | x 31.6 s = 170 times | 1.659                             | 282            | 400           |
| DH5  | 16.6 times                                             | / | 5 s | x 31.6 s = 105 times | 2.905                             | 305            | 400           |
| 3DH1 | 50.6 times                                             | / | 5 s | x 31.6 s = 320 times | 0.407                             | 130            | 400           |
| 3DH3 | 27.0 times                                             | / | 5 s | x 31.6 s = 171 times | 1.658                             | 284            | 400           |
| 3DH5 | 16.6 times                                             | / | 5 s | x 31.6 s = 105 times | 2.909                             | 305            | 400           |

Sample Calculation

Result = Number of transmission x Length of transmission

\*Average data of 5 tests.

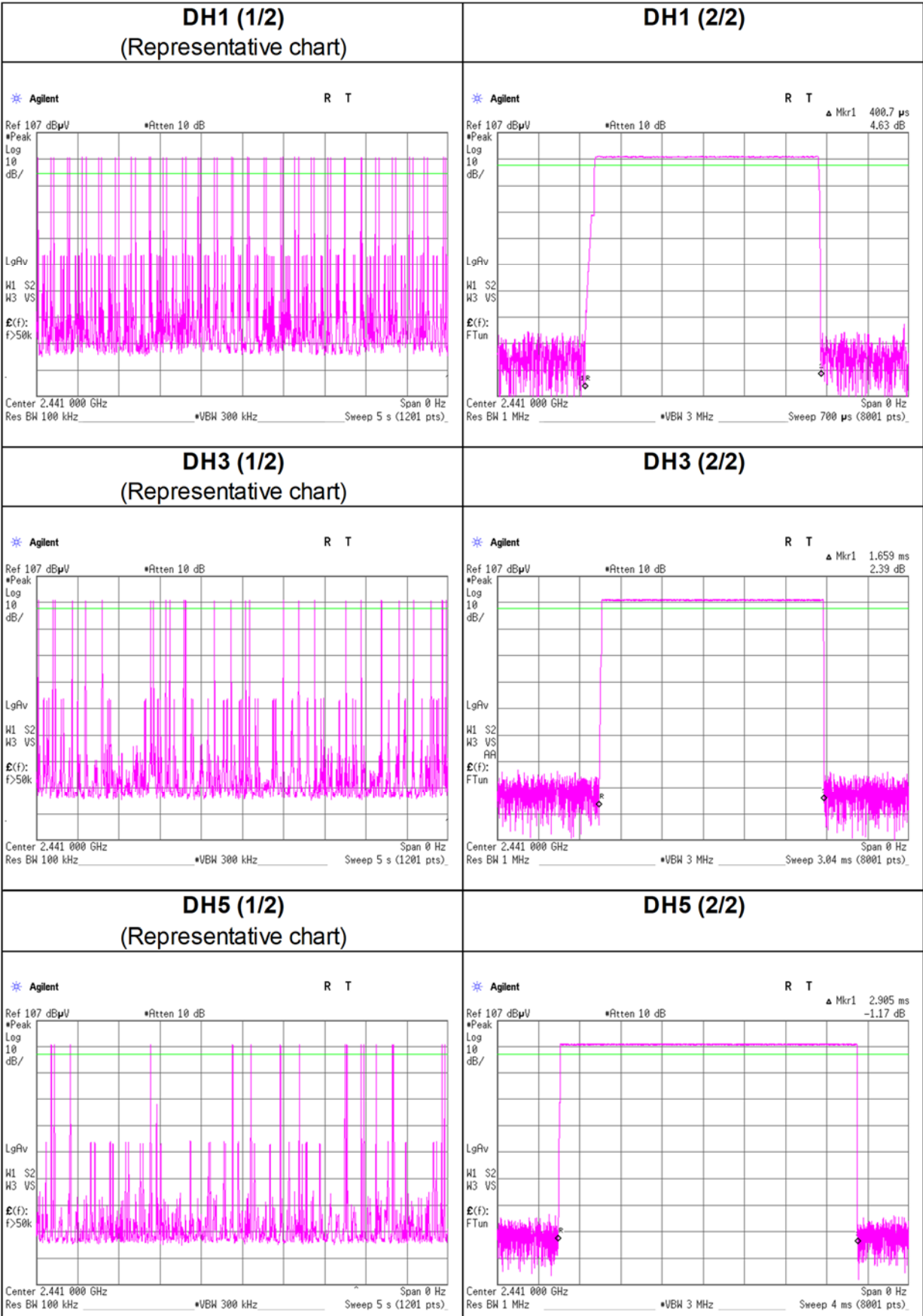
| Mode | Sampling [times] |    |    |    |    | Average<br>[times] |
|------|------------------|----|----|----|----|--------------------|
|      | 1                | 2  | 3  | 4  | 5  |                    |
| DH1  | 51               | 51 | 52 | 50 | 51 | 51                 |
| DH3  | 27               | 28 | 26 | 26 | 27 | 26.8               |
| DH5  | 17               | 16 | 17 | 16 | 17 | 16.6               |
| 3DH1 | 50               | 51 | 51 | 50 | 51 | 50.6               |
| 3DH3 | 26               | 27 | 27 | 28 | 27 | 27                 |
| 3DH5 | 16               | 16 | 16 | 18 | 17 | 16.6               |

Sample Calculation

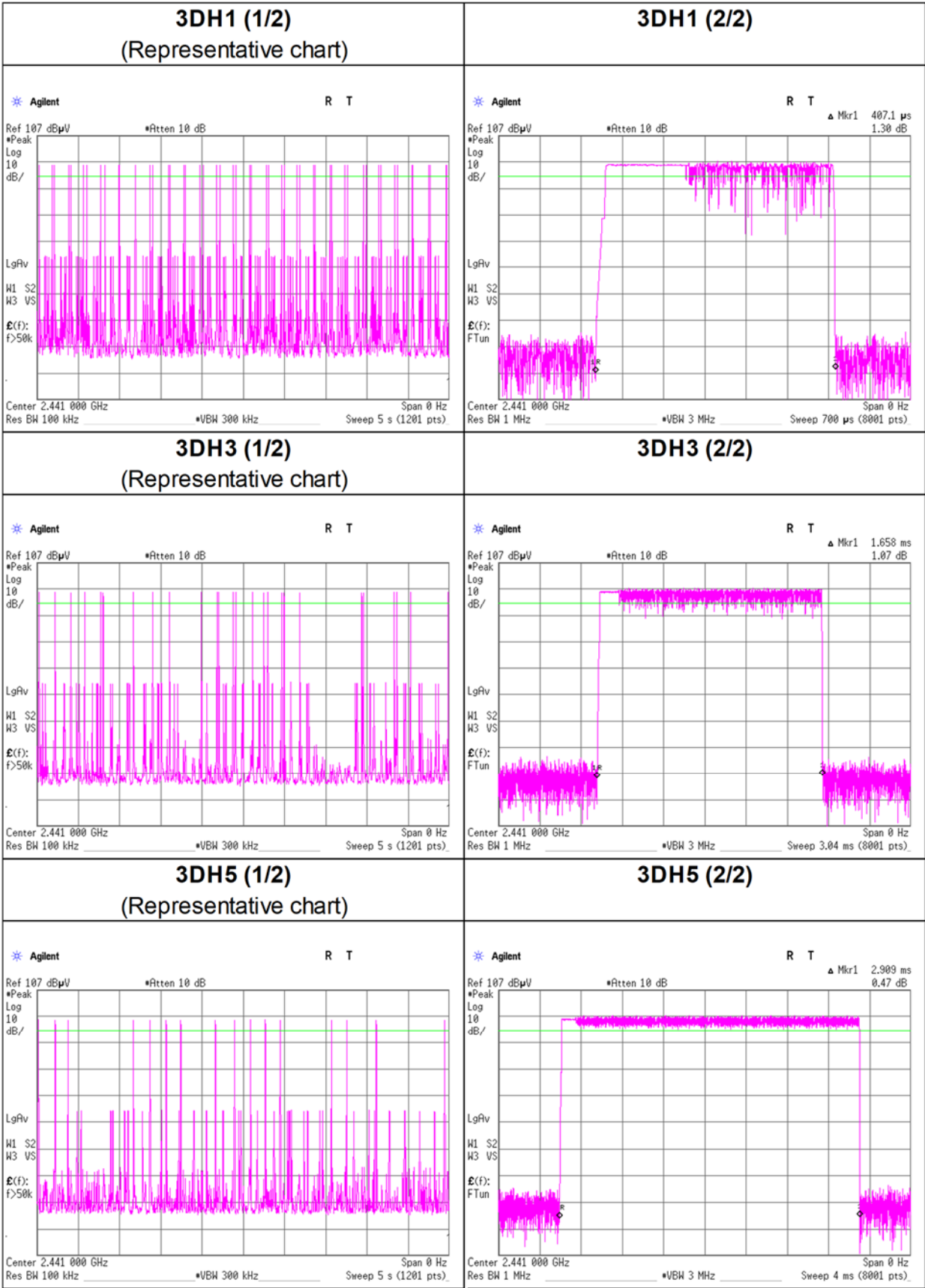
Average = Summation (Sampling 1 to 5) / 5

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

Dwell time



Dwell time



## Maximum Peak Output Power

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Miku Ikudome  
Mode Tx, Hopping Off

### Maximum peak output power

| Mode | Freq.<br>[MHz] | Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Conducted Power |      |       |      |                | e.i.r.p. for RSS-247     |        |      |       |      |                |
|------|----------------|------------------|-----------------------|------------------------|-----------------|------|-------|------|----------------|--------------------------|--------|------|-------|------|----------------|
|      |                |                  |                       |                        | Result          |      | Limit |      | Margin<br>[dB] | Antenna<br>Gain<br>[dBi] | Result |      | Limit |      | Margin<br>[dB] |
|      |                |                  |                       |                        | [dBm]           | [mW] | [dBm] | [mW] |                |                          | [dBm]  | [mW] | [dBm] | [mW] |                |
| DH5  | 2402           | -9.25            | 2.25                  | 9.63                   | 2.63            | 1.83 | 20.97 | 125  | 18.34          | -16.10                   | -13.47 | 0.04 | 36.02 | 4000 | 49.49          |
| DH5  | 2441           | -9.06            | 2.26                  | 9.64                   | 2.84            | 1.92 | 20.97 | 125  | 18.13          | -16.10                   | -13.26 | 0.05 | 36.02 | 4000 | 49.28          |
| DH5  | 2480           | -9.41            | 2.27                  | 9.64                   | 2.50            | 1.78 | 20.97 | 125  | 18.47          | -16.10                   | -13.60 | 0.04 | 36.02 | 4000 | 49.62          |
| 2DH5 | 2402           | -10.08           | 2.25                  | 9.63                   | 1.80            | 1.51 | 20.97 | 125  | 19.17          | -16.10                   | -14.30 | 0.04 | 36.02 | 4000 | 50.32          |
| 2DH5 | 2441           | -9.71            | 2.26                  | 9.64                   | 2.19            | 1.66 | 20.97 | 125  | 18.78          | -16.10                   | -13.91 | 0.04 | 36.02 | 4000 | 49.93          |
| 2DH5 | 2480           | -10.33           | 2.27                  | 9.64                   | 1.58            | 1.44 | 20.97 | 125  | 19.39          | -16.10                   | -14.52 | 0.04 | 36.02 | 4000 | 50.54          |
| 3DH5 | 2402           | -9.71            | 2.25                  | 9.63                   | 2.17            | 1.65 | 20.97 | 125  | 18.80          | -16.10                   | -13.93 | 0.04 | 36.02 | 4000 | 49.95          |
| 3DH5 | 2441           | -9.41            | 2.26                  | 9.64                   | 2.49            | 1.77 | 20.97 | 125  | 18.48          | -16.10                   | -13.61 | 0.04 | 36.02 | 4000 | 49.63          |
| 3DH5 | 2480           | -9.43            | 2.27                  | 9.64                   | 2.48            | 1.77 | 20.97 | 125  | 18.49          | -16.10                   | -13.62 | 0.04 | 36.02 | 4000 | 49.64          |

Sample Calculation:

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

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

Test was not performed at AFH mode, because the decrease of number of channel (min: 20 ch) at AFH mode does not influence on the output power and bandwidth of the EUT.  
As this device had AFH mode and frequency separation could not meet the requirement of over 20 dB BW without 2/3 relaxation, 125 mW power limit was applied to it.

### Average power (Reference data for RF Exposure)

| Mode | Freq.<br>[MHz] | Reading<br>[dBm] | Cable<br>Loss<br>[dB] | Atten.<br>Loss<br>[dB] | Result<br>(Time average) |      | Duty<br>factor<br>[dB] | Result<br>(Burst power average) |      |
|------|----------------|------------------|-----------------------|------------------------|--------------------------|------|------------------------|---------------------------------|------|
|      |                |                  |                       |                        | [dBm]                    | [mW] |                        | [dBm]                           | [mW] |
| DH5  | 2402           | -10.74           | 2.25                  | 9.63                   | 1.14                     | 1.30 | 1.11                   | 2.25                            | 1.68 |
| DH5  | 2441           | -10.50           | 2.26                  | 9.64                   | 1.40                     | 1.38 | 1.11                   | 2.51                            | 1.78 |
| DH5  | 2480           | -10.95           | 2.27                  | 9.64                   | 0.96                     | 1.25 | 1.11                   | 2.07                            | 1.61 |
| 2DH5 | 2402           | -13.75           | 2.25                  | 9.63                   | -1.87                    | 0.65 | 1.10                   | -0.77                           | 0.84 |
| 2DH5 | 2441           | -12.96           | 2.26                  | 9.64                   | -1.06                    | 0.78 | 1.10                   | 0.04                            | 1.01 |
| 2DH5 | 2480           | -14.23           | 2.27                  | 9.64                   | -2.32                    | 0.59 | 1.10                   | -1.22                           | 0.76 |
| 3DH5 | 2402           | -13.70           | 2.25                  | 9.63                   | -1.82                    | 0.66 | 1.10                   | -0.72                           | 0.85 |
| 3DH5 | 2441           | -12.93           | 2.26                  | 9.64                   | -1.03                    | 0.79 | 1.10                   | 0.07                            | 1.02 |
| 3DH5 | 2480           | -12.95           | 2.27                  | 9.64                   | -1.04                    | 0.79 | 1.10                   | 0.06                            | 1.01 |

Sample Calculation:

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

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

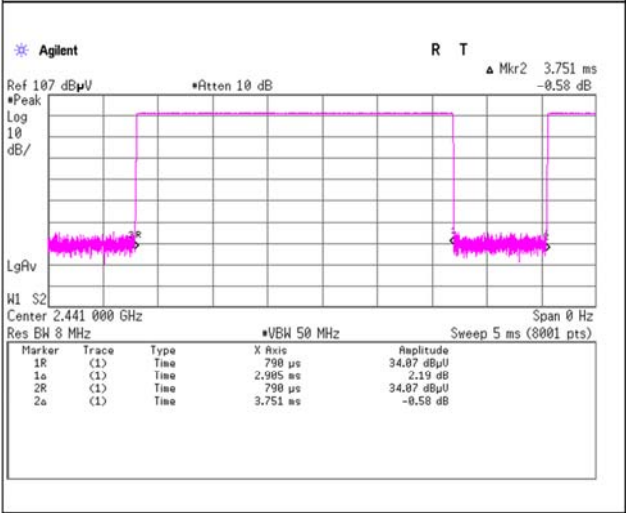
\*The equipment and cables were not used for factor 0 dB of the data sheets.

**Burst Rate Confirmation**

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off

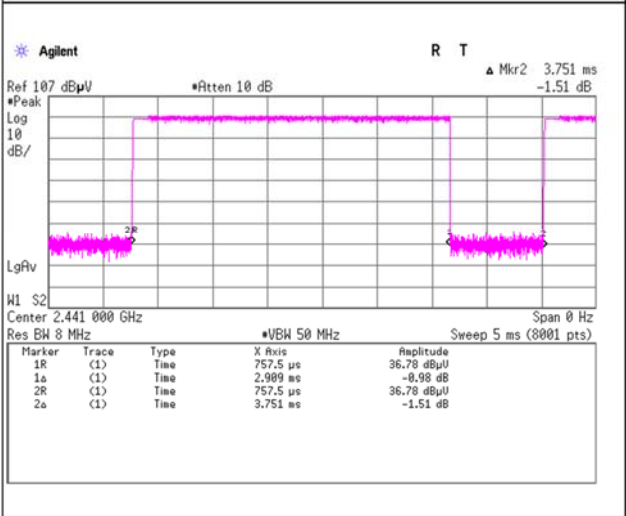
**DH5**

Tx on / (Tx on + Tx off) = 0.774  
Tx on / (Tx on + Tx off) \* 100 = 77.4 %  
Duty factor = 10 \* log (3.751 / 2.905) : 1.11 dB  
VBW: 1 / on time = 344.23 Hz < 500 Hz



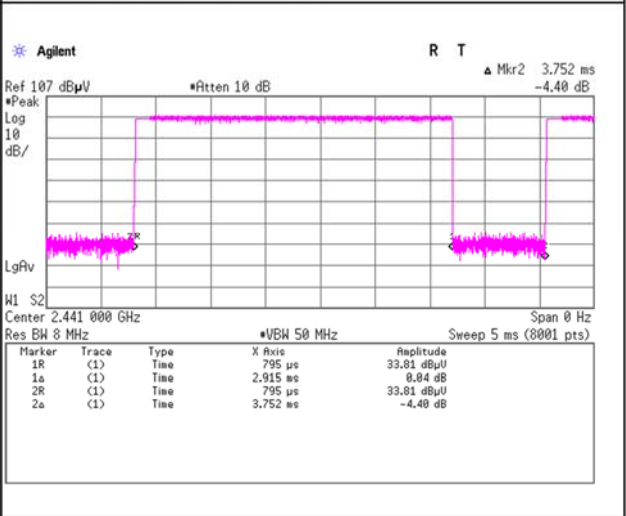
**2DH5**

Tx on / (Tx on + Tx off) = 0.776  
Tx on / (Tx on + Tx off) \* 100 = 77.6 %  
Duty factor = 10 \* log (3.751 / 2.909) : 1.10 dB  
VBW: 1 / on time = 343.79 Hz < 500 Hz



**3DH5**

Tx on / (Tx on + Tx off) = 0.777  
Tx on / (Tx on + Tx off) \* 100 = 77.7 %  
Duty factor = 10 \* log (3.752 / 2.915) : 1.10 dB  
VBW: 1 / on time = 343.05 Hz < 500 Hz



## Radiated Spurious Emission

|                        |                               |                      |
|------------------------|-------------------------------|----------------------|
| Test place             | Shonan EMC Lab.               |                      |
| Semi Anechoic Chamber  | WAC1                          | WAC1                 |
| Date                   | January 17, 2025              | January 19, 2025     |
| Temperature / Humidity | 21 deg. C / 36 % RH           | 23 deg. C / 38 % RH  |
| Engineer               | Kouki Yamada                  | Yohsuke Matsuzawa    |
|                        | (1 GHz to 10 GHz)             | (10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, DH5 2402 MHz |                      |

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

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain | Distance | Result   | Limit    | Margin | Height | Angle  | Remark                    |
|----------|-----------|----------|---------|----------|--------|------|----------|----------|----------|--------|--------|--------|---------------------------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB] | [dB]     | [dBuV/m] | [dBuV/m] | [dB]   | [cm]   | [deg.] |                           |
| Hori.    | 2390.000  | PK       | 46.84   | 27.85    | -28.00 | -    | 2.19     | 48.88    | 73.9     | 25.0   | 238    | 284    | -                         |
| Hori.    | 4804.000  | PK       | 46.41   | 31.97    | -35.33 | -    | 2.19     | 45.24    | 73.9     | 28.6   | 150    | 0      | Floor Noise               |
| Hori.    | 7206.000  | PK       | 46.25   | 36.23    | -34.02 | -    | 2.19     | 50.65    | 73.9     | 23.2   | 150    | 0      | Floor Noise               |
| Hori.    | 9608.000  | PK       | 45.20   | 37.93    | -31.46 | -    | 2.19     | 53.86    | 73.9     | 20.0   | 150    | 0      | Floor Noise               |
| Hori.    | 2390.000  | AV       | 32.64   | 27.85    | -28.00 | -    | 2.19     | 34.68    | 53.9     | 19.2   | 238    | 284    | VBW : 500 Hz              |
| Hori.    | 4804.000  | AV       | 32.27   | 31.97    | -35.33 | -    | 2.19     | 31.10    | 53.9     | 22.8   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Hori.    | 7206.000  | AV       | 32.22   | 36.23    | -34.02 | -    | 2.19     | 36.62    | 53.9     | 17.2   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Hori.    | 9608.000  | AV       | 30.99   | 37.93    | -31.46 | -    | 2.19     | 39.65    | 53.9     | 14.2   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 2390.000  | PK       | 46.67   | 27.85    | -28.00 | -    | 2.19     | 48.71    | 73.9     | 25.1   | 153    | 224    | -                         |
| Vert.    | 4804.000  | PK       | 46.62   | 31.97    | -35.33 | -    | 2.19     | 45.45    | 73.9     | 28.4   | 150    | 0      | Floor Noise               |
| Vert.    | 7206.000  | PK       | 46.31   | 36.23    | -34.02 | -    | 2.19     | 50.71    | 73.9     | 23.1   | 150    | 0      | Floor Noise               |
| Vert.    | 9608.000  | PK       | 45.24   | 37.93    | -31.46 | -    | 2.19     | 53.90    | 73.9     | 20.0   | 150    | 0      | Floor Noise               |
| Vert.    | 2390.000  | AV       | 32.68   | 27.85    | -28.00 | -    | 2.19     | 34.72    | 53.9     | 19.1   | 153    | 224    | VBW : 500 Hz              |
| Vert.    | 4804.000  | AV       | 32.31   | 31.97    | -35.33 | -    | 2.19     | 31.14    | 53.9     | 22.7   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 7206.000  | AV       | 32.15   | 36.23    | -34.02 | -    | 2.19     | 36.55    | 53.9     | 17.3   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 9608.000  | AV       | 30.79   | 37.93    | -31.46 | -    | 2.19     | 39.45    | 53.9     | 14.4   | 150    | 0      | VBW : 500 Hz, Floor Noise |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86 [m] / 3.0 [m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00 [m] / 3.0 [m]) = -9.54 [dB]$

### 20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain | Distance | Result   | Limit    | Margin | Remark  |
|----------|-----------|----------|---------|----------|--------|------|----------|----------|----------|--------|---------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB] | [dB]     | [dBuV/m] | [dBuV/m] | [dB]   |         |
| Hori.    | 2402.000  | PK       | 74.45   | 27.89    | -27.99 | -    | 2.19     | 76.54    | -        | -      | Carrier |
| Hori.    | 2400.000  | PK       | 38.54   | 27.89    | -27.99 | -    | 2.19     | 40.63    | 56.5     | 15.8   | -       |
| Vert.    | 2402.000  | PK       | 78.07   | 27.89    | -27.99 | -    | 2.19     | 80.16    | -        | -      | Carrier |
| Vert.    | 2400.000  | PK       | 37.85   | 27.89    | -27.99 | -    | 2.19     | 39.94    | 60.1     | 20.1   | -       |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

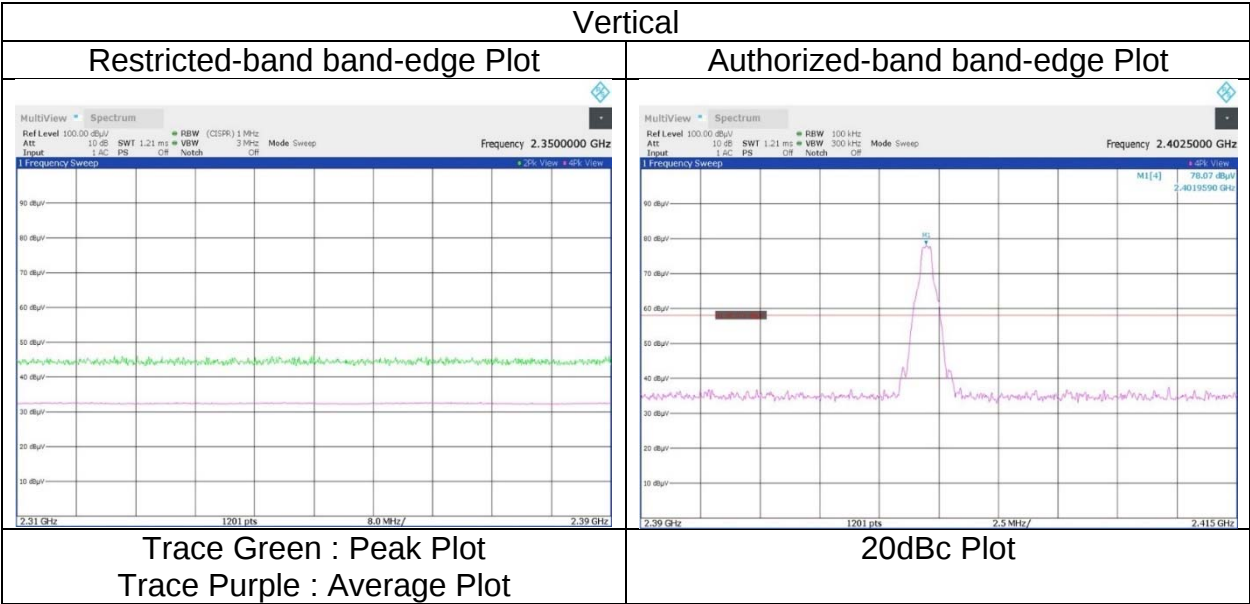
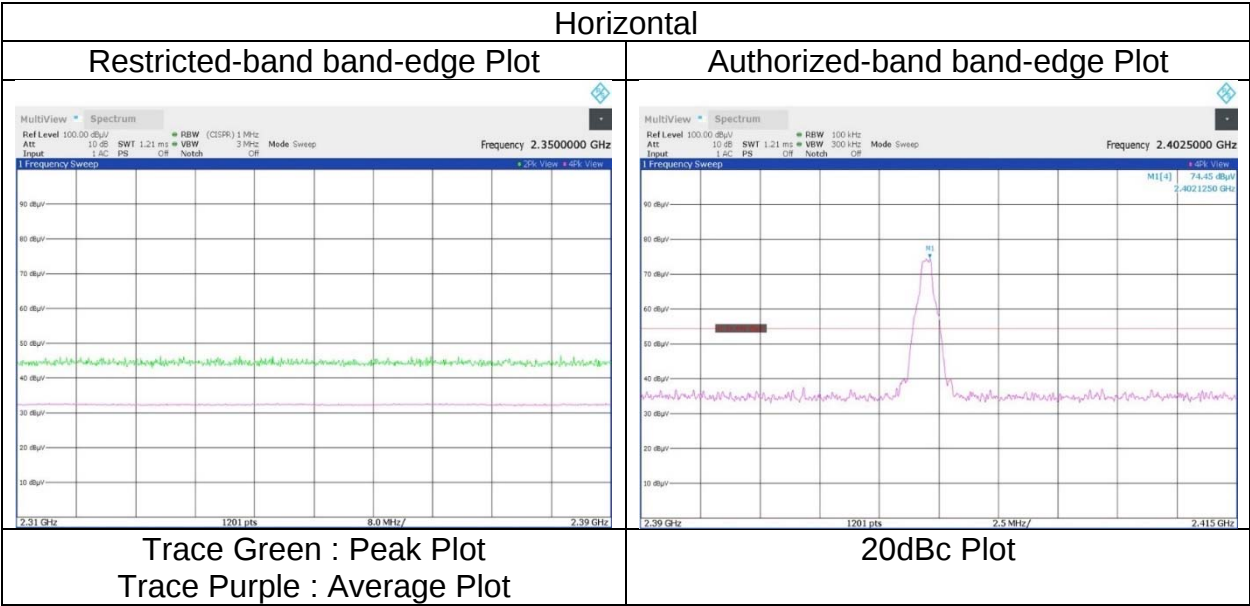
Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86 [m] / 3.0 [m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00 [m] / 3.0 [m]) = -9.54 [dB]$

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

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Shonan EMC Lab.  
WAC1  
January 17, 2025  
21 deg. C / 36 % RH  
Kouki Yamada  
Tx, Hopping Off, DH5 2402 MHz



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

**Radiated Spurious Emission**

|                        |                                    |                                   |                                           |
|------------------------|------------------------------------|-----------------------------------|-------------------------------------------|
| Test place             | Shonan EMC Lab.                    |                                   |                                           |
| Semi Anechoic Chamber  | WAC1                               | WAC1                              | WAC1                                      |
| Date                   | January 30, 2025                   | January 17, 2025                  | January 19, 2025                          |
| Temperature / Humidity | 20 deg. C / 25 % RH                | 21 deg. C / 36 % RH               | 23 deg. C / 38 % RH                       |
| Engineer               | Makoto Hosaka<br>(30 MHz to 1 GHz) | Kouki Yamada<br>(1 GHz to 10 GHz) | Yohsuke Matsuzawa<br>(10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, DH5 2441 MHz      |                                   |                                           |

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

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain  | Distance     | Result   | Limit    | Margin | Height | Angle  | Remark                      |
|----------|-----------|----------|---------|----------|--------|-------|--------------|----------|----------|--------|--------|--------|-----------------------------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB]  | Fac.<br>[dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]   | [deg.] |                             |
| Hori.    | 215.438   | QP       | 40.30   | 11.08    | 7.23   | 27.95 | 0.00         | 30.66    | 43.5     | 12.8   | 160    | 288    | -                           |
| Hori.    | 294.912   | QP       | 41.80   | 13.59    | 7.48   | 27.76 | 0.00         | 35.11    | 46.0     | 10.8   | 167    | 113    | -                           |
| Hori.    | 358.949   | QP       | 42.60   | 15.04    | 7.68   | 28.09 | 0.00         | 37.23    | 46.0     | 8.7    | 109    | 80     | -                           |
| Hori.    | 393.215   | QP       | 41.60   | 15.52    | 7.77   | 28.37 | 0.00         | 36.52    | 46.0     | 9.4    | 100    | 202    | -                           |
| Hori.    | 400.005   | QP       | 40.30   | 15.74    | 7.80   | 28.42 | 0.00         | 35.42    | 46.0     | 10.5   | 100    | 68     | -                           |
| Hori.    | 442.368   | QP       | 43.50   | 16.31    | 7.91   | 28.65 | 0.00         | 39.07    | 46.0     | 6.9    | 100    | 263    | -                           |
| Hori.    | 933.011   | QP       | 33.80   | 21.87    | 8.89   | 28.14 | 0.00         | 36.42    | 46.0     | 9.5    | 102    | 207    | -                           |
| Hori.    | 4882.000  | PK       | 46.95   | 32.34    | -35.41 | -     | 2.19         | 46.07    | 73.9     | 27.8   | 150    |        | 0 Floor Noise               |
| Hori.    | 7323.000  | PK       | 46.33   | 36.63    | -33.85 | -     | 2.19         | 51.30    | 73.9     | 22.6   | 150    |        | 0 Floor Noise               |
| Hori.    | 9764.000  | PK       | 44.51   | 37.93    | -31.32 | -     | 2.19         | 53.31    | 73.9     | 20.5   | 150    |        | 0 Floor Noise               |
| Hori.    | 4882.000  | AV       | 32.43   | 32.34    | -35.41 | -     | 2.19         | 31.55    | 53.9     | 22.3   | 150    |        | 0 VBW : 500 Hz, Floor Noise |
| Hori.    | 7323.000  | AV       | 32.28   | 36.63    | -33.85 | -     | 2.19         | 37.25    | 53.9     | 16.6   | 150    |        | 0 VBW : 500 Hz, Floor Noise |
| Hori.    | 9764.000  | AV       | 30.26   | 37.93    | -31.32 | -     | 2.19         | 39.06    | 53.9     | 14.8   | 150    |        | 0 VBW : 500 Hz, Floor Noise |
| Vert.    | 30.583    | QP       | 33.80   | 13.57    | 6.19   | 28.67 | 0.00         | 24.89    | 40.0     | 15.1   | 100    | 66     | -                           |
| Vert.    | 358.696   | QP       | 37.30   | 15.04    | 7.67   | 28.09 | 0.00         | 31.92    | 46.0     | 14.0   | 150    | 141    | -                           |
| Vert.    | 393.215   | QP       | 39.00   | 15.52    | 7.77   | 28.37 | 0.00         | 33.92    | 46.0     | 12.0   | 152    | 196    | -                           |
| Vert.    | 442.368   | QP       | 38.80   | 16.31    | 7.91   | 28.65 | 0.00         | 34.37    | 46.0     | 11.6   | 142    | 40     | -                           |
| Vert.    | 840.004   | QP       | 33.70   | 21.22    | 8.78   | 28.42 | 0.00         | 35.28    | 46.0     | 10.7   | 100    | 316    | -                           |
| Vert.    | 867.111   | QP       | 29.80   | 21.99    | 8.81   | 28.35 | 0.00         | 32.25    | 46.0     | 13.7   | 150    | 306    | -                           |
| Vert.    | 4882.000  | PK       | 46.68   | 32.34    | -35.41 | -     | 2.19         | 45.80    | 73.9     | 28.1   | 150    |        | 0 Floor Noise               |
| Vert.    | 7323.000  | PK       | 46.36   | 36.63    | -33.85 | -     | 2.19         | 51.33    | 73.9     | 22.5   | 150    |        | 0 Floor Noise               |
| Vert.    | 9764.000  | PK       | 45.00   | 37.93    | -31.32 | -     | 2.19         | 53.80    | 73.9     | 20.1   | 150    |        | 0 Floor Noise               |
| Vert.    | 4882.000  | AV       | 32.37   | 32.34    | -35.41 | -     | 2.19         | 31.49    | 53.9     | 22.4   | 150    |        | 0 VBW : 500 Hz, Floor Noise |
| Vert.    | 7323.000  | AV       | 32.23   | 36.63    | -33.85 | -     | 2.19         | 37.20    | 53.9     | 16.7   | 150    |        | 0 VBW : 500 Hz, Floor Noise |
| Vert.    | 9764.000  | AV       | 30.38   | 37.93    | -31.32 | -     | 2.19         | 39.18    | 53.9     | 14.7   | 150    |        | 0 VBW : 500 Hz, Floor Noise |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86[m]/3.0[m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00[m]/3.0[m]) = -9.54 [dB]$

## Radiated Spurious Emission

|                        |                               |                      |
|------------------------|-------------------------------|----------------------|
| Test place             | Shonan EMC Lab.               |                      |
| Semi Anechoic Chamber  | WAC1                          | WAC1                 |
| Date                   | January 17, 2025              | January 19, 2025     |
| Temperature / Humidity | 21 deg. C / 36 % RH           | 23 deg. C / 38 % RH  |
| Engineer               | Kouki Yamada                  | Yohsuke Matsuzawa    |
|                        | (1 GHz to 10 GHz)             | (10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, DH5 2480 MHz |                      |

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

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain | Distance | Result   | Limit    | Margin | Height | Angle  | Remark                    |
|----------|-----------|----------|---------|----------|--------|------|----------|----------|----------|--------|--------|--------|---------------------------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB] | [dB]     | [dBuV/m] | [dBuV/m] | [dB]   | [cm]   | [deg.] |                           |
| Hori.    | 2483.500  | PK       | 47.19   | 27.96    | -27.94 | -    | 2.19     | 49.40    | 73.9     | 24.5   | 312    | 191    | -                         |
| Hori.    | 4960.000  | PK       | 46.68   | 32.62    | -35.50 | -    | 2.19     | 45.99    | 73.9     | 27.9   | 150    | 0      | Floor Noise               |
| Hori.    | 7440.000  | PK       | 46.14   | 36.69    | -33.66 | -    | 2.19     | 51.36    | 73.9     | 22.5   | 150    | 0      | Floor Noise               |
| Hori.    | 9920.000  | PK       | 44.46   | 37.93    | -31.18 | -    | 2.19     | 53.40    | 73.9     | 20.5   | 150    | 0      | Floor Noise               |
| Hori.    | 2483.500  | AV       | 32.67   | 27.96    | -27.94 | -    | 2.19     | 34.88    | 53.9     | 19.0   | 312    | 191    | VBW : 500 Hz              |
| Hori.    | 4960.000  | AV       | 32.56   | 32.62    | -35.50 | -    | 2.19     | 31.87    | 53.9     | 22.0   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Hori.    | 7440.000  | AV       | 31.96   | 36.69    | -33.66 | -    | 2.19     | 37.18    | 53.9     | 16.7   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Hori.    | 9920.000  | AV       | 29.99   | 37.93    | -31.18 | -    | 2.19     | 38.93    | 53.9     | 14.9   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 2483.500  | PK       | 46.65   | 27.96    | -27.94 | -    | 2.19     | 48.86    | 73.9     | 25.0   | 146    | 217    | -                         |
| Vert.    | 4960.000  | PK       | 46.59   | 32.62    | -35.50 | -    | 2.19     | 45.90    | 73.9     | 28.0   | 150    | 0      | Floor Noise               |
| Vert.    | 7440.000  | PK       | 46.05   | 36.69    | -33.66 | -    | 2.19     | 51.27    | 73.9     | 22.6   | 150    | 0      | Floor Noise               |
| Vert.    | 9920.000  | PK       | 44.51   | 37.93    | -31.18 | -    | 2.19     | 53.45    | 73.9     | 20.4   | 150    | 0      | Floor Noise               |
| Vert.    | 2483.500  | AV       | 32.69   | 27.96    | -27.94 | -    | 2.19     | 34.90    | 53.9     | 19.0   | 146    | 217    | VBW : 500 Hz              |
| Vert.    | 4960.000  | AV       | 32.47   | 32.62    | -35.50 | -    | 2.19     | 31.78    | 53.9     | 22.1   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 7440.000  | AV       | 32.05   | 36.69    | -33.66 | -    | 2.19     | 37.27    | 53.9     | 16.6   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 9920.000  | AV       | 29.97   | 37.93    | -31.18 | -    | 2.19     | 38.91    | 53.9     | 14.9   | 150    | 0      | VBW : 500 Hz, Floor Noise |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

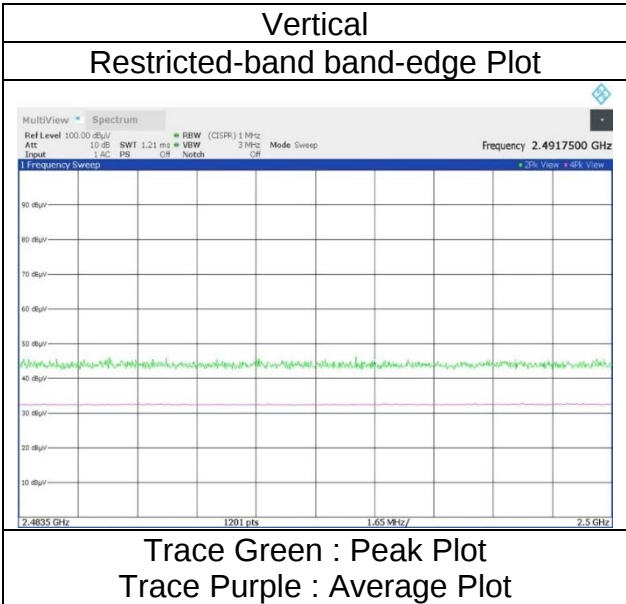
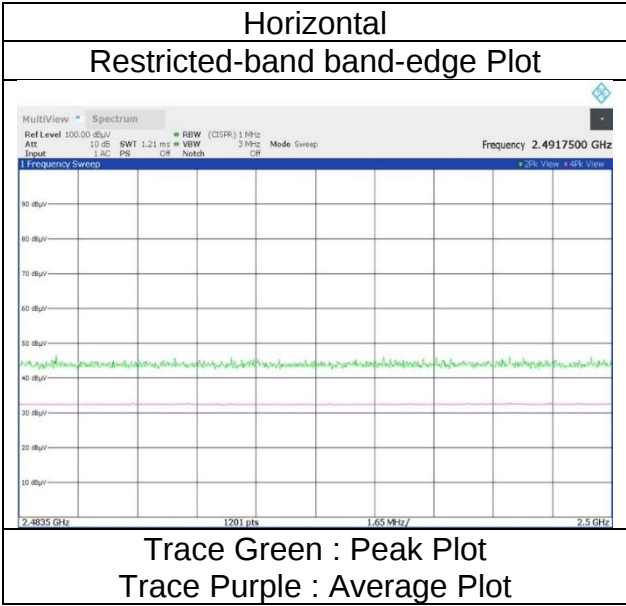
Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86[m]/3.0[m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00[m]/3.0[m]) = -9.54 [dB]$

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

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Shonan EMC Lab.  
WAC1  
January 17, 2025  
21 deg. C / 36 % RH  
Kouki Yamada  
Tx, Hopping Off, DH5 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

|                        |                                |                      |
|------------------------|--------------------------------|----------------------|
| Test place             | Shonan EMC Lab.                |                      |
| Semi Anechoic Chamber  | WAC1                           | WAC1                 |
| Date                   | January 17, 2025               | January 19, 2025     |
| Temperature / Humidity | 21 deg. C / 36 % RH            | 23 deg. C / 38 % RH  |
| Engineer               | Kouki Yamada                   | Yohsuke Matsuzawa    |
|                        | (1 GHz to 10 GHz)              | (10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, 3DH5 2402 MHz |                      |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Fac.<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg.] | Remark                    |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------------|--------------------|-------------------|----------------|----------------|-----------------|---------------------------|
| Hori.    | 2390.000           | PK       | 46.57             | 27.85              | -28.00       | -            | 2.19                     | 48.61              | 73.9              | 25.2           | 240            | 284             | -                         |
| Hori.    | 4804.000           | PK       | 46.18             | 31.97              | -35.33       | -            | 2.19                     | 45.01              | 73.9              | 28.8           | 150            | 0               | Floor Noise               |
| Hori.    | 7206.000           | PK       | 46.04             | 36.23              | -34.02       | -            | 2.19                     | 50.44              | 73.9              | 23.4           | 150            | 0               | Floor Noise               |
| Hori.    | 9608.000           | PK       | 44.94             | 37.93              | -31.46       | -            | 2.19                     | 53.60              | 73.9              | 20.3           | 150            | 0               | Floor Noise               |
| Hori.    | 2390.000           | AV       | 32.93             | 27.85              | -28.00       | -            | 2.19                     | 34.97              | 53.9              | 18.9           | 240            | 284             | VBW : 500 Hz              |
| Hori.    | 4804.000           | AV       | 32.38             | 31.97              | -35.33       | -            | 2.19                     | 31.21              | 53.9              | 22.6           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Hori.    | 7206.000           | AV       | 32.30             | 36.23              | -34.02       | -            | 2.19                     | 36.70              | 53.9              | 17.2           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Hori.    | 9608.000           | AV       | 30.84             | 37.93              | -31.46       | -            | 2.19                     | 39.50              | 53.9              | 14.4           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Vert.    | 2390.000           | PK       | 46.82             | 27.85              | -28.00       | -            | 2.19                     | 48.86              | 73.9              | 25.0           | 152            | 225             | -                         |
| Vert.    | 4804.000           | PK       | 46.16             | 31.97              | -35.33       | -            | 2.19                     | 44.99              | 73.9              | 28.9           | 150            | 0               | Floor Noise               |
| Vert.    | 7206.000           | PK       | 45.70             | 36.23              | -34.02       | -            | 2.19                     | 50.10              | 73.9              | 23.8           | 150            | 0               | Floor Noise               |
| Vert.    | 9608.000           | PK       | 44.68             | 37.93              | -31.46       | -            | 2.19                     | 53.34              | 73.9              | 20.5           | 150            | 0               | Floor Noise               |
| Vert.    | 2390.000           | AV       | 32.68             | 27.85              | -28.00       | -            | 2.19                     | 34.72              | 53.9              | 19.1           | 152            | 225             | VBW : 500 Hz              |
| Vert.    | 4804.000           | AV       | 32.05             | 31.97              | -35.33       | -            | 2.19                     | 30.88              | 53.9              | 23.0           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Vert.    | 7206.000           | AV       | 31.98             | 36.23              | -34.02       | -            | 2.19                     | 36.38              | 53.9              | 17.5           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Vert.    | 9608.000           | AV       | 30.58             | 37.93              | -31.46       | -            | 2.19                     | 39.24              | 53.9              | 14.6           | 150            | 0               | VBW : 500 Hz, Floor Noise |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86[m]/3.0[m]) = 2.19[dB]$

10 GHz to 40 GHz :  $20\log(1.00[m]/3.0[m]) = -9.54[dB]$

### 20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Fac.<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Remark  |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------------|--------------------|-------------------|----------------|---------|
| Hori.    | 2402.000           | PK       | 70.54             | 27.89              | -27.99       | -            | 2.19                     | 72.63              | -                 | -              | Carrier |
| Hori.    | 2400.000           | PK       | 37.72             | 27.89              | -27.99       | -            | 2.19                     | 39.81              | 52.6              | 12.7           | -       |
| Vert.    | 2402.000           | PK       | 76.15             | 27.89              | -27.99       | -            | 2.19                     | 78.24              | -                 | -              | Carrier |
| Vert.    | 2400.000           | PK       | 37.86             | 27.89              | -27.99       | -            | 2.19                     | 39.95              | 58.2              | 18.2           | -       |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

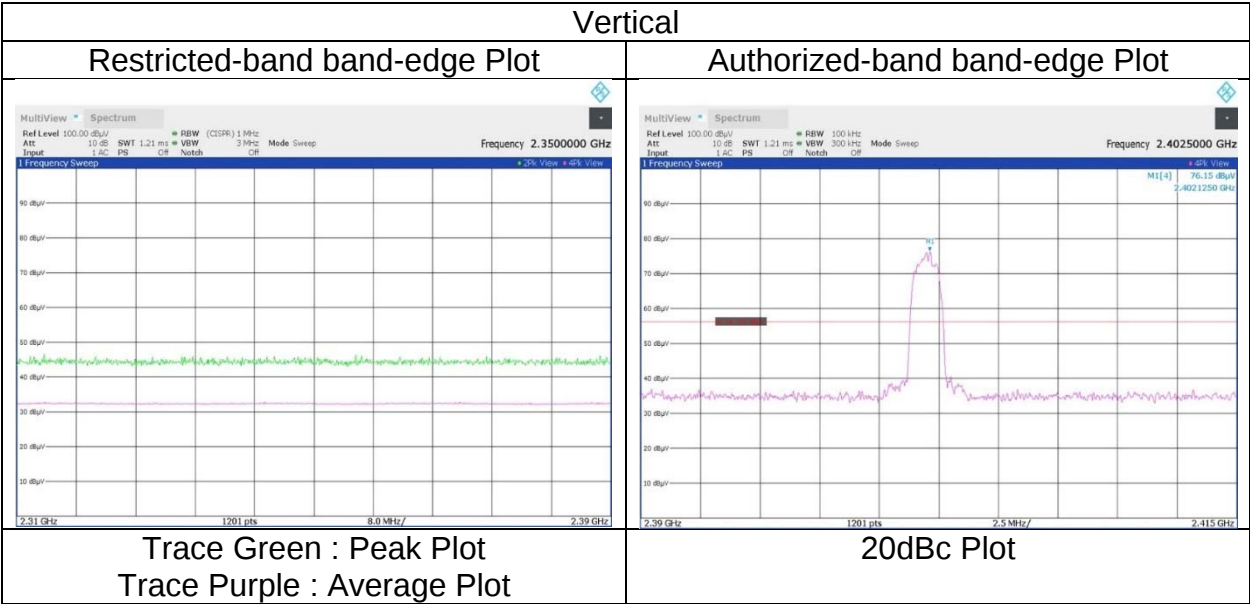
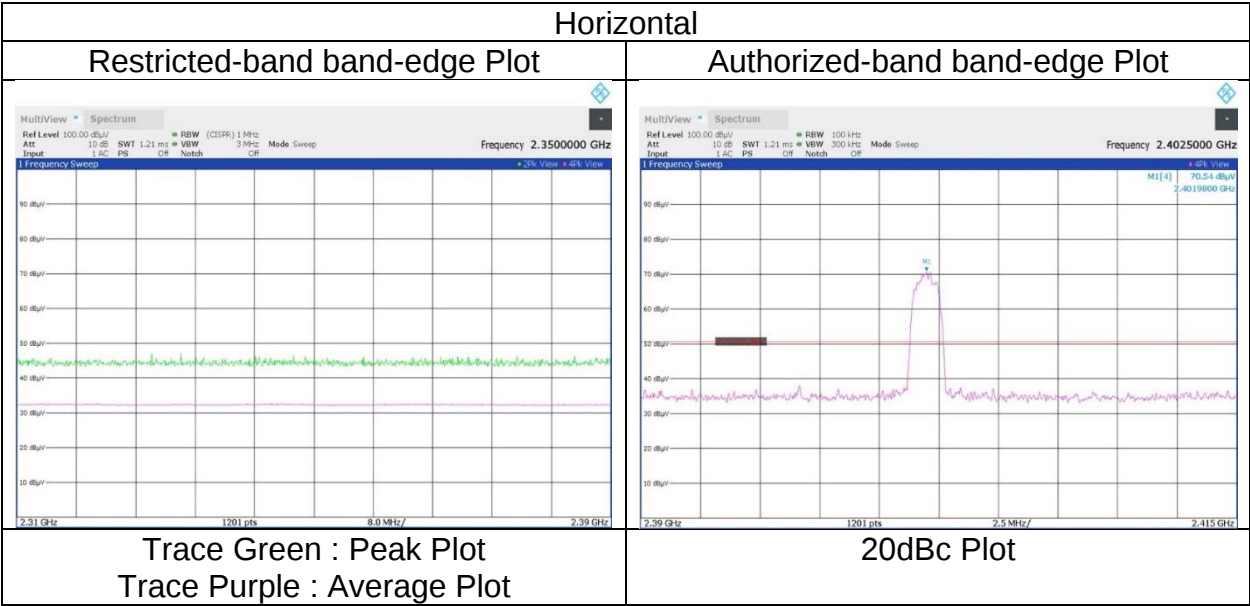
Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86[m]/3.0[m]) = 2.19[dB]$

10 GHz to 40 GHz :  $20\log(1.00[m]/3.0[m]) = -9.54[dB]$

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

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Shonan EMC Lab.  
WAC1  
January 17, 2025  
21 deg. C / 36 % RH  
Kouki Yamada  
Tx, Hopping Off, 3DH5 2402 MHz



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

## Radiated Spurious Emission

|                        |                                |                      |
|------------------------|--------------------------------|----------------------|
| Test place             | Shonan EMC Lab.                |                      |
| Semi Anechoic Chamber  | WAC1                           | WAC1                 |
| Date                   | January 17, 2025               | January 19, 2025     |
| Temperature / Humidity | 21 deg. C / 36 % RH            | 23 deg. C / 38 % RH  |
| Engineer               | Kouki Yamada                   | Yohsuke Matsuzawa    |
|                        | (1 GHz to 10 GHz)              | (10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, 3DH5 2441 MHz |                      |

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

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain | Distance  | Result   | Limit    | Margin | Height | Angle  | Remark                    |
|----------|-----------|----------|---------|----------|--------|------|-----------|----------|----------|--------|--------|--------|---------------------------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB] | Fac. [dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]   | [deg.] |                           |
| Hori.    | 4882.000  | PK       | 46.91   | 32.34    | -35.41 | -    | 2.19      | 46.03    | 73.9     | 27.8   | 150    | 0      | Floor Noise               |
| Hori.    | 7323.000  | PK       | 46.16   | 36.63    | -33.85 | -    | 2.19      | 51.13    | 73.9     | 22.7   | 150    | 0      | Floor Noise               |
| Hori.    | 9764.000  | PK       | 44.59   | 37.93    | -31.32 | -    | 2.19      | 53.39    | 73.9     | 20.5   | 150    | 0      | Floor Noise               |
| Hori.    | 4882.000  | AV       | 32.35   | 32.34    | -35.41 | -    | 2.19      | 31.47    | 53.9     | 22.4   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Hori.    | 7323.000  | AV       | 32.06   | 36.63    | -33.85 | -    | 2.19      | 37.03    | 53.9     | 16.8   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Hori.    | 9764.000  | AV       | 30.42   | 37.93    | -31.32 | -    | 2.19      | 39.22    | 53.9     | 14.6   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 4882.000  | PK       | 46.42   | 32.34    | -35.41 | -    | 2.19      | 45.54    | 73.9     | 28.3   | 150    | 0      | Floor Noise               |
| Vert.    | 7323.000  | PK       | 46.58   | 36.63    | -33.85 | -    | 2.19      | 51.55    | 73.9     | 22.3   | 150    | 0      | Floor Noise               |
| Vert.    | 9764.000  | PK       | 44.33   | 37.93    | -31.32 | -    | 2.19      | 53.13    | 73.9     | 20.7   | 150    | 0      | Floor Noise               |
| Vert.    | 4882.000  | AV       | 32.36   | 32.34    | -35.41 | -    | 2.19      | 31.48    | 53.9     | 22.4   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 7323.000  | AV       | 32.11   | 36.63    | -33.85 | -    | 2.19      | 37.08    | 53.9     | 16.8   | 150    | 0      | VBW : 500 Hz, Floor Noise |
| Vert.    | 9764.000  | AV       | 30.30   | 37.93    | -31.32 | -    | 2.19      | 39.10    | 53.9     | 14.8   | 150    | 0      | VBW : 500 Hz, Floor Noise |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86[m]/3.0[m]) = 2.19[dB]$

10 GHz to 40 GHz :  $20\log(1.00[m]/3.0[m]) = -9.54[dB]$

## Radiated Spurious Emission

|                        |                                |                      |
|------------------------|--------------------------------|----------------------|
| Test place             | Shonan EMC Lab.                |                      |
| Semi Anechoic Chamber  | WAC1                           | WAC1                 |
| Date                   | January 17, 2025               | January 19, 2025     |
| Temperature / Humidity | 21 deg. C / 36 % RH            | 23 deg. C / 38 % RH  |
| Engineer               | Kouki Yamada                   | Yohsuke Matsuzawa    |
|                        | (1 GHz to 10 GHz)              | (10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, 3DH5 2480 MHz |                      |

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

| Polarity | Frequency<br>[MHz] | Detector | Reading<br>[dBuV] | Ant.Fac.<br>[dB/m] | Loss<br>[dB] | Gain<br>[dB] | Distance<br>Fac.<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Margin<br>[dB] | Height<br>[cm] | Angle<br>[deg.] | Remark                    |
|----------|--------------------|----------|-------------------|--------------------|--------------|--------------|--------------------------|--------------------|-------------------|----------------|----------------|-----------------|---------------------------|
| Hori.    | 2483.500           | PK       | 46.63             | 27.96              | -27.94       | -            | 2.19                     | 48.84              | 73.9              | 25.0           | 121            | 188             | -                         |
| Hori.    | 4960.000           | PK       | 46.66             | 32.62              | -35.50       | -            | 2.19                     | 45.97              | 73.9              | 27.9           | 150            | 0               | Floor Noise               |
| Hori.    | 7440.000           | PK       | 46.74             | 36.69              | -33.66       | -            | 2.19                     | 51.96              | 73.9              | 21.9           | 150            | 0               | Floor Noise               |
| Hori.    | 9920.000           | PK       | 44.21             | 37.93              | -31.18       | -            | 2.19                     | 53.15              | 73.9              | 20.7           | 150            | 0               | Floor Noise               |
| Hori.    | 2483.500           | AV       | 32.62             | 27.96              | -27.94       | -            | 2.19                     | 34.83              | 53.9              | 19.0           | 121            | 188             | VBW : 500 Hz              |
| Hori.    | 4960.000           | AV       | 32.42             | 32.62              | -35.50       | -            | 2.19                     | 31.73              | 53.9              | 22.1           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Hori.    | 7440.000           | AV       | 32.07             | 36.69              | -33.66       | -            | 2.19                     | 37.29              | 53.9              | 16.6           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Hori.    | 9920.000           | AV       | 30.41             | 37.93              | -31.18       | -            | 2.19                     | 39.35              | 53.9              | 14.5           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Vert.    | 2483.500           | PK       | 46.58             | 27.96              | -27.94       | -            | 2.19                     | 48.79              | 73.9              | 25.1           | 145            | 218             | -                         |
| Vert.    | 4960.000           | PK       | 46.77             | 32.62              | -35.50       | -            | 2.19                     | 46.08              | 73.9              | 27.8           | 150            | 0               | Floor Noise               |
| Vert.    | 7440.000           | PK       | 46.45             | 36.69              | -33.66       | -            | 2.19                     | 51.67              | 73.9              | 22.2           | 150            | 0               | Floor Noise               |
| Vert.    | 9920.000           | PK       | 43.74             | 37.93              | -31.18       | -            | 2.19                     | 52.68              | 73.9              | 21.2           | 150            | 0               | Floor Noise               |
| Vert.    | 2483.500           | AV       | 32.04             | 27.96              | -27.94       | -            | 2.19                     | 34.25              | 53.9              | 19.6           | 145            | 218             | VBW : 500 Hz              |
| Vert.    | 4960.000           | AV       | 32.44             | 32.62              | -35.50       | -            | 2.19                     | 31.75              | 53.9              | 22.1           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Vert.    | 7440.000           | AV       | 31.98             | 36.69              | -33.66       | -            | 2.19                     | 37.20              | 53.9              | 16.7           | 150            | 0               | VBW : 500 Hz, Floor Noise |
| Vert.    | 9920.000           | AV       | 30.09             | 37.93              | -31.18       | -            | 2.19                     | 39.03              | 53.9              | 14.8           | 150            | 0               | VBW : 500 Hz, Floor Noise |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

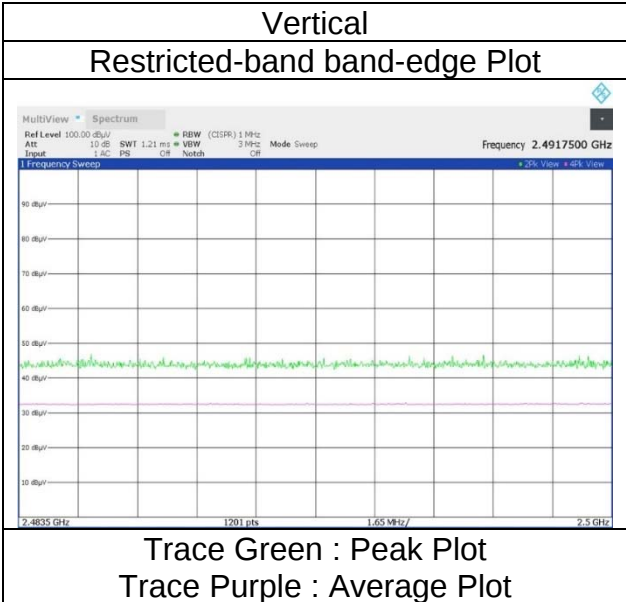
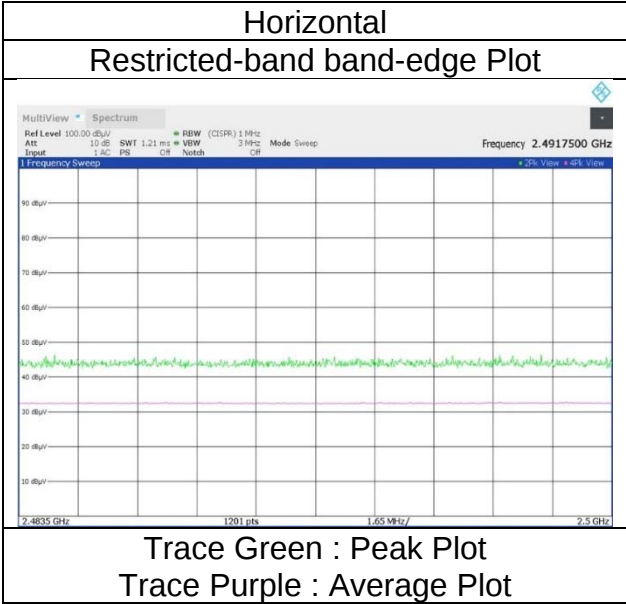
Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86[m]/3.0[m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00[m]/3.0[m]) = -9.54 [dB]$

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

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

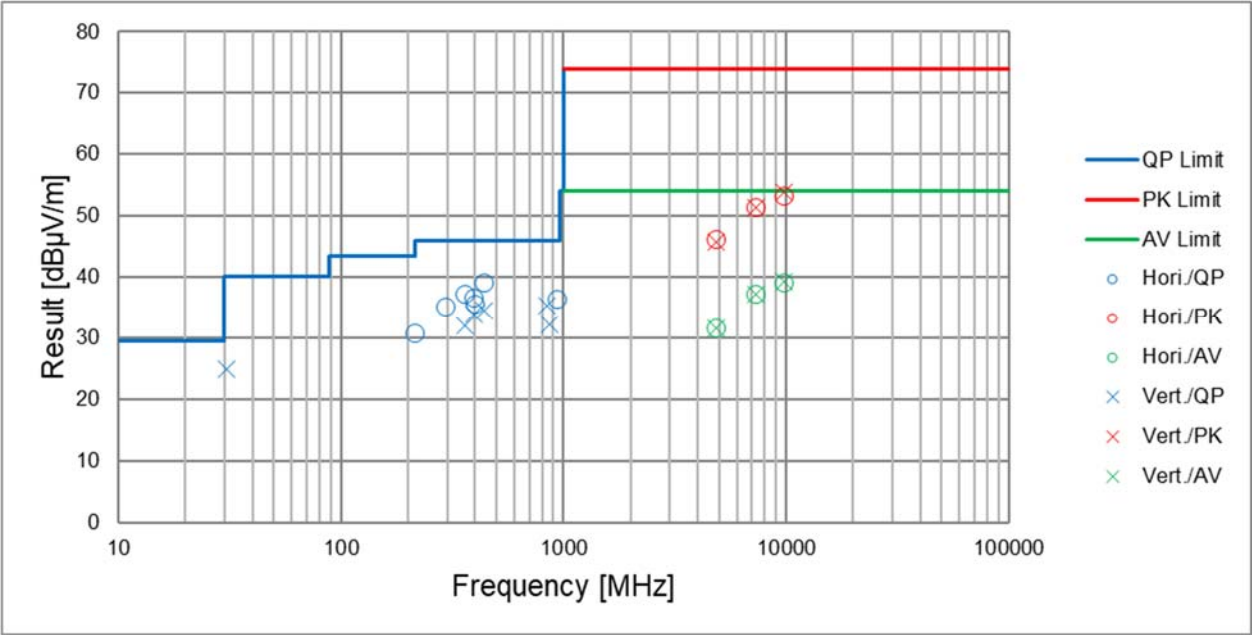
Shonan EMC Lab.  
WAC1  
January 17, 2025  
21 deg. C / 36 % RH  
Kouki Yamada  
Tx, Hopping Off, 3DH5 2480 MHz



\* 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**  
**(Plot data, Worst case mode for Maximum Peak Output Power)**

|                        |                               |                     |                      |
|------------------------|-------------------------------|---------------------|----------------------|
| Test place             | Shonan EMC Lab.               |                     |                      |
| Semi Anechoic Chamber  | WAC1                          | WAC1                | WAC1                 |
| Date                   | January 30, 2025              | January 17, 2025    | January 19, 2025     |
| Temperature / Humidity | 20 deg. C / 25 % RH           | 21 deg. C / 36 % RH | 23 deg. C / 38 % RH  |
| Engineer               | Makoto Hosaka                 | Kouki Yamada        | Yohsuke Matsuzawa    |
|                        | (30 MHz to 1 GHz)             | (1 GHz to 10 GHz)   | (10 GHz to 26.5 GHz) |
| Mode                   | Tx, Hopping Off, DH5 2441 MHz |                     |                      |



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

## Radiated Spurious Emission

Test place Shonan EMC Lab.  
Semi Anechoic Chamber WAC1 WAC1 WAC1  
Date January 30, 2025 January 28, 2025 January 27, 2025  
Temperature / Humidity 20 deg. C / 25 % RH 21 deg. C / 32 % RH 21 deg. C / 32 % RH  
Engineer Makoto Hosaka Takayuki Kobayashi Makoto Hosaka  
(30 MHz to 1 GHz) (1 GHz to 18 GHz) (18 GHz to 26.5 GHz)  
Mode Tx, Hopping Off, 3DH5 2402 MHz with 11ac-80 5775 MHz

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

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain  | Distance     | Result   | Limit    | Margin | Height | Angle  | Remark                    |
|----------|-----------|----------|---------|----------|--------|-------|--------------|----------|----------|--------|--------|--------|---------------------------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB]  | Fac.<br>[dB] | [dBuV/m] | [dBuV/m] | [dB]   | [cm]   | [deg.] |                           |
| Hori.    | 215.438   | QP       | 39.80   | 11.08    | 7.23   | 27.95 | 0.00         | 30.16    | 43.5     | 13.3   | 160    | 288    | -                         |
| Hori.    | 294.912   | QP       | 41.80   | 13.59    | 7.48   | 27.76 | 0.00         | 35.11    | 46.0     | 10.8   | 159    | 113    | -                         |
| Hori.    | 358.699   | QP       | 42.10   | 15.04    | 7.67   | 28.09 | 0.00         | 36.72    | 46.0     | 9.2    | 109    | 80     | -                         |
| Hori.    | 393.215   | QP       | 42.20   | 15.52    | 7.77   | 28.37 | 0.00         | 37.12    | 46.0     | 8.8    | 100    | 72     | -                         |
| Hori.    | 400.005   | QP       | 40.30   | 15.74    | 7.80   | 28.42 | 0.00         | 35.42    | 46.0     | 10.5   | 100    | 68     | -                         |
| Hori.    | 442.368   | QP       | 42.70   | 16.31    | 7.91   | 28.65 | 0.00         | 38.27    | 46.0     | 7.7    | 100    | 266    | -                         |
| Hori.    | 933.011   | QP       | 33.60   | 21.87    | 8.89   | 28.14 | 0.00         | 36.22    | 46.0     | 9.7    | 102    | 207    | -                         |
| Hori.    | 2390.000  | PK       | 47.48   | 27.85    | -29.14 | -     | 2.19         | 48.38    | 73.9     | 25.5   | 107    | 247    | -                         |
| Hori.    | 4804.000  | PK       | 48.35   | 31.97    | -28.21 | -     | 2.19         | 54.30    | 73.9     | 19.6   | 150    | 0      | Floor Noise               |
| Hori.    | 7206.000  | PK       | 48.24   | 36.23    | -36.00 | -     | 2.19         | 50.66    | 73.9     | 23.2   | 150    | 0      | Floor Noise               |
| Hori.    | 9608.000  | PK       | 47.44   | 37.93    | -34.16 | -     | 2.19         | 53.40    | 73.9     | 20.5   | 150    | 0      | Floor Noise               |
| Hori.    | 2390.000  | AV       | 33.83   | 27.85    | -29.14 | -     | 2.19         | 34.73    | 53.9     | 19.1   | 107    | 247    | VBW : 500 Hz              |
| Hori.    | 4804.000  | AV       | 34.35   | 31.97    | -28.21 | -     | 2.19         | 40.30    | 53.9     | 13.6   | 150    | 0      | Floor noise, VBW : 500 Hz |
| Hori.    | 7206.000  | AV       | 34.47   | 36.23    | -36.00 | -     | 2.19         | 36.89    | 53.9     | 17.0   | 150    | 0      | Floor noise, VBW : 500 Hz |
| Hori.    | 9608.000  | AV       | 33.80   | 37.93    | -34.16 | -     | 2.19         | 39.76    | 53.9     | 14.1   | 150    | 0      | Floor noise, VBW : 500 Hz |
| Vert.    | 30.577    | QP       | 33.50   | 13.57    | 6.19   | 28.67 | 0.00         | 24.59    | 40.0     | 15.4   | 100    | 66     | -                         |
| Vert.    | 358.696   | QP       | 37.10   | 15.04    | 7.67   | 28.09 | 0.00         | 31.72    | 46.0     | 14.2   | 150    | 161    | -                         |
| Vert.    | 393.215   | QP       | 39.00   | 15.52    | 7.77   | 28.37 | 0.00         | 33.92    | 46.0     | 12.0   | 152    | 196    | -                         |
| Vert.    | 442.368   | QP       | 36.50   | 16.31    | 7.91   | 28.65 | 0.00         | 32.07    | 46.0     | 13.9   | 100    | 101    | -                         |
| Vert.    | 840.004   | QP       | 32.40   | 21.22    | 8.78   | 28.42 | 0.00         | 33.98    | 46.0     | 12.0   | 100    | 316    | -                         |
| Vert.    | 867.111   | QP       | 29.70   | 21.99    | 8.81   | 28.35 | 0.00         | 32.15    | 46.0     | 13.8   | 182    | 331    | -                         |
| Vert.    | 2390.000  | PK       | 48.27   | 27.85    | -29.14 | -     | 2.19         | 49.17    | 73.9     | 24.7   | 143    | 224    | -                         |
| Vert.    | 4804.000  | PK       | 48.33   | 31.97    | -28.21 | -     | 2.19         | 54.28    | 73.9     | 19.6   | 150    | 0      | Floor Noise               |
| Vert.    | 7206.000  | PK       | 48.24   | 36.23    | -36.00 | -     | 2.19         | 50.66    | 73.9     | 23.2   | 150    | 0      | Floor Noise               |
| Vert.    | 9608.000  | PK       | 47.80   | 37.93    | -34.16 | -     | 2.19         | 53.76    | 73.9     | 20.1   | 150    | 0      | Floor Noise               |
| Vert.    | 2390.000  | AV       | 33.94   | 27.85    | -29.14 | -     | 2.19         | 34.84    | 53.9     | 19.0   | 143    | 224    | VBW : 500 Hz              |
| Vert.    | 4804.000  | AV       | 34.32   | 31.97    | -28.21 | -     | 2.19         | 40.27    | 53.9     | 13.6   | 150    | 0      | Floor noise, VBW : 500 Hz |
| Vert.    | 7206.000  | AV       | 34.32   | 36.23    | -36.00 | -     | 2.19         | 36.74    | 53.9     | 17.1   | 150    | 0      | Floor noise, VBW : 500 Hz |
| Vert.    | 9608.000  | AV       | 33.66   | 37.93    | -34.16 | -     | 2.19         | 39.62    | 53.9     | 14.2   | 150    | 0      | Floor noise, VBW : 500 Hz |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

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

Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86 [m] / 3.0 [m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00 [m] / 3.0 [m]) = -9.54 [dB]$

### 20 dBc Data Sheet

(RBW 100 kHz, VBW 300 kHz)

| Polarity | Frequency | Detector | Reading | Ant.Fac. | Loss   | Gain | Distance     | Result   | Limit    | Margin | Remark  |
|----------|-----------|----------|---------|----------|--------|------|--------------|----------|----------|--------|---------|
|          | [MHz]     |          | [dBuV]  | [dB/m]   | [dB]   | [dB] | Fac.<br>[dB] | [dBuV/m] | [dBuV/m] | [dB]   |         |
| Hori.    | 2402.000  | PK       | 73.80   | 27.89    | -29.13 | -    | 2.19         | 74.75    | -        | -      | Carrier |
| Hori.    | 2400.000  | PK       | 39.45   | 27.89    | -29.13 | -    | 2.19         | 40.40    | 54.7     | 14.3   | -       |
| Vert.    | 2402.000  | PK       | 74.49   | 27.89    | -29.13 | -    | 2.19         | 75.44    | -        | -      | Carrier |
| Vert.    | 2400.000  | PK       | 39.48   | 27.89    | -29.13 | -    | 2.19         | 40.43    | 55.4     | 14.9   | -       |

Result = Reading + Ant.Fac. + Loss (Cable + (Atten or Filter)(below 18 GHz) - Gain(Amp) (1 GHz to 18 GHz)) - Gain(Amp) (only below 1 GHz & above 18 GHz) + Distance Fac.

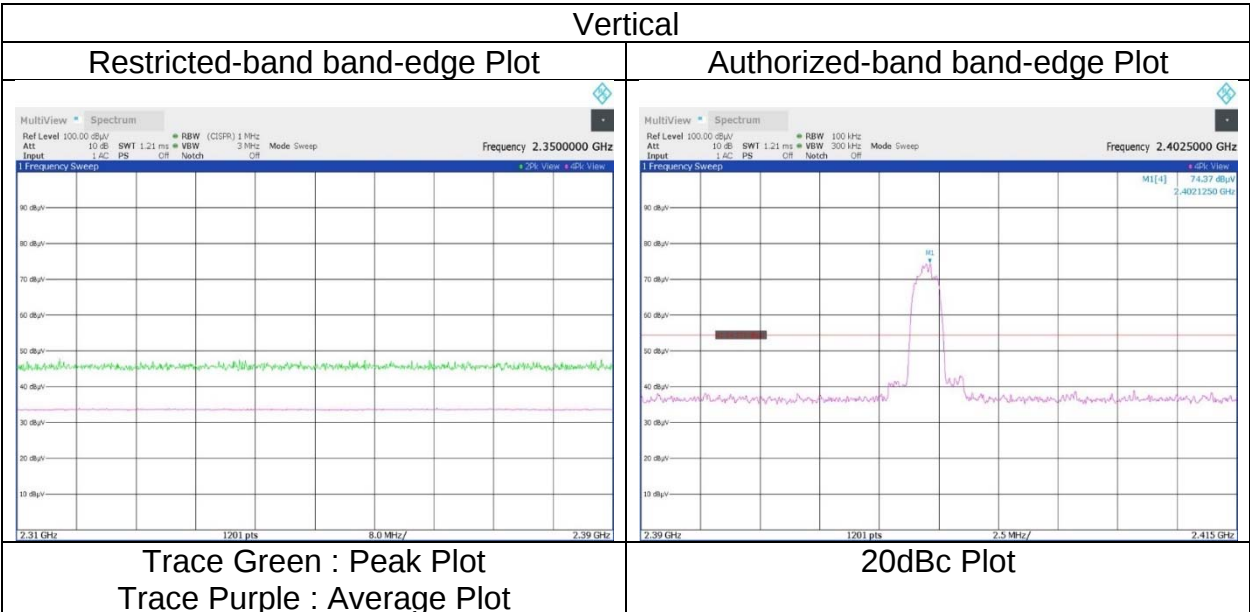
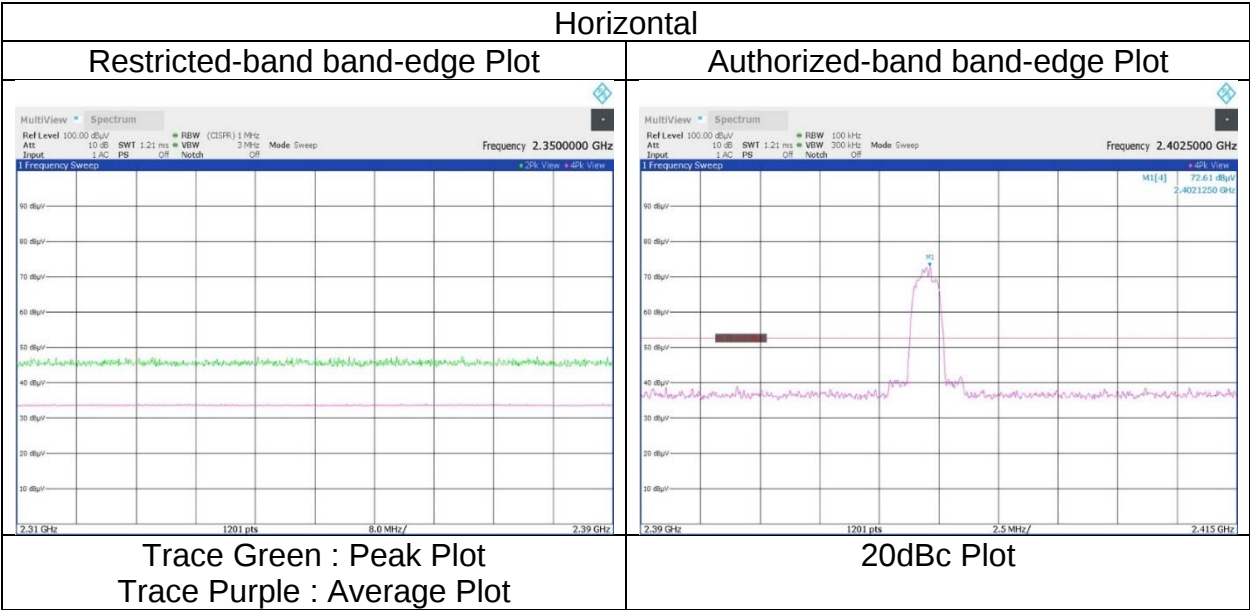
Distance Fac. : 1 GHz to 10 GHz :  $20\log(3.86 [m] / 3.0 [m]) = 2.19 [dB]$

10 GHz to 40 GHz :  $20\log(1.00 [m] / 3.0 [m]) = -9.54 [dB]$

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

Test place  
Semi Anechoic Chamber  
Date  
Temperature / Humidity  
Engineer  
Mode

Shonan EMC Lab.  
WAC1  
January 28, 2025  
21 deg. C / 32 % RH  
Takayuki Kobayashi  
Tx, Hopping Off, 3DH5 2402 MHz with 11ac-80 5775 MHz

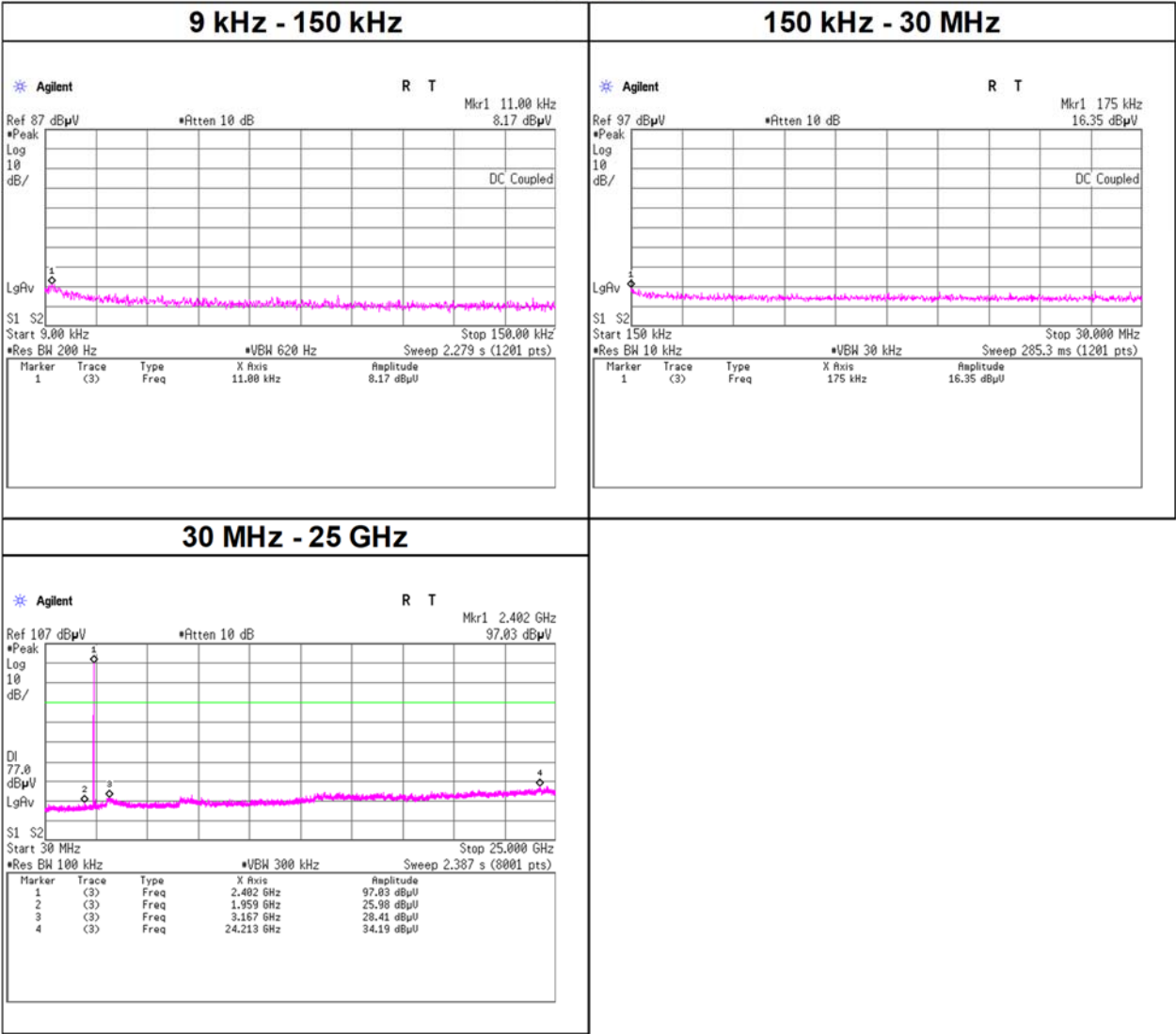


\* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.  
Final result of restricted band edge and authorized band edge were shown in tabular data.

Conducted Spurious Emission

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off, DH5

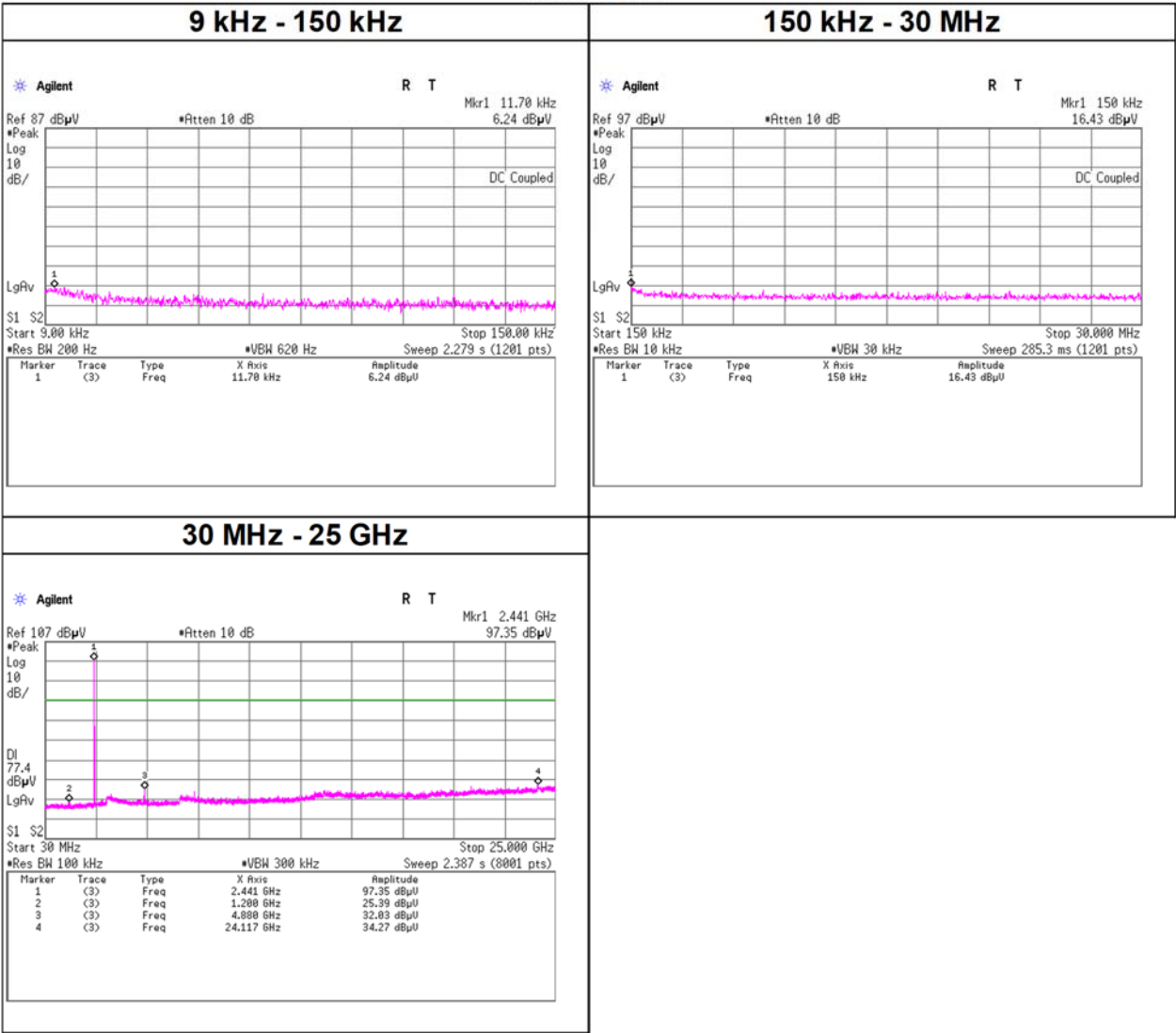
2402 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off, DH5

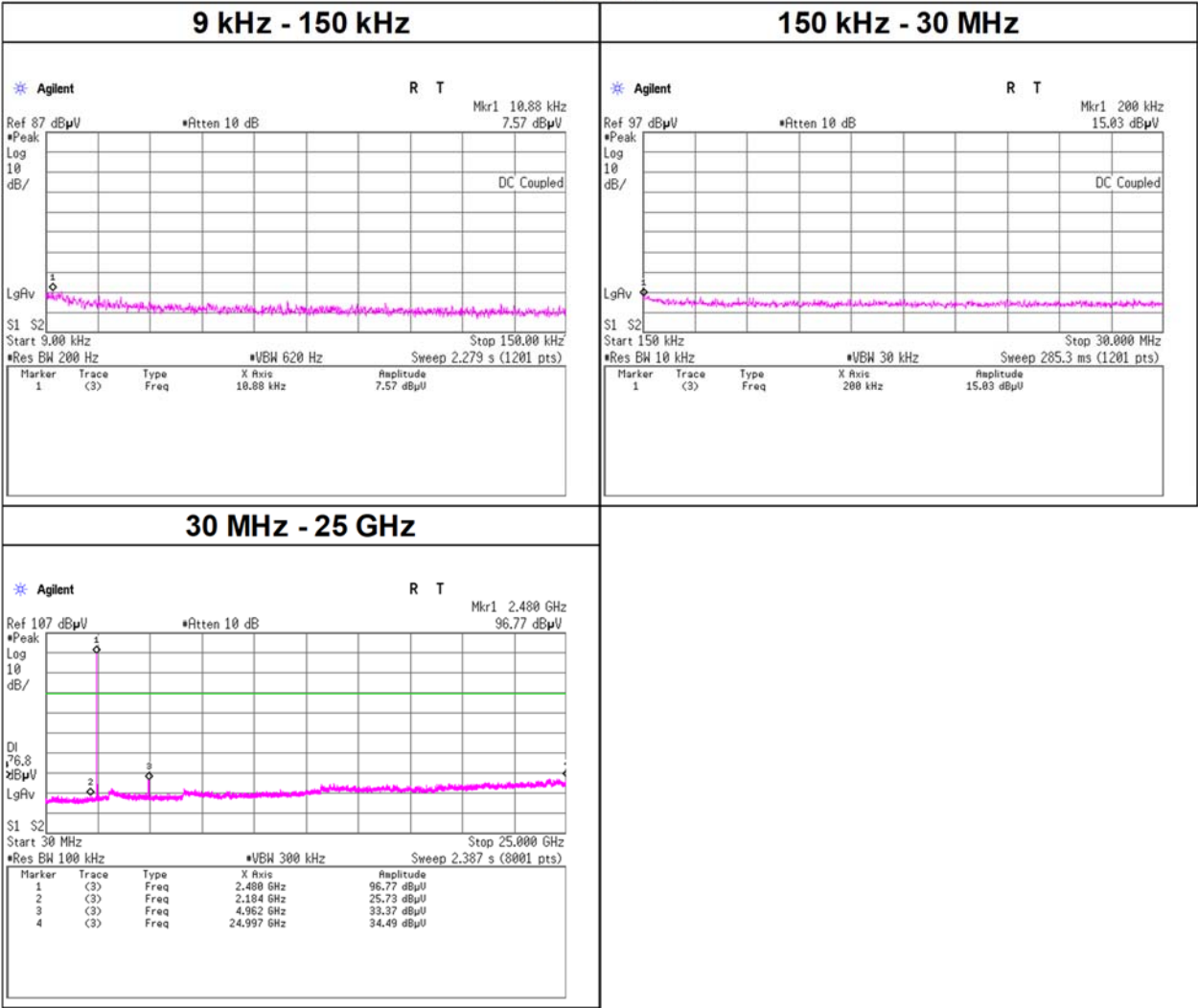
2441 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off, DH5

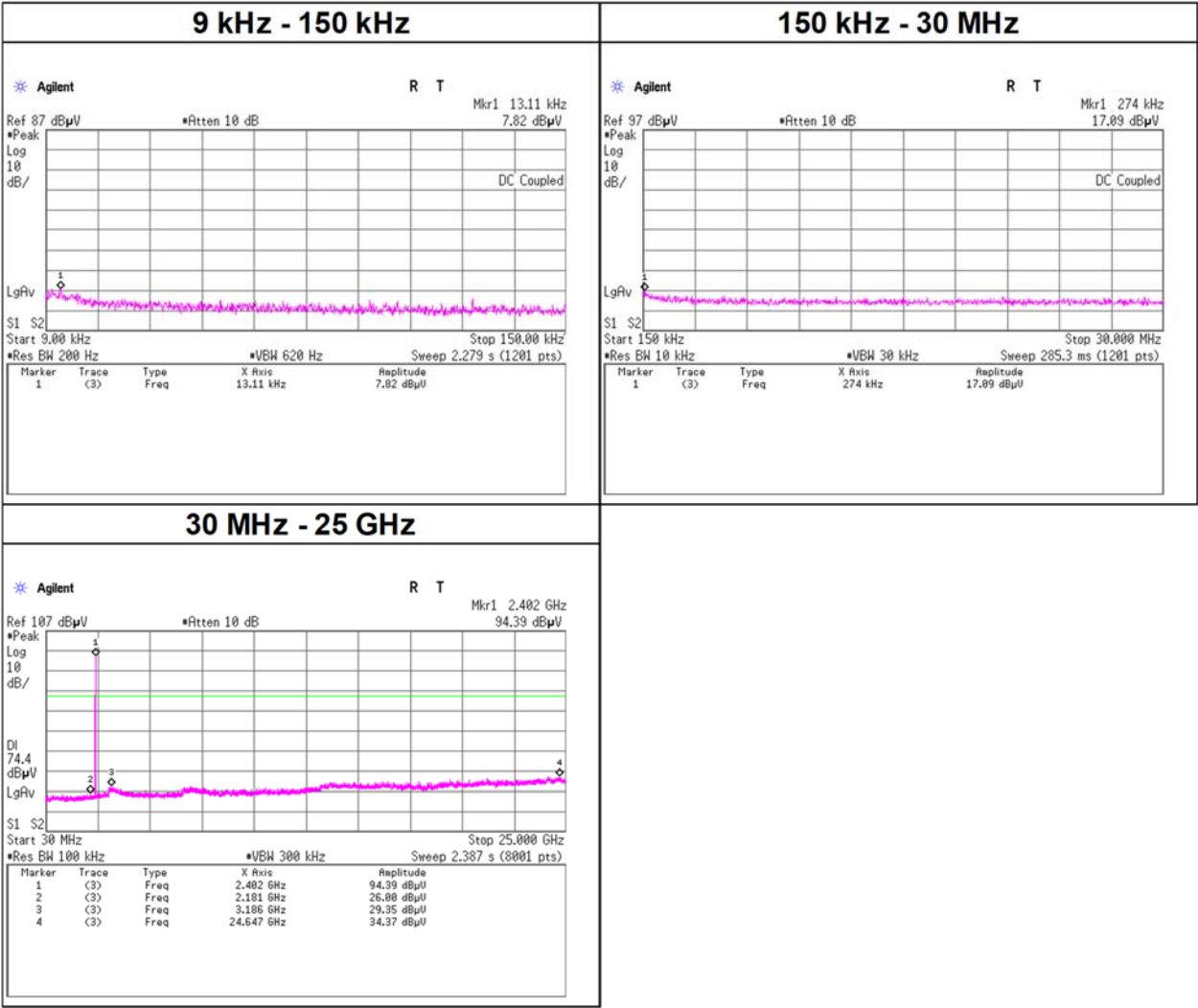
2480 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off, 3DH5

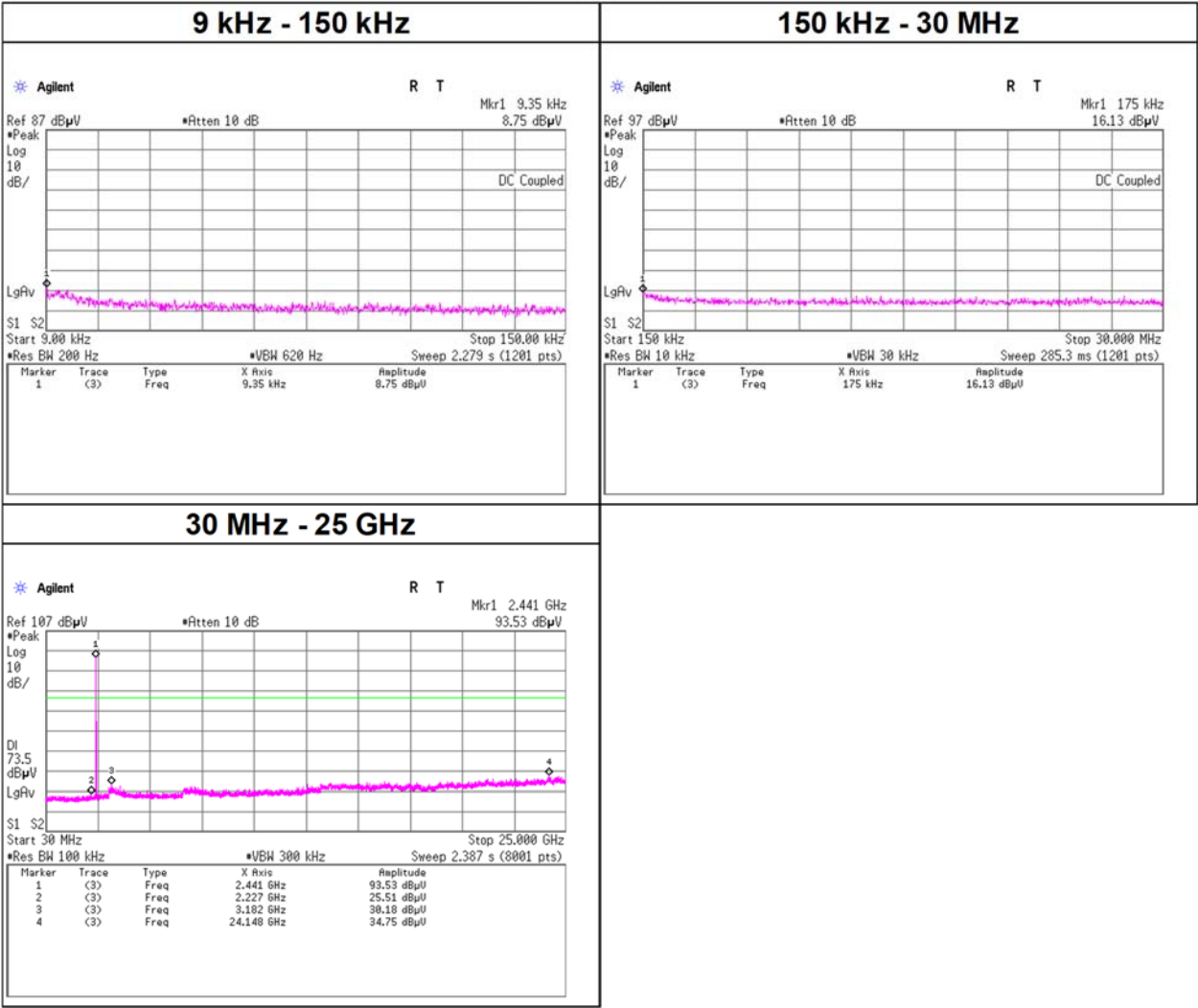
2402 MHz



Conducted Spurious Emission

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off, 3DH5

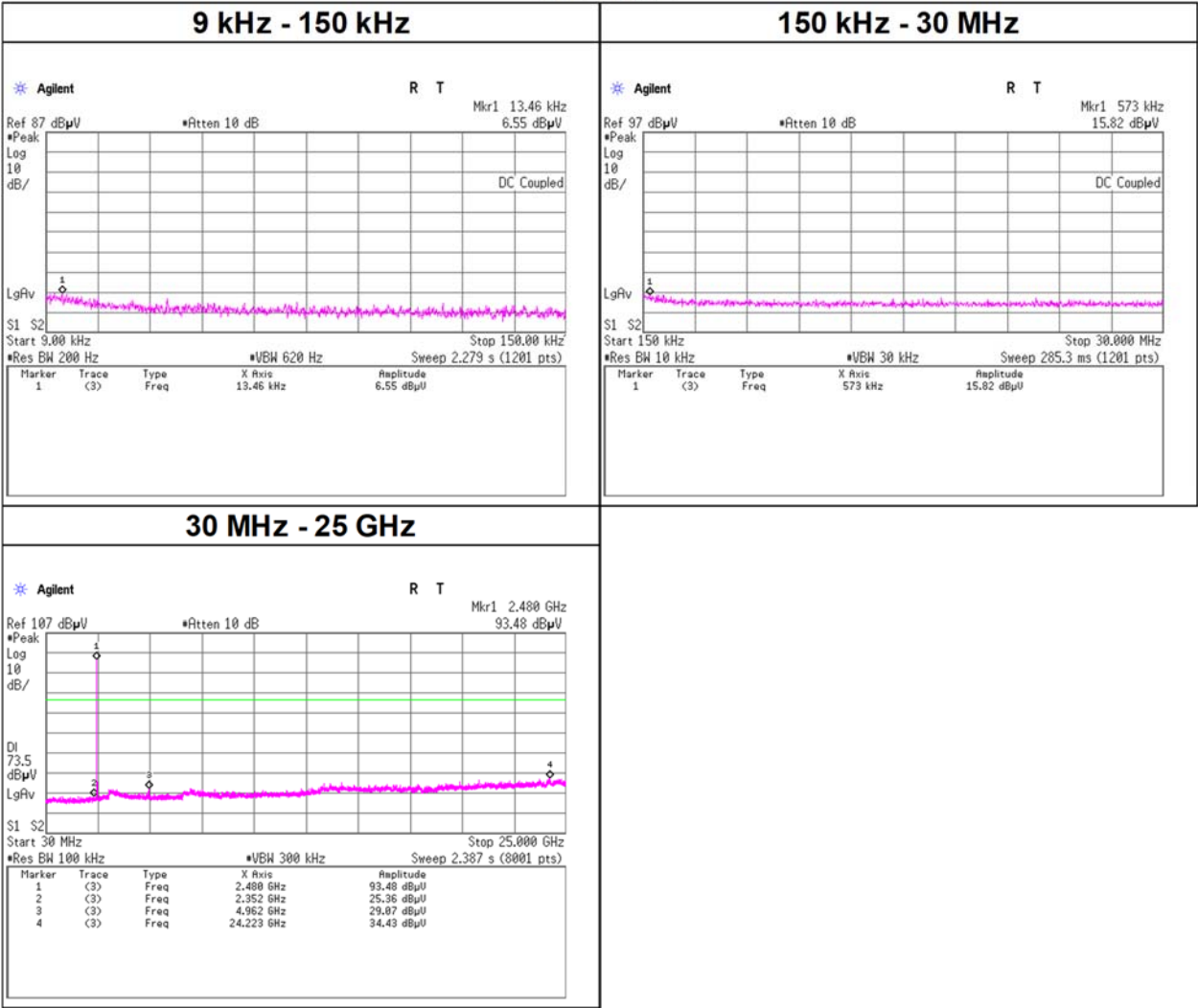
2441 MHz



Conducted Spurious Emission

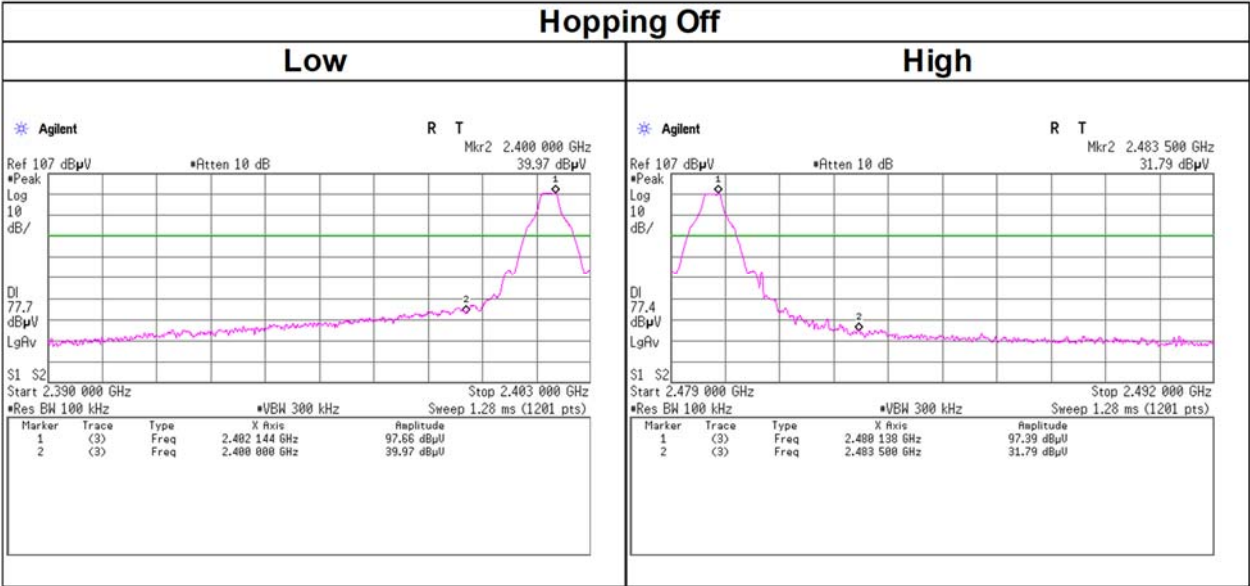
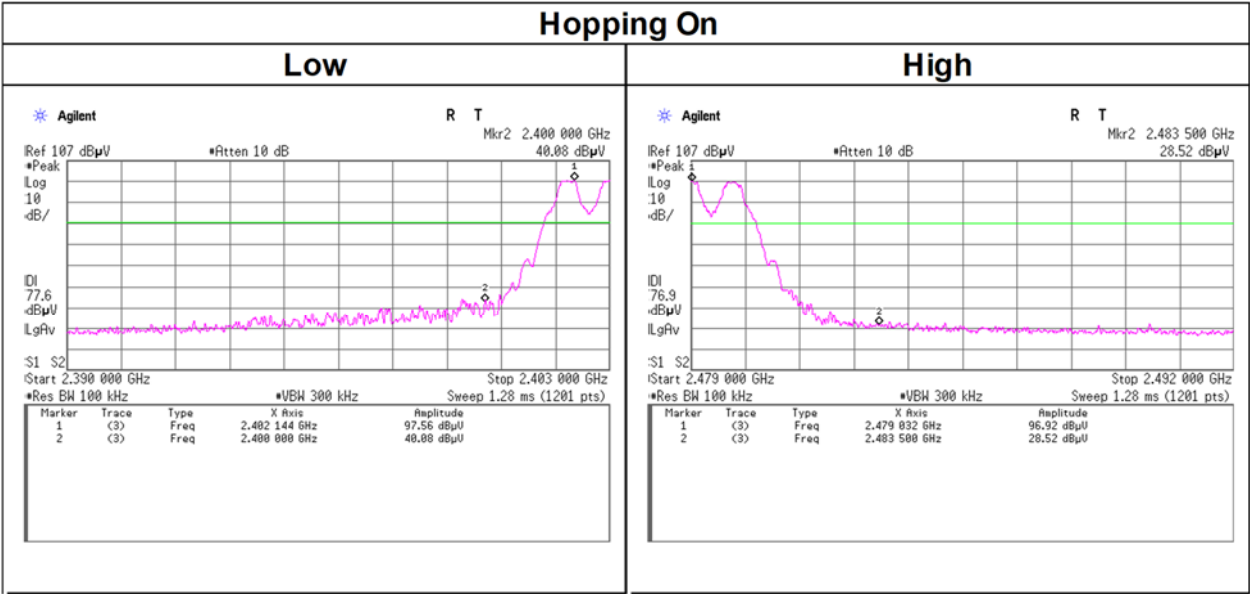
Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx, Hopping Off, 3DH5

2480 MHz



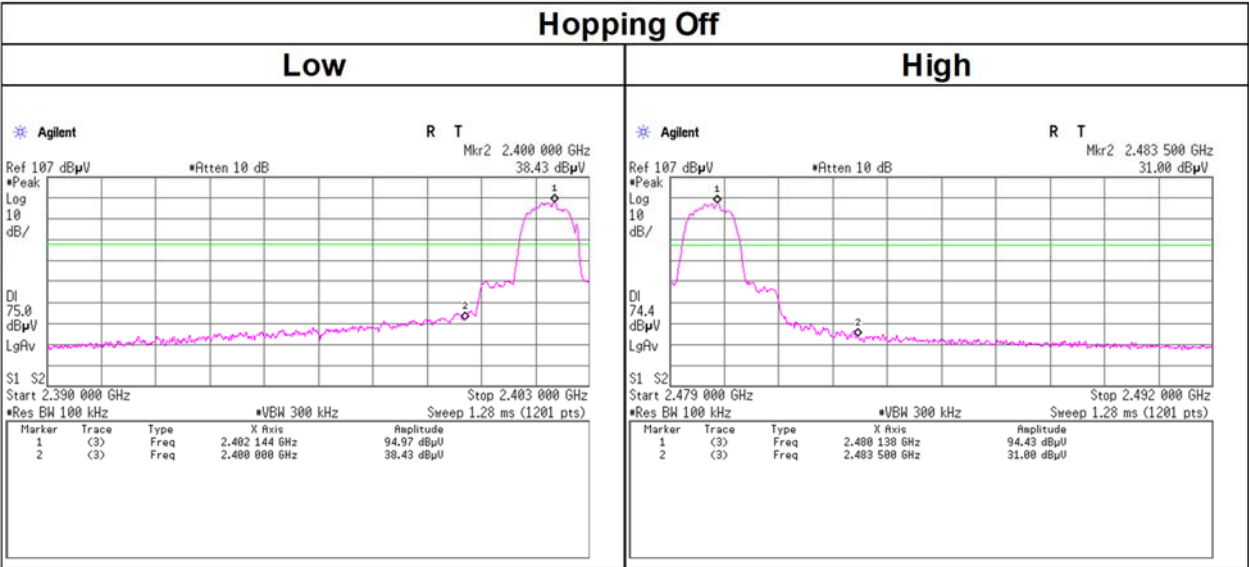
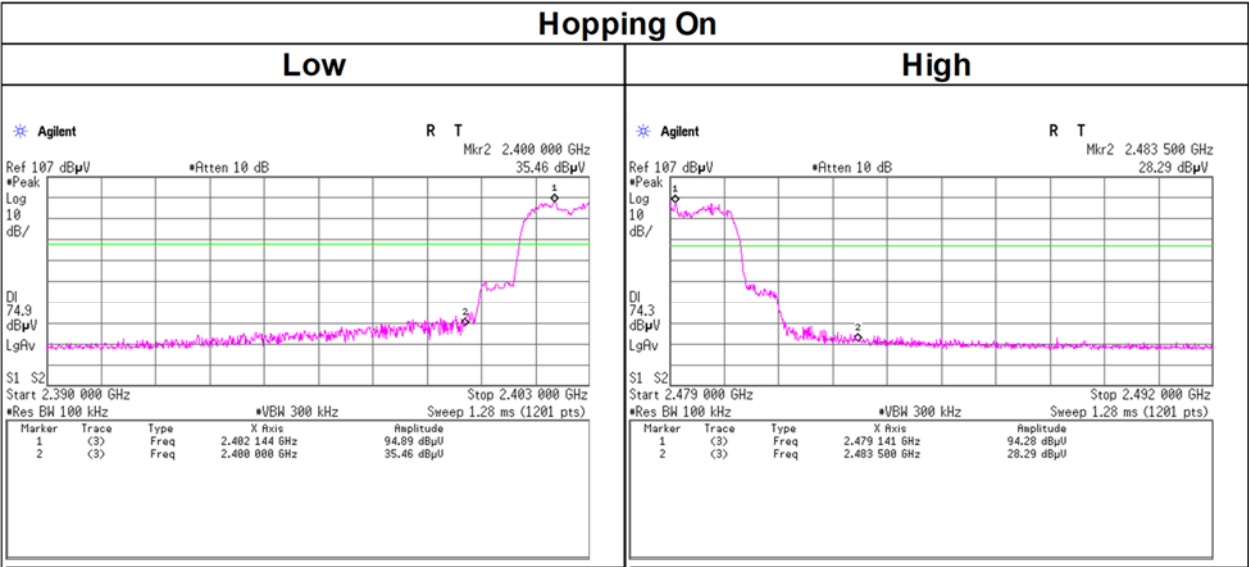
Conducted Emission Band Edge compliance

Test place                      Shonan EMC Lab. No.5Shielded Room  
Date                              January 19, 2025  
Temperature / Humidity      17 deg. C / 31 % RH  
Engineer                        Yohsuke Matsuzawa  
Mode                              Tx DH5



Conducted Emission Band Edge compliance

Test place Shonan EMC Lab. No.5Shielded Room  
Date January 19, 2025  
Temperature / Humidity 17 deg. C / 31 % RH  
Engineer Yohsuke Matsuzawa  
Mode Tx 3DH5



## APPENDIX 2: Test Instruments

### Test Equipment (1/2)

| Test Item | LIMS ID | Description                       | Manufacturer                      | Model                                      | Serial                                  | Last Calibration Date | Cal Int |
|-----------|---------|-----------------------------------|-----------------------------------|--------------------------------------------|-----------------------------------------|-----------------------|---------|
| AT        | 145132  | Attenuator                        | Weinschel Corp.                   | 54A-10                                     | W5692                                   | 2024/10/10            | 12      |
| AT        | 242068  | Attenuator                        | Weinschel Corp.                   | 54A-10                                     | 120524                                  | 2024/11/06            | 12      |
| AT        | 196947  | Coaxial Cable                     | Huber+Suhner                      | SUCOFLEX 102                               | 803478/2                                | 2024/03/07            | 12      |
| AT        | 196949  | Coaxial Cable                     | Huber+Suhner                      | SUCOFLEX 102                               | 803480/2                                | 2024/03/07            | 12      |
| AT        | 146212  | Digital Hitester                  | HIOKI E.E. CORPORATION            | 3805-50                                    | 80997828                                | 2024/09/24            | 12      |
| AT        | 146247  | Power Meter                       | Keysight Technologies Inc         | 8990B                                      | MY51000272                              | 2024/05/14            | 12      |
| AT        | 146310  | Power sensor                      | Keysight Technologies Inc         | N1923A                                     | MY5326009                               | 2024/05/14            | 12      |
| AT        | 235604  | Spectrum Analyzer                 | Keysight Technologies Inc         | E4440A                                     | MY45300743                              | 2024/05/23            | 12      |
| AT        | 204923  | Terminator                        | Weinschel - API Technologies Corp | M1459A                                     | 110101                                  | 2024/02/14            | 12      |
| AT        | 175822  | Thermo-Hygrometer                 | CUSTOM. Inc                       | CTH-201                                    | -                                       | 2024/08/11            | 12      |
| RE        | 199784  | Attenuator                        | JFW                               | 50HF-006N                                  | -                                       | 2024/06/14            | 12      |
| RE        | 239786  | Biconical Antenna                 | Schwarzbeck Mess-Elektronik OHG   | VHBB 9124+BBA9106                          | 01895                                   | 2024/08/10            | 12      |
| RE        | 145176  | Coaxial Cable                     | Suhner                            | SUCOFLEX 102                               | 32703/2                                 | 2024/08/21            | 12      |
| RE        | 179540  | Coaxial Cable                     | Huber+Suhner                      | SUCOFLEX 102                               | 802815/2                                | 2024/03/05            | 12      |
| RE        | 236708  | Coaxial Cable                     | Hayashi-Repic co., Ltd.           | NMS079B-GL310C-SMS117B-2m                  | 47256-02-03                             | 2024/05/09            | 12      |
| RE        | 236710  | Coaxial Cable                     | Hayashi-Repic co., Ltd.           | KMS020B-GL140sE-KMS020B-7.0m               | 47256-03-01                             | 2024/05/09            | 12      |
| RE        | 236723  | Coaxial Cable                     | Hayashi-Repic co., Ltd.           | SF106(HUBER+SUHNER)/LMR400UF/GL310C/GL310C | 2000429/47753-1/47256-01-03/47256-01-01 | 2024/05/09            | 12      |
| RE        | 239643  | Coaxial Cable                     | Junkosha                          | MWX221-01000NFSNMS/B                       | 2306S021                                | 2024/08/20            | 12      |
| RE        | 243209  | Coaxial Cable                     | Hayashi-Repic co., Ltd.           | SMS13-13A26-NFS13-1.0m                     | 49190-01-01                             | 2024/12/05            | 12      |
| RE        | 243687  | Coaxial Cable                     | Hayashi-Repic co., Ltd.           | NMS079B-GL310C-NMS079B-6.0m                | 49373-01-01                             | 2024/12/05            | 12      |
| RE        | 235639  | DIGITAL MULTIMETER                | HIOKI E.E. CORPORATION            | DT4261                                     | 230313156                               | 2024/05/29            | 12      |
| RE        | 170932  | EMI Software                      | TSJ (Techno Science Japan)        | TEPTO-DV3(RE,CE,ME,PE)                     | Ver 3.1.0546                            | -                     | -       |
| RE        | 145512  | Horn Antenna                      | ETS-Lindgren                      | 3160-09                                    | 00094868                                | 2024/06/20            | 12      |
| RE        | 236686  | Horn Antenna                      | Schwarzbeck Mess-Elektronik OHG   | BBHA 9120 C                                | 787                                     | 2024/04/19            | 12      |
| RE        | 236769  | Horn Antenna                      | AINFO Inc.                        | LB-8180-NF                                 | 2030013000111                           | 2024/04/19            | 12      |
| RE        | 145527  | Logperiodic Antenna               | Schwarzbeck Mess-Elektronik OHG   | VUSLP9111B                                 | 193                                     | 2024/04/10            | 12      |
| RE        | 145007  | Pre Amplifier                     | Toyo Corporation                  | HAP18-26W                                  | 19                                      | 2024/08/21            | 12      |
| RE        | 145130  | Pre Amplifier                     | Agilent Technologies              | 8447D                                      | 2944A09965                              | 2024/07/10            | 12      |
| RE        | 237784  | RF RELAY MATRIX with preamplifier | TSJ (Techno Science Japan)        | RFM-E221261R                               | 07795                                   | 2024/11/12            | 12      |
| RE        | 236212  | Semi-Anechoic Chamber             | TDK                               | SWAC-01(NSA)                               | 1                                       | 2024/05/09            | 12      |

Test Equipment (2/2)

| Test Item | LIMS ID | Description           | Manufacturer    | Model          | Serial | Last Calibration Date | Cal Int |
|-----------|---------|-----------------------|-----------------|----------------|--------|-----------------------|---------|
| RE        | 236616  | Semi-Anechoic Chamber | TDK             | SWAC-01(SVSWR) | 1      | 2024/06/04            | 12      |
| RE        | 207280  | Tape Measure          | ASKUL           | -              | -      | -                     | -       |
| RE        | 235267  | Test Receiver         | Rohde & Schwarz | ESW44          | 103018 | 2024/03/05            | 12      |
| RE        | 235735  | Thermo-Hygrometer     | CUSTOM. Inc     | CTH-230        | -      | 2024/04/28            | 12      |

\*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

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

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

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

Test item:

AT: Antenna Terminal Conducted test

RE: Radiated Emission