



# EMI TEST REPORT

**Test Report No. : 13185291Y-B-R1**

**Applicant:** DENSO CORPORATION  
**Type of EUT:** Cockpit Control Unit  
**Model Number of EUT:** DNNS111  
**FCC ID:** HYQDNNS111  
**Test regulation:** FCC Part 15 Subpart B:2020 Class B  
ICES-003 Issue 6:2016 (SMSE-005-19) Class B

**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 limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report covers EMC technical requirements. It does not cover administrative issues such as Manual or non-EMC test related Requirements. (if applicable)
6. The all test items in this test report are conducted by UL Japan, Inc. Yokowa EMC Lab.
7. This test report must not be used by the customer to claim product certification, approval, or endorsement by any agency of the Federal Government.
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.
10. This report is a revised version of 13185291Y-B. 13185291Y-B is replaced with this report.

**Date of test:**

January 7 to 9, 2020

**Representative  
test engineer:**

Hiromichi Nakai

Engineer

Consumer Technology Division

**Approved by:**

Daigo Hamaguchi

Leader

Consumer Technology Division



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

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# **REVISION HISTORY**

**Original Test Report No.: 13185291Y-B**

Revision	Test report No.	Date	Page revised	Contents
- (Original)	13185291Y-B	May 11, 2020	-	-
1	13185291Y-B-R1	June 16, 2020	P.1	Update of JAB logo
1	13185291Y-B-R1	June 16, 2020	P.1, 7, 8	Update of ICES from ICES-003 Issue 6:2016 + Amendment 1: 2017 Class B (SMSE-005-19) to ICES-003 Issue 6:2016 (SMSE-005-19) Class B
1	13185291Y-B-R1	June 16, 2020	P.6	Addition of information of Bluetooth
1	13185291Y-B-R1	June 16, 2020	P.6	Addition of information of AM/FM Radio
1	13185291Y-B-R1	June 16, 2020	P.7	Update of test specification of FCC from FCC Part 15 final revised on April 1, 2020 and effective June 1, 2020 except 15.258 to FCC Part 15 final revised on May 26, 2020 and effective July 27, 2020 except 15.258
1	13185291Y-B-R1	June 16, 2020	P.18, 19, 26, 27, 34, 35, 36, 45, 46, 47	Modification of typo from 87.0 MHz Receiving to 87.5 MHz Receiving

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

AAN	Asymmetric Artificial Network	ISED	Innovation, Science and Economic Development Canada
AC	Alternating Current	ISN	Impedance Stabilization Network
AM	Amplitude Modulation	ISO	International Organization for Standardization
AMN	Artificial Mains Network	JAB	Japan Accreditation Board
Amp, AMP	Amplifier	LAN	Local Area Network
ANSI	American National Standards Institute	LCL	Longitudinal Conversion Loss
Ant, ANT	Antenna	LIMS	Laboratory Information Management System
AP	Access Point	LISN	Line Impedance Stabilization Network
ASK	Amplitude Shift Keying	MRA	Mutual Recognition Arrangement
Atten., ATT	Attenuator	N/A	Not Applicable
AV	Average	NIST	National Institute of Standards and Technology
BPSK	Binary Phase-Shift Keying	NS	No signal detect.
BR	Bluetooth Basic Rate	NSA	Normalized Site Attenuation
BT	Bluetooth	NVLAP	National Voluntary Laboratory Accreditation Program
BT LE	Bluetooth Low Energy	OBW	Occupied Band Width
BW	BandWidth	OFDM	Orthogonal Frequency Division Multiplexing
C.F	Correction Factor	PK	Peak
Cal Int	Calibration Interval	PLT	long-term flicker severity
CAV	CISPR AV	POHC(A)	Partial Odd Harmonic Current
CCK	Complementary Code Keying	Pol., Pola.	Polarization
CDN	Coupling Decoupling Network	PR-ASK	Phase Reversal ASK
Ch., CH	Channel	PST	short-term flicker severity
CISPR	Comite International Special des Perturbations Radioelectriques	QAM	Quadrature Amplitude Modulation
Corr.	Correction	QP	Quasi-Peak
CPE	Customer premise equipment	QPSK	Quadri-Phase Shift Keying
CW	Continuous Wave	r.m.s., RMS	Root Mean Square
DBPSK	Differential BPSK	RBW	Resolution Band Width
DC	Direct Current	RE	Radio Equipment
DET	Detector	REV	Reverse
Dmax	maximum absolute voltage change during an observation period	RF	Radio Frequency
DQPSK	Differential QPSK	RFID	Radio Frequency Identifier
DSSS	Direct Sequence Spread Spectrum	RSS	Radio Standards Specifications
EDR	Enhanced Data Rate	Rx	Receiving
e.i.r.p., EIRP	Equivalent Isotropically Radiated Power	SINAD	Ratio of (Signal + Noise + Distortion) to (Noise + Distortion)
EM clamp	Electromagnetic clamp	S/N	Signal to Noise ratio
EMC	ElectroMagnetic Compatibility	SA, S/A	Spectrum Analyzer
EMI	ElectroMagnetic Interference	SG	Signal Generator
EMS	ElectroMagnetic Susceptibility	SVSWR	Site-Voltage Standing Wave Ratio
EN	European Norm	THC(A)	Total Harmonic Current
e.r.p., ERP	Effective Radiated Power	THD(%)	Total Harmonic Distortion
EU	European Union	TR	Test Receiver
EUT	Equipment Under Test	Tx	Transmitting
Fac.	Factor	VBW	Video BandWidth
FCC	Federal Communications Commission	Vert.	Vertical
FHSS	Frequency Hopping Spread Spectrum	WLAN	Wireless LAN
FM	Frequency Modulation	xDSL	Generic term for all types of DSL technology (DSL: Digital Subscriber Line)
Freq.	Frequency		
FSK	Frequency Shift Keying		
Fund	Fundamental		
FWD	Forward		
GFSK	Gaussian Frequency-Shift Keying		
GNSS	Global Navigation Satellite System		
GPS	Global Positioning System		
Hori.	Horizontal		
ICES	Interference-Causing Equipment Standard		
I/O	Input/Output		
IEC	International Electrotechnical Commission		
IEEE	Institute of Electrical and Electronics Engineers		
IF	Intermediate Frequency		
ILAC	International Laboratory Accreditation Conference		

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## **CONTENTS**

	<b>PAGE</b>
<b>Section 1: Customer information</b>	<b>5</b>
<b>Section 2: Equipment under test (EUT)</b>	<b>5</b>
<b>Section 3: Test specification, procedures and results</b>	<b>7</b>
<b>Section 4: Operation of EUT during testing</b>	<b>10</b>
<b>Section 5: Radiated emission</b>	<b>12</b>
<b>Section 6 : Antenna terminal voltage</b>	<b>15</b>
<b>Appendix 1: Photographs of test setup</b>	<b>16</b>
<b>Appendix 2: Data of EMI test</b>	<b>18</b>
Radiated emission	
Antenna terminal voltage	
<b>Appendix 3: Test Instruments</b>	<b>58</b>

## **Section 1: Customer information**

Company Name : DENSO CORPORATION

Address : 1-1 Showa-cho, Kariya-shi, Aichi ken, 448-8661 Japan

Telephone Number : +81-566-20-3304

Facsimile Number : +81-566-25-4920

Contact Person : Naoto Makino

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 : Cockpit Control Unit

Model Number : DNNS111

Serial Number : Refer to Clause 4.2

Rating : DC 13.2 V

Country of Mass-production : Japan

Condition : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)

Receipt Date : December 26, 2019

Modification : No modification by the test lab.

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## 2.2 Product description

Model: DNNS111 (referred to as the EUT in this report) is a Cockpit Control Unit.  
The clock frequencies used in the EUT: 1800 MHz

### [AM/FM Radio]

	AM	FM
Equipment type	Receiver	
Frequency of operation	530 kHz to 1710 kHz	87.5 MHz to 108.0 MHz
Channel spacing	5 kHz	50 kHz
Antenna connector type	Receptacle Connector	

### [Bluetooth (Ver4.2 BDR/EDR)]

	Bluetooth
Equipment type	Transceiver
Frequency of operation	2402 MHz - 2480 MHz
Type of modulation	FHSS (GFSK, $\pi/4$ -DQPSK, 8-DPSK)
Channel spacing	1 MHz
Antenna type	ASSEMBLY Bluetooth Antenna
Antenna Connector type	MHF PLUG
Antenna Gain	-0.88 dBi

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### Section 3: Test specification, procedures and results

#### 3.1 Test Specification

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

Title : FCC 47CFR Part15 Radio Frequency Device  
Subpart B Unintentional Radiators  
\* The revision does not affect the test result conducted before its effective date.

Test Specification : ICES-003 Issue 6:2016 (SMSE-005-19)  
Title : Spectrum Management and Telecommunications  
Interference-Causing Equipment Standard  
Information Technology Equipment (Including Digital Apparatus) –  
Limits and Methods of Measurement

#### 3.2 Procedures & results

Item	Test Procedure	Limits	Deviation	Worst margin	Result	Remarks
Conducted emission	ANSI C63.4: 2014 7. AC powerline conducted emission measurements IEEE 187:2003	Class B	N/A	N/A	N/A	*1)
Radiated emission	ANSI C63.4: 2014 8. Radiated emission measurements IEEE 187:2003	30 MHz - 88 MHz: 100 µV/m 88 MHz - 216 MHz: 150 µV/m 216 MHz-960 MHz: 200 µV/m above 960 MHz: 500 µV/m	N/A	1.63 dB (3488.800 MHz, Vertical, 1.FM Reception (Sub))	Complied# a)	*2)
Antenna Terminal	ANSI C63.4: 2014 12. Measurement of unintentional radiators other than ITE IEEE 187:2003	2 nW (at 75 ohm)	N/A	13.1 dB (3386.667 MHz, 1. FM Reception (Main)) (2853.333 MHz, 1. FM Reception (Sub))	Complied b)	*3)
<p>*1) The test is not applicable since the EUT does not have AC ports.  *2) The test mode which applies test procedure of IEEE 187:2003 is outside of JAB accreditation scopes.  *3) This test item is outside of JAB accreditation scopes.  Note: UL Japan's EMI Work Procedures No. 13-EM-W0420</p> <p>a) Refer to Appendix 2 (data of Radiated emission)  b) Refer to Appendix 2 (data of Antenna terminal)</p> <p>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.</p>						

#### 3.3 Addition to standard

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

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### 3.4 Confirmation

UL Japan, Inc. hereby confirms that EUT, in the configuration tested, complies with the specifications FCC Part 15 Subpart B:2020 Class B and ICES-003 Issue 6:2016 (SMSE-005-19) Class B.

### 3.5 Uncertainty

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

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

#### EMI

	Open area test site					Shielded room				Ueispr (±)
	No.1		No.2	No.3	No.1	No.2	No.3	No.7		
	(±)		(±)	(±)	(±)	(±)	(±)	(±)		
Conducted disturbance										
LISN (AMN)	9 kHz - 150 kHz	3.8 dB								3.8 dB
	150 kHz - 30 MHz	3.4 dB								3.4 dB
ISN (LCL= 55 dB - 40 dB)	150 kHz - 30 MHz	4.2 dB								5.0 dB
ISN (LCL= 65 dB - 50 dB)	150 kHz - 30 MHz	4.6 dB								5.0 dB
ISN (LCL= 75 dB - 60 dB)	150 kHz - 30 MHz	5.0 dB								5.0 dB
ISN (Screened)	150 kHz - 30 MHz	3.4 dB								5.0 dB
ISN (75 ohm)	150 kHz - 30 MHz	3.4 dB								5.0 dB
Current probe	150 kHz - 30 MHz	2.9 dB								2.9 dB
Capacitive Voltage Probe	150 kHz - 30 MHz	3.9 dB								3.9 dB
Voltage probe	150 kHz - 30 MHz	2.9 dB								2.9 dB
Radiated disturbance										
3 m	9 kHz - 30 MHz	3.6 dB	3.5 dB	3.5 dB	-	-	-	-	Not Defined	
	30 MHz - 200 MHz (Horizontal)	4.5 dB	4.7 dB	4.7 dB	-	-	-	-	6.3 dB	
	30 MHz - 200 MHz (Vertical)	4.6 dB	4.9 dB	4.9 dB	-	-	-	-	6.3 dB	
	200 MHz - 1000 MHz (Horizontal)	5.0 dB	5.1 dB	5.1 dB	-	-	-	-	6.3 dB	
	200 MHz - 1000 MHz (Vertical)	6.1 dB	6.2 dB	6.2 dB	-	-	-	-	6.3 dB	
	1 GHz - 6 GHz	4.8 dB			-	-	-	-	5.2 dB	
	6 GHz - 18 GHz	5.1 dB			-	-	-	-	5.5 dB	
10 m	9 kHz - 30 MHz	3.3 dB	3.4 dB	3.4 dB	-	-	-	-	Not Defined	
	30 MHz - 200 MHz (Horizontal)	4.5 dB	4.7 dB	4.7 dB	-	-	-	-	6.3 dB	
	30 MHz - 200 MHz (Vertical)	4.5 dB	4.7 dB	4.7 dB	-	-	-	-	6.3 dB	
	200 MHz - 1000 MHz (Horizontal)	4.7 dB	4.9 dB	4.9 dB	-	-	-	-	6.3 dB	
	200 MHz - 1000 MHz (Vertical)	4.8 dB	4.9 dB	4.9 dB	-	-	-	-	6.3 dB	
	1 GHz - 18 GHz	5.0 dB			-	-	-	-	Not Defined	
Antenna terminal voltage										
	30 MHz - 1000 MHz	3.7 dB								Not Defined
	1 GHz - 2.15 GHz	3.8 dB								Not Defined
Disturbance power										
	30 MHz - 300 MHz	3.7 dB								4.5 dB

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### 3.6 Test Location

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FCC Test Firm Registration Number: 788329

	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 open area test site	-	40 x 20	-
No.2 open area test site	-	20 x 18	-
No.3 open area test site	-	20 x 18	-
No.1 shielded room	5.5 x 6.4 x 2.7	5.5 x 6.4	-
No.2 shielded room	4.5 x 3.6 x 2.7	4.5 x 3.6	-
No.3 shielded room	3.6 x 7.2 x 2.4	3.6 x 7.2	-
No.4 shielded room	5.5 x 5.0 x 2.4	4.35 x 3.35	-
No.5 shielded room	5.5 x 4.3 x 2.5	5.54 x 3.0	-
No.6 shielded room	5.2 x 3.2 x 2.9	5.2 x 3.2	-
No.7 shielded room	9.3 x 3.4 x 2.7	9.3 x 3.4	-
No.1 EMS lab. (Full-anechoic chamber)	5.0 x 8.0 x 3.5	-	-
No.2 EMS lab. (Full-anechoic chamber)	4.0 x 7.0 x 3.5	-	-

### 3.7 Test setup, Data of EMI & Test instruments

Refer to Appendix 1 to 3.

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## **Section 4: Operation of EUT during testing**

### **4.1 Operating modes**

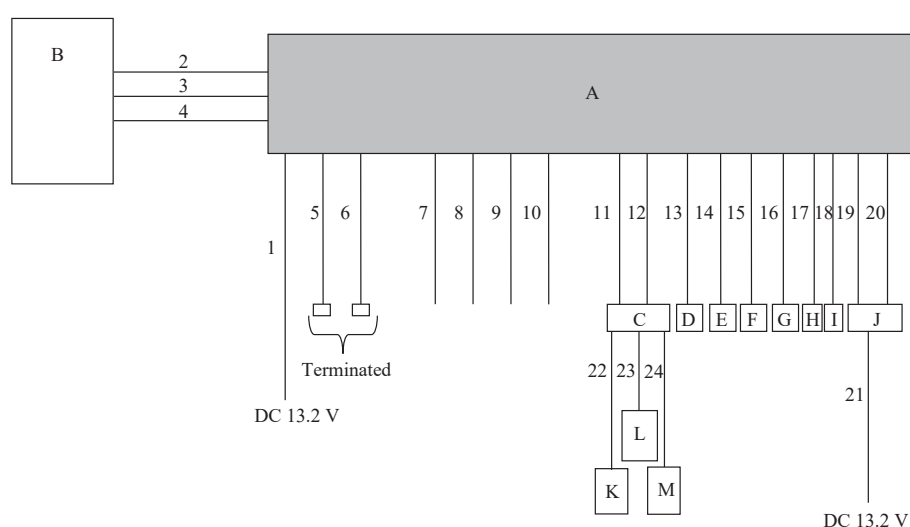
The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

Test sequence is used: 1. FM Reception (Main), FM Reception (Sub)

Software: Version 02.00.11

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing

### **4.2 Configuration and peripherals**



\*Cabling and setup 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	Cockpit Control Unit	DNNS111	468700-3570	DENSO CORPORATION	EUT
B	Center Information Display	-	462200-8830	DENSO CORPORATION	-
C	AUX-Box	86257	FL000	HOSIDEN	-
D	4Ω Speaker	K50	No.13	VISATON	-
E	4Ω Speaker	K50	No.14	VISATON	-
F	4Ω Speaker	K50	No.15	VISATON	-
G	4Ω Speaker	K50	No.16	VISATON	-
H	CAN Terminated	DE-C8-J9	-	-	-
I	CAN Terminated	DE-C8-J9	-	-	-
J	Meter	TN257550-673	85002AN02A	DENSO CORPORATION	-
K	USB Memory	USM4GU G	USM15504B	SONY	-
L	Smart phone	GALAXY NEXUS SC-04D	R2EBB51195E	SAMSUNG	-
M	USB Memory	USM4GU L	14625B-1	SONY	-

#### List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	1.6	Unshielded	Unshielded	-
2	Bluetooth Antenna Cable	1.0	Shielded	Shielded	-
3	DC + signal Cable	1.0	Unshielded	Unshielded	-
4	LVDS Cable	1.0	Shielded	Shielded	-
5	Antenna Cable	2.0	Shielded	Shielded	-
6	Antenna Cable	2.0	Shielded	Shielded	-
7	USB Cable	1.6	Shielded	Shielded	-
8	USB Cable	1.6	Shielded	Shielded	-
9	Camera Cable	0.9	Shielded	Shielded	-
10	Signal Cable	1.0	Unshielded	Unshielded	-
11	USB Cable	1.7	Shielded	Shielded	-
12	Signal Cable	0.9	Unshielded	Unshielded	-
13	Speaker Cable	1.0	Unshielded	Unshielded	-
14	Speaker Cable	1.0	Unshielded	Unshielded	-
15	Speaker Cable	1.0	Unshielded	Unshielded	-
16	Speaker Cable	1.0	Unshielded	Unshielded	-
17	Signal Cable	1.0	Unshielded	Unshielded	-
18	Signal Cable	1.0	Unshielded	Unshielded	-
19	Signal Cable	1.2	Unshielded	Unshielded	-
20	Meter Cable	1.7	Shielded	Shielded	-
21	DC Cable	1.6	Unshielded	Unshielded	-
22	USB Cable	2.0	Shielded	Shielded	-
23	AUX Cable	1.5	Shielded	Shielded	-
24	USB Cable	2.5	Shielded	Shielded	-

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## **Section 5: Radiated emission**

### **5.1 Operating environment**

This test was carried out in open area test site.

Temperature : See data

Humidity : See data

### **5.2 Test configuration**

EUT was placed on a table which was consisted by polystyrene foam, polypropylene foam and polycarbonate of nominal size, 1 m by 1.5 m, raised 0.8 m above the conducting ground plane.

The rear of EUT and its peripherals was aligned and flushed with rear of tabletop.

I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle and were hanged 40 cm height to the ground plane. The measurements were performed for vertical or horizontal antenna polarization or both as necessary. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Photographs of the set up are shown in Appendix 1.

### **5.3 Test conditions**

Frequency range : 30 MHz - 25000 MHz

Test distance : 3 m

EUT position : Table top

### **5.4 Test procedure**

<Below 1 GHz>

The Radiated Electric Field Strength intensity has been measured on open area test site with a ground plane at a distance of 3 m\*.

\* Measuring distance

The boundary of the EUT is defined by an imaginary circular periphery.

Pre check measurements were performed in a screened room with a search coil at 30 MHz-1000 MHz to distinguish disturbances of EUT from the ambient noise

Measurements were performed with a quasi-peak detector.

The measuring antenna height was 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 intensity.

The measurements were performed for vertical or horizontal antenna polarization or both as necessary.

<Above 1 GHz>

The radiated electric field strength intensity has been measured on open area test site with a ground plane. The distance is shown in Appendix 2.

Pre check measurements were performed in a screened room with a horn antenna at 1000 MHz - 25000 MHz to distinguish disturbances of EUT from the ambient noise.

Measurements were performed with a Peak detector and an average detector.

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.

EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for vertical or horizontal antenna polarization or both as necessary.

Frequency	: 30 MHz-1000 MHz	1000 MHz-25000 MHz *1)
Instrument used	: Test Receiver	Test Receiver
Detector Type	: QP	AV
		PK
IF Band width	: 120 kHz	RBW 1 MHz
		RBW 1 MHz

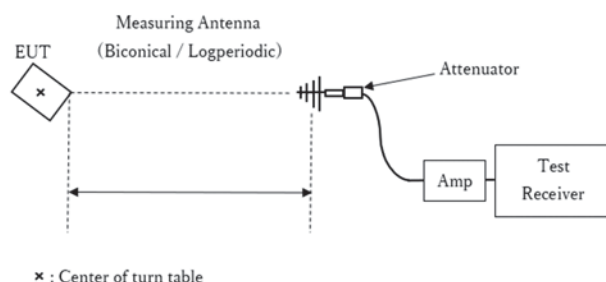
\*1) The measurement data was adjusted to a 3 m distance using the following Distance Factor.

Distance factor:  $20 \log (\text{Actual distance}/3 \text{ m})$

Distance factor and actual distance are shown in Appendix 2.

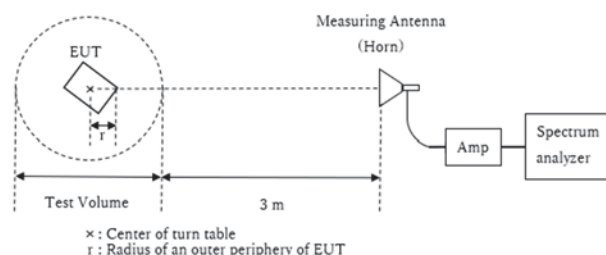
**Figure 2: Test Setup**

Below 1 GHz



Test Distance: 3 m

1 GHz - 18 GHz



Distance Factor:  $20 \times \log (3.10 \text{ m}^*/3.0 \text{ m}) = 0.28 \text{ dB}$

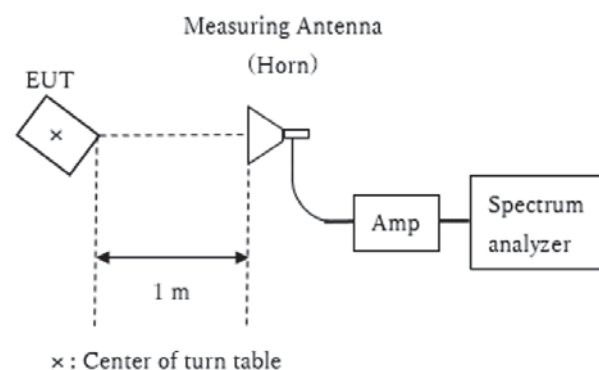
\* Test Distance:  $(3 + \text{Test Volume} / 2) - r = 3.10 \text{ m}$

Test Volume: 1.6 m

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

$r = 0.70 \text{ m}$

18 GHz - 26.5 GHz



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

\*Test Distance: 1 m

## 5.5 Results

Summary of the test results: Pass

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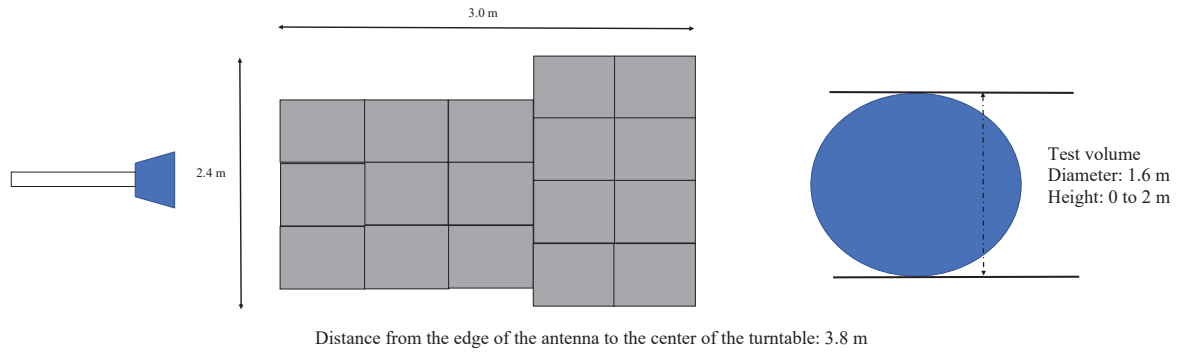
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**Figure. Absorber arrangement**

3Site



## **Section 6 : Antenna terminal voltage**

### **6.1 Operation environment**

The test was carried out in measurement room.

Temperature : See data

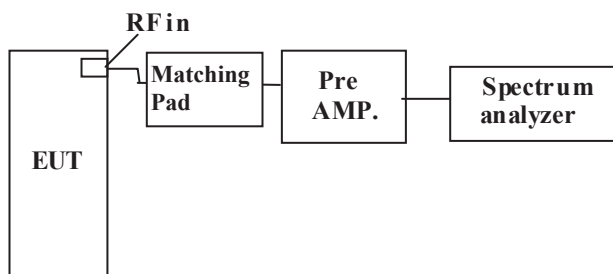
Humidity : See data

### **6.2 Test configuration**

The EUT was placed on a non-metallic platform 0.8 m.

Photographs of the set up are shown in Appendix 1.

**Figure 1. Antenna terminal voltage**  
**30 MHz-25000 MHz**



### **6.3 Test conditions**

Frequency range : 30 MHz - 25000 MHz

EUT position : Table top

### **6.4 Test procedure**

Connect EUT and spectrum analyzer through pre-amplifier. Set EUT to CH investigation mode then measure the voltage of local leakage from antenna terminal. Spectrum analyzer should be hold in maximum mode during the measurement.

Detector Type: Peak (30 MHz - 25000 MHz)

At frequency between 2000 MHz and 25000 MHz, 75/50 ohm conversion loss of impedance is used in speculation.

### **6.5 Results**

Summary of the test results : Pass

DATA OF RADIATED DISTURBANCE TEST

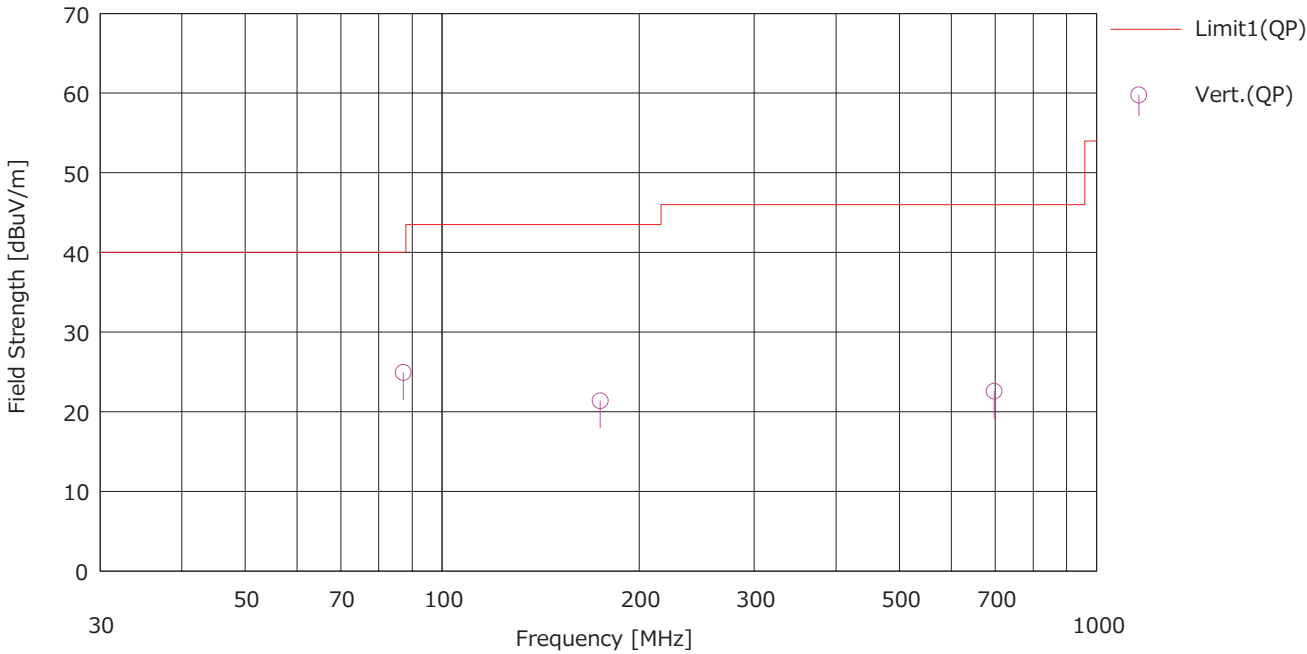
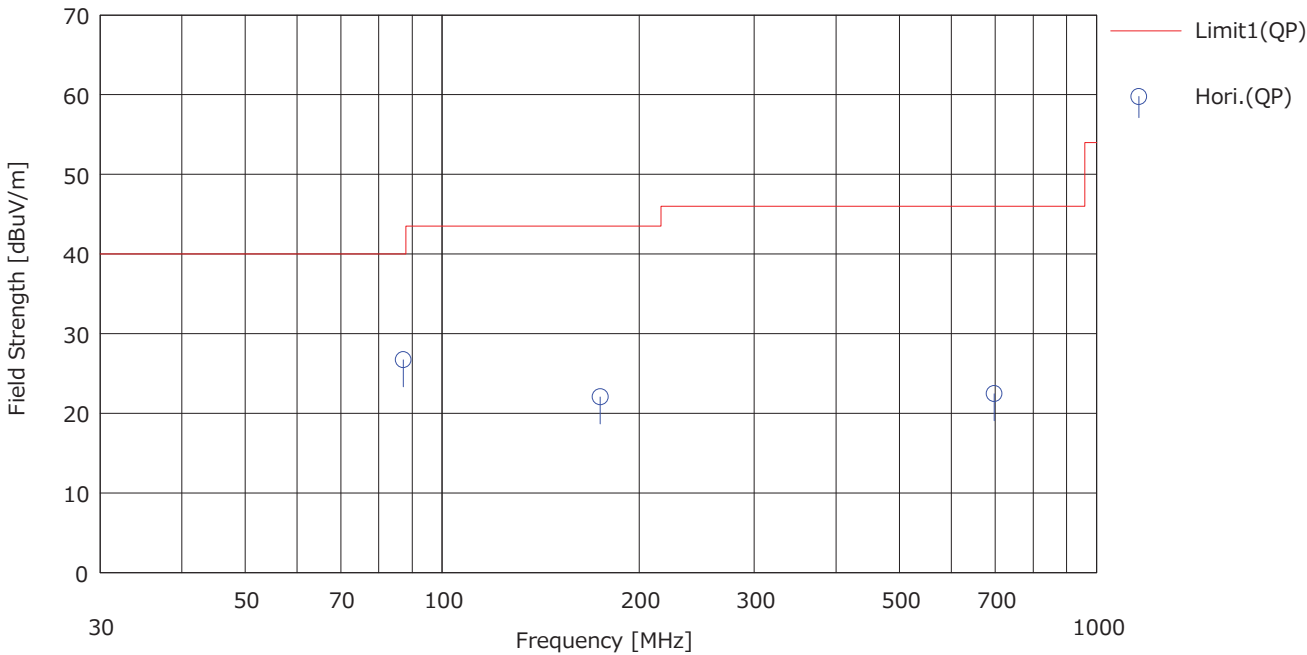
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi





# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margn <QP> [dB]	Pola. [H/V]	Ant. Type	Comment
1	87.220	39.00	9.48	7.85	29.79	0.18	26.72	40.00	13.28	Hori.	BA	
2	87.220	37.20	9.48	7.85	29.79	0.18	24.92	40.00	15.08	Vert.	BA	
3	174.440	29.20	13.47	8.80	29.64	0.24	22.07	43.50	21.43	Hori.	BA	
4	174.440	28.50	13.47	8.80	29.64	0.24	21.37	43.50	22.13	Vert.	BA	
5	261.660	---	12.15	6.75	29.70	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
6	261.660	---	12.15	6.75	29.70	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
7	348.880	---	15.00	7.55	29.82	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
8	348.880	---	15.00	7.55	29.82	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
9	436.100	---	16.17	8.19	29.95	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
10	436.100	---	16.17	8.19	29.95	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
11	523.320	---	17.61	8.62	30.03	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
12	523.320	---	17.61	8.62	30.03	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
13	610.540	---	19.56	9.06	29.98	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
14	610.540	---	19.56	9.06	29.98	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
15	697.760	23.00	19.85	9.54	29.92	0.00	22.47	46.00	23.53	Hori.	LA	
16	697.760	23.10	19.85	9.54	29.92	0.00	22.57	46.00	23.43	Vert.	LA	
17	784.980	---	20.77	10.04	29.74	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
18	784.980	---	20.77	10.04	29.74	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
19	872.200	---	21.81	10.53	29.33	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
20	872.200	---	21.81	10.53	29.33	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
21	959.420	---	22.13	11.04	28.91	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
22	959.420	---	22.13	11.04	28.91	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.

# DATA OF RADIATED DISTURBANCE TEST

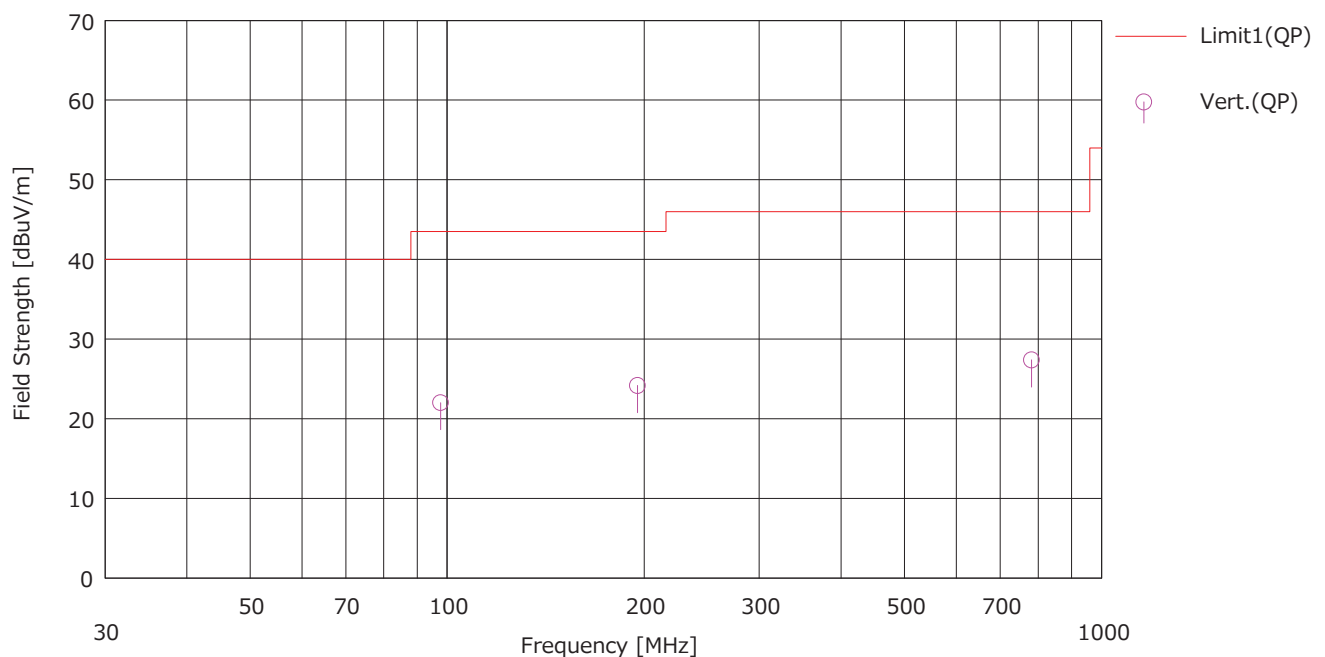
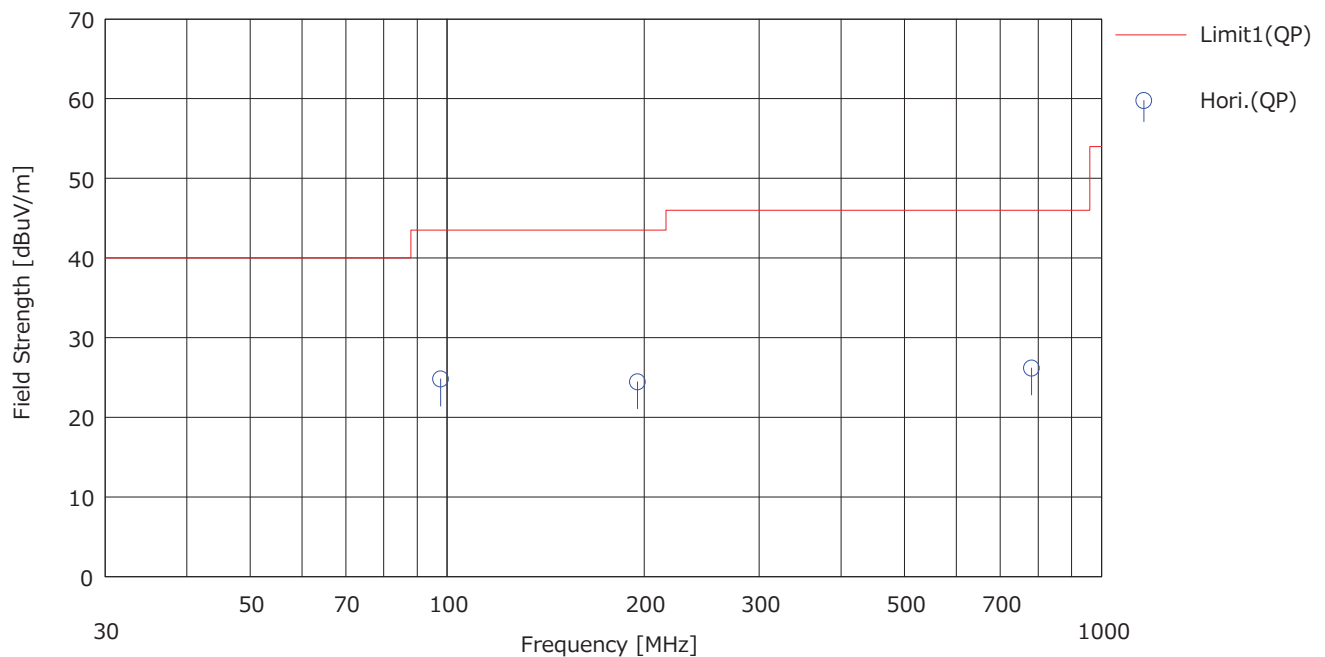
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]			
1	97.720	36.30	10.06	7.99	29.71	0.17	24.81	43.50	18.69	Hori.	BA	
2	97.720	33.50	10.06	7.99	29.71	0.17	22.01	43.50	21.49	Vert.	BA	
3	195.440	30.50	14.60	9.01	29.62	-0.03	24.46	43.50	19.04	Hori.	BA	
4	195.440	30.20	14.60	9.01	29.62	-0.03	24.16	43.50	19.34	Vert.	BA	
5	293.160	---	13.38	7.05	29.74	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
6	293.160	---	13.38	7.05	29.74	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
7	390.880	---	15.38	7.93	29.89	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
8	390.880	---	15.38	7.93	29.89	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
9	488.600	---	17.39	8.44	30.03	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
10	488.600	---	17.39	8.44	30.03	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
11	586.320	---	18.94	8.93	29.99	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
12	586.320	---	18.94	8.93	29.99	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
13	684.040	---	19.69	9.47	29.93	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
14	684.040	---	19.69	9.47	29.93	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
15	781.760	25.20	20.71	10.02	29.75	0.00	26.18	46.00	19.82	Hori.	LA	
16	781.760	26.40	20.71	10.02	29.75	0.00	27.38	46.00	18.62	Vert.	LA	
17	879.480	---	21.89	10.57	29.30	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
18	879.480	---	21.89	10.57	29.30	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
19	977.200	---	22.50	11.14	28.83	0.00	---	54.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
20	977.200	---	22.50	11.14	28.83	0.00	---	54.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.

# DATA OF RADIATED DISTURBANCE TEST

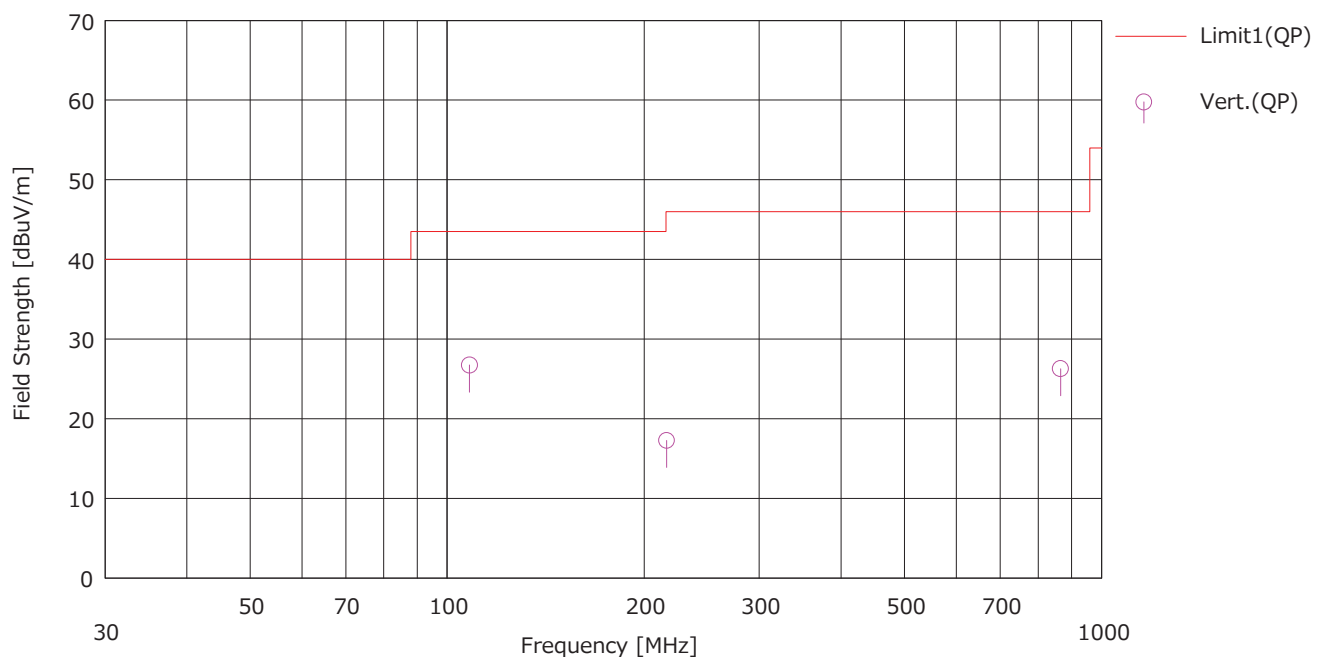
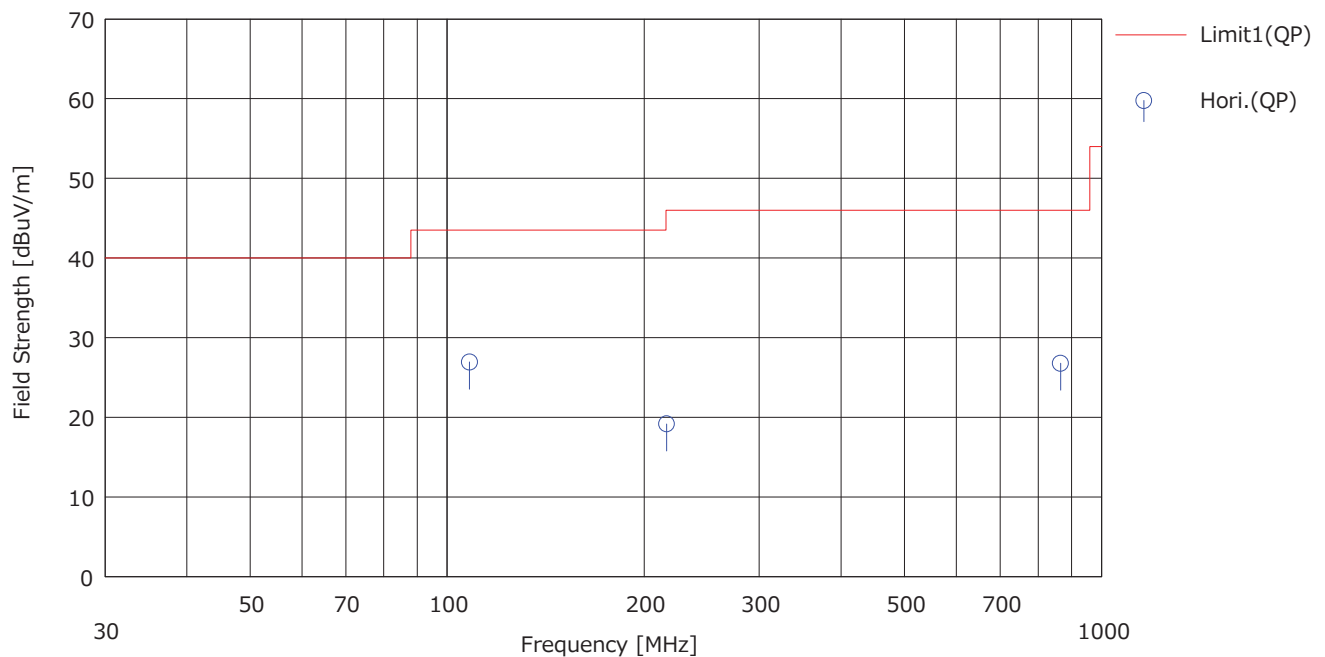
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margin <QP> [dB]	Pola. [H/V]	Ant. Type	Comment
1	108.220	37.60	10.86	8.10	29.68	0.06	26.94	43.50	16.56	Hori.	BA	
2	108.220	37.40	10.86	8.10	29.68	0.06	26.74	43.50	16.76	Vert.	BA	
3	216.440	31.50	11.00	6.31	29.64	0.00	19.17	46.00	26.83	Hori.	LA	
4	216.440	29.60	11.00	6.31	29.64	0.00	17.27	46.00	28.73	Vert.	LA	
5	324.660	---	14.40	7.34	29.79	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
6	324.660	---	14.40	7.34	29.79	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
7	432.880	---	16.11	8.17	29.95	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
8	432.880	---	16.11	8.17	29.95	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
9	541.100	---	17.64	8.71	30.02	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
10	541.100	---	17.64	8.71	30.02	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
11	649.320	---	19.22	9.27	29.95	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
12	649.320	---	19.22	9.27	29.95	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
13	757.540	---	20.21	9.88	29.80	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
14	757.540	---	20.21	9.88	29.80	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
15	865.760	23.80	21.87	10.49	29.37	0.00	26.79	46.00	19.21	Hori.	LA	
16	865.760	23.30	21.87	10.49	29.37	0.00	26.29	46.00	19.71	Vert.	LA	
17	973.980	---	22.37	11.12	28.84	0.00	---	54.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
18	973.980	---	22.37	11.12	28.84	0.00	---	54.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.

# DATA OF RADIATED DISTURBANCE TEST

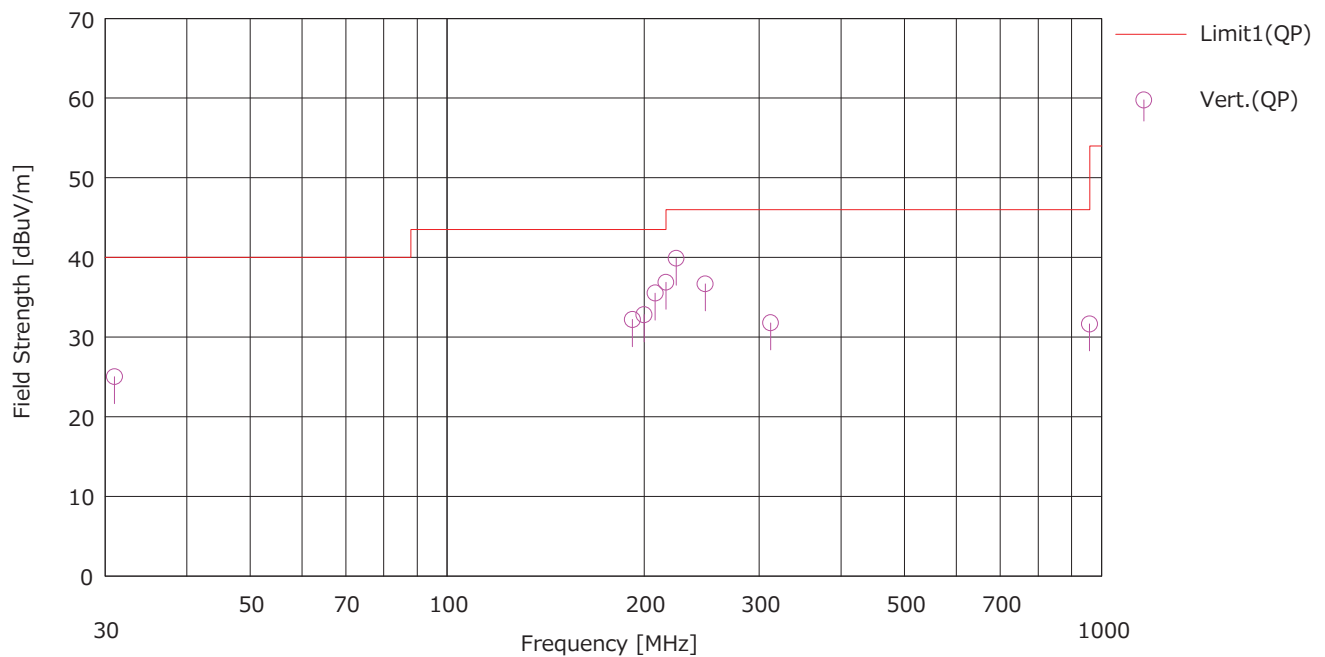
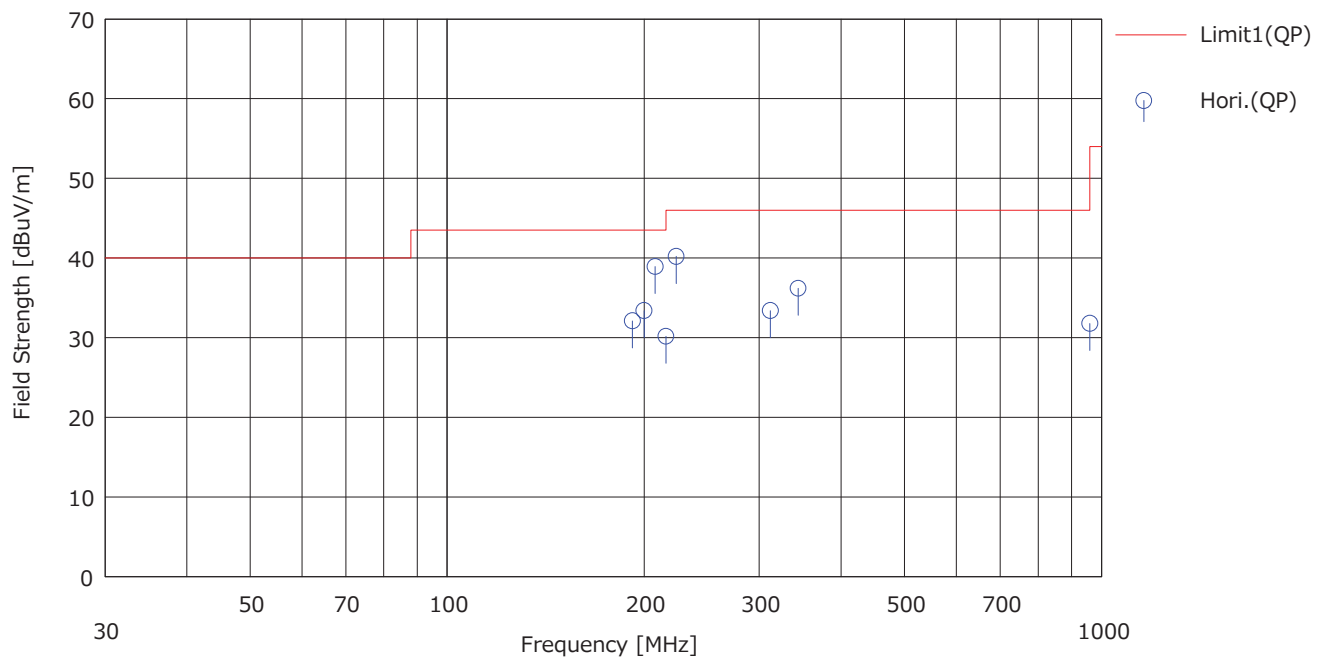
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (3m)

Engineer : Hiromichi Nakai



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (3m)

Engineer : Hiromichi Nakai

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]			
1	31.023	34.60	13.41	7.04	29.88	-0.14	25.03	40.00	14.97	Vert.	BA	
2	191.999	38.20	14.54	8.98	29.63	0.02	32.11	43.50	11.39	Hori.	BA	
3	192.001	38.30	14.54	8.98	29.63	0.02	32.21	43.50	11.29	Vert.	BA	
4	200.001	45.40	11.47	6.15	29.62	0.00	33.40	43.50	10.10	Hori.	LA	
5	200.002	44.80	11.47	6.15	29.62	0.00	32.80	43.50	10.70	Vert.	LA	
6	208.000	47.90	11.02	6.23	29.63	0.00	35.52	43.50	7.98	Vert.	LA	
7	208.002	51.30	11.02	6.23	29.63	0.00	38.92	43.50	4.58	Hori.	LA	
8	215.999	42.50	11.01	6.31	29.64	0.00	30.18	43.50	13.32	Hori.	LA	
9	216.001	49.20	11.01	6.31	29.64	0.00	36.88	46.00	9.12	Vert.	LA	
10	223.997	52.10	11.06	6.38	29.65	0.00	39.89	46.00	6.11	Vert.	LA	
11	224.001	52.40	11.06	6.38	29.65	0.00	40.19	46.00	5.81	Hori.	LA	
12	247.999	48.00	11.74	6.62	29.68	0.00	36.68	46.00	9.32	Vert.	LA	
13	311.992	42.00	13.93	7.23	29.77	0.00	33.39	46.00	12.61	Hori.	LA	
14	312.001	40.40	13.93	7.23	29.77	0.00	31.79	46.00	14.21	Vert.	LA	
15	344.002	43.50	15.01	7.51	29.82	0.00	36.20	46.00	9.80	Hori.	LA	
16	959.032	27.40	22.12	11.04	28.91	0.00	31.65	46.00	14.35	Vert.	LA	
17	959.998	27.50	22.15	11.04	28.91	0.00	31.78	46.00	14.22	Hori.	LA	

# DATA OF RADIATED DISTURBANCE TEST

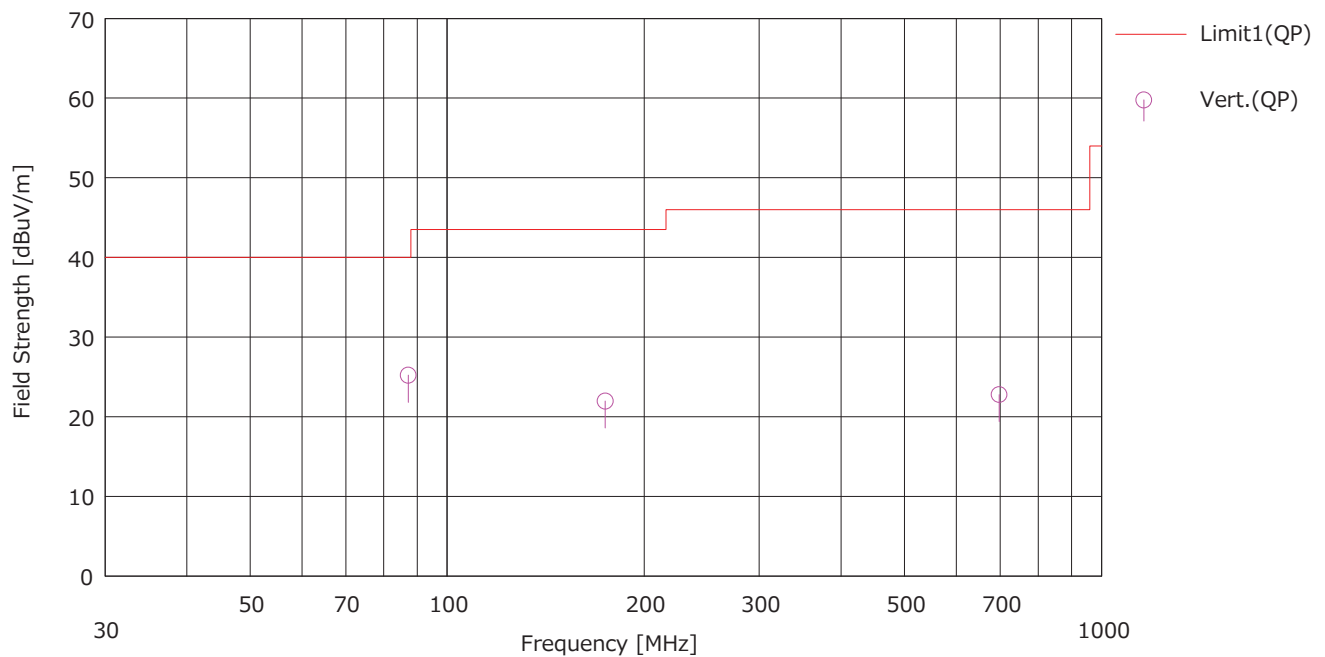
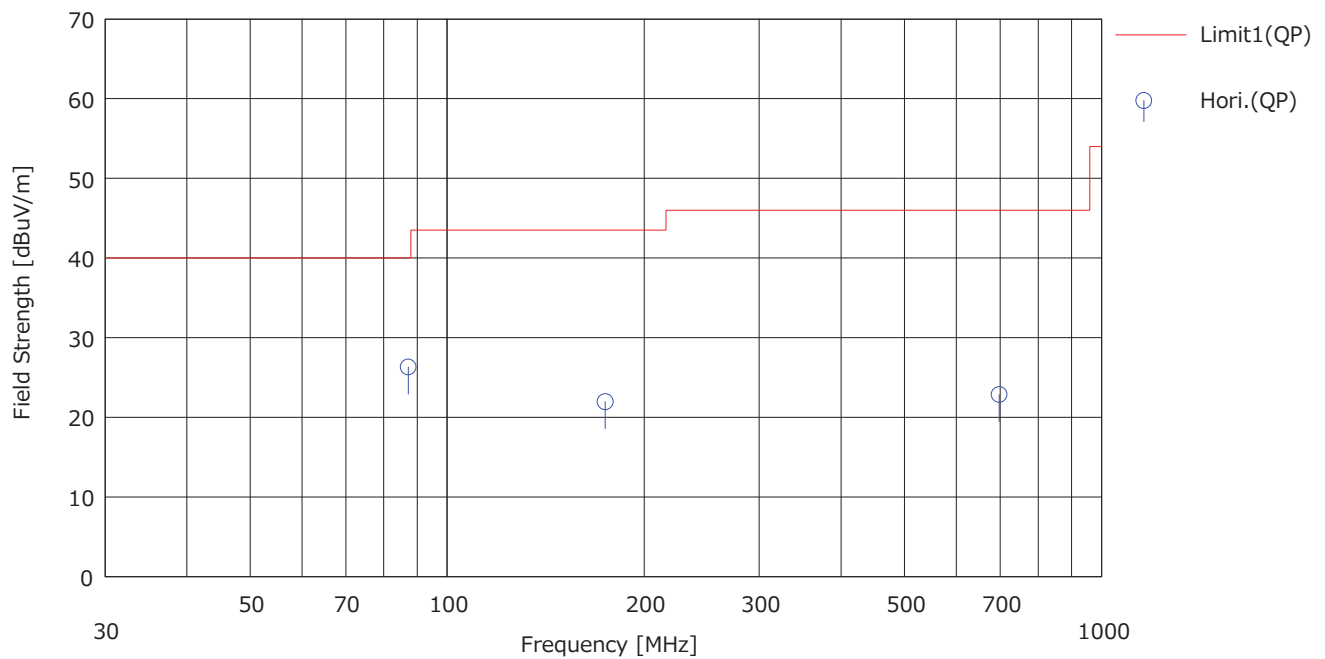
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi





# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margn <QP> [dB]	Pola. [H/V]	Ant. Type	Comment
1	87.220	38.60	9.48	7.85	29.79	0.18	26.32	40.00	13.68	Hori.	BA	
2	87.220	37.50	9.48	7.85	29.79	0.18	25.22	40.00	14.78	Vert.	BA	
3	174.440	29.10	13.47	8.80	29.64	0.24	21.97	43.50	21.53	Hori.	BA	
4	174.440	29.10	13.47	8.80	29.64	0.24	21.97	43.50	21.53	Vert.	BA	
5	261.660	---	12.15	6.75	29.70	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
6	261.660	---	12.15	6.75	29.70	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
7	348.880	---	15.00	7.55	29.82	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
8	348.880	---	15.00	7.55	29.82	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
9	436.100	---	16.17	8.19	29.95	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
10	436.100	---	16.17	8.19	29.95	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
11	523.320	---	17.61	8.62	30.03	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
12	523.320	---	17.61	8.62	30.03	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
13	610.540	---	19.56	9.06	29.98	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
14	610.540	---	19.56	9.06	29.98	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
15	697.760	23.40	19.85	9.54	29.92	0.00	22.87	46.00	23.13	Hori.	LA	
16	697.760	23.30	19.85	9.54	29.92	0.00	22.77	46.00	23.23	Vert.	LA	
17	784.980	---	20.77	10.04	29.74	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
18	784.980	---	20.77	10.04	29.74	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
19	872.200	---	21.81	10.53	29.33	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
20	872.200	---	21.81	10.53	29.33	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
21	959.420	---	22.13	11.04	28.91	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
22	959.420	---	22.13	11.04	28.91	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.

# DATA OF RADIATED DISTURBANCE TEST

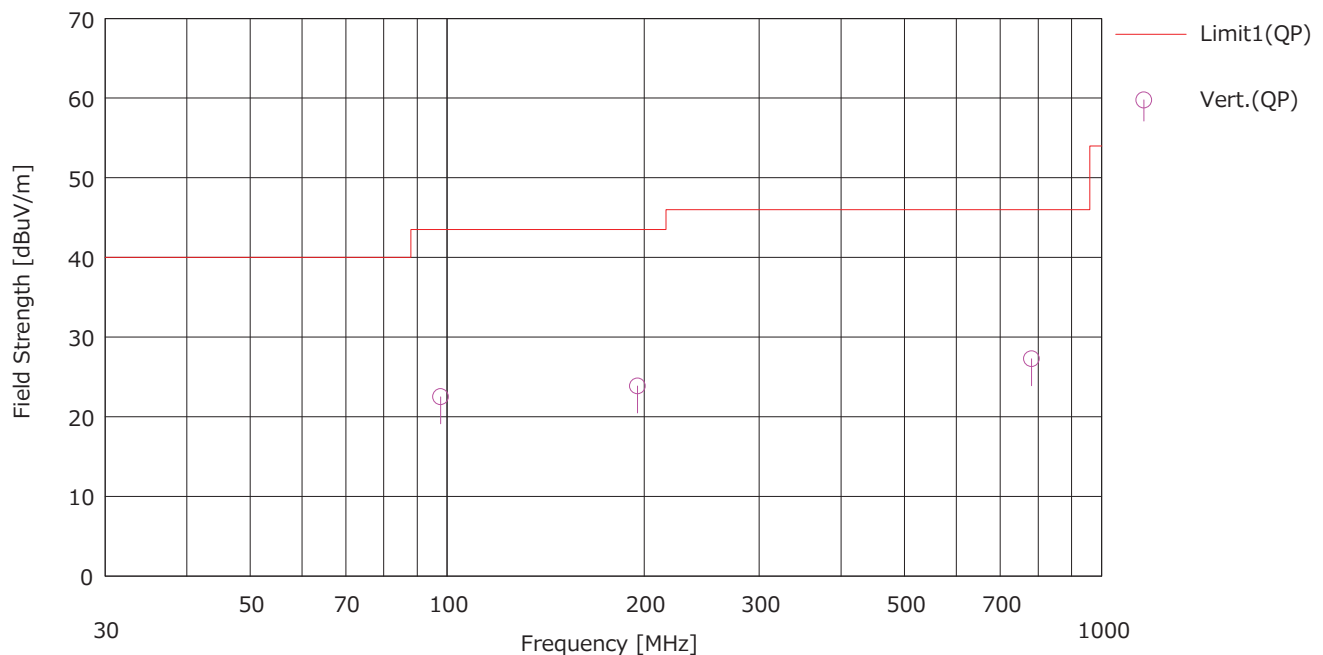
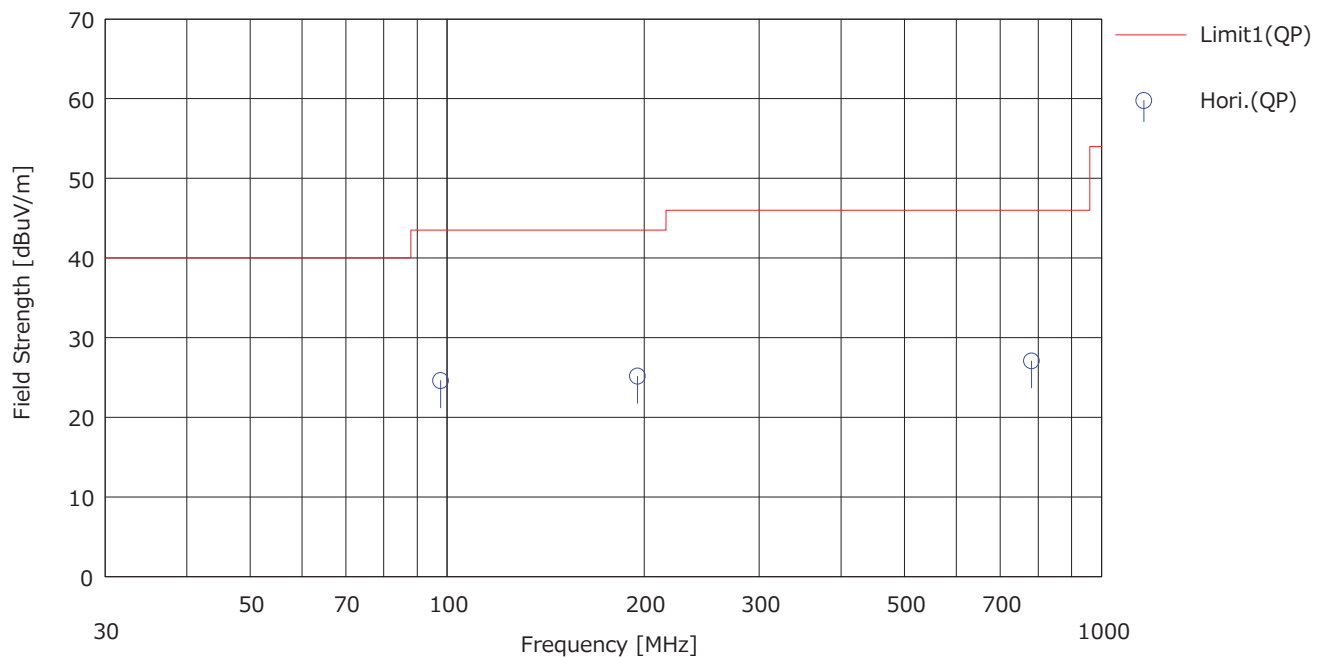
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP> [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP> [dBuV/m]	Limit <QP> [dBuV/m]	Margn <QP> [dB]	Pola. [H/V]	Ant. Type	Comment
1	97.720	36.10	10.06	7.99	29.71	0.17	24.61	43.50	18.89	Hori.	BA	
2	97.720	34.00	10.06	7.99	29.71	0.17	22.51	43.50	20.99	Vert.	BA	
3	195.440	31.20	14.60	9.01	29.62	-0.03	25.16	43.50	18.34	Hori.	BA	
4	195.440	29.90	14.60	9.01	29.62	-0.03	23.86	43.50	19.64	Vert.	BA	
5	293.160	---	13.38	7.05	29.74	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.]
6	293.160	---	13.38	7.05	29.74	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
7	390.880	---	15.38	7.93	29.89	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
8	390.880	---	15.38	7.93	29.89	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
9	488.600	---	17.39	8.44	30.03	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
10	488.600	---	17.39	8.44	30.03	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
11	586.320	---	18.94	8.93	29.99	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
12	586.320	---	18.94	8.93	29.99	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
13	684.040	---	19.69	9.47	29.93	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
14	684.040	---	19.69	9.47	29.93	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
15	781.760	26.10	20.71	10.02	29.75	0.00	27.08	46.00	18.92	Hori.	LA	
16	781.760	26.30	20.71	10.02	29.75	0.00	27.28	46.00	18.72	Vert.	LA	
17	879.480	---	21.89	10.57	29.30	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
18	879.480	---	21.89	10.57	29.30	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
19	977.200	---	22.50	11.14	28.83	0.00	---	54.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
20	977.200	---	22.50	11.14	28.83	0.00	---	54.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.

# DATA OF RADIATED DISTURBANCE TEST

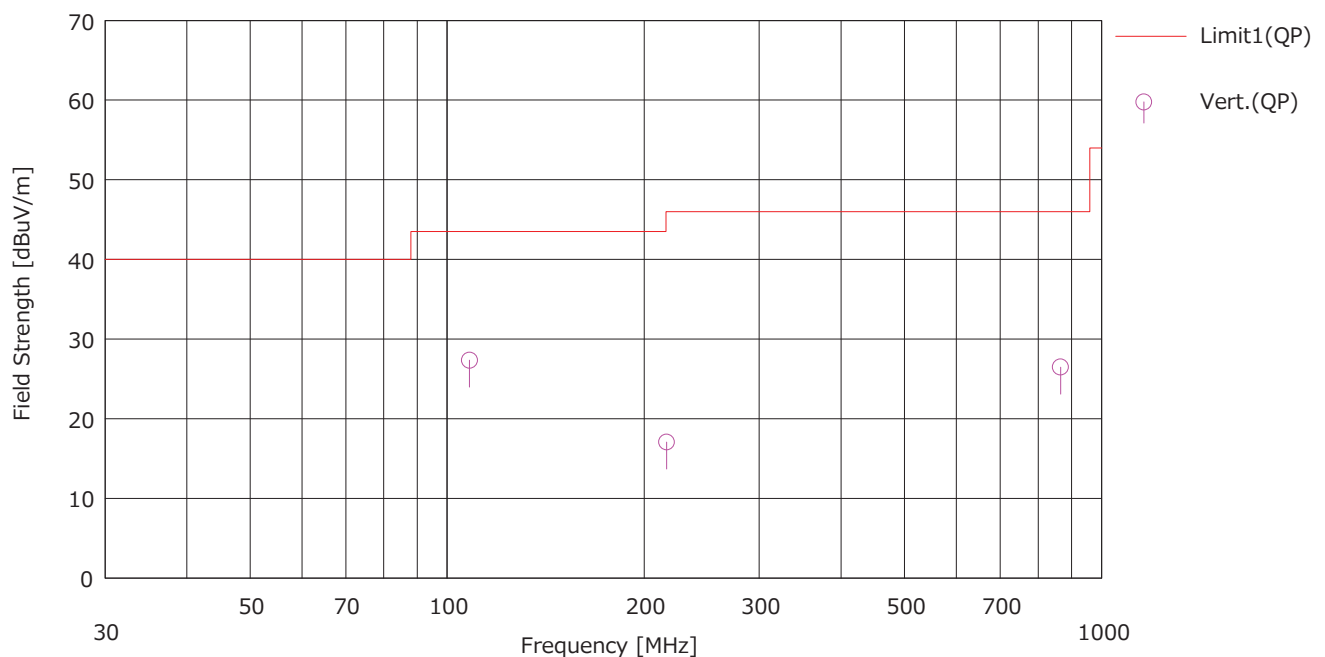
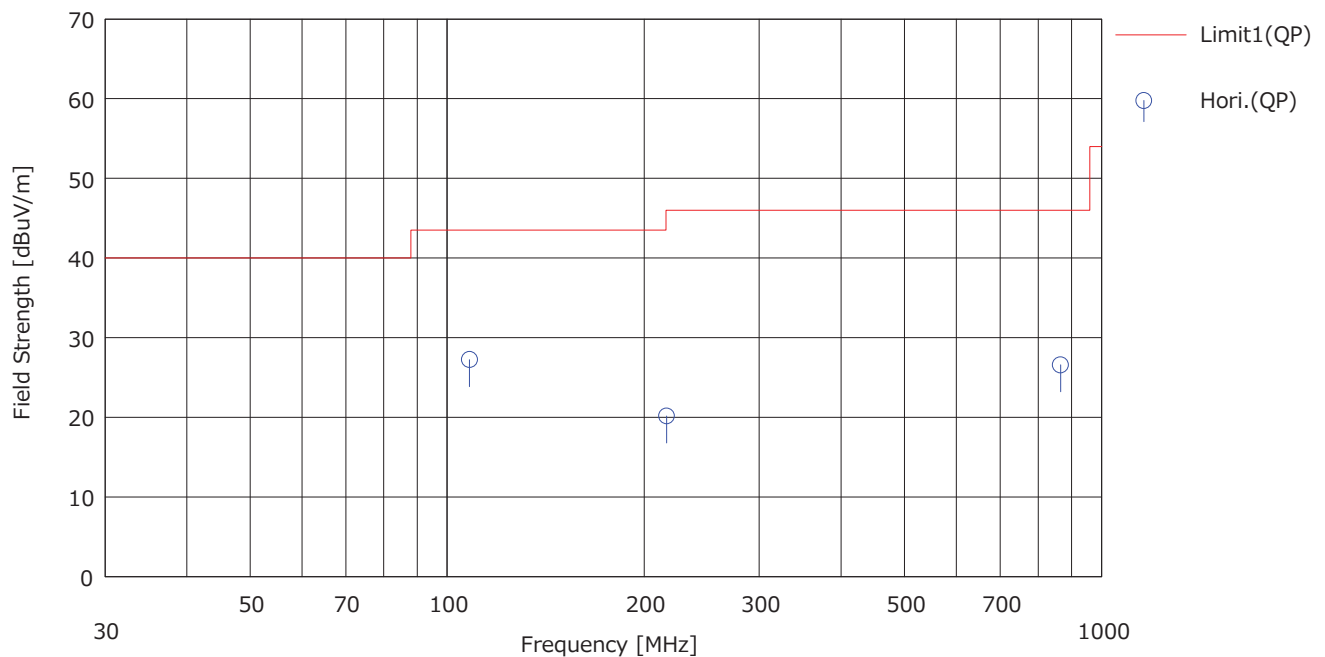
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (3m)

Engineer : Seigo Kakehi

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margn <QP>	Pola. [H/V]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]			
1	108.220	37.90	10.86	8.10	29.68	0.06	27.24	43.50	16.26	Hori.	BA	
2	108.220	38.00	10.86	8.10	29.68	0.06	27.34	43.50	16.16	Vert.	BA	
3	216.440	32.50	11.00	6.31	29.64	0.00	20.17	46.00	25.83	Hori.	LA	
4	216.440	29.40	11.00	6.31	29.64	0.00	17.07	46.00	28.93	Vert.	LA	
5	324.660	---	14.40	7.34	29.79	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
6	324.660	---	14.40	7.34	29.79	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
7	432.880	---	16.11	8.17	29.95	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
8	432.880	---	16.11	8.17	29.95	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
9	541.100	---	17.64	8.71	30.02	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
10	541.100	---	17.64	8.71	30.02	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
11	649.320	---	19.22	9.27	29.95	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
12	649.320	---	19.22	9.27	29.95	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
13	757.540	---	20.21	9.88	29.80	0.00	---	46.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
14	757.540	---	20.21	9.88	29.80	0.00	---	46.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.
15	865.760	23.60	21.87	10.49	29.37	0.00	26.59	46.00	19.41	Hori.	LA	
16	865.760	23.50	21.87	10.49	29.37	0.00	26.49	46.00	19.51	Vert.	LA	
17	973.980	---	22.37	11.12	28.84	0.00	---	54.00	---	Hori.	LA	It has been confirmed that the margin exceeds 20 dB.
18	973.980	---	22.37	11.12	28.84	0.00	---	54.00	---	Vert.	LA	It has been confirmed that the margin exceeds 20 dB.

# DATA OF RADIATED DISTURBANCE TEST

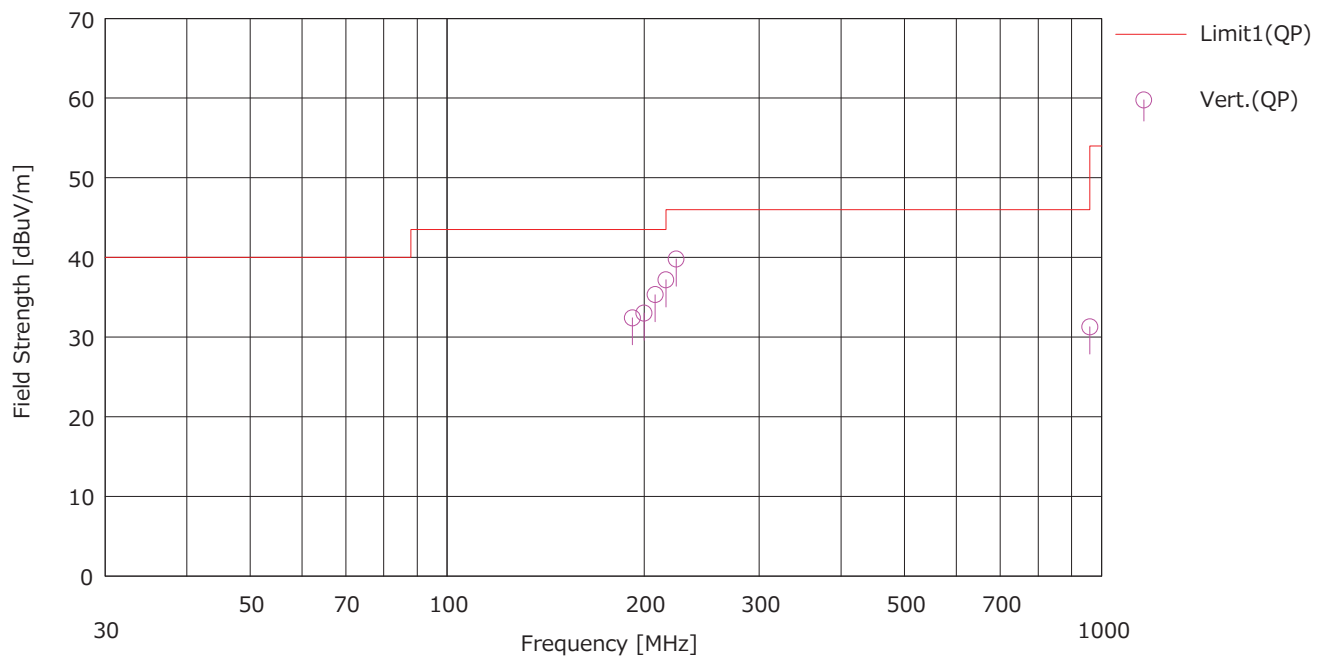
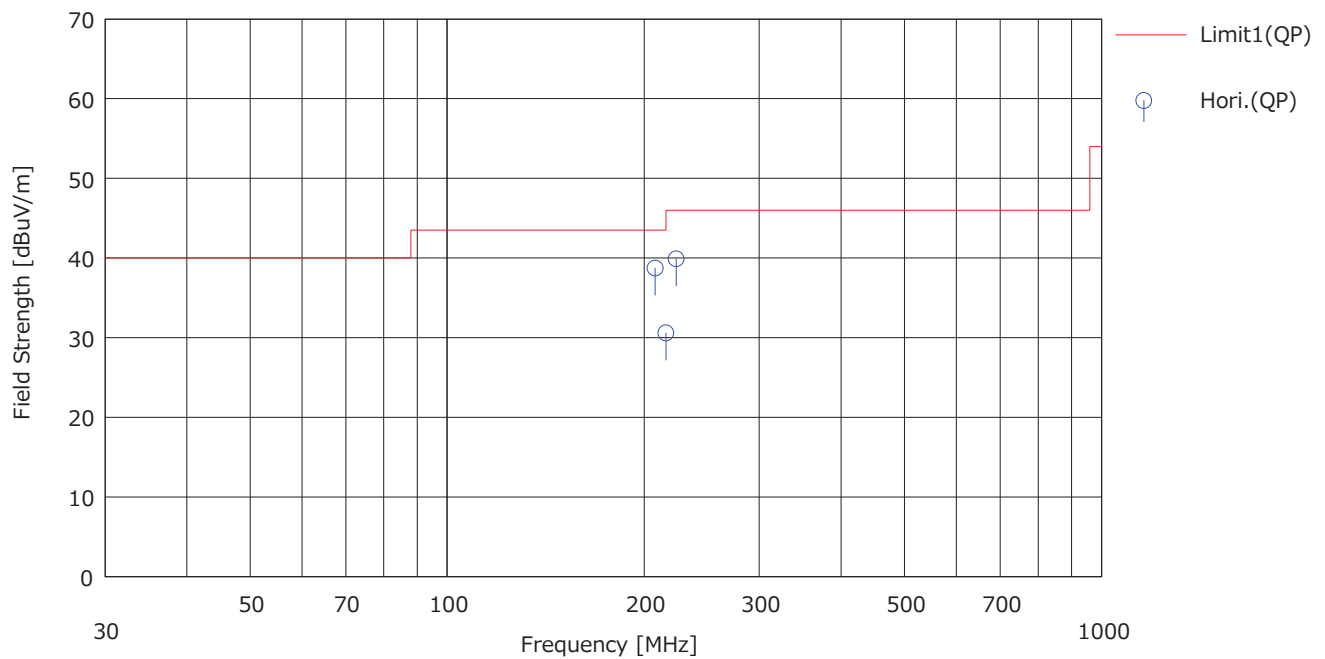
UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (SUB)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (3m)

Engineer : Hiromichi Nakai



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 2 Open area test site  
Date : 01/08/2020

Mode : 1.FM Reception (SUB)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 20 deg. C / 40 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (3m)

Engineer : Hiromichi Nakai

## << QP DATA >>

No.	Freq. [MHz]	Reading <QP>	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result <QP>	Limit <QP>	Margin <QP>	Pola. [H/V]	Ant. Type	Comment
		[dBuV]					[dBuV/m]	[dBuV/m]	[dB]			
1	192.001	38.50	14.54	8.98	29.63	0.02	32.41	43.50	11.09	Vert.	BA	
2	200.004	45.00	11.47	6.15	29.62	0.00	33.00	43.50	10.50	Vert.	LA	
3	208.000	47.70	11.02	6.23	29.63	0.00	35.32	43.50	8.18	Vert.	LA	
4	208.001	51.10	11.02	6.23	29.63	0.00	38.72	43.50	4.78	Hori.	LA	
5	216.001	42.90	11.01	6.31	29.64	0.00	30.58	46.00	15.42	Hori.	LA	
6	216.003	49.50	11.01	6.31	29.64	0.00	37.18	46.00	8.82	Vert.	LA	
7	223.997	52.10	11.06	6.38	29.65	0.00	39.89	46.00	6.11	Hori.	LA	
8	224.001	52.00	11.06	6.38	29.65	0.00	39.79	46.00	6.21	Vert.	LA	
9	959.996	27.00	22.15	11.04	28.91	0.00	31.28	46.00	14.72	Vert.	LA	

# DATA OF RADIATED DISTURBANCE TEST

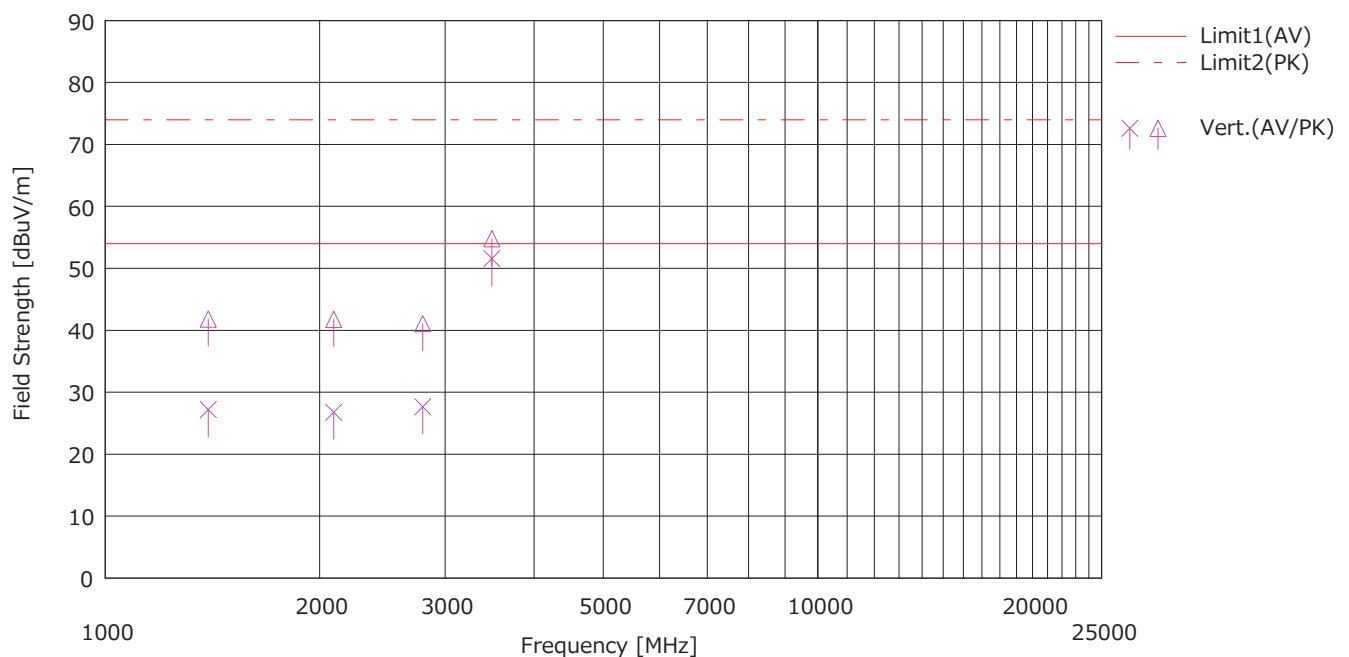
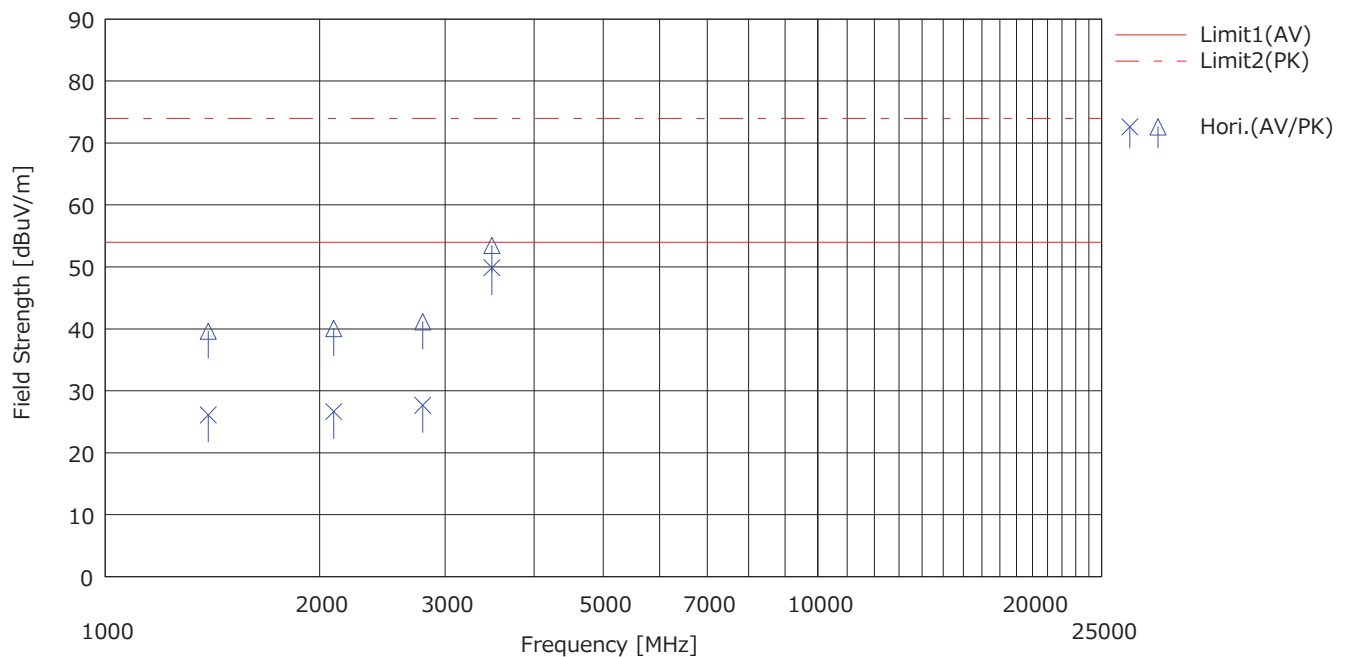
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi





# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Main)

Order No. : 13185291

Power : DC 13.2 V

Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

## &lt;&lt; AV/PK DATA &gt;&gt;

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV)	(PK)					(AV)	(PK)	(AV)	(PK)	(AV)	(PK)			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	1046.640	---	---	24.82	1.98	40.36	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
2	1046.640	---	---	24.82	1.98	40.36	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
3	1133.860	---	---	25.00	2.05	40.22	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
4	1133.860	---	---	25.00	2.05	40.22	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
5	1221.080	---	---	25.40	2.12	40.08	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
6	1221.080	---	---	25.40	2.12	40.08	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
7	1308.300	---	---	25.73	2.19	39.94	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
8	1308.300	---	---	25.73	2.19	39.94	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
9	1395.520	36.50	50.00	25.77	3.35	39.80	0.28	26.10	39.60	54.00	74.00	27.90	34.40	Hori.	HA	
10	1395.520	37.60	52.20	25.77	3.35	39.80	0.28	27.20	41.80	54.00	74.00	26.80	32.20	Vert.	HA	
11	1482.740	---	---	25.51	2.34	39.66	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
12	1482.740	---	---	25.51	2.34	39.66	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
13	1569.960	---	---	25.28	2.41	39.52	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
14	1569.960	---	---	25.28	2.41	39.52	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
15	1657.180	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
16	1657.180	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
17	1744.400	---	---	25.08	2.55	39.24	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
18	1744.400	---	---	25.08	2.55	39.24	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
19	1831.620	---	---	25.40	2.62	39.10	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
20	1831.620	---	---	25.40	2.62	39.10	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
21	1918.840	---	---	25.73	2.69	38.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
22	1918.840	---	---	25.73	2.69	38.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
23	2006.060	---	---	26.25	2.76	38.83	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
24	2006.060	---	---	26.25	2.76	38.83	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
25	2093.280	34.10	47.50	26.98	4.17	38.88	0.28	26.65	40.05	54.00	74.00	27.35	33.95	Hori.	HA	
26	2093.280	34.20	49.20	26.98	4.17	38.88	0.28	26.75	41.75	54.00	74.00	27.25	32.25	Vert.	HA	
27	2180.500	---	---	28.16	2.87	38.92	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
28	2180.500	---	---	28.16	2.87	38.92	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
29	2267.720	---	---	28.15	2.93	38.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
30	2267.720	---	---	28.15	2.93	38.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
31	2354.940	---	---	27.74	2.98	39.01	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
32	2354.940	---	---	27.74	2.98	39.01	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
33	2442.160	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
34	2442.160	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
35	2529.380	---	---	27.50	3.08	39.09	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
36	2529.380	---	---	27.50	3.08	39.09	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
37	2616.600	---	---	27.80	3.14	39.14	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
38	2616.600	---	---	27.80	3.14	39.14	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
39	2703.820	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
40	2703.820	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
41	2791.040	33.50	47.00	28.29	4.81	39.23	0.28	27.65	41.15	54.00	74.00	26.35	32.85	Hori.	HA	
42	2791.040	33.50	46.90	28.29	4.81	39.23	0.28	27.65	41.05	54.00	74.00	26.35	32.95	Vert.	HA	
43	2878.260	---	---	28.51	3.30	39.27	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
44	2878.260	---	---	28.51	3.30	39.27	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
45	2965.480	---	---	28.41	3.34	39.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
46	2965.480	---	---	28.41	3.34	39.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
47	3052.700	---	---	28.63	3.40	39.30	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
48	3052.700	---	---	28.63	3.40	39.30	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz+:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Main)

Order No. : 13185291

Power : DC 13.2 V

Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		<AV>	<PK>					<AV>	<PK>	<AV>	<PK>	<AV>	<PK>			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
49	3139.920	---	---	28.75	3.45	39.25	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
50	3139.920	---	---	28.75	3.45	39.25	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
51	3227.140	---	---	28.52	3.51	39.21	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
52	3227.140	---	---	28.52	3.51	39.21	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
53	3314.360	---	---	28.18	3.55	39.16	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
54	3314.360	---	---	28.18	3.55	39.16	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
55	3401.580	---	---	28.18	3.60	39.11	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
56	3401.580	---	---	28.18	3.60	39.11	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
57	3488.800	54.50	58.10	28.77	5.39	39.07	0.28	49.87	53.47	54.00	74.00	4.13	20.53	Hori.	HA	
58	3488.800	56.20	59.40	28.77	5.39	39.07	0.28	51.57	54.77	54.00	74.00	2.43	19.23	Vert.	HA	

# DATA OF RADIATED DISTURBANCE TEST

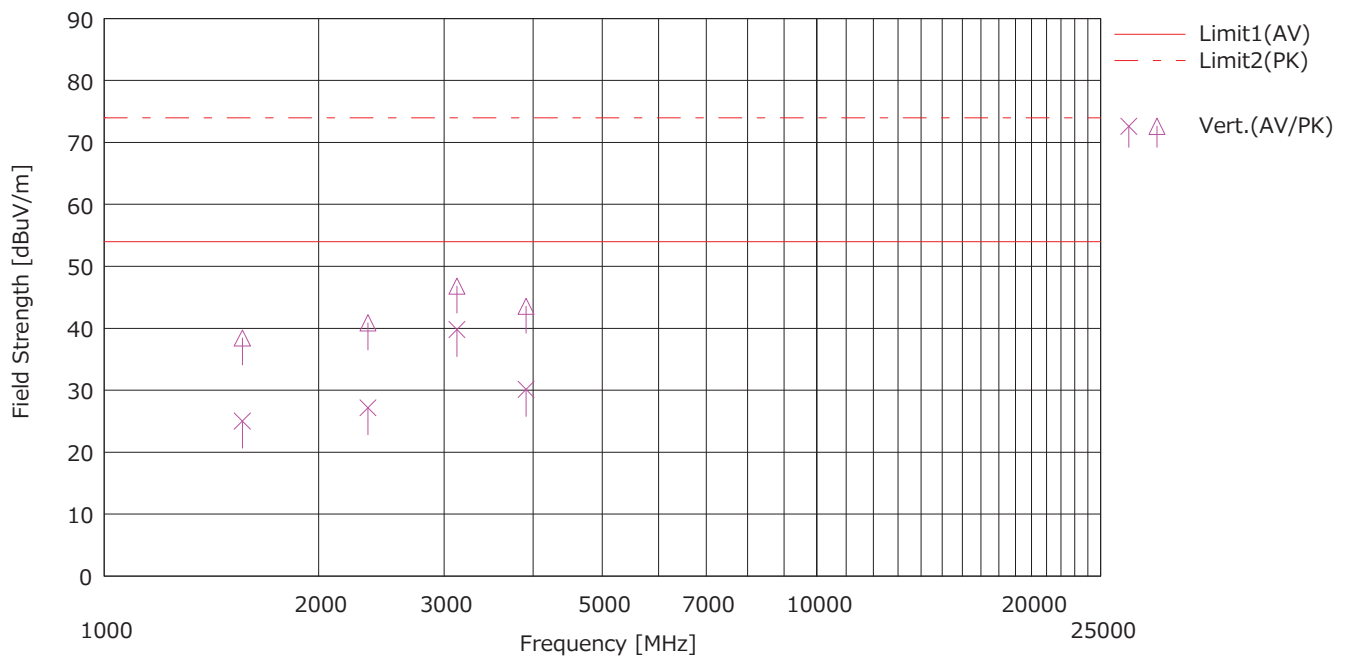
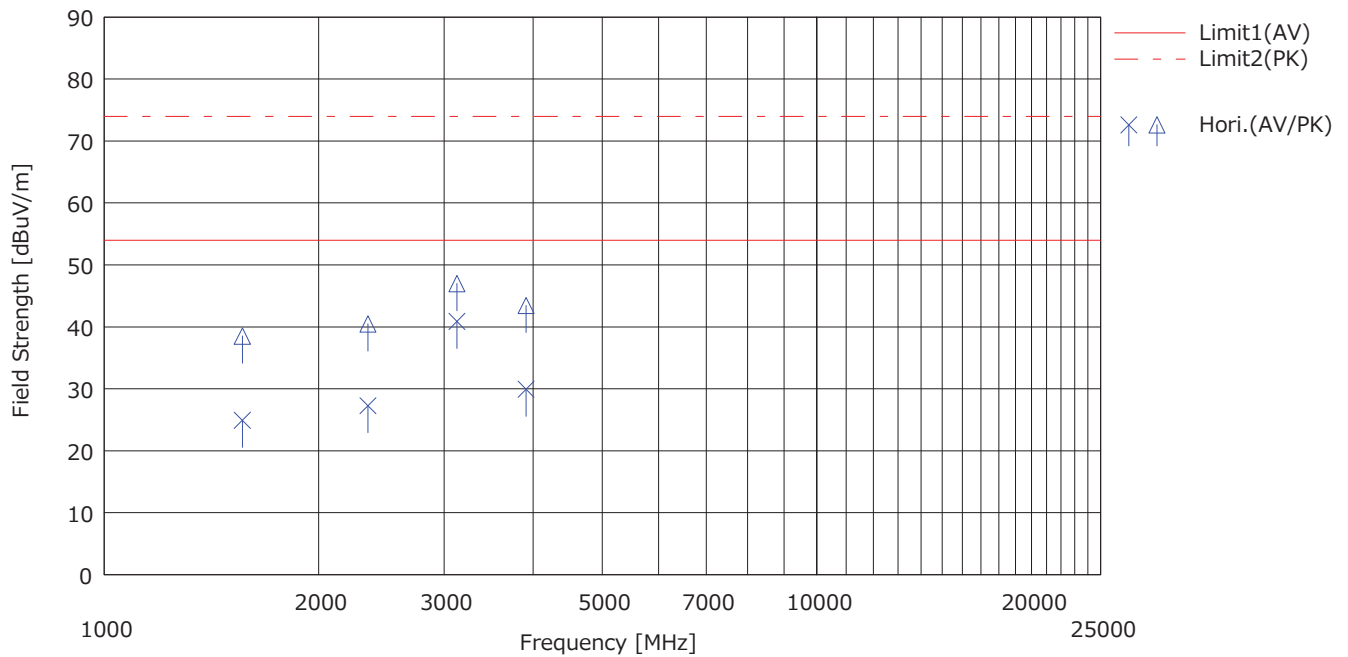
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Main)

Order No. : 13185291

Power : DC 13.2 V

Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

## &lt;&lt; AV/PK DATA &gt;&gt;

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV)	(PK)					(AV)	(PK)	(AV)	(PK)	(AV)	(PK)			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	1074.920	---	---	24.95	2.00	40.32	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
2	1074.920	---	---	24.95	2.00	40.32	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
3	1172.640	---	---	25.15	2.08	40.16	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
4	1172.640	---	---	25.15	2.08	40.16	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
5	1270.360	---	---	25.57	2.16	40.00	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
6	1270.360	---	---	25.57	2.16	40.00	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
7	1368.080	---	---	25.77	2.24	39.85	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
8	1368.080	---	---	25.77	2.24	39.85	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
9	1465.800	---	---	25.63	2.32	39.69	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
10	1465.800	---	---	25.63	2.32	39.69	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
11	1563.520	35.30	48.90	25.31	3.56	39.53	0.28	24.92	38.52	54.00	74.00	29.08	35.48	Hori.	HA	
12	1563.520	35.40	48.80	25.31	3.56	39.53	0.28	25.02	38.42	54.00	74.00	28.98	35.58	Vert.	HA	
13	1661.240	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
14	1661.240	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
15	1758.960	---	---	25.12	2.56	39.22	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
16	1758.960	---	---	25.12	2.56	39.22	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
17	1856.680	---	---	25.49	2.65	39.06	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
18	1856.680	---	---	25.49	2.65	39.06	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
19	1954.400	---	---	25.93	2.72	38.90	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
20	1954.400	---	---	25.93	2.72	38.90	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
21	2052.120	---	---	26.52	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
22	2052.120	---	---	26.52	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
23	2149.840	---	---	27.89	2.86	38.90	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
24	2149.840	---	---	27.89	2.86	38.90	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
25	2247.560	---	---	28.24	2.91	38.95	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
26	2247.560	---	---	28.24	2.91	38.95	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
27	2345.280	33.80	47.00	27.78	4.41	39.00	0.28	27.27	40.47	54.00	74.00	26.73	33.53	Hori.	HA	
28	2345.280	33.70	47.40	27.78	4.41	39.00	0.28	27.17	40.87	54.00	74.00	26.83	33.13	Vert.	HA	
29	2443.000	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
30	2443.000	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
31	2540.720	---	---	27.53	3.10	39.10	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
32	2540.720	---	---	27.53	3.10	39.10	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
33	2638.440	---	---	27.86	3.15	39.15	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
34	2638.440	---	---	27.86	3.15	39.15	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
35	2736.160	---	---	28.11	3.21	39.20	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
36	2736.160	---	---	28.11	3.21	39.20	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
37	2833.880	---	---	28.46	3.27	39.25	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
38	2833.880	---	---	28.46	3.27	39.25	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
39	2931.600	---	---	28.42	3.33	39.30	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
40	2931.600	---	---	28.42	3.33	39.30	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
41	3029.320	---	---	28.57	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
42	3029.320	---	---	28.57	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
43	3127.040	46.00	52.10	28.77	5.10	39.26	0.28	40.89	46.99	54.00	74.00	13.11	27.01	Hori.	HA	
44	3127.040	44.90	51.90	28.77	5.10	39.26	0.28	39.79	46.79	54.00	74.00	14.21	27.21	Vert.	HA	
45	3224.760	---	---	28.53	3.50	39.21	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
46	3224.760	---	---	28.53	3.50	39.21	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
47	3322.480	---	---	28.14	3.56	39.16	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
48	3322.480	---	---	28.14	3.56	39.16	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz+:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		<AV>	<PK>					<AV>	<PK>	<AV>	<PK>	<AV>	<PK>			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
49	3420.200	---	---	28.32	3.62	39.10	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
50	3420.200	---	---	28.32	3.62	39.10	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
51	3517.920	---	---	28.89	3.67	39.05	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
52	3517.920	---	---	28.89	3.67	39.05	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
53	3615.640	---	---	29.15	3.73	39.00	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
54	3615.640	---	---	29.15	3.73	39.00	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
55	3713.360	---	---	29.31	3.78	38.94	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
56	3713.360	---	---	29.31	3.78	38.94	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
57	3811.080	---	---	29.55	3.84	38.89	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
58	3811.080	---	---	29.55	3.84	38.89	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
59	3908.800	33.10	46.60	29.68	5.72	38.84	0.28	29.94	43.44	54.00	74.00	24.06	30.56	Hori.	HA	
60	3908.800	33.30	46.70	29.68	5.72	38.84	0.28	30.14	43.54	54.00	74.00	23.86	30.46	Vert.	HA	

# DATA OF RADIATED DISTURBANCE TEST

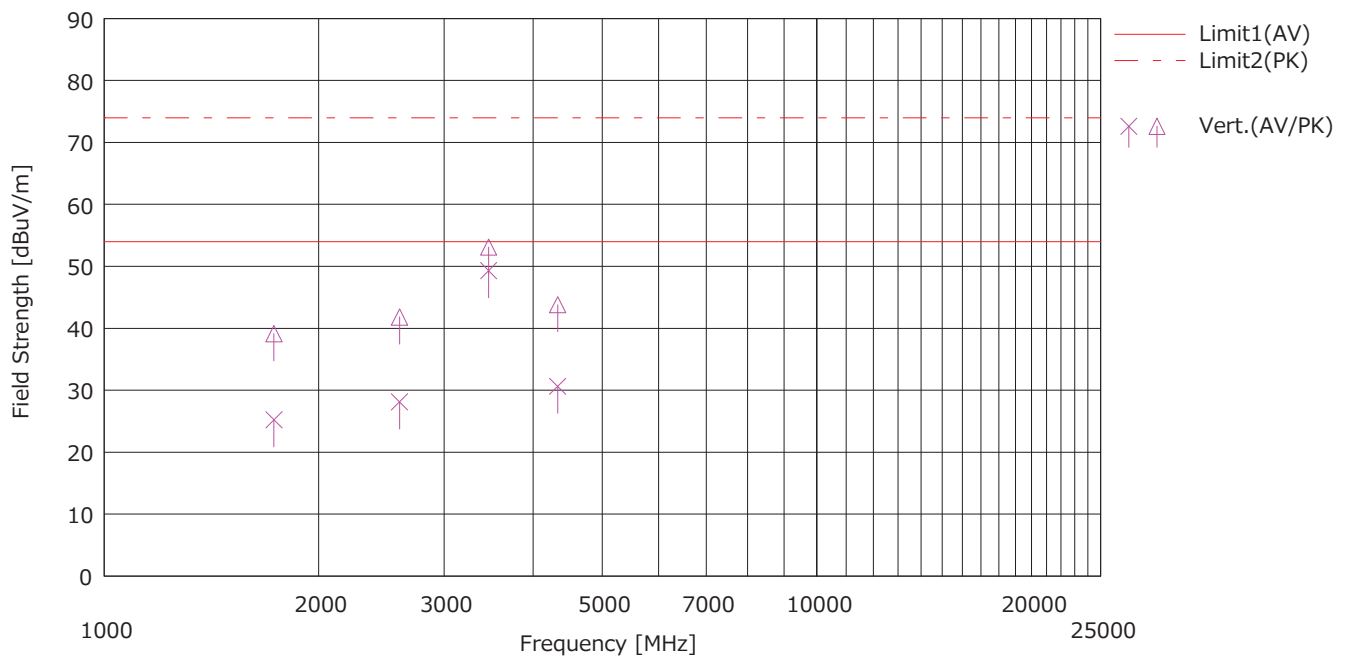
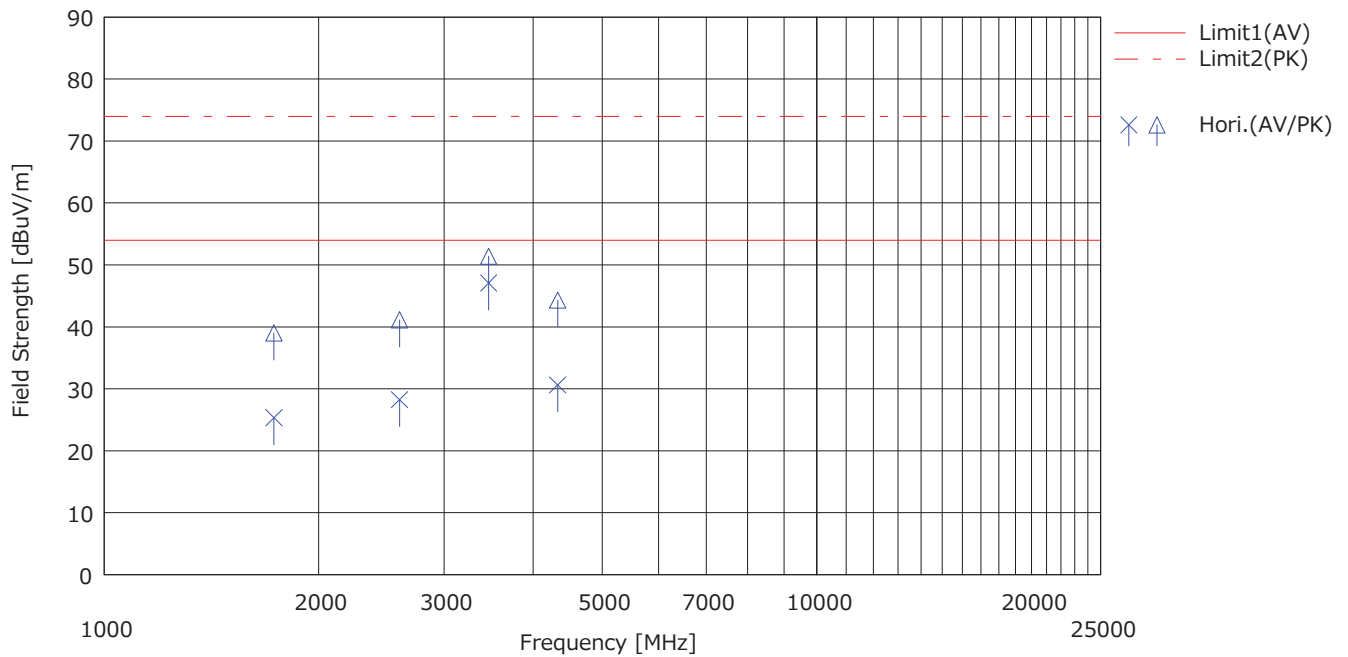
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Main)

Order No. : 13185291

Power : DC 13.2 V

Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

## &lt;&lt; AV/PK DATA &gt;&gt;

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]					(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]			
1	1082.200	---	---	24.98	2.01	40.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
2	1082.200	---	---	24.98	2.01	40.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
3	1190.420	---	---	25.29	2.10	40.13	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
4	1190.420	---	---	25.29	2.10	40.13	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
5	1298.640	---	---	25.71	2.18	39.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
6	1298.640	---	---	25.71	2.18	39.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
7	1406.860	---	---	25.77	2.28	39.78	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
8	1406.860	---	---	25.77	2.28	39.78	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
9	1515.080	---	---	25.38	2.36	39.61	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
10	1515.080	---	---	25.38	2.36	39.61	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
11	1623.300	---	---	25.09	2.45	39.44	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
12	1623.300	---	---	25.09	2.45	39.44	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
13	1731.520	35.50	49.20	25.05	3.75	39.26	0.28	25.32	39.02	54.00	74.00	28.68	34.98	Hori.	HA	
14	1731.520	35.40	49.30	25.05	3.75	39.26	0.28	25.22	39.12	54.00	74.00	28.78	34.88	Vert.	HA	
15	1839.740	---	---	25.43	2.63	39.09	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
16	1839.740	---	---	25.43	2.63	39.09	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
17	1947.960	---	---	25.89	2.72	38.91	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
18	1947.960	---	---	25.89	2.72	38.91	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
19	2056.180	---	---	26.57	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
20	2056.180	---	---	26.57	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
21	2164.400	---	---	28.02	2.86	38.91	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
22	2164.400	---	---	28.02	2.86	38.91	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
23	2272.620	---	---	28.13	2.93	38.97	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
24	2272.620	---	---	28.13	2.93	38.97	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
25	2380.840	---	---	27.63	3.00	39.02	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
26	2380.840	---	---	27.63	3.00	39.02	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
27	2489.060	---	---	27.44	3.07	39.07	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
28	2489.060	---	---	27.44	3.07	39.07	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
29	2597.280	34.70	47.60	27.74	4.64	39.13	0.28	28.23	41.13	54.00	74.00	25.77	32.87	Hori.	HA	
30	2597.280	34.60	48.30	27.74	4.64	39.13	0.28	28.13	41.83	54.00	74.00	25.87	32.17	Vert.	HA	
31	2705.500	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
32	2705.500	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
33	2813.720	---	---	28.38	3.26	39.24	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
34	2813.720	---	---	28.38	3.26	39.24	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
35	2921.940	---	---	28.44	3.33	39.29	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
36	2921.940	---	---	28.44	3.33	39.29	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
37	3030.160	---	---	28.58	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
38	3030.160	---	---	28.58	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
39	3138.380	---	---	28.75	3.45	39.26	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
40	3138.380	---	---	28.75	3.45	39.26	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
41	3246.600	---	---	28.43	3.51	39.20	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
42	3246.600	---	---	28.43	3.51	39.20	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
43	3354.820	---	---	28.03	3.58	39.14	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
44	3354.820	---	---	28.03	3.58	39.14	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
45	3463.040	51.90	56.20	28.62	5.37	39.08	0.28	47.09	51.39	54.00	74.00	6.91	22.61	Hori.	HA	
46	3463.040	54.10	57.90	28.62	5.37	39.08	0.28	49.29	53.09	54.00	74.00	4.71	20.91	Vert.	HA	
47	3571.260	---	---	29.05	3.70	39.02	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
48	3571.260	---	---	29.05	3.70	39.02	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		<AV>	<PK>					<AV>	<PK>	<AV>	<PK>	<AV>	<PK>			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
49	3679.480	---	---	29.27	3.77	38.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
50	3679.480	---	---	29.27	3.77	38.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
51	3787.700	---	---	29.49	3.83	38.90	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
52	3787.700	---	---	29.49	3.83	38.90	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
53	3895.920	---	---	29.69	3.89	38.85	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
54	3895.920	---	---	29.69	3.89	38.85	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
55	4004.140	---	---	29.75	3.95	38.79	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
56	4004.140	---	---	29.75	3.95	38.79	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
57	4112.360	---	---	29.81	4.01	38.82	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
58	4112.360	---	---	29.81	4.01	38.82	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
59	4220.580	---	---	30.13	4.05	38.85	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
60	4220.580	---	---	30.13	4.05	38.85	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
61	4328.800	32.80	46.50	30.37	6.03	38.87	0.28	30.61	44.31	54.00	74.00	23.39	29.69	Hori.	HA	
62	4328.800	32.80	46.00	30.37	6.03	38.87	0.28	30.61	43.81	54.00	74.00	23.39	30.19	Vert.	HA	



# DATA OF RADIATED DISTURBANCE TEST

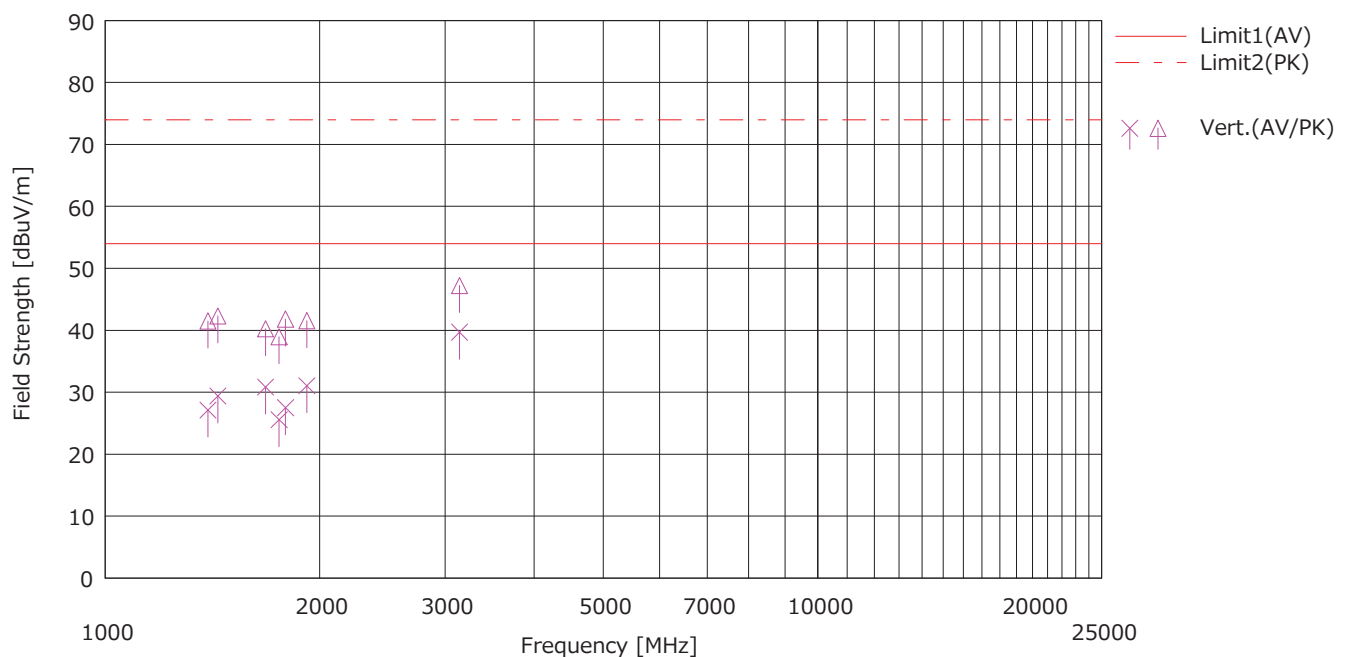
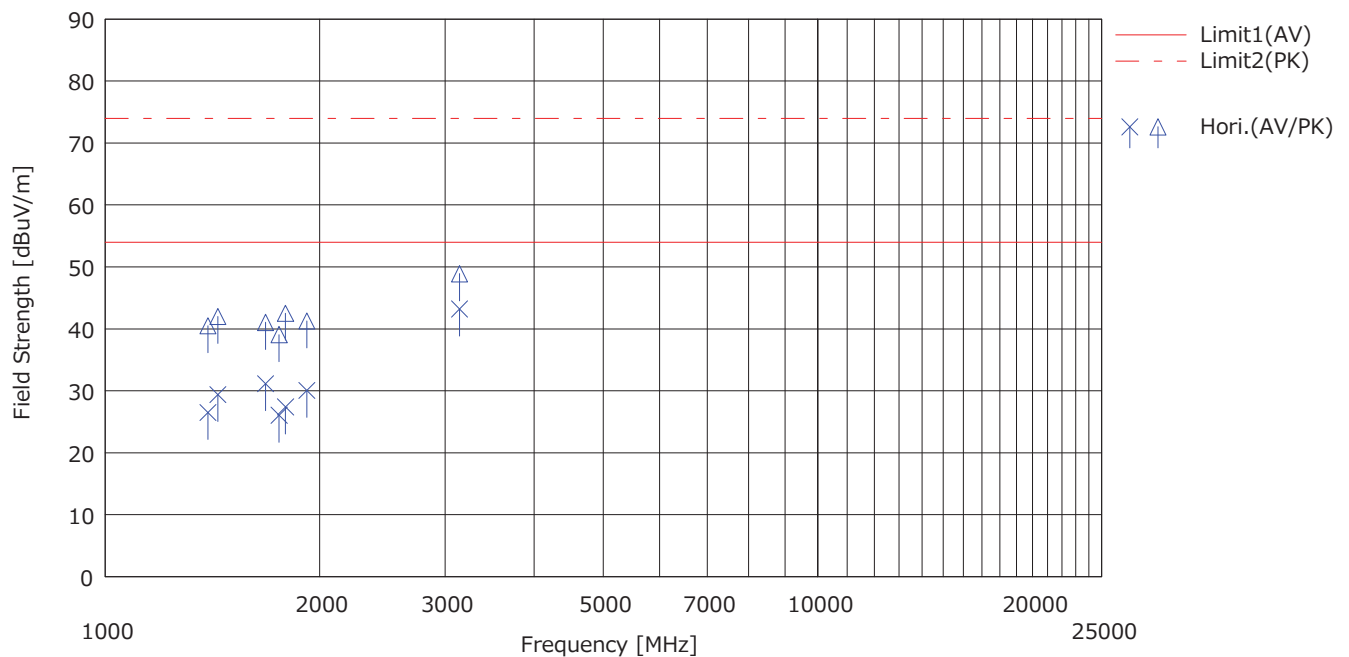
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Jun Ito



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Main)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Jun Ito

## << AV/PK DATA >>

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]					(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]			
1	1394.574	36.90	50.90	25.77	3.35	39.80	0.28	26.50	40.50	54.00	74.00	27.50	33.50	Hori.	HA	
2	1394.574	37.50	51.90	25.77	3.35	39.80	0.28	27.10	41.50	54.00	74.00	26.90	32.50	Vert.	HA	
3	1440.109	39.70	52.60	25.75	3.40	39.73	0.28	29.40	42.30	54.00	74.00	24.60	31.70	Vert.	HA	
4	1440.109	39.70	52.30	25.75	3.40	39.73	0.28	29.40	42.00	54.00	74.00	24.60	32.00	Hori.	HA	
5	1680.097	41.20	50.60	25.00	3.70	39.35	0.28	30.83	40.23	54.00	74.00	23.17	33.77	Vert.	HA	
6	1680.097	41.50	51.40	25.00	3.70	39.35	0.28	31.13	41.03	54.00	74.00	22.87	32.97	Hori.	HA	
7	1755.379	36.10	49.10	25.11	3.79	39.22	0.28	26.06	39.06	54.00	74.00	27.94	34.94	Hori.	HA	
8	1755.379	35.60	49.00	25.11	3.79	39.22	0.28	25.56	38.96	54.00	74.00	28.44	35.04	Vert.	HA	
9	1792.000	37.20	52.30	25.25	3.82	39.16	0.28	27.39	42.49	54.00	74.00	26.61	31.51	Hori.	HA	
10	1792.000	37.30	51.60	25.25	3.82	39.16	0.28	27.49	41.79	54.00	74.00	26.51	32.21	Vert.	HA	
11	1919.999	39.00	50.20	25.74	3.99	38.96	0.28	30.05	41.25	54.00	74.00	23.95	32.75	Hori.	HA	
12	1919.999	40.00	50.50	25.74	3.99	38.96	0.28	31.05	41.55	54.00	74.00	22.95	32.45	Vert.	HA	
13	3142.889	44.80	52.30	28.75	5.11	39.25	0.28	39.69	47.19	54.00	74.00	14.31	26.81	Vert.	HA	
14	3142.889	48.30	54.00	28.75	5.11	39.25	0.28	43.19	48.89	54.00	74.00	10.81	25.11	Hori.	HA	

# DATA OF RADIATED DISTURBANCE TEST

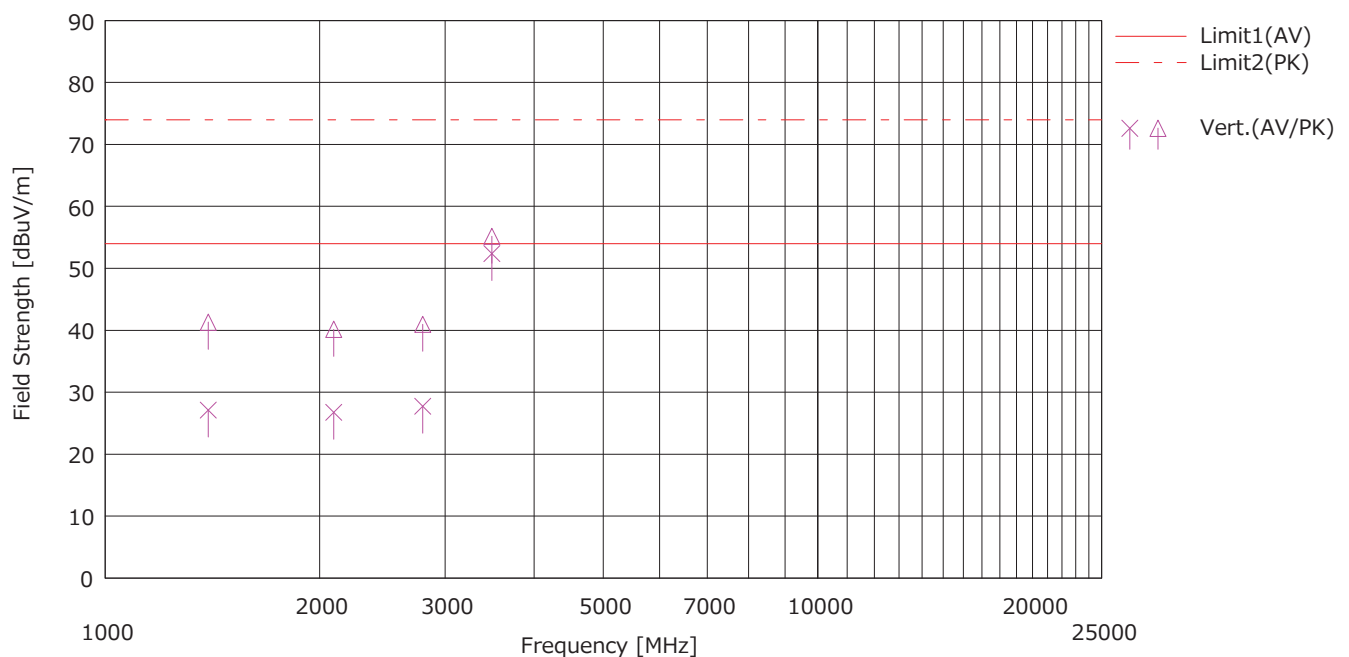
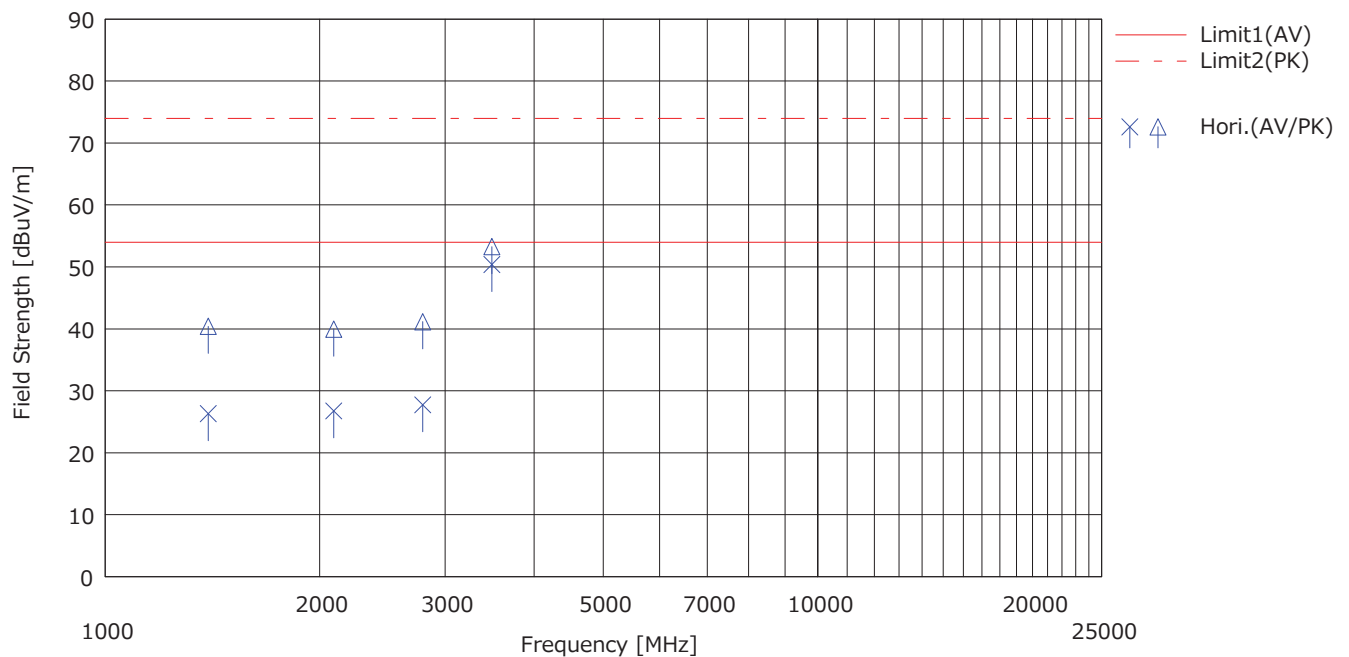
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
 Order No. : 13185291  
 Power : DC 13.2 V  
 Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

## &lt;&lt; AV/PK DATA &gt;&gt;

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV)	(PK)					(AV)	(PK)	(AV)	(PK)	(AV)	(PK)			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	1046.640	---	---	24.82	1.98	40.36	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
2	1046.640	---	---	24.82	1.98	40.36	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
3	1133.860	---	---	25.00	2.05	40.22	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
4	1133.860	---	---	25.00	2.05	40.22	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
5	1221.080	---	---	25.40	2.12	40.08	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
6	1221.080	---	---	25.40	2.12	40.08	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
7	1308.300	---	---	25.73	2.19	39.94	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
8	1308.300	---	---	25.73	2.19	39.94	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
9	1395.520	36.70	50.80	25.77	3.35	39.80	0.28	26.30	40.40	54.00	74.00	27.70	33.60	Hori.	HA	
10	1395.520	37.50	51.70	25.77	3.35	39.80	0.28	27.10	41.30	54.00	74.00	26.90	32.70	Vert.	HA	
11	1482.740	---	---	25.51	2.34	39.66	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
12	1482.740	---	---	25.51	2.34	39.66	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
13	1569.960	---	---	25.28	2.41	39.52	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
14	1569.960	---	---	25.28	2.41	39.52	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
15	1657.180	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
16	1657.180	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
17	1744.400	---	---	25.08	2.55	39.24	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
18	1744.400	---	---	25.08	2.55	39.24	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
19	1831.620	---	---	25.40	2.62	39.10	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
20	1831.620	---	---	25.40	2.62	39.10	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
21	1918.840	---	---	25.73	2.69	38.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
22	1918.840	---	---	25.73	2.69	38.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
23	2006.060	---	---	26.25	2.76	38.83	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
24	2006.060	---	---	26.25	2.76	38.83	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
25	2093.280	34.20	47.40	26.98	4.17	38.88	0.28	26.75	39.95	54.00	74.00	27.25	34.05	Hori.	HA	
26	2093.280	34.20	47.60	26.98	4.17	38.88	0.28	26.75	40.15	54.00	74.00	27.25	33.85	Vert.	HA	
27	2180.500	---	---	28.16	2.87	38.92	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
28	2180.500	---	---	28.16	2.87	38.92	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
29	2267.720	---	---	28.15	2.93	38.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
30	2267.720	---	---	28.15	2.93	38.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
31	2354.940	---	---	27.74	2.98	39.01	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
32	2354.940	---	---	27.74	2.98	39.01	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
33	2442.160	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
34	2442.160	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
35	2529.380	---	---	27.50	3.08	39.09	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
36	2529.380	---	---	27.50	3.08	39.09	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
37	2616.600	---	---	27.80	3.14	39.14	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
38	2616.600	---	---	27.80	3.14	39.14	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
39	2703.820	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
40	2703.820	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
41	2791.040	33.60	47.00	28.29	4.81	39.23	0.28	27.75	41.15	54.00	74.00	26.25	32.85	Hori.	HA	
42	2791.040	33.60	46.80	28.29	4.81	39.23	0.28	27.75	40.95	54.00	74.00	26.25	33.05	Vert.	HA	
43	2878.260	---	---	28.51	3.30	39.27	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
44	2878.260	---	---	28.51	3.30	39.27	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
45	2965.480	---	---	28.41	3.34	39.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
46	2965.480	---	---	28.41	3.34	39.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
47	3052.700	---	---	28.63	3.40	39.30	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
48	3052.700	---	---	28.63	3.40	39.30	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz+:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (87.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		<AV>	<PK>					<AV>	<PK>	<AV>	<PK>	<AV>	<PK>			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
49	3139.920	---	---	28.75	3.45	39.25	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
50	3139.920	---	---	28.75	3.45	39.25	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
51	3227.140	---	---	28.52	3.51	39.21	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
52	3227.140	---	---	28.52	3.51	39.21	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
53	3314.360	---	---	28.18	3.55	39.16	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
54	3314.360	---	---	28.18	3.55	39.16	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
55	3401.580	---	---	28.18	3.60	39.11	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
56	3401.580	---	---	28.18	3.60	39.11	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
57	3488.800	55.00	57.90	28.77	5.39	39.07	0.28	50.37	53.27	54.00	74.00	3.63	20.73	Hori.	HA	
58	3488.800	57.00	59.80	28.77	5.39	39.07	0.28	52.37	55.17	54.00	74.00	1.63	18.83	Vert.	HA	

# DATA OF RADIATED DISTURBANCE TEST

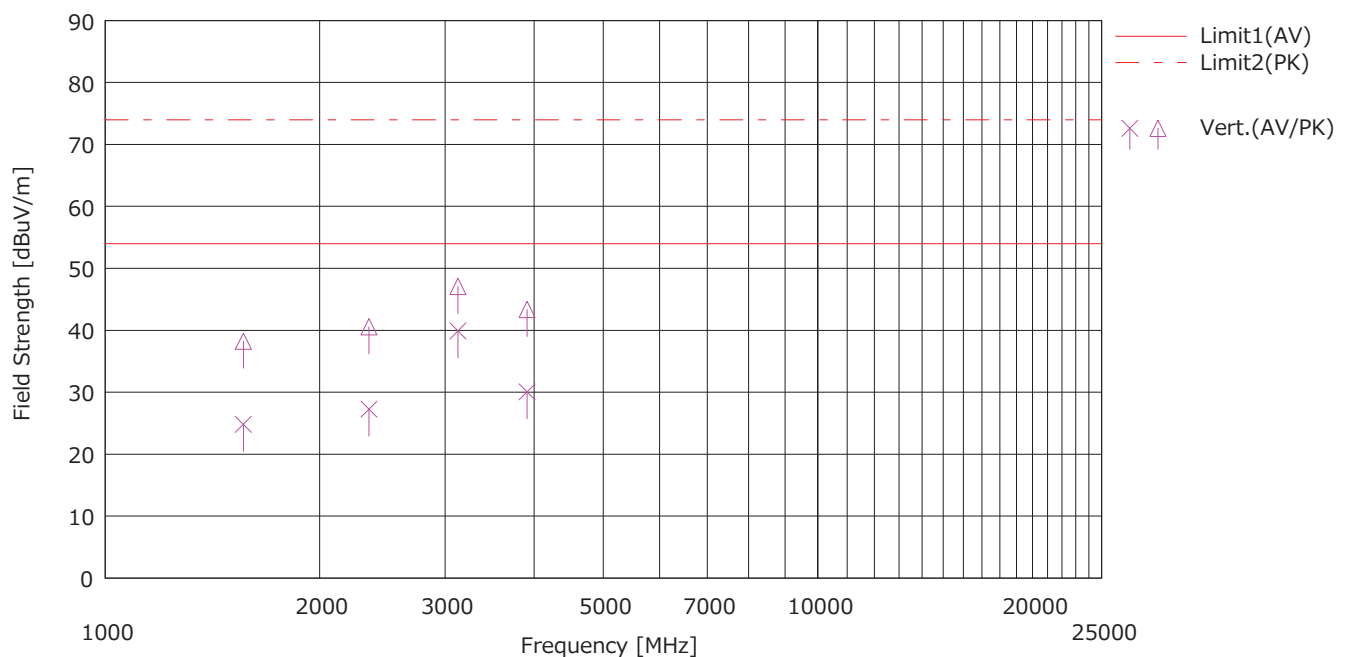
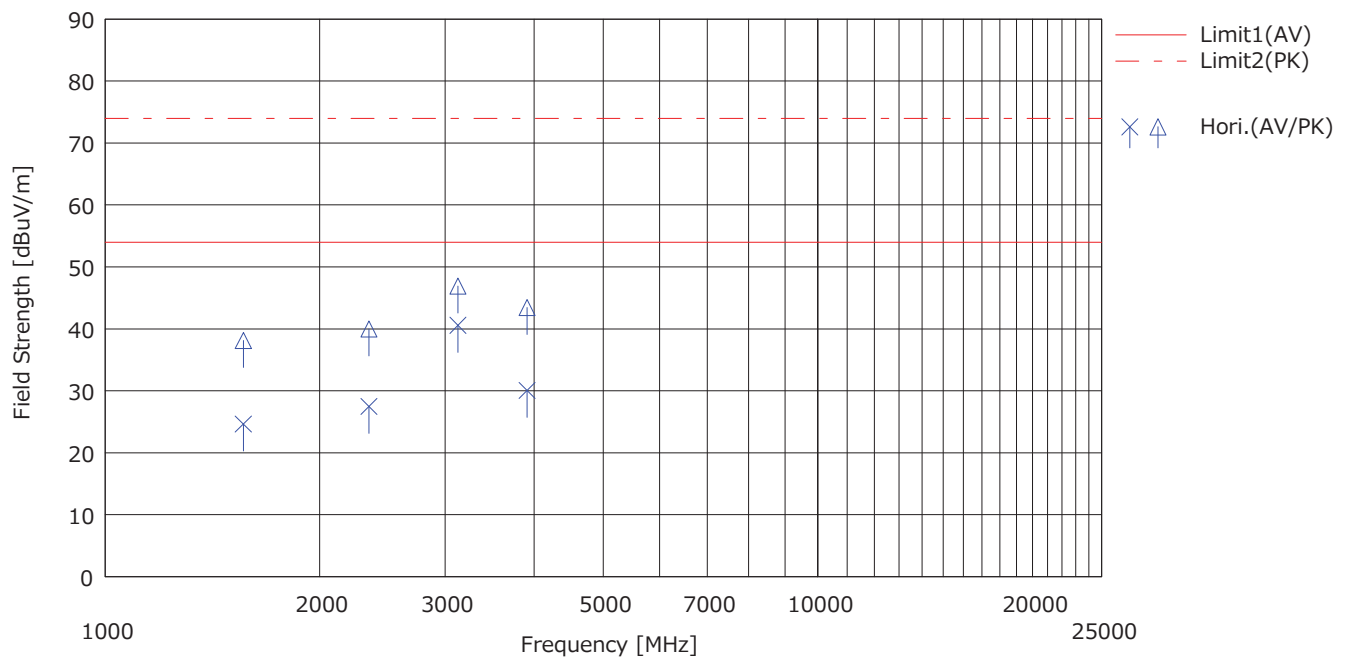
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
 Order No. : 13185291  
 Power : DC 13.2 V  
 Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

## &lt;&lt; AV/PK DATA &gt;&gt;

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV)	(PK)					(AV)	(PK)	(AV)	(PK)	(AV)	(PK)			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	1074.920	---	---	24.95	2.00	40.32	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
2	1074.920	---	---	24.95	2.00	40.32	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
3	1172.640	---	---	25.15	2.08	40.16	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
4	1172.640	---	---	25.15	2.08	40.16	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
5	1270.360	---	---	25.57	2.16	40.00	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
6	1270.360	---	---	25.57	2.16	40.00	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
7	1368.080	---	---	25.77	2.24	39.85	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
8	1368.080	---	---	25.77	2.24	39.85	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
9	1465.800	---	---	25.63	2.32	39.69	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
10	1465.800	---	---	25.63	2.32	39.69	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
11	1563.520	35.00	48.50	25.31	3.56	39.53	0.28	24.62	38.12	54.00	74.00	29.38	35.88	Hori.	HA	
12	1563.520	35.20	48.60	25.31	3.56	39.53	0.28	24.82	38.22	54.00	74.00	29.18	35.78	Vert.	HA	
13	1661.240	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
14	1661.240	---	---	25.02	2.48	39.38	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
15	1758.960	---	---	25.12	2.56	39.22	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
16	1758.960	---	---	25.12	2.56	39.22	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
17	1856.680	---	---	25.49	2.65	39.06	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
18	1856.680	---	---	25.49	2.65	39.06	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
19	1954.400	---	---	25.93	2.72	38.90	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
20	1954.400	---	---	25.93	2.72	38.90	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
21	2052.120	---	---	26.52	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
22	2052.120	---	---	26.52	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
23	2149.840	---	---	27.89	2.86	38.90	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
24	2149.840	---	---	27.89	2.86	38.90	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
25	2247.560	---	---	28.24	2.91	38.95	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
26	2247.560	---	---	28.24	2.91	38.95	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
27	2345.280	34.00	46.50	27.78	4.41	39.00	0.28	27.47	39.97	54.00	74.00	26.53	34.03	Hori.	HA	
28	2345.280	33.80	47.10	27.78	4.41	39.00	0.28	27.27	40.57	54.00	74.00	26.73	33.43	Vert.	HA	
29	2443.000	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
30	2443.000	---	---	27.50	3.03	39.05	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
31	2540.720	---	---	27.53	3.10	39.10	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
32	2540.720	---	---	27.53	3.10	39.10	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
33	2638.440	---	---	27.86	3.15	39.15	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
34	2638.440	---	---	27.86	3.15	39.15	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
35	2736.160	---	---	28.11	3.21	39.20	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
36	2736.160	---	---	28.11	3.21	39.20	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
37	2833.880	---	---	28.46	3.27	39.25	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
38	2833.880	---	---	28.46	3.27	39.25	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
39	2931.600	---	---	28.42	3.33	39.30	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
40	2931.600	---	---	28.42	3.33	39.30	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
41	3029.320	---	---	28.57	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
42	3029.320	---	---	28.57	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
43	3127.040	45.70	52.00	28.77	5.10	39.26	0.28	40.59	46.89	54.00	74.00	13.41	27.11	Hori.	HA	
44	3127.040	45.00	52.20	28.77	5.10	39.26	0.28	39.89	47.09	54.00	74.00	14.11	26.91	Vert.	HA	
45	3224.760	---	---	28.53	3.50	39.21	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
46	3224.760	---	---	28.53	3.50	39.21	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
47	3322.480	---	---	28.14	3.56	39.16	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
48	3322.480	---	---	28.14	3.56	39.16	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz+:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (97.5 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		<AV>	<PK>					<AV>	<PK>	<AV>	<PK>	<AV>	<PK>			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
49	3420.200	---	---	28.32	3.62	39.10	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
50	3420.200	---	---	28.32	3.62	39.10	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
51	3517.920	---	---	28.89	3.67	39.05	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
52	3517.920	---	---	28.89	3.67	39.05	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
53	3615.640	---	---	29.15	3.73	39.00	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
54	3615.640	---	---	29.15	3.73	39.00	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
55	3713.360	---	---	29.31	3.78	38.94	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
56	3713.360	---	---	29.31	3.78	38.94	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
57	3811.080	---	---	29.55	3.84	38.89	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
58	3811.080	---	---	29.55	3.84	38.89	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
59	3908.800	33.20	46.60	29.68	5.72	38.84	0.28	30.04	43.44	54.00	74.00	23.96	30.56	Hori.	HA	
60	3908.800	33.20	46.50	29.68	5.72	38.84	0.28	30.04	43.34	54.00	74.00	23.96	30.66	Vert.	HA	



# DATA OF RADIATED DISTURBANCE TEST

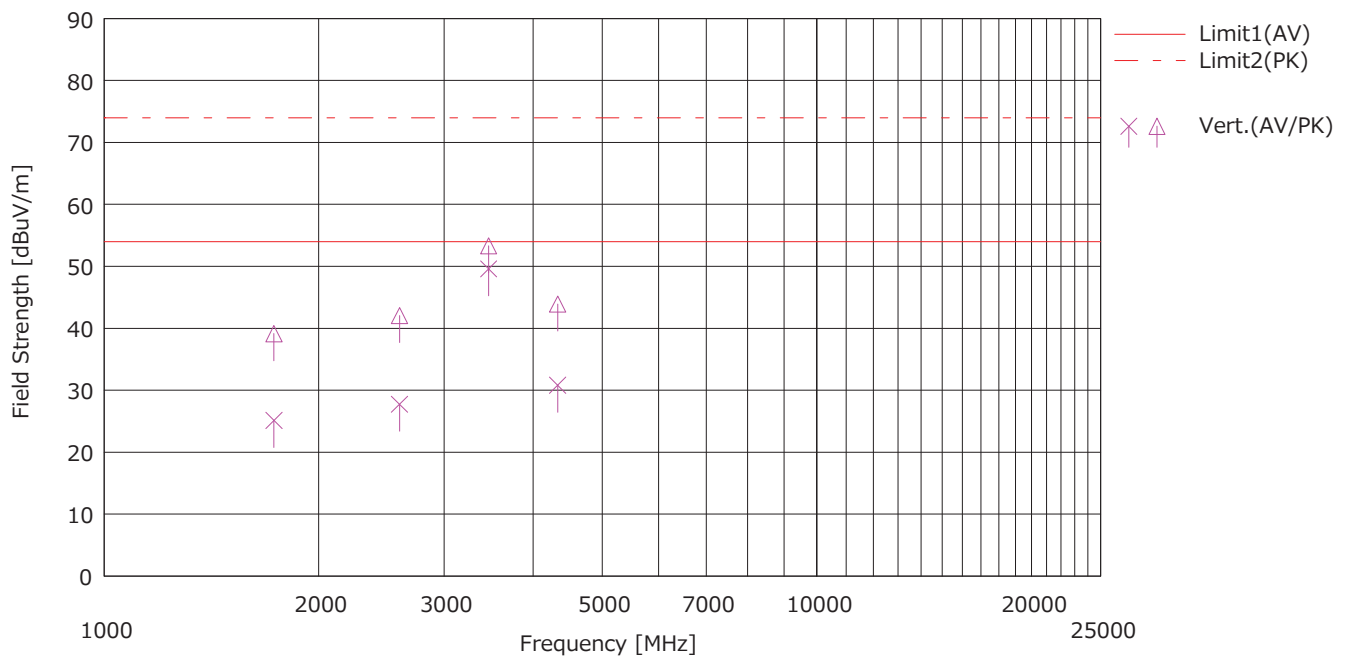
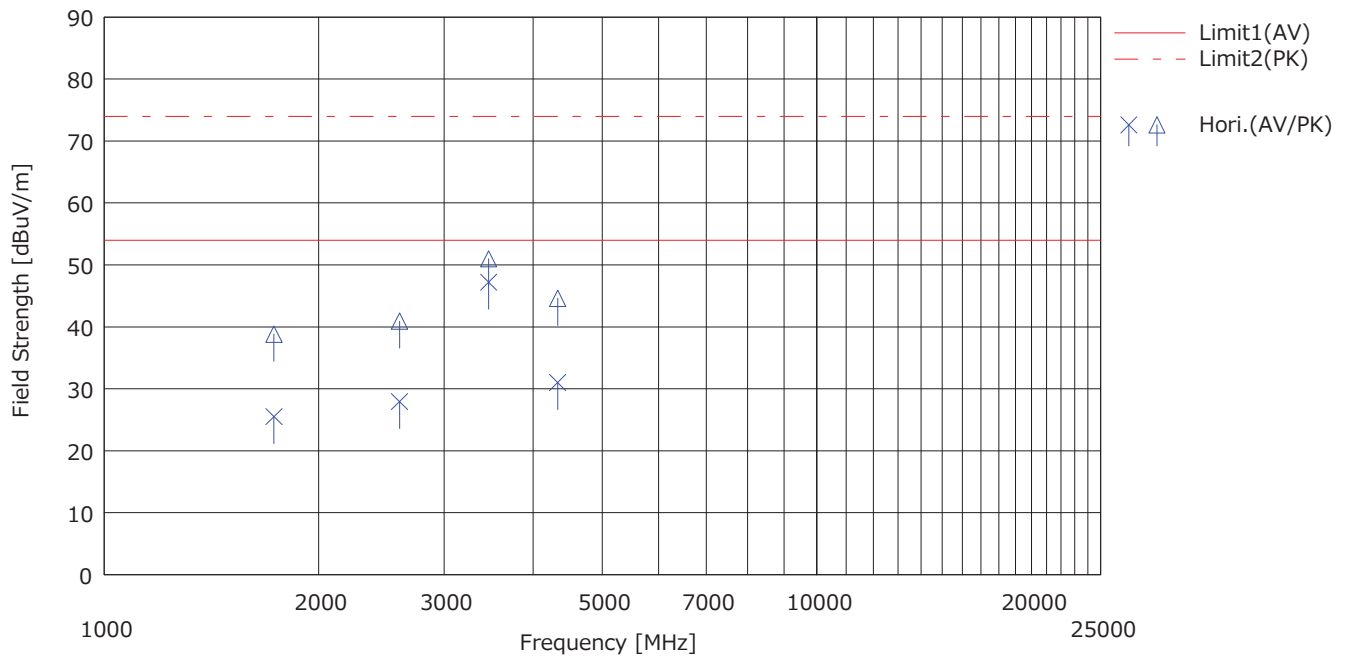
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Sub)

Order No. : 13185291

Power : DC 13.2 V

Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

## &lt;&lt; AV/PK DATA &gt;&gt;

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV)	(PK)					(AV)	(PK)	(AV)	(PK)	(AV)	(PK)			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	1082.200	---	---	24.98	2.01	40.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
2	1082.200	---	---	24.98	2.01	40.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
3	1190.420	---	---	25.29	2.10	40.13	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
4	1190.420	---	---	25.29	2.10	40.13	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
5	1298.640	---	---	25.71	2.18	39.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
6	1298.640	---	---	25.71	2.18	39.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
7	1406.860	---	---	25.77	2.28	39.78	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
8	1406.860	---	---	25.77	2.28	39.78	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
9	1515.080	---	---	25.38	2.36	39.61	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
10	1515.080	---	---	25.38	2.36	39.61	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
11	1623.300	---	---	25.09	2.45	39.44	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
12	1623.300	---	---	25.09	2.45	39.44	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
13	1731.520	35.70	49.00	25.05	3.75	39.26	0.28	25.52	38.82	54.00	74.00	28.48	35.18	Hori.	HA	
14	1731.520	35.30	49.30	25.05	3.75	39.26	0.28	25.12	39.12	54.00	74.00	28.88	34.88	Vert.	HA	
15	1839.740	---	---	25.43	2.63	39.09	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
16	1839.740	---	---	25.43	2.63	39.09	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
17	1947.960	---	---	25.89	2.72	38.91	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
18	1947.960	---	---	25.89	2.72	38.91	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
19	2056.180	---	---	26.57	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
20	2056.180	---	---	26.57	2.79	38.86	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
21	2164.400	---	---	28.02	2.86	38.91	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
22	2164.400	---	---	28.02	2.86	38.91	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
23	2272.620	---	---	28.13	2.93	38.97	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
24	2272.620	---	---	28.13	2.93	38.97	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
25	2380.840	---	---	27.63	3.00	39.02	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
26	2380.840	---	---	27.63	3.00	39.02	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
27	2489.060	---	---	27.44	3.07	39.07	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
28	2489.060	---	---	27.44	3.07	39.07	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
29	2597.280	34.40	47.40	27.74	4.64	39.13	0.28	27.93	40.93	54.00	74.00	26.07	33.07	Hori.	HA	
30	2597.280	34.20	48.50	27.74	4.64	39.13	0.28	27.73	42.03	54.00	74.00	26.27	31.97	Vert.	HA	
31	2705.500	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
32	2705.500	---	---	28.11	3.19	39.18	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
33	2813.720	---	---	28.38	3.26	39.24	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
34	2813.720	---	---	28.38	3.26	39.24	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
35	2921.940	---	---	28.44	3.33	39.29	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
36	2921.940	---	---	28.44	3.33	39.29	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
37	3030.160	---	---	28.58	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
38	3030.160	---	---	28.58	3.38	39.31	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
39	3138.380	---	---	28.75	3.45	39.26	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
40	3138.380	---	---	28.75	3.45	39.26	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
41	3246.600	---	---	28.43	3.51	39.20	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
42	3246.600	---	---	28.43	3.51	39.20	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
43	3354.820	---	---	28.03	3.58	39.14	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
44	3354.820	---	---	28.03	3.58	39.14	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
45	3463.040	52.00	55.80	28.62	5.37	39.08	0.28	47.19	50.99	54.00	74.00	6.81	23.01	Hori.	HA	
46	3463.040	54.40	58.10	28.62	5.37	39.08	0.28	49.59	53.29	54.00	74.00	4.41	20.71	Vert.	HA	
47	3571.260	---	---	29.05	3.70	39.02	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
48	3571.260	---	---	29.05	3.70	39.02	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz+:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site

Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
 Order No. : 13185291  
 Power : DC 13.2 V  
 Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : Local (108 MHz Receiving)

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Seigo Kakehi

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		<AV>	<PK>					<AV>	<PK>	<AV>	<PK>	<AV>	<PK>			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
49	3679.480	---	---	29.27	3.77	38.96	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
50	3679.480	---	---	29.27	3.77	38.96	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
51	3787.700	---	---	29.49	3.83	38.90	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
52	3787.700	---	---	29.49	3.83	38.90	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
53	3895.920	---	---	29.69	3.89	38.85	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
54	3895.920	---	---	29.69	3.89	38.85	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
55	4004.140	---	---	29.75	3.95	38.79	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
56	4004.140	---	---	29.75	3.95	38.79	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
57	4112.360	---	---	29.81	4.01	38.82	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
58	4112.360	---	---	29.81	4.01	38.82	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
59	4220.580	---	---	30.13	4.05	38.85	0.28	---	---	54.00	74.00	---	---	Hori.	HA	the margin exceeds 20 dB.
60	4220.580	---	---	30.13	4.05	38.85	0.28	---	---	54.00	74.00	---	---	Vert.	HA	the margin exceeds 20 dB.
61	4328.800	33.20	46.80	30.37	6.03	38.87	0.28	31.01	44.61	54.00	74.00	22.99	29.39	Hori.	HA	
62	4328.800	33.00	46.10	30.37	6.03	38.87	0.28	30.81	43.91	54.00	74.00	23.19	30.09	Vert.	HA	

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN  
 CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance: 3.10 m.

# DATA OF RADIATED DISTURBANCE TEST

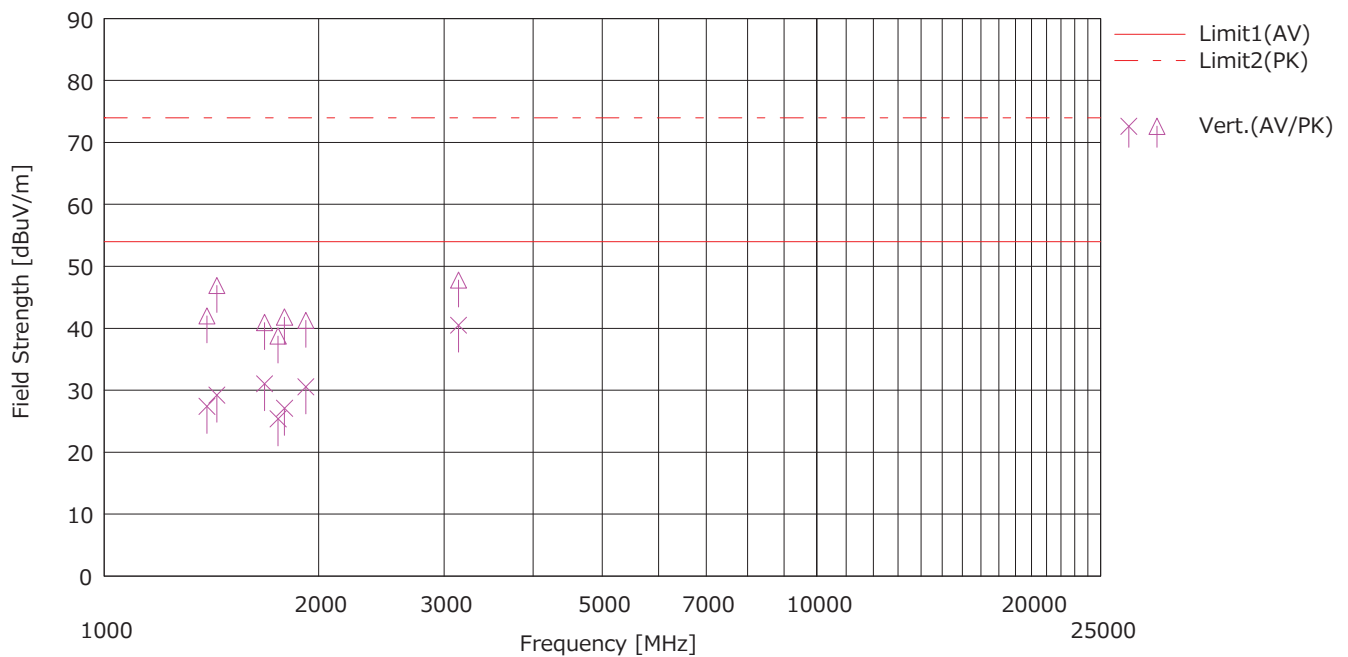
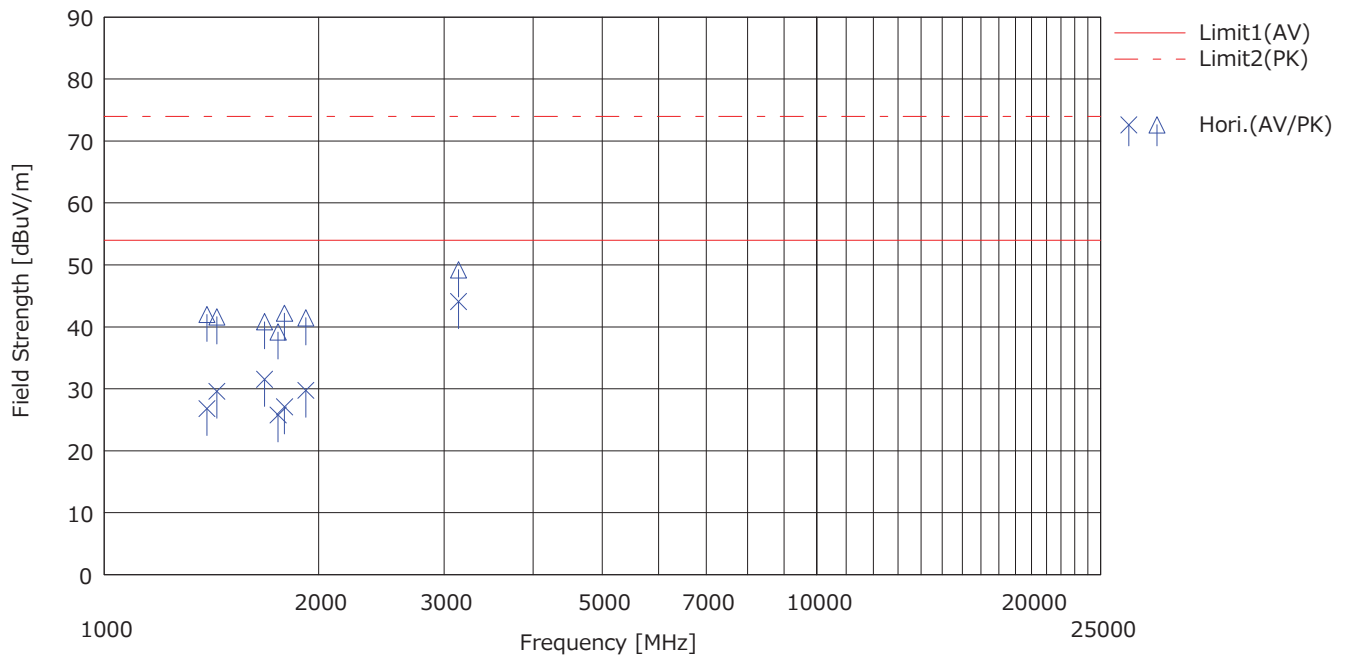
UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Jun Ito



# DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 3 Open area test site  
Date : 01/09/2020

Mode : 1.FM Reception (Sub)  
Order No. : 13185291  
Power : DC 13.2 V  
Temp. / Humi. : 24 deg. C / 31 % RH

Remarks : -

Limit : FCC Part 15B CLASS B (GHz, 3m)

Engineer : Jun Ito

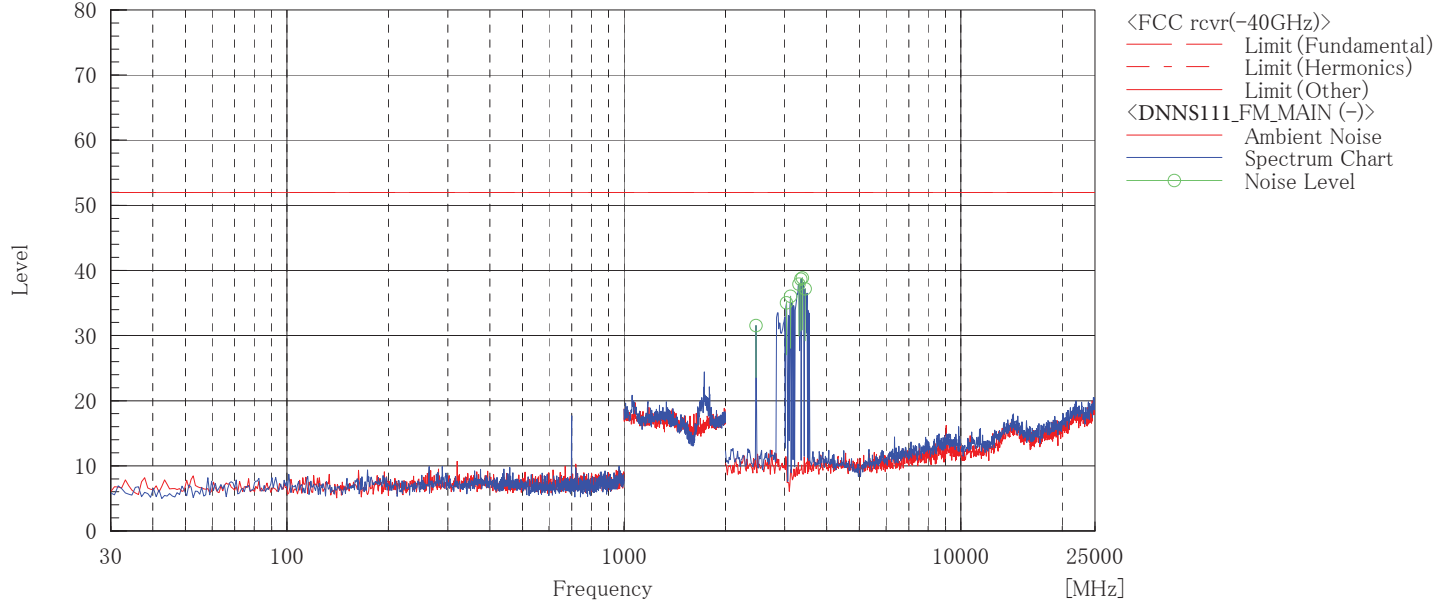
## << AV/PK DATA >>

No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	S.Fac [dB]	Result		Limit		Margin		Pola. [H/V]	Ant. Type	Comment
		(AV)	(PK)					(AV)	(PK)	(AV)	(PK)	(AV)	(PK)			
		[dBuV]	[dBuV]					[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]			
1	1394.574	37.20	52.40	25.77	3.35	39.80	0.28	26.80	42.00	54.00	74.00	27.20	32.00	Hori.	HA	
2	1394.574	37.80	52.40	25.77	3.35	39.80	0.28	27.40	42.00	54.00	74.00	26.60	32.00	Vert.	HA	
3	1440.085	39.90	51.90	25.75	3.40	39.73	0.28	29.60	41.60	54.00	74.00	24.40	32.40	Hori.	HA	
4	1440.085	39.50	57.20	25.75	3.40	39.73	0.28	29.20	46.90	54.00	74.00	24.80	27.10	Vert.	HA	
5	1680.097	41.90	51.20	25.00	3.70	39.35	0.28	31.53	40.83	54.00	74.00	22.47	33.17	Hori.	HA	
6	1680.097	41.40	51.30	25.00	3.70	39.35	0.28	31.03	40.93	54.00	74.00	22.97	33.07	Vert.	HA	
7	1755.379	35.80	49.20	25.11	3.79	39.22	0.28	25.76	39.16	54.00	74.00	28.24	34.84	Hori.	HA	
8	1755.379	35.40	48.80	25.11	3.79	39.22	0.28	25.36	38.76	54.00	74.00	28.64	35.24	Vert.	HA	
9	1792.000	36.90	52.00	25.25	3.82	39.16	0.28	27.09	42.19	54.00	74.00	26.91	31.81	Hori.	HA	
10	1792.000	36.90	51.60	25.25	3.82	39.16	0.28	27.09	41.79	54.00	74.00	26.91	32.21	Vert.	HA	
11	1919.999	38.70	50.40	25.74	3.99	38.96	0.28	29.75	41.45	54.00	74.00	24.25	32.55	Hori.	HA	
12	1919.999	39.50	50.20	25.74	3.99	38.96	0.28	30.55	41.25	54.00	74.00	23.45	32.75	Vert.	HA	
13	3142.888	49.20	54.30	28.75	5.11	39.25	0.28	44.09	49.19	54.00	74.00	9.91	24.81	Hori.	HA	
14	3142.888	45.60	52.90	28.75	5.11	39.25	0.28	40.49	47.79	54.00	74.00	13.51	26.21	Vert.	HA	

UL Japan, Inc.  
Yokowa No.6 S/R

## &lt;&lt;ANTENNA TERMINAL VOLTAGE TEST&gt;&gt;

01/07/2020

EUT Power : DC 13.2 V  
[dB( $\mu$  V)]Limit : FCC Part15(ANSI C63.4/92)  
Mode : 1.FM Reception (Main)  
Temp./Hum. : 20 deg.C / 40 % RH  
Engineer : Hiromichi Nakai  
Test Room : No.6 Shielded Room

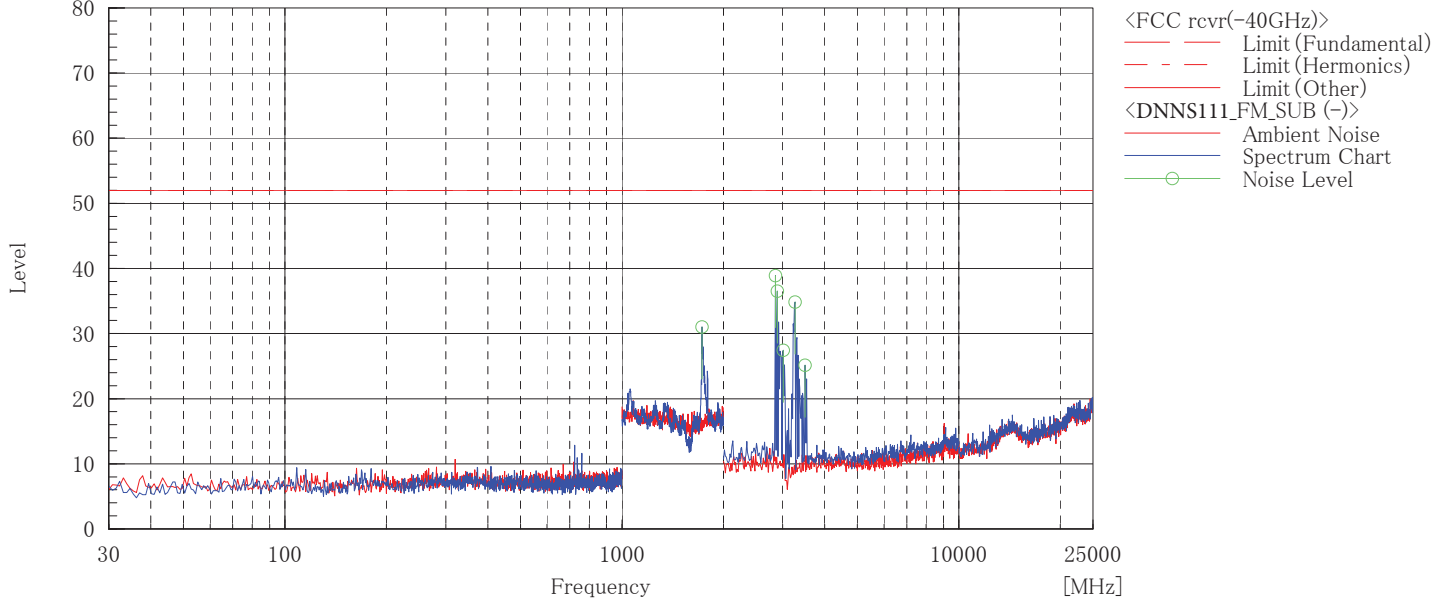
## Spectrum Selection (Peak Value)

Ch.	No.	Frequency [MHz]	Harm	Reading [dB( $\mu$ V)]	c. f [dB]	Result [dB( $\mu$ V)]	Limit [dB( $\mu$ V)]	Margin [dB]
—	1	2466.667		64.6	-33.0	31.6	52.0	20.4
	2	3040.000		67.8	-32.8	35.0	52.0	17.0
	3	3120.000		68.7	-32.7	36.0	52.0	16.0
	4	3306.667		70.4	-32.5	37.9	52.0	14.1
	5	3346.667		71.2	-32.5	38.7	52.0	13.3
	6	3386.667		71.3	-32.4	38.9	52.0	13.1
	7	3453.333		69.6	-32.4	37.2	52.0	14.8

UL Japan, Inc.  
Yokowa No.6 S/R

## &lt;&lt;ANTENNA TERMINAL VOLTAGE TEST&gt;&gt;

01/07/2020

EUT Power : DC 13.2 V  
[dB( $\mu$  V)]Limit : FCC Part15(ANSI C63.4/92)  
Mode : 1.FM Reception (Sub)  
Temp./Hum. : 20 deg.C / 40 % RH  
Engineer : Hiromichi Nakai  
Test Room : No.6 Shielded Room

## Spectrum Selection (Peak Value)

Ch.	No.	Frequency [MHz]	Harm	Reading [dB( $\mu$ V)]	c. f [dB]	Result [dB( $\mu$ V)]	Limit [dB( $\mu$ V)]	Margin [dB]
—	1	2853.333		71.8	-32.9	38.9	52.0	13.1
	2	2893.333		69.4	-32.9	36.5	52.0	15.5
	3	3266.667		67.4	-32.6	34.8	52.0	17.2
	4	1730.000		58.3	-27.3	31.0	52.0	21.0
	5	3493.333		57.4	-32.3	25.1	52.0	26.9
	6	3013.333		60.2	-32.8	27.4	52.0	24.6

## **APPENDIX 3**

### **Test Instruments**

**\*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 disturbance**

**AT : Antenna terminal conducted disturbance**



Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	MCC-218	141394	Microwave Cable	Junkosha	MWX221	1607S141(1 m) / 1608S264(5 m)	2019/09/11	12
RE	TR-13	151197	EMI Test Receiver	Rohde & Schwarz	ESW26	101287	2019/08/29	12
RE	DM-03	146649	Tester	SANWA	PC500	7019229	2019/06/21	12
RE	YJM-15	147543	Measure	-	-	-	-	-
RE	SC-03	147518	Search Coil	UL Japan	-	-	-	-
RE	OS-07	146989	Digital Humidity Indicator	SATO	PC-5000TRH-II	05A06	2019/01/11	12
RE	HA-05	146710	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	257	2019/04/19	12
RE	YOATS-03(SVSWR)	147000	Open area test site	JSE	3m,10m	3	2019/03/12	12
RE	CC-C14	178057	Microwave Cable	Huber+Suhner	SUCOFLEX 126EA	800630 / 126EA	2019/03/01	12
RE	CC-C15	178392	Microwave Cable	Junkosha INC.	JUNFLON MWX315	1511-023	2019/03/18	12
RE	YAJ-01	147319	Antenna Tilt Jig	Intelligent System Engineering Co., Ltd	Antenna Tilt Jig	T-0004	-	-
RE	MHA-01	141510	Horn Antenna 18-26.5GHz	EMCO	3160-09	1266	2019/05/17	12
RE	AF-06	146601	Pre Amplifier	AGILENT	HP8449B	3008A01672	2019/11/11	12
RE	TR-12	146893	EMI Test Receiver	Rohde & Schwarz	ESU 26	100413	2019/07/26	12
RE	COTS-YW-EMI-TSJ	146923	EMI measurement program	TSJ	TEPTO-DV	-	-	-

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	DM-02	146648	Tester	SANWA	PC500	7019227	2019/06/21	12
RE	YJM-12	147540	Measure	Rubber KOMBE	GW-3H99W	-	-	-
RE	SC-02	147517	Search Coil	UL Japan	-	-	-	-
RE	OS-10	146984	Digital Humidity Indicator	SATO	PC-5000TRH	B-10	2019/04/09	12
RE	AF-03	146611	Pre Amplifier	ANRITSU	MH648A	M97457	2019/07/10	12
RE	AT-02	146625	Attenuator	ANRITSU	MP721A	6200239014	2019/07/11	12
RE	AT-40	146572	Attenuator	ANRITSU	MP721B	6201150481	2019/10/18	12
RE	CC-2ORC	146806	Yokowa No.2 open coaxial(0.01-1000MHz)	UL Japan	CC-21,CC-22,CC-23,CC-24,CC-25,CC-27,SW-21,SW	YO0201	2019/10/18	12
RE	YOATS-02(NSA)	146944	Open area test site	JSE	3m、 10m	2	2019/09/16	12
RE	BA-14	159920	Biconical Antenna	Schwarzbeck	VHBB 9124 + BBA 9106	9124-1022	2019/03/06	12
RE	LA-15	146964	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	185	2019/03/21	12
AT	BM-1A01	146833	Barometer	Sunoh	SBR121	2347	2018/09/19	36
AT	OS-33	146736	Thermo-Hygrometer	CUSTOM	CTH-201	510Q06R	2019/03/08	12
AT	DM-06	146650	Tester	SANWA	PC500	7019239	2019/06/21	12
AT	YJM-17	147545	Measure	-	-	-	-	-

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	AV17-12	148701	Broadcast Tester	Rohde & Schwarz	SFE	2112.4300K02-121168-Li	2019/08/05	12
AT	APMAT07	146634	Matching Pad	TME	ZT-130	500101	2019/10/11	12
AT	IP-08	146715	Power Combiner	Mini-Circuit	ZFRSC-2050	-	2019/10/11	12
AT	ATS-02	160511	75Ω Cable	UL Japan	-	-	2019/11/07	12
AT	SP-03	146763	50Ω Coaxil Cable(Antenna Terminal)	UL Japan	50-N-N-SP	YSP03	2019/03/07	12
AT	SP-04	146764	50Ω Coaxil Cable(Antenna Terminal)	UL Japan	50-N-N-SP	YSP04	2019/03/07	12
AT	SP-05	146765	50Ω Coaxil Cable(Antenna Terminal)	UL Japan	50-N-N-SP	YSP05	2019/03/07	12
AT	KAF-03	151789	Pre Amplifier	HEWLETT PACKARD	8447D	2944A09947	2019/03/07	12
AT	AF-04	146600	Pre Amplifier	HEWLETT PACKARD	8449B	3008A01207	2019/07/18	12
AT	COTS-YW-AT	146723	Software for Antenna Terminal Voltage	Toyo Corporation	-	-	-	-
AT	TR-09	146776	Test Receiver	Rohde & Schwarz	ESCI	100769	2019/09/27	12

**End of Report**