RADIO TEST REPORT

Test Report No. 15815237H-R1

Customer	**Panasonic Automotive Systems Co., Ltd.**
Description of EUT	**Wireless Charger**
Model Number of EUT	**AT2604**
FCC ID	**ACJ932AT2604**
Test Regulation	**FCC Part 15 Subpart C**
Test Result	**Complied**
Issue Date	**July 24, 2025**
Remarks	**-**

Representative test engineer	Approved by
Tomoya Sone Engineer	Akihiko Maeda Leader

CERTIFICATE 5107.02

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REVISION HISTORY

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15815237H	July 7, 2025	-
1	15815237H-R1	July 24, 2025	Correction of the Rated Output Power for Radio Specification in Clause 2.2. From “5 W / 15 W” to “15 W”

Reference: Abbreviations (Including words undescribed in this report)

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

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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	Shuko Saito

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

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	Wireless Charger
Model Number	AT2604
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	May 30, 2025
Test Date	June 2 to 16, 2025

2.2 Product Description

General Specification

Rating	DC +10.5 V to +16.0 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

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

SECTION 3: Test Summary

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 Reference Standards

ANSI/USEMCSC C63.2-2023
ANSI C63.4-2014+C63.4a-2017
ANSI C63.5-2017
ANSI C63.10-2020
ANSI/USEMCSC C63.10/Cor 1-2023
ANSI/USEMCSC C63.10a-2024 for ISED
ANSI C63.25.1-2018
RSS-Gen Issue 5/Amendment 1/Amendment 2 for ISED

3.3 Summary of Test Results

Item	Specification	Results	Remarks
Conducted Emission	<FCC> Section 15.207 <ISED> RSS-Gen 8.8	N/A	*1)
Electric Field Strength of Fundamental Emission	<FCC> Section 15.209 <ISED> RSS-210 8.2 RSS-Gen 8.9	Complied	Radiated
Electric Field Strength of Spurious Emission	<FCC> Section 15.209 <ISED> RSS-210 8.3 RSS-Gen 8.9	Complied	Radiated
-20 dB Bandwidth	<FCC> Reference data <ISED> -	Complied	Radiated

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

*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.

FCC Part 15.31 (e)
This EUT constantly provides the stable voltage to RF part through the regulator regardless of input voltage.
Therefore, this 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 EUT.
Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.4 Addition to standard

Item	Specification	Results	Remarks
99 % emission bandwidth	-	-	Radiated
Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.			

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

3.5 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

Measurement distance	Frequency range		Unit	Calculated Uncertainty (+/-)
3 m	9 kHz to 30 MHz		dB	3.3
10 m			dB	3.1
3 m	30 MHz to 200 MHz	Horizontal	dB	5.0
		Vertical	dB	5.0
	200 MHz to 1000 MHz	Horizontal	dB	5.2
		Vertical	dB	6.2
10 m	30 MHz to 200 MHz	Horizontal	dB	5.5
		Vertical	dB	5.4
	200 MHz to 1000 MHz	Horizontal	dB	5.5
		Vertical	dB	5.5

-20 dB Bandwidth and 99% Occupied Bandwidth

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

3.6 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 (SAC1)	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 (SAC2)	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber (SAC3)	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room (PR3)	3 m
No.3 shielded room (SR3)	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber (SAC4)	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room (PR4)	3 m
No.4 shielded room (SR4)	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber (SAC5)	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room (MR5)	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room (SR6)	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room (MR6)	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room (SR7)	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room (MR8)	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room (MR9)	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room (SR10)	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room (MR11)	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room (MR12)	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	-	-

3.7 Test data, Test instruments, and Test set up

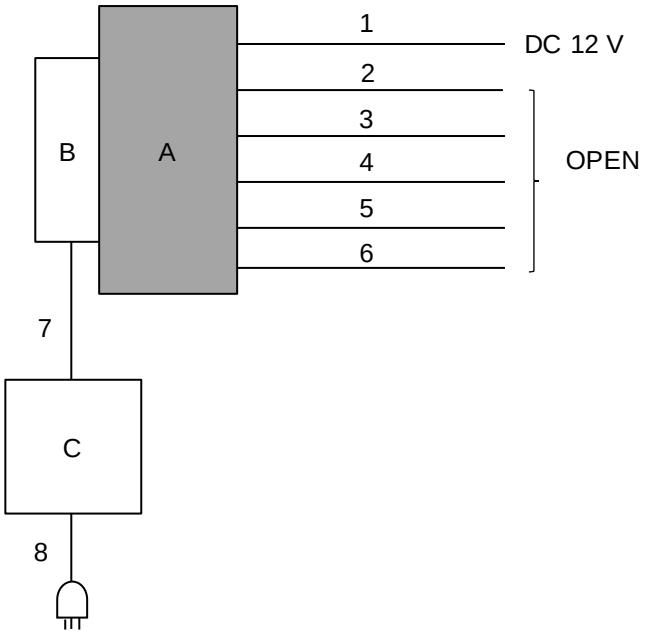
Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1. Operating Mode(s)

Test mode	Remarks
1) Normal Charging mode (FSK [fop:120.3 kHz, fmod:116.4 kHz] / EPP 15 W)	-
2) Normal Charging mode (FSK [fop:127.0 kHz, fmod:128.0 kHz] / EPP 15 W)	-
3) Normal Charging mode (FSK [fop:127.5 kHz, fmod:132.2 kHz] / EPP 15 W)	-
*Power of the EUT was set by the software as follows; Software: WC3_514D_2S_GEN5C: V514D (Date: 2025.06.02, Storage location: EUT memory) *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.	

4.2 Configuration and Peripherals



AC 100 V / 60 Hz

*Cabling and setup were taken into consideration and test data was taken under worse case conditions.
*Item A and Item B communicate and charges via air interface.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Wireless Charger	AT2604	No.046	Panasonic Automotive Systems Co., Ltd.	EUT
B	Reference Receiver	TRP#MP1B	1	Nok9	-
C	Qi Reference Tester	LP/MP/FOD	200134-1807	Nok9	-

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	4.2	Unshielded	Unshielded	-
2	CAN Cable	2.0	Unshielded	Unshielded	-
3	Signal Cable	2.0	Unshielded	Unshielded	-
4	Signal Cable	2.0	Unshielded	Unshielded	-
5	Signal Cable	2.0	Unshielded	Unshielded	-
6	Signal Cable	2.0	Unshielded	Unshielded	-
7	Communication Cable	0.6	Unshielded	Unshielded	-
8	AC Cable	1.5	Unshielded	Unshielded	-

SECTION 5: Radiated emission (Fundamental and Spurious Emission)

Test Procedure

EUT was placed on the 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 and From 110 kHz to 150 kHz	From 90 kHz to 110 kHz	From 150 kHz to 490 kHz	From 490 kHz to 30 MHz	From 30 MHz to 1 GHz
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

*1) Distance Factor: 40 x log (3 m / 300 m) = -80 dB
*2) Distance Factor: 40 x log (3 m / 30 m) = -40 dB

Figure 1: Test Setup

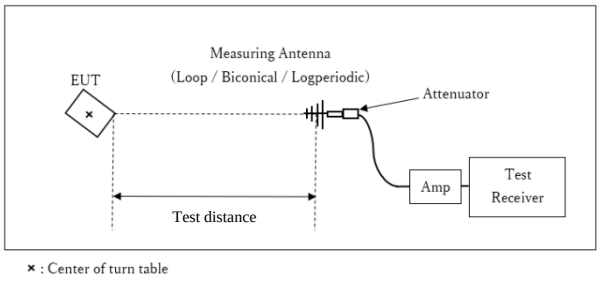
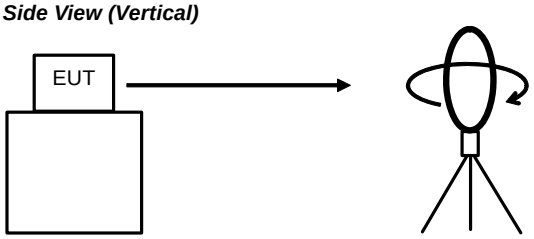
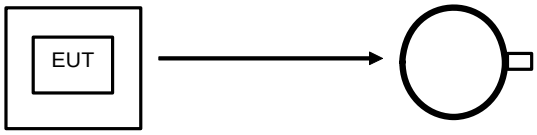
Below 1 GHz	
	Test Distance: 3 m

Figure 2: Direction of the Loop Antenna

Side View (Vertical)

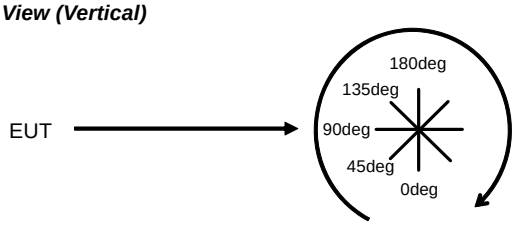


Top View (Horizontal)



Antenna was not rotated.

Top View (Vertical)



Front side: 0 deg.
Forward direction: clockwise

- 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

SECTION 6: -20 dB Bandwidth

Test Procedure

The test was measured with a spectrum analyzer.

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
-20 dB Bandwidth	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	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.

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

APPENDIX 1: Test data

Radiated Emission (Fundamental and Spurious Emission)

Mode	Mode 1

Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	22 deg. C	50 % RH	Shousei Hamaguchi	Below 30 MHz
June 4, 2025	SAC2	23 deg. C	60 % RH	Shousei Hamaguchi	Above 30 MHz

PK or QP

Ant Deg [deg] or Polarity [Hori/Vert]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12030	PK	100.7	19.8	-74.0	32.3	-	14.2	45.9	31.7	Fundamental
0deg	0.24060	PK	49.8	20.0	-74.0	32.3	-	-36.5	39.9	76.4	
0deg	0.36090	PK	66.3	20.0	-73.9	32.2	-	-19.8	36.4	56.2	
0deg	0.48120	PK	39.8	20.0	-73.9	32.2	-	-46.3	34.0	80.3	
0deg	0.60150	QP	58.1	19.9	-33.9	32.2	-	11.9	32.0	20.1	
0deg	0.72180	QP	38.5	20.1	-33.9	32.2	-	-7.5	30.4	37.9	
0deg	0.84210	QP	52.4	20.0	-33.8	32.3	-	6.3	29.1	22.8	
0deg	0.96240	QP	37.7	20.0	-33.8	32.3	-	-8.4	27.9	36.3	
0deg	1.08270	QP	48.5	20.0	-33.8	32.3	-	2.4	26.9	24.5	
0deg	1.20300	QP	37.2	20.0	-33.8	32.3	-	-8.9	26.0	34.9	
Hori.	107.154	QP	22.1	11.2	7.4	28.4	-	12.3	43.5	31.2	
Hori.	150.263	QP	24.3	15.0	7.8	28.3	-	18.8	43.5	24.7	
Hori.	184.364	QP	20.6	16.3	8.0	28.1	-	16.8	43.5	26.7	
Hori.	219.215	QP	24.4	11.3	8.2	27.9	-	16.0	46.0	30.0	
Hori.	306.374	QP	20.6	13.8	8.8	27.8	-	15.4	46.0	30.6	
Hori.	380.850	QP	22.0	15.3	9.2	28.3	-	18.2	46.0	27.8	
Vert.	107.154	QP	25.0	11.2	7.4	28.4	-	15.2	43.5	28.3	
Vert.	150.263	QP	22.6	15.0	7.8	28.3	-	17.1	43.5	26.4	
Vert.	184.364	QP	22.5	16.3	8.0	28.1	-	18.7	43.5	24.8	
Vert.	219.215	QP	22.0	11.3	8.2	27.9	-	13.6	46.0	32.4	
Vert.	306.374	QP	20.6	13.8	8.8	27.8	-	15.4	46.0	30.6	
Vert.	380.850	QP	20.6	15.3	9.2	28.3	-	16.8	46.0	29.2	

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

PK with Duty factor

Ant Deg [deg] or Polarity [Hori/Vert]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12030	PK	100.7	19.8	-74.0	32.3	0.0	14.2	25.9	***11.7***	Fundamental
0deg	0.24060	PK	49.8	20.0	-74.0	32.3	0.0	-36.5	19.9	56.4	
0deg	0.36090	PK	66.3	20.0	-73.9	32.2	0.0	-19.8	16.4	36.2	
0deg	0.48120	PK	39.8	20.0	-73.9	32.2	0.0	-46.3	14.0	60.3	

Result = Reading + Ant Factor + Loss (Cable + Attenuator + 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

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12030	PK	100.7	19.8	6.0	32.3	-	94.2	-	-	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).

Radiated Emission (Fundamental and Spurious Emission)

Mode	Mode 2

Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	22 deg. C	50 % RH	Shousei Hamaguchi	Below 30 MHz
June 4, 2025	SAC2	23 deg. C	60 % RH	Shousei Hamaguchi	Above 30 MHz

PK or QP

Ant Deg [deg] or Polarity [Hori/Vert]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12700	PK	99.5	19.8	-74.0	32.3	-	13.0	45.5	32.5	Fundamental
0deg	0.25400	PK	53.2	20.0	-74.0	32.3	-	-33.1	39.5	72.6	
0deg	0.38100	PK	67.2	20.0	-73.9	32.2	-	-18.9	36.0	54.9	
0deg	0.50800	QP	41.0	20.0	-33.9	32.2	-	-5.1	33.5	38.6	
0deg	0.63500	QP	57.7	20.0	-33.9	32.2	-	11.6	31.5	19.9	
0deg	0.76200	QP	38.5	20.1	-33.8	32.3	-	-7.5	29.9	37.4	
0deg	0.88900	QP	52.2	20.0	-33.8	32.3	-	6.1	28.6	22.5	
0deg	1.01600	QP	37.9	20.0	-33.8	32.3	-	-8.2	27.4	35.6	
0deg	1.14300	QP	48.3	20.0	-33.8	32.3	-	2.2	26.4	24.2	
0deg	1.27000	QP	37.4	20.0	-33.8	32.3	-	-8.7	25.5	34.2	
Hori.	107.154	QP	22.1	11.2	7.4	28.4	-	12.3	43.5	31.2	
Hori.	150.236	QP	24.3	15.0	7.8	28.3	-	18.8	43.5	24.7	
Hori.	184.338	QP	20.6	16.3	8.0	28.1	-	16.8	43.5	26.7	
Hori.	219.274	QP	24.5	11.3	8.2	27.9	-	16.1	46.0	29.9	
Hori.	306.353	QP	20.6	13.8	8.8	27.8	-	15.4	46.0	30.6	
Hori.	380.807	QP	22.0	15.3	9.2	28.3	-	18.2	46.0	27.8	
Vert.	107.154	QP	25.0	11.2	7.4	28.4	-	15.2	43.5	28.3	
Vert.	150.236	QP	22.6	15.0	7.8	28.3	-	17.1	43.5	26.4	
Vert.	184.338	QP	22.5	16.3	8.0	28.1	-	18.7	43.5	24.8	
Vert.	219.274	QP	21.9	11.3	8.2	27.9	-	13.5	46.0	32.5	
Vert.	306.353	QP	20.6	13.8	8.8	27.8	-	15.4	46.0	30.6	
Vert.	380.807	QP	20.6	15.3	9.2	28.3	-	16.8	46.0	29.2	

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

PK with Duty factor

Ant Deg [deg] or Polarity [Hori/Vert]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12700	PK	99.5	19.8	-74.0	32.3	0.0	13.0	25.5	***12.5***	Fundamental
0deg	0.25400	PK	53.2	20.0	-74.0	32.3	0.0	-33.1	19.5	52.6	
0deg	0.38100	PK	67.2	20.0	-73.9	32.2	0.0	-18.9	16.0	34.9	

Result = Reading + Ant Factor + Loss (Cable + Attenuator + 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

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12700	PK	99.5	19.8	6.0	32.3	-	93.0	-	-	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).

Radiated Emission (Fundamental and Spurious Emission)

Mode	Mode 3

Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	22 deg. C	50 % RH	Shousei Hamaguchi	Below 30 MHz
June 4, 2025	SAC2	23 deg. C	60 % RH	Shousei Hamaguchi	Above 30 MHz

PK or QP

Ant Deg [deg] or Polarity [Hori/Vert]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12750	PK	100.1	19.8	-74.0	32.3	-	13.6	45.4	31.8	Fundamental
0deg	0.25500	PK	56.3	20.0	-74.0	32.3	-	-30.0	39.4	69.4	
0deg	0.38250	PK	70.1	20.0	-73.9	32.2	-	-16.0	35.9	51.9	
0deg	0.51000	QP	42.5	20.0	-33.9	32.2	-	-3.6	33.5	37.1	
0deg	0.63750	QP	60.0	20.0	-33.9	32.2	-	13.9	31.5	17.6	
0deg	0.76500	QP	39.6	20.1	-33.8	32.3	-	-6.4	29.9	36.3	
0deg	0.89250	QP	54.0	20.0	-33.8	32.3	-	7.9	28.6	20.7	
0deg	1.02000	QP	38.5	20.0	-33.8	32.3	-	-7.6	27.4	35.0	
0deg	1.14750	QP	49.8	20.0	-33.8	32.3	-	3.7	26.4	22.7	
0deg	1.27500	QP	37.6	20.0	-33.8	32.3	-	-8.5	25.4	33.9	
Hori.	107.125	QP	22.2	11.2	7.4	28.4	-	12.4	43.5	31.1	
Hori.	150.265	QP	24.3	15.0	7.8	28.3	-	18.8	43.5	24.7	
Hori.	184.386	QP	20.6	16.3	8.0	28.1	-	16.8	43.5	26.7	
Hori.	219.237	QP	24.5	11.3	8.2	27.9	-	16.1	46.0	29.9	
Hori.	306.337	QP	20.6	13.8	8.8	27.8	-	15.4	46.0	30.6	
Hori.	380.801	QP	22.0	15.3	9.2	28.3	-	18.2	46.0	27.8	
Vert.	107.125	QP	25.0	11.2	7.4	28.4	-	15.2	43.5	28.3	
Vert.	150.265	QP	22.6	15.0	7.8	28.3	-	17.1	43.5	26.4	
Vert.	184.386	QP	22.5	16.3	8.0	28.1	-	18.7	43.5	24.8	
Vert.	219.237	QP	22.0	11.3	8.2	27.9	-	13.6	46.0	32.4	
Vert.	306.337	QP	20.5	13.8	8.8	27.8	-	15.3	46.0	30.7	
Vert.	380.801	QP	20.6	15.3	9.2	28.3	-	16.8	46.0	29.2	

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

PK with Duty factor

Ant Deg [deg] or Polarity [Hori/Vert]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12750	PK	100.1	19.8	-74.0	32.3	0.0	13.6	25.4	***11.8***	Fundamental
0deg	0.25500	PK	56.3	20.0	-74.0	32.3	0.0	-30.0	19.4	49.4	
0deg	0.38250	PK	70.1	20.0	-73.9	32.2	0.0	-16.0	15.9	31.9	

Result = Reading + Ant Factor + Loss (Cable + Attenuator + 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

Ant Deg [deg]	Frequency [MHz]	Detector	Reading [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
0deg	0.12750	PK	100.1	19.8	6.0	32.3	-	93.6	-	-	Fundamental

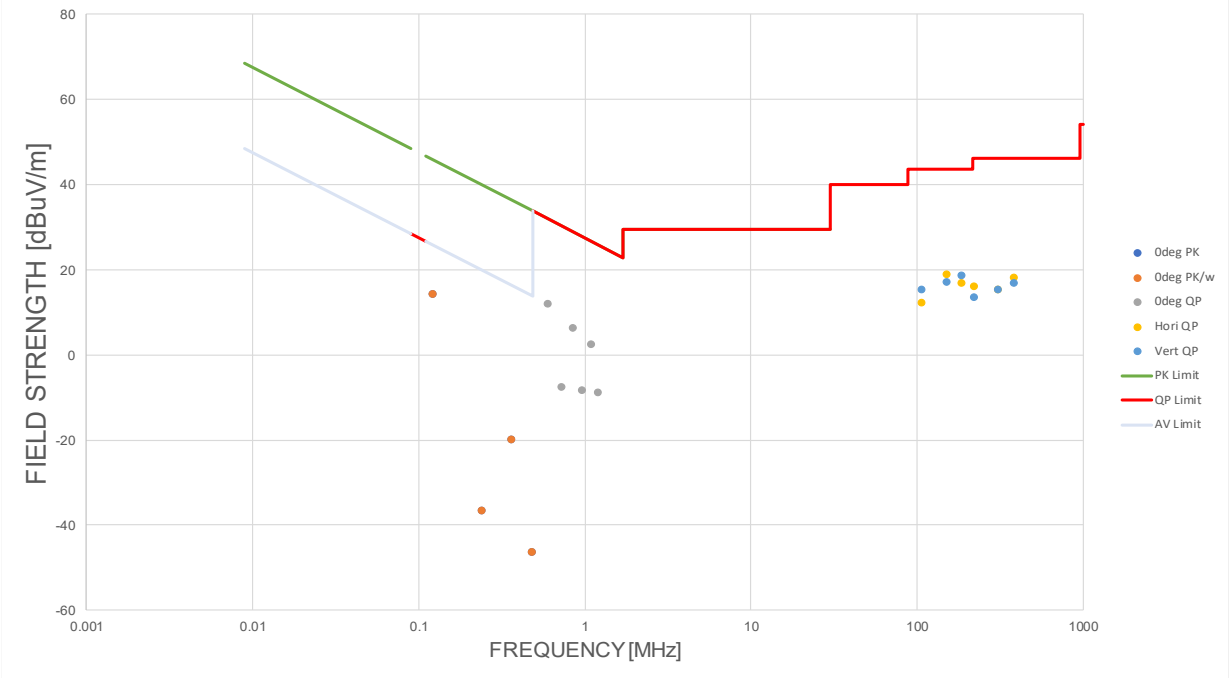
Result = Reading + Ant Factor + Loss (Cable+Attenuator) - Gain(Amprifier)

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).

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

Mode	Mode 1

Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	22 deg. C	50 % RH	Shousei Hamaguchi	Below 30 MHz
June 4, 2025	SAC2	23 deg. C	60 % RH	Shousei Hamaguchi	Above 30 MHz



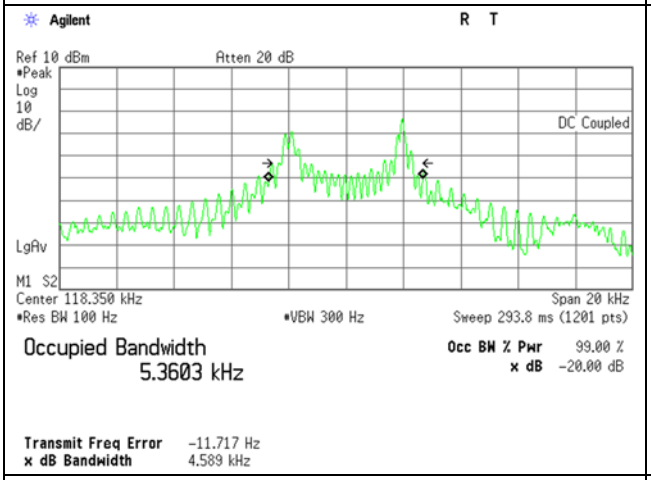
-20 dB Bandwidth / 99 % emission bandwidth

Mode	Mode 1 to 3

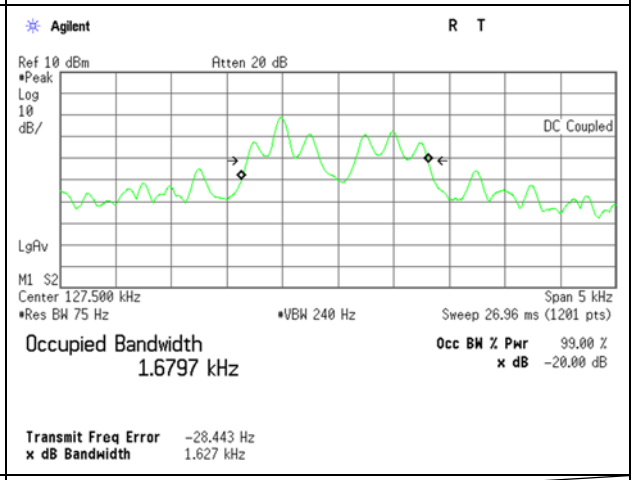
Date	Test site	Temperature	Humidity	Engineer
June 16, 2025	SAC2	24 deg. C	60 % RH	Tomoya Sone

Mode	-20 dB Bandwidth [kHz]	99 % emission bandwidth [kHz]
1	4.589	5.3603
2	1.627	1.6797
3	5.464	6.3664

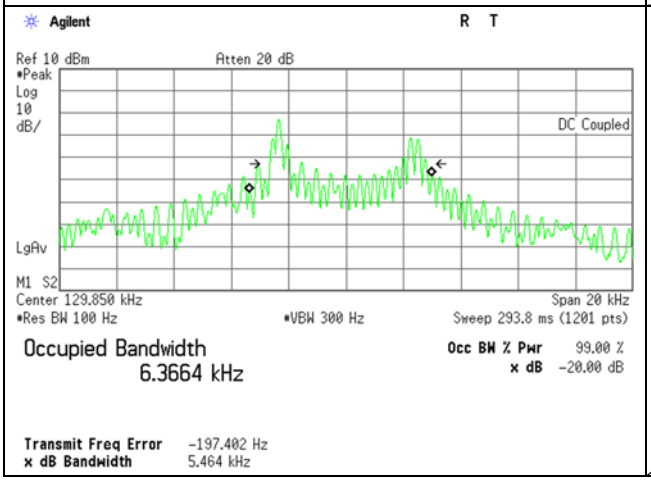
Mode1



Mode2



Mode3



APPENDIX 2: Test instruments

Test Equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141213	Attenuator(6dB)	Weinschel Corp	2	BK7971	11/11/2024	12
RE	141215	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W/3D-2W/ RG400u/ RFM-E421(SW)	-/01068 (Switcher)	06/24/2024	12
RE	141222	Coaxial Cable	Fujikura,HP,Mini-Circits,Fujikura	3D-2W(12m)/ 5D-2W(5m)/ 5D-2W(0.8m)/ 5D-2W(1m)	-	02/14/2025	12
RE	141265	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-190	07/10/2024	12
RE	141317	Coaxial Cable	UL-ISE	-	-	09/11/2024	12
RE	141427	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103B+BBA9106	08031	07/30/2024	12
RE	141530	Digital Tester	Fluke Corporation	FLUKE 26-3	78030621	02/25/2025	12
RE	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	08/06/2024	12
RE	141568	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	2901	01/19/2025	12
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/14/2025	12
RE	141594	Pre Amplifier	Keysight Technologies Inc	8447D	2944A10150	02/19/2025	12
RE	141900	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46185823	11/13/2024	12
RE	141950	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	11/28/2024	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	05/07/2025	12
RE	141998	AC1_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	12/06/2023	24
RE	142004	AC2_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	12/12/2023	24
RE	142226	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	142228	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	142314	Attenuator	Pasternack Enterprises	PE7390-6	D/C 1504	06/06/2024	12
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	207745	Coaxial Cable	UL-ISE	-	-	03/19/2025	12
RE	220646	Attenuator	Huber+Suhner	6806_N-50-1	-	03/06/2025	12
RE	244707	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202102	01/19/2025	12
RE	252514	Active Loop Antenna	Schwarzbeck Mess-Elektronik OHG	FMZB 1519-60 D	1519-60 D-067	09/26/2024	12

***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