# RADIO TEST REPORT

## Test Report No. : 13665469H-C

| | | |
|---|---|---|
| **Applicant** | : | **DENSO TEN Limited** |
| **Type of EUT** | : | **Car Navigation** |
| **Model Number of EUT** | : | **FT0091A** |
| **FCC ID** | : | **BABFT0091A** |
| **Test regulation** | : | **FCC Part 15 Subpart E: 2021**<br>**(26 dB Emission Bandwidth and 99 % Occupied Bandwidth, 6 dB Bandwidth and Radiated Spurious Emission tests only)**<br>***For permissive change** |
| **Test Result** | : | **Complied (Refer to SECTION 3)** |

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
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6. This test report covers Radio technical requirements.
   It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
8. The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan has been accredited.
9. The information provided from the customer for this report is identified in Section 1.

**Date of test:** February 4 to 22, 2021

**Representative test engineer:**
Ken Fujita
Engineer
Consumer Technology Division

**Approved by:**
Tsubasa Takayama
Leader
Consumer Technology Division

CERTIFICATE 5107.02

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

# REVISION HISTORY

## Original Test Report No.: 13665469H-C

| Revision | Test report No. | Date | Page revised | Contents |
|---|---|---|---|---|
| - (Original) | 13665469H-C | March 22, 2021 | - | - |

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

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

**CONTENTS** **PAGE**

# SECTION 1: Customer information

| | | |
|---|---|---|
| Company Name | : | DENSO TEN Limited |
| Address | : | 2-28, Gosho-dori 1-Chome, Hyogo-ku, Kobe, 652-8510 JAPAN |
| Telephone Number | : | +81-78-682-2159 |
| Facsimile Number | : | +81-78-671-7160 |
| Contact Person | : | Daisuke Fukii |

The information provided from the customer is as follows;
- Applicant, Type of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (EUT) other than the Receipt Date
- SECTION 4: Operation of EUT during testing

* The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

# SECTION 2: Equipment under test (EUT)

## 2.1 Identification of EUT

| | | |
|---|---|---|
| Type | : | Car Navigation |
| Model Number | : | FT0091A |
| Serial Number | : | Refer to SECTION 4.2 |
| Rating | : | DC 12 V |
| Receipt Date | : | January 15, 2021 |
| Country of Mass-production | : | Mexico |
| Condition | : | Production prototype<br>(Not for Sale: This sample is equivalent to mass-produced items.) |
| Modification | : | No Modification by the test lab. |

## 2.2 Product Description

Model: FT0091A (referred to as the EUT in this report) is a Car Navigation.

**Radio Specification**

Radio Type : Transceiver
Clock frequency(ies) : 26 MHz

| | IEEE802.11b | IEEE802.11g/n | IEEE802.11a/n (20 M band) *1) | IEEE802.11n (40M band) *1) |
|---|---|---|---|---|
| Frequency of operation | 2412 MHz - 2462 MHz | 2412 MHz - 2462 MHz | 5180 MHz - 5240 MHz<br>5260 MHz - 5320 MHz<br>5500 MHz - 5700 MHz<br>5745 MHz - 5825 MHz | 5190 MHz - 5230 MHz<br>5270 MHz - 5310 MHz<br>5510 MHz - 5670 MHz<br>5755 MHz - 5795 MHz |
| Type of modulation | DSSS (CCK, DQPSK, DBPSK) | OFDM-CCK (64QAM, 16QAM, QPSK, BPSK) | OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM) | |
| Channel spacing | 5 MHz | | 20 MHz | 40 MHz |
| Antenna type | Surface Mountable Dielectric Chip Antenna | | | |
| Antenna Connector type | - | | | |
| Antenna Gain | 1.6 dBi (2.4 GHz Band), 0 dBi (5 GHz Band) | | | |

| | Bluetooth Ver 3.0 with EDR function |
|---|---|
| Frequency of operation | 2402 MHz - 2480 MHz |
| Type of modulation | FHSS (GFSK, π/4-DQPSK, 8-DPSK) |
| Channel spacing | 1 MHz |
| Antenna type | Surface Mountable Dielectric Chip Antenna |
| Antenna Connector type | - |
| Antenna Gain | 1.6 dBi |

| | Broadband Receiver |
|---|---|
| Frequency of operation | AM / HD_AM: 530 kHz - 1710 kHz<br>FM / HD_FM: 87.75 MHz - 107.9 MHz<br>XM:2332.5 MHz - 2345.0 MHz |
| Local oscillation frequency | AM: 472.5 kHz - 1777.5 kHz<br>FM: 88.05 MHz - 108.2 MHz |
| Channel spacing | AM / HD_AM: 10 kHz<br>FM / HD_FM: 0.2 MHz |
| IF Frequency | AM: 57.5 kHz<br>FM: 300 kHz |
| Antenna Connector type | HFC |

*1) This test report applies to WLAN (5 GHz Band only).
*Wireless LAN and Bluetooth do not transmit simultaneously.

# SECTION 3: Test specification, procedures & results

## 3.1 Test Specification

Test Specification : FCC Part 15 Subpart E
FCC Part 15 final revised on January 12, 2021 and effective February 11, 2021
* The revision does not affect the test result conducted before its effective date.

Title : FCC 47 CFR Part 15 Radio Frequency Device Subpart E
Unlicensed National Information Infrastructure Devices
Section 15.407 General technical requirements

## 3.2 Procedures and results

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|---|---|---|---|---|
| Conducted Emission | **FCC:** ANSI C63.10-2013 | **FCC:** 15.407 (b) (6) / 15.207 | N/A | N/A | *1) |
| | **ISED:** RSS-Gen 8.8 | **ISED:** RSS-Gen 8.8 | | | |
| 26 dB Emission Bandwidth | **FCC:** KDB Publication Number 789033 | **FCC:** 15.407 (a) (1) (2) (3) | See data | Complied a) | Conducted |
| | **ISED:** - | **ISED:** - | | | |
| Maximum Conducted Output Power | **FCC:** KDB Publication Number 789033 | **FCC:** 15.407 (a) (1) (2) (3) | | N/A | *2) |
| | **ISED:** - | **ISED:** RSS-247 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.1 | | | |
| Maximum Power Spectral Density | **FCC:** KDB Publication Number 789033 | **FCC :** 15.407 (a) (1) (2) (3) | | N/A | *2) |
| | **ISED:** - | **ISED:** RSS-247 6.2.1.1, 6.2.2.1, 6.2.3.1, 6.2.4.1 | | | |
| Spurious Emission Restricted Band Edge | **FCC:** ANSI C63.10-2013 KDB Publication Number 789033 | **FCC:** 15.407 (b), 15.205 and 15.209 | 4.6 dB 11000.000 MHz, AV, Vert. | Complied# b) | Conducted (< 30 MHz) *2) / Radiated (> 30 MHz) *3) |
| | **ISED:** - | **ISED:** RSS-247 6.2.1.2, 6.2.2.2, 6.2.3.2, 6.2.4.2 | | | |
| 6 dB Emission Bandwidth | **FCC:** ANSI C63.10-2013 | **FCC:** 15.407 (e) | See data | Complied c) | Conducted |
| | **ISED:** - | **ISED:** RSS-247 6.2.4.1 | | | |

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.
*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.
*2) The purpose of this test is to verify that the degradation and performance meets the minimum adaptable requirements, therefore, only items related to the x'tal were tested. This test items is controlled by software there is no "degradation".
*3) Radiated test was selected over 30 MHz based on FCC 15.407 (b) and KDB 789033 D02 G.3.b).

a) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth)
b) Refer to APPENDIX 1 (data of Radiated Spurious Emission)
c) Refer to APPENDIX 1 (data of 6 dB Bandwidth)

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

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

**FCC Part 15.31 (e)**
This EUT provides the stable voltage constantly to RF Part regardless of input voltage. 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 Band Width | **ISED:** RSS-Gen 6.7 | **ISED:** - | N/A | - a) | Conducted |
| a) Refer to APPENDIX 1 (data of 26 dB Emission Bandwidth and 99 % Occupied Bandwidth) | | | | | |

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

## 3.4 Uncertainty

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

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

**Conducted emission**

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

**Radiated emission**

| Measurement distance | Frequency range | | Uncertainty (+/-) |
|---|---|---|---|
| 3 m | 9 kHz to 30 MHz | | 3.3 dB |
| 10 m | | | 3.2 dB |
| | | | |
| 3 m | 30 MHz to 200 MHz | (Horizontal) | 4.8 dB |
| | | (Vertical) | 5.0 dB |
| | 200 MHz to 1000 MHz | (Horizontal) | 5.2 dB |
| | | (Vertical) | 6.3 dB |
| 10 m | 30 MHz to 200 MHz | (Horizontal) | 4.8 dB |
| | | (Vertical) | 4.8 dB |
| | 200 MHz to 1000 MHz | (Horizontal) | 5.0 dB |
| | | (Vertical) | 5.0 dB |
| | | | |
| 3 m | 1 GHz to 6 GHz | | 4.9 dB |
| | 6 GHz to 18 GHz | | 5.2 dB |
| 1 m | 10 GHz to 26.5 GHz | | 5.5 dB |
| | 26.5 GHz to 40 GHz | | 5.5 dB |
| 0.5 m | 26.5 GHz to 40 GHz | | 5.5 dB |
| 10 m | 1 GHz to 18 GHz | | 5.2 dB |

**Antenna Terminal test**

| Test Item | Uncertainty (+/-) |
|---|---|
| 26 dB Emission Bandwidth / 6 dB Emission Bandwidth / | 0.96 % |
| Maximum Conducted Output Power / Average Output Power | 1.4 dB |
| Burst Rate | 0.10 % |
| Maximum Power Spectral Density | 2.6 dB |
| Spurious Emission (Conducted) | 2.6 dB |

## 3.5 Test Location

UL Japan, Inc. Ise EMC Lab.
*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 199967
ISED Lab Company Number: 2973C / CAB identifier: JP0002
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81 596 24 8999, Facsimile: +81 596 24 8124

| Test site | Width x Depth x Height (m) | Size of reference ground plane (m) / horizontal conducting plane | Other rooms | Maximum measurement distance |
|---|---|---|---|---|
| No.1 semi-anechoic chamber | 19.2 x 11.2 x 7.7 | 7.0 x 6.0 | No.1 Power source room | 10 m |
| No.2 semi-anechoic chamber | 7.5 x 5.8 x 5.2 | 4.0 x 4.0 | - | 3 m |
| No.3 semi-anechoic chamber | 12.0 x 8.5 x 5.9 | 6.8 x 5.75 | No.3 Preparation room | 3 m |
| No.3 shielded room | 4.0 x 6.0 x 2.7 | N/A | - | - |
| No.4 semi-anechoic chamber | 12.0 x 8.5 x 5.9 | 6.8 x 5.75 | No.4 Preparation room | 3 m |
| No.4 shielded room | 4.0 x 6.0 x 2.7 | N/A | - | - |
| No.5 semi-anechoic chamber | 6.0 x 6.0 x 3.9 | 6.0 x 6.0 | - | - |
| No.5 measurement room | 6.4 x 6.4 x 3.0 | 6.4 x 6.4 | - | - |
| No.6 shielded room | 4.0 x 4.5 x 2.7 | 4.0 x 4.5 | - | - |
| No.6 measurement room | 4.75 x 5.4 x 3.0 | 4.75 x 4.15 | - | - |
| No.7 shielded room | 4.7 x 7.5 x 2.7 | 4.7 x 7.5 | - | - |
| No.8 measurement room | 3.1 x 5.0 x 2.7 | 3.1 x 5.0 | - | - |
| No.9 measurement room | 8.8 x 4.6 x 2.8 | 2.4 x 2.4 | - | - |
| No.11 measurement room | 6.2 x 4.7 x 3.0 | 4.8 x 4.6 | - | - |

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

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

Refer to APPENDIX.

# SECTION 4: Operation of EUT during testing

## 4.1 Operating Mode(s)

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

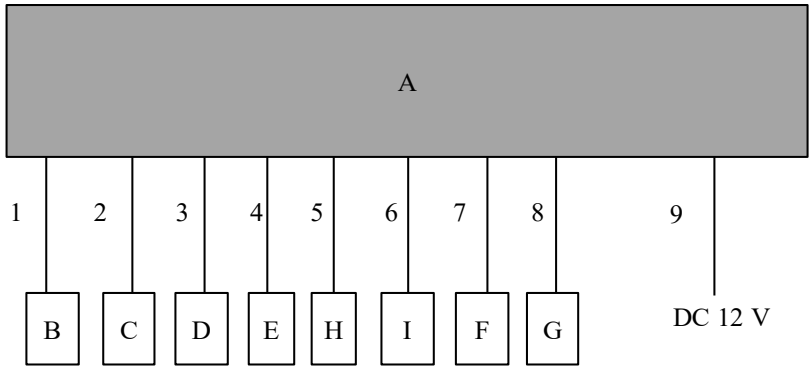
| Mode | Remarks* |
|---|---|
| IEEE 802.11a (11a) | 54 Mbps, PN9 |
| IEEE 802.11n 20 MHz BW (11n-20) | MCS 7 PN9 (Short) Short GI |
| IEEE 802.11n 40 MHz BW (11n-40) | MCS 7 PN9 (Short) Short GI |
| *The worst condition was determined based on the test result of Maximum Conducted Output Power. | |
| *Power of the EUT was set by the software as follows;<br>Power settings: 11a/n-20: +11 dBm<br>n-40: +10 dBm<br>Software: Ver.00.01F<br>(Date: January 6, 2021, Storage location: EUT memory)<br><br>*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. | |

*The details of Operation mode(s)

| Test Item | Operating Mode | Tested Frequency | | | |
|---|---|---|---|---|---|
| | | Lower Band | Middle Band | Additional Band | Upper Band |
| 26 dB Emission Bandwidth | 11a Tx<br>11n-20 Tx | - | 5260 MHz<br>5300 MHz<br>5320 MHz | 5500 MHz<br>5580 MHz<br>5700 MHz | - |
| | 11n-40 Tx | - | 5270 MHz<br>5310 MHz | 5510 MHz<br>5550 MHz<br>5670 MHz | - |
| 99 % Occupied Bandwidth | 11a Tx<br>11n-20 Tx | 5180 MHz<br>5220 MHz<br>5240 MHz | 5260 MHz<br>5300 MHz<br>5320 MHz | 5500 MHz<br>5580 MHz<br>5700 MHz | 5745 MHz<br>5785 MHz<br>5825 MHz |
| | 11n-40 Tx | 5190 MHz<br>5240 MHz | 5270 MHz<br>5310 MHz | 5510 MHz<br>5550 MHz<br>5670 MHz | 5755 MHz<br>5795 MHz |
| 6 dB Bandwidth | 11a Tx<br>11n-20 Tx | - | - | - | 5745 MHz<br>5785 MHz<br>5825 MHz |
| | 11n-40 Tx | - | - | - | 5755 MHz<br>5795 MHz |
| Radiated Spurious Emission (Below 1 GHz) | 11a Tx *1) | - | 5320 MHz | - | - |
| Radiated Spurious Emission (Above 1 GHz) | 11a Tx | 5180 MHz | 5260 MHz<br>5320 MHz | 5500 MHz<br>5580 MHz<br>5700 MHz | 5745 MHz<br>5785 MHz<br>5825 MHz |
| | 11n-20 Tx | 5180 MHz | 5320 MHz | 5500 MHz<br>5700 MHz | 5745 MHz<br>5825 MHz |
| | 11n-40 Tx | 5190 MHz | 5270 MHz<br>5310 MHz | 5510 MHz<br>5550 MHz<br>5600 MHz | 5755 MHz<br>5795 MHz |
| *1) The mode was tested as a representative, because it had the highest power at antenna terminal test. | | | | | |

## 4.2 Configuration and peripherals

Radiated Spurious Emission test




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

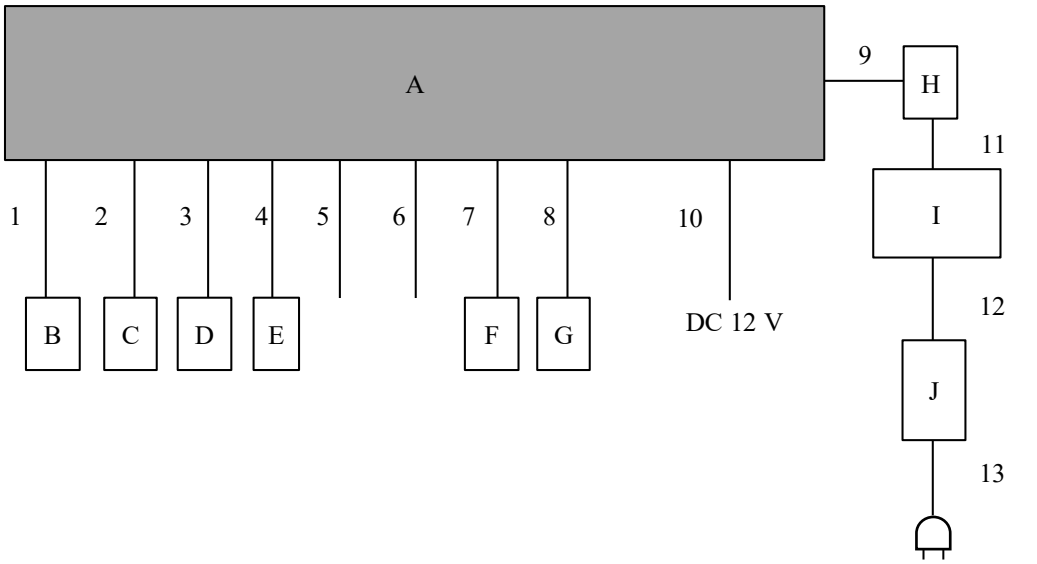
**Description of EUT and Support equipment**

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|---|---|---|---|---|---|
| A | Car Navigation | FT0091A | MSC00011 | DENSO TEN Limited | EUT |
| B | Antenna | 16ADA | No.1 | HONDA Genuine product | - |
| C | Radio dummy | 39835-T5A-E010-M1 | 24D50094 | - | - |
| D | Camera | 8983980530 | 0000015 | HONDA Genuine product | - |
| E | MIC ASSY | W01B-5012-D240 | 03U1520000026 | TRANSTRON INC. | - |
| F | Dummy load | - | - | DENSO TEN Limited | - |
| G | Switch | - | - | DENSO TEN Limited | - |
| H | USB memory | USM4GR B | - | Sony | - |
| I | USB memory | USM4GR B | - | Sony | - |

**List of cables used**

| No. | Name | Length (m) | Shield | | Remarks |
|---|---|---|---|---|---|
| | | | Cable | Connector | |
| 1 | Antenna Cable | 0.6 | Shielded | Shielded | - |
| 2 | Antenna Cable | 0.5 | Shielded | Shielded | - |
| 3 | Signal Cable | 0.6 | Unshielded | Unshielded | - |
| 4 | Signal Cable | 0.5 | Unshielded | Unshielded | - |
| 5 | USB Cable | 1.0 | Shielded | Shielded | - |
| 6 | USB Cable | 1.0 | Shielded | Shielded | - |
| 7 | Signal Cable | 0.5 | Unshielded | Unshielded | - |
| 8 | Signal Cable | 1.0 | Unshielded | Unshielded | - |
| 9 | DC Cable | 1.5 | Unshielded | Unshielded | - |

Antenna Terminal Conducted tests




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

**Description of EUT and Support equipment**

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|---|---|---|---|---|---|
| A | Car Navigation | FT0091A | MSC00011 | DENSO TEN Limited | EUT |
| B | Antenna | 16ADA | No.1 | HONDA Genuine product | - |
| C | Antenna | 39835-T5A-E010-M1 | 24D50094 | - | - |
| D | Camera | 8983980530 | 0000015 | HONDA Genuine product | - |
| E | MIC ASSY | W01B-5012-D240 | 03U1520000026 | TRANSTRON INC. | - |
| F | Dummy load | - | - | DENSO TEN Limited | - |
| G | Switch | - | - | DENSO TEN Limited | - |
| H | Jig board | - | - | DENSO TEN Limited | - |
| I | Laptop PC | PR63PBAA337AD7X | 6F053983H | TOSHIBA | - |
| J | AC Adapter | PA51770-1ACA | FX1200E91PCC | TOSHIBA | - |

**List of cables used**

| No. | Name | Length (m) | Shield | | Remarks |
|---|---|---|---|---|---|
| | | | Cable | Connector | |
| 1 | Antenna Cable | 0.6 | Shielded | Shielded | - |
| 2 | Antenna Cable | 0.5 | Shielded | Shielded | - |
| 3 | Signal Cable | 0.6 | Unshielded | Unshielded | - |
| 4 | Signal Cable | 0.5 | Unshielded | Unshielded | - |
| 5 | USB Cable | 1.0 | Shielded | Shielded | - |
| 6 | USB Cable | 1.0 | Shielded | Shielded | - |
| 7 | Signal Cable | 0.5 | Unshielded | Unshielded | - |
| 8 | Signal Cable | 1.0 | Unshielded | Unshielded | - |
| 9 | Signal Cable | 0.1 | Unshielded | Unshielded | - |
| 10 | DC Cable | 0.5 | Unshielded | Unshielded | - |
| 11 | USB Cable | 0.7 | Shielded | Shielded | - |
| 12 | DC Cable | 1.7 | Unshielded | Unshielded | - |
| 13 | AC Cable | 0.8 | Unshielded | Unshielded | - |

## SECTION 5: Radiated Spurious Emission and Band Edge Compliance

**Test Procedure**

< Below 1GHz >
EUT was placed on a urethane platform of nominal size, 0.5 m by 1.0 m, raised 0.8 m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

< Above 1GHz >
EUT was placed on a urethane platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

The height of the measuring antenna varied between 1 m and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.
Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

< Below 1GHz >

The result also satisfied with the general limits specified in section 15.209 (a).

< Above 1GHz >

Inside of restricted bands (Section 15.205):

Apply to limit in the Section 15.209 (a).

Outside of the restricted bands:

Apply to limit 68.2 dBuV/m, 3 m (-27 dBm e.i.r.p.*) in the Section 15.407 (b) (1) (2) (3).

For W58 Bandedge
-27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge in the section 15.407(b)(4)(i).

Restricted band edge:

Apply to limit in the Section 15.209 (a).
Since this limit is severer than the limit of the inside of restricted bands.

*Electric field strength to e.i.r.p. conversion:

$$E = \frac{1000000\sqrt{30P}}{3} \quad \text{(uV/m)} \qquad :P \text{ is the e.i.r.p. (Watts)}$$

**Test Antennas are used as below;**

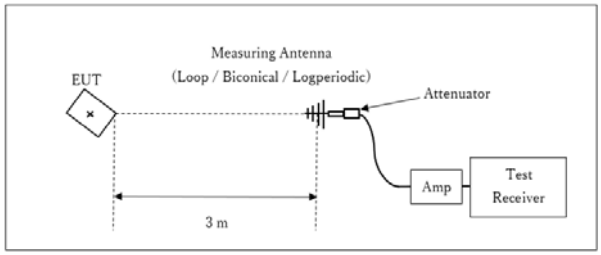
| Frequency | 30 MHz to 200 MHz | 200 MHz to 1 GHz | Above 1 GHz |
|---|---|---|---|
| Antenna Type | Biconical | Logperiodic | Horn |

| Frequency | Below 1 GHz | Above 1 GHz | |
|---|---|---|---|
| Instrument used | Test Receiver | Spectrum Analyzer | |
| Detector | QP | Peak | Average |
| IF Bandwidth | BW: 120 kHz | RBW: 1 MHz<br>VBW: 3 MHz | Method AD *1)<br>RBW: 1 MHz<br>VBW: 3 MHz<br>Detector: Power Averaging (RMS)<br>Trace: ≥ 100 traces<br>If duty cycle was less than 98%, a duty factor was added to the results. |

*1) The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".

**Figure 2: Test Setup**

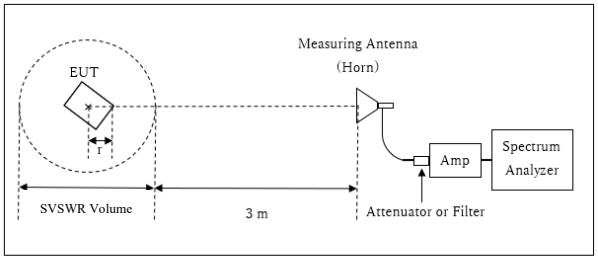
Below 1 GHz




× : Center of turn table

Test Distance: 3 m

1 GHz - 10 GHz

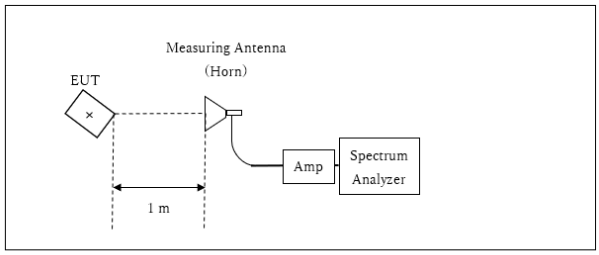



r : Radius of an outer periphery of EUT
× : Center of turn table

Distance Factor: 20 x log (3.9 m / 3.0 m) = 2.28 dB
* Test Distance: (3 + SVSWR Volume /2) - r = 3.9 m

SVSWR Volume : 2.0 m
(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r = 0.1 m

10 GHz - 40 GHz




× : Center of turn table

Distance Factor: 20 x log (1.0 m / 3.0 m) = -9.5 dB
*Test Distance: 1 m

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

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

**Measurement range : 30 MHz - 40 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 and Test method |
|---|---|---|---|---|---|---|---|
| 26 dB Bandwidth | Enough to capture the emission | Close to 1 % of EBW | > RBW | Auto | Peak | Max Hold | Spectrum Analyzer |
| 99 % Occupied Bandwidth *1) | Enough width to display emission skirts | 1 % to 5 % of OBW | ≥ 3 RBW | Auto | Peak | Max Hold | Spectrum Analyzer |
| 6 dB Bandwidth | Enough to capture the emission | 100 kHz | 300 kHz | Auto | Peak | Max Hold | Spectrum Analyzer |

* The test method was also referred to KDB 789033 D02 General UNII Test Procedures New Rules v02r01 "Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E".

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

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

**Test data : APPENDIX**
**Test result : Pass**

# APPENDIX 1: Test data

## 26 dB Emission Bandwidth and 99 % Occupied Bandwidth

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| | No.3 Measurement Room | No.2 Measurement Room | No.2 Measurement Room |
| Date | February 4, 2021 | February 22, 2021 | February 22, 2021 |
| Temperature / Humidity | 23 deg. C / 38 % RH | 20 deg. C / 30 % RH | 20 deg. C / 33 % RH |
| Engineer | Junya Okuno | Yuichiro Yamazaki | Junya Okuno |
| Mode | Tx | | |

11a

| Tested Frequency [MHz] | 26 dB Emission Bandwidth [MHz] | 99 % Occupied Bandwidth [kHz] |
|---|---|---|
| 5180 | - | 16738.2 |
| 5220 | - | 16788.7 |
| 5240 | - | 16810.8 |
| 5260 | 21.608 | 16767.6 |
| 5300 | 21.539 | 16735.7 |
| 5320 | 21.257 | 16761.5 |
| 5500 | 20.492 | 16759.2 |
| 5580 | 20.284 | 16797.6 |
| 5700 | 20.938 | 16766.9 |
| 5745 | - | 16780.4 |
| 5785 | - | 16754.9 |
| 5825 | - | 16752.9 |

11n-20

| Tested Frequency [MHz] | 26 dB Emission Bandwidth [MHz] | 99 % Occupied Bandwidth [kHz] |
|---|---|---|
| 5180 | - | 17827.8 |
| 5220 | - | 17940.6 |
| 5240 | - | 18140.5 |
| 5260 | 21.981 | 17853.3 |
| 5300 | 24.935 | 18953.1 |
| 5320 | 24.464 | 18449.2 |
| 5500 | 22.496 | 17857.1 |
| 5580 | 21.844 | 17847.8 |
| 5700 | 21.671 | 17864.4 |
| 5745 | - | 17823.3 |
| 5785 | - | 17860.9 |
| 5825 | - | 17902.1 |

# 26 dB Emission Bandwidth and 99 % Occupied Bandwidth

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. No.3 Measurement Room |
| Date | February 4, 2021 |
| Temperature / Humidity | 23 deg. C / 38 % RH |
| Engineer | Junya Okuno |
| Mode | Tx |

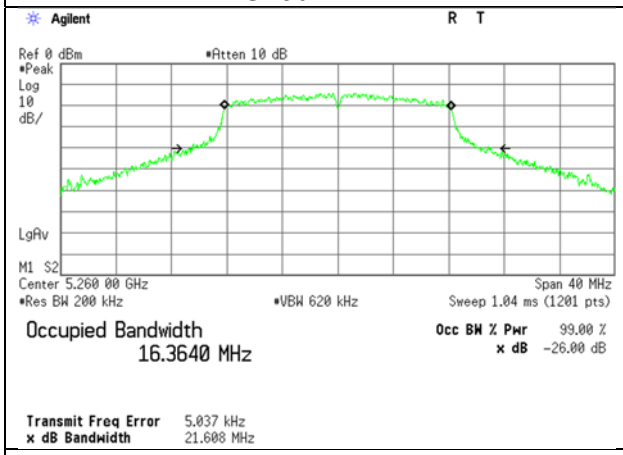
11n-40

| Tested Frequency [MHz] | 26 dB Emission Bandwidth [MHz] | 99 % Occupied Bandwidth [kHz] |
|---|---|---|
| 5190 | - | 36032.2 |
| 5230 | - | 36246.7 |
| 5270 | 42.105 | 36072.7 |
| 5310 | 42.280 | 36207.3 |
| 5510 | 41.730 | 36044.7 |
| 5550 | 41.448 | 36112.1 |
| 5670 | 41.351 | 36102.8 |
| 5755 | - | 36121.9 |
| 5795 | - | 36069.8 |

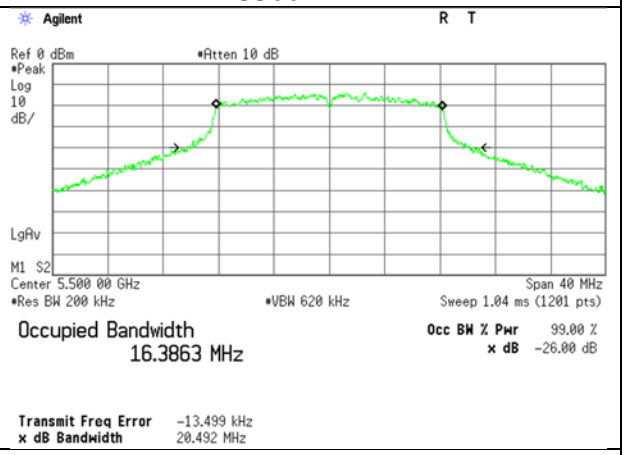
# 26 dB Emission Bandwidth

## 11a

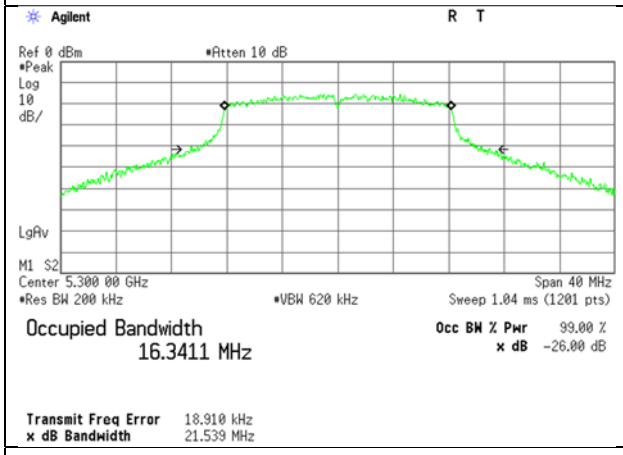
### 5260 MHz



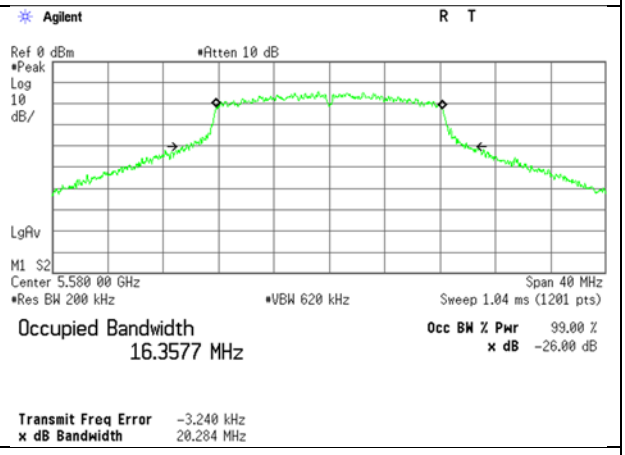

### 5500 MHz



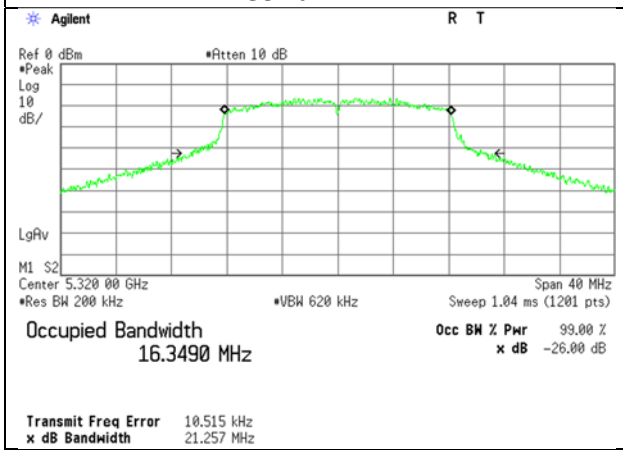

### 5300 MHz



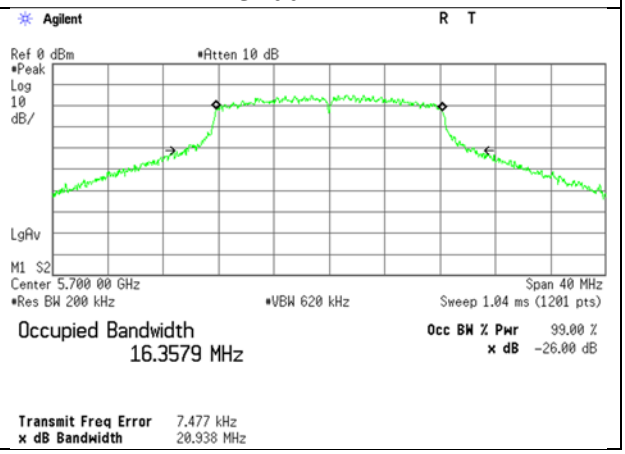

### 5580 MHz




### 5320 MHz



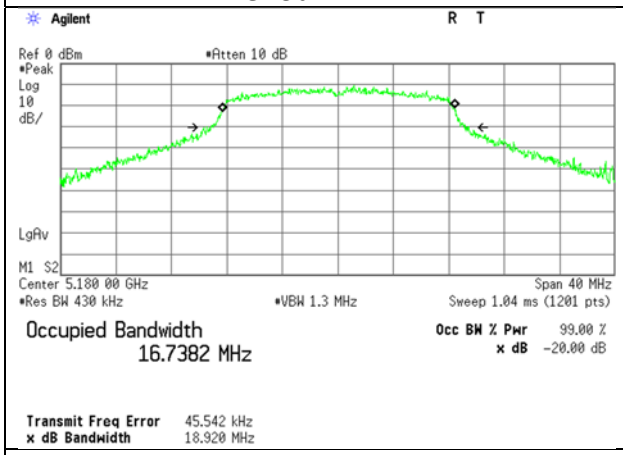

### 5700 MHz



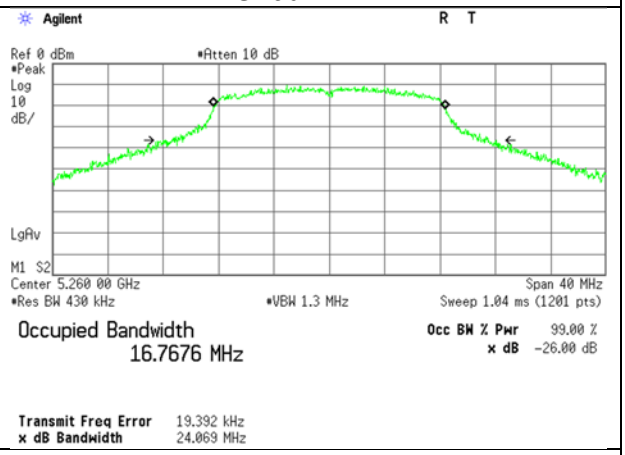
# 99 % Occupied Bandwidth

## 11a

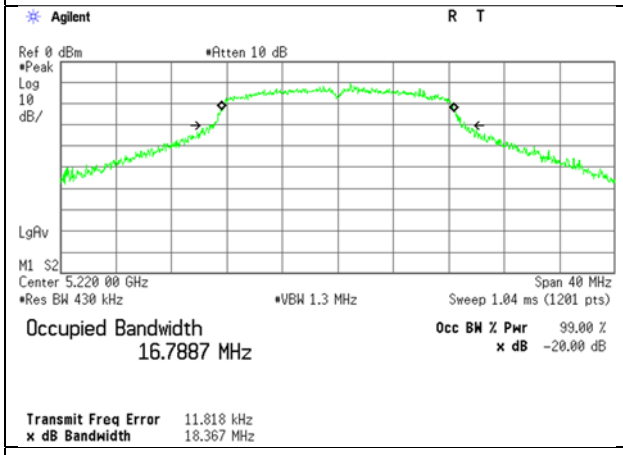
### 5180 MHz



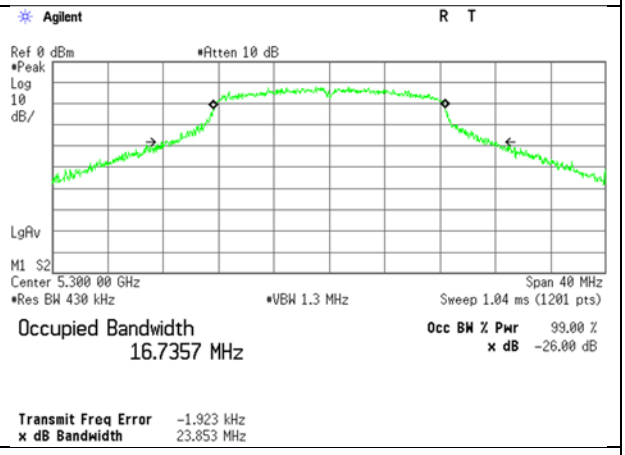

### 5260 MHz



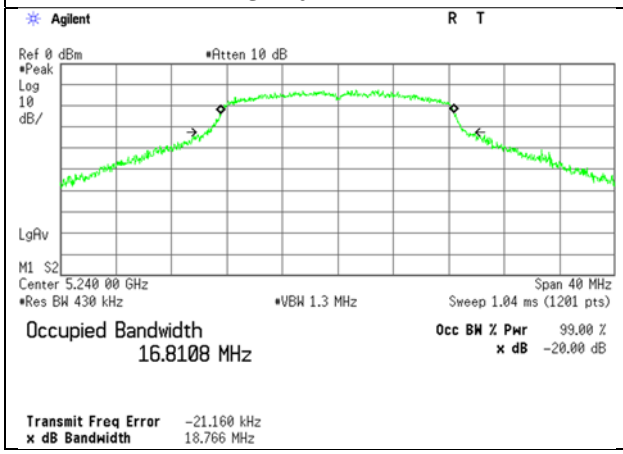

### 5220 MHz



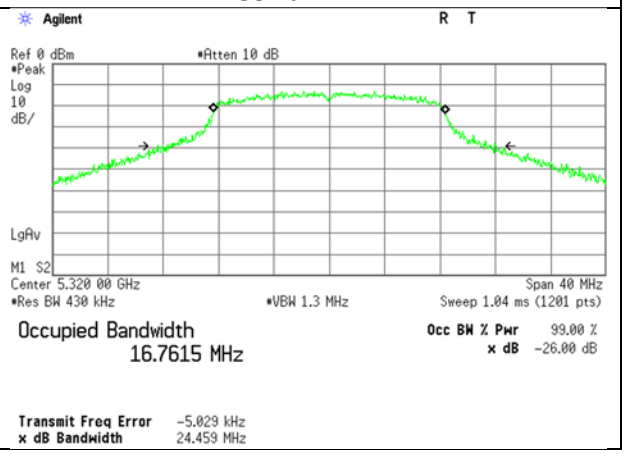

### 5300 MHz




### 5240 MHz



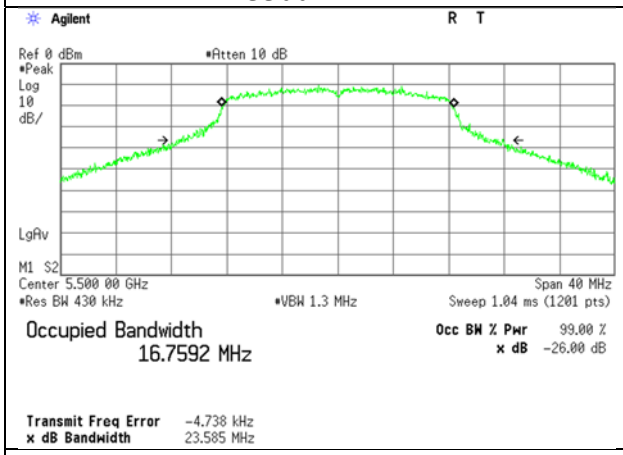

### 5320 MHz



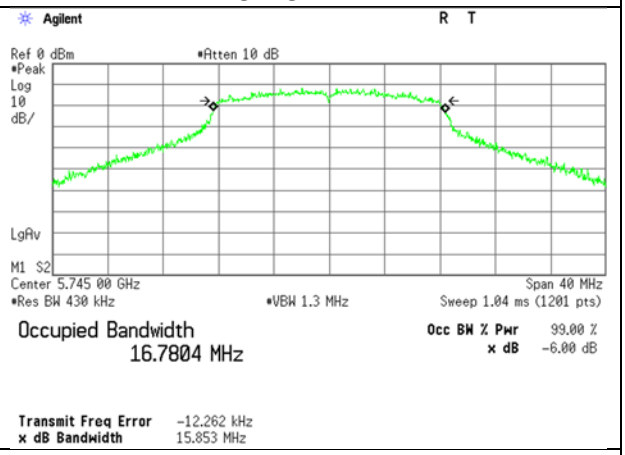
# 99 % Occupied Bandwidth

## 11a

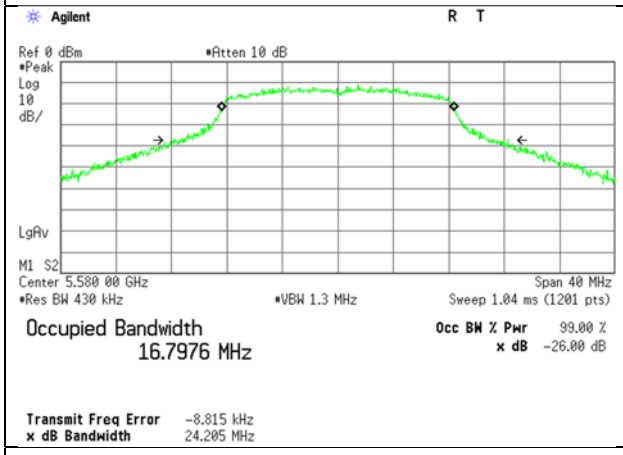
### 5500 MHz



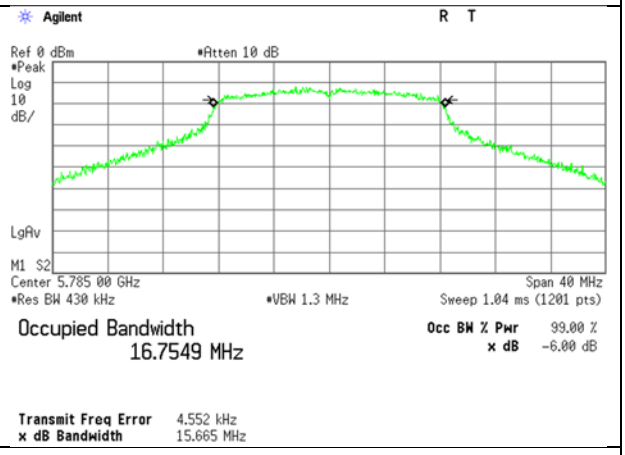

### 5745 MHz



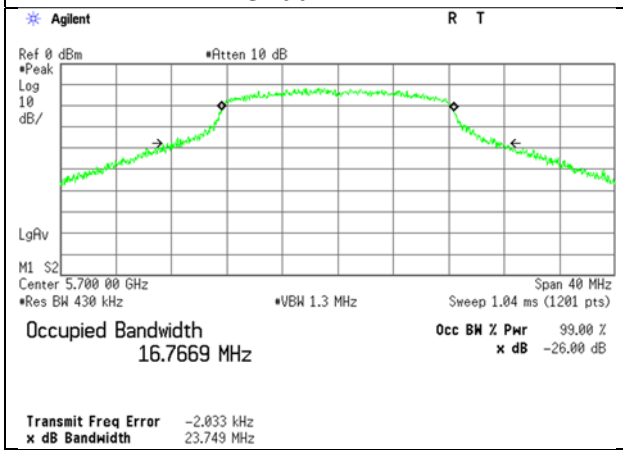

### 5580 MHz



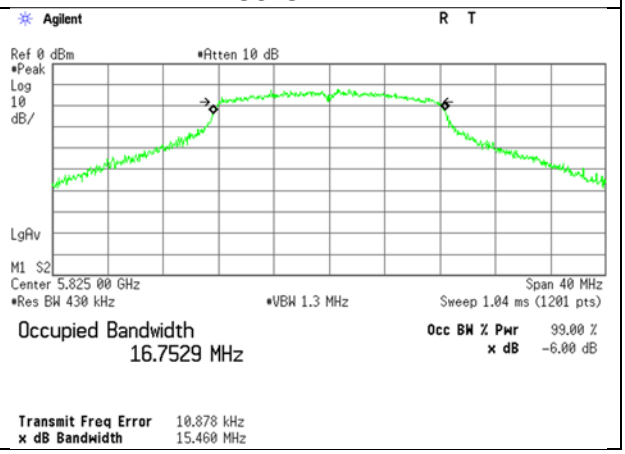

### 5785 MHz




### 5700 MHz



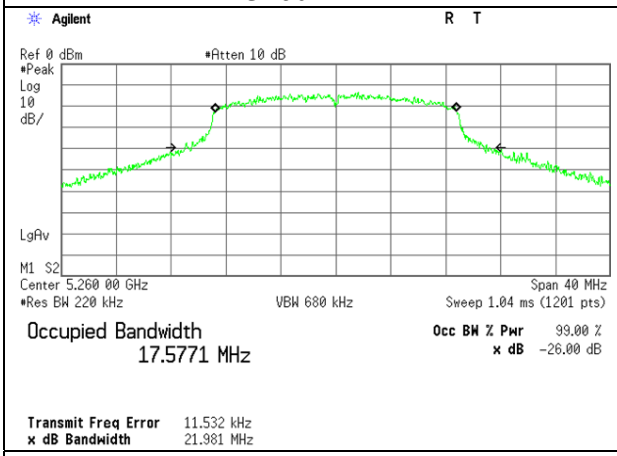

### 5825 MHz



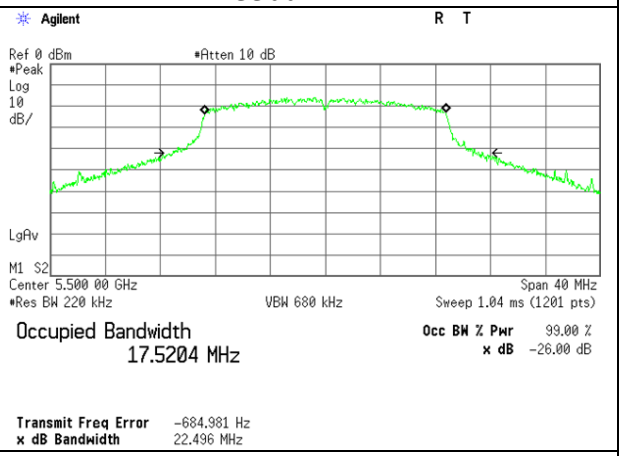
# 26 dB Emission Bandwidth

## 11n-20

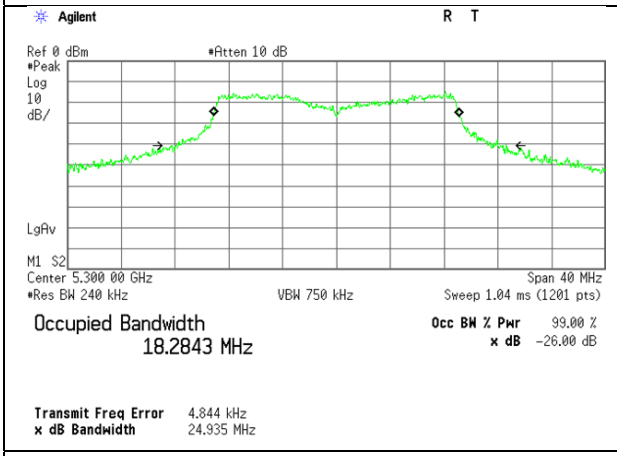
### 5260 MHz



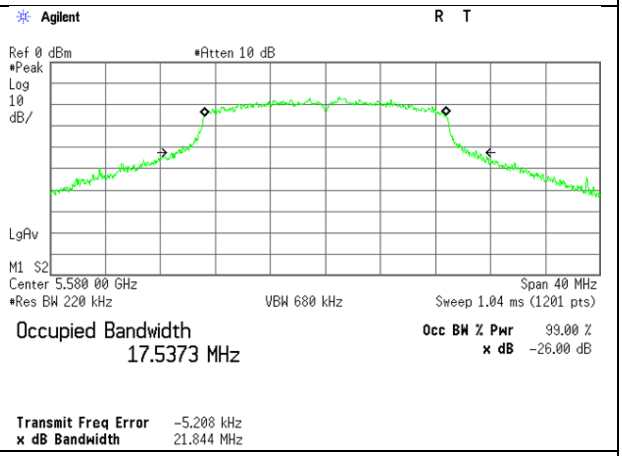

### 5500 MHz



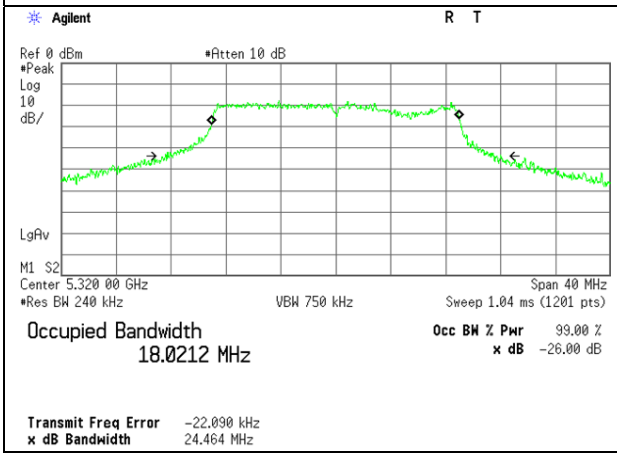

### 5300 MHz



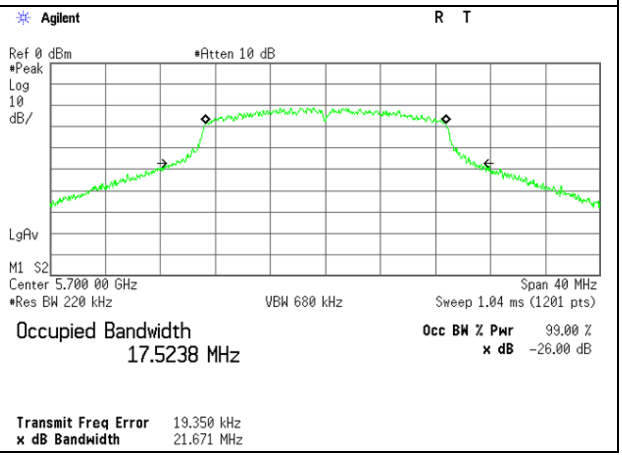

### 5580 MHz




### 5320 MHz



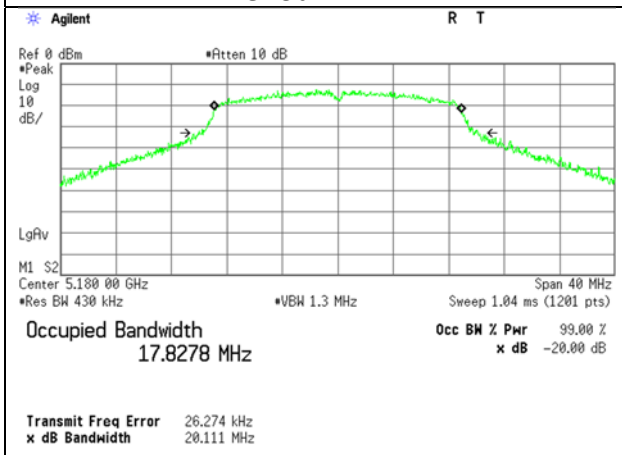

### 5700 MHz



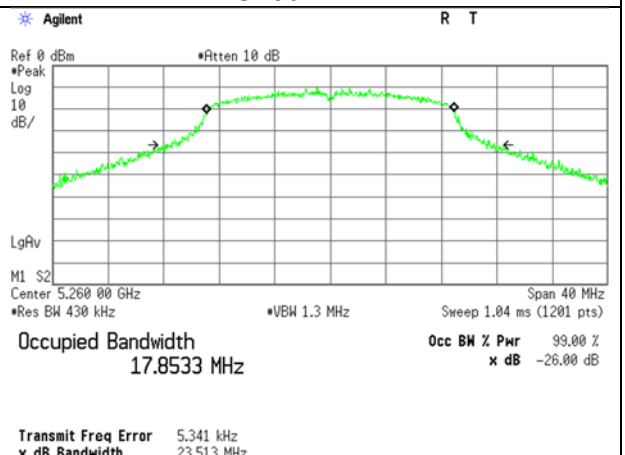
# 99 % Occupied Bandwidth

## 11n-20

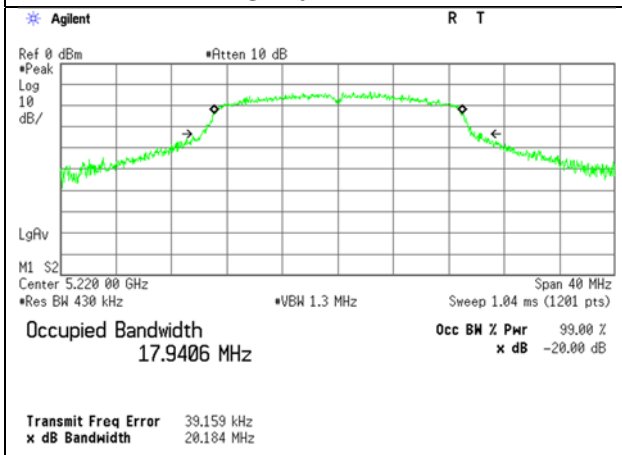
### 5180 MHz



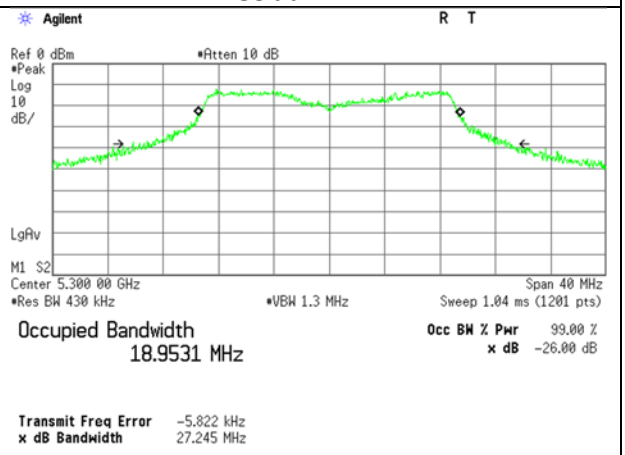

### 5260 MHz



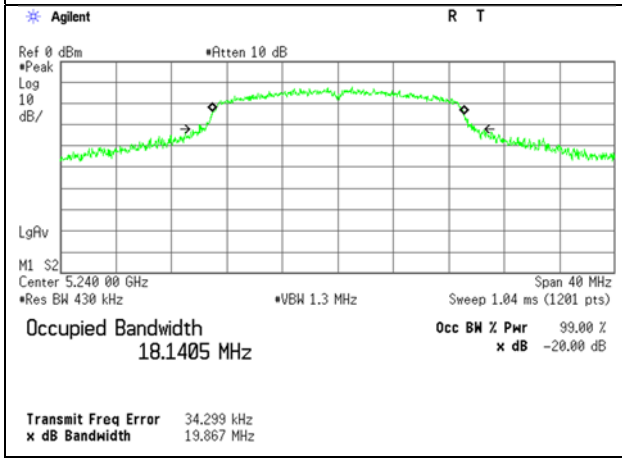

### 5220 MHz



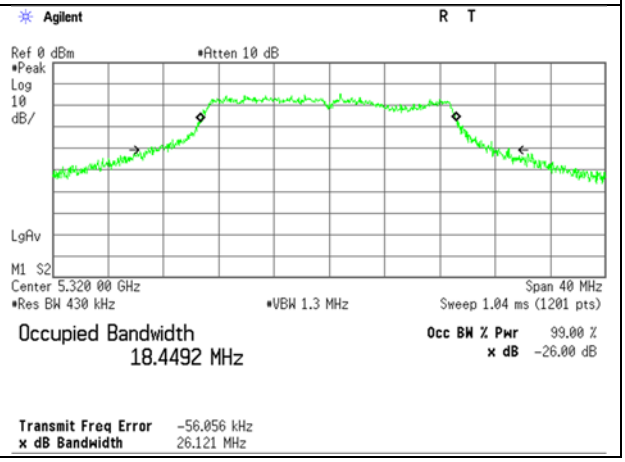

### 5300 MHz




### 5240 MHz



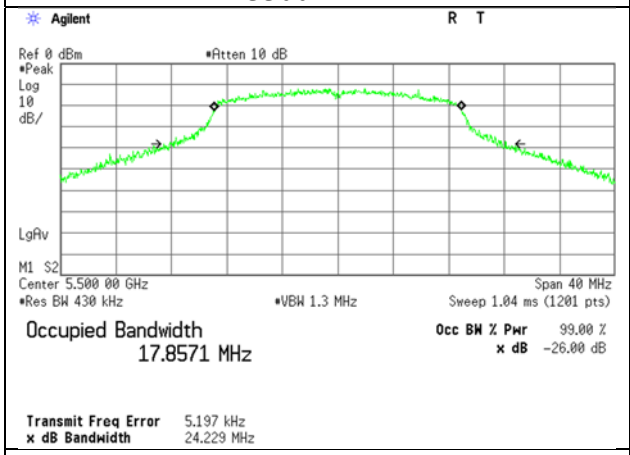

### 5320 MHz



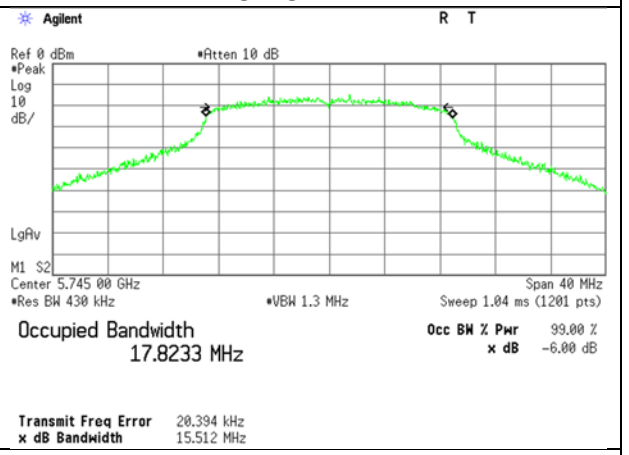
# 99 % Occupied Bandwidth

## 11n-20

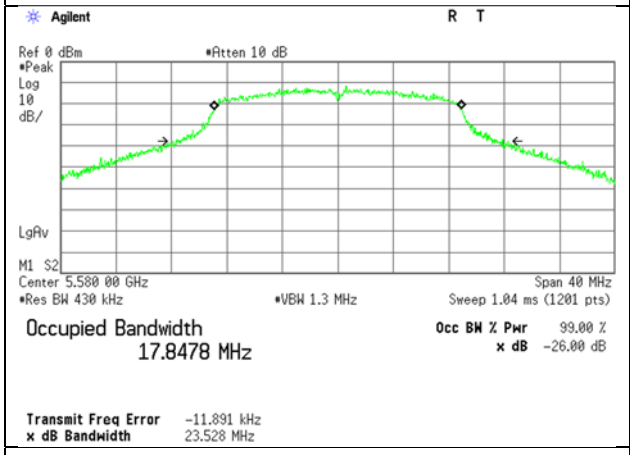
### 5500 MHz



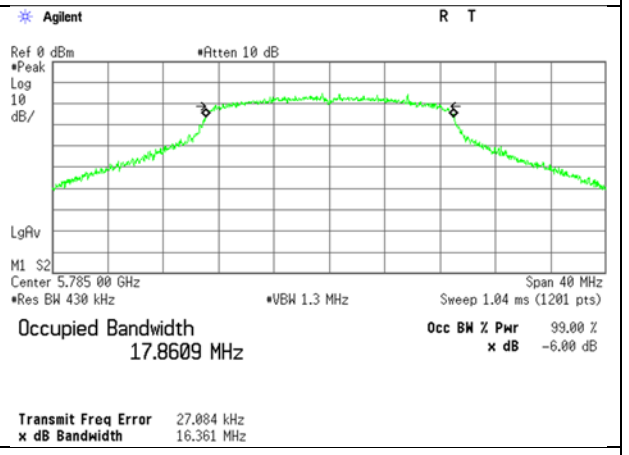

### 5745 MHz



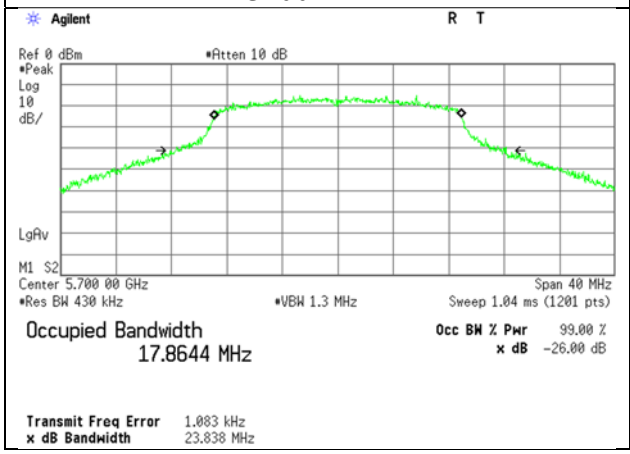

### 5580 MHz



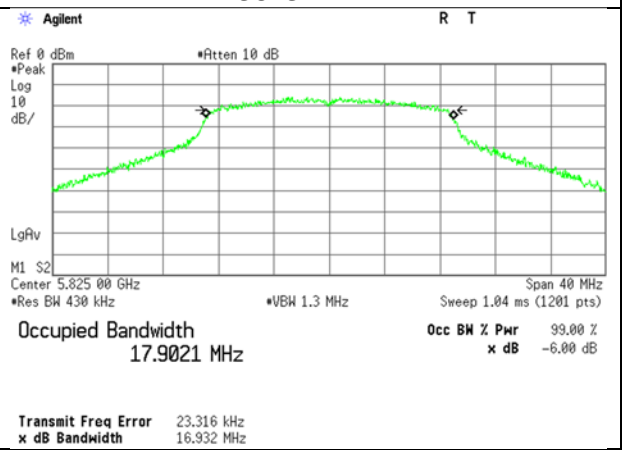

### 5785 MHz




### 5700 MHz



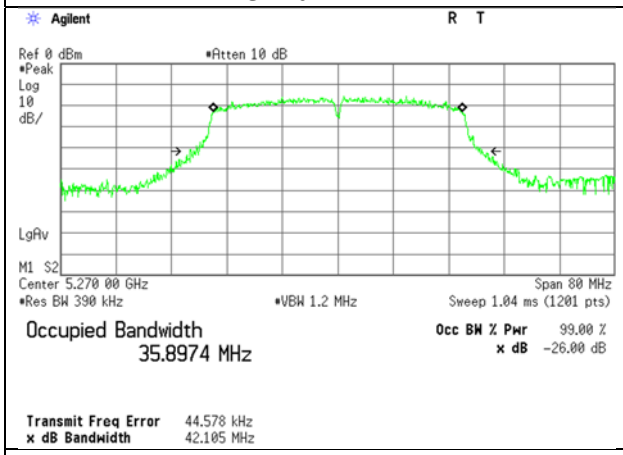

### 5825 MHz



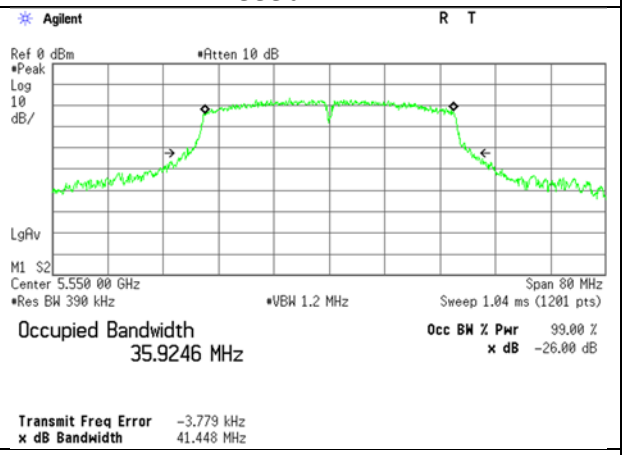
# 26 dB Emission Bandwidth

## 11n-40

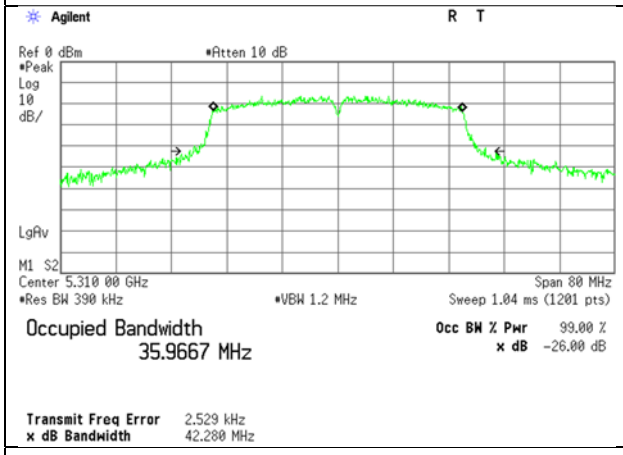
### 5270 MHz



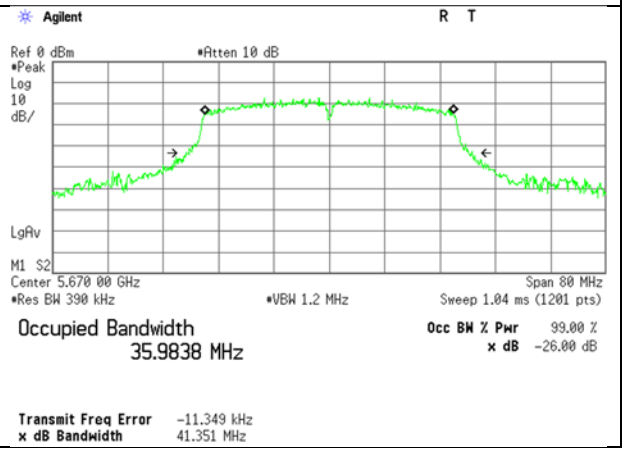

### 5550 MHz



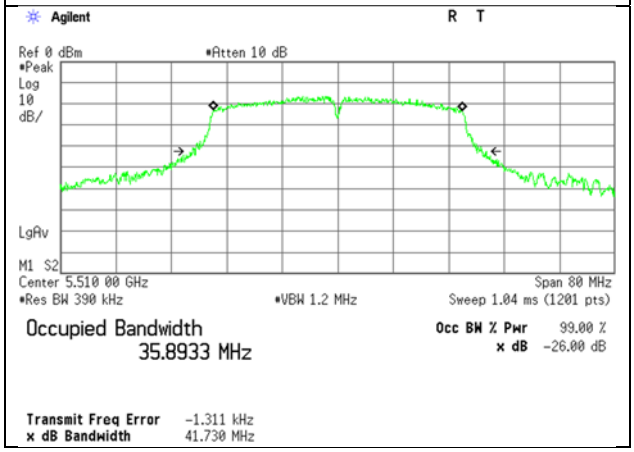

### 5310 MHz




### 5670 MHz



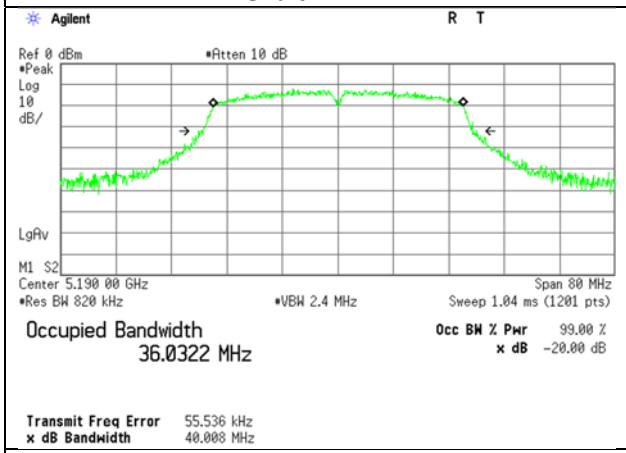

### 5510 MHz



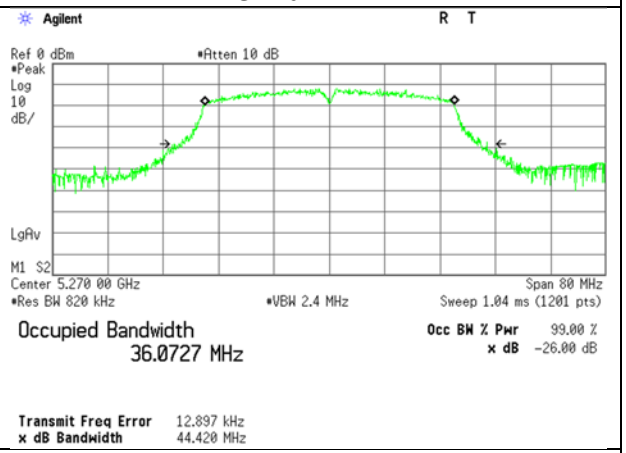
# 99 % Occupied Bandwidth

## 11n-40

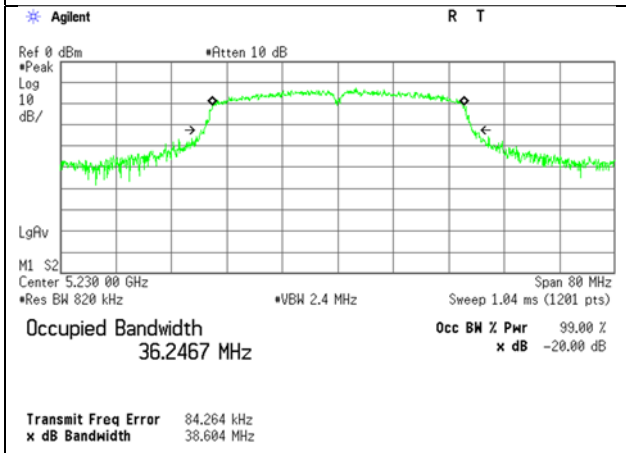
### 5190 MHz



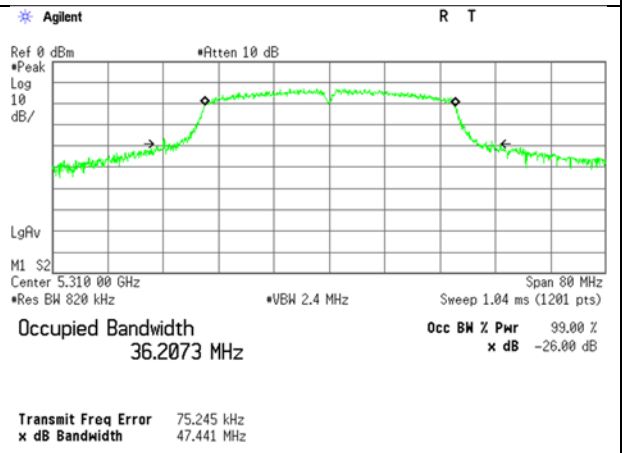

### 5270 MHz




### 5230 MHz



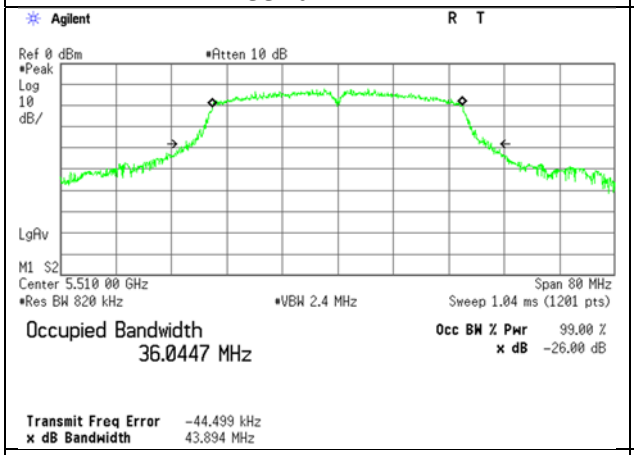

### 5310 MHz



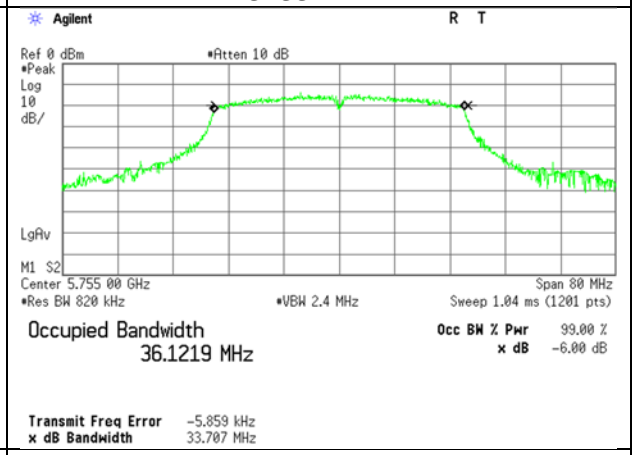
# 99 % Occupied Bandwidth

## 11n-40

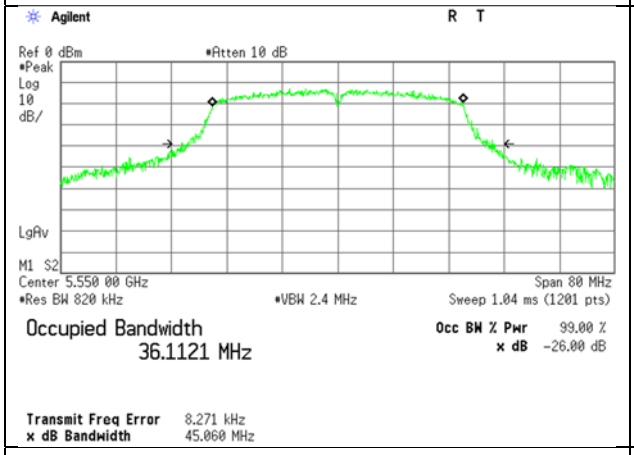
### 5510 MHz



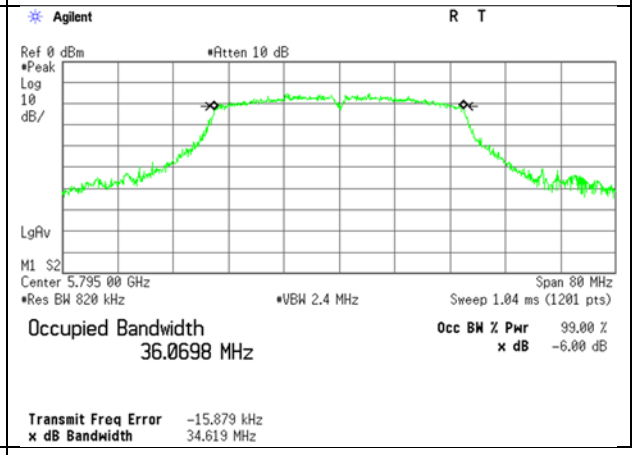

### 5755 MHz



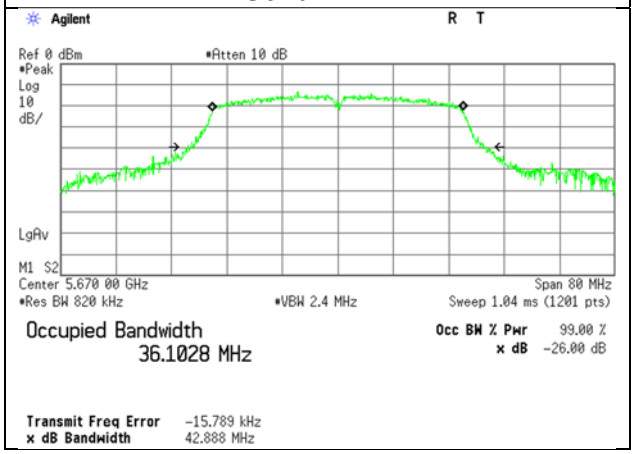

### 5550 MHz




### 5795 MHz




### 5670 MHz



# 6 dB Bandwidth

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. No.3 Measurement Room |
| Date | February 4, 2021 |
| Temperature / Humidity | 23 deg. C / 38 % RH |
| Engineer | Junya Okuno |
| Mode | Tx |

11a

| Tested Frequency [MHz] | 6 dB Bandwidth [MHz] | Limit [MHz] |
|---|---|---|
| 5745 | 15.894 | > 0.500 |
| 5785 | 15.424 | > 0.500 |
| 5825 | 15.132 | > 0.500 |

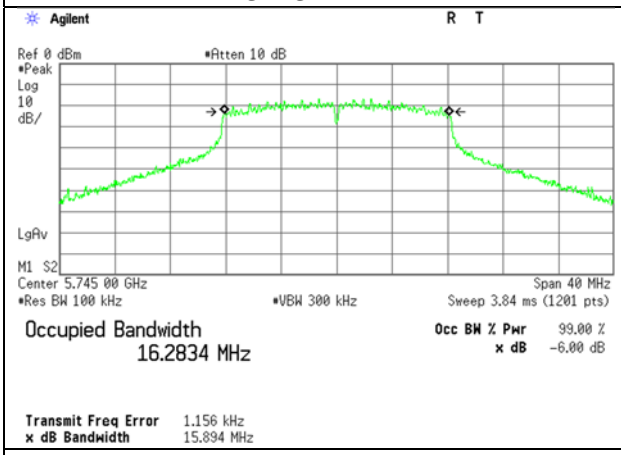
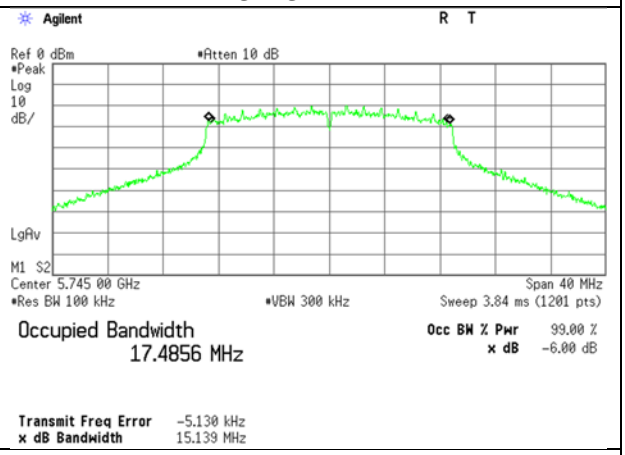
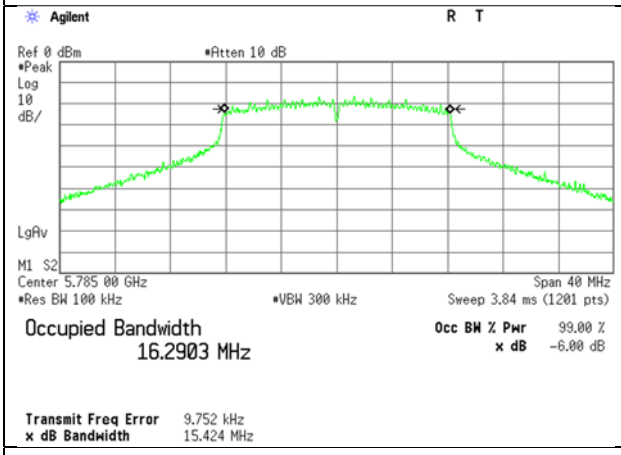
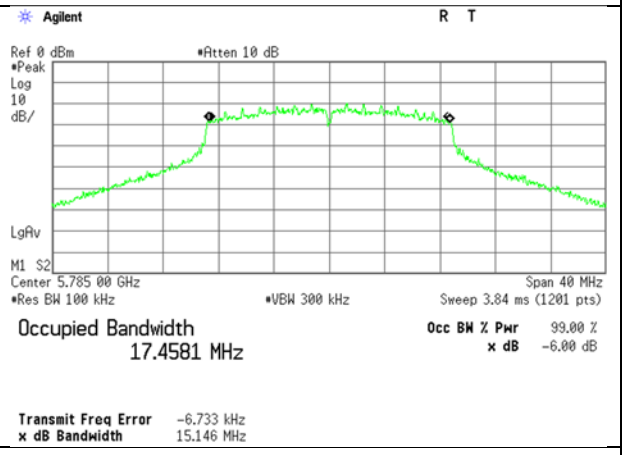
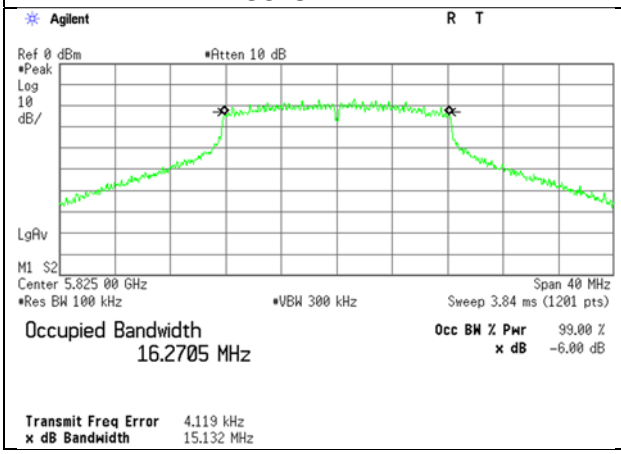
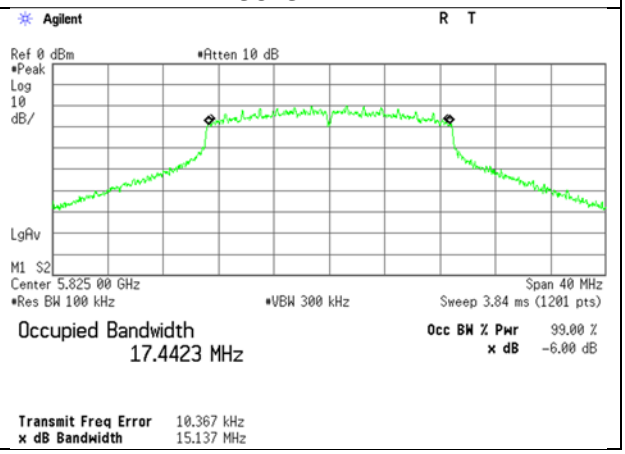
11n-20

| Tested Frequency [MHz] | 6 dB Bandwidth [MHz] | Limit [MHz] |
|---|---|---|
| 5745 | 15.139 | > 0.500 |
| 5785 | 15.146 | > 0.500 |
| 5825 | 15.137 | > 0.500 |

11n-40

| Tested Frequency [MHz] | 6 dB Bandwidth [MHz] | Limit [MHz] |
|---|---|---|
| 5755 | 35.124 | > 0.500 |
| 5795 | 35.114 | > 0.500 |

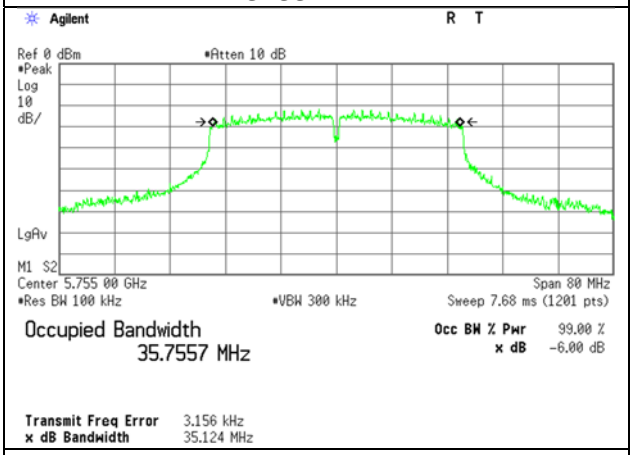
# 6 dB Bandwidth

| 11a | 11n-20 |
|---|---|
| **5745 MHz** | **5745 MHz** |
|  |  |
| **5785 MHz** | **5785 MHz** |
|  |  |
| **5825 MHz** | **5825 MHz** |
|  |  |

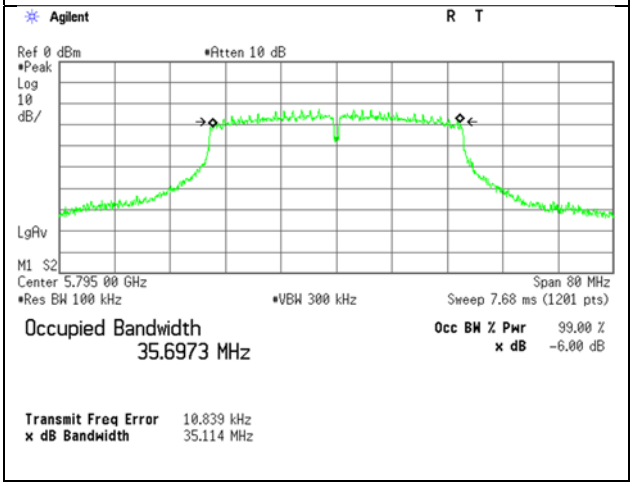
# 6 dB Bandwidth

## 11n-40

### 5755 MHz




### 5795 MHz

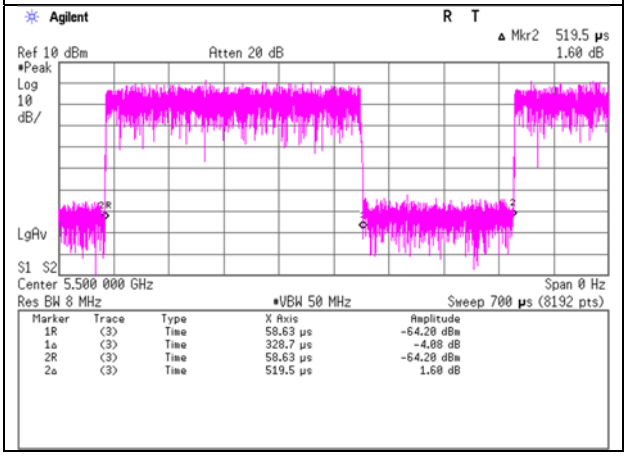


# Burst rate confirmation

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. No.3 Measurement Room |
| Date | April 1, 2015 |
| Temperature / Humidity | 22 deg. C / 38 % RH |
| Engineer | Junya Okuno |
| Mode | Tx |

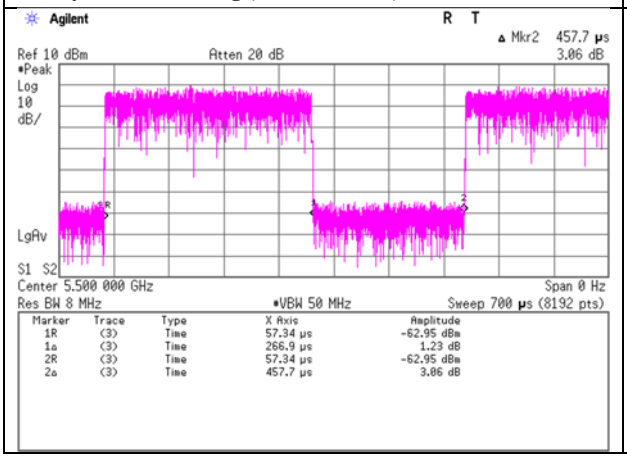
## 11a 54 Mbps

| | |
|---|---|
| Tx on / (Tx on + Tx off) = | 0.633 |
| Tx on / (Tx on + Tx off) * 100 = | 63.3 % |
| Duty factor = 10 * log (0.5195 / 0.3287) = | 1.99 dB |



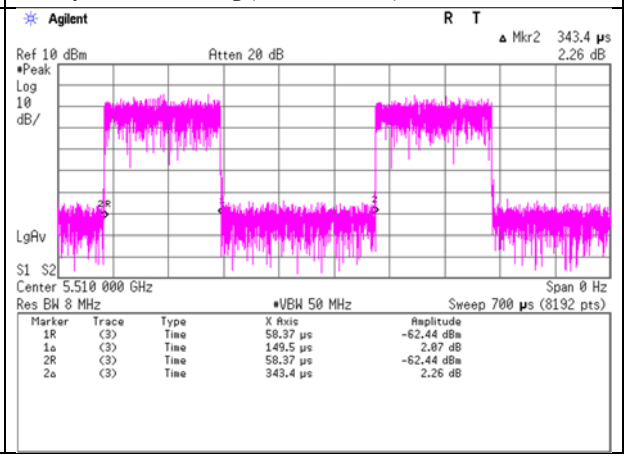

## 11n-20 MCS 7 (Short GI)

| | |
|---|---|
| Tx on / (Tx on + Tx off) = | 0.583 |
| Tx on / (Tx on + Tx off) * 100 = | 58.3 % |
| Duty factor = 10 * log (0.4577 / 0.2669) = | 2.34 dB |




## 11n-40 MCS 7 (Short GI)

| | |
|---|---|
| Tx on / (Tx on + Tx off) = | 0.436 |
| Tx on / (Tx on + Tx off) * 100 = | 43.6 % |
| Duty factor = 10 * log (0.3434 / 0.1496) = | 3.61 dB |

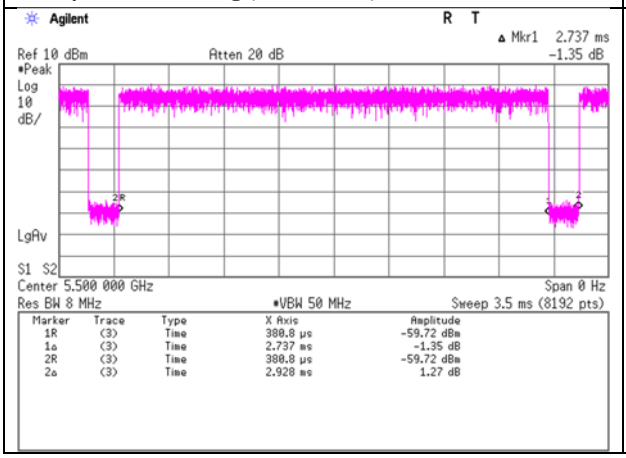


# Burst rate confirmation

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. No.3 Measurement Room |
| Date | April 1, 2015 |
| Temperature / Humidity | 22 deg. C / 38 % RH |
| Engineer | Junya Okuno |
| Mode | Tx |

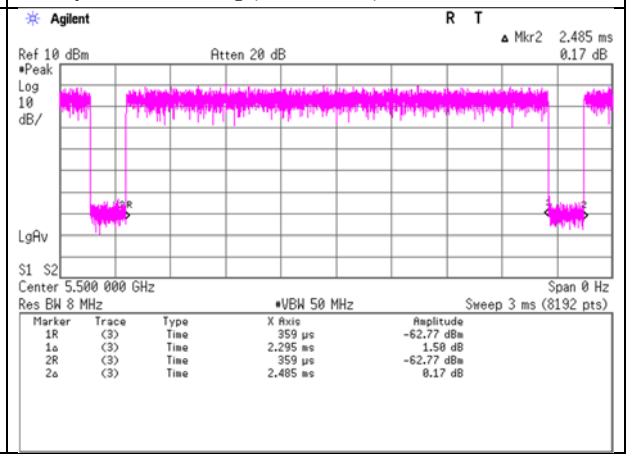
## 11a 6 Mbps

| | |
|---|---|
| Tx on / (Tx on + Tx off) = | 0.935 |
| Tx on / (Tx on + Tx off) * 100 = | 93.5 % |
| Duty factor = 10 * log (2.928 / 2.737) = | 0.29 dB |



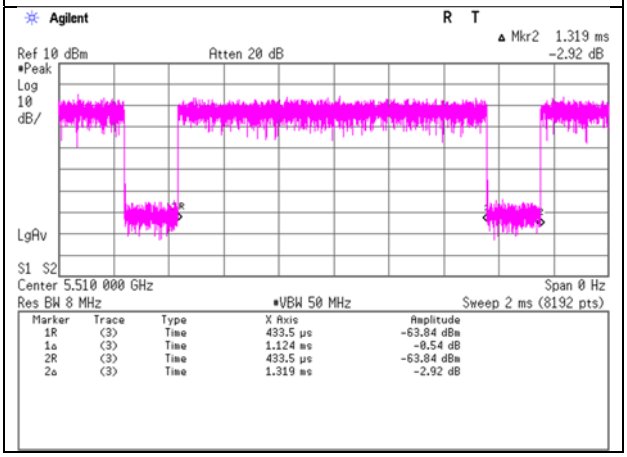

## 11n-20 MCS 0 (Short GI)

| | |
|---|---|
| Tx on / (Tx on + Tx off) = | 0.924 |
| Tx on / (Tx on + Tx off) * 100 = | 92.4 % |
| Duty factor = 10 * log (2.485 / 2.295) = | 0.35 dB |




## 11n-40 MCS 0 (Short GI)

| | |
|---|---|
| Tx on / (Tx on + Tx off) = | 0.852 |
| Tx on / (Tx on + Tx off) * 100 = | 85.2 % |
| Duty factor = 10 * log (1.319 / 1.124) = | 0.69 dB |



# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5180 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5150.000 | PK | 47.4 | 32.0 | 6.0 | 31.6 | - | 53.7 | 73.9 | 20.2 | |
| Hori. | 10360.000 | PK | 49.2 | 40.1 | -2.5 | 33.5 | - | 53.2 | 73.9 | 20.7 | |
| Hori. | 15540.000 | PK | 42.9 | 37.4 | 0.0 | 32.5 | - | 47.9 | 73.9 | 26.0 | Floor noise |
| Hori. | 5150.000 | AV | 32.3 | 32.0 | 6.0 | 31.6 | 2.0 | 40.6 | 53.9 | 13.3 | *1) |
| Hori. | 15540.000 | AV | 36.4 | 37.4 | 0.0 | 32.5 | - | 41.4 | 53.9 | 12.5 | Floor noise |
| Vert. | 5150.000 | PK | 46.3 | 32.0 | 6.0 | 31.6 | - | 52.6 | 73.9 | 21.3 | |
| Vert. | 10360.000 | PK | 51.5 | 40.1 | -2.5 | 33.5 | - | 55.5 | 73.9 | 18.4 | |
| Vert. | 15540.000 | PK | 42.9 | 37.4 | 0.0 | 32.5 | - | 47.9 | 73.9 | 26.0 | Floor noise |
| Vert. | 5150.000 | AV | 32.1 | 32.0 | 6.0 | 31.6 | 2.0 | 40.4 | 53.9 | 13.5 | *1) |
| Vert. | 15540.000 | AV | 36.4 | 37.4 | 0.0 | 32.5 | - | 41.4 | 53.9 | 12.5 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

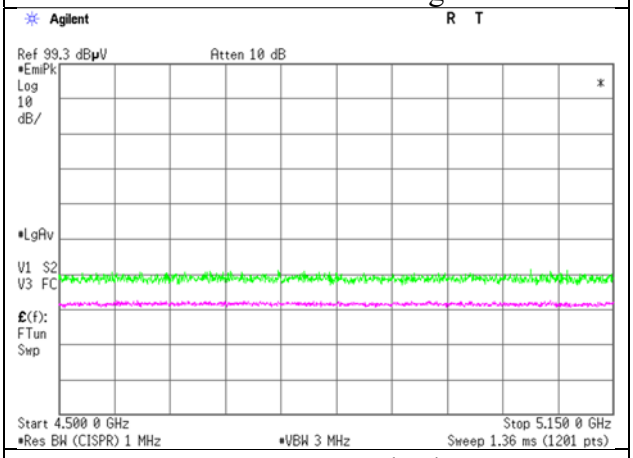
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11a 5180 MHz |

Horizontal

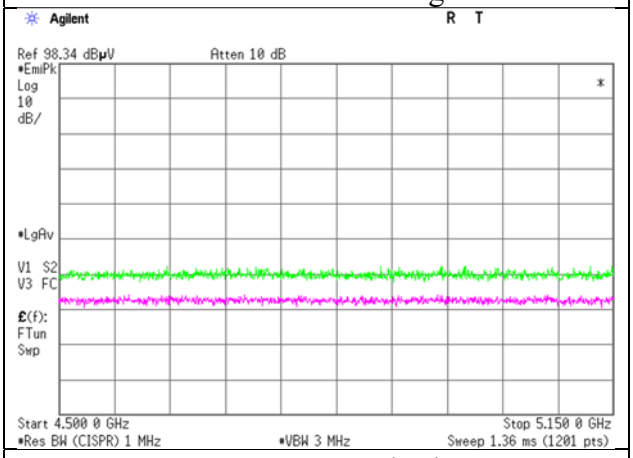
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5260 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 10520.000 | PK | 48.5 | 39.9 | -2.5 | 33.6 | - | 52.4 | 68.2 | 15.8 | |
| Hori. | 15780.000 | PK | 43.1 | 37.0 | 0.2 | 32.6 | - | 47.6 | 73.9 | 26.3 | Floor noise |
| Hori. | 15780.000 | AV | 35.5 | 37.0 | 0.2 | 32.6 | - | 40.0 | 53.9 | 13.9 | Floor noise |
| Vert. | 10520.000 | PK | 50.5 | 39.9 | -2.5 | 33.6 | - | 54.4 | 68.2 | 13.9 | |
| Vert. | 15780.000 | PK | 43.1 | 37.0 | 0.2 | 32.6 | - | 47.6 | 73.9 | 26.3 | Floor noise |
| Vert. | 15780.000 | AV | 35.5 | 37.0 | 0.2 | 32.6 | - | 40.0 | 53.9 | 13.9 | Floor noise |

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

# Radiated Spurious Emission

| | | | | |
|---|---|---|---|---|
| Report No. | 13665469H | | | |
| Test place | Ise EMC Lab. | | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) | (Below 1 GHz) |
| Mode | Tx 11a 5320 MHz | | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 46.992 | QP | 22.0 | 12.3 | 7.5 | 32.2 | - | 9.6 | 40.0 | 30.4 | |
| Hori. | 87.689 | QP | 22.4 | 8.3 | 8.1 | 32.2 | - | 6.6 | 40.0 | 33.4 | |
| Hori. | 156.146 | QP | 21.7 | 15.5 | 8.9 | 32.1 | - | 13.9 | 43.5 | 29.6 | |
| Hori. | 246.530 | QP | 22.3 | 11.7 | 9.7 | 32.1 | - | 11.7 | 46.0 | 34.3 | |
| Hori. | 396.957 | QP | 22.3 | 15.6 | 10.9 | 32.0 | - | 16.7 | 46.0 | 29.3 | |
| Hori. | 578.739 | QP | 22.4 | 18.6 | 12.0 | 32.0 | - | 20.9 | 46.0 | 25.1 | |
| Hori. | 5350.000 | PK | 46.3 | 31.5 | 6.1 | 31.7 | - | 52.2 | 73.9 | 21.7 | |
| Hori. | 10640.000 | PK | 46.6 | 39.9 | -2.4 | 33.6 | - | 50.5 | 73.9 | 23.4 | |
| Hori. | 15960.000 | PK | 43.3 | 37.6 | 0.3 | 32.8 | - | 48.4 | 73.9 | 25.5 | Floor noise |
| Hori. | 5350.000 | AV | 32.4 | 31.5 | 6.1 | 31.7 | 2.0 | 40.3 | 53.9 | 13.6 | *1) |
| Hori. | 10640.000 | AV | 39.6 | 39.9 | -2.4 | 33.6 | 2.0 | 45.4 | 53.9 | 8.5 | |
| Hori. | 15960.000 | AV | 35.0 | 37.6 | 0.3 | 32.8 | - | 40.2 | 53.9 | 13.7 | Floor noise |
| Vert. | 46.992 | QP | 24.6 | 12.3 | 7.5 | 32.2 | - | 12.2 | 40.0 | 27.8 | |
| Vert. | 87.689 | QP | 22.2 | 8.3 | 8.1 | 32.2 | - | 6.4 | 40.0 | 33.6 | |
| Vert. | 156.146 | QP | 22.6 | 15.5 | 8.9 | 32.1 | - | 14.8 | 43.5 | 28.7 | |
| Vert. | 246.530 | QP | 22.1 | 11.7 | 9.7 | 32.1 | - | 11.5 | 46.0 | 34.5 | |
| Vert. | 396.957 | QP | 22.2 | 15.6 | 10.9 | 32.0 | - | 16.6 | 46.0 | 29.4 | |
| Vert. | 578.739 | QP | 22.4 | 18.6 | 12.0 | 32.0 | - | 20.9 | 46.0 | 25.1 | |
| Vert. | 5350.000 | PK | 44.1 | 31.5 | 6.1 | 31.7 | - | 50.0 | 73.9 | 23.9 | |
| Vert. | 10640.000 | PK | 48.6 | 39.9 | -2.4 | 33.6 | - | 52.5 | 73.9 | 21.4 | |
| Vert. | 15960.000 | PK | 43.3 | 37.6 | 0.3 | 32.8 | - | 48.5 | 73.9 | 25.5 | Floor noise |
| Vert. | 5350.000 | AV | 30.9 | 31.5 | 6.1 | 31.7 | 2.0 | 38.8 | 53.9 | 15.1 | *1) |
| Vert. | 10640.000 | AV | 42.6 | 39.9 | -2.4 | 33.6 | 2.0 | 48.5 | 53.9 | 5.4 | |
| Vert. | 15960.000 | AV | 35.0 | 37.6 | 0.3 | 32.8 | - | 40.2 | 53.9 | 13.8 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

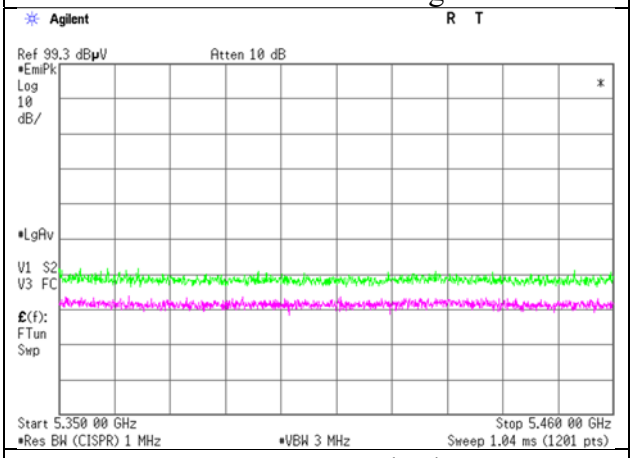
*1) Not Out of Band emission(Leakage Power)

# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11a 5320 MHz |

Horizontal

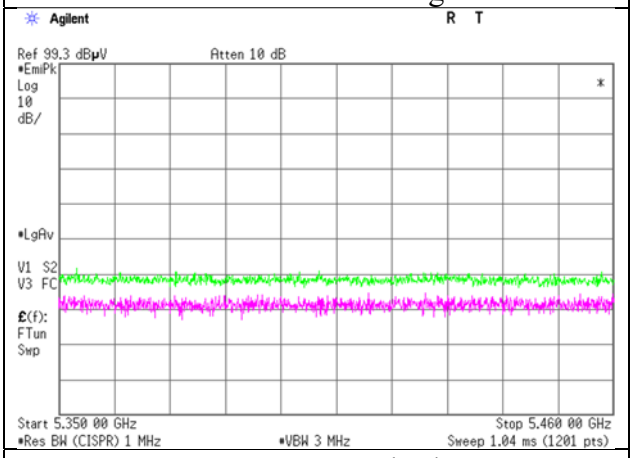
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5500 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5460.000 | PK | 46.3 | 31.7 | 6.1 | 31.7 | - | 52.4 | 73.9 | 21.5 | |
| Hori. | 5470.000 | PK | 45.9 | 31.7 | 6.1 | 31.7 | - | 52.0 | 73.9 | 21.9 | |
| Hori. | 11000.000 | PK | 47.3 | 40.0 | -2.3 | 33.6 | - | 51.4 | 73.9 | 22.5 | |
| Hori. | 16500.000 | PK | 43.2 | 39.5 | 0.0 | 32.7 | - | 50.1 | 68.2 | 18.1 | Floor noise |
| Hori. | 5460.000 | AV | 32.1 | 31.7 | 6.1 | 31.7 | 2.0 | 40.2 | 53.9 | 13.8 | *1) |
| Hori. | 5470.000 | AV | 32.2 | 31.7 | 6.1 | 31.7 | 2.0 | 40.3 | 53.9 | 13.6 | *1) |
| Hori. | 11000.000 | AV | 40.1 | 40.0 | -2.3 | 33.6 | 2.0 | 46.2 | 53.9 | 7.7 | |
| Vert. | 5460.000 | PK | 44.8 | 31.7 | 6.1 | 31.7 | - | 50.9 | 73.9 | 23.0 | |
| Vert. | 5470.000 | PK | 43.9 | 31.7 | 6.1 | 31.7 | - | 50.0 | 73.9 | 23.9 | |
| Vert. | 11000.000 | PK | 49.8 | 40.0 | -2.3 | 33.6 | - | 53.9 | 73.9 | 20.0 | |
| Vert. | 16500.000 | PK | 43.3 | 39.5 | 0.0 | 32.7 | - | 50.1 | 68.2 | 18.1 | Floor noise |
| Vert. | 5460.000 | AV | 32.7 | 31.7 | 6.1 | 31.7 | 2.0 | 40.8 | 53.9 | 13.2 | *1) |
| Vert. | 5470.000 | AV | 31.7 | 31.7 | 6.1 | 31.7 | 2.0 | 39.8 | 53.9 | 14.1 | *1) |
| Vert. | 11000.000 | AV | 43.2 | 40.0 | -2.3 | 33.6 | 2.0 | 49.3 | 53.9 | 4.6 | |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

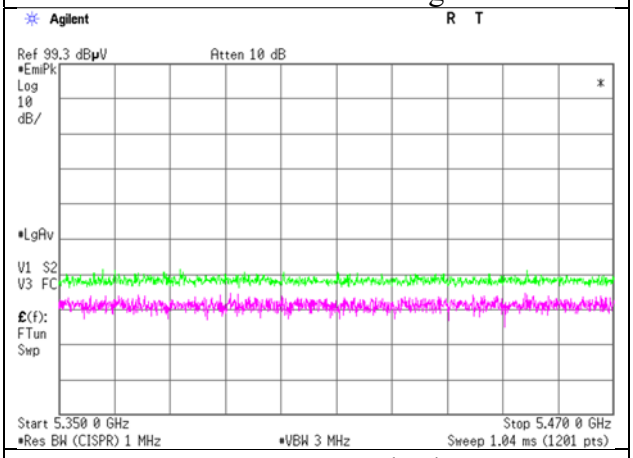
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11a 5500 MHz |

Horizontal

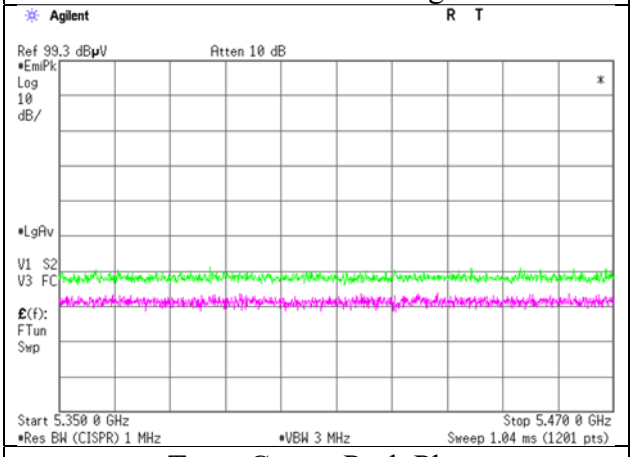
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5580 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 11160.000 | PK | 48.7 | 39.6 | -2.2 | 33.6 | - | 52.5 | 73.9 | 21.4 | |
| Hori. | 16740.000 | PK | 42.1 | 40.9 | -0.2 | 32.7 | - | 50.1 | 68.2 | 18.1 | Floor noise |
| Hori. | 11160.000 | AV | 40.6 | 39.6 | -2.2 | 33.6 | 2.0 | 46.5 | 53.9 | 7.4 | |
| Vert. | 11160.000 | PK | 44.5 | 39.6 | -2.2 | 33.6 | - | 48.4 | 73.9 | 25.5 | |
| Vert. | 16740.000 | PK | 42.1 | 40.9 | -0.2 | 32.7 | - | 50.1 | 68.2 | 18.1 | Floor noise |
| Vert. | 11160.000 | AV | 37.0 | 39.6 | -2.2 | 33.6 | 2.0 | 42.8 | 53.9 | 11.1 | |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5700 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5725.000 | PK | 46.0 | 32.0 | 6.2 | 31.8 | - | 52.4 | 122.2 | 69.9 | |
| Hori. | 11400.000 | PK | 44.0 | 39.9 | -2.0 | 33.5 | - | 48.3 | 73.9 | 25.6 | |
| Hori. | 17100.000 | PK | 43.4 | 42.0 | -0.3 | 32.6 | - | 52.5 | 68.2 | 15.7 | Floor noise |
| Hori. | 5725.000 | AV | 34.3 | 32.0 | 6.2 | 31.8 | 2.0 | 42.6 | 53.9 | 11.3 | *1) |
| Hori. | 11400.000 | AV | 36.2 | 39.9 | -2.0 | 33.5 | 2.0 | 42.5 | 53.9 | 11.4 | |
| Vert. | 5725.000 | PK | 48.9 | 32.0 | 6.2 | 31.8 | - | 55.3 | 122.2 | 67.0 | |
| Vert. | 11400.000 | PK | 46.0 | 39.9 | -2.0 | 33.5 | - | 50.4 | 73.9 | 23.5 | |
| Vert. | 17100.000 | PK | 43.3 | 42.0 | -0.3 | 32.6 | - | 52.4 | 68.2 | 15.8 | Floor noise |
| Vert. | 5725.000 | AV | 34.7 | 32.0 | 6.2 | 31.8 | 2.0 | 43.0 | 53.9 | 10.9 | *1) |
| Vert. | 11400.000 | AV | 37.7 | 39.9 | -2.0 | 33.5 | 2.0 | 44.0 | 53.9 | 9.9 | |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

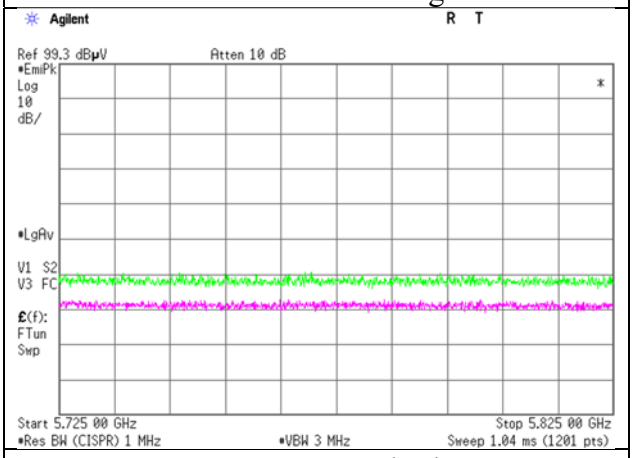
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11a 5700 MHz |

Horizontal

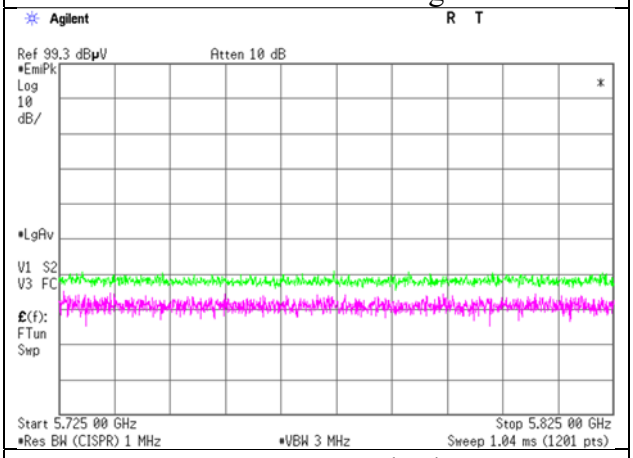
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5745 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5650.000 | PK | 44.7 | 31.7 | 6.2 | 31.8 | - | 50.7 | 68.2 | 17.5 | |
| Hori. | 5700.000 | PK | 43.1 | 31.8 | 6.2 | 31.8 | - | 49.3 | 105.2 | 55.9 | |
| Hori. | 5720.000 | PK | 43.8 | 31.9 | 6.2 | 31.8 | - | 50.1 | 110.8 | 60.7 | |
| Hori. | 5725.000 | PK | 44.4 | 32.0 | 6.2 | 31.8 | - | 50.8 | 122.2 | 71.5 | |
| Hori. | 11490.000 | PK | 44.5 | 39.7 | -1.9 | 33.5 | - | 48.8 | 73.9 | 25.1 | |
| Hori. | 17235.000 | PK | 43.5 | 42.6 | -0.2 | 32.7 | - | 53.2 | 68.2 | 15.0 | Floor noise |
| Hori. | 5650.000 | AV | 33.2 | 31.7 | 6.2 | 31.8 | 2.0 | 41.2 | 53.9 | 12.7 | |
| Hori. | 5700.000 | AV | 33.1 | 31.8 | 6.2 | 31.8 | 2.0 | 41.3 | 53.9 | 12.6 | |
| Hori. | 5720.000 | AV | 33.0 | 31.9 | 6.2 | 31.8 | 2.0 | 41.3 | 53.9 | 12.6 | |
| Hori. | 5725.000 | AV | 33.2 | 32.0 | 6.2 | 31.8 | 2.0 | 41.5 | 53.9 | 12.4 | *1) |
| Hori. | 11490.000 | AV | 37.2 | 39.7 | -1.9 | 33.5 | 2.0 | 43.5 | 53.9 | 10.4 | |
| Vert. | 5650.000 | PK | 44.5 | 31.7 | 6.2 | 31.8 | - | 50.5 | 68.2 | 17.7 | |
| Vert. | 5700.000 | PK | 43.3 | 31.8 | 6.2 | 31.8 | - | 49.5 | 105.2 | 55.7 | |
| Vert. | 5720.000 | PK | 43.7 | 31.9 | 6.2 | 31.8 | - | 50.0 | 110.8 | 60.8 | |
| Vert. | 5725.000 | PK | 44.3 | 32.0 | 6.2 | 31.8 | - | 50.7 | 122.2 | 71.6 | |
| Vert. | 11490.000 | PK | 45.7 | 39.7 | -1.9 | 33.5 | - | 50.0 | 73.9 | 23.9 | |
| Vert. | 17235.000 | PK | 43.3 | 42.6 | -0.2 | 32.7 | - | 52.9 | 68.2 | 15.3 | Floor noise |
| Vert. | 5650.000 | AV | 32.8 | 31.7 | 6.2 | 31.8 | 2.0 | 40.8 | 53.9 | 13.1 | |
| Vert. | 5700.000 | AV | 32.9 | 31.8 | 6.2 | 31.8 | 2.0 | 41.1 | 53.9 | 12.8 | |
| Vert. | 5720.000 | AV | 33.0 | 31.9 | 6.2 | 31.8 | 2.0 | 41.3 | 53.9 | 12.6 | |
| Vert. | 5725.000 | AV | 33.1 | 32.0 | 6.2 | 31.8 | 2.0 | 41.4 | 53.9 | 12.5 | *1) |
| Vert. | 11490.000 | AV | 40.5 | 39.7 | -1.9 | 33.5 | 2.0 | 46.7 | 53.9 | 7.2 | |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

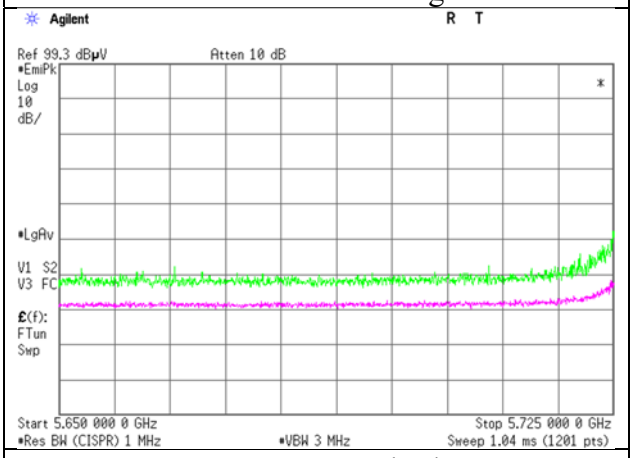
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11a 5745 MHz |

Horizontal

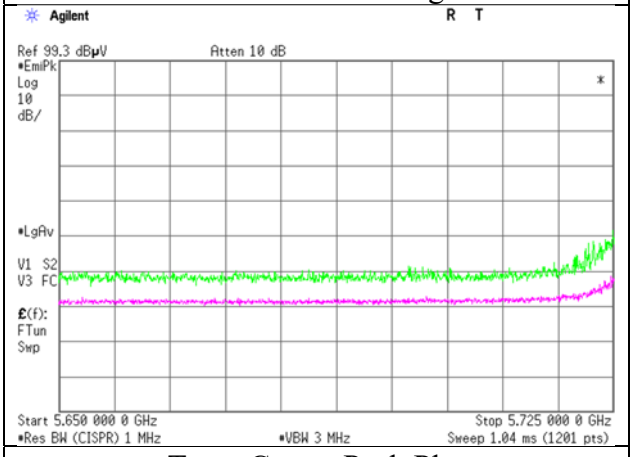
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5785 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 11650.000 | PK | 45.3 | 39.2 | -1.8 | 33.4 | - | 49.3 | 73.9 | 24.6 | |
| Hori. | 17475.000 | PK | 42.2 | 44.6 | -0.1 | 32.7 | - | 54.0 | 68.2 | 14.2 | Floor noise |
| Hori. | 11650.000 | AV | 38.7 | 39.2 | -1.8 | 33.4 | 2.0 | 44.6 | 53.9 | 9.3 | |
| Vert. | 11650.000 | PK | 46.6 | 39.2 | -1.8 | 33.4 | - | 50.6 | 73.9 | 23.3 | |
| Vert. | 17475.000 | PK | 42.5 | 44.6 | -0.1 | 32.7 | - | 54.3 | 68.2 | 13.9 | Floor noise |
| Vert. | 11650.000 | AV | 39.9 | 39.2 | -1.8 | 33.4 | 2.0 | 45.8 | 53.9 | 8.1 | |

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11a 5825 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5850.000 | PK | 42.2 | 32.3 | 6.2 | 31.8 | - | 48.9 | 122.2 | 73.3 | |
| Hori. | 5855.000 | PK | 41.8 | 32.3 | 6.2 | 31.8 | - | 48.5 | 110.8 | 62.3 | |
| Hori. | 5875.000 | PK | 42.4 | 32.3 | 6.3 | 31.8 | - | 49.2 | 105.2 | 56.1 | |
| Hori. | 5925.000 | PK | 42.8 | 32.4 | 6.3 | 31.9 | - | 49.6 | 68.2 | 18.6 | |
| Hori. | 11650.000 | PK | 45.3 | 39.2 | -1.8 | 33.4 | - | 49.3 | 73.9 | 24.6 | |
| Hori. | 17475.000 | PK | 42.2 | 44.6 | -0.1 | 32.7 | - | 54.0 | 68.2 | 14.2 | Floor noise |
| Hori. | 5850.000 | AV | 34.6 | 32.3 | 6.2 | 31.8 | 2.0 | 43.3 | 53.9 | 10.6 | |
| Hori. | 5855.000 | AV | 33.2 | 32.3 | 6.2 | 31.8 | 2.0 | 41.9 | 53.9 | 12.0 | |
| Hori. | 5875.000 | AV | 32.2 | 32.3 | 6.3 | 31.8 | 2.0 | 40.9 | 53.9 | 13.0 | |
| Hori. | 5925.000 | AV | 32.7 | 32.4 | 6.3 | 31.9 | 2.0 | 41.5 | 53.9 | 12.4 | |
| Hori. | 11650.000 | AV | 38.7 | 39.2 | -1.8 | 33.4 | 2.0 | 44.6 | 53.9 | 9.3 | |
| Vert. | 5850.000 | PK | 42.6 | 32.3 | 6.2 | 31.8 | - | 49.3 | 122.2 | 72.9 | |
| Vert. | 5855.000 | PK | 42.3 | 32.3 | 6.2 | 31.8 | - | 49.0 | 110.8 | 61.8 | |
| Vert. | 5875.000 | PK | 42.2 | 32.3 | 6.3 | 31.8 | - | 49.0 | 105.2 | 56.3 | |
| Vert. | 5925.000 | PK | 42.1 | 32.4 | 6.3 | 31.9 | - | 48.9 | 68.2 | 19.3 | |
| Vert. | 11650.000 | PK | 46.6 | 39.2 | -1.8 | 33.4 | - | 50.6 | 73.9 | 23.3 | |
| Vert. | 17475.000 | PK | 42.5 | 44.6 | -0.1 | 32.7 | - | 54.3 | 68.2 | 13.9 | Floor noise |
| Vert. | 5850.000 | AV | 33.4 | 32.3 | 6.2 | 31.8 | 2.0 | 42.1 | 53.9 | 11.8 | |
| Vert. | 5855.000 | AV | 33.4 | 32.3 | 6.2 | 31.8 | 2.0 | 42.1 | 53.9 | 11.8 | |
| Vert. | 5875.000 | AV | 34.1 | 32.3 | 6.3 | 31.8 | 2.0 | 42.8 | 53.9 | 11.1 | |
| Vert. | 5925.000 | AV | 32.4 | 32.4 | 6.3 | 31.9 | 2.0 | 41.2 | 53.9 | 12.7 | |
| Vert. | 11650.000 | AV | 39.9 | 39.2 | -1.8 | 33.4 | 2.0 | 45.8 | 53.9 | 8.1 | |

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

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

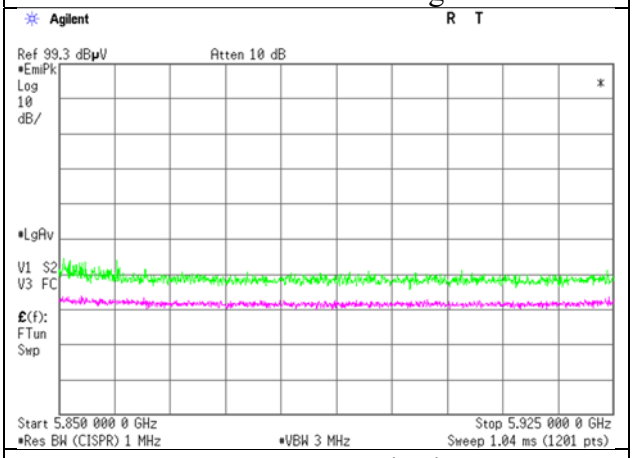
Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11a 5825 MHz |

Horizontal

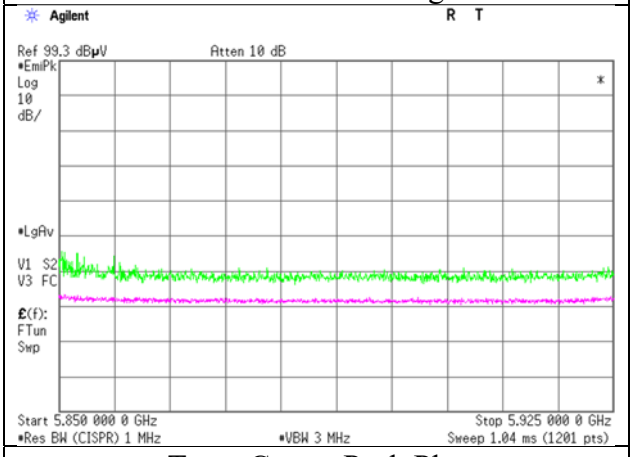
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| | (Band edge) |
| Mode | Tx 11n-20 5180 MHz |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5150.000 | PK | 46.9 | 32.0 | 6.0 | 31.6 | - | 53.2 | 73.9 | 20.7 | |
| Hori. | 5150.000 | AV | 32.2 | 32.0 | 6.0 | 31.6 | 2.3 | 40.8 | 53.9 | 13.1 | *1) |
| Vert. | 5150.000 | PK | 46.6 | 32.0 | 6.0 | 31.6 | - | 52.9 | 73.9 | 21.0 | |
| Vert. | 5150.000 | AV | 32.4 | 32.0 | 6.0 | 31.6 | 2.3 | 41.0 | 53.9 | 12.9 | *1) |

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

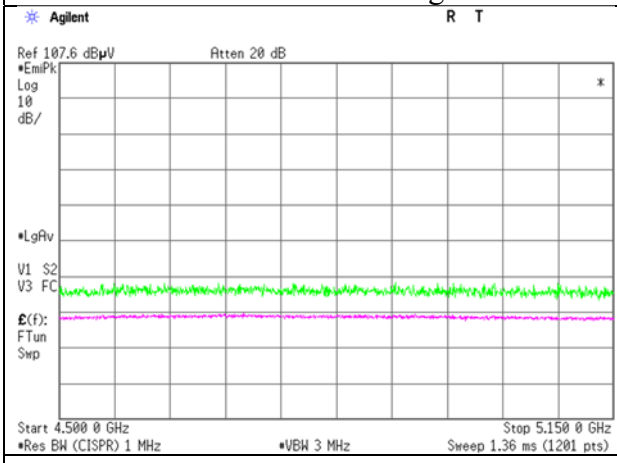
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-20 5180 MHz |

Horizontal

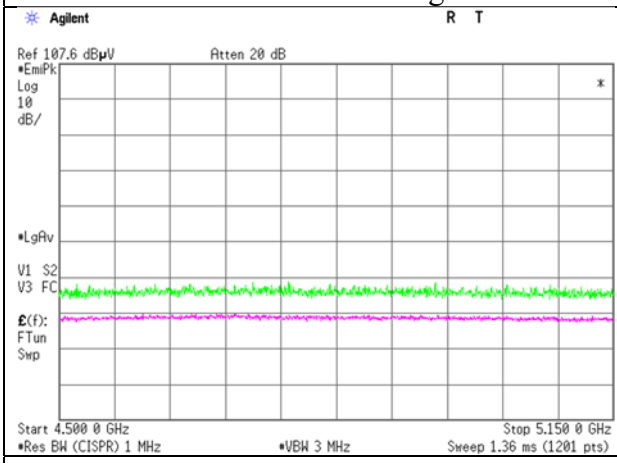
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| | (Band edge) |
| Mode | Tx 11n-20 5320 MHz |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5350.000 | PK | 46.9 | 31.5 | 6.1 | 31.7 | - | 52.8 | 73.9 | 21.1 | |
| Hori. | 5350.000 | AV | 33.1 | 31.5 | 6.1 | 31.7 | 2.3 | 41.3 | 53.9 | 12.6 | *1) |
| Vert. | 5350.000 | PK | 44.3 | 31.5 | 6.1 | 31.7 | - | 50.2 | 73.9 | 23.7 | |
| Vert. | 5350.000 | AV | 31.1 | 31.5 | 6.1 | 31.7 | 2.3 | 39.3 | 53.9 | 14.6 | *1) |

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

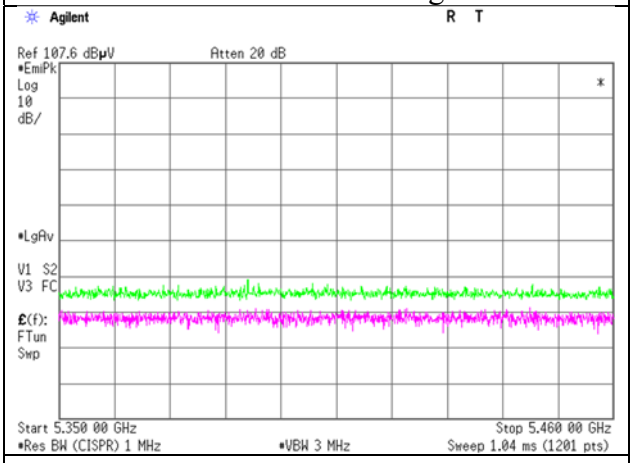
*1) Not Out of Band emission(Leakage Power)

# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-20 5320 MHz |

Horizontal

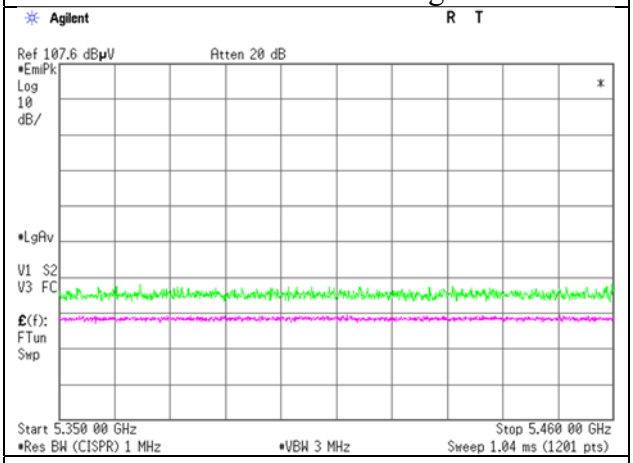
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| | (Band edge) |
| Mode | Tx 11n-20 5500 MHz |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5460.000 | PK | 46.9 | 31.7 | 6.1 | 31.7 | - | 53.0 | 73.9 | 20.9 | |
| Hori. | 5470.000 | PK | 46.3 | 31.7 | 6.1 | 31.7 | - | 52.4 | 73.9 | 21.5 | |
| Hori. | 5460.000 | AV | 33.1 | 31.7 | 6.1 | 31.7 | 2.3 | 41.5 | 53.9 | 12.4 | *1) |
| Hori. | 5470.000 | AV | 32.7 | 31.7 | 6.1 | 31.7 | 2.3 | 41.1 | 53.9 | 12.8 | *1) |
| Vert. | 5460.000 | PK | 44.9 | 31.7 | 6.1 | 31.7 | - | 51.0 | 73.9 | 22.9 | |
| Vert. | 5470.000 | PK | 44.1 | 31.7 | 6.1 | 31.7 | - | 50.2 | 73.9 | 23.7 | |
| Vert. | 5460.000 | AV | 32.7 | 31.7 | 6.1 | 31.7 | 2.3 | 41.1 | 53.9 | 12.8 | *1) |
| Vert. | 5470.000 | AV | 32.0 | 31.7 | 6.1 | 31.7 | 2.3 | 40.4 | 53.9 | 13.5 | *1) |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

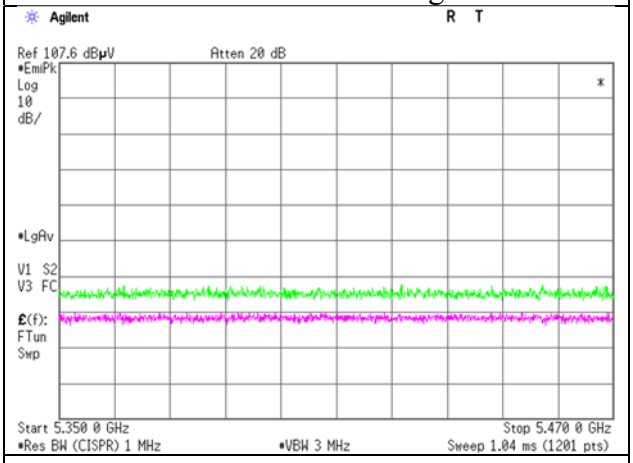
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-20 5500 MHz |

Horizontal

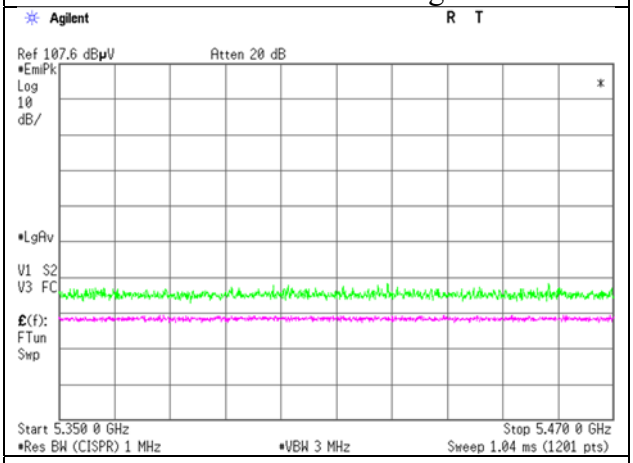
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| | (Band edge) |
| Mode | Tx 11n-20 5700 MHz |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5725.000 | PK | 46.3 | 32.0 | 6.2 | 31.8 | - | 52.7 | 122.2 | 69.6 | |
| Hori. | 5725.000 | AV | 34.2 | 32.0 | 6.2 | 31.8 | 2.3 | 42.9 | 53.9 | 11.0 | *1) |
| Vert. | 5725.000 | PK | 48.4 | 32.0 | 6.2 | 31.8 | - | 54.8 | 122.2 | 67.5 | |
| Vert. | 5725.000 | AV | 34.6 | 32.0 | 6.2 | 31.8 | 2.3 | 43.3 | 53.9 | 10.6 | *1) |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

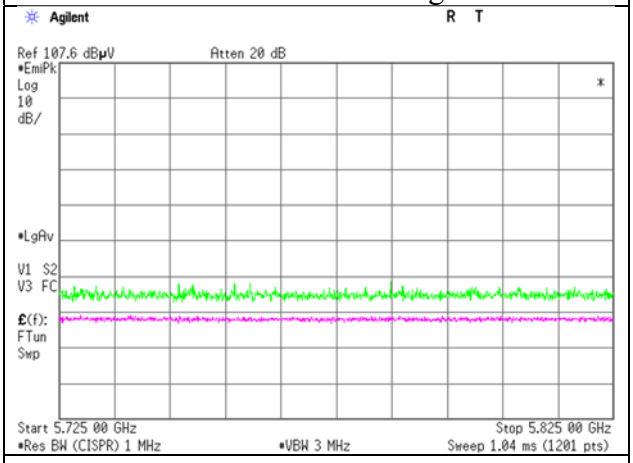
*1) Not Out of Band emission(Leakage Power)

# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-20 5700 MHz |

Horizontal

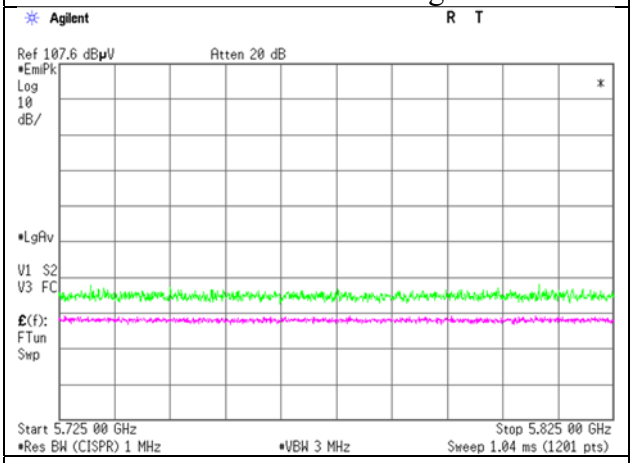
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| | (Band edge) |
| Mode | Tx 11n-20 5745 MHz |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5650.000 | PK | 44.8 | 31.7 | 6.2 | 31.8 | - | 50.8 | 68.2 | 17.4 | |
| Hori. | 5700.000 | PK | 44.1 | 31.8 | 6.2 | 31.8 | - | 50.3 | 105.2 | 54.9 | |
| Hori. | 5720.000 | PK | 44.4 | 31.9 | 6.2 | 31.8 | - | 50.7 | 110.8 | 60.1 | |
| Hori. | 5725.000 | PK | 44.4 | 32.0 | 6.2 | 31.8 | - | 50.8 | 122.2 | 71.5 | |
| Hori. | 5650.000 | AV | 33.1 | 31.7 | 6.2 | 31.8 | 2.3 | 41.5 | 53.9 | 12.4 | |
| Hori. | 5700.000 | AV | 33.4 | 31.8 | 6.2 | 31.8 | 2.3 | 41.9 | 53.9 | 12.0 | |
| Hori. | 5720.000 | AV | 32.7 | 31.9 | 6.2 | 31.8 | 2.3 | 41.4 | 53.9 | 12.5 | |
| Hori. | 5725.000 | AV | 33.0 | 32.0 | 6.2 | 31.8 | 2.3 | 41.7 | 53.9 | 12.2 | *1) |
| Vert. | 5650.000 | PK | 43.8 | 31.7 | 6.2 | 31.8 | - | 49.8 | 68.2 | 18.4 | |
| Vert. | 5700.000 | PK | 43.6 | 31.8 | 6.2 | 31.8 | - | 49.8 | 105.2 | 55.4 | |
| Vert. | 5720.000 | PK | 43.7 | 31.9 | 6.2 | 31.8 | - | 50.0 | 110.8 | 60.8 | |
| Vert. | 5725.000 | PK | 44.2 | 32.0 | 6.2 | 31.8 | - | 50.6 | 122.2 | 71.7 | |
| Vert. | 5650.000 | AV | 32.8 | 31.7 | 6.2 | 31.8 | 2.3 | 41.2 | 53.9 | 12.7 | |
| Vert. | 5700.000 | AV | 32.9 | 31.8 | 6.2 | 31.8 | 2.3 | 41.4 | 53.9 | 12.5 | |
| Vert. | 5720.000 | AV | 32.7 | 31.9 | 6.2 | 31.8 | 2.3 | 41.4 | 53.9 | 12.5 | |
| Vert. | 5725.000 | AV | 33.3 | 32.0 | 6.2 | 31.8 | 2.3 | 42.0 | 53.9 | 11.9 | *1) |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

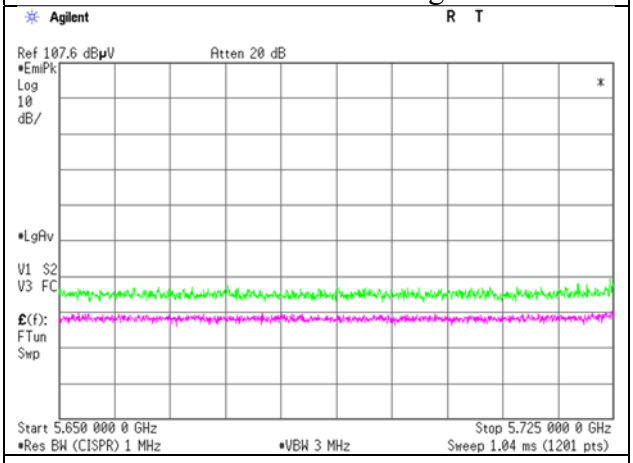
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-20 5745 MHz |

Horizontal

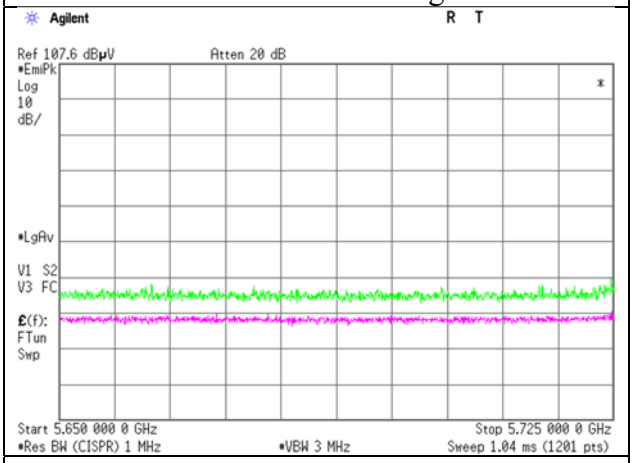
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| | (Band edge) |
| Mode | Tx 11n-20 5825 MHz |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5850.000 | PK | 43.1 | 32.3 | 6.2 | 31.8 | - | 49.8 | 122.2 | 72.4 | |
| Hori. | 5855.000 | PK | 42.2 | 32.3 | 6.2 | 31.8 | - | 48.9 | 110.8 | 61.9 | |
| Hori. | 5875.000 | PK | 42.6 | 32.3 | 6.3 | 31.8 | - | 49.4 | 105.2 | 55.9 | |
| Hori. | 5925.000 | PK | 42.8 | 32.4 | 6.3 | 31.9 | - | 49.6 | 68.2 | 18.6 | |
| Hori. | 5850.000 | AV | 33.9 | 32.3 | 6.2 | 31.8 | 2.3 | 42.9 | 53.9 | 11.0 | |
| Hori. | 5855.000 | AV | 34.1 | 32.3 | 6.2 | 31.8 | 2.3 | 43.2 | 53.9 | 10.8 | |
| Hori. | 5875.000 | AV | 33.6 | 32.3 | 6.3 | 31.8 | 2.3 | 42.7 | 53.9 | 11.2 | |
| Hori. | 5925.000 | AV | 33.0 | 32.4 | 6.3 | 31.9 | 2.3 | 42.1 | 53.9 | 11.8 | |
| Vert. | 5850.000 | PK | 43.1 | 32.3 | 6.2 | 31.8 | - | 49.8 | 122.2 | 72.4 | |
| Vert. | 5855.000 | PK | 43.0 | 32.3 | 6.2 | 31.8 | - | 49.7 | 110.8 | 61.1 | |
| Vert. | 5875.000 | PK | 42.7 | 32.3 | 6.3 | 31.8 | - | 49.5 | 105.2 | 55.8 | |
| Vert. | 5925.000 | PK | 42.3 | 32.4 | 6.3 | 31.9 | - | 49.1 | 68.2 | 19.1 | |
| Vert. | 5850.000 | AV | 33.2 | 32.3 | 6.2 | 31.8 | 2.3 | 42.2 | 53.9 | 11.7 | |
| Vert. | 5855.000 | AV | 33.6 | 32.3 | 6.2 | 31.8 | 2.3 | 42.7 | 53.9 | 11.3 | |
| Vert. | 5875.000 | AV | 34.1 | 32.3 | 6.3 | 31.8 | 2.3 | 43.2 | 53.9 | 10.7 | |
| Vert. | 5925.000 | AV | 33.3 | 32.4 | 6.3 | 31.9 | 2.3 | 42.4 | 53.9 | 11.5 | |

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

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

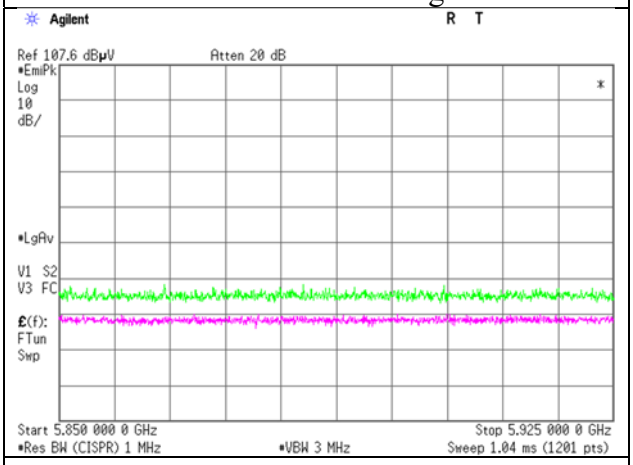
Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-20 5825 MHz |

Horizontal

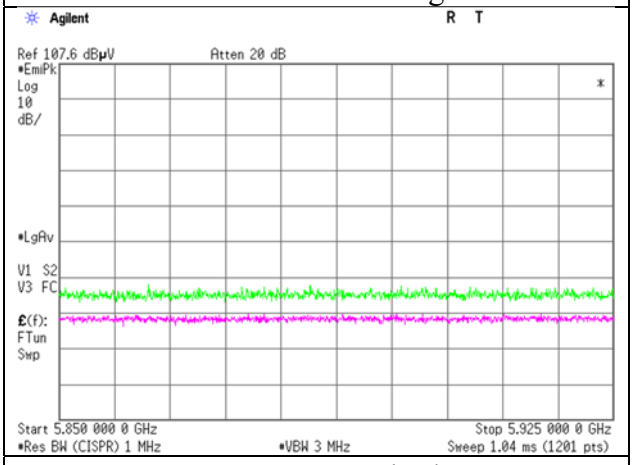
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n-40 5190 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5150.000 | PK | 46.7 | 32.0 | 6.0 | 31.6 | - | 53.0 | 73.9 | 20.9 | |
| Hori. | 10380.000 | PK | 45.4 | 40.0 | -2.5 | 33.5 | - | 49.4 | 68.2 | 18.8 | |
| Hori. | 15570.000 | PK | 43.2 | 37.2 | 0.0 | 32.5 | - | 48.0 | 73.9 | 25.9 | Floor noise |
| Hori. | 20760.000 | PK | 46.0 | 37.9 | -1.5 | 33.2 | - | 49.2 | 73.9 | 24.7 | Floor noise |
| Hori. | 5150.000 | AV | 33.5 | 32.0 | 6.0 | 31.6 | 3.6 | 43.4 | 53.9 | 10.5 | *1) |
| Hori. | 15570.000 | AV | 36.0 | 37.2 | 0.0 | 32.5 | - | 40.8 | 53.9 | 13.1 | Floor noise |
| Hori. | 20760.000 | AV | 36.7 | 37.9 | -1.5 | 33.2 | - | 39.8 | 53.9 | 14.1 | Floor noise |
| Vert. | 5150.000 | PK | 45.8 | 32.0 | 6.0 | 31.6 | - | 52.1 | 73.9 | 21.8 | |
| Vert. | 10380.000 | PK | 49.3 | 40.0 | -2.5 | 33.5 | - | 53.2 | 68.2 | 15.0 | |
| Vert. | 15570.000 | PK | 43.9 | 37.2 | 0.0 | 32.5 | - | 48.7 | 73.9 | 25.2 | Floor noise |
| Vert. | 20760.000 | PK | 47.0 | 37.9 | -1.5 | 33.2 | - | 50.2 | 73.9 | 23.7 | Floor noise |
| Vert. | 5150.000 | AV | 33.1 | 32.0 | 6.0 | 31.6 | 3.6 | 43.0 | 53.9 | 10.9 | *1) |
| Vert. | 15570.000 | AV | 36.0 | 37.2 | 0.0 | 32.5 | - | 40.8 | 53.9 | 13.1 | Floor noise |
| Vert. | 20760.000 | AV | 36.0 | 37.9 | -1.5 | 33.2 | - | 39.2 | 53.9 | 14.7 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

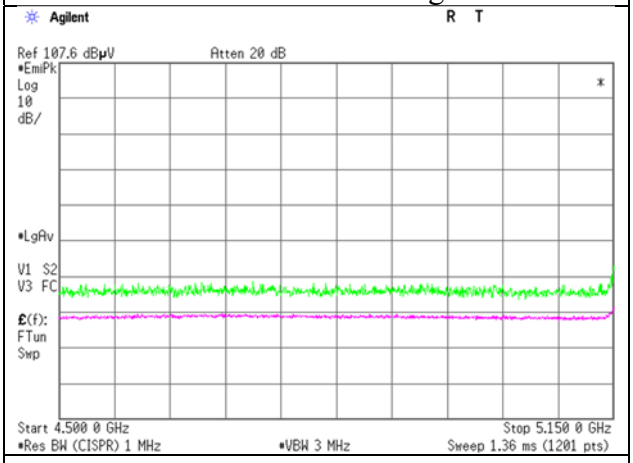
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-40 5190 MHz |

Horizontal

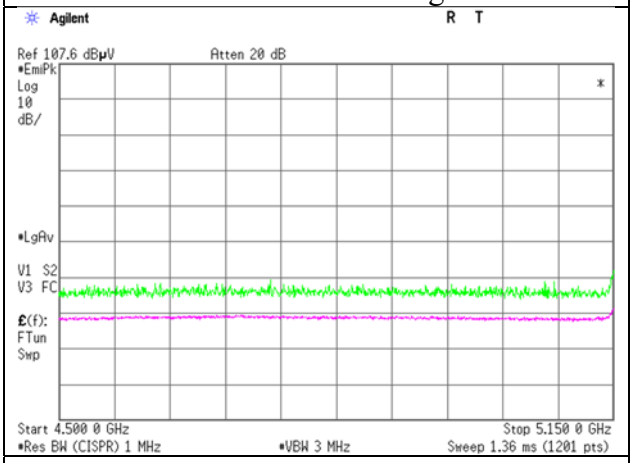
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n-40 5270 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 10540.000 | PK | 45.6 | 39.9 | -2.5 | 33.6 | - | 49.5 | 68.2 | 18.7 | |
| Hori. | 15810.000 | PK | 42.6 | 36.8 | 0.2 | 32.7 | - | 46.9 | 73.9 | 27.0 | Floor noise |
| Hori. | 21080.000 | PK | 46.2 | 38.0 | -1.4 | 33.2 | - | 49.6 | 73.9 | 24.3 | Floor noise |
| Hori. | 15810.000 | AV | 35.4 | 36.8 | 0.2 | 32.7 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Hori. | 21080.000 | AV | 36.7 | 38.0 | -1.4 | 33.2 | - | 40.1 | 53.9 | 13.8 | Floor noise |
| Vert. | 10540.000 | PK | 46.0 | 39.9 | -2.5 | 33.6 | - | 49.9 | 68.2 | 18.3 | |
| Vert. | 15810.000 | PK | 42.7 | 36.8 | 0.2 | 32.7 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Vert. | 21080.000 | PK | 47.3 | 38.0 | -1.4 | 33.2 | - | 50.7 | 73.9 | 23.2 | Floor noise |
| Vert. | 15810.000 | AV | 35.4 | 36.8 | 0.2 | 32.7 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Vert. | 21080.000 | AV | 36.3 | 38.0 | -1.4 | 33.2 | - | 39.7 | 53.9 | 14.2 | Floor noise |

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n-40 5310 MHz | | |

| Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|
| 5350.000 | PK | 45.6 | 31.5 | 6.0 | 31.7 | - | 51.4 | 73.9 | 22.5 | |
| 10620.000 | PK | 45.1 | 39.9 | -2.4 | 33.6 | - | 49.0 | 73.9 | 25.0 | |
| 15930.000 | PK | 42.1 | 37.3 | 0.3 | 32.7 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| 21240.000 | PK | 47.1 | 38.1 | -1.4 | 33.1 | - | 50.7 | 73.9 | 23.3 | Floor noise |
| 5350.000 | AV | 32.2 | 31.5 | 6.0 | 31.7 | 3.6 | 41.6 | 53.9 | 12.3 | *1) |
| 10620.000 | AV | 37.3 | 39.9 | -2.4 | 33.6 | 3.6 | 44.8 | 53.9 | 9.1 | |
| 15930.000 | AV | 35.2 | 37.3 | 0.3 | 32.7 | - | 40.1 | 53.9 | 13.8 | Floor noise |
| 21240.000 | AV | 35.9 | 38.1 | -1.4 | 33.1 | - | 39.5 | 53.9 | 14.5 | Floor noise |
| 5350.000 | PK | 45.2 | 31.5 | 6.0 | 31.7 | - | 51.0 | 73.9 | 22.9 | |
| 10620.000 | PK | 44.9 | 39.9 | -2.4 | 33.6 | - | 48.8 | 73.9 | 25.1 | |
| 15930.000 | PK | 42.1 | 37.3 | 0.3 | 32.7 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| 21240.000 | PK | 47.3 | 38.1 | -1.4 | 33.1 | - | 50.9 | 73.9 | 23.1 | Floor noise |
| 5350.000 | AV | 32.4 | 31.5 | 6.0 | 31.7 | 3.6 | 41.8 | 53.9 | 12.1 | *1) |
| 10620.000 | AV | 38.7 | 39.9 | -2.4 | 33.6 | 3.6 | 46.2 | 53.9 | 7.7 | |
| 15930.000 | AV | 35.3 | 37.3 | 0.3 | 32.7 | - | 40.2 | 53.9 | 13.7 | Floor noise |
| 21240.000 | AV | 36.1 | 38.1 | -1.4 | 33.1 | - | 39.7 | 53.9 | 14.3 | Floor noise |

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

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

Factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

ut of Band emission(Leakage Power)

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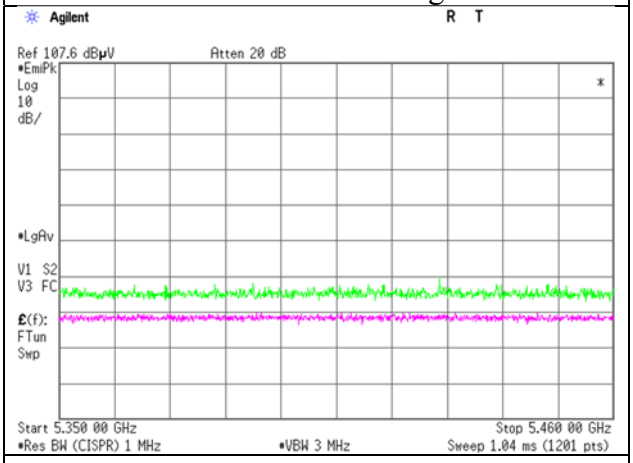
# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-40 5310 MHz |

Horizontal

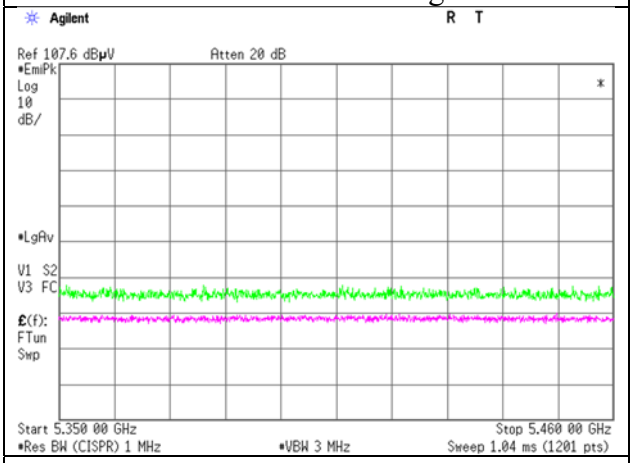
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n40 5510 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5460.000 | PK | 43.0 | 31.7 | 6.1 | 31.7 | - | 49.1 | 73.9 | 24.8 | |
| Hori. | 5470.000 | PK | 42.8 | 31.7 | 6.1 | 31.7 | - | 48.9 | 73.9 | 25.0 | |
| Hori. | 11020.000 | PK | 45.8 | 40.0 | -2.3 | 33.6 | - | 49.9 | 73.9 | 24.0 | |
| Hori. | 16530.000 | PK | 43.3 | 39.6 | 0.0 | 32.7 | - | 50.2 | 68.2 | 18.1 | Floor noise |
| Hori. | 22040.000 | PK | 48.0 | 38.1 | -1.4 | 32.4 | - | 52.2 | 73.9 | 21.7 | Floor noise |
| Hori. | 5460.000 | AV | 33.1 | 31.7 | 6.1 | 31.7 | 3.6 | 42.8 | 53.9 | 11.1 | *1) |
| Hori. | 5470.000 | AV | 33.2 | 31.7 | 6.1 | 31.7 | 3.6 | 42.9 | 53.9 | 11.0 | *1) |
| Hori. | 11020.000 | AV | 38.8 | 40.0 | -2.3 | 33.6 | 3.6 | 46.5 | 53.9 | 7.4 | |
| Hori. | 22040.000 | AV | 37.7 | 38.1 | -1.4 | 32.4 | - | 41.9 | 53.9 | 12.0 | Floor noise |
| Vert. | 5460.000 | PK | 43.2 | 31.7 | 6.1 | 31.7 | - | 49.3 | 73.9 | 24.6 | |
| Vert. | 5470.000 | PK | 42.6 | 31.7 | 6.1 | 31.7 | - | 48.7 | 73.9 | 25.2 | |
| Vert. | 11020.000 | PK | 45.9 | 40.0 | -2.3 | 33.6 | - | 50.0 | 73.9 | 23.9 | |
| Vert. | 16530.000 | PK | 43.3 | 39.6 | 0.0 | 32.7 | - | 50.2 | 68.2 | 18.1 | Floor noise |
| Vert. | 22040.000 | PK | 47.2 | 38.1 | -1.4 | 32.4 | - | 51.4 | 73.9 | 22.5 | Floor noise |
| Vert. | 5460.000 | AV | 33.3 | 31.7 | 6.1 | 31.7 | 3.6 | 43.0 | 53.9 | 10.9 | *1) |
| Vert. | 5470.000 | AV | 33.1 | 31.7 | 6.1 | 31.7 | 3.6 | 42.8 | 53.9 | 11.1 | *1) |
| Vert. | 11020.000 | AV | 40.2 | 40.0 | -2.3 | 33.6 | 3.6 | 47.8 | 53.9 | 6.1 | |
| Vert. | 22040.000 | AV | 38.1 | 38.1 | -1.4 | 32.4 | - | 42.3 | 53.9 | 11.6 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

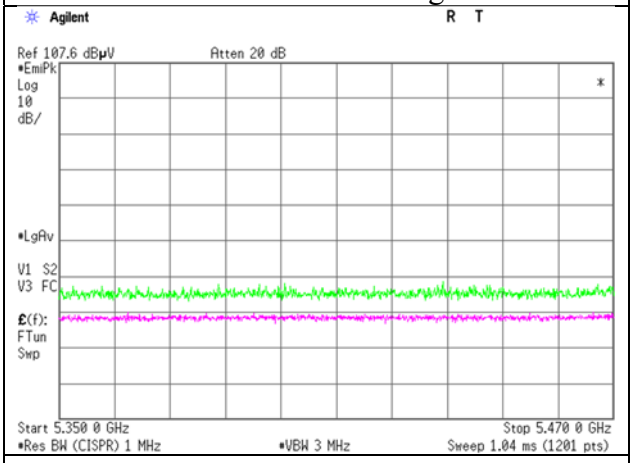
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-40 5510 MHz |

Horizontal

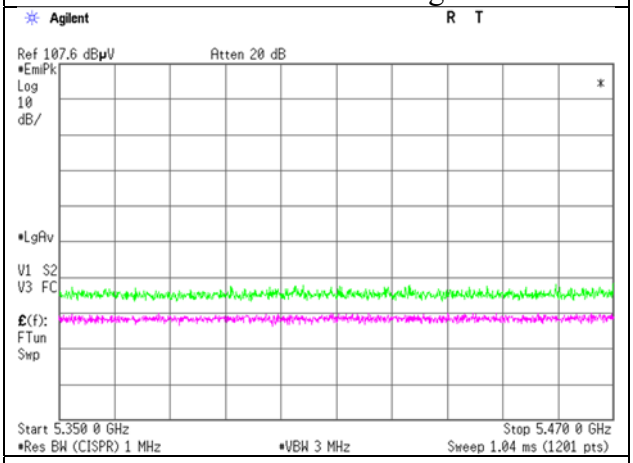
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n40 5550 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 11100.000 | PK | 44.2 | 39.6 | -2.2 | 33.6 | - | 48.0 | 73.9 | 26.0 | |
| Hori. | 16650.000 | PK | 42.4 | 40.2 | -0.1 | 32.7 | - | 49.8 | 68.2 | 18.4 | Floor noise |
| Hori. | 22200.000 | PK | 45.1 | 38.1 | -1.4 | 32.4 | - | 49.4 | 73.9 | 24.5 | Floor noise |
| Hori. | 11100.000 | AV | 37.3 | 39.6 | -2.2 | 33.6 | 3.6 | 44.7 | 53.9 | 9.2 | |
| Hori. | 22200.000 | AV | 35.9 | 38.1 | -1.4 | 32.4 | - | 40.2 | 53.9 | 13.7 | Floor noise |
| Vert. | 11100.000 | PK | 45.7 | 39.6 | -2.2 | 33.6 | - | 49.5 | 73.9 | 24.4 | |
| Vert. | 16650.000 | PK | 42.4 | 40.2 | -0.1 | 32.7 | - | 49.8 | 68.2 | 18.4 | Floor noise |
| Vert. | 22200.000 | PK | 44.7 | 38.1 | -1.4 | 32.4 | - | 49.0 | 73.9 | 24.9 | Floor noise |
| Vert. | 11100.000 | AV | 38.6 | 39.6 | -2.2 | 33.6 | 3.6 | 46.0 | 53.9 | 7.9 | |
| Vert. | 22200.000 | AV | 36.1 | 38.1 | -1.4 | 32.4 | - | 40.4 | 53.9 | 13.5 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

# Radiated Spurious Emission

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n-40 5670 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5725.000 | PK | 44.6 | 32.0 | 6.2 | 31.8 | - | 51.0 | 122.2 | 71.3 | |
| Hori. | 11340.000 | PK | 45.0 | 39.8 | -2.1 | 33.5 | - | 49.3 | 73.9 | 24.6 | |
| Hori. | 17010.000 | PK | 42.2 | 41.7 | -0.3 | 32.6 | - | 51.0 | 68.2 | 17.3 | Floor noise |
| Hori. | 22680.000 | PK | 45.6 | 38.3 | -1.3 | 32.3 | - | 50.3 | 73.9 | 23.6 | Floor noise |
| Hori. | 5725.000 | AV | 32.2 | 32.0 | 6.2 | 31.8 | 3.6 | 42.2 | 53.9 | 11.7 | *1) |
| Hori. | 11340.000 | AV | 36.8 | 39.8 | -2.1 | 33.5 | 3.6 | 44.6 | 53.9 | 9.3 | |
| Hori. | 22680.000 | AV | 36.4 | 38.3 | -1.3 | 32.3 | - | 41.1 | 53.9 | 12.8 | Floor noise |
| Vert. | 5725.000 | PK | 41.4 | 32.0 | 6.2 | 31.8 | - | 47.7 | 122.2 | 74.5 | |
| Vert. | 11340.000 | PK | 44.3 | 39.8 | -2.1 | 33.5 | - | 48.5 | 73.9 | 25.4 | |
| Vert. | 17010.000 | PK | 42.2 | 41.7 | -0.3 | 32.6 | - | 50.9 | 68.2 | 17.3 | Floor noise |
| Vert. | 22680.000 | PK | 45.7 | 38.3 | -1.3 | 32.3 | - | 50.4 | 73.9 | 23.5 | Floor noise |
| Vert. | 5725.000 | AV | 32.3 | 32.0 | 6.2 | 31.8 | 3.6 | 42.3 | 53.9 | 11.6 | *1) |
| Vert. | 11340.000 | AV | 37.0 | 39.8 | -2.1 | 33.5 | 3.6 | 44.9 | 53.9 | 9.1 | |
| Vert. | 22680.000 | AV | 36.7 | 38.3 | -1.3 | 32.3 | - | 41.4 | 53.9 | 12.5 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

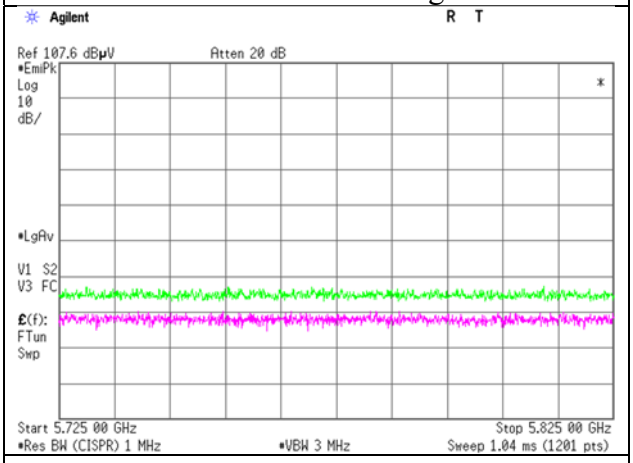
*1) Not Out of Band emission(Leakage Power)

# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-40 5670 MHz |

Horizontal

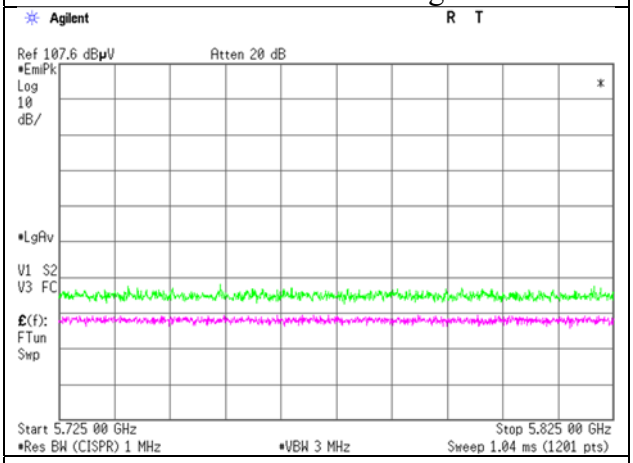
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n-40 5755 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5650.000 | PK | 42.2 | 31.7 | 6.2 | 31.8 | - | 48.2 | 68.2 | 20.0 | |
| Hori. | 5700.000 | PK | 41.8 | 31.8 | 6.2 | 31.8 | - | 48.0 | 105.2 | 57.2 | |
| Hori. | 5720.000 | PK | 42.0 | 31.9 | 6.2 | 31.8 | - | 48.3 | 110.8 | 62.5 | |
| Hori. | 5725.000 | PK | 41.1 | 32.0 | 6.2 | 31.8 | - | 47.5 | 122.2 | 74.8 | |
| Hori. | 11510.000 | PK | 43.8 | 39.6 | -1.9 | 33.5 | - | 48.1 | 73.9 | 25.8 | |
| Hori. | 17265.000 | PK | 42.5 | 42.8 | -0.2 | 32.7 | - | 52.5 | 68.2 | 15.7 | Floor noise |
| Hori. | 23020.000 | PK | 45.9 | 38.5 | -1.2 | 32.3 | - | 50.9 | 73.9 | 23.0 | Floor noise |
| Hori. | 5650.000 | AV | 32.2 | 31.7 | 6.2 | 31.8 | 3.6 | 41.9 | 53.9 | 12.1 | |
| Hori. | 5700.000 | AV | 33.1 | 31.8 | 6.2 | 31.8 | 3.6 | 42.9 | 53.9 | 11.0 | |
| Hori. | 5720.000 | AV | 31.9 | 31.9 | 6.2 | 31.8 | 3.6 | 41.8 | 53.9 | 12.1 | |
| Hori. | 5725.000 | AV | 32.2 | 32.0 | 6.2 | 31.8 | 3.6 | 42.2 | 53.9 | 11.7 | *1) |
| Hori. | 11510.000 | AV | 36.4 | 39.6 | -1.9 | 33.5 | 3.6 | 44.3 | 53.9 | 9.6 | |
| Hori. | 23020.000 | AV | 37.2 | 38.5 | -1.2 | 32.3 | - | 42.2 | 53.9 | 11.7 | Floor noise |
| Vert. | 5650.000 | PK | 42.3 | 31.7 | 6.2 | 31.8 | - | 48.3 | 68.2 | 19.9 | |
| Vert. | 5700.000 | PK | 42.1 | 31.8 | 6.2 | 31.8 | - | 48.3 | 105.2 | 56.9 | |
| Vert. | 5720.000 | PK | 42.0 | 31.9 | 6.2 | 31.8 | - | 48.3 | 110.8 | 62.5 | |
| Vert. | 5725.000 | PK | 41.8 | 32.0 | 6.2 | 31.8 | - | 48.2 | 122.2 | 74.1 | |
| Vert. | 11510.000 | PK | 45.9 | 39.6 | -1.9 | 33.5 | - | 50.1 | 73.9 | 23.8 | |
| Vert. | 17265.000 | PK | 42.5 | 42.8 | -0.2 | 32.7 | - | 52.5 | 68.2 | 15.7 | Floor noise |
| Vert. | 23020.000 | PK | 45.4 | 38.5 | -1.2 | 32.3 | - | 50.4 | 73.9 | 23.5 | Floor noise |
| Vert. | 5650.000 | AV | 32.3 | 31.7 | 6.2 | 31.8 | 3.6 | 42.0 | 53.9 | 12.0 | |
| Vert. | 5700.000 | AV | 33.0 | 31.8 | 6.2 | 31.8 | 3.6 | 42.8 | 53.9 | 11.1 | |
| Vert. | 5720.000 | AV | 32.0 | 31.9 | 6.2 | 31.8 | 3.6 | 41.9 | 53.9 | 12.0 | |
| Vert. | 5725.000 | AV | 32.1 | 32.0 | 6.2 | 31.8 | 3.6 | 42.1 | 53.9 | 11.8 | *1) |
| Vert. | 11510.000 | AV | 40.0 | 39.6 | -1.9 | 33.5 | 3.6 | 47.9 | 53.9 | 6.0 | |
| Vert. | 23020.000 | AV | 37.1 | 38.5 | -1.2 | 32.3 | - | 42.1 | 53.9 | 11.8 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

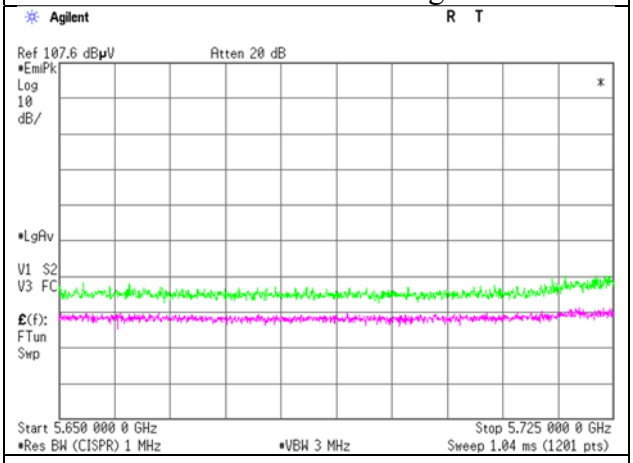
*1) Not Out of Band emission(Leakage Power)

## Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n-40 5755 MHz |

Horizontal

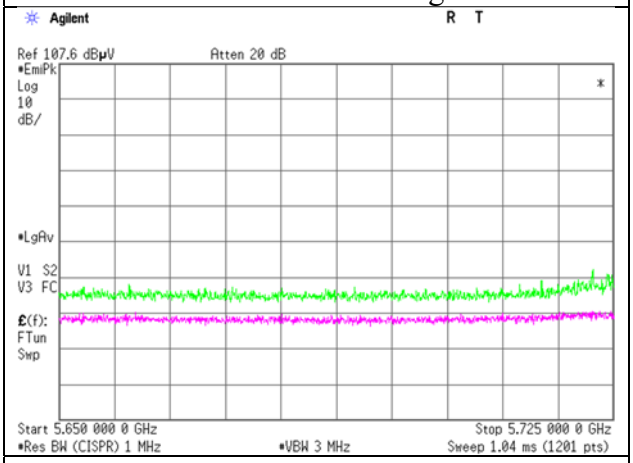
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

* 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

| | | | |
|---|---|---|---|
| Report No. | 13665469H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita | Yuta Moriya | Ken Fujita |
| | (1 GHz - 10 GHz) | (10 GHz - 18 GHz) | (18 GHz - 40 GHz) |
| Mode | Tx 11n-40 5795 MHz | | |

| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hori. | 5650.000 | PK | 41.5 | 31.7 | 6.2 | 31.8 | - | 47.5 | 68.2 | 20.7 | |
| Hori. | 5700.000 | PK | 41.4 | 31.8 | 6.2 | 31.8 | - | 47.6 | 105.2 | 57.6 | |
| Hori. | 5720.000 | PK | 41.1 | 31.9 | 6.2 | 31.8 | - | 47.4 | 110.8 | 63.4 | |
| Hori. | 5725.000 | PK | 41.2 | 32.0 | 6.2 | 31.8 | - | 47.6 | 122.2 | 74.7 | |
| Hori. | 11590.000 | PK | 45.5 | 39.2 | -1.9 | 33.4 | - | 49.4 | 73.9 | 24.5 | |
| Hori. | 17385.000 | PK | 42.3 | 44.2 | -0.1 | 32.7 | - | 53.7 | 68.2 | 14.5 | Floor noise |
| Hori. | 23180.000 | PK | 47.0 | 38.6 | -1.2 | 32.2 | - | 52.2 | 73.9 | 21.7 | Floor noise |
| Hori. | 5650.000 | AV | 31.1 | 31.7 | 6.2 | 31.8 | 3.6 | 40.8 | 53.9 | 13.2 | |
| Hori. | 5700.000 | AV | 31.5 | 31.8 | 6.2 | 31.8 | 3.6 | 41.3 | 53.9 | 12.6 | |
| Hori. | 5720.000 | AV | 31.9 | 31.9 | 6.2 | 31.8 | 3.6 | 41.8 | 53.9 | 12.1 | |
| Hori. | 5725.000 | AV | 32.0 | 32.0 | 6.2 | 31.8 | 3.6 | 42.0 | 53.9 | 11.9 | *1) |
| Hori. | 11590.000 | AV | 37.9 | 39.2 | -1.9 | 33.4 | 3.6 | 45.4 | 53.9 | 8.5 | |
| Hori. | 23180.000 | AV | 36.9 | 38.6 | -1.2 | 32.2 | - | 42.1 | 53.9 | 11.8 | Floor noise |
| Vert. | 5650.000 | PK | 41.4 | 31.7 | 6.2 | 31.8 | - | 47.4 | 68.2 | 20.8 | |
| Vert. | 5700.000 | PK | 41.3 | 31.8 | 6.2 | 31.8 | - | 47.5 | 105.2 | 57.7 | |
| Vert. | 5720.000 | PK | 41.7 | 31.9 | 6.2 | 31.8 | - | 48.0 | 110.8 | 62.8 | |
| Vert. | 5725.000 | PK | 42.1 | 32.0 | 6.2 | 31.8 | - | 48.5 | 122.2 | 73.8 | |
| Vert. | 11590.000 | PK | 45.2 | 39.2 | -1.9 | 33.4 | - | 49.1 | 73.9 | 24.8 | |
| Vert. | 17385.000 | PK | 42.3 | 44.2 | -0.1 | 32.7 | - | 53.7 | 68.2 | 14.5 | Floor noise |
| Vert. | 23180.000 | PK | 46.3 | 38.6 | -1.2 | 32.2 | - | 51.5 | 73.9 | 22.4 | Floor noise |
| Vert. | 5650.000 | AV | 32.3 | 31.7 | 6.2 | 31.8 | 3.6 | 42.0 | 53.9 | 12.0 | |
| Vert. | 5700.000 | AV | 32.2 | 31.8 | 6.2 | 31.8 | 3.6 | 42.0 | 53.9 | 11.9 | |
| Vert. | 5720.000 | AV | 32.1 | 31.9 | 6.2 | 31.8 | 3.6 | 42.0 | 53.9 | 11.9 | |
| Vert. | 5725.000 | AV | 31.7 | 32.0 | 6.2 | 31.8 | 3.6 | 41.7 | 53.9 | 12.2 | *1) |
| Vert. | 11590.000 | AV | 38.9 | 39.2 | -1.9 | 33.4 | 3.6 | 46.4 | 53.9 | 7.5 | |
| Vert. | 23180.000 | AV | 37.2 | 38.6 | -1.2 | 32.2 | - | 42.4 | 53.9 | 11.5 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz 20log (3.9 m / 3.0 m) = 2.28 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

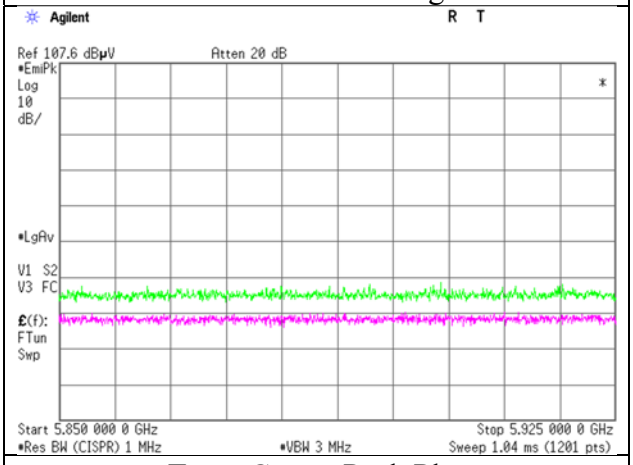
*1) Not Out of Band emission(Leakage Power)

# Radiated Spurious Emission

| | |
|---|---|
| Report No. | 13665469H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.3 |
| Date | February 18, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita |
| Mode | Tx 11n40 5795 MHz |

Horizontal

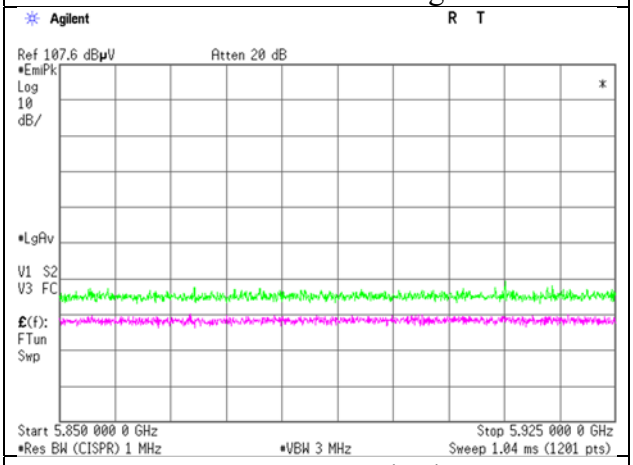
Restricted-band band-edge Plot




Trace Green: Peak Plot
Trace Purple: Average Plot

Vertical

Restricted-band band-edge Plot

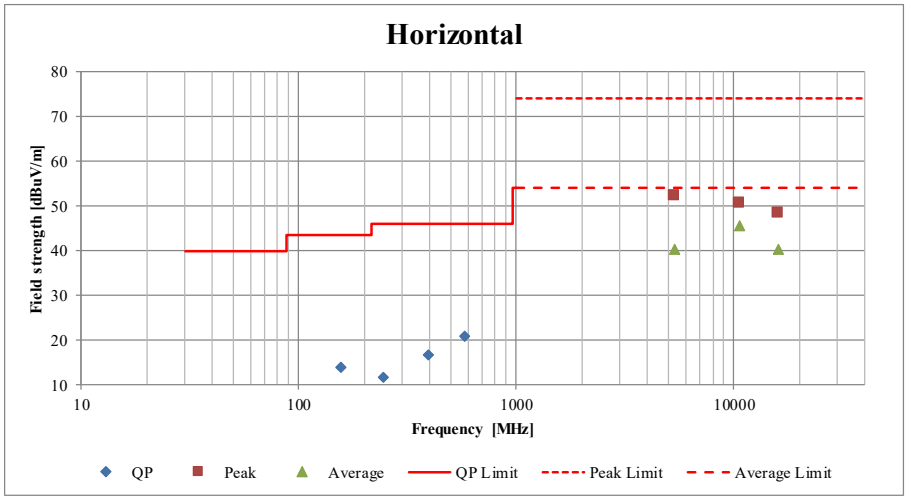


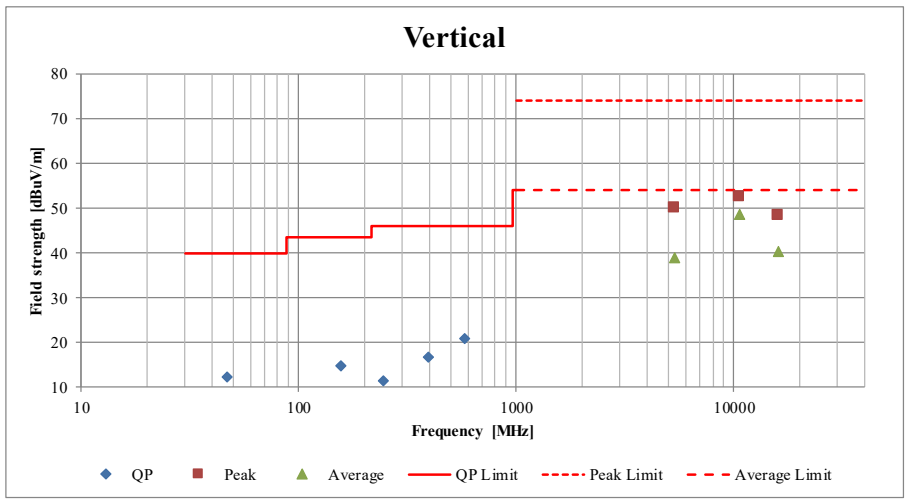

Trace Green: Peak Plot
Trace Purple: Average Plot

* 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)

| | | | | |
|---|---|---|---|---|
| Report No. | 13665469H | | | |
| Test place | Ise EMC Lab. | | | |
| Semi Anechoic Chamber | No.3 | No.3 | No.3 | No.3 |
| Date | February 18, 2021 | February 19, 2021 | February 19, 2021 | February 19, 2021 |
| Temperature / Humidity | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH | 21 deg. C / 32 % RH |
| Engineer | Ken Fujita (1 GHz - 10 GHz) | Yuta Moriya (10 GHz - 18 GHz) | Ken Fujita (18 GHz - 40 GHz) | Ken Fujita (Below 1 GHz) |
| Mode | Tx 11a 5320 MHz | | | |




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

# APPENDIX 2: Test instruments

**Test equipment**

| Test Item | Local ID | LIMS ID | Description | Manufacturer | Model | Serial | Last Calibration Date | Cal Int |
|---|---|---|---|---|---|---|---|---|
| AT | MCC-224 | 160324 | Coaxial Cable | Huber+Suhner | SUCOFLEX 102A | MY009/2A | 11/17/2020 | 12 |
| AT | MAT-57 | 141333 | Attenuator(10dB) | Suhner | 6810.19.A | - | 12/07/2020 | 12 |
| AT | MSA-10 | 141899 | Spectrum Analyzer | AGILENT | E4448A | MY46180655 | 08/04/2020 | 12 |
| AT | MPM-16 | 141812 | Power Meter | AGILENT | 8990B | MY51000271 | 08/20/2020 | 12 |
| AT | MPSE-22 | 141842 | Power sensor | AGILENT | N1923A | MY54070003 | 08/20/2020 | 12 |
| AT | MMM-16 | 141360 | DIGIITAL HiTESTER | HIOKI | 3805 | 70900532 | 01/07/2021 | 12 |
| AT | MOS-29 | 141568 | Thermo-Hygrometer | CUSTOM | CTH-201 | 2901 | 01/15/2021 | 12 |
| AT | MAT-21 | 141174 | Attenuator(20dB)(above1GHz) | HIROSE ELECTRIC CO.,LTD. | AT-120 | 901247 | 01/13/2021 | 12 |
| AT | MOS-41 | 192300 | Thermo-Hygrometer | CUSTOM. Inc | CTH-201 | 0013 | 12/06/2020 | 12 |
| RE | MAEC-03 | 142008 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-10005 | 05/22/2020 | 24 |
| RE | MOS-13 | 141554 | Thermo-Hygrometer | CUSTOM | CTH-180 | 1301 | 01/15/2021 | 12 |
| RE | MMM-08 | 141532 | DIGITAL HiTESTER | HIOKI | 3805 | 51201197 | 01/07/2021 | 12 |
| RE | MJM-16 | 142183 | Measure | KOMELON | KMC-36 | - | - | - |
| RE | COTS-MEMI-02 | 178648 | EMI measurement program | TSJ (Techno Science Japan) | TEPTO-DV | - | - | - |
| RE | MAT-95 | 142314 | Attenuator | Pasternack | PE7390-6 | D/C 1504 | 06/17/2020 | 12 |
| RE | MBA-03 | 141424 | Biconical Antenna | Schwarzbeck | BBA9106 | 1915 | 08/13/2020 | 12 |
| RE | MCC-51 | 141323 | Coaxial cable | UL Japan | - | - | 07/06/2020 | 12 |
| RE | MLA-22 | 141266 | Logperiodic Antenna (200-1000MHz) | Schwarzbeck | VUSLP9111B | 911B-191 | 08/13/2020 | 12 |
| RE | MPA-13 | 141582 | Pre Amplifier | SONOMA INSTRUMENT | 11/5/1900 | 260834 | 02/03/2021 | 12 |
| RE | MTR-10 | 141951 | EMI Test Receiver | Rohde & Schwarz | ESR26 | 101408 | 03/10/2020 | 12 |
| RE | MHA-20 | 141507 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 258 | 10/31/2020 | 12 |
| RE | MPA-11 | 141580 | MicroWave System Amplifier | AGILENT | 83017A | MY39500779 | 03/24/2020 | 12 |
| RE | MCC-231 | 177964 | Microwave Cable | Junkosha INC. | MMX221 | 1901S329(1m)/ 1902S579(5m) | 03/04/2021 | 12 |
| RE | MHA-16 | 141513 | Horn Antenna 15-40GHz | Schwarzbeck | BBHA9170 | BBHA9170306 | 05/21/2020 | 12 |
| RE | MCC-54 | 141325 | Microwave Cable | Suhner | SUCOFLEX101 | 2873(1m) / 2876(5m) | 03/02/2021 | 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:**

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