



MPE TEST REPORT

Test Report No.: 14298325H

Customer	Panasonic Automotive Systems Co., Ltd.
Description of EUT	Wireless Charger
Model Number of EUT	AT2301
FCC ID	ACJ932AT2301
Test Regulation	FCC rule §1.1310 Radiofrequency radiation exposure limits.
Test Result	Complied (Refer to SECTION 3)
Issue Date	July 11, 2022
Remarks	*This test report has issued for MPE testing by wireless charger according to KDB 680106 D01 v03r01.

Representative Test Engineer

Hiroyuki Furutaka
Engineer

Approved By

Tsubasa Takayama
Leader



CERTIFICATE 5107.02

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

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It does not cover administrative issues such as Manual or non-MPE test related Requirements. (if applicable)
- The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
- The opinions and the interpretations to the result of the description in this report are outside scopes where UL Japan, Inc. has been accredited.
- The information provided from the applicant for this report is identified in Section 1.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

REVISION HISTORY

Original Test Report No.: 14298325H

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14298325H	July 11, 2022	-

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
BT	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	Panasonic Automotive Systems Co., Ltd. *1)
Address	4261, Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken 224-8520, Japan
Telephone Number	+81-80-3444-7148
Contact Person	Takahisa Sakai

*1) The Grantee name in the FCC application is “Panasonic Corporation of North America”.

The information provided from 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

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

SECTION 2: Equipment Under Test (EUT)

2.1 Identification of EUT

Description	Wireless Charger
Model Number	AT2301
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	April 25, 2022
Test Date	June 2 and 3, 2022

2.2 Product Description

General Specification

Rating	DC +10.5 V to +16 V (Typ: +12 V)
Feature of EUT	Use the ACC KEY of the car to turn the Wireless charger power ON/OFF. Place the charging side of the portable device (etc. mobile phone) down. When charging, the operation indicator light (orange) comes on. If charging is not occurring, try placing the portable device as close to the center of the charging area as possible. When charging is complete, the operation indicator light (green) comes on.

Radio Specification

Operating Frequency	120.3 kHz / 127.0 kHz / 127.5 kHz / 116.4 kHz to 132.2 kHz
Rated Output Power	5 W / 15 W
Coil system	Single Coil
Charging distance	Contact

*Test limit was applied to the test limit of 100 kHz - 300 kHz based on FCC rule Section 1.1310, according to KDB 680106 D01 RF Exposure Wireless Charging Apps Clause 3).

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Title	FCC rule §1.1310 Radiofrequency radiation exposure limits.
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3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst Margin	Result
MPE Limit	KDB 680106 D01 RF Exposure Wireless Charging Apps v03r01	Table 1(B)	N/A	Refer to section.5	Complied

*These tests were performed without any deviations from test procedure.

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3 - 3.0	614	1.63	*(100)	6
3.0 - 30	1842/f	4.89/f	*(900/f ²)	6
30 - 300	61.4	0.163	1.0	6
300 - 1500			f/300	6
1500 - 100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3 - 1.34	614	1.63	*(100)	30
1.34 - 30	824/f	2.19/f	*(180/f ²)	30
30 - 300	27.5	0.073	0.2	30
300 - 1500			f/1500	30
1500 - 100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Note 1 to Table 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.

Note 2 to Table 1: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

Test limit was applied to the test limit of 100 kHz - 300 kHz based on FCC rule Section 1.1310, according to KDB 680106 D01 RF Exposure Wireless Charging Apps Section 3 c).

KDB 680106 D01 RF Exposure Wireless Charging Apps requires following contents in order to exclude RF exposure evaluation.

- a). Power transfer frequency is less than 1 MHz.
- b). Output power from each primary coil is less than or equal to 15 watts.
- c). The system may consist of more than one source primary coils, charging one or more clients. If more than one primary coil is present, the coil pairs may be powered on at the same time.
- d). Client device is placed directly in contact with the transmitter.
- e). Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).
- f). The aggregate H-field strengths anywhere at or beyond 15 cm surrounding the device, and 20 cm away from the surface from all coils that by design can simultaneously transmit, and while those coils are simultaneously energized, are demonstrated to be less than 50% of the applicable MPE limit.

All requests were complied.

Also, Test data used Exposure Level Tester is complied KDB 680106 D01 RF Exposure Wireless Charging Apps Section 3 c).

3.3 Confirmation

UL Japan, Inc. hereby confirms that EUT, in the configuration tested, complies with the specifications KDB 680106 D01 RF Exposure Wireless Charging Apps.

3.4 Uncertainty

Although this standard determines only the limit value of uncertainty, there is no applicable rule of uncertainty in this. Therefore, the following results are derived depending on whether or not laboratory uncertainty is applied.

EMF

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

1 Hz - 400 kHz (H-Field) ELT400	9.23 %
100 kHz - 3 GHz (E-Field) SEF-01, SEF-05	24.16 %

*The worst value in the test range was applied.

3.5 Test Location

UL Japan, Inc. Ise EMC Lab.

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

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

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

Telephone: +81-596-24-8999

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.

SECTION 4: Operation of EUT during testing

4.1. Operating Mode(s)

The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use. Test configuration was adjusted maximum output power of EUT.

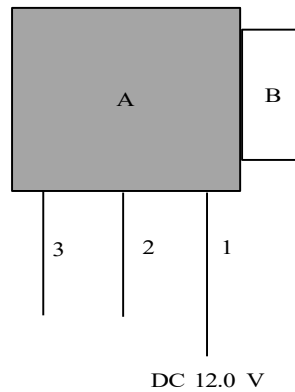
Test sequence is used:

Test mode	Remarks
1) Normal Operating mode (120.3 kHz / BPP 5 W)	Mode 1
2) Normal Operating mode (127.0 kHz / BPP 5 W)	Mode 2
3) Normal Operating mode (127.5 kHz / BPP 5 W)	Mode 3
4) Normal Operating mode (120.3 kHz / EPP 15 W)	Mode 4
5) Normal Operating mode (127.0 kHz / EPP 15 W)	Mode 5
6) Normal Operating mode (127.5 kHz / EPP 15 W)	Mode 6
7) Normal Operating mode (116.4 kHz / EPP 15 W)	Mode 7
8) Normal Operating mode (119.4 kHz / EPP 15 W)	Mode 8
9) Normal Operating mode (124.5 kHz / EPP 15 W)	Mode 9
10) Normal Operating mode (122.6 kHz / EPP 15 W)	Mode 10
11) Normal Operating mode (126.0 kHz / EPP 15 W)	Mode 11
12) Normal Operating mode (131.7 kHz / EPP 15 W)	Mode 12
13) Normal Operating mode (123.1 kHz / EPP 15 W)	Mode 13
14) Normal Operating mode (126.5 kHz / EPP 15 W)	Mode 14
15) Normal Operating mode (132.2 kHz / EPP 15 W)	Mode 15

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

4.2. Configuration and peripherals

[Mode 1 to 6]



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

Description of EUT and Support equipment

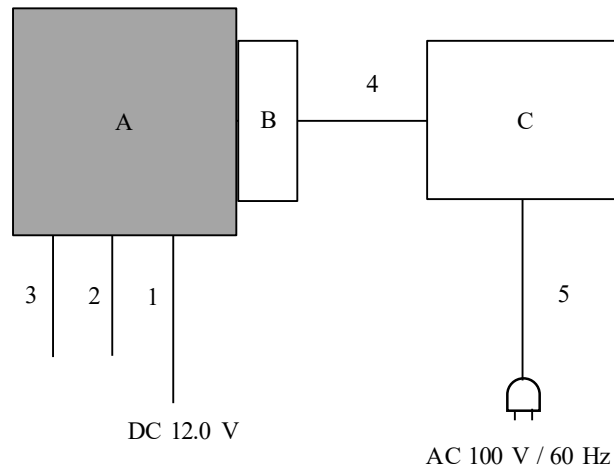
No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Wireless Charger	AT2301	3T-20220421-008	Panasonic Automotive Systems Co., Ltd.	EUT
B	Test Jig	PAS-JS100 for EPP	102	Panasonic Automotive Systems Co., Ltd.	-
		PAS-J015 for BPP	No.015	Panasonic Automotive Systems Co., Ltd.	-

*A and B communicates and charges via air interface.

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	2.0	Unshielded	Unshielded	-
2	CAN Cable	4.0	Unshielded	Unshielded	-
3	Signal Cable	2.0	Unshielded	Unshielded	-

[Mode 7 to 15]



* 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	Wireless Charger	AT2301	500051	Panasonic Automotive Systems Co., Ltd.	EUT
B	Reference Receiver	TPR#MP1B	103	Nok9	-
C	Qi Reference Tester	CATSII Qi BST	200134-1807	Nok9	-

*A and B communicates and charges via air interface.

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	2.0	Unshielded	Unshielded	-
2	CAN Cable	4.0	Unshielded	Unshielded	-
3	Signal Cable	2.0	Unshielded	Unshielded	-
4	Communication Cable	0.6	Unshielded	Unshielded	-
5	AC Cable	1.5	Unshielded	Unshielded	-

SECTION 5: MPE Limit [KDB 680106 Section 3) (FCC § 1.1310)]

5.1. Operating environment

Test place : See data
Temperature : See data
Humidity : See data

5.2. Test configuration

The EUT was placed on a non-metallic of 0.8m above the reference ground plane.
Worst position is shown in the photos in Appendix 2.

5.3. Test conditions

EUT position : Table top

5.4. Test procedure

The test of the weighted result has been performed using time domain evaluation.
Sensor locations : Around from 15 cm to 40 cm

5.5. Results

Summary of the test results : Complied

APPENDIX 1: Test data

Magnetic field strength

Test place Ise EMC Lab. No.7 Shielded room
 Date June 2, 2022
 Temperature/ Humidity 21 deg. C / 52 % RH
 Engineer Masaya Minami
 Mode Mode 1

Operating Frequency	0.1203 MHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0770	0.0613	pass
20cm	0.0460	0.0366	pass
30cm	0.0320	0.0255	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0740	0.0589	pass
20cm	0.0480	0.0382	pass
30cm	0.0330	0.0263	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0500	0.0398	pass
20cm	0.0360	0.0286	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0420	0.0334	pass
20cm	0.0350	0.0278	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1850	0.1472	pass
20cm	0.0950	0.0756	pass
30cm	0.0430	0.0342	pass
40cm	0.0320	0.0255	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0890	0.0708	pass
20cm	0.0560	0.0446	pass
30cm	0.0360	0.0286	pass
40cm	0.0310	0.0247	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / 4π*10⁽⁻⁷⁾

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 2

Operating Frequency	0.127 MHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0890	0.0708	pass
20cm	0.0480	0.0382	pass
30cm	0.0330	0.0263	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0790	0.0628	pass
20cm	0.0510	0.0406	pass
30cm	0.0330	0.0263	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0510	0.0406	pass
20cm	0.0370	0.0294	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0500	0.0398	pass
20cm	0.0370	0.0294	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2340	0.1862	pass
20cm	0.1100	0.0875	pass
30cm	0.0420	0.0334	pass
40cm	0.0330	0.0263	pass
Measurement distance *2)	33		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0960	0.0764	pass
20cm	0.0560	0.0446	pass
30cm	0.0350	0.0278	pass
40cm	0.0310	0.0247	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \times 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 2

Operating Frequency	0.127 MHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	0.22	pass	0.23	pass	0.23	pass	0.24	pass	0.26	pass	0.29	pass
20cm	0.18	pass	0.19	pass	0.21	pass	0.21	pass	0.20	pass	0.18	pass
30cm	0.16	pass	0.15	pass	0.19	pass	0.18	pass	0.16	pass	0.16	pass
40cm	0.13	pass	0.12	pass	0.15	pass	0.15	pass	0.13	pass	0.12	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 3

Operating Frequency	0.1275 MHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0840	0.0668	pass
20cm	0.0500	0.0398	pass
30cm	0.0330	0.0263	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0880	0.0700	pass
20cm	0.0510	0.0406	pass
30cm	0.0330	0.0263	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0520	0.0414	pass
20cm	0.0380	0.0302	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0490	0.0390	pass
20cm	0.0370	0.0294	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2250	0.1790	pass
20cm	0.1060	0.0843	pass
30cm	0.0430	0.0342	pass
40cm	0.0320	0.0255	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1010	0.0804	pass
20cm	0.0600	0.0477	pass
30cm	0.0350	0.0278	pass
40cm	0.0300	0.0239	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \times 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 3

Operating Frequency	0.1275 MHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	0.26	pass	0.21	pass	0.22	pass	0.28	pass	0.39	pass	0.26	pass
20cm	0.20	pass	0.18	pass	0.20	pass	0.22	pass	0.30	pass	0.22	pass
30cm	0.18	pass	0.14	pass	0.17	pass	0.19	pass	0.27	pass	0.18	pass
40cm	0.15	pass	0.11	pass	0.15	pass	0.17	pass	0.22	pass	0.15	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 4

Operating Frequency	0.1203 MHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2530	0.2013	pass
20cm	0.1300	0.1034	pass
30cm	0.0490	0.0390	pass
40cm	0.0350	0.0278	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1650	0.1313	pass
20cm	0.0880	0.0700	pass
30cm	0.0410	0.0326	pass
40cm	0.0330	0.0263	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0550	0.0438	pass
20cm	0.0390	0.0310	pass
30cm	0.0320	0.0255	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0710	0.0565	pass
20cm	0.0460	0.0366	pass
30cm	0.0330	0.0263	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.3560	0.2832	pass
20cm	0.2540	0.2021	pass
30cm	0.0370	0.0294	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2490	0.1981	pass
20cm	0.1660	0.1321	pass
30cm	0.0380	0.0302	pass
40cm	0.0320	0.0255	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \times 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 4

Operating Frequency	0.1203 MHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	0.50	pass	0.33	pass	0.36	pass	0.36	pass	0.61	pass	0.55	pass
20cm	0.38	pass	0.27	pass	0.22	pass	0.24	pass	0.45	pass	0.42	pass
30cm	0.26	pass	0.20	pass	0.19	pass	0.16	pass	0.32	pass	0.35	pass
40cm	0.17	pass	0.17	pass	0.11	pass	0.11	pass	0.22	pass	0.14	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 5

Operating Frequency	0.127 MHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2230	0.1774	pass
20cm	0.1100	0.0875	pass
30cm	0.0320	0.0255	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1460	0.1161	pass
20cm	0.0920	0.0732	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0550	0.0438	pass
20cm	0.0420	0.0334	pass
30cm	0.0300	0.0239	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0660	0.0525	pass
20cm	0.0410	0.0326	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.3860	0.3071	pass
20cm	0.1550	0.1233	pass
30cm	0.0350	0.0278	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2320	0.1846	pass
20cm	0.1640	0.1305	pass
30cm	0.0460	0.0366	pass
40cm	0.0300	0.0239	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \times 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 5

Operating Frequency	0.127 MHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	0.27	pass	0.24	pass	0.19	pass	0.30	pass	0.62	pass	0.34	pass
20cm	0.13	pass	0.13	pass	0.14	pass	0.16	pass	0.54	pass	0.26	pass
30cm	0.09	pass	0.11	pass	0.09	pass	0.13	pass	0.23	pass	0.15	pass
40cm	0.06	pass	0.07	pass	0.06	pass	0.12	pass	0.15	pass	0.09	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 6

Operating Frequency	0.1275 MHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2330	0.1854	pass
20cm	0.1160	0.0923	pass
30cm	0.0370	0.0294	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1380	0.1098	pass
20cm	0.0830	0.0660	pass
30cm	0.0330	0.0263	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0420	0.0334	pass
20cm	0.0350	0.0278	pass
30cm	0.0310	0.0247	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0670	0.0533	pass
20cm	0.0420	0.0334	pass
30cm	0.0320	0.0255	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.3210	0.2554	pass
20cm	0.1460	0.1161	pass
30cm	0.0340	0.0270	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2330	0.1854	pass
20cm	0.1540	0.1225	pass
30cm	0.0450	0.0358	pass
40cm	0.0300	0.0239	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 2, 2022
Temperature/ Humidity	21 deg. C / 52 % RH
Engineer	Masaya Minami
Mode	Mode 6

Operating Frequency	0.1275 MHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	0.22	pass	0.38	pass	0.29	pass	0.30	pass	0.59	pass	0.67	pass
20cm	0.16	pass	0.29	pass	0.23	pass	0.26	pass	0.44	pass	0.48	pass
30cm	0.10	pass	0.17	pass	0.16	pass	0.19	pass	0.39	pass	0.41	pass
40cm	0.07	pass	0.11	pass	0.14	pass	0.12	pass	0.26	pass	0.39	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 7

Operating Frequency	116.4 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1700	0.1352	pass
20cm	0.0880	0.0700	pass
30cm	0.0430	0.0342	pass
40cm	0.0330	0.0263	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1600	0.1273	pass
20cm	0.0800	0.0636	pass
30cm	0.0420	0.0334	pass
40cm	0.0340	0.0270	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0740	0.0589	pass
20cm	0.0510	0.0406	pass
30cm	0.0340	0.0270	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0770	0.0613	pass
20cm	0.0510	0.0406	pass
30cm	0.0350	0.0278	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.7780	0.6189	pass
20cm	0.3250	0.2586	pass
30cm	0.1040	0.0827	pass
40cm	0.0540	0.0430	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2700	0.2148	pass
20cm	0.1440	0.1146	pass
30cm	0.0650	0.0517	pass
40cm	0.0390	0.0310	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 7

Operating Frequency	116.4 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.09	pass	0.98	pass	0.70	pass	0.42	pass	3.70	pass	0.31	pass
20cm	0.59	pass	0.59	pass	0.42	pass	0.27	pass	2.05	pass	0.14	pass
30cm	0.25	pass	0.23	pass	0.13	pass	0.13	pass	0.94	pass	0.07	pass
40cm	0.10	pass	0.11	pass	0.06	pass	0.07	pass	0.64	pass	0.01	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 8

Operating Frequency	119.4 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1696	0.1349	pass
20cm	0.0887	0.0706	pass
30cm	0.0431	0.0343	pass
40cm	0.0321	0.0255	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1601	0.1274	pass
20cm	0.0801	0.0637	pass
30cm	0.0425	0.0338	pass
40cm	0.0348	0.0277	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0748	0.0595	pass
20cm	0.0501	0.0399	pass
30cm	0.0331	0.0263	pass
40cm	0.0304	0.0242	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0760	0.0605	pass
20cm	0.0518	0.0412	pass
30cm	0.0342	0.0272	pass
40cm	0.0303	0.0241	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.7773	0.6184	pass
20cm	0.3249	0.2584	pass
30cm	0.1031	0.0821	pass
40cm	0.0533	0.0424	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2692	0.2141	pass
20cm	0.1433	0.1140	pass
30cm	0.0649	0.0516	pass
40cm	0.0387	0.0308	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 8

Operating Frequency	119.4 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.12	pass	0.99	pass	0.75	pass	0.38	pass	3.65	pass	0.35	pass
20cm	0.58	pass	0.62	pass	0.41	pass	0.23	pass	2.09	pass	0.15	pass
30cm	0.25	pass	0.20	pass	0.16	pass	0.12	pass	0.93	pass	0.05	pass
40cm	0.06	pass	0.11	pass	0.10	pass	0.10	pass	0.67	pass	0.01	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 9

Operating Frequency	124.5 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1687	0.1342	pass
20cm	0.0895	0.0712	pass
30cm	0.0429	0.0341	pass
40cm	0.0321	0.0255	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1596	0.1270	pass
20cm	0.0811	0.0645	pass
30cm	0.0427	0.0340	pass
40cm	0.0347	0.0276	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0746	0.0593	pass
20cm	0.0494	0.0393	pass
30cm	0.0338	0.0269	pass
40cm	0.0309	0.0245	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0755	0.0601	pass
20cm	0.0515	0.0409	pass
30cm	0.0346	0.0275	pass
40cm	0.0306	0.0244	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.7764	0.6177	pass
20cm	0.3256	0.2591	pass
30cm	0.1037	0.0825	pass
40cm	0.0526	0.0418	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2696	0.2145	pass
20cm	0.1425	0.1134	pass
30cm	0.0654	0.0520	pass
40cm	0.0393	0.0313	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \times 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 9

Operating Frequency	124.5 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.15	pass	0.96	pass	0.72	pass	0.40	pass	3.62	pass	0.35	pass
20cm	0.61	pass	0.59	pass	0.44	pass	0.22	pass	2.06	pass	0.13	pass
30cm	0.24	pass	0.24	pass	0.20	pass	0.13	pass	0.91	pass	0.06	pass
40cm	0.07	pass	0.08	pass	0.15	pass	0.14	pass	0.63	pass	0.00	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 10

Operating Frequency	122.6 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1884	0.1499	pass
20cm	0.0955	0.0759	pass
30cm	0.0460	0.0366	pass
40cm	0.0365	0.0290	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1712	0.1362	pass
20cm	0.0936	0.0745	pass
30cm	0.0421	0.0335	pass
40cm	0.0322	0.0256	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0694	0.0552	pass
20cm	0.0456	0.0363	pass
30cm	0.0335	0.0266	pass
40cm	0.0316	0.0252	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0756	0.0601	pass
20cm	0.0459	0.0365	pass
30cm	0.0347	0.0276	pass
40cm	0.0327	0.0260	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.7278	0.5790	pass
20cm	0.3497	0.2782	pass
30cm	0.1119	0.0890	pass
40cm	0.0503	0.0400	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2446	0.1946	pass
20cm	0.1308	0.1041	pass
30cm	0.0606	0.0482	pass
40cm	0.0369	0.0293	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 10

Operating Frequency	122.6 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.18	pass	1.04	pass	0.67	pass	0.40	pass	3.83	pass	0.31	pass
20cm	0.74	pass	0.65	pass	0.40	pass	0.26	pass	1.76	pass	0.14	pass
30cm	0.27	pass	0.28	pass	0.16	pass	0.14	pass	0.56	pass	0.08	pass
40cm	0.12	pass	0.11	pass	0.04	pass	0.06	pass	0.20	pass	0.05	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 11

Operating Frequency	126.0 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1885	0.1499	pass
20cm	0.0945	0.0752	pass
30cm	0.0452	0.0360	pass
40cm	0.0375	0.0298	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1715	0.1365	pass
20cm	0.0942	0.0750	pass
30cm	0.0419	0.0333	pass
40cm	0.0326	0.0259	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0686	0.0545	pass
20cm	0.0449	0.0357	pass
30cm	0.0325	0.0259	pass
40cm	0.0324	0.0258	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0762	0.0606	pass
20cm	0.0469	0.0373	pass
30cm	0.0353	0.0281	pass
40cm	0.0334	0.0266	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.7286	0.5797	pass
20cm	0.3490	0.2776	pass
30cm	0.1110	0.0883	pass
40cm	0.0499	0.0397	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2437	0.1938	pass
20cm	0.1310	0.1042	pass
30cm	0.0609	0.0484	pass
40cm	0.0379	0.0301	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 11

Operating Frequency	126.0 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.23	pass	1.04	pass	0.67	pass	0.37	pass	3.83	pass	0.31	pass
20cm	0.77	pass	0.62	pass	0.38	pass	0.28	pass	1.73	pass	0.14	pass
30cm	0.26	pass	0.32	pass	0.12	pass	0.14	pass	0.58	pass	0.03	pass
40cm	0.09	pass	0.15	pass	0.01	pass	0.02	pass	0.19	pass	0.05	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 12

Operating Frequency	131.7 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1892	0.1505	pass
20cm	0.0945	0.0752	pass
30cm	0.0463	0.0369	pass
40cm	0.0362	0.0288	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1705	0.1357	pass
20cm	0.0934	0.0743	pass
30cm	0.0420	0.0334	pass
40cm	0.0326	0.0259	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0688	0.0548	pass
20cm	0.0449	0.0357	pass
30cm	0.0336	0.0267	pass
40cm	0.0318	0.0253	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0750	0.0597	pass
20cm	0.0452	0.0360	pass
30cm	0.0349	0.0277	pass
40cm	0.0327	0.0260	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.7285	0.5796	pass
20cm	0.3491	0.2778	pass
30cm	0.1127	0.0897	pass
40cm	0.0505	0.0402	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2455	0.1953	pass
20cm	0.1305	0.1038	pass
30cm	0.0615	0.0489	pass
40cm	0.0359	0.0286	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 12

Operating Frequency	131.7 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.20	pass	1.04	pass	0.65	pass	0.39	pass	3.81	pass	0.30	pass
20cm	0.79	pass	0.63	pass	0.43	pass	0.27	pass	1.75	pass	0.18	pass
30cm	0.24	pass	0.24	pass	0.17	pass	0.19	pass	0.57	pass	0.07	pass
40cm	0.08	pass	0.15	pass	0.08	pass	0.09	pass	0.24	pass	0.04	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 13

Operating Frequency	123.1 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1750	0.1392	pass
20cm	0.0860	0.0684	pass
30cm	0.0430	0.0342	pass
40cm	0.0340	0.0270	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1870	0.1488	pass
20cm	0.0890	0.0708	pass
30cm	0.0450	0.0358	pass
40cm	0.0350	0.0278	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0730	0.0581	pass
20cm	0.0500	0.0398	pass
30cm	0.0340	0.0270	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0690	0.0549	pass
20cm	0.0460	0.0366	pass
30cm	0.0330	0.0263	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.9240	0.7351	pass
20cm	0.3420	0.2721	pass
30cm	0.1020	0.0811	pass
40cm	0.0500	0.0398	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2830	0.2251	pass
20cm	0.1360	0.1082	pass
30cm	0.0580	0.0461	pass
40cm	0.0390	0.0310	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 13

Operating Frequency	123.1 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.06	pass	1.07	pass	0.72	pass	0.65	pass	3.47	pass	0.35	pass
20cm	0.98	pass	1.00	pass	0.43	pass	0.24	pass	1.68	pass	0.18	pass
30cm	0.28	pass	0.31	pass	0.15	pass	0.10	pass	0.50	pass	0.05	pass
40cm	0.11	pass	0.13	pass	0.08	pass	0.04	pass	0.25	pass	0.01	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 14

Operating Frequency	126.5 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1749	0.1392	pass
20cm	0.0859	0.0684	pass
30cm	0.0440	0.0350	pass
40cm	0.0341	0.0271	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1865	0.1484	pass
20cm	0.0888	0.0706	pass
30cm	0.0454	0.0361	pass
40cm	0.0345	0.0274	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0727	0.0578	pass
20cm	0.0499	0.0397	pass
30cm	0.0345	0.0275	pass
40cm	0.0300	0.0239	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0686	0.0546	pass
20cm	0.0461	0.0367	pass
30cm	0.0336	0.0267	pass
40cm	0.0306	0.0243	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.9240	0.7351	pass
20cm	0.3414	0.2716	pass
30cm	0.1022	0.0813	pass
40cm	0.0502	0.0399	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2830	0.2251	pass
20cm	0.1367	0.1088	pass
30cm	0.0571	0.0454	pass
40cm	0.0381	0.0303	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \times 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 14

Operating Frequency	126.5 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.06	pass	1.05	pass	0.71	pass	0.69	pass	3.50	pass	0.36	pass
20cm	1.00	pass	1.04	pass	0.46	pass	0.27	pass	1.70	pass	0.21	pass
30cm	0.30	pass	0.28	pass	0.20	pass	0.09	pass	0.49	pass	0.08	pass
40cm	0.13	pass	0.12	pass	0.10	pass	0.04	pass	0.25	pass	0.00	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

Magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 15

Operating Frequency	132.2 kHz
	1.63 A/m *1)

Measurement distance *2)	Front		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1734	0.1379	pass
20cm	0.0867	0.0689	pass
30cm	0.0426	0.0339	pass
40cm	0.0351	0.0279	pass
Measurement distance *2)	Rear		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.1856	0.1476	pass
20cm	0.0898	0.0714	pass
30cm	0.0448	0.0356	pass
40cm	0.0346	0.0275	pass
Measurement distance *2)	Left		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0728	0.0579	pass
20cm	0.0505	0.0402	pass
30cm	0.0340	0.0271	pass
40cm	0.0308	0.0245	pass
Measurement distance *2)	Right		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.0697	0.0554	pass
20cm	0.0455	0.0362	pass
30cm	0.0322	0.0256	pass
40cm	0.0310	0.0247	pass
Measurement distance *2)	Top		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.9241	0.7351	pass
20cm	0.3411	0.2713	pass
30cm	0.1032	0.0821	pass
40cm	0.0498	0.0396	pass
Measurement distance *2)	Bottom		
	Actual magnetic density(μT)	Magnetic field strength(A/m) *3)	Result
15cm	0.2827	0.2249	pass
20cm	0.1363	0.1084	pass
30cm	0.0574	0.0456	pass
40cm	0.0397	0.0316	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*3): This value was calculated by following formula.

*Magnetic field strength [A/m]= Magnetic density / $4\pi \cdot 10^{-7}$

*Test result is less than 50 % of the MPE limit.

Electro-magnetic field strength

Test place	Ise EMC Lab. No.7 Shielded room
Date	June 3, 2022
Temperature/ Humidity	22 deg. C / 58 % RH
Engineer	Hiroyuki Furutaka
Mode	Mode 15

Operating Frequency	132.2 kHz
Limit	614.00 V/m

*1)

*2)	Front		Rear		Right		Left		Top		Bottom	
	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result	Reading (V/m)	Result
15cm	1.01	pass	1.04	pass	0.67	pass	0.71	pass	3.53	pass	0.37	pass
20cm	1.01	pass	1.08	pass	0.42	pass	0.26	pass	1.67	pass	0.17	pass
30cm	0.32	pass	0.33	pass	0.15	pass	0.09	pass	0.52	pass	0.07	pass
40cm	0.16	pass	0.08	pass	0.11	pass	0.01	pass	0.29	pass	-0.01	pass

*1): For this limit value, "General Population / Uncontrolled Exposure" of FCC § 1.1310 (e) (B) was used.

*2): This is the distance between the center of the probe and the edges of the EUT.

*Test result is less than 50 % of the MPE limit.

APPENDIX 2: Test instruments

Test equipment

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
EMF	MBM-11	141346	Barometer	Sanoh Co., Ltd	SBR121	839	12/11/2019	36
EMF	MELT-01	177190	Exposure Level Tester	NARDA	ELT-400	N-0135	12/24/2021	12
EMF	MELT-02	177191	B-Field Probe 100 cm ²	NARDA	ELT-400	M-0577	12/24/2021	12
EMF	MJM-04	142178	Measure	PROMART	SEN1635	-	-	-
EMF	MMM-16	141360	DIGITAL HiTESTER	HIOKI E.E. CORPORATION	3805	70900532	01/16/2022	12
EMF	MOS-34	141572	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	3401	01/10/2022	12
EMF	SEF-01	145494	Broadband Field Meter	NARDA	NBM-520	C-0520	08/24/2021	36
EMF	SEF-05	145498	Probe EF0391(E-Field)	NARDA	EF0391	A-1299	08/24/2021	36

*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:

EMF: Electromagnetic field