EMI TEST REPORT

Test Report No. : 12445256Y-R5

Applicant:	**DAIICHI DENSHI,INC.**
Type of Equipment:	**Roaster**
Model No.:	**NOVO MARK Ⅱ**
FCC ID:	**2AUGUNOVOMARK2**
Test regulation:	**FCC Part 15 Subpart B:2019 Class A** **ICES-003 Issue 6 + Amendment 1 Class A (SMSE-015-16)**
Test result:	**Complied (Refer to Section 3.2)**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above 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.
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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 12445256Y-R4. 12445256Y-R4 is replaced with this report.

Date of test:

August 16 and 17, 2018 / January 7, 2020

Representative test engineer:

Toshifumi Yoneshige
Engineer
Consumer Technology Division

Approved by:

Daigo Hamaguchi
Leader
Consumer Technology Division

RTL02610

☐ 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.: 12445256Y

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12445256Y	August 27, 2018	-	-
1	12445256Y-R1	February 13, 2019	P.1	Addition of Test standard ICES-003.
1	12445256Y-R1	February 13, 2019	P.5	Section 3.1 and 3.4: Addition of the specification ICES-003.
1	12445256Y-R1	February 13, 2019	P.1	Correction of cover page - note for Test Result - note No.9
1	12445256Y-R1	February 13, 2019	P.4	Addition of note for Section 1.
1	12445256Y-R1	February 13, 2019	P.4	Addition of note for Receipt Date of Sample
1	12445256Y-R1	February 13, 2019	P.5	Section 3.2: Addition of Remarks for Result and these notes.
1	12445256Y-R1	February 13, 2019	P.6	Addition of sentence for Uncertainty.
2	12445256Y-R2	December 23, 2019	P.1, 6	Update of FCC15 version
2	12445256Y-R2	December 23, 2019	P.1, header	Addition of FCC ID (2AUGUNOVOMARK2)
2	12445256Y-R2	December 23, 2019	P.3	Addition of Abbreviations list
2	12445256Y-R2	December 23, 2019	P.5	Correction of rating; From AC 200 V – 230 V, 40 A, 50/60 Hz to AC 220 V – 240 V, 40 A, 60 Hz
2	12445256Y-R2	December 23, 2019	P.5	Addition of clock frequency (131 MHz)
2	12445256Y-R2	December 23, 2019	corresponding page	Updated based on ISO 17025:2017
3	12445256Y-R3	December 27, 2019	P.12	Correction of typing error in Figure. Absorber arrangement
4	12445256Y-R4	January 9, 2020	P.12	Correction of test distance from 10 m to 10 m (30 MHz - 1000 MHz) / 3m (1000 MHz - 2000 MHz)
4	12445256Y-R4	January 9, 2020	P.8	Addition of uncertainty
4	12445256Y-R4	January 9, 2020	P.14	Change of absorber arrangement
4	12445256Y-R4	January 9, 2020	P.16	Change of test setup photo due to retest
4	12445256Y-R4	January 9, 2020	P.21, 22	Change of test data due to retest
5	12445256Y-R5	January 9, 2020	P.13	Addition of explanatory note for antenna tilt “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.”
5	12445256Y-R5	January 9, 2020	P.26	Addition of test instruments (Local ID No.: RT-62, COTS-YW-EMI-TSJ, DM-01, YJM-16, SC-01, OS-03, YOATS-01, CC-C14, CC-C15, YAJ-01, AF-06, HA-07)
5	12445256Y-R5	January 9, 2020	P.24-26	Addition of explanatory note for test instrumens

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Reference: Abbreviations (Including words undescribed in this report)

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

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CONTENTS

Section 1: Customer information

Company Name	:	DAIICHI DENSHI,INC.
Address	:	820 Yodomizutare-cho Fushimi-ku Kyoto-shi Kyoto, 613-0902 Japan
Telephone Number	:	+81-75-632-0348
Facsimile Number	:	+81-75-632-0741
Contact Person	:	Akihito Mizuki

The information provided from the customer is as follows;
- Applicant, Type of Equipment, Model No. on the cover and other relevant pages
- Section 1: Customer information
- Section 2: Equipment under test (E.U.T.)
- Section 4: Operation of E.U.T. during testing

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

Section 2: Equipment under test (E.U.T.)

2. 1 Identification of E.U.T.

Type of equipment	:	Roaster
Model No.	:	NOVO MARK II
Serial No.	:	Refer to Clause 4.2
Rating	:	AC 220 V – 240 V, 40 A, 60 Hz
Country of Mass-production	:	Japan
Condition of EUT	:	Production model
Size	:	635 x 635 x 1950 (Width x Depth x Height (mm))
Modification of EUT	:	No modification by the test lab.
Receipt Date of Sample (Information from test lab.)	:	August 9, 2018 (Used for all tests except for Radiated emission (above 1 GHz) test) January 7, 2020 (Used for Radiated emission (above 1 GHz) test)

2. 2 Product description

Model: NOVO MARK II (referred to as the EUT in this report) is a Roaster.
The clock frequencies used in the EUT: 131 MHz

Section 3: Test specification, procedures and results

3. 1 Test Specification

Test Specification	:	FCC Part 15 Subpart B FCC Part 15 final revised on July 19, 2019 and effective August 19, 2019 except 15.258
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart B Unintentional Radiators
Test Specification	:	ICES-003 Issue 6 + Amendment 1 (SMSE-015-16)
Title	:	Spectrum Management and Telecommunications Interference-Causing Equipment Standard Information Technology Equipment (Including Digital Apparatus) – Limits and Methods of Measurement

* The revisions made after testing date do not affect the test specification applied to the EUT.

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	Class A	N/A	21.1 dB (0.15000 MHz, QP, L2)	Complied a)	-
Radiated emission	ANSI C63.4: 2014 8. Radiated emission measurements	Class A	N/A	8.5 dB (38.273 MHz, Vertical, QP)	Complied b)	-
Note: UL Japan's EMI Work Procedures No. 13-EM-W0420 a) Refer to Appendix 2 (data of Conducted disturbance) b) Refer to Appendix 2 (data of Radiated disturbance)						
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.						

3. 3 Addition to standard

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

3. 4 Confirmation

UL Japan, Inc. hereby confirms that E.U.T., in the configuration tested, complies with the specifications FCC Part 15 Subpart B:2019 Class A and ICES-003 Issue 6 + Amendment 1 Class A (SMSE-015-16).

3. 5 Uncertainty

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

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

EMI (Test date: August 16 and 17, 2018)

		Open area test site			Shielded room				Ucispr (±)
		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	3.8 dB							3.9 dB
Voltage probe	150 kHz - 30 MHz	2.9 dB							2.9 dB
Radiated disturbance									
3 m	9 kHz - 30 MHz	3.3 dB	3.4 dB	3.4 dB	-	-	-	-	Not Defined
	30 MHz - 200 MHz (Horizontal)	4.6 dB	4.5 dB	4.7 dB	-	-	-	-	6.3 dB
	30 MHz - 200 MHz (Vertical)	4.7 dB	4.7 dB	4.9 dB	-	-	-	-	6.3 dB
	200 MHz - 1000 MHz (Horizontal)	4.9 dB	5.2 dB	5.2 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	4.9 dB			-	-	-	-	5.2 dB
	6 GHz - 18 GHz	5.2 dB			-	-	-	-	5.5 dB
10 m	9 kHz - 30 MHz	3.1 dB	3.3 dB	3.2 dB	-	-	-	-	Not Defined
	30 MHz - 200 MHz (Horizontal)	4.6 dB	4.5 dB	4.7 dB	-	-	-	-	6.3 dB
	30 MHz - 200 MHz (Vertical)	4.5 dB	4.5 dB	4.8 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)	4.7 dB	5.0 dB	5.0 dB	-	-	-	-	6.3 dB
	1 GHz - 18 GHz	5.1 dB			-	-	-	-	Not Defined
Antenna terminal voltage									
30 MHz - 1000 MHz		3.8 dB							Not Defined
1 GHz - 2.15 GHz		3.9 dB							Not Defined

EMI (Test date: January 7, 2020)

		Open area test site			Shielded room				Ucispr (±)
		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.

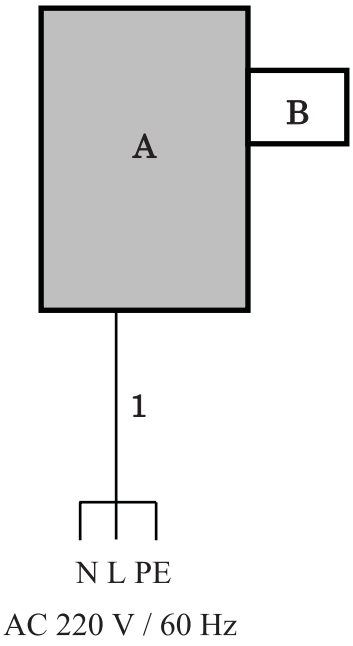
Section 4: Operation of E.U.T. during testing

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.Running

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	Remark
A	Roaster	NOVO MARKII	001 *1) 002 *2)	DAIICHI DENSHI,INC.	EUT
B	USB Memory	TS8GJF600	634208 7526	Trancend	-

*1) Used for all tests except for Radiated emission (above 1 GHz) test
*2) Used for Radiated emission (above 1 GHz) test

List of cables used

No.	Name	Length (m)	Cable Shield	Connector Shield	Remark
1	AC Power Cable	3.3	Unshielded	Unshielded	3 wire

Section 5: Conducted emission

5. 1 Operating environment

The test was carried out in shielded room.
Temperature : See data
Humidity : See data

5. 2 Test configuration

EUT was placed on a carpet for insulation above the reference ground plane.
EUT was located 80 cm from the LISN and excess AC cable was bundled in center. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN to the input power source. All unused 50 ohm connectors of the LISN were resistively terminated in 50 ohm when not connected to the measuring equipment.
Photographs of the set up are shown in Appendix 1.

5. 3 Test conditions

Frequency range : 0.15 MHz - 30 MHz
EUT position : Floor standing

5. 4 Test procedure

The AC Mains Terminal Continuous disturbance Voltage had been measured with the EUT in shielded room.
The EUT was connected to a Line Impedance Stabilization Network (LISN).
An overview sweep with peak detection has been performed.
The measurements had been performed with a quasi-peak detector and if required, with an average detector.
The conducted emission measurements were made with the following detector function of the test receiver.
Detector Type : QP / CAV
IF Band width : 9 kHz / 9 kHz

5. 5 Results

Summary of the test results: Pass

Section 6: Radiated emission

6. 1 Operating environment

This test was carried out in open area test site.
Temperature : See data
Humidity : See data

6. 2 Test configuration

EUT was placed on a carpet for insulation above the reference ground plane. (Below 1 GHz)
EUT was placed on a wooden platform, raised 0.1 m above a reference ground plane. (Above 1 GHz)
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.

6. 3 Test conditions

Frequency range : 30 MHz - 2000 MHz
Test distance : 10 m (30 MHz - 1000 MHz) / 3m (1000 MHz - 2000 MHz)
EUT position : Floor standing

6. 4 Test procedure

The Radiated Electric Field Strength intensity has been measured on an open test site with a ground plane at a distance of 10 m (30 MHz - 1000 MHz) / 3m (1000 MHz - 2000 MHz)*.
* Measuring distance
☐ The boundary of the EUT is defined by an imaginary straight-line periphery describing a simple geometric configuration encompassing the EUT.
☒ The boundary of the EUT is defined by an imaginary circular periphery.
☐ This test repot use worse case for the setup.

Pre check measurements were performed in shielded room with a search coil at 30 MHz - 2000 MHz to distinguish disturbances of EUT from the ambient noise.
Measurements were performed with quasi-peak detector, average detector and 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.
Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.
The measurements were performed for vertical or horizontal antenna polarization or both as necessary.
The radiated emission measurements were made with the following detector function of the test receiver and spectrum analyzer.

Frequency	:	30 MHz-1000 MHz	1000 MHz-2000 MHz *1)	
Instrument used	:	Test Receiver	Test Receiver	
Detector Type	:	QP	AV	PK
IF Band width	:	120 kHz	1 MHz	1 MHz

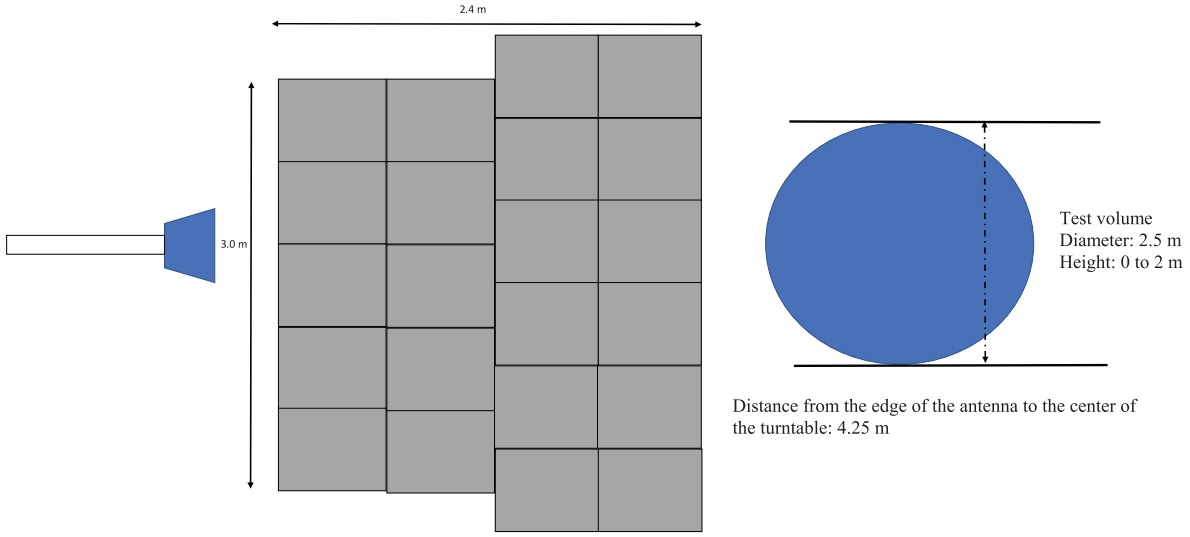
*1) The measurement data was adjusted to a 10 m distance using the following Distance Factor.
Distance factor: 20 log (Actual distance/10 m)
Distance factor and actual distance are shown in Appendix 2.

6. 5 Results

Summary of the test results: Pass

Figure. Absorber arrangement

1Site



Appendix 2: Data of EMI test

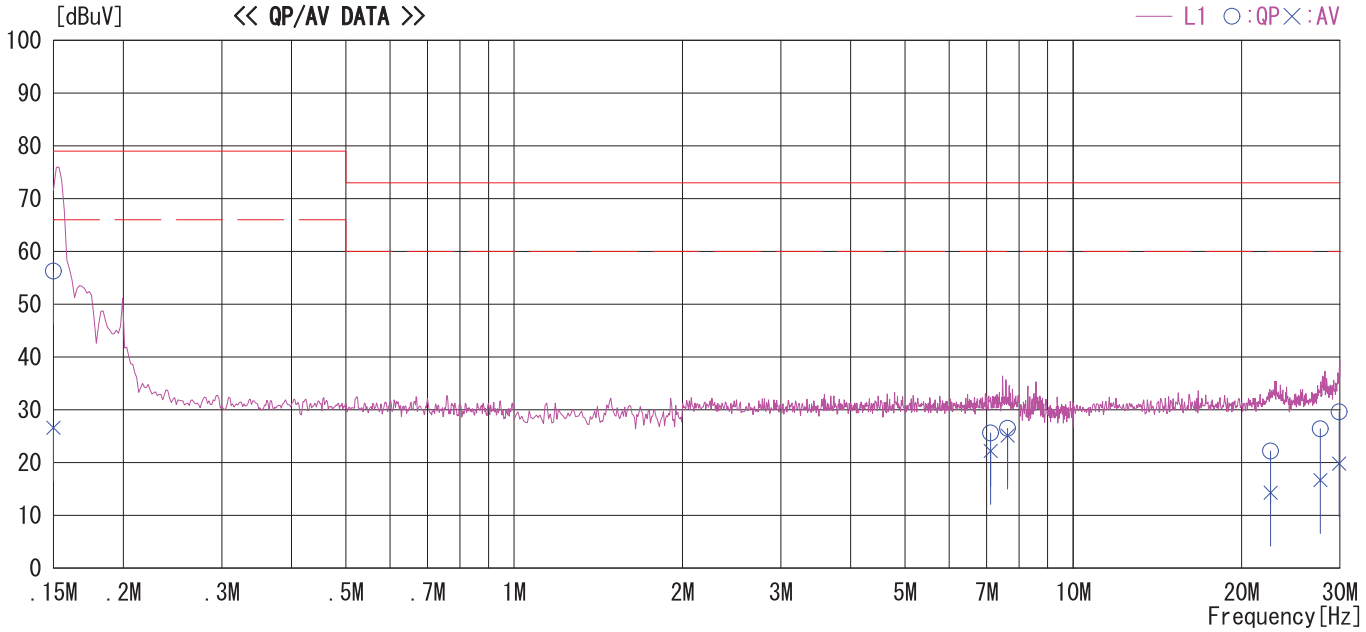
DATA OF CONDUCTED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No.1 Shielded room
Date : 08/17/2018

Report No. : 12445256Y
Power : AC 220 V / 60 Hz
Temp./Humi. : 25 deg.C / 56 % RH
Engineer : Toshifumi Yoneshige

Mode / Remarks : 1.Running

LIMIT : FCC Part 15 B CLASS A (QP)
FCC Part 15 B CLASS A (AV)



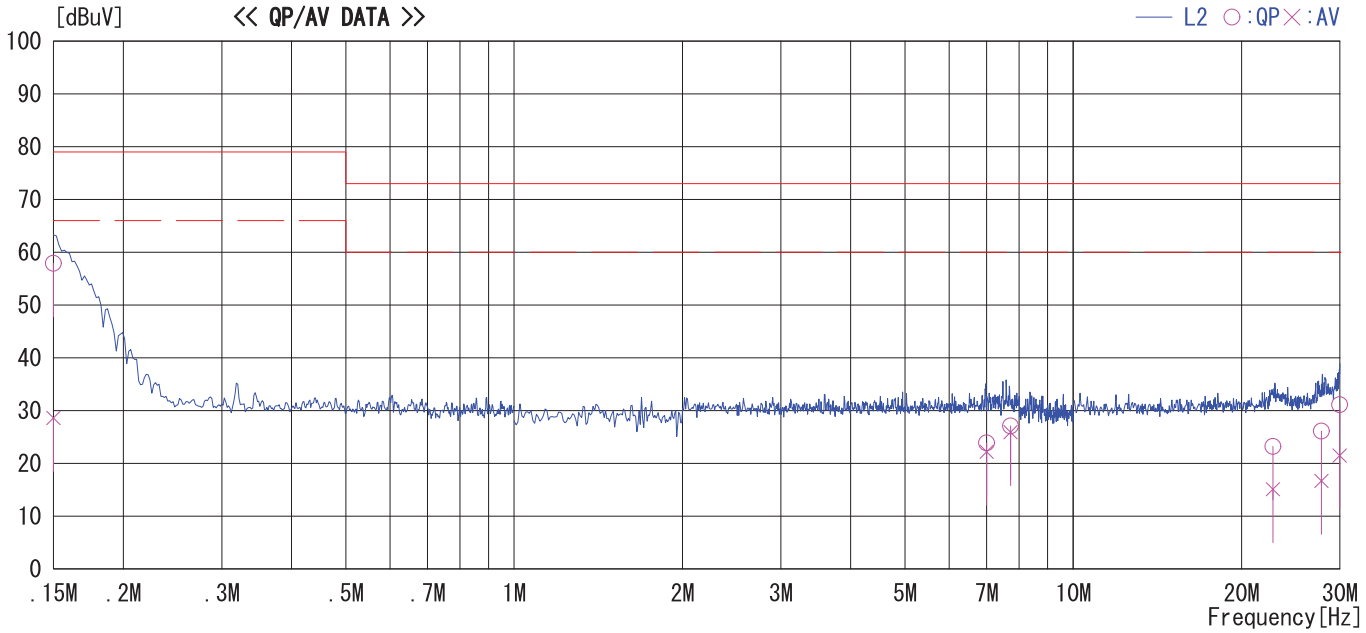


CHART:WITH FACTOR, Peak hold data. Except for the above table: adequate margin data below the limits.
CALCULATION:RESULT[dBuV]=READING[dBuV]+C.F(LOSS)[dB](LISN+CABLE+ATTEN(Except LS-11, LS-12, LS-13))

DATA OF CONDUCTED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No.1 Shielded room
Date : 08/17/2018

Report No. : 12445256Y
Power : AC 220 V / 60 Hz
Temp./Humi. : 25 deg.C / 56 % RH
Engineer : Toshifumi Yoneshige

Mode / Remarks : 1.Running

LIMIT : FCC Part 15 B CLASS A (QP)
FCC Part 15 B CLASS A (AV)

Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase
	QP	AV	Factor	QP	AV	QP	AV	QP	AV	
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0.15000	43.1	13.4	13.2	56.3	26.6	79.0	66.0	22.7	39.4	L1
7.11581	11.9	8.5	13.7	25.6	22.2	73.0	60.0	47.4	37.8	L1
7.63041	12.8	11.4	13.7	26.5	25.1	73.0	60.0	46.5	34.9	L1
22.54441	7.6	-0.3	14.6	22.2	14.3	73.0	60.0	50.8	45.7	L1
27.66560	11.7	2.0	14.7	26.4	16.7	73.0	60.0	46.6	43.3	L1
29.88721	14.9	5.1	14.7	29.6	19.8	73.0	60.0	43.4	40.2	L1
0.15000	44.7	15.4	13.2	57.9	28.6	79.0	66.0	21.1	37.4	L2
7.00181	10.2	8.5	13.7	23.9	22.2	73.0	60.0	49.1	37.8	L2
7.72448	13.4	12.2	13.7	27.1	25.9	73.0	60.0	45.9	34.1	L2
22.75130	8.6	0.5	14.6	23.2	15.1	73.0	60.0	49.8	44.9	L2
27.79322	11.4	2.0	14.7	26.1	16.7	73.0	60.0	46.9	43.3	L2
29.96762	16.4	6.8	14.7	31.1	21.5	73.0	60.0	41.9	38.5	L2

CHART:WITH FACTOR, Peak hold data. Except for the above table: adequate margin data below the limits.
CALCULATION:RESULT[dBuV]=READING[dBuV]+C.F(LOSS)[dB](LISN+CABLE+ATTEN(Except LS-11, LS-12, LS-13))

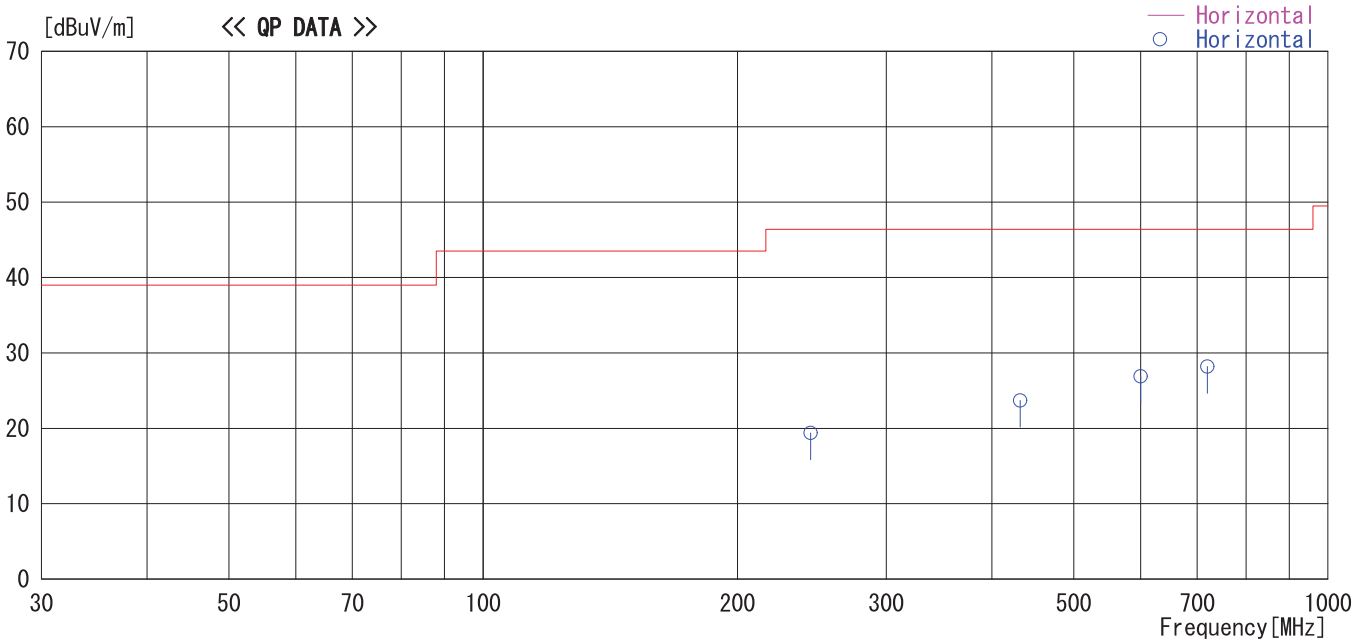
DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No.1 Open area test site
Date : 08/16/2018

Report No. : 12445256Y
Power : AC 220 V / 60 Hz
Temp./Humi. : 28 deg.C / 58 % RH
Engineer : Toshifumi Yoneshige

Mode / Remarks : 1.Running

LIMIT : FCC Part 15B CLASS A (10m)



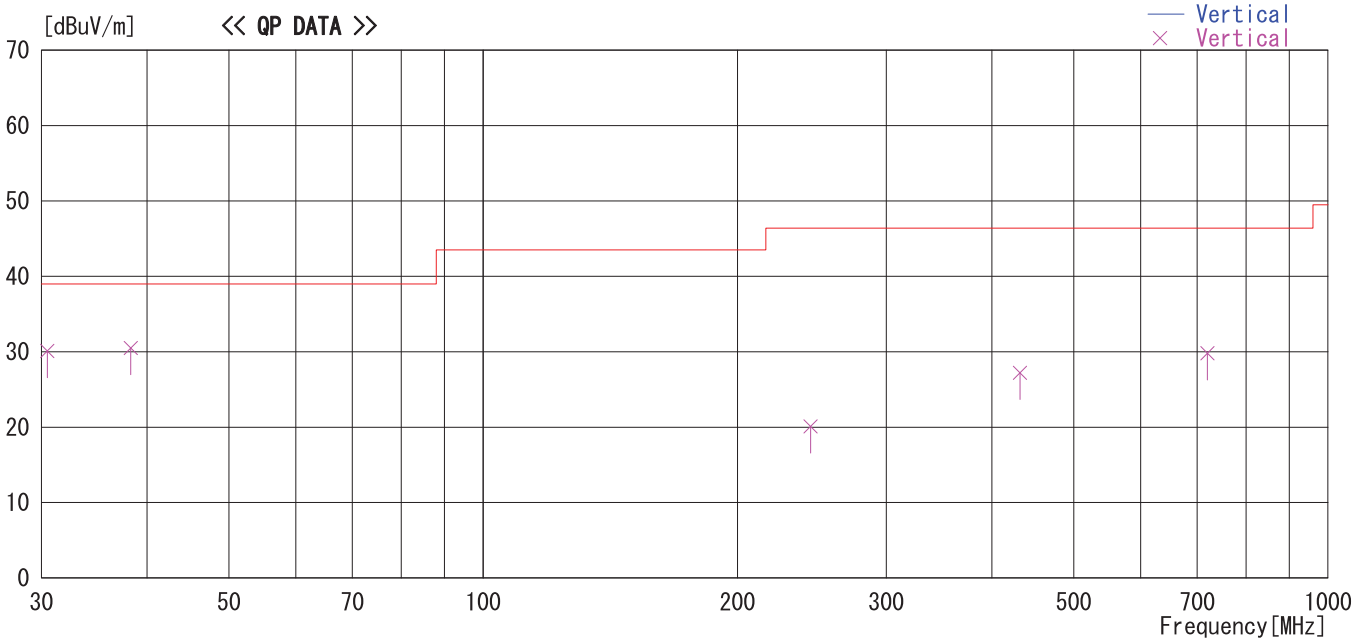


CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.(ATTEN: Below 1GHz only)) - GAIN(AMP) + ANSI C63.5_ΔAF

DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No.1 Open area test site
Date : 08/16/2018

Report No. : 12445256Y
Power : AC 220 V / 60 Hz
Temp./Humi. : 28 deg.C / 58 % RH
Engineer : Toshifumi Yoneshige

Mode / Remarks : 1.Running

LIMIT : FCC Part 15B CLASS A (10m)

Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]		[dBuV/m]	[dB]
30.483	39.6	QP	13.2	-22.7	30.1	Vert.	39.0	8.9
38.273	41.4	QP	11.6	-22.5	30.5	Vert.	39.0	8.5
244.094	31.0	QP	11.6	-22.5	20.1	Vert.	46.4	26.3
244.090	30.3	QP	11.6	-22.5	19.4	Hori.	46.4	27.0
432.001	32.0	QP	16.1	-20.9	27.2	Vert.	46.4	19.2
432.004	28.5	QP	16.1	-20.9	23.7	Hori.	46.4	22.7
600.001	27.4	QP	19.1	-19.6	26.9	Hori.	46.4	19.5
719.998	26.7	QP	20.1	-18.6	28.2	Hori.	46.4	18.2
719.999	28.3	QP	20.1	-18.6	29.8	Vert.	46.4	16.6

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.(ATTEN: Below 1GHz only)) - GAIN(AMP) + ANSI C63.5_ΔAF

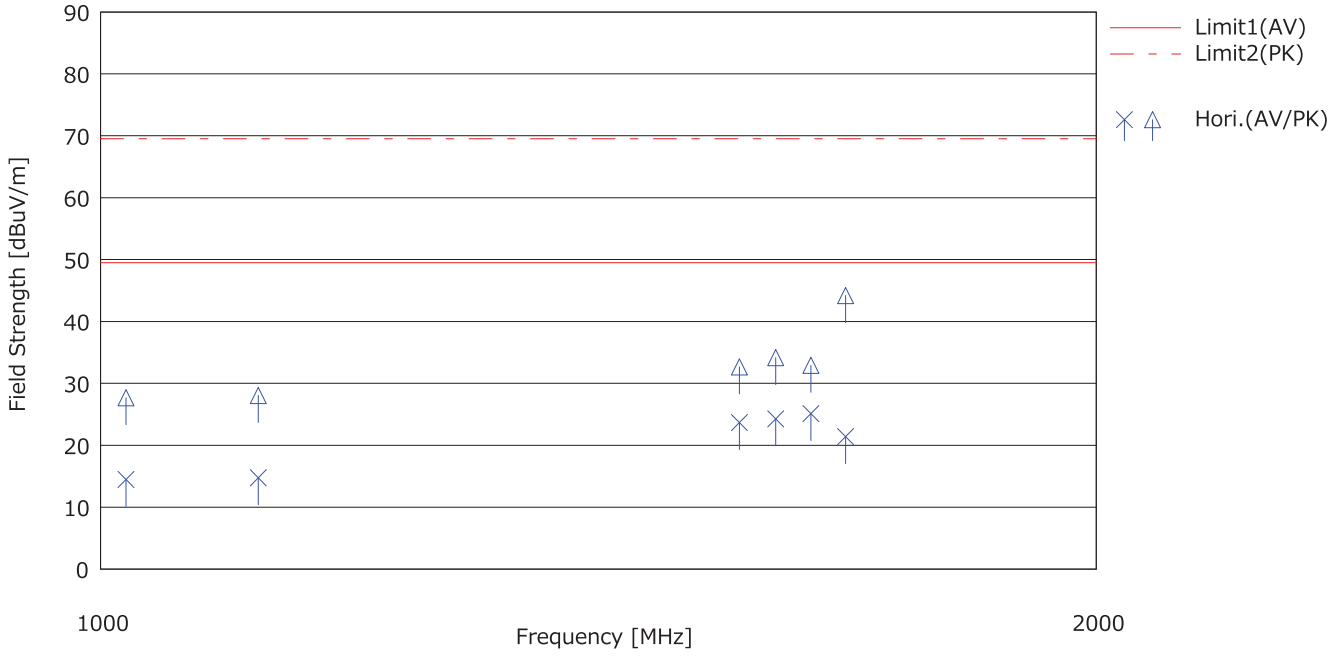
DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 1 Open area test site
Date : 01/07/2020

Mode : 1.Running
Report No. : 12445256Y
Power : AC 220 V / 60 Hz
Temp. / Humi. : 22 deg. C / 39 % RH

Limit : FCC Part 15B CLASS A (GHz, 10m)

Engineer : Toshifumi Yoneshige



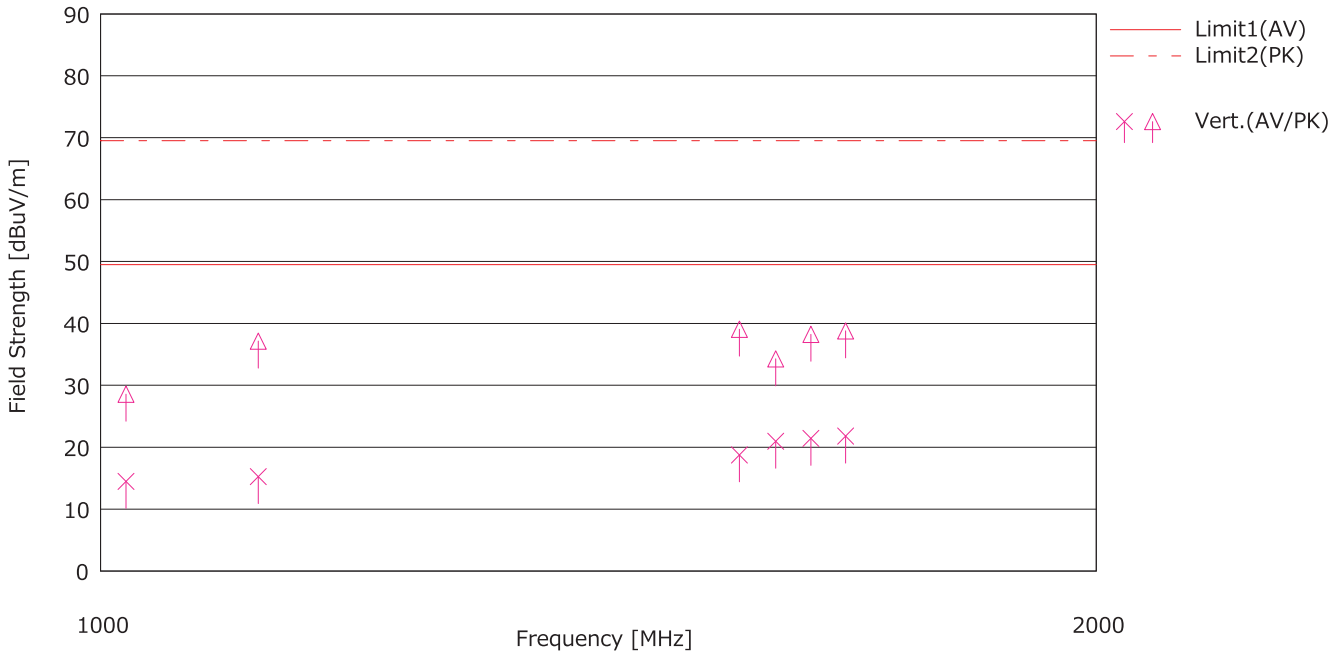


CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-199.99MHz:BICONICAL, 200MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT.Fac. + LOSS(CABLE)+S.Fac.(DISTANCE Fac.) - GAIN(AMP). Actual distance:3.75 m

DATA OF RADIATED DISTURBANCE TEST

UL Japan, Inc. Yokowa EMC Lab. No. 1 Open area test site
Date : 01/07/2020

Mode : 1.Running
Report No. : 12445256Y
Power : AC 220 V / 60 Hz
Temp. / Humi. : 22 deg. C / 39 % RH

Limit : FCC Part 15B CLASS A (GHz, 10m)

Engineer : Toshifumi Yoneshige

<< AV/PK DATA >>

No.	Freq.	Reading		Ant.Fac	Loss	Gain	S.Fac	Result		Limit		Margin		Pola.	Ant. Type	Comment
		〈AV〉	〈PK〉					〈AV〉	〈PK〉	〈AV〉	〈PK〉	〈AV〉	〈PK〉			
	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	[H/V]		
1	1017.944	36.20	49.40	24.31	2.89	40.41	-8.52	14.47	27.67	49.50	69.50	35.03	41.83	Hori.	HA	
2	1017.944	36.20	50.30	24.31	2.89	40.41	-8.52	14.47	28.57	49.50	69.50	35.03	40.93	Vert.	HA	
3	1116.084	36.70	50.00	23.80	3.01	40.25	-8.52	14.74	28.04	49.50	69.50	34.76	41.46	Hori.	HA	
4	1116.084	37.20	59.10	23.80	3.01	40.25	-8.52	15.24	37.14	49.50	69.50	34.26	32.36	Vert.	HA	
5	1560.126	42.80	51.80	25.37	3.55	39.54	-8.52	23.66	32.66	49.50	69.50	25.84	36.84	Hori.	HA	
6	1560.126	37.90	58.20	25.37	3.55	39.54	-8.52	18.76	39.06	49.50	69.50	30.74	30.44	Vert.	HA	
7	1600.001	44.00	53.90	24.66	3.59	39.47	-8.52	24.26	34.16	49.50	69.50	25.24	35.34	Hori.	HA	
8	1600.001	40.70	54.00	24.66	3.59	39.47	-8.52	20.96	34.26	49.50	69.50	28.54	35.24	Vert.	HA	
9	1639.842	44.30	52.10	25.11	3.65	39.41	-8.52	25.13	32.93	49.50	69.50	24.37	36.57	Hori.	HA	
10	1639.842	40.60	57.40	25.11	3.65	39.41	-8.52	21.43	38.23	49.50	69.50	28.07	31.27	Vert.	HA	
11	1679.865	40.20	63.00	25.37	3.70	39.35	-8.52	21.40	44.20	49.50	69.50	28.10	25.30	Hori.	HA	
12	1679.865	40.60	57.60	25.37	3.70	39.35	-8.52	21.80	38.80	49.50	69.50	27.70	30.70	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:3.75 m

Test report No.: 12445256Y

APPENDIX 3

Test Instruments

***Hyphens for Last Calibration Date, Calibration Due Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.**
The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test item

CE : Conducted disturbance
RE : Radiated disturbance

Test report No.: 12445256Y (Test date: August 16 and 17, 2018)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
CE RE	146923	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
CE RE	146647	Tester	SANWA	PC500	7019221	2018/6/19	2019/6/30	12
CE RE	147544	Measure	-	-	-	-	-	-
CE	146804	Yokowa No.1 shield coaxial(0.009MHz-1000MHz)	UL Japan	CC-14,CC-15,CC-16,CC-18,CC-19,SW-11,SW-12	YS0101	2018/7/23	2019/7/31	12
CE	146987	Digital Humidity Indicator	SATO	PC-5000TRH	B-05	2018/4/17	2019/4/30	12
RE	147516	Search Coil	UL Japan	-	-	-	-	-
RE	146982	Digital Humidity Indicator	SATO	PC-5000TRH-II	04A05	2018/3/27	2019/3/31	12
CE	146958	LISN(AMN)	Schwarzbeck	NNLK8129	8129137	2017/11/1	2018/11/30	12
CE	141246	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	2017/12/19	2018/12/31	12
RE	146599	Pre Amplifier	ANRITSU	MH648A	M89645	2018/3/2	2019/3/31	12
RE	146574	Attenuator	ANRITSU	MP721A	6200543685	2018/7/13	2019/7/31	12
RE	146577	Attenuator	ANRITSU	MP721B	6200749339	2018/7/13	2019/7/31	12
RE	171377	Biconical Antenna	Schwarzbeck	VHBB 9124 + BBA 9106	9124-1105	2018/6/29	2019/6/30	12
RE	146963	Logperiodic Antenna	Schwarzbeck	VUSLP9111B	184	2018/3/3	2019/3/31	12
RE	146839	Yokowa No.1 open coaxial(0.1-1000MHz)	TSJ	CC-11,CC-12,CC-14,CC-15,CC-16,CC-17,SW-11,SW-12	SUCOFLEX104G	2018/7/13	2019/7/31	12

Test report No.: 12445256Y (Test date: August 16 and 17, 2018)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
RE	146941	Open area test site	JSE	3m、10m、30m	1	2018/5/22	2019/5/31	12
CE RE	151197	EMI Test Receiver	Rohde & Schwarz	ESW26	101287	2018/1/16	2019/1/31	12

Test report No.: 12445256Y (Test date: January 7, 2020)

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	RT-62	146757	EMI Test Receiver	Rohde & Schwarz	ESW26	101277	2019/9/6	12
RE	COTS-YW-EMI-TSJ	146923	EMI measurement program	TSJ	TEPTO-DV	-	-	-
RE	DM-01	146647	Tester	SANWA	PC500	7019221	2019/6/21	12
RE	YJM-16	147544	Measure	-	-	-	-	-
RE	SC-01	147516	Search Coil	UL Japan	-	-	-	-
RE	OS-03	146982	Digital Humidity Indicator	SATO	PC-5000TRH-II	04A05	2019/3/8	12
RE	YOATS-01(SVSWR)	146942	Open area test site	JSE	3m,10m	1	2019/3/7	12
RE	CC-C14	178057	Microwave Cable	Huber+Suhner	SUCOFLEX 126EA	800630 / 126EA	2019/3/1	12
RE	CC-C15	178392	Microwave Cable	Junkosha INC.	JUNFLON MWX315	1511-023	2019/3/18	12
RE	YAJ-01	147319	Antenna Tilt Jig	Intelligent System Engineering Co., Ltd	Antenna Tilt Jig	T-0004	-	-
RE	AF-06	146601	Pre Amplifier	AGILENT	HP8449B	3008A01672	2019/11/11	12
RE	HA-07	146712	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-684	2019/5/17	12

End of Report