



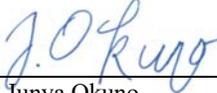
RADIO TEST REPORT

Test Report No. : 12749447H-C-R1

Applicant : **Panasonic Corporation of North America**
Type of Equipment : **Common Trigger Box**
Model No. : **WV-TW37003**
FCC ID : **ACJ9TAWV-TW37003**
Test regulation : **FCC Part 15 Subpart E: 2019**
For Permissive Change
(Radiated Spurious Emission tests only)
Test Result : **Complied (Refer to SECTION 3.2)**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
6. The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
7. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
8. The information provided from the customer for this report is identified in SECTION 1.
9. This report is a revised version of 12749447H-C. 12749447H-C is replaced with this report.

Date of test: June 30 and July 9, 2019

Representative test engineer: 
Junya Okuno
Engineer
Consumer Technology Division

Approved by: 
Tsubasa Takayama
Leader
Consumer Technology Division



This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
http://japan.ul.com/resources/emc_accredited/

- 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.: 12749447H-C

| Revision | Test report No. | Date | Page revised | Contents |
|--------------|-----------------|------------------|--------------|---|
| - (Original) | 12749447H-C | July 30, 2019 | - | - |
| 1 | 12749447H-C-R1 | November 8, 2019 | P 6 | Typing error of a) on the table in Section 3.2. |
| 1 | 12749447H-C-R1 | November 8, 2019 | P 10 | Correction of configuration and peripherals in Clause 4.2 |

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SECTION 1: Customer information

Applicant

Company Name : Panasonic Corporation of North America
Address : Two Riverfront Plaza, Newark, NJ 07102-5490
Telephone Number : +1-201-348-7724
Facsimile Number : +1-201-392-4564
Contact Person : Vir Angelo Lontoc

Manufacturer

Company Name : Panasonic i-PRO Sensing Solutions Co., Ltd.
Address : 4-1-62, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan
Telephone Number : +81-50-3380-1971
Facsimile Number : +81-50-3380-2002
Contact Person : Katsumi Yano

***Remarks:**

Panasonic Corporation of North America designates Panasonic i-PRO Sensing Solutions Co., Ltd. as manufacturer of the product (Common Trigger Box).

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No., 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 (E.U.T.)
- SECTION 4: Operation of E.U.T. 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 (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Common Trigger Box
Model No. : WV-TW37003
Serial No. : Refer to SECTION 4.2
Rating : DC 12 V, DC 24 V
Receipt Date of Sample : June 26, 2019
(Information from test lab.)
Country of Mass-production : Japan
Condition of EUT : Production model
Modification of EUT : No Modification by the test lab.

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2.2 Product Description

Model: WV-TW37003 (referred to as the EUT in this report) is a Common Trigger Box.

Radio Specification

Radio Type : Transceiver
Clock frequency (crystal) : 37.4 MHz

| | IEEE802.11b | IEEE802.11g/n (20 M band) | IEEE802.11a/n/ac (20 M band) | IEEE802.11n/ac (40 M band) | IEEE802.11ac (80 M band) |
|------------------------|---|--|---|--|-----------------------------|
| Frequency of operation | 2412 MHz to 2462 MHz | 2412 MHz to 2462 MHz | 5745 MHz to 5825 MHz ^{*1)} | 5755 MHz ^{*1)} 5795 MHz ^{*1)} | 5775 MHz ^{*1)} |
| Type of modulation | DSSS (CCK, DQPSK, DBPSK) | OFDM-CCK (64QAM, 16QAM, QPSK, BPSK) | OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM(IEEE802.11ac only)) | | |
| Channel spacing | 5MHz | | 20MHz | 40MHz | 80MHz |
| Antenna type | Patterned dipole antenna | | | | |
| Antenna Connector type | RP-SMA Jack (Female) | | | | |
| Antenna Gain | 3.7 dBi (2.4 GHz Band), -4.2 dBi (5 GHz Band) | | | | |

| | Bluetooth Ver.4.1 with EDR function / Bluetooth Low Energy |
|------------------------|---|
| Frequency of operation | 2402 MHz - 2480 MHz |
| Type of modulation | BT: FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK) LE: GFSK |
| Channel spacing | BT: 1 MHz LE: 2 MHz |
| Antenna type | Patterned dipole antenna |
| Antenna Connector type | RP-SMA Jack (Female) |
| Antenna Gain | 3.7 dBi |

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

<Contents of the change from original model>
Specification was changed from the original model as follows:
Antenna of the EUT was modified.
The radio specification is identical to the original.
Therefore only Radiated Spurious Emission test were performed in this report.
Additionally, only the information of modified antenna is described in this report.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart E
FCC Part 15 final revised on July 19, 2019 and effective August 19, 2019 except 15.258

Title : FCC 47CFR Part15 Radio Frequency Device Subpart E
Unlicensed National Information Infrastructure Devices
Section 15.407 General technical requirements

* The revisions made after testing date do not affect the test specification applied to the EUT.
**The customer has declared that the EUT has complies with FCC Part 15 Subpart B.

3.2 Procedures and results

| Item | Test Procedure | Specification | Worst margin | Results | Remarks |
|---|---|--|---|-----------------|---|
| Spurious Emission Restricted Band Edge | FCC: ANSI C63.10-2013 KDB Publication Number 789033 | FCC: 15.407 (b), 15.205 and 15.209 | 3.1 dB 550.000 MHz, QP, horizontal. | Complied# a) | Conducted (< 30 MHz) / Radiated (> 30 MHz) *1) |
| | ISED: - | ISED: RSS-247 6.2.1.2 6.2.2.2 6.2.3.2 6.2.4.2 | | | |
| Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422. *1) Radiated test was selected over 30 MHz based on section FCC 15.407 (b) and KDB 789033 D02 G.3.b). a) Refer to APPENDIX 1 (data of Radiated Spurious Emission) | | | | | |
| Symbols: Complied The data of this test item has enough margin, more than the measurement uncertainty. Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration. | | | | | |

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

FCC Part 15.31 (e)

The EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage. The test was performed with DC 12.0 V by using DC power supply.
That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

The EUT has a unique coupling/antenna connector (RP-SMA Jack). Therefore the equipment complies with the requirement of 15.203.

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

EMI

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 $k=2$.
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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) 4.9 dB |
| | 200 MHz to 1000 MHz (Horizontal) | 5.0 dB |
| | | (Vertical) 5.0 dB |
| 3 m | 1 GHz to 6 GHz | 5.0 dB |
| | 6 GHz to 18 GHz | 5.3 dB |
| 1 m | 10 GHz to 26.5 GHz | 5.8 dB |
| | 26.5 GHz to 40 GHz | 5.8 dB |
| 10 m | 1 GHz to 18 GHz | 5.2 dB |

3.5 Test Location

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*NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967 / ISED Lab Company Number: 2973C

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

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

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

SECTION 4: Operation of E.U.T. 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 and also was judged the necessity of 802.11ac mode by the pre-test.

| Mode | Remarks* |
|--|-----------------------|
| IEEE 802.11a (11a) | 6 Mbps, PN9 |
| IEEE 802.11n 20 MHz BW (11n-20) | MCS 7 (Long GI), PN9 |
| IEEE 802.11ac 20 MHz BW (11ac-20) | MCS 8 (Long GI), PN9 |
| IEEE 802.11n 40 MHz BW (11n-40) | MCS 5 (Short GI), PN9 |
| IEEE 802.11ac 40 MHz BW (11ac-40) | MCS 1 (Short GI), PN9 |
| IEEE 802.11ac 80 MHz BW (11ac-80) | MCS 9 (Long GI), PN9 |
| *The worst condition was determined based on the test result of Maximum Conducted Output Power. | |
| *The power value of the EUT was set for testing as follows (setting value might be different from product specification value); Power settings: Same as production model Software: TeraTerm Version4.9.2 *This setting of software is the worst case. Any conditions under the normal use do not exceed the condition of setting. In addition, end users cannot change the settings of the output power of the product. | |

*The details of Operation mode(s)

| Test Item | Operating Mode | Tested Frequency | | | |
|--|-----------------------|-------------------------|--------------------|------------------------|-------------------|
| | | Lower Band | Middle Band | Additional Band | Upper Band |
| Radiated Spurious Emission (Below 1 GHz) | 11a Tx *1) | - | - | - | 5825 MHz |
| Radiated Spurious Emission (Above 1 GHz) | 11a Tx | - | - | - | 5745 MHz |
| | 11ac-20 Tx *2) | - | - | - | 5785 MHz |
| | 11ac-40 Tx *2) | - | - | - | 5825 MHz |
| | 11ac-80 Tx | - | - | - | 5755 MHz |
| *1) The mode was tested as a representative, because it had the highest power at antenna terminal test. | | | | | |
| *2) Since 11n-20 and 11ac-20 / 11n-40 and 11ac-40 have the same modulation method and no differences in transmitting specification, test was performed on the representative mode that had the highest output power. | | | | | |

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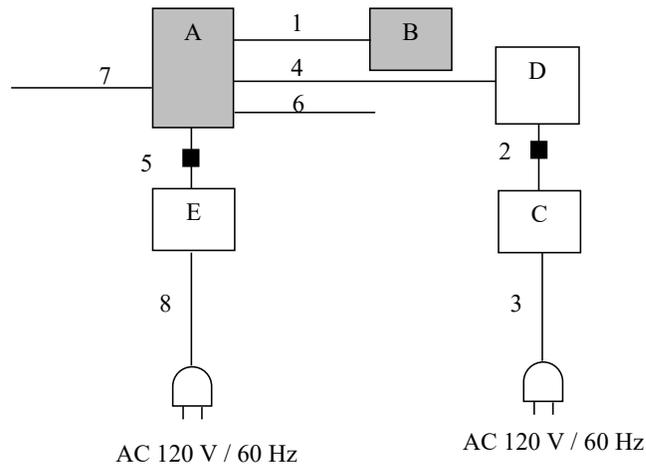
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4.2 Configuration and peripherals



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

Description of EUT and Support equipment

| No. | Item | Model number | Serial number | Manufacturer | Remarks |
|-----|--------------------|---------------------------|---------------|---|---------|
| A | Common Trigger Box | WV-TW37003 | RGA0019 | Panasonic i-PRO Sensing Solutions Co., Ltd. | EUT |
| B | Antenna | AP-PAN-W-M-S2-RP-RA-WH-15 | - | Airgain | EUT |
| C | AC Adapter | CF-AA1653AM2 | - | Panasonic | - |
| D | Laptop PC | CF-N8 | 0CKSA09265 | Panasonic | - |
| E | AC Adapter | CF-AA1625A M4 | SEB55N2-16.0C | Panasonic | - |

List of cables used

| No. | Name | Length (m) | Shield | | Remarks |
|-----|---------------|------------|------------|------------|---------|
| | | | Cable | Connector | |
| 1 | Antenna Cable | 4.5 | Shielded | Shielded | - |
| 2 | DC Cable | 1.3 | Unshielded | Unshielded | - |
| 3 | AC Cable | 1.8 | Unshielded | Unshielded | - |
| 4 | LAN Cable | 3.0 | Unshielded | Unshielded | - |
| 5 | DC Cable | 1.2 | Unshielded | Unshielded | - |
| 6 | Flat Cable | 0.7 | Unshielded | Unshielded | - |
| 7 | Signal Cable | 1.0 | Unshielded | Unshielded | - |
| 8 | AC Cable | 1.8 | 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 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field strength.

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

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

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

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

< 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:

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

Test Antennas are used as below;

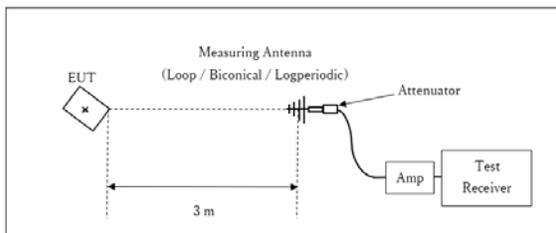
| | | | |
|--------------|-------------------|------------------|-------------|
| Frequency | 30 MHz to 200 MHz | 200 MHz to 1 GHz | Above 1 GHz |
| Antenna Type | Biconical | Logperiodic | Horn |

| | | | |
|-----------------|---------------|--------------------------|--|
| 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 VBW: 3 MHz | Method AD *1) RBW: 1 MHz VBW: 3 MHz Detector: Power Averaging (RMS) Trace: ≥ 100 traces 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

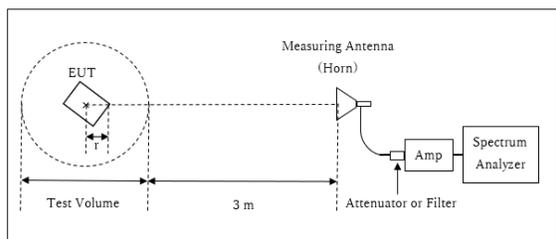
Below 1 GHz



× : 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: $20 \times \log(3.6 \text{ m} / 3.0 \text{ m}) = 1.59 \text{ dB}$

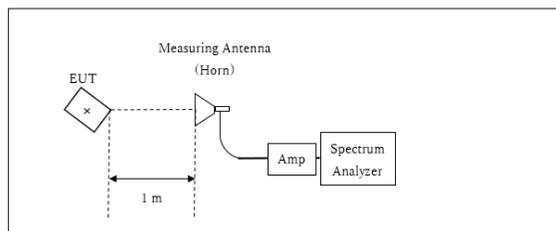
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.6 \text{ m}$

Test Volume : 1.5 m

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

$r = 0.15 \text{ m}$

10 GHz - 40.0 GHz



× : Center of turn table

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

*Test Distance: 1 m

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

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

Measurement range : 30 MHz - 40 GHz
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Radiated Spurious Emission

Report No. 12749447H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2
Date July 9, 2019 July 9, 2019
Temperature / Humidity 22 deg. C / 60 % RH 22 deg. C / 55 % RH
Engineer Junya Okuno Koji Yamamoto
(1 GHz - 10 GHz) (10 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. | 3830.000 | PK | 44.0 | 30.1 | 4.9 | 33.5 | - | 45.4 | 73.9 | 28.5 | |
| Hori. | 5650.000 | PK | 33.3 | 32.1 | 5.6 | 33.3 | - | 37.6 | 68.2 | 30.6 | |
| Hori. | 5700.000 | PK | 34.9 | 32.2 | 5.6 | 33.3 | - | 39.4 | 105.2 | 65.8 | |
| Hori. | 5715.000 | PK | 35.0 | 32.2 | 5.6 | 33.3 | - | 39.5 | 109.4 | 69.9 | |
| Hori. | 5720.000 | PK | 35.1 | 32.2 | 5.6 | 33.3 | - | 39.6 | 110.8 | 71.2 | |
| Hori. | 5725.000 | PK | 37.4 | 32.2 | 5.6 | 33.3 | - | 41.9 | 122.2 | 80.3 | |
| Hori. | 11490.000 | PK | 41.7 | 40.4 | -1.7 | 33.1 | - | 47.2 | 73.9 | 26.7 | Floor noise |
| Hori. | 17235.000 | PK | 43.5 | 40.5 | -0.2 | 32.2 | - | 51.6 | 73.9 | 22.3 | Floor noise |
| Hori. | 22980.000 | PK | 45.0 | 38.6 | -0.7 | 31.5 | - | 51.4 | 73.9 | 22.5 | Floor noise |
| Hori. | 3830.000 | AV | 35.2 | 30.1 | 4.9 | 33.5 | 0.3 | 36.9 | 53.9 | 17.0 | |
| Hori. | 11490.000 | AV | 34.4 | 40.4 | -1.7 | 33.1 | - | 39.9 | 53.9 | 14.0 | Floor noise |
| Hori. | 17235.000 | AV | 35.6 | 40.5 | -0.2 | 32.2 | - | 43.8 | 53.9 | 10.2 | Floor noise |
| Hori. | 22980.000 | AV | 37.4 | 38.6 | -0.7 | 31.5 | - | 43.8 | 53.9 | 10.1 | Floor noise |
| Vert. | 3830.000 | PK | 46.1 | 30.1 | 4.9 | 33.5 | - | 47.5 | 73.9 | 26.4 | |
| Vert. | 5650.000 | PK | 33.6 | 32.1 | 5.6 | 33.3 | - | 38.0 | 68.2 | 30.2 | |
| Vert. | 5700.000 | PK | 35.0 | 32.2 | 5.6 | 33.3 | - | 39.5 | 105.2 | 65.7 | |
| Vert. | 5715.000 | PK | 37.5 | 32.2 | 5.6 | 33.3 | - | 42.0 | 109.4 | 67.4 | |
| Vert. | 5720.000 | PK | 40.0 | 32.2 | 5.6 | 33.3 | - | 44.4 | 110.8 | 66.4 | |
| Vert. | 5725.000 | PK | 44.8 | 32.2 | 5.6 | 33.3 | - | 49.3 | 122.2 | 72.9 | |
| Vert. | 11490.000 | PK | 41.9 | 40.4 | -1.7 | 33.1 | - | 47.4 | 73.9 | 26.5 | Floor noise |
| Vert. | 17235.000 | PK | 43.7 | 40.5 | -0.2 | 32.2 | - | 51.9 | 73.9 | 22.0 | Floor noise |
| Vert. | 22980.000 | PK | 44.9 | 38.6 | -0.7 | 31.5 | - | 51.3 | 73.9 | 22.6 | Floor noise |
| Vert. | 3830.000 | AV | 41.4 | 30.1 | 4.9 | 33.5 | 0.3 | 43.1 | 53.9 | 10.8 | |
| Vert. | 11490.000 | AV | 34.8 | 40.4 | -1.7 | 33.1 | - | 40.4 | 53.9 | 13.6 | Floor noise |
| Vert. | 17235.000 | AV | 35.6 | 40.5 | -0.2 | 32.2 | - | 43.7 | 53.9 | 10.2 | Floor noise |
| Vert. | 22980.000 | AV | 37.6 | 38.6 | -0.7 | 31.5 | - | 44.0 | 53.9 | 9.9 | Floor noise |

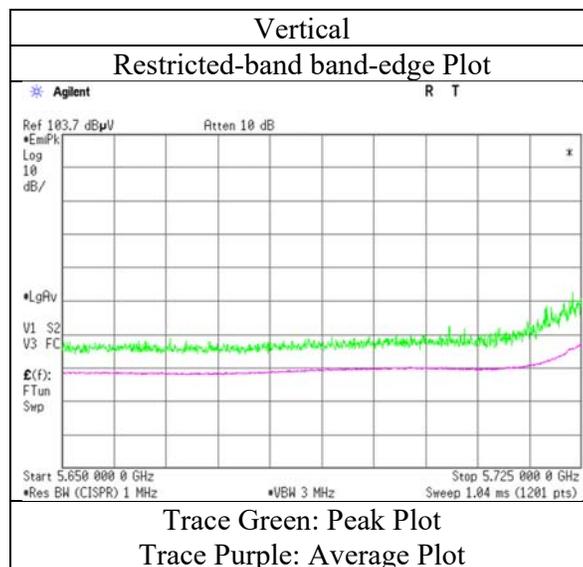
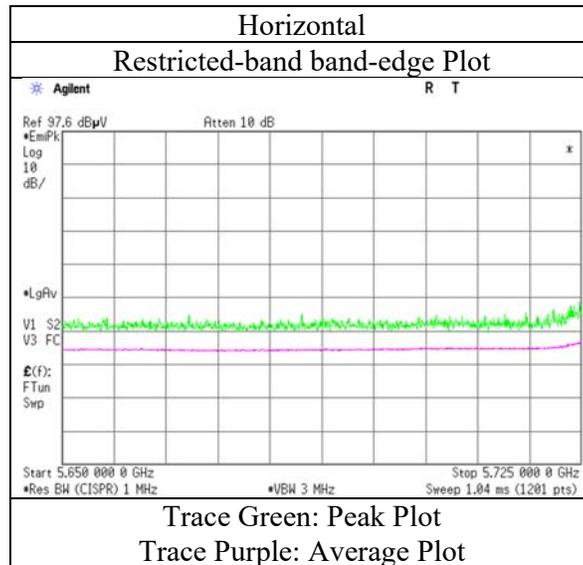
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

| | |
|------------------------|---------------------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | July 9, 2019 |
| Temperature / Humidity | 22 deg. C / 60 % RH |
| Engineer | Junya Okuno (1 GHz - 10 GHz) |
| Mode | Tx 11a 5745 MHz |



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

Radiated Spurious Emission

Report No. 12749447H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2
Date July 9, 2019 July 9, 2019
Temperature / Humidity 22 deg. C / 60 % RH 22 deg. C / 55 % RH
Engineer Junya Okuno Koji Yamamoto
(1 GHz - 10 GHz) (10 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. | 3856.660 | PK | 44.4 | 30.1 | 4.9 | 33.5 | - | 45.9 | 73.9 | 28.0 | |
| Hori. | 11570.000 | PK | 41.9 | 40.0 | -1.6 | 33.1 | - | 47.1 | 73.9 | 26.8 | Floor noise |
| Hori. | 17355.000 | PK | 43.9 | 41.2 | -0.2 | 32.1 | - | 52.8 | 73.9 | 21.1 | Floor noise |
| Hori. | 23140.000 | PK | 45.6 | 38.7 | -0.7 | 31.4 | - | 52.2 | 73.9 | 21.7 | Floor noise |
| Hori. | 3856.660 | AV | 37.0 | 30.1 | 4.9 | 33.5 | 0.3 | 38.7 | 53.9 | 15.2 | |
| Hori. | 11570.000 | AV | 34.4 | 40.0 | -1.6 | 33.1 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Hori. | 17355.000 | AV | 35.3 | 41.2 | -0.2 | 32.1 | - | 44.1 | 53.9 | 9.8 | Floor noise |
| Hori. | 23140.000 | AV | 37.4 | 38.7 | -0.7 | 31.4 | - | 44.0 | 53.9 | 9.9 | Floor noise |
| Vert. | 3856.660 | PK | 47.1 | 30.1 | 4.9 | 33.5 | - | 48.5 | 73.9 | 25.4 | |
| Vert. | 11570.000 | PK | 42.1 | 40.0 | -1.6 | 33.1 | - | 47.3 | 73.9 | 26.6 | Floor noise |
| Vert. | 17355.000 | PK | 44.0 | 41.2 | -0.2 | 32.1 | - | 52.9 | 73.9 | 21.0 | Floor noise |
| Vert. | 23140.000 | PK | 45.6 | 38.7 | -0.7 | 31.4 | - | 52.2 | 73.9 | 21.7 | Floor noise |
| Vert. | 3856.660 | AV | 42.2 | 30.1 | 4.9 | 33.5 | 0.3 | 44.0 | 53.9 | 9.9 | |
| Vert. | 11570.000 | AV | 34.2 | 40.0 | -1.6 | 33.1 | - | 39.4 | 53.9 | 14.5 | Floor noise |
| Vert. | 17355.000 | AV | 35.6 | 41.2 | -0.2 | 32.1 | - | 44.5 | 53.9 | 9.4 | Floor noise |
| Vert. | 23140.000 | AV | 37.5 | 38.7 | -0.7 | 31.4 | - | 44.1 | 53.9 | 9.8 | 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 $20\log(3.6\text{ m} / 3.0\text{ m}) = 1.59\text{ dB}$
10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

| | | | |
|------------------------|---------------------|---------------------|---------------------|
| Report No. | 12749447H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.2 | No.2 | No.2 |
| Date | July 9, 2019 | July 9, 2019 | July 13, 2019 |
| Temperature / Humidity | 22 deg. C / 60 % RH | 22 deg. C / 55 % RH | 23 deg. C / 70 % RH |
| Engineer | Junya Okuno | Koji Yamamoto | Junya Okuno |
| | (1 GHz - 10 GHz) | (10 GHz - 40 GHz) | (Below 1 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. | 62.228 | QP | 44.1 | 6.9 | 7.1 | 30.4 | - | 27.7 | 40.0 | 12.3 | |
| Hori. | 94.389 | QP | 41.3 | 9.1 | 7.4 | 30.3 | - | 27.5 | 43.5 | 16.0 | |
| Hori. | 400.001 | QP | 42.4 | 15.6 | 9.6 | 29.7 | - | 37.9 | 46.0 | 8.2 | |
| Hori. | 449.988 | QP | 39.4 | 16.4 | 9.6 | 29.9 | - | 35.5 | 46.0 | 10.5 | |
| Hori. | 499.998 | QP | 42.8 | 17.7 | 9.8 | 30.0 | - | 40.3 | 46.0 | 5.7 | |
| Hori. | 550.000 | QP | 44.9 | 17.9 | 10.0 | 29.9 | - | 42.9 | 46.0 | 3.1 | |
| Hori. | 3883.322 | PK | 44.7 | 30.1 | 4.9 | 33.5 | - | 46.2 | 73.9 | 27.7 | |
| Hori. | 5850.000 | PK | 35.8 | 32.5 | 5.6 | 33.3 | - | 40.7 | 122.2 | 81.5 | |
| Hori. | 5855.000 | PK | 33.9 | 32.5 | 5.6 | 33.3 | - | 38.7 | 110.8 | 72.1 | |
| Hori. | 5860.000 | PK | 33.3 | 32.5 | 5.6 | 33.3 | - | 38.1 | 109.4 | 71.3 | |
| Hori. | 5875.000 | PK | 33.7 | 32.5 | 5.6 | 33.3 | - | 38.5 | 105.2 | 66.7 | |
| Hori. | 5925.000 | PK | 33.6 | 32.5 | 5.7 | 33.3 | - | 38.4 | 68.2 | 29.8 | |
| Hori. | 11650.000 | PK | 42.2 | 39.6 | -1.6 | 33.1 | - | 47.1 | 73.9 | 26.8 | Floor noise |
| Hori. | 17475.000 | PK | 44.1 | 42.1 | -0.2 | 32.1 | - | 53.9 | 73.9 | 20.1 | Floor noise |
| Hori. | 23300.000 | PK | 46.0 | 38.8 | -0.6 | 31.4 | - | 52.8 | 73.9 | 21.1 | Floor noise |
| Hori. | 3883.322 | AV | 38.1 | 30.1 | 4.9 | 33.5 | 0.3 | 39.9 | 53.9 | 14.0 | |
| Hori. | 11650.000 | AV | 34.3 | 39.6 | -1.6 | 33.1 | - | 39.3 | 53.9 | 14.6 | Floor noise |
| Hori. | 17475.000 | AV | 35.6 | 42.1 | -0.2 | 32.1 | - | 45.3 | 53.9 | 8.6 | Floor noise |
| Hori. | 23300.000 | AV | 37.6 | 38.8 | -0.6 | 31.4 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Vert. | 62.229 | QP | 49.0 | 6.9 | 7.1 | 30.4 | - | 32.6 | 40.0 | 7.4 | |
| Vert. | 96.328 | QP | 48.0 | 9.5 | 7.4 | 30.3 | - | 34.6 | 43.5 | 8.9 | |
| Vert. | 399.999 | QP | 35.5 | 15.6 | 9.6 | 29.7 | - | 31.0 | 46.0 | 15.1 | |
| Vert. | 449.998 | QP | 31.8 | 16.4 | 9.6 | 29.9 | - | 28.0 | 46.0 | 18.1 | |
| Vert. | 500.000 | QP | 39.7 | 17.7 | 9.8 | 30.0 | - | 37.2 | 46.0 | 8.8 | |
| Vert. | 550.002 | QP | 41.7 | 17.9 | 10.0 | 29.8 | - | 39.7 | 46.0 | 6.3 | |
| Vert. | 3883.322 | PK | 46.2 | 30.1 | 4.9 | 33.5 | - | 47.7 | 73.9 | 26.2 | |
| Vert. | 5850.000 | PK | 39.5 | 32.5 | 5.6 | 33.3 | - | 44.4 | 122.2 | 77.8 | |
| Vert. | 5855.000 | PK | 37.5 | 32.5 | 5.6 | 33.3 | - | 42.3 | 110.8 | 68.5 | |
| Vert. | 5860.000 | PK | 36.1 | 32.5 | 5.6 | 33.3 | - | 40.9 | 109.4 | 68.5 | |
| Vert. | 5875.000 | PK | 33.3 | 32.5 | 5.6 | 33.3 | - | 38.1 | 105.2 | 67.1 | |
| Vert. | 5925.000 | PK | 33.3 | 32.5 | 5.7 | 33.3 | - | 38.1 | 68.2 | 30.1 | |
| Vert. | 11650.000 | PK | 42.1 | 39.6 | -1.6 | 33.1 | - | 47.1 | 73.9 | 26.8 | Floor noise |
| Vert. | 17475.000 | PK | 43.8 | 42.1 | -0.2 | 32.1 | - | 53.6 | 73.9 | 20.3 | Floor noise |
| Vert. | 23300.000 | PK | 46.1 | 38.8 | -0.6 | 31.4 | - | 52.9 | 73.9 | 21.0 | Floor noise |
| Vert. | 3883.322 | AV | 42.1 | 30.1 | 4.9 | 33.5 | 0.3 | 43.9 | 53.9 | 10.0 | |
| Vert. | 11650.000 | AV | 34.3 | 39.6 | -1.6 | 33.1 | - | 39.2 | 53.9 | 14.7 | Floor noise |
| Vert. | 17475.000 | AV | 35.1 | 42.1 | -0.2 | 32.1 | - | 44.9 | 53.9 | 9.0 | Floor noise |
| Vert. | 23300.000 | AV | 37.6 | 38.8 | -0.6 | 31.4 | - | 44.4 | 53.9 | 9.5 | Floor noise |

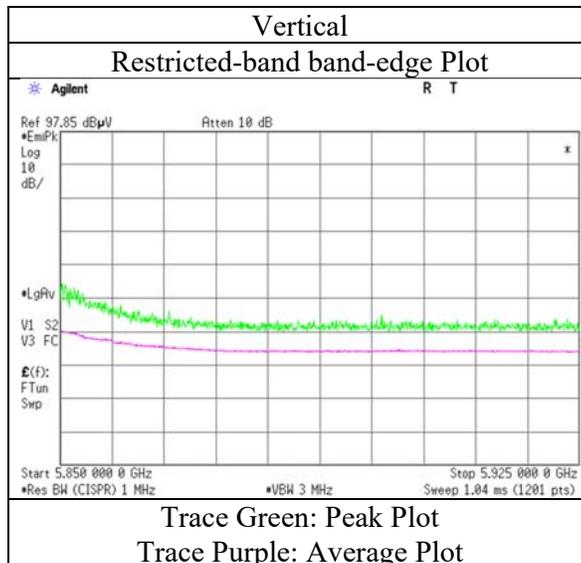
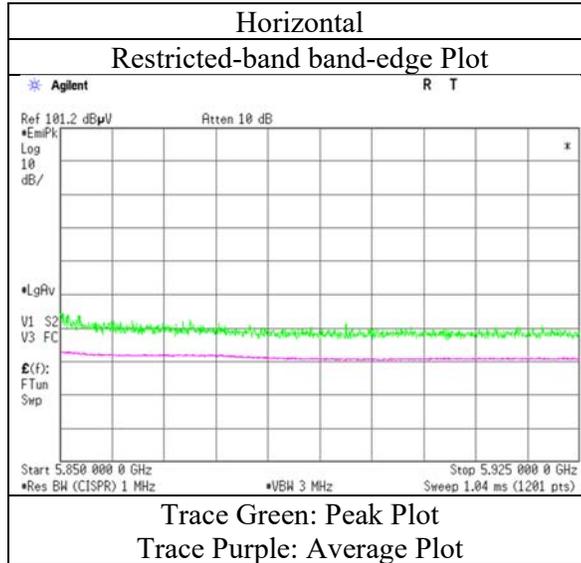
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

*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 (3.6 m / 3.0 m) = 1.59 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

| | |
|------------------------|---------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | July 9, 2019 |
| Temperature / Humidity | 22 deg. C / 60 % RH |
| Engineer | Junya Okuno |
| Mode | Tx 11a 5825 MHz |



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

Radiated Spurious Emission

| | | |
|------------------------|---------------------|---------------------|
| Report No. | 12749447H | |
| Test place | Ise EMC Lab. | |
| Semi Anechoic Chamber | No.2 | No.2 |
| Date | June 30, 2019 | July 9, 2019 |
| Temperature / Humidity | 25 deg. C / 57 % RH | 22 deg. C / 55 % RH |
| Engineer | Koji Yamamoto | Koji Yamamoto |
| | (1 GHz - 10 GHz) | (10 GHz - 40 GHz) |
| Mode | Tx 11ac-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. | 1040.000 | PK | 49.3 | 25.5 | 3.3 | 35.4 | - | 42.7 | 73.9 | 31.2 | |
| Hori. | 1665.963 | PK | 48.4 | 25.3 | 3.7 | 34.7 | - | 42.6 | 73.9 | 31.3 | |
| Hori. | 3829.988 | PK | 43.3 | 30.1 | 4.9 | 33.5 | - | 44.7 | 73.9 | 29.2 | |
| Hori. | 5650.000 | PK | 41.9 | 32.1 | 5.6 | 33.3 | - | 46.2 | 68.2 | 22.0 | |
| Hori. | 5700.000 | PK | 41.1 | 32.2 | 5.6 | 33.3 | - | 45.5 | 105.2 | 59.7 | |
| Hori. | 5715.000 | PK | 42.4 | 32.2 | 5.6 | 33.3 | - | 46.8 | 109.4 | 62.6 | |
| Hori. | 5720.000 | PK | 44.3 | 32.2 | 5.6 | 33.3 | - | 48.7 | 110.8 | 62.1 | |
| Hori. | 5725.000 | PK | 42.7 | 32.2 | 5.6 | 33.3 | - | 47.2 | 122.2 | 75.0 | |
| Hori. | 11490.000 | PK | 42.1 | 40.4 | -1.7 | 33.1 | - | 47.7 | 73.9 | 26.2 | Floor noise |
| Hori. | 17235.000 | PK | 44.1 | 40.5 | -0.2 | 32.2 | - | 52.2 | 73.9 | 21.7 | Floor noise |
| Hori. | 22980.000 | PK | 44.4 | 38.6 | -0.7 | 31.5 | - | 50.8 | 73.9 | 23.1 | Floor noise |
| Hori. | 1040.000 | AV | 42.8 | 25.5 | 3.3 | 35.4 | - | 36.2 | 53.9 | 17.7 | |
| Hori. | 1665.963 | AV | 36.7 | 25.3 | 3.7 | 34.7 | - | 31.0 | 53.9 | 22.9 | |
| Hori. | 3829.988 | AV | 36.3 | 30.1 | 4.9 | 33.5 | 2.2 | 40.0 | 53.9 | 13.9 | |
| Hori. | 11490.000 | AV | 34.7 | 40.4 | -1.7 | 33.1 | - | 40.3 | 53.9 | 13.6 | Floor noise |
| Hori. | 17235.000 | AV | 35.7 | 40.5 | -0.2 | 32.2 | - | 43.8 | 53.9 | 10.1 | Floor noise |
| Hori. | 22980.000 | AV | 37.3 | 38.6 | -0.7 | 31.5 | - | 43.7 | 53.9 | 10.2 | Floor noise |
| Vert. | 1040.000 | PK | 48.3 | 25.5 | 3.3 | 35.4 | - | 41.7 | 73.9 | 32.2 | |
| Vert. | 1665.963 | PK | 45.9 | 25.3 | 3.7 | 34.7 | - | 40.1 | 73.9 | 33.8 | |
| Vert. | 3831.028 | PK | 44.0 | 30.1 | 4.9 | 33.5 | - | 45.4 | 73.9 | 28.5 | |
| Vert. | 5650.000 | PK | 42.1 | 32.1 | 5.6 | 33.3 | - | 46.5 | 68.2 | 21.7 | |
| Vert. | 5700.000 | PK | 43.3 | 32.2 | 5.6 | 33.3 | - | 47.8 | 105.2 | 57.4 | |
| Vert. | 5715.000 | PK | 41.9 | 32.2 | 5.6 | 33.3 | - | 46.4 | 109.4 | 63.0 | |
| Vert. | 5720.000 | PK | 42.3 | 32.2 | 5.6 | 33.3 | - | 46.8 | 110.8 | 64.0 | |
| Vert. | 5725.000 | PK | 42.5 | 32.2 | 5.6 | 33.3 | - | 47.0 | 122.2 | 75.2 | |
| Vert. | 11490.000 | PK | 42.6 | 40.4 | -1.7 | 33.1 | - | 48.1 | 73.9 | 25.8 | Floor noise |
| Vert. | 17235.000 | PK | 43.8 | 40.5 | -0.2 | 32.2 | - | 51.9 | 73.9 | 22.0 | Floor noise |
| Vert. | 22980.000 | PK | 44.5 | 38.6 | -0.7 | 31.5 | - | 50.9 | 73.9 | 23.0 | Floor noise |
| Vert. | 1040.000 | AV | 40.4 | 25.5 | 3.3 | 35.4 | - | 33.8 | 53.9 | 20.1 | |
| Vert. | 1665.963 | AV | 36.2 | 25.3 | 3.7 | 34.7 | - | 30.5 | 53.9 | 23.4 | |
| Vert. | 3831.028 | AV | 37.1 | 30.1 | 4.9 | 33.5 | 2.2 | 40.8 | 53.9 | 13.1 | |
| Vert. | 11490.000 | AV | 34.5 | 40.4 | -1.7 | 33.1 | - | 40.1 | 53.9 | 13.8 | Floor noise |
| Vert. | 17235.000 | AV | 35.8 | 40.5 | -0.2 | 32.2 | - | 44.0 | 53.9 | 9.9 | Floor noise |
| Vert. | 22980.000 | AV | 37.4 | 38.6 | -0.7 | 31.5 | - | 43.8 | 53.9 | 10.1 | Floor noise |

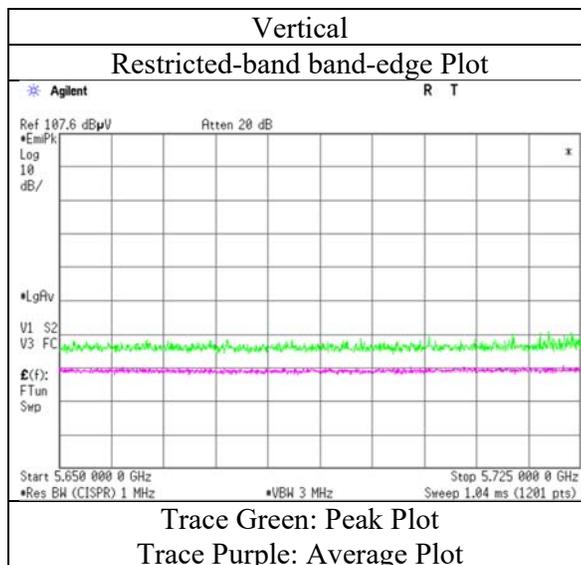
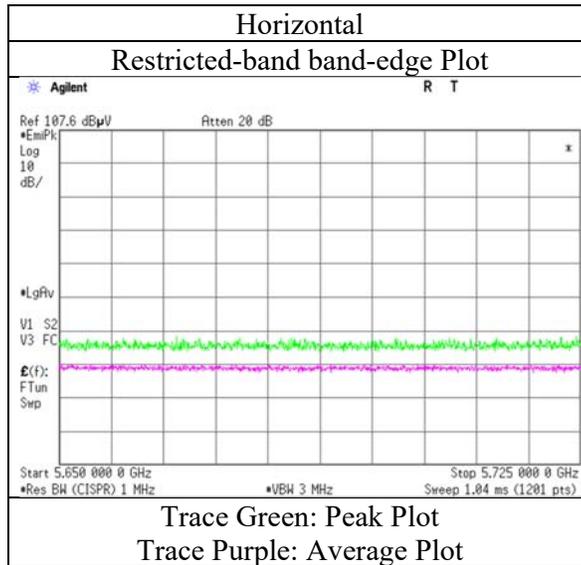
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log(3.6 m / 3.0 m) = 1.59 dB
 10 GHz - 40 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

| | |
|------------------------|---------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | June 30, 2019 |
| Temperature / Humidity | 25 deg. C / 57 % RH |
| Engineer | Koji Yamamoto |
| Mode | Tx 11ac-20 5745 MHz |



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

Radiated Spurious Emission

Report No. 12749447H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2
Date June 30, 2019 July 9, 2019
Temperature / Humidity 25 deg. C / 57 % RH 22 deg. C / 55 % RH
Engineer Koji Yamamoto Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 40 GHz)
Mode Tx 11ac-20 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. | 1040.000 | PK | 49.4 | 25.5 | 3.3 | 35.4 | - | 42.8 | 73.9 | 31.1 | |
| Hori. | 1665.424 | PK | 51.9 | 25.3 | 3.7 | 34.7 | - | 46.2 | 73.9 | 27.8 | |
| Hori. | 3855.073 | PK | 43.8 | 30.1 | 4.9 | 33.5 | - | 45.3 | 73.9 | 28.6 | |
| Hori. | 11570.000 | PK | 42.0 | 40.0 | -1.6 | 33.1 | - | 47.3 | 73.9 | 26.6 | Floor noise |
| Hori. | 17355.000 | PK | 43.2 | 41.2 | -0.2 | 32.1 | - | 52.1 | 73.9 | 21.8 | Floor noise |
| Hori. | 23140.000 | PK | 45.5 | 38.7 | -0.7 | 31.4 | - | 52.1 | 73.9 | 21.8 | Floor noise |
| Hori. | 1040.000 | AV | 43.8 | 25.5 | 3.3 | 35.4 | - | 37.2 | 53.9 | 16.7 | |
| Hori. | 1665.424 | AV | 37.9 | 25.3 | 3.7 | 34.7 | - | 32.2 | 53.9 | 21.8 | |
| Hori. | 3855.073 | AV | 38.2 | 30.1 | 4.9 | 33.5 | 2.2 | 41.9 | 53.9 | 12.0 | |
| Hori. | 11570.000 | AV | 34.3 | 40.0 | -1.6 | 33.1 | - | 39.5 | 53.9 | 14.4 | Floor noise |
| Hori. | 17355.000 | AV | 35.3 | 41.2 | -0.2 | 32.1 | - | 44.2 | 53.9 | 9.7 | Floor noise |
| Hori. | 23140.000 | AV | 37.5 | 38.7 | -0.7 | 31.4 | - | 44.2 | 53.9 | 9.7 | Floor noise |
| Vert. | 1040.000 | PK | 47.4 | 25.5 | 3.3 | 35.4 | - | 40.8 | 73.9 | 33.1 | |
| Vert. | 1665.424 | PK | 44.8 | 25.3 | 3.7 | 34.7 | - | 39.1 | 73.9 | 34.9 | |
| Vert. | 3855.073 | PK | 44.2 | 30.1 | 4.9 | 33.5 | - | 45.7 | 73.9 | 28.2 | |
| Vert. | 11570.000 | PK | 42.2 | 40.0 | -1.6 | 33.1 | - | 47.4 | 73.9 | 26.5 | Floor noise |
| Vert. | 17355.000 | PK | 43.9 | 41.2 | -0.2 | 32.1 | - | 52.7 | 73.9 | 21.2 | Floor noise |
| Vert. | 23140.000 | PK | 45.6 | 38.7 | -0.7 | 31.4 | - | 52.2 | 73.9 | 21.7 | Floor noise |
| Vert. | 1040.000 | AV | 39.7 | 25.5 | 3.3 | 35.4 | - | 33.1 | 53.9 | 20.8 | |
| Vert. | 1665.424 | AV | 36.2 | 25.3 | 3.7 | 34.7 | - | 30.5 | 53.9 | 23.5 | |
| Vert. | 3855.073 | AV | 37.3 | 30.1 | 4.9 | 33.5 | 2.2 | 41.0 | 53.9 | 12.9 | |
| Vert. | 11570.000 | AV | 34.4 | 40.0 | -1.6 | 33.1 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Vert. | 17355.000 | AV | 35.5 | 41.2 | -0.2 | 32.1 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Vert. | 23140.000 | AV | 37.4 | 38.7 | -0.7 | 31.4 | - | 44.0 | 53.9 | 9.9 | Floor noise |

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

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

Distance factor: 1 GHz - 10 GHz $20\log(3.6\text{ m} / 3.0\text{ m}) = 1.59\text{ dB}$
10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

| | | | |
|------------------------|---------------------|---------------------|--|
| Report No. | 12749447H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.2 | No.2 | |
| Date | June 30, 2019 | July 9, 2019 | |
| Temperature / Humidity | 25 deg. C / 57 % RH | 22 deg. C / 55 % RH | |
| Engineer | Koji Yamamoto | Koji Yamamoto | |
| | (1 GHz - 10 GHz) | (10 GHz - 40 GHz) | |
| Mode | Tx 11ac-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. | 1037.115 | PK | 50.1 | 25.4 | 3.3 | 35.4 | - | 43.4 | 73.9 | 30.5 | |
| Hori. | 1665.627 | PK | 53.1 | 25.3 | 3.7 | 34.7 | - | 47.4 | 73.9 | 26.5 | |
| Hori. | 3886.137 | PK | 43.4 | 30.1 | 4.9 | 33.5 | - | 44.9 | 73.9 | 29.0 | |
| Hori. | 5850.000 | PK | 42.3 | 32.5 | 5.6 | 33.3 | - | 47.2 | 122.2 | 75.0 | |
| Hori. | 5855.000 | PK | 41.2 | 32.5 | 5.6 | 33.3 | - | 46.1 | 110.8 | 64.7 | |
| Hori. | 5860.000 | PK | 42.0 | 32.5 | 5.6 | 33.3 | - | 46.9 | 109.4 | 62.5 | |
| Hori. | 5875.000 | PK | 41.5 | 32.5 | 5.6 | 33.3 | - | 46.3 | 105.2 | 58.9 | |
| Hori. | 5925.000 | PK | 42.4 | 32.5 | 5.7 | 33.3 | - | 47.2 | 68.2 | 21.0 | |
| Hori. | 11650.000 | PK | 41.7 | 39.6 | -1.6 | 33.1 | - | 46.6 | 73.9 | 27.3 | Floor noise |
| Hori. | 17475.000 | PK | 43.5 | 42.1 | -0.2 | 32.1 | - | 53.3 | 73.9 | 20.6 | Floor noise |
| Hori. | 23300.000 | PK | 45.9 | 38.8 | -0.6 | 31.4 | - | 52.7 | 73.9 | 21.2 | Floor noise |
| Hori. | 1037.115 | AV | 44.6 | 25.4 | 3.3 | 35.4 | - | 37.9 | 53.9 | 16.1 | |
| Hori. | 1665.627 | AV | 38.6 | 25.3 | 3.7 | 34.7 | - | 32.8 | 53.9 | 21.1 | |
| Hori. | 3886.137 | AV | 37.2 | 30.1 | 4.9 | 33.5 | 2.2 | 41.0 | 53.9 | 12.9 | |
| Hori. | 11650.000 | AV | 35.3 | 39.6 | -1.6 | 33.1 | - | 40.2 | 53.9 | 13.7 | Floor noise |
| Hori. | 17475.000 | AV | 35.4 | 42.1 | -0.2 | 32.1 | - | 45.1 | 53.9 | 8.8 | Floor noise |
| Hori. | 23300.000 | AV | 37.8 | 38.8 | -0.6 | 31.4 | - | 44.6 | 53.9 | 9.3 | Floor noise |
| Vert. | 1037.115 | PK | 47.5 | 25.4 | 3.3 | 35.4 | - | 40.8 | 73.9 | 33.1 | |
| Vert. | 1665.627 | PK | 46.2 | 25.3 | 3.7 | 34.7 | - | 40.4 | 73.9 | 33.5 | |
| Vert. | 3886.137 | PK | 44.2 | 30.1 | 4.9 | 33.5 | - | 45.7 | 73.9 | 28.2 | |
| Vert. | 5850.000 | PK | 41.9 | 32.5 | 5.6 | 33.3 | - | 46.7 | 122.2 | 75.5 | |
| Vert. | 5855.000 | PK | 42.6 | 32.5 | 5.6 | 33.3 | - | 47.4 | 110.8 | 63.4 | |
| Vert. | 5860.000 | PK | 41.2 | 32.5 | 5.6 | 33.3 | - | 46.0 | 109.4 | 63.4 | |
| Vert. | 5875.000 | PK | 41.6 | 32.5 | 5.6 | 33.3 | - | 46.5 | 105.2 | 58.7 | |
| Vert. | 5925.000 | PK | 55.8 | 32.5 | 5.7 | 33.3 | - | 60.6 | 68.2 | 7.6 | |
| Vert. | 11650.000 | PK | 42.1 | 39.6 | -1.6 | 33.1 | - | 47.0 | 73.9 | 26.9 | Floor noise |
| Vert. | 17475.000 | PK | 43.4 | 42.1 | -0.2 | 32.1 | - | 53.2 | 73.9 | 20.8 | Floor noise |
| Vert. | 23300.000 | PK | 46.1 | 38.8 | -0.6 | 31.4 | - | 52.9 | 73.9 | 21.0 | Floor noise |
| Vert. | 1037.115 | AV | 39.7 | 25.4 | 3.3 | 35.4 | - | 32.9 | 53.9 | 21.0 | |
| Vert. | 1665.627 | AV | 36.4 | 25.3 | 3.7 | 34.7 | - | 30.6 | 53.9 | 23.3 | |
| Vert. | 3886.137 | AV | 37.3 | 30.1 | 4.9 | 33.5 | 2.2 | 41.1 | 53.9 | 12.9 | |
| Vert. | 11650.000 | AV | 35.0 | 39.6 | -1.6 | 33.1 | - | 40.0 | 53.9 | 13.9 | Floor noise |
| Vert. | 17475.000 | AV | 35.2 | 42.1 | -0.2 | 32.1 | - | 44.9 | 53.9 | 9.0 | Floor noise |
| Vert. | 23300.000 | AV | 37.9 | 38.8 | -0.6 | 31.4 | - | 44.7 | 53.9 | 9.2 | Floor noise |

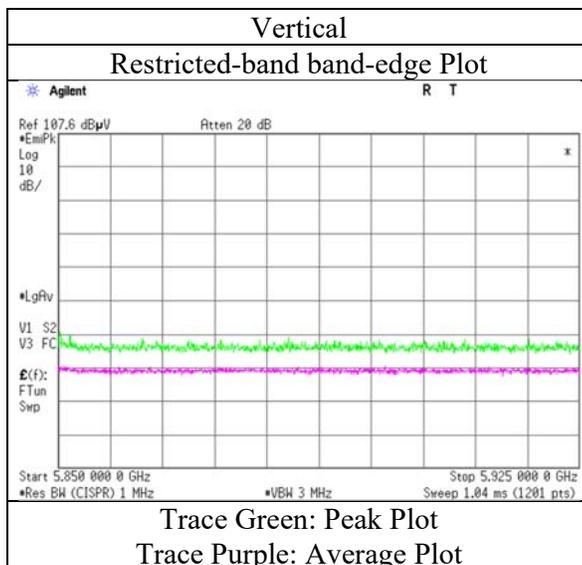
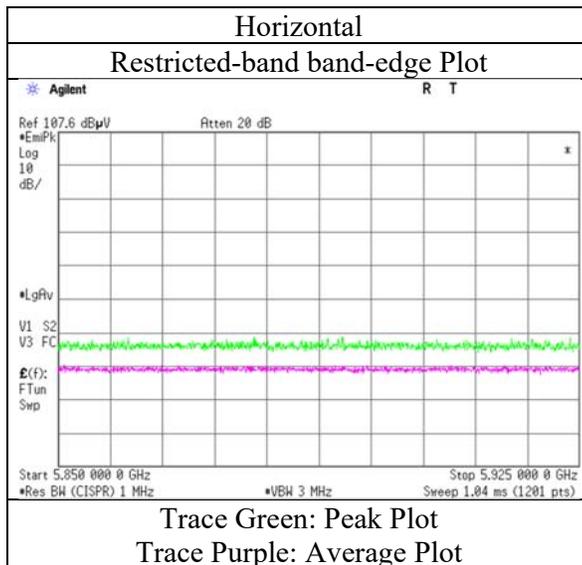
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz $20\log(3.6\text{ m} / 3.0\text{ m}) = 1.59\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Radiated Spurious Emission

| | |
|------------------------|---------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | June 30, 2019 |
| Temperature / Humidity | 25 deg. C / 57 % RH |
| Engineer | Koji Yamamoto |
| Mode | Tx 11ac-20 5825 MHz |



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

Radiated Spurious Emission

Report No. 12749447H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2
Date June 30, 2019 July 9, 2019
Temperature / Humidity 25 deg. C / 57 % RH 22 deg. C / 55 % RH
Engineer Koji Yamamoto Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 40 GHz)
Mode Tx 11ac-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. | 1040.000 | PK | 50.7 | 25.5 | 3.3 | 35.4 | - | 44.1 | 73.9 | 29.8 | |
| Hori. | 1664.508 | PK | 52.6 | 25.3 | 3.7 | 34.7 | - | 46.9 | 73.9 | 27.0 | |
| Hori. | 3836.660 | PK | 42.7 | 30.1 | 4.9 | 33.5 | - | 44.2 | 73.9 | 29.8 | |
| Hori. | 5650.000 | PK | 42.5 | 32.1 | 5.6 | 33.3 | - | 46.9 | 68.2 | 21.4 | |
| Hori. | 5700.000 | PK | 46.8 | 32.2 | 5.6 | 33.3 | - | 51.3 | 105.2 | 53.9 | |
| Hori. | 5715.000 | PK | 51.7 | 32.2 | 5.6 | 33.3 | - | 56.2 | 109.4 | 53.2 | |
| Hori. | 5720.000 | PK | 50.3 | 32.2 | 5.6 | 33.3 | - | 54.8 | 110.8 | 56.0 | |
| Hori. | 5725.000 | PK | 49.9 | 32.2 | 5.6 | 33.3 | - | 54.4 | 122.2 | 67.8 | |
| Hori. | 11510.000 | PK | 42.5 | 40.3 | -1.7 | 33.1 | - | 48.1 | 73.9 | 25.9 | Floor noise |
| Hori. | 17265.000 | PK | 44.0 | 40.6 | -0.2 | 32.2 | - | 52.3 | 73.9 | 21.7 | Floor noise |
| Hori. | 23020.000 | PK | 45.2 | 38.7 | -0.7 | 31.5 | - | 51.7 | 73.9 | 22.2 | Floor noise |
| Hori. | 1040.000 | AV | 44.4 | 25.5 | 3.3 | 35.4 | - | 37.8 | 53.9 | 16.1 | |
| Hori. | 1664.508 | AV | 38.3 | 25.3 | 3.7 | 34.7 | - | 32.5 | 53.9 | 21.4 | |
| Hori. | 3836.660 | AV | 37.5 | 30.1 | 4.9 | 33.5 | 1.2 | 40.2 | 53.9 | 13.7 | |
| Hori. | 11510.000 | AV | 34.4 | 40.3 | -1.7 | 33.1 | - | 39.9 | 53.9 | 14.0 | Floor noise |
| Hori. | 17265.000 | AV | 35.7 | 40.6 | -0.2 | 32.2 | - | 43.9 | 53.9 | 10.0 | Floor noise |
| Hori. | 23020.000 | AV | 37.7 | 38.7 | -0.7 | 31.5 | - | 44.1 | 53.9 | 9.8 | Floor noise |
| Vert. | 1040.000 | PK | 47.9 | 25.5 | 3.3 | 35.4 | - | 41.3 | 73.9 | 32.6 | |
| Vert. | 1664.508 | PK | 45.1 | 25.3 | 3.7 | 34.7 | - | 39.4 | 73.9 | 34.6 | |
| Vert. | 3836.660 | PK | 43.8 | 30.1 | 4.9 | 33.5 | - | 45.3 | 73.9 | 28.6 | |
| Vert. | 5650.000 | PK | 41.7 | 32.1 | 5.6 | 33.3 | - | 46.0 | 68.2 | 22.2 | |
| Vert. | 5700.000 | PK | 44.7 | 32.2 | 5.6 | 33.3 | - | 49.1 | 105.2 | 56.1 | |
| Vert. | 5715.000 | PK | 48.4 | 32.2 | 5.6 | 33.3 | - | 52.9 | 109.4 | 56.5 | |
| Vert. | 5720.000 | PK | 50.9 | 32.2 | 5.6 | 33.3 | - | 55.3 | 110.8 | 55.5 | |
| Vert. | 5725.000 | PK | 51.8 | 32.2 | 5.6 | 33.3 | - | 56.3 | 122.2 | 65.9 | |
| Vert. | 11510.000 | PK | 42.3 | 40.3 | -1.7 | 33.1 | - | 47.8 | 73.9 | 26.1 | Floor noise |
| Vert. | 17265.000 | PK | 43.6 | 40.6 | -0.2 | 32.2 | - | 51.8 | 73.9 | 22.1 | Floor noise |
| Vert. | 23020.000 | PK | 45.6 | 38.7 | -0.7 | 31.5 | - | 52.1 | 73.9 | 21.8 | Floor noise |
| Vert. | 1040.000 | AV | 39.9 | 25.5 | 3.3 | 35.4 | - | 33.3 | 53.9 | 20.6 | |
| Vert. | 1664.508 | AV | 36.6 | 25.3 | 3.7 | 34.7 | - | 30.8 | 53.9 | 23.1 | |
| Vert. | 3836.660 | AV | 37.1 | 30.1 | 4.9 | 33.5 | 1.2 | 39.8 | 53.9 | 14.2 | |
| Vert. | 11510.000 | AV | 34.6 | 40.3 | -1.7 | 33.1 | - | 40.1 | 53.9 | 13.8 | Floor noise |
| Vert. | 17265.000 | AV | 35.1 | 40.6 | -0.2 | 32.2 | - | 43.4 | 53.9 | 10.5 | Floor noise |
| Vert. | 23020.000 | AV | 37.6 | 38.7 | -0.7 | 31.5 | - | 44.0 | 53.9 | 9.9 | Floor noise |

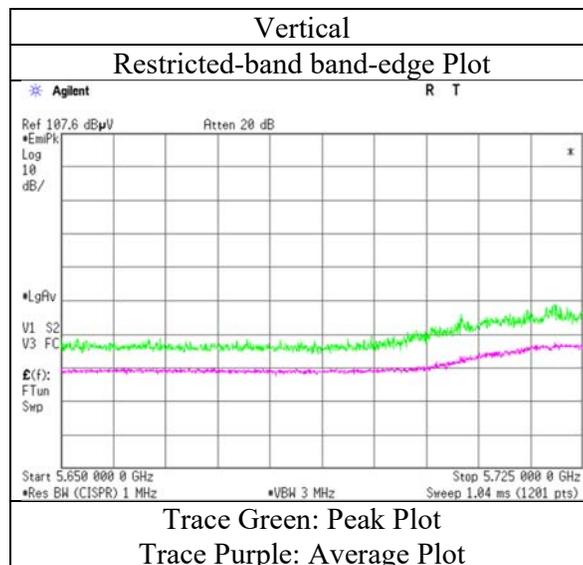
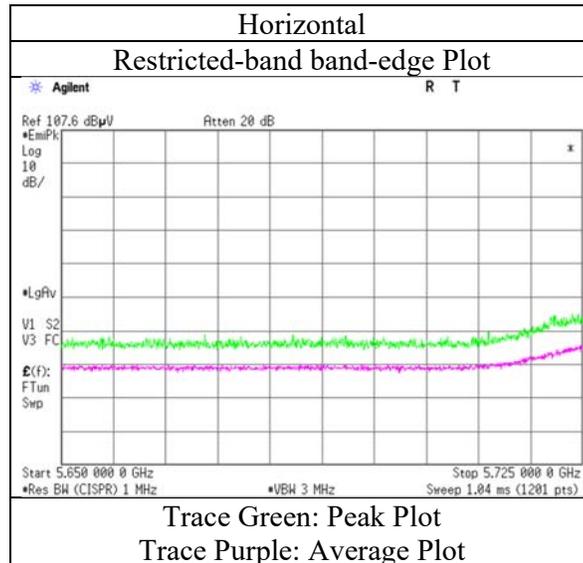
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

| | |
|------------------------|---------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | June 30, 2019 |
| Temperature / Humidity | 25 deg. C / 57 % RH |
| Engineer | Koji Yamamoto |
| Mode | Tx 11ac-40 5755 MHz |



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

Radiated Spurious Emission

Report No. 12749447H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2
Date June 30, 2019 July 9, 2019
Temperature / Humidity 25 deg. C / 57 % RH 22 deg. C / 55 % RH
Engineer Koji Yamamoto Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 40 GHz)
Mode Tx 11ac-40 5795 MHz

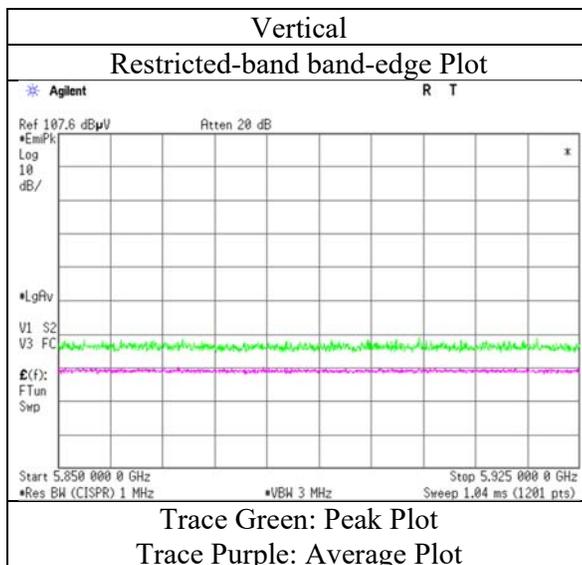
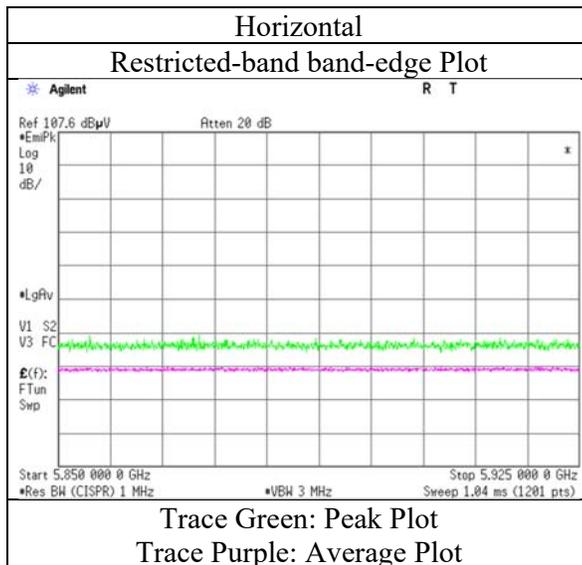
| Polarity | Frequency [MHz] | Detector | Reading [dBuV] | Ant.Fac. [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Margin [dB] | Remark |
|----------|-----------------|----------|----------------|-----------------|-----------|-----------|------------------|-----------------|----------------|-------------|-------------|
| Hori. | 1674.670 | PK | 43.9 | 25.4 | 3.7 | 34.7 | - | 38.3 | 73.9 | 35.6 | |
| Hori. | 3849.000 | PK | 41.5 | 30.1 | 4.9 | 33.5 | - | 43.0 | 73.9 | 30.9 | |
| Hori. | 5850.000 | PK | 41.3 | 32.5 | 5.6 | 33.3 | - | 46.1 | 122.2 | 76.1 | |
| Hori. | 5855.000 | PK | 40.1 | 32.5 | 5.6 | 33.3 | - | 44.9 | 110.8 | 65.9 | |
| Hori. | 5860.000 | PK | 39.2 | 32.5 | 5.6 | 33.3 | - | 44.1 | 109.4 | 65.3 | |
| Hori. | 5875.000 | PK | 40.7 | 32.5 | 5.6 | 33.3 | - | 45.5 | 105.2 | 59.7 | |
| Hori. | 5925.000 | PK | 40.7 | 32.5 | 5.7 | 33.3 | - | 45.6 | 68.2 | 22.7 | |
| Hori. | 11590.000 | PK | 42.5 | 39.9 | -1.6 | 33.1 | - | 47.7 | 73.9 | 26.2 | Floor noise |
| Hori. | 17385.000 | PK | 43.4 | 41.5 | -0.2 | 32.1 | - | 52.5 | 73.9 | 21.4 | Floor noise |
| Hori. | 23180.000 | PK | 45.7 | 38.8 | -0.7 | 31.4 | - | 52.3 | 73.9 | 21.6 | Floor noise |
| Hori. | 1674.670 | AV | 36.6 | 25.4 | 3.7 | 34.7 | - | 31.0 | 53.9 | 23.0 | |
| Hori. | 3849.000 | AV | 34.7 | 30.1 | 4.9 | 33.5 | 1.2 | 37.3 | 53.9 | 16.6 | |
| Hori. | 11590.000 | AV | 34.6 | 39.9 | -1.6 | 33.1 | - | 39.7 | 53.9 | 14.2 | Floor noise |
| Hori. | 17385.000 | AV | 35.6 | 41.5 | -0.2 | 32.1 | - | 44.7 | 53.9 | 9.2 | Floor noise |
| Hori. | 23180.000 | AV | 37.5 | 38.8 | -0.7 | 31.4 | - | 44.2 | 53.9 | 9.7 | Floor noise |
| Vert. | 1674.670 | PK | 53.2 | 25.4 | 3.7 | 34.7 | - | 47.6 | 73.9 | 26.3 | |
| Vert. | 3849.944 | PK | 44.4 | 30.1 | 4.9 | 33.5 | - | 45.8 | 73.9 | 28.1 | |
| Vert. | 5850.000 | PK | 43.2 | 32.5 | 5.6 | 33.3 | - | 48.1 | 122.2 | 74.1 | |
| Vert. | 5855.000 | PK | 40.7 | 32.5 | 5.6 | 33.3 | - | 45.6 | 110.8 | 65.2 | |
| Vert. | 5860.000 | PK | 40.8 | 32.5 | 5.6 | 33.3 | - | 45.7 | 109.4 | 63.7 | |
| Vert. | 5875.000 | PK | 40.9 | 32.5 | 5.6 | 33.3 | - | 45.7 | 105.2 | 59.5 | |
| Vert. | 5925.000 | PK | 41.5 | 32.5 | 5.7 | 33.3 | - | 46.3 | 68.2 | 21.9 | |
| Vert. | 11590.000 | PK | 42.6 | 39.9 | -1.6 | 33.1 | - | 47.8 | 73.9 | 26.1 | Floor noise |
| Vert. | 17385.000 | PK | 43.3 | 41.5 | -0.2 | 32.1 | - | 52.4 | 73.9 | 21.5 | Floor noise |
| Vert. | 23180.000 | PK | 45.9 | 38.8 | -0.7 | 31.4 | - | 52.6 | 73.9 | 21.3 | Floor noise |
| Vert. | 1674.670 | AV | 38.1 | 25.4 | 3.7 | 34.7 | - | 32.5 | 53.9 | 21.4 | |
| Vert. | 3849.944 | AV | 36.4 | 30.1 | 4.9 | 33.5 | 1.2 | 39.0 | 53.9 | 14.9 | |
| Vert. | 11590.000 | AV | 34.7 | 39.9 | -1.6 | 33.1 | - | 39.9 | 53.9 | 14.0 | Floor noise |
| Vert. | 17385.000 | AV | 35.6 | 41.5 | -0.2 | 32.1 | - | 44.8 | 53.9 | 9.1 | Floor noise |
| Vert. | 23180.000 | AV | 37.3 | 38.8 | -0.7 | 31.4 | - | 43.9 | 53.9 | 10.0 | Floor noise |

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

Distance factor: 1 GHz - 10 GHz 20log (3.6 m / 3.0 m) = 1.59 dB
10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

| | |
|------------------------|---------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | June 30, 2019 |
| Temperature / Humidity | 25 deg. C / 57 % RH |
| Engineer | Koji Yamamoto |
| Mode | Tx 11ac-40 5795 MHz |



* The measurement was conducted for a sufficiently long enough time to detect any possible spurious emissions.

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

Radiated Spurious Emission

Report No. 12749447H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2 No.2
Date June 30, 2019 July 9, 2019
Temperature / Humidity 25 deg. C / 57 % RH 22 deg. C / 55 % RH
Engineer Koji Yamamoto Koji Yamamoto
(1 GHz - 10 GHz) (10 GHz - 40 GHz)
Mode Tx 11ac-80 5775 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. | 1040.000 | PK | 49.8 | 25.5 | 3.3 | 35.4 | - | 43.2 | 73.9 | 30.7 | |
| Hori. | 1659.919 | PK | 44.9 | 25.2 | 3.7 | 34.7 | - | 39.1 | 73.9 | 34.8 | |
| Hori. | 3849.981 | PK | 46.5 | 30.1 | 4.9 | 33.5 | - | 47.9 | 73.9 | 26.0 | |
| Hori. | 5650.000 | PK | 42.3 | 32.1 | 5.6 | 33.3 | - | 46.6 | 68.2 | 21.6 | |
| Hori. | 5700.000 | PK | 46.3 | 32.2 | 5.6 | 33.3 | - | 50.8 | 105.2 | 54.4 | |
| Hori. | 5715.000 | PK | 47.7 | 32.2 | 5.6 | 33.3 | - | 52.2 | 109.4 | 57.2 | |
| Hori. | 5720.000 | PK | 47.3 | 32.2 | 5.6 | 33.3 | - | 51.8 | 110.8 | 59.1 | |
| Hori. | 5725.000 | PK | 46.3 | 32.2 | 5.6 | 33.3 | - | 50.8 | 122.2 | 71.4 | |
| Hori. | 5850.000 | PK | 47.6 | 32.5 | 5.6 | 33.3 | - | 52.4 | 122.2 | 69.8 | |
| Hori. | 5855.000 | PK | 43.0 | 32.5 | 5.6 | 33.3 | - | 47.9 | 110.8 | 62.9 | |
| Hori. | 5860.000 | PK | 42.4 | 32.5 | 5.6 | 33.3 | - | 47.2 | 109.4 | 62.2 | |
| Hori. | 5875.000 | PK | 43.2 | 32.5 | 5.6 | 33.3 | - | 48.0 | 105.2 | 57.2 | |
| Hori. | 5925.000 | PK | 41.5 | 32.5 | 5.7 | 33.3 | - | 46.3 | 68.2 | 21.9 | |
| Hori. | 11550.000 | PK | 41.4 | 40.1 | -1.7 | 33.1 | - | 46.7 | 73.9 | 27.2 | Floor noise |
| Hori. | 17325.000 | PK | 44.1 | 40.9 | -0.2 | 32.1 | - | 52.7 | 73.9 | 21.2 | Floor noise |
| Hori. | 23100.000 | PK | 45.2 | 38.7 | -0.7 | 31.5 | - | 51.8 | 73.9 | 22.1 | Floor noise |
| Hori. | 1040.000 | AV | 43.4 | 25.5 | 3.3 | 35.4 | - | 36.8 | 53.9 | 17.1 | |
| Hori. | 1659.919 | AV | 36.5 | 25.2 | 3.7 | 34.7 | - | 30.7 | 53.9 | 23.2 | |
| Hori. | 3849.981 | AV | 35.6 | 30.1 | 4.9 | 33.5 | 3.9 | 41.0 | 53.9 | 12.9 | |
| Hori. | 11550.000 | AV | 34.3 | 40.1 | -1.7 | 33.1 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Hori. | 17325.000 | AV | 35.9 | 40.9 | -0.2 | 32.1 | - | 44.5 | 53.9 | 9.4 | Floor noise |
| Hori. | 23100.000 | AV | 37.5 | 38.7 | -0.7 | 31.5 | - | 44.1 | 53.9 | 9.8 | Floor noise |
| Vert. | 1040.000 | PK | 48.7 | 25.5 | 3.3 | 35.4 | - | 42.1 | 73.9 | 31.8 | |
| Vert. | 1659.919 | PK | 44.6 | 25.2 | 3.7 | 34.7 | - | 38.8 | 73.9 | 35.1 | |
| Vert. | 3849.981 | PK | 46.1 | 30.1 | 4.9 | 33.5 | - | 47.5 | 73.9 | 26.4 | |
| Vert. | 5650.000 | PK | 42.1 | 32.1 | 5.6 | 33.3 | - | 46.5 | 68.2 | 21.7 | |
| Vert. | 5700.000 | PK | 45.6 | 32.2 | 5.6 | 33.3 | - | 50.1 | 105.2 | 55.2 | |
| Vert. | 5715.000 | PK | 50.4 | 32.2 | 5.6 | 33.3 | - | 54.9 | 109.4 | 54.6 | |
| Vert. | 5720.000 | PK | 51.4 | 32.2 | 5.6 | 33.3 | - | 55.9 | 110.8 | 54.9 | |
| Vert. | 5725.000 | PK | 50.4 | 32.2 | 5.6 | 33.3 | - | 54.8 | 122.2 | 67.4 | |
| Vert. | 5850.000 | PK | 48.3 | 32.5 | 5.6 | 33.3 | - | 53.1 | 122.2 | 69.1 | |
| Vert. | 5855.000 | PK | 44.4 | 32.5 | 5.6 | 33.3 | - | 49.2 | 110.8 | 61.6 | |
| Vert. | 5860.000 | PK | 43.2 | 32.5 | 5.6 | 33.3 | - | 48.1 | 109.4 | 61.3 | |
| Vert. | 5875.000 | PK | 42.0 | 32.5 | 5.6 | 33.3 | - | 46.8 | 105.2 | 58.4 | |
| Vert. | 5925.000 | PK | 42.1 | 32.5 | 5.7 | 33.3 | - | 47.0 | 68.2 | 21.3 | |
| Vert. | 11550.000 | PK | 41.5 | 40.1 | -1.7 | 33.1 | - | 46.8 | 73.9 | 27.1 | Floor noise |
| Vert. | 17325.000 | PK | 44.2 | 40.9 | -0.2 | 32.1 | - | 52.8 | 73.9 | 21.1 | Floor noise |
| Vert. | 23100.000 | PK | 45.4 | 38.7 | -0.7 | 31.5 | - | 51.9 | 73.9 | 22.0 | Floor noise |
| Vert. | 1040.000 | AV | 41.4 | 25.5 | 3.3 | 35.4 | - | 34.8 | 53.9 | 19.1 | |
| Vert. | 1659.919 | AV | 36.3 | 25.2 | 3.7 | 34.7 | - | 30.5 | 53.9 | 23.4 | |
| Vert. | 3849.981 | AV | 37.5 | 30.1 | 4.9 | 33.5 | 3.9 | 42.9 | 53.9 | 11.0 | |
| Vert. | 11550.000 | AV | 34.2 | 40.1 | -1.7 | 33.1 | - | 39.6 | 53.9 | 14.3 | Floor noise |
| Vert. | 17325.000 | AV | 35.8 | 40.9 | -0.2 | 32.1 | - | 44.4 | 53.9 | 9.5 | Floor noise |
| Vert. | 23100.000 | AV | 37.4 | 38.7 | -0.7 | 31.5 | - | 43.9 | 53.9 | 10.0 | Floor noise |

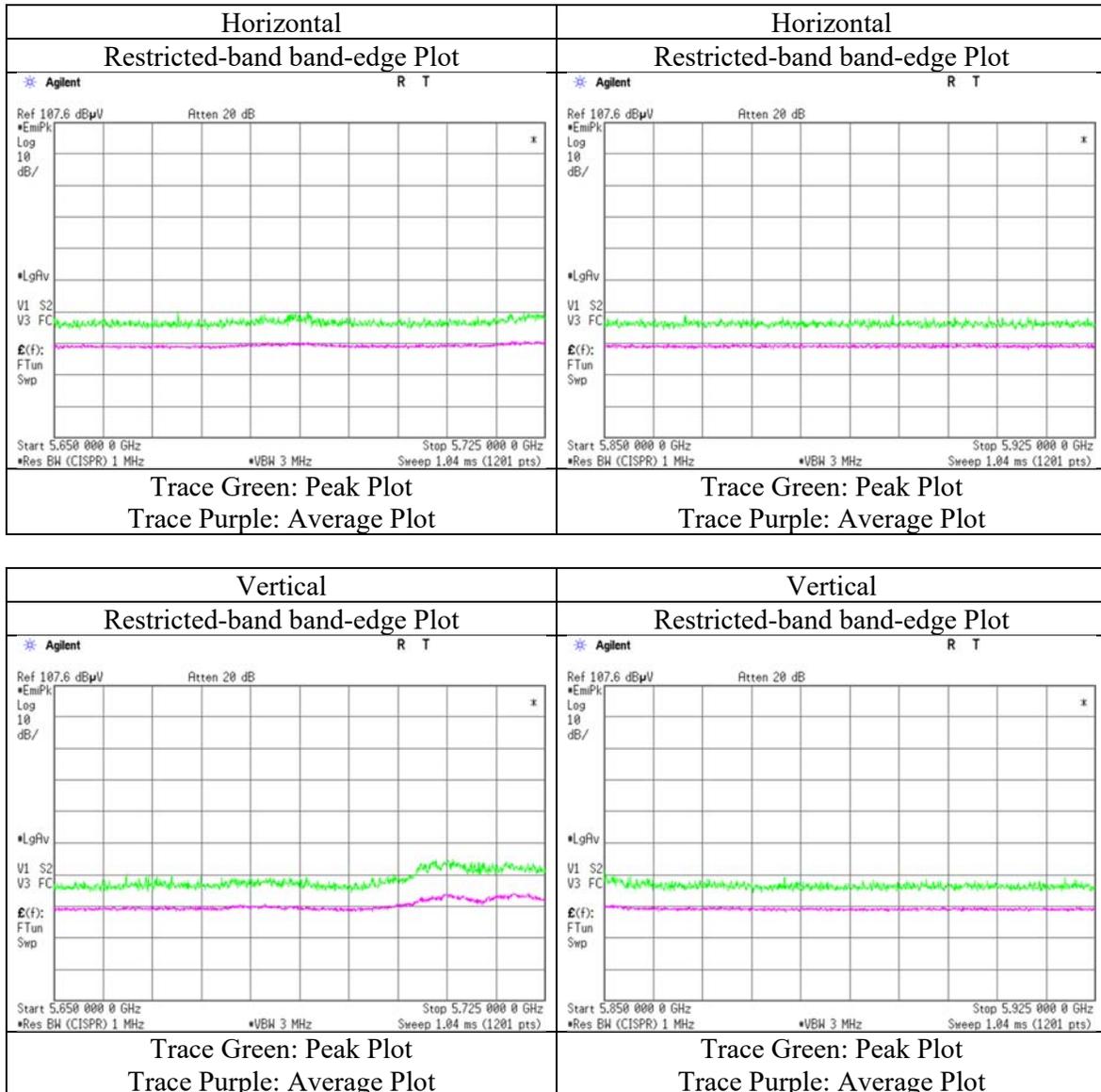
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

Distance factor: 1 GHz - 10 GHz 20log(3.6 m / 3.0 m) = 1.59 dB
10 GHz - 40 GHz 20log(1.0 m / 3.0 m) = -9.5 dB

Radiated Spurious Emission

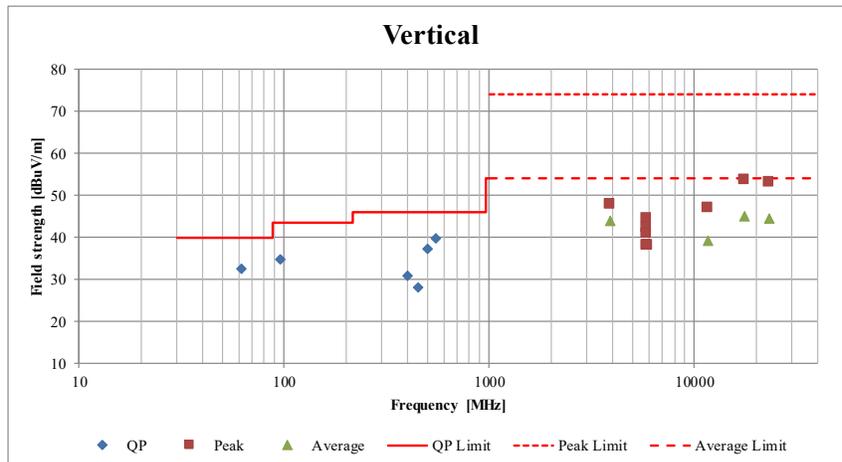
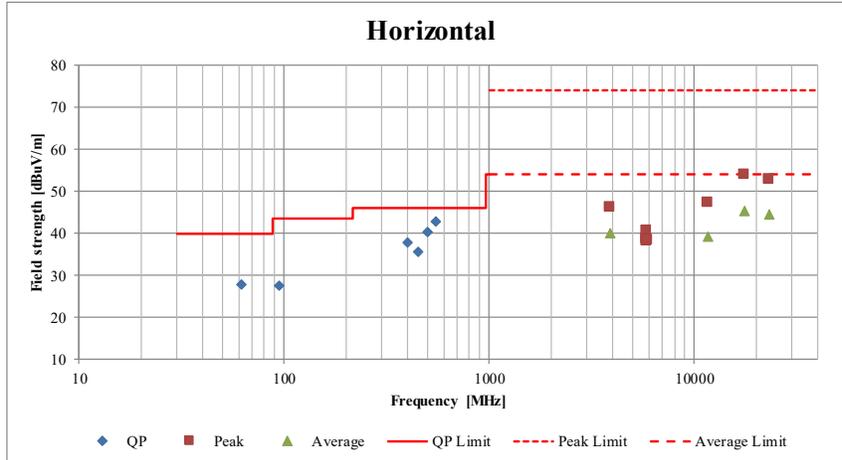
| | |
|------------------------|---------------------|
| Report No. | 12749447H |
| Test place | Ise EMC Lab. |
| Semi Anechoic Chamber | No.2 |
| Date | June 30, 2019 |
| Temperature / Humidity | 25 deg. C / 57 % RH |
| Engineer | Koji Yamamoto |
| Mode | Tx 11ac-80 5775 MHz |



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

Radiated Spurious Emission
(Plot data, Worst case)

| | | | |
|------------------------|---------------------|---------------------|---------------------|
| Report No. | 12749447H | | |
| Test place | Ise EMC Lab. | | |
| Semi Anechoic Chamber | No.2 | No.2 | No.2 |
| Date | July 9, 2019 | July 9, 2019 | July 13, 2019 |
| Temperature / Humidity | 22 deg. C / 60 % RH | 22 deg. C / 55 % RH | 23 deg. C / 70 % RH |
| Engineer | Junya Okuno | Koji Yamamoto | Junya Okuno |
| | (1 GHz - 10 GHz) | (10 GHz - 40 GHz) | (Below 1 GHz) |
| Mode | Tx 11a 5825 MHz | | |



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

APPENDIX 2: Test instruments

Test Instruments

| Test Item | LIMS ID | Description | Manufacturer | Model | Serial | Last Calibration Date | Calibration Due Date | Cal Int |
|-----------|---------|----------------------------------|-------------------|------------------------------------|--------------------------------|-----------------------|----------------------|---------|
| RE | 142228 | Measure | KOMELON | KMC-36 | - | - | - | - |
| RE | 141899 | Spectrum Analyzer | AGILENT | E4448A | MY46180655 | 08/10/2018 | 08/31/2019 | 12 |
| RE | 141556 | Thermo-Hygrometer | CUSTOM | CTH-201 | 0003 | 12/05/2018 | 12/31/2019 | 12 |
| RE | 141579 | Pre Amplifier | AGILENT | 8449B | 3008A02142 | 01/21/2019 | 01/31/2020 | 12 |
| RE | 141392 | Microwave Cable | Junkosha | MWX221 | 1604S253(1 m) 1608S087(5 m) | 08/08/2018 | 08/31/2019 | 12 |
| RE | 141512 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 254 | 05/09/2019 | 05/31/2020 | 12 |
| RE | 141152 | EMI measurement program | TSJ | TEPTO-DV | - | - | - | - |
| RE | 141542 | Digital Tester | Fluke Corporation | FLUKE 26-3 | 78030611 | 08/21/2018 | 08/31/2019 | 12 |
| RE | 142006 | AC2_Semi Anechoic Chamber(SVSWR) | TDK | Semi Anechoic Chamber 3m | DA-06902 | 04/01/2019 | 04/30/2021 | 24 |
| RE | 160324 | Coaxial Cable | Huber+Suhner | SUCOFLEX 102A | MY009/2A | 11/08/2018 | 11/30/2019 | 12 |
| RE | 142004 | AC2_Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-06902 | 06/29/2018 | 06/30/2020 | 24 |
| RE | 141279 | Microwave Cable | Junkosha | MMX221-00500DMSDMS | 1502S303 | 03/05/2019 | 03/31/2020 | 12 |
| RE | 141406 | High Pass Filter 7-20GHz | TOKIMEC | TF37NCCA | 7001 | 09/19/2018 | 09/30/2019 | 12 |
| RE | 141506 | Horn Antenna 15-40GHz | Schwarzbeck | BBHA9170 | BBHA9170307 | 05/10/2019 | 05/31/2020 | 12 |
| RE | 141517 | Horn Antenna 26.5-40GHz | ETS LINDGREN | 3160-10 | 152399 | 05/16/2019 | 05/31/2020 | 12 |
| RE | 141588 | Pre Amplifier | MITEQ, Inc | AMF-6F-2600400-33-8P / AMF-4F-2600 | 1871355 /1871328 | 09/21/2018 | 09/30/2019 | 12 |

*Hyphens for Last Calibration Date, Calibration Due 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.

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

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

Test item:

RE: Radiated Emission

UL Japan, Inc.

Ise EMC Lab.

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