

# **RADIO TEST REPORT**

# Test Report No. 15092638H-A

Customer	ASAHI DENSO CO., LTD.
Description of EUT	PANEL SW
Model Number of EUT	CZ186
FCC ID	T8VCZ186
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	March 19, 2024
Remarks	-

Representative test engineer	Approved by
J. Fragatomi	S. Mijazono
Junki Nagatomi Engineer	Shinichi Miyazono Engineer
	ACCREDITED  CERTIFICATE 5107.02
The testing in which "Non-accreditation" is displaye  There is no testing item of "Non-accreditation".	d is outside the accreditation scopes in UL Japan, Inc.

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# **REVISION HISTORY**

## Original Test Report No. 15092638H-A

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15092638H-A	March 19, 2024	-

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

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

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## **SECTION 1: Customer Information**

Company Name	ASAHI DENSO CO., LTD.
Address	6-2-1 Somejidai, Hamakita-ku, Hamamatsu, Shizuoka 434-0046 Japan
Telephone Number	+81-53-586-7383
Contact Person	Tomohiro Yaguchi

The information provided by the customer is as follows;

- Customer, Description 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 and Test Date
- SECTION 4: Operation of EUT during testing

# **SECTION 2: Equipment Under Test (EUT)**

#### 2.1 Identification of EUT

Description	PANEL SW
Model Number	CZ186
Serial Number	Refer to SECTION 4.2
Condition	Production prototype
	(Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	December 14, 2023
Test Date	March 11, 2024

#### 2.2 Product Description

#### **General Specification**

Rating	DC 12 V / DC 24 V (Battery)
Operating temperature	-20 deg. C to +75 deg. C

#### **Radio Specification**

Equipment Type	Transmitter
Frequency of Operation	134.2 kHz
Type of Modulation	ASK

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# **SECTION 3: Test specification, procedures & results**

#### 3.1 Test Specification

Test Specification	FCC Part 15 Subpart C
·	The latest version on the first day of the testing period
Title	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
	Section 15.207 Conducted limits
	Section 15.209 Radiated emission limits; general requirements.

#### 3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	<fcc></fcc>	<fcc></fcc>	N/A	N/A	*1)
	ANSI C63.10:2013	Section 15.207			
	6 Standard test methods	<ised></ised>			
	<ised></ised>	RSS-Gen 8.8			
	RSS-Gen 8.8				
Electric Field Strength	<fcc></fcc>	<fcc></fcc>	24.3 dB	Complied	Radiated
of Fundamental	ANSI C63.10:2013	Section 15.209	134.2 kHz, 0 deg.		
Emission	6 Standard test methods	<ised></ised>	Peak with Duty		
	<ised></ised>	RSS-210 7.2	factor		
	RSS-Gen 6.5, 6.12	RSS-Gen 8.9			
Electric Field Strength	<fcc></fcc>	<fcc></fcc>	6.3 dB	Complied	Radiated
of Spurious Emission	ANSI C63.10:2013	Section 15.209	208.213 MHz,		
	6 Standard test methods	<ised></ised>	Vertical, QP		
	<ised></ised>	RSS-210 7.3			
	RSS-Gen 6.5, 6.6, 6.13	RSS-Gen 8.9			
-20 dB Bandwidth	<fcc></fcc>	<fcc></fcc>	N/A	Complied	Radiated
	ANSI C63.10:2013	Reference data			
	6 Standard test methods	<ised></ised>			
	<ised></ised>	-			
	-				

Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.

#### FCC Part 15.31 (e)

The EUT provides stable voltage constantly to the wireless transmitter regardless of input voltage. Instead of a new battery, DC power supply was used for the test.

That does not affect the test result, therefore the EUT complies with the requirement.

#### FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the vehicle.

Therefore, the equipment complies with the antenna requirement of Section 15.203.

<sup>\*1)</sup> 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.

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#### 3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99 % emission bandwidth	RSS-Gen 6.7	-	N/A	-	Radiated

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

#### 3.4 Uncertainty

Measurement uncertainty is not taken into account when stating conformity with a specified requirement. Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

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

#### **Radiated emission**

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Measurement distance	Frequency range	Frequency range					
3 m	9 kHz to 30 MHz		dB	3.3			
10 m			dB	3.1			
3 m	30 MHz to 200 MHz	Iz to 200 MHz Horizontal		4.7			
		Vertical	dB	4.7			
	200 MHz to 1000 MHz	Horizontal	dB	4.8			
		Vertical	dB	6.0			
10 m	30 MHz to 200 MHz	Horizontal	dB	5.2			
		Vertical	dB	5.1			
	200 MHz to 1000 MHz	Horizontal	dB	5.2			
		Vertical	dB	5.2			

-20 dB Bandwidth and 99% Occupied Bandwidth

Item	Unit	Calculated Uncertainty (+/-)
Bandwidth (OBW)	%	0.96

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#### 3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

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

Telephone: +81-596-24-8999

\*A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 884919

ISED Lab Company Number: 2973C / CAB identifier: JP0002

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room	2.6 x 3.4 x 2.5	N/A	-	-
Large Chamber	16.9 x 22.1 x 10.17	16.9 x 22.1	-	10 m
Small Chamber	5.3 x 6.69 x 3.59	5.3 x 6.69	-	-

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

Refer to APPENDIX.

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

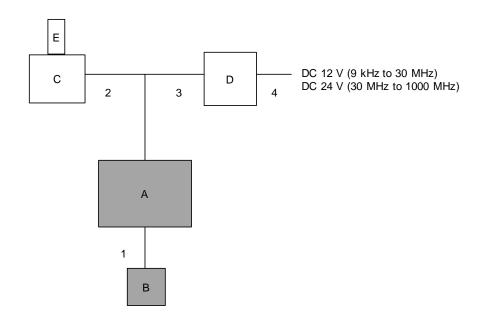
## 4.1. Operating Mode(s)

Test mode	Remarks									
1) Transmitting mode	-									
*Power of the EUT was set by the software as follows;										
Software: CZ186-811 Version: 1.00										
(Date: 2024.03.11, Storage location: EUT memory)										
*This setting of software is the worst case.	*This setting of software is the worst case									
Any conditions under the normal use do not exceed the condition of setting.										
In addition, end users cannot change the settings of the output power of the product.										
Justification: The system was configured in typical fashion (as a user would normally use it) for testing.										

<sup>\*</sup>This EUT has two modes which transponder key is attached or not. The worst case was confirmed with and without transponder key attached, as a result, the test without transponder key attached was the worst case. Therefore the test without transponder key attached was performed only.

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#### 4.2 Configuration and Peripherals



<sup>\*</sup> Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

**Description of EUT and Support Equipment** 

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No.	Item	Model number	Serial Number	Manufacturer	Remark						
Α	PANEL SW	CZ186	3Y13	ASAHI DENSO CO., LTD.	EUT						
В	ANTENNA UNIT	CZ186-083	11X3	ASAHI DENSO CO., LTD.	EUT						
С	Key Cylinder	CZ186-903	3Y13	ASAHI DENSO CO., LTD.	-						
D	Jig	CZ186-JIG	3Y13	ASAHI DENSO CO., LTD.	-						
E	Kev	CZ186-906	3Y13	ASAHI DENSO CO., LTD.	-						

#### **List of Cables Used**

	Liot of Cabico Coca										
No.	Name	Length (m)	Shield		Remark						
			Cable	Connector							
1	DC Signal Cable	0.1	Unshielded	Unshielded	-						
2	DC Signal Cable	1.6	Unshielded	Unshielded	-						
3	DC Signal Cable	1.3	Unshielded	Unshielded	-						
4	DC Cable	3.5	Unshielded	Unshielded	-						

<sup>\*</sup>As a result of comparing DC 12 V and DC 24 V at pre-check, the test was performed with the worst voltage as representative.

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### **SECTION 5: Radiated emission (Fundamental and Spurious Emission)**

#### **Test Procedure**

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 Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.

#### [Limit conversion]

The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohmes. For example, the measurement at frequency 9 kHz resulted in a level of 45.5 dBuV/m, which is equivalent to 45.5 - 51.5 = -6.0 dBuA/m, which has the same margin, 3 dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

#### [Frequency: From 9 kHz to 30 MHz]

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

The measurements were performed for vertical polarization (antenna angle: 0 deg., 45 deg., 90 deg., and 135 deg., 180 deg.) and horizontal polarization.

\*Refer to Figure 2 about Direction of the Loop Antenna.

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 m open field test site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

These tests were performed in semi anechoic chamber. Therefore, the measured level of emissions may be higher than if measurements were made without a ground plane. However, test results were confirmed to pass against standard limit.

#### [Frequency: From 30 MHz to 1 GHz]

The measuring antenna height 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.

[Test instruments and test settings]

Frequency	Below 30 MHz	30 MHz to 200 MHz	200 MHz to 1 GHz
Antenna Type	Loop	Biconical	Logperiodic

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

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

Frequency	From 9 kHz to 90 kHz	From 90 kHz	From 150 kHz	From 490 kHz	From 30 MHz
	and	to	to	to	to
	From 110 kHz		490 kHz	30 MHz	1 GHz
	to 150 kHz				
Instrument used	Test Receiver				
Detector	PK / AV	QP	PK / AV	QP	QP
IF Bandwidth	200 Hz	200 Hz	9 kHz	9 kHz	120 kHz
Test Distance	3 m *1)	3 m *1)	3 m *1)	3 m *2)	3 m

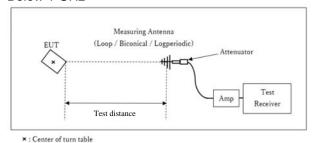
<sup>\*1)</sup> Distance Factor: 40 x log (3 m / 300 m) = -80 dB

<sup>\*2)</sup> Distance Factor: 40 x log (3 m / 30 m) = -40 dB

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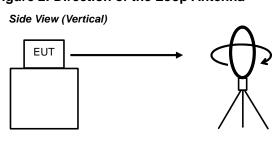
Figure 1: Test Setup

Below 1 GHz

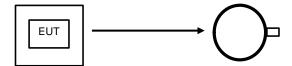


Test Distance: 3 m

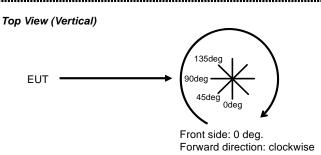
Figure 2: Direction of the Loop Antenna



Top View (Horizontal)



Antenna was not rotated.



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

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

Measurement range : 9 kHz to 1 GHz
Test data : APPENDIX
Test result : Pass

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# SECTION 6: -20 dB Bandwidth

#### **Test Procedure**

The test was measured with a spectrum analyzer using a test fixture.

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
-20 dB Bandwidth	50 kHz	510 Hz	1.6 kHz	Auto	Peak	Max Hold	Spectrum Analyzer

Test data : APPENDIX Test result : Pass

# SECTION 7: 99 % emission bandwidth

#### **Test Procedure**

The test was measured with a spectrum analyzer using a test fixture.

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used		
99 % emission bandwidth	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer		
Peak hold was applied as Worst-case measurement.									

Test data : APPENDIX
Test result : Pass

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# **APPENDIX 1: Test data**

# Radiated Emission (Fundamental and Spurious Emission)

Test place Ise EMC Lab.

Semi Anechoic Chamber No.1

Date March 11, 2024
Temperature / Humidity 20 deg. C / 36 % RH
Engineer Junki Nagatomi
Mode Mode 1

#### PK or QP

FRUI QF											
Ant Deg [deg] or	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Duty Factor	Result	Limit	Margin	Remark
Polarity [Hori/Vert]	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
0deg	0.13420	PK	87.4	19.5	-74.0	32.2	-	0.7	45.0	44.3	Fundamental
0deg	0.26840	PK	46.7	19.6	-74.0	32.2	-	-39.9	39.0	78.9	
0deg	0.40260	PK	51.2	19.7	-73.9	32.2	-	-35.2	35.5	70.7	
0deg	0.53680	QP	32.5	19.7	-33.9	32.2	-	-13.9	33.0	46.9	
0deg	0.67100	QP	43.1	19.7	-33.9	32.2	-	-3.3	31.1	34.4	
0deg	0.80520	QP	32.1	19.7	-33.8	32.2	-	-14.2	29.5	43.7	
0deg	0.93940	QP	43.6	19.7	-33.8	32.2	-	-2.7	28.1	30.8	
0deg	1.07360	QP	31.8	19.7	-33.8	32.2	-	-14.5	26.9	41.4	
0deg	1.20780	QP	39.2	19.7	-33.8	32.2	-	-7.1	25.9	33.0	
0deg	1.34200	QP	31.2	19.7	-33.8	32.2	-	-15.1	25.0	40.1	
Hori.	112.106	QP	42.8	11.7	8.6	39.0	-	24.1	43.5	19.4	
Hori.	176.230	QP	41.7	16.0	9.3	39.0	-	28.0	43.5	15.5	
Hori.	208.192	QP	51.0	11.4	9.7	39.0	-	33.1	43.5	10.4	
Hori.	240.253	QP	55.9	11.7	10.0	38.9	-	38.7	46.0	7.3	
Hori.	256.217	QP	52.0	12.1	10.1	38.9	-	35.3	46.0	10.7	
Hori.	288.243	QP	46.2	13.5	10.4	38.8	-	31.3	46.0	14.7	
Vert.	128.159	QP	49.4	13.6	8.8	39.0	-	32.8	43.5	10.7	
Vert.	160.175	QP	45.4	15.4	9.2	39.0	-	31.0	43.5	12.5	
Vert.	208.213	QP	55.1	11.4	9.7	39.0	-	37.2	43.5	6.3	
Vert.	240.221	QP	53.7	11.7	10.0	38.9	-	36.5	46.0	9.5	
Vert.	256.309	QP	51.3	12.1	10.1	38.9	-	34.6	46.0	11.4	
Vert.	288.278	QP	44.6	13.5	10.4	38.8	-	29.7	46.0	16.3	

Result = Reading + Ant Factor + Loss (Cable + Attenuator + Filter + D.Factor) - Gain(Amprifier)

#### PK with Duty factor

П	Ant Deg [deg] or	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Duty Factor	Result	Limit	Margin	Remark
	Polarity [Hori/Vert]	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
[	0deg	0.13420	PK	87.4	19.5	-74.0	32.2	0.0	0.7	25.0	24.3	Fundamental
[	0deg	0.26840	PK	46.7	19.6	-74.0	32.2	0.0	-39.9	19.0	58.9	
[	0deg	0.40260	PK	51.2	19.7	-73.9	32.2	0.0	-35.2	15.5	50.7	

Result = Reading + Ant Factor + Loss (Cable + Attenuator + Filter + D.Factor) - Gain(Amprifier) + Duty factor \*

\* Since the peak emission result satisfied the average limit, duty factor was omitted.

#### Result of the fundamental emission at 3 m without Distance factor

result of the fundame	intai ciiiissio		Reading Ant Loss Gain Duty Result Limit Margin Remark									
Ant Deg [deg]	Frequency	Detector	Reading	Ant	Loss	Gain	Duty	Result	Limit	Margin	Remark	Τ
				Factor			Factor					
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		
0deg	0.13420	PK	87.4	19.5	6.0	32.2	-	80.7	-	-	Fundamental	

Result = Reading + Ant Factor + Loss (Cable+Attenuator) - Gain(Amprifier)

If Gain 0.0dB shown in the above table, pre-amplifier was not used to avoid the influence of carrier power. The pre-amplifier used for carrier frequency measurement was not saturated.

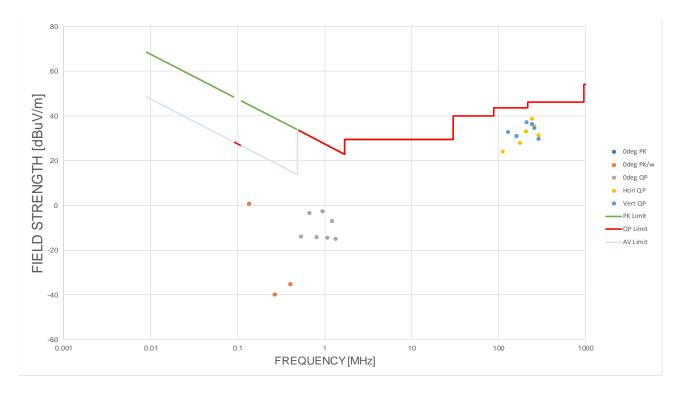
Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).

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# Radiated Spurious Emission (Plot data, Worst case for Spurious Emission)

Test place Ise EMC Lab. Semi Anechoic Chamber No.1

Date March 11, 2024
Temperature / Humidity 20 deg. C / 36 % RH
Engineer Junki Nagatomi
Mode Mode 1



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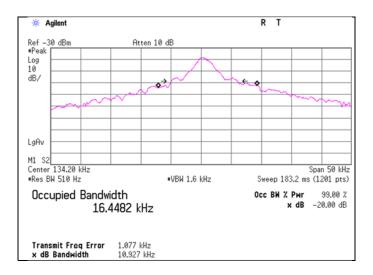
# -20 dB Bandwidth / 99 % emission bandwidth

Test place Ise EMC Lab.

Semi Anechoic Chamber No.1

Date March 11, 2024
Temperature / Humidity 20 deg. C / 36 % RH
Engineer Junki Nagatomi
Mode Mode 1

-20 dB Bandwidth [kHz]	99 % emission bandwidth [kHz]
10.927	16.4482



<sup>\*</sup>It was confirmed that there was no difference by the input voltage.

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# **APPENDIX 2: Test instruments**

**Test Equipment** 

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141198	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+ BBA9106	2513	06/06/2023	12
RE	141213 Attenuator (6dB)		Weinschel Corp	2	BK7971	11/16/2023	12
RE	141350	Coaxial Cable	Suhner/storm/Agilent/TSJ	=	-	03/05/2024	12
RE	141530	Digital Tester	Fluke Corporation	FLUKE 26-3	78030621	02/01/2024	12
RE	141566	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	A08Q26	-	-
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/17/2024	12
RE	141585	Pre Amplifier	L3 Narda-MITEQ	MLA-10K01-B01-35	1237616	02/17/2024	12
RE	141950	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	11/20/2023	12
RE	141978	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY46180899	03/06/2023	12
RE	141998	AC1_Semi Anechoic Chamber (NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	12/06/2023	24
RE	142152	Loop Antenna	Rohde & Schwarz	HFH2-Z2	836553/009	10/17/2023	12
RE	142226	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	159670	Coaxial Cable	UL Japan	=	-	11/21/2023	12
RE	160924 Logperiodic Antenna		Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	225	11/29/2023	12
RE	178648 EMI measurement program		TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	202511	Loop Antenna	UL Japan	-	-	-	-

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

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

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

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

Test item:

**RE: Radiated Emission**