



EMI TEST REPORT

Test Report No. : 12782612H-C-R2

Applicant : DENSO TEN Limited
Type of Equipment : Car Audio
Model No. : TN0012A
FCC ID : BABTN0012A
Test regulation : FCC Part 15 Subpart B: 2019 Class B
ICES-003 Issue 6: 2016 + Amendment 1: 2017 Class B
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 above regulation.
4. The test results in this 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. Ise EMC Lab.
7. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
8. The information provided from the customer for this report is identified in SECTION 1.
9. This report is a revised version of 12782612H-C-R1. 12782612H-C-R1 is replaced with this report.

Date of test: April 14 and 15, 2019

Representative test engineer:

Akihiko Maeda

Engineer

Consumer Technology Division

Approved by:

Tsubasa Takayama

Leader

Consumer Technology Division



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- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan.
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REVISION HISTORY

Original Test Report No.: 12782612H-C

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12782612H-C	May 31, 2019	-	-
1	12782612H-C-R1	June 11, 2019	P.1, 6	Update of FCC Part 15
1	12782612H-C-R1	June 11, 2019	P.23 to 30	Correction of sentence. - Deletion of ANT TYPE - Deletion of “+ ANT FACTOR” from calculation.
1	12782612H-C-R1	June 11, 2019	P.13 to 23, 27	Addition of sentence for Test data: * Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
1	12782612H-C-R1	June 11, 2019	P. 10	Correction of remarks *1): Describing the distance factor divided to frequency range
1	12782612H-C-R1	June 11, 2019	P.11	Correction of frequency range for each setup: - middle column: from 1 GHz -13 GHz to 1 GHz - 10 GHz - lower column: from 13 GHz - 26.5 GHz to 10 GHz - 40 GHz
2	12782612H-C-R2	July 8, 2019	All pages	Addition of FCC ID
2	12782612H-C-R2	July 8, 2019	P.1	Change of NVLAP logo to NVLAP combined ILAC MRA mark
2	12782612H-C-R2	July 8, 2019	P.9	Correction of Item D: - Change of Manufacture from “-“ to “TOKAI RIKAI”
2	12782612H-C-R2	July 8, 2019	P.9	Correction of Model number of Item E from “GP-KD63B1RC” to “86790-62010”
2	12782612H-C-R2	July 8, 2019	P.9	Correction of Model number of Item G from “146001-5800101” to “146001-58000101”
2	12782612H-C-R2	July 8, 2019	P.9	Correction of Item H: - Change of Model number from “PP100021” to “86300-06250” - Change of Serial number from “86300-06250” to “PP100021” - Change of Manufacture from “-“ to “DENSO TEN Limited”
2	12782612H-C-R2	July 8, 2019	P.13 to 30	Correction of CALCULATION formula

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SECTION 1: Customer information

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

The information provided from the customer is as follows;

- Applicant, Type of Equipment, Model No., FCC ID 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	:	Car Audio
Model No.	:	TN0012A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12 V
Receipt Date of Sample (Information from test lab.)	:	April 8, 2019
Country of Mass-production	:	Thailand
Condition of EUT	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product Description

Model: TN0012A (referred to as the EUT in this report) are Car Audio.

There has 2 type for Left-hand steering wheel (LHD) and Right-hand steering wheel (RHD)

General Specification

Clock frequency(ies)	:	32.768 kHz, 24 MHz, 2.64 GHz (MAX): SoC 4 MHz: Security IC 8 MHz: CAN MICON 20 MHz: BT Module 37 MHz: LVDS IC 42 MHz: Video Dec 55.46667 MHz: Saturn DAB TUNER 62.4 MHz: Radio/Audio DSP
Operating Temperature	:	-20 deg. C - +65 deg. C

Radio Specification

Bluetooth (Ver.5.0 + EDR)

Equipment Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480 MHz
Type of Modulation	:	GFSK, $\pi/4$ -DQPSK, 8DPSK
Antenna Type	:	Inverted-F PCB Antenna
Antenna Gain	:	3.08 dBi (Max)

Broadcast Receiver

Radio Type	:	Receiver
Frequency of Operation	:	AM: 531 kHz - 1602 kHz FM/RDS: 87.5 MHz - 108MHz
Channel spacing	:	AM: 9 kHz FM: 0.05 MHz RDS: 0.1 MHz
Antenna connector type	:	HFC II

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart B
FCC Part 15 final revised on June 4, 2019 and effective July 5, 2019 except 15.258

Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

Test specification : ICES-003 Issue 6: 2016 + Amendment 1: 2017
Title : Spectrum Management and Telecommunications
Interference-Causing Equipment Standard
Information Technology Equipment (Including Digital Apparatus) –
Limits and Methods of Measurement

* The revision on June 4, 2019, does not affect the test specification applied to the EUT.

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result	Remarks
Conducted emission	FCC: ANSI C63.4: 2014 7. AC power - line conducted emission measurements IEEE 187:2003	Class B	N/A	-	N/A	*1)
	IC: ICES-003 Issue 6: 2016 + Amendment 1: 2017					
Radiated emission	FCC: ANSI C63.4: 2014 8. Radiated emission measurements IEEE 187:2003	Class B	N/A	12.99 dB 527.996 MHz, Horizontal	Complied a)	-
	IC: ICES-003 Issue 6: 2016 + Amendment 1: 2017					
Antenna Terminal	FCC: ANSI C63.4: 2014 12. Measurement of unintentional radiators other than ITE IEEE 187:2003	Class B	N/A	24.41 dB 989.991 MHz	Complied b)	-
	IC: -					
*Note: UL Japan, Inc's EMI Work Procedure 13-EM-W0420. *1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line. a) Refer to APPENDIX 1 (data of Radiated emission) b) Refer to APPENDIX 1 (data of Antenna Terminal Conducted Emission)						
Symbols: Complied The data of this test item has enough margin, more than the measurement uncertainty. Complied# The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.						

3.3 Addition to standard

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

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the 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 $k = 2$.

Radiated emission

Measurement distance	Frequency range	Uncertainty (+/-)
3 m	30 MHz to 200 MHz (Horizontal)	4.8 dB
	(Vertical)	5.0 dB
	200 MHz to 1000 MHz (Horizontal)	5.2 dB
	(Vertical)	6.3 dB
10 m	30 MHz to 200 MHz (Horizontal)	4.8 dB
	(Vertical)	4.9 dB
	200 MHz to 1000 MHz (Horizontal)	5.0 dB
	(Vertical)	5.0 dB
3 m	1 GHz to 6 GHz	5.0 dB
	6 GHz to 18 GHz	5.3 dB
1 m	10 GHz to 26.5 GHz	5.8 dB
	26.5 GHz to 40 GHz	5.8 dB
10 m	1 GHz to 18 GHz	5.2 dB

Antenna Terminal test

Test Item	Uncertainty (+/-)
Antenna terminal conducted emission / Power density / Burst power	2.7 dB

3.5 Test Location

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NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967

Test site	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	2973C-1	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	-	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.6 shielded room	-	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	-	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	-	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	-	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	-	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.11 measurement room	-	6.2 x 4.7 x 3.0	4.8 x 4.6	-	-

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

3.6 Test data, Test instruments, and Test set up

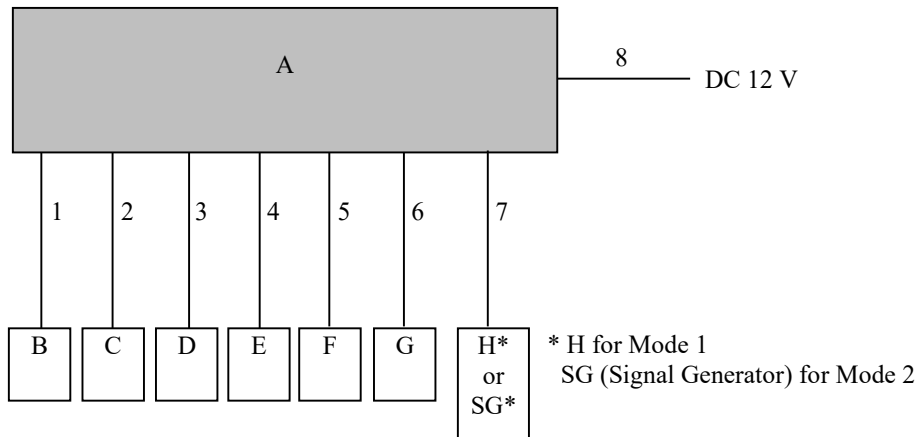
Refer to APPENDIX.

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

4.1 Operating Mode(s)

The mode(s) : 1. USB Play mode: Radiated Emission test only
2. FM Receiving mode : Radiated Emission test only (Local, Other)
3. FM Tuning mode : Antenna terminal conducted test only

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Car Audio	TN0012A	100111896-0008: RHD 100113501-0011: LHD	DENSO TEN Limited	EUT
B	USB Memory	USM4GRB	-	SONY	-
C	Speaker Dummy	-	-	-	-
D	Steering switch	84250-58150-BO	884-6S91	TOKAI RIKAI	-
E	Camera	86790-62010	5XC300013	Panasonic	-
F	Microphone	86730-52020	-	KOJIMA INDUSTRIES	-
G	DAB Antenna AMP	146001-58000101	-	DENSO TEN Limited	-
H	Radio Antenna AMP	86300-06250	PP100021	DENSO TEN Limited	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	2.0	Shielded	Shielded	-
2	Speaker Cable	3.7	Unshielded	Unshielded	-
3	Signal Cable	3.7	Unshielded	Unshielded	-
4	Signal Cable	3.7	Unshielded	Unshielded	-
5	Signal Cable	3.7	Unshielded	Unshielded	-
6	DAB Cable	3.6	Shielded	Shielded	-
7	Radio Cable	3.1	Shielded	Shielded	-
8	DC Cable	4.0	Unshielded	Unshielded	-

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SECTION 5: Radiated Emission

5.1 Operating environment

Test place : No.2 semi anechoic chamber
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane.

The EUT was set on the edge of the tabletop.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. 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 3.

5.3 Test conditions

Frequency range : 30 MHz - 200 MHz (Biconical antenna) / 200 MHz - 1000 MHz (Logperiodic antenna)
1000 MHz - 40000 MHz (Horn antenna)
Test distance : 3 m
EUT position : Table top
EUT operation mode : See Clause 4.1

5.4 Test procedure

The height of the measuring antenna varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

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

The radiated emission measurements were made with the following detector function of the Test Receiver and the Spectrum Analyzer.

For above 1 GHz, 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.

For Mode 2, test was performed under the condition that signal of FM 107.4 MHz (RHD) or 105.8 MHz (LHD) from Signal Generator was input to the EUT.

The test of Local oscillator spurious has been measured up to appropriate frequency based on the result of the antenna terminal test.

Frequency	Below 1 GHz	Above 1 GHz *1)
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120 kHz	PK: RBW: 1 MHz / VBW: 3 MHz AV *2): RBW: 1 MHz / VBW: 10 Hz

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

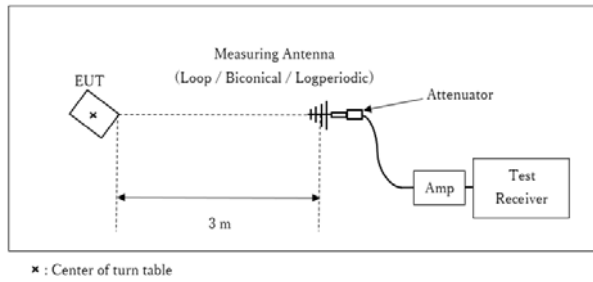
1 GHz - 10 GHz : Distance Factor: $20 \times \log (3.0 / 3 \text{ m}) = 0.00 \text{ dB}$

10 GHz - 40 GHz : Distance Factor: $20 \times \log (1.0 / 3 \text{ m}) = -9.54 \text{ dB}$

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

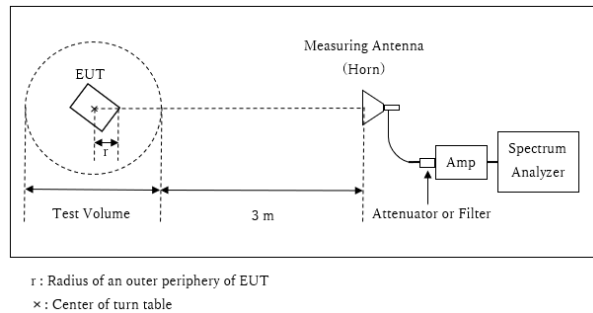
Figure 2: Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz - 10 GHz



Distance Factor: $20 \times \log(3.0 \text{ m}^* / 3.0 \text{ m}) = 0.0 \text{ dB}$

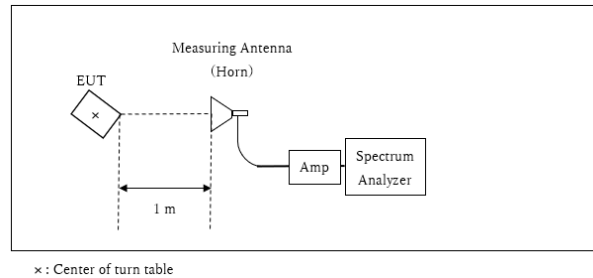
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.0 \text{ m}$

Test Volume: 1.5 m

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

$r = 0.75 \text{ m}$

10 GHz - 40 GHz



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

*Test Distance: 1 m

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

5.5 Test result

Summary of the test results: Pass

The limit is rounded down to one decimal place.

The test result is rounded off to one or two decimal places, so some differences might be observed.

Date: April 14 and 15, 2019

Test engineer: Akihiko Maeda

SECTION 6: Antenna Terminal

6.1 Operating environment

Test place : No.2 semi anechoic chamber
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a wooden table of nominal size, 1.0 m by 1.5 m, raised 0.8 m from the ground.
Photographs of the set up are shown in Appendix 3.

6.3 Test conditions

Frequency range : 30 MHz - 1000 MHz / 1000 MHz - 40000 MHz
Test distance : N / A
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

The Antenna Terminal was measured with a spectrum analyzer connected to the antenna port.

Frequency	Below 1 GHz	Above 1 GHz
Instrument used	Spectrum Analyzer	Spectrum Analyzer *1)
IF Bandwidth	PK: RBW: 100 kHz / VBW: 100 kHz	PK: RBW: 1 MHz / VBW: 3 MHz

*1) The Spectrum Analyzer was used in 3 dB resolution bandwidth.

6.5 Test result

Summary of the test results: Pass

Date: April 14 and 15, 2019

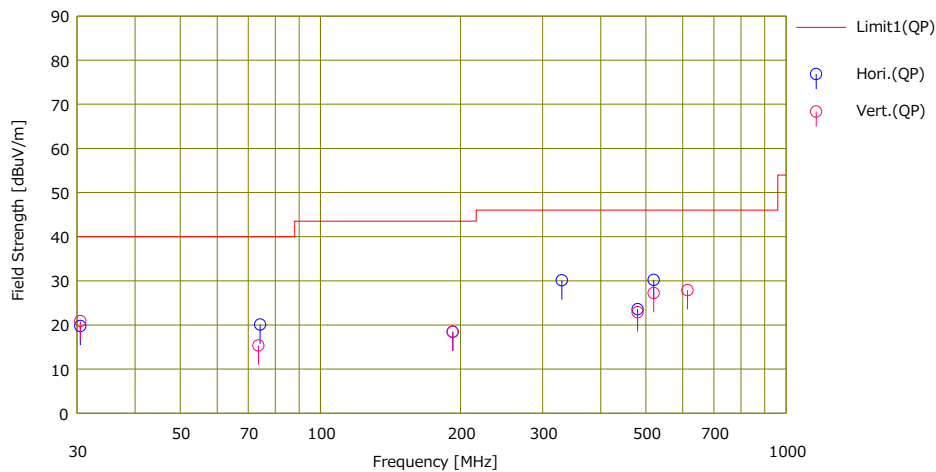
Test engineer: Akihiko Maeda

APPENDIX 1: Test data

Radiated emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 1

Limit : FCC_Part 15 Subpart B(15.109)_Class B



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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT) - GAIN(AMP)

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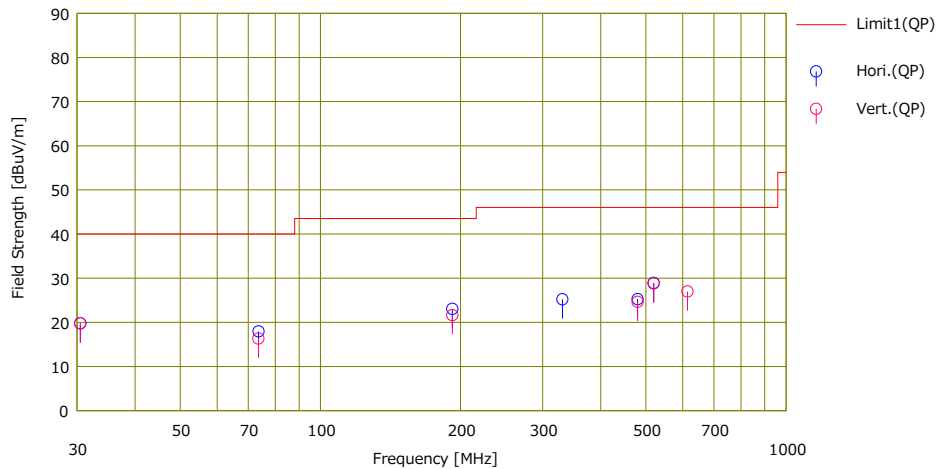
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Radiated emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 2 (Other)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading [QP] [dBuV]	AntFac [dB/m]	Loss [dB]	Gain [dB]	Result [QP] [dBuV/m]	Limit [QP] [dBuV/m]	Margn [QP] [dB]	Pola	Height [m]	Angle [deg]	Ant. Type	Comment
		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]				
1	30.500	25.40	18.18	6.72	30.53	19.77	40.00	20.23	Hori.	100	0	BA	
2	73.616	34.90	6.20	7.21	30.37	17.94	40.00	22.06	Hori.	227	16	BA	
3	192.002	28.40	16.19	8.13	29.69	23.03	43.50	20.47	Hori.	229	295	BA	
4	330.827	30.90	14.58	9.10	29.36	25.22	46.00	20.78	Hori.	100	67	LA21	
5	479.995	28.40	17.09	9.71	29.94	25.26	46.00	20.74	Hori.	100	175	LA21	
6	519.869	31.40	17.60	9.84	29.93	28.91	46.00	17.09	Hori.	100	0	LA21	
7	30.500	25.40	18.18	6.72	30.53	19.77	40.00	20.23	Vert.	100	0	BA	
8	73.611	33.30	6.20	7.21	30.37	16.34	40.00	23.66	Vert.	100	77	BA	
9	192.001	27.00	16.19	8.13	29.69	21.63	43.50	21.87	Vert.	100	20	BA	
10	480.003	27.80	17.09	9.71	29.94	24.66	46.00	21.34	Vert.	116	131	LA21	
11	519.877	31.30	17.60	9.84	29.93	28.81	46.00	17.19	Vert.	100	341	LA21	
12	614.415	26.90	19.50	10.21	29.63	26.98	46.00	19.02	Vert.	100	150	LA21	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT) - GAIN(AMP))

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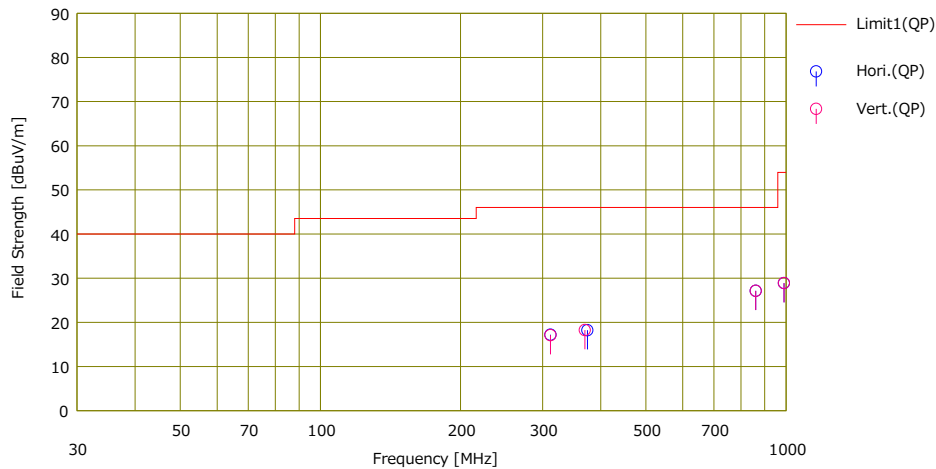
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Radiated emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 2 (Local)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading [QP] [dBuV]	AntFac [dB/m]	Loss [dB]	Gain [dB]	Result [QP] [dBuV/m]	Limit [QP] [dBuV/m]	Margn [QP] [dB]	Pola. [H/V]	Height [m]	Angle [deg]	Ant. Type	Comment
		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[m]	[deg]		
1	311.988	23.60	13.92	8.93	29.25	17.20	46.00	28.80	Hori.	100	0	LA21	local
2	374.394	23.40	14.98	9.42	29.59	18.21	46.00	27.79	Hori.	100	0	LA21	local
3	860.911	22.50	21.78	11.13	28.27	27.14	46.00	18.86	Hori.	100	0	LA21	local
4	989.991	22.40	22.41	11.59	27.51	28.89	54.00	25.11	Hori.	100	0	LA21	local
5	311.988	23.50	13.92	8.93	29.25	17.10	46.00	28.90	Vert.	100	0	LA21	local
6	369.660	23.40	15.04	9.39	29.57	18.26	46.00	27.74	Vert.	100	0	LA21	local
7	860.911	22.50	21.78	11.13	28.27	27.14	46.00	18.86	Vert.	100	0	LA21	local
8	989.991	22.40	22.41	11.59	27.51	28.89	54.00	25.11	Vert.	100	0	LA21	local

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT) - GAIN(AMP))

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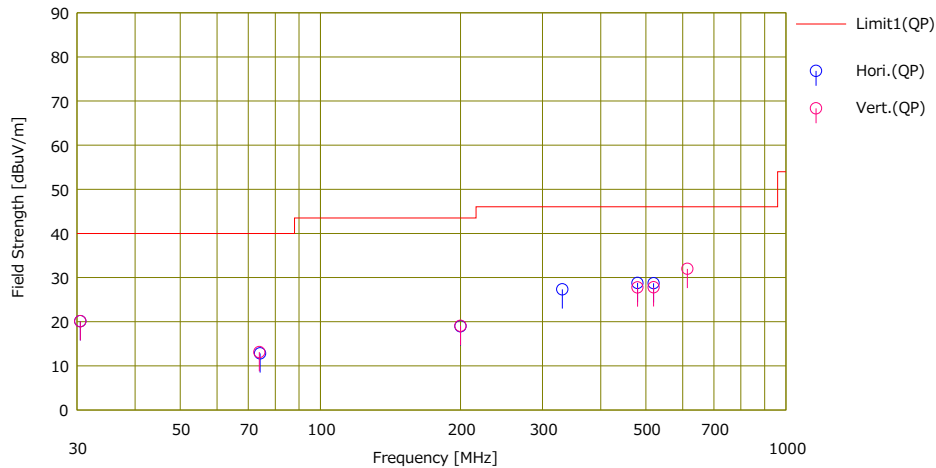
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 30 % RH
Engineer Takumi Shimada
(Below 1 GHz)
Mode Mode 1

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading [QP] [dBuV]	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result [QP] [dBuV/m]	Limit [QP] [dBuV/m]	Margn [QP] [dB]	Pola. [H/V]	Height [cm]	Angle [deg.]	Ant. Type	Comment
		[dBuV]				[dBuV/m]	[dBuV/m]	[dB]					
1	30.500	25.60	18.31	6.72	30.53	20.10	40.00	19.90	Hori.	100	0	BA	
2	74.230	29.80	6.15	7.21	30.36	12.80	40.00	27.20	Hori.	237	192	BA	
3	199.999	23.70	16.69	8.19	29.63	18.95	43.50	24.55	Hori.	100	0	BA	
4	330.837	33.00	14.58	9.10	29.36	27.32	46.00	18.68	Hori.	100	261	LA21	
5	479.940	31.90	17.09	9.71	29.94	28.76	46.00	17.24	Hori.	100	210	LA21	
6	519.858	31.20	17.60	9.84	29.93	28.71	46.00	17.29	Hori.	100	9	LA21	
7	30.500	25.60	18.31	6.72	30.53	20.10	40.00	19.90	Vert.	100	0	BA	
8	73.945	30.10	6.14	7.21	30.36	13.09	40.00	26.91	Vert.	255	106	BA	
9	199.999	23.80	16.69	8.19	29.63	19.05	43.50	24.45	Vert.	100	0	BA	
10	479.940	30.90	17.09	9.71	29.94	27.76	46.00	18.24	Vert.	130	255	LA21	
11	519.865	30.30	17.60	9.84	29.93	27.81	46.00	18.19	Vert.	100	281	LA21	
12	614.399	31.90	19.50	10.21	29.63	31.98	46.00	14.02	Vert.	100	0	LA21	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

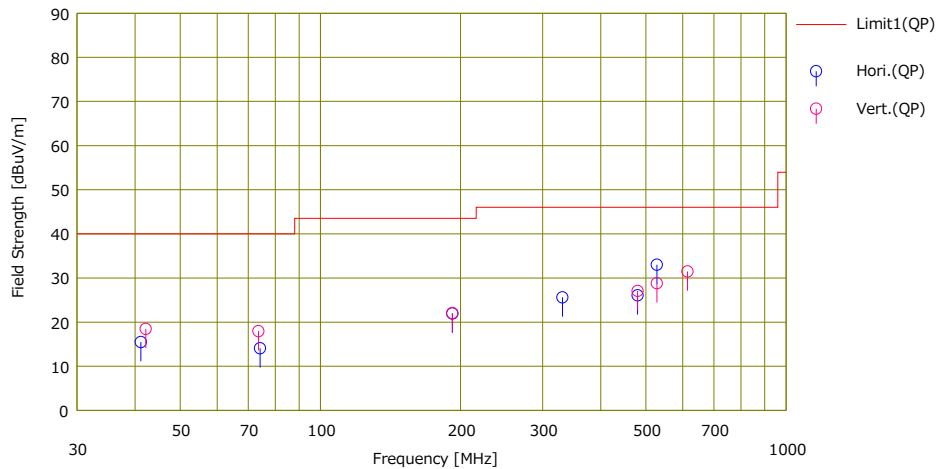
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 2 (Other)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading [QP] [dBuV]	Ant Fac [dB/m]	Loss [dB]	Gain [dB]	Result [QP] [dBuV/m]	Limit [QP] [dBuV/m]	Margn [QP] [dB]	Pola. [H/V]	Height [cm]	Angle [deg.]	Ant. Type	Comment
		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[H/V]	[cm]	[deg.]		
1	41.150	24.90	14.22	6.85	30.49	15.48	40.00	24.52	Hori.	100	0	BA	
2	74.197	31.00	6.22	7.21	30.36	14.07	40.00	25.93	Hori.	229	24	BA	
3	192.029	27.30	16.19	8.13	29.69	21.93	43.50	21.57	Hori.	150	283	BA	
4	330.812	31.30	14.58	9.09	29.36	25.61	46.00	20.39	Hori.	100	273	LA21	
5	479.897	29.20	17.09	9.71	29.94	26.06	46.00	19.94	Hori.	100	209	LA21	
6	527.996	35.60	17.45	9.87	29.91	33.01	46.00	12.99	Hori.	100	144	LA21	
7	42.151	28.20	13.89	6.86	30.49	18.46	40.00	21.54	Vert.	100	226	BA	
8	73.584	34.90	6.20	7.21	30.37	17.94	40.00	22.06	Vert.	100	64	BA	
9	192.032	27.40	16.19	8.13	29.69	22.03	43.50	21.47	Vert.	100	346	BA	
10	479.973	30.20	17.09	9.71	29.94	27.06	46.00	18.94	Vert.	100	255	LA21	
11	527.994	31.40	17.45	9.87	29.91	28.81	46.00	17.19	Vert.	100	135	LA21	
12	614.395	31.40	19.50	10.21	29.63	31.48	46.00	14.52	Vert.	100	15	LA21	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

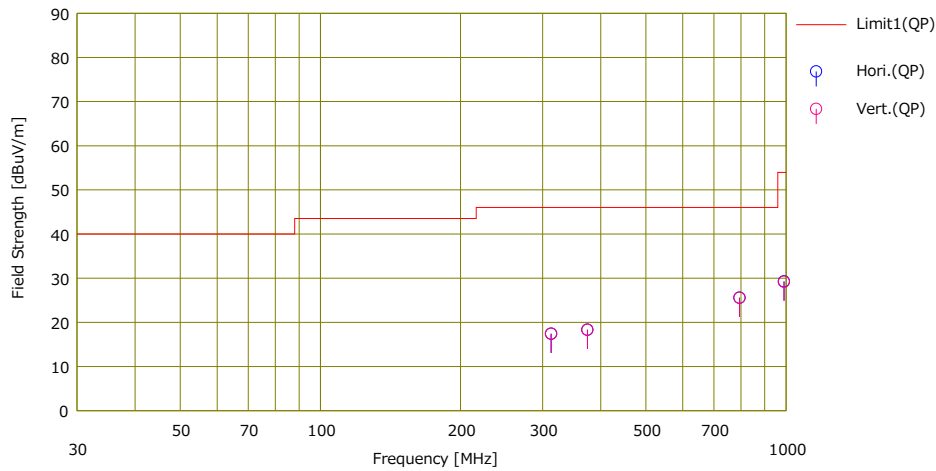
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 2 (Local)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading (QP) [dBuV]	AntFac (dB/m)	Loss (dB)	Gain (dB)	Result (QP) [dBuV/m]	Limit (QP) [dBuV/m]	Margn (QP) (dB)	Pola. (H/V)	Height (m)	Angle (deg)	Ant. Type	Comment
		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]					
1	313.005	23.80	13.95	8.94	29.26	17.43	46.00	28.57	Hori.	100	0	LA21	
2	374.397	23.50	14.98	9.42	29.59	18.31	46.00	27.69	Hori.	100	0	LA21	
3	794.331	22.50	20.87	10.89	28.68	25.58	46.00	20.42	Hori.	100	0	LA21	
4	989.991	22.80	22.41	11.59	27.51	29.29	54.00	24.71	Hori.	100	0	LA21	
5	313.005	23.80	13.95	8.94	29.26	17.43	46.00	28.57	Vert.	100	0	LA21	
6	374.397	23.50	14.98	9.42	29.59	18.31	46.00	27.69	Vert.	100	0	LA21	
7	794.331	22.50	20.87	10.89	28.68	25.58	46.00	20.42	Vert.	100	0	LA21	
8	989.991	22.70	22.41	11.59	27.51	29.19	54.00	24.81	Vert.	100	0	LA21	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

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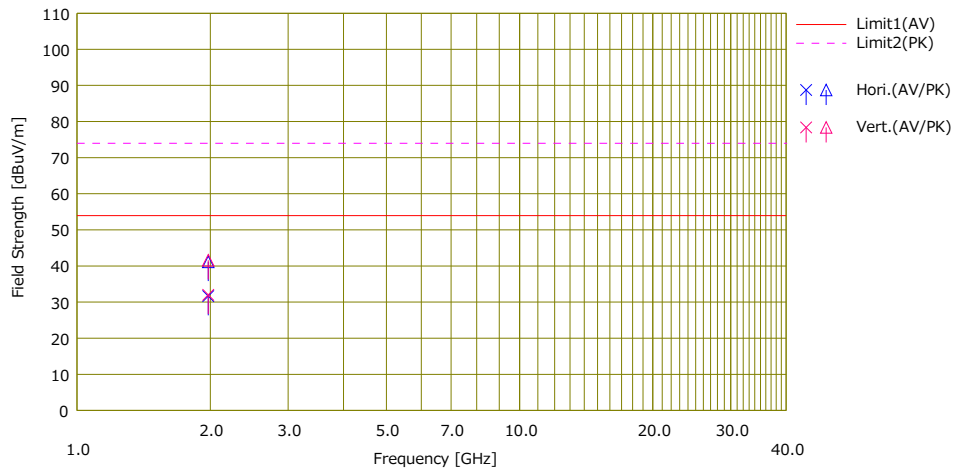
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Above 1 GHz)
Mode Mode 1

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]					
1	1980.013	37.51	47.03	26.16	2.36	34.40	31.63	41.15	54.00	74.00	22.37	32.85	Hori.	120	155	HA6	
2	1980.013	37.90	47.47	26.16	2.36	34.40	32.02	41.59	54.00	74.00	21.98	32.41	Vert.	127	134	HA6	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT + D-FACTOR) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

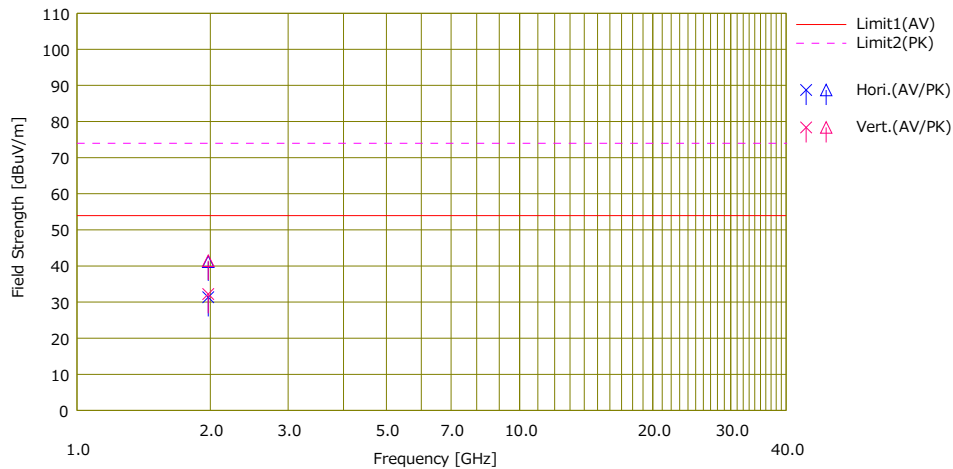
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Above 1 GHz)
Mode Mode 2 (Other)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]					
1	1980.009	37.20	47.07	26.16	2.36	34.40	31.32	41.19	54.00	74.00	22.68	32.81	Hori.	116	151	HA6	
2	1980.009	38.07	47.30	26.16	2.36	34.40	32.19	41.42	54.00	74.00	21.81	32.58	Vert.	126	139	HA6	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT + D-FACTOR) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

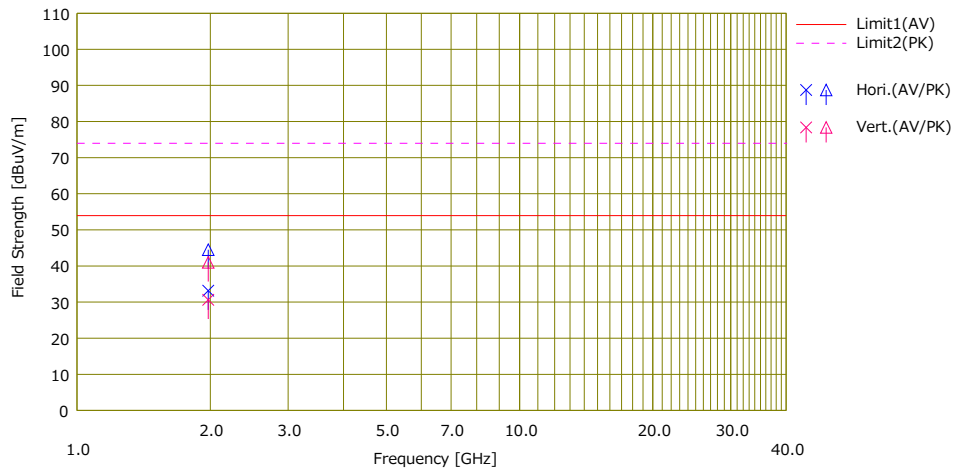
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Above 1 GHz)
Mode Mode 1

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]					
1	1980.033	39.04	50.39	26.16	2.36	34.40	33.16	44.51	54.00	74.00	20.84	29.49	Hori.	250	140	HA6	
2	1980.033	36.49	46.87	26.16	2.36	34.40	30.61	40.99	54.00	74.00	23.39	33.01	Vert.	152	124	HA6	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT + D-FACTOR) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

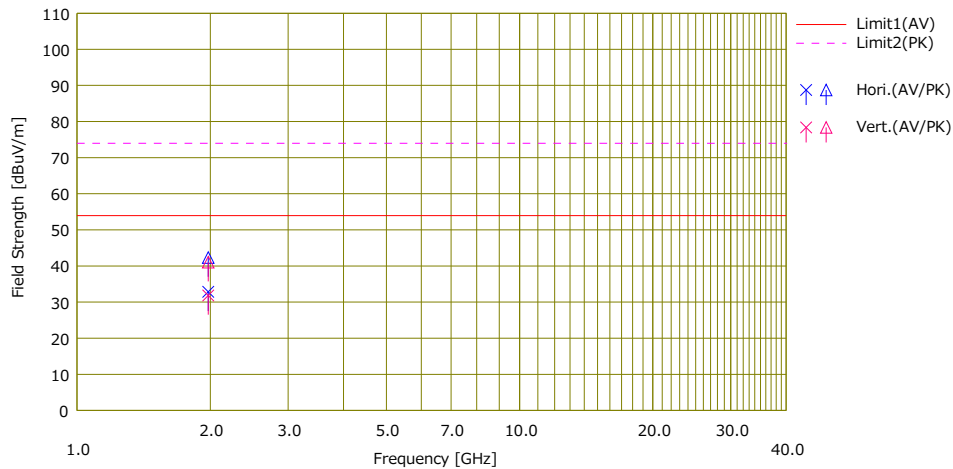
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Above 1 GHz)
Mode Mode 2 (Other)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]					
1	1980.032	38.71	48.18	26.16	2.36	34.40	32.83	42.30	54.00	74.00	21.17	31.70	Hori.	0	0	HA6	
2	1980.032	37.70	46.91	26.16	2.36	34.40	31.82	41.03	54.00	74.00	22.18	32.97	Vert.	155	132	HA6	

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

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATT + D-FACTOR) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

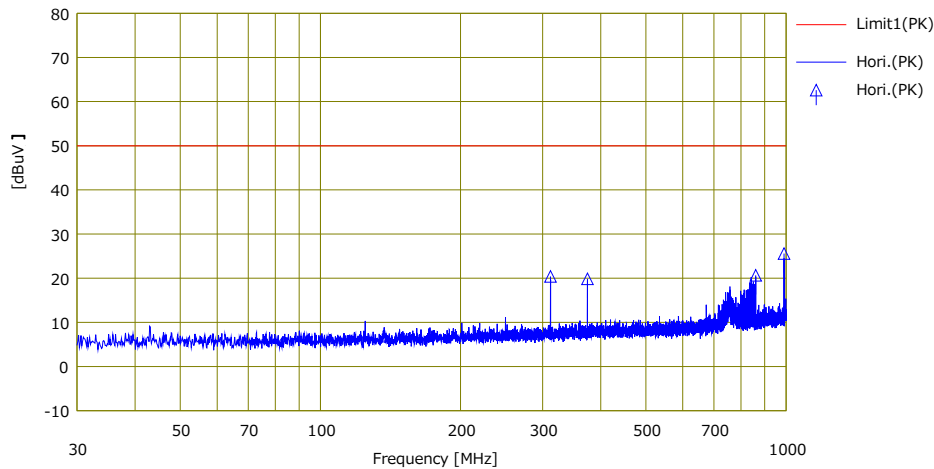
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading (PK) [dBuV]	Ant.Fac (dB/m)	Loss (dB)	Gain (dB)	Result (PK) [dBuV]	Limit (PK) [dBuV]	Margin (PK) (dB)	Pola.	Height (m)	Angle (deg)	Ant. Type	Comment
1	311.988	40.60	0.00	9.06	29.25	20.41	50.00	29.59					
2	374.394	39.92	0.00	9.55	29.59	19.88	50.00	30.12					
3	860.911	37.65	0.00	11.27	28.27	20.65	50.00	29.35					
4	989.991	41.38	0.00	11.72	27.51	25.59	50.00	24.41					Load 107.4MHz

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

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

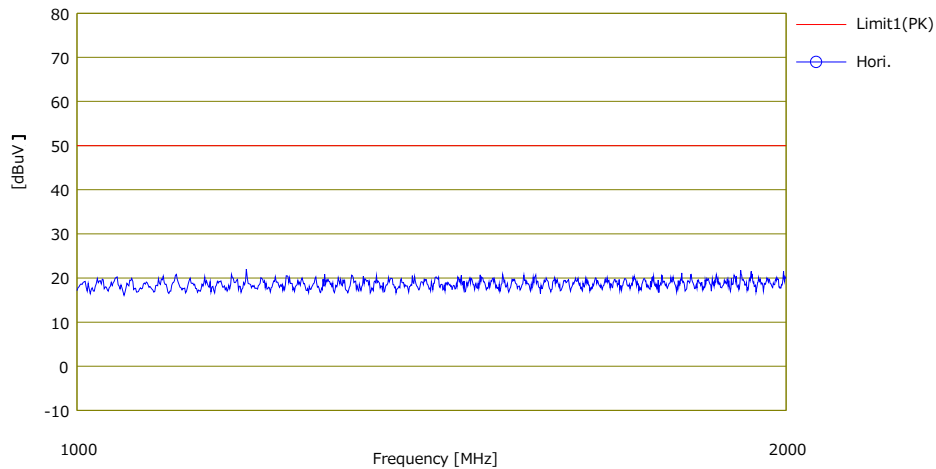
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(1 GHz - 2 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement



No.	Freq.	Reading	Ant.Fac.	Loss	Gain	Result	Limit (PK)	Margin (PK)	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV]	[dBuV]	[dB]		[cm]	[deg]		
													No Signal Detected

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

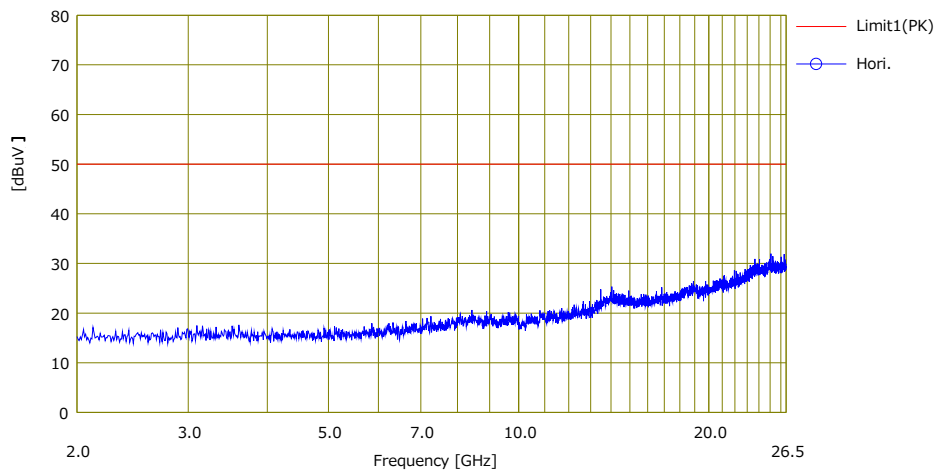
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (RHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(2 GHz - 26.5 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement



No.	Freq.	Reading	Ant.Fac.	Loss	Gain	Result	Limit (PK)	Margin (PK)	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV]	[dBuV]	[dB]		[cm]	[deg]		
													No Signal Detected

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

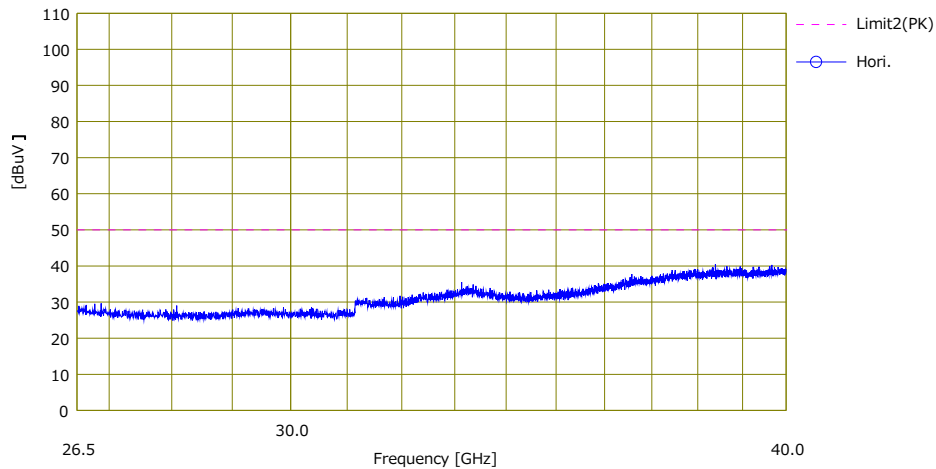
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (RHD)

Report No.	12782612H
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	April 14, 2019
Temperature / Humidity	21 deg. C / 32 % RH
Engineer	Akihiko Maeda
	(26.5 GHz - 40 GHz)
Mode	Mode 3



No.	Freq.	Reading	Ant.Fac.	Loss	Gain	Result	Limit (PK)	Margin (PK)	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV]	[dBuV]	[dB]		[cm]	[deg]		
													No Signal Detected

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

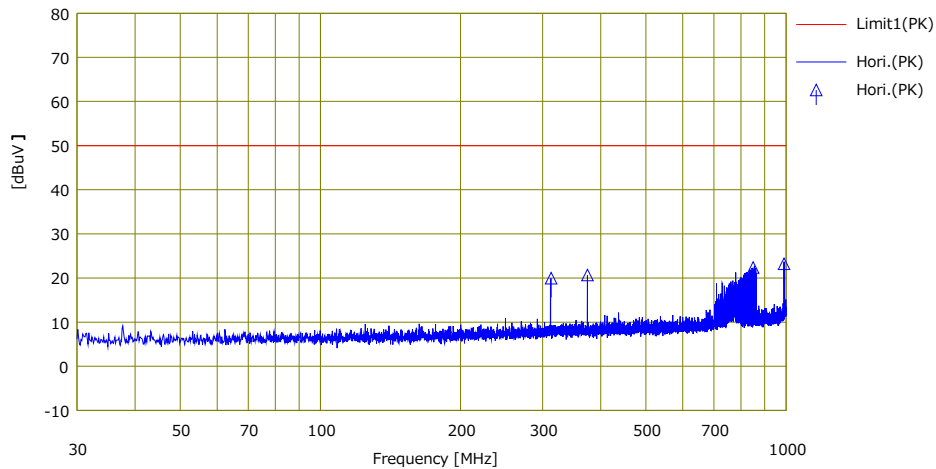
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 15, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(Below 1 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading (PK) [dBuV]	Ant Fac (dB/m)	Loss (dB)	Gain (dB)	Result (PK) [dBuV]	Limit (PK) [dBuV]	Margin (PK) (dB)	Pola.	Height (cm)	Angle (deg)	Ant. Type	Comment
1	313.005	40.12	0.00	9.07	29.26	19.93	50.00	30.07				HA6	
2	374.397	40.72	0.00	9.55	29.59	20.68	50.00	29.32				HA6	
3	849.768	39.50	0.00	11.23	28.34	22.39	50.00	27.61				HA6	Load 105.8MHz
4	989.991	39.00	0.00	11.72	27.51	23.21	50.00	26.79				HA6	

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

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

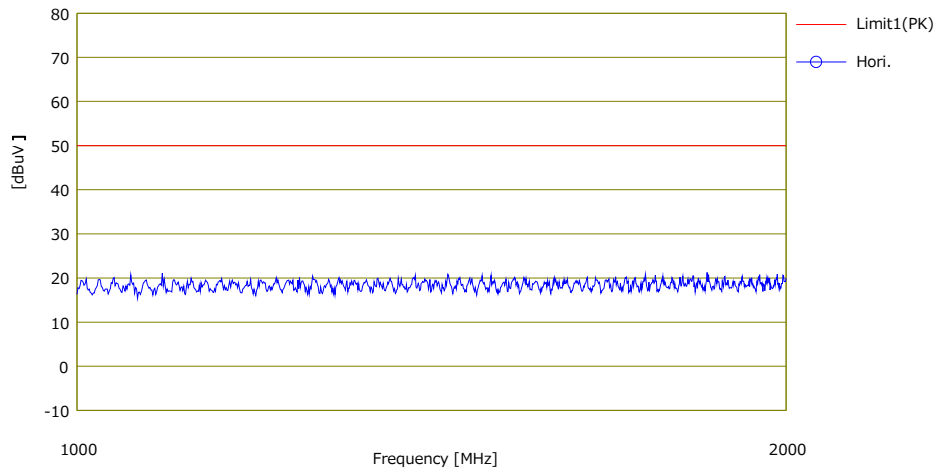
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(1 GHz - 2 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement



No.	Freq.	Reading	Ant.Fac.	Loss	Gain	Result	Limit (PK)	Margin (PK)	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV]	[dBuV]	[dB]		[cm]	[deg]		
													No Signal Detected

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

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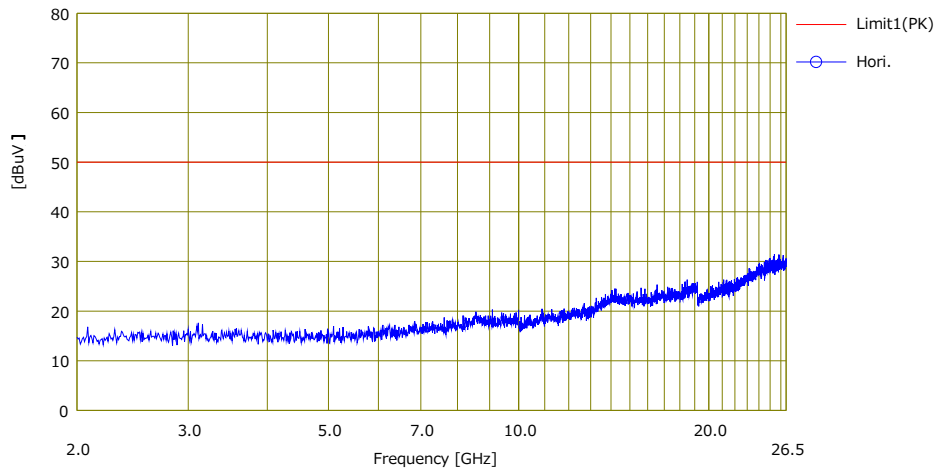
Facsimile : +81 596 24 8124

Antenna Terminal Conducted Emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(2 GHz - 26.5 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement

Limit : FCC15.111 Antenna terminal measurement



No.	Freq.	Reading	Ant.Fac.	Loss	Gain	Result	Limit (PK)	Margin (PK)	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV]	[dBuV]	[dB]		[cm]	[deg]		
													No Signal Detected

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

UL Japan, Inc.

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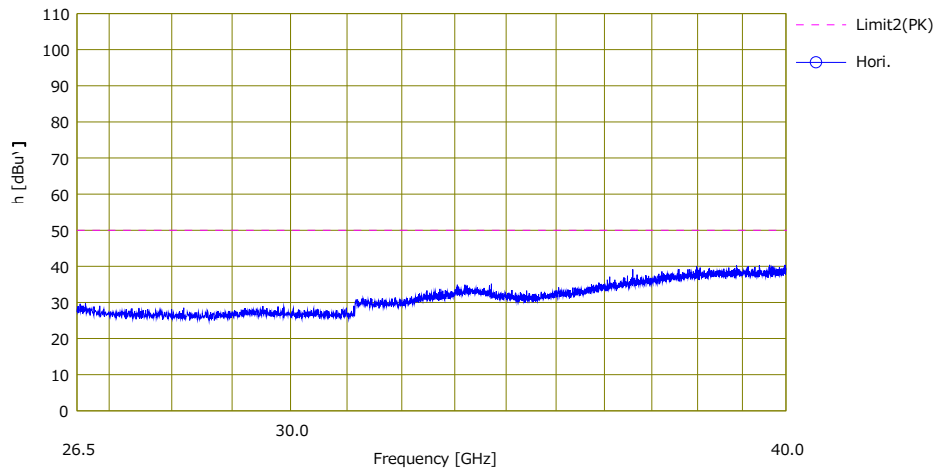
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Antenna Terminal Conducted Emission (LHD)

Report No. 12782612H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date April 14, 2019
Temperature / Humidity 21 deg. C / 32 % RH
Engineer Akihiko Maeda
(26.5 GHz - 40 GHz)
Mode Mode 3

Limit : FCC15.111 Antenna terminal measurement



No.	Freq.	Reading	Ant.Fac	Loss	Gain	Result	Limit (PK)	Margin (PK)	Pola.	Height	Angle	Ant. Type	Comment
	[MHz]	[dBuV]	[dB/m]	[dB]	[dB]	[dBuV]	[dBuV]	[dB]		[cm]	[deg]		
													No Signal Detected

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + ATT) - GAIN(AMP))

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APPENDIX 2: Test instruments

Test Instruments

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
RE/AT	142228	Measure	KOMELON	KMC-36	-	-	-	-
RE/AT	141556	Thermo-Hygrometer	CUSTOM	CTH-201	3	12/05/2018	12/31/2019	12
RE/AT	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	08/21/2018	08/31/2019	12
RE/AT	141392	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 1608S087(5 m)	08/08/2018	08/31/2019	12
RE/AT	141855	Spectrum Analyzer	AGILENT	E4440A	MY46187750	11/09/2018	11/30/2019	12
RE/AT	141579	Pre Amplifier	AGILENT	8449B	3008A02142	01/21/2019	01/31/2020	12
RE	142006	AC2_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-06902	04/01/2019	04/30/2020	12
RE/AT	141152	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
RE	141512	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	06/06/2018	06/30/2019	12
RE	160324	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	11/08/2018	11/30/2019	12
RE	141517	Horn Antenna 26.5-40GHz	ETS LINDGREN	Oct-60	152399	06/08/2018	06/30/2019	12
RE/AT	141885	Spectrum Analyzer	AGILENT	E4448A	US44300523	11/07/2018	11/30/2019	12
RE	141588	Pre Amplifier	MITEQ, Inc	AMF-6F-2600400-33-8P / AMF-4F-2600	1871355 /1871328	09/21/2018	09/30/2019	12
AT	141577	Microwave System Power Amplifier	AGILENT	83050A	MY39500610	10/04/2018	10/31/2019	12
AT	141326	Microwave Cable	Suhner	SUCOFLEX101	2874(1m) / 2877(5m)	03/04/2019	03/31/2020	12
AT	141224	Microwave Cable	Junkosha	MWX221	1409S496	03/05/2019	03/31/2020	12
RE	141513	Horn Antenna 15-40GHz	Schwarzbeck	BBHA9170	BBHA9170306	06/07/2018	06/30/2019	12
RE	141942	Test Receiver	Rohde & Schwarz	ESCI	100300	08/08/2018	08/31/2019	12
RE/AT	141578	Pre Amplifier	AGILENT	8447D	2944A10845	09/19/2018	09/30/2019	12
RE	142004	AC2_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	06/29/2018	06/30/2020	24
AT	141550	Matching Pad Anritsu	ANRITSU	MB-009	40063	07/18/2018	07/31/2019	12
RE	141265	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-190	03/25/2019	03/31/2020	12
RE/AT	141317	Coaxial Cable	Fujikura/Agilent	-	-	02/25/2019	02/29/2020	12
RE/AT	141203	Attenuator(6dB)	Weinschel Corp	2	BK7970	11/05/2018	11/30/2019	12
RE/AT	141427	Biconical Antenna	Schwarzbeck	VHA9103B	8031	05/31/2018	05/31/2019	12

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

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

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

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

Test item:

RE: Radiated emission

AT: Antenna Terminal Conducted test

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