

RADIO TEST REPORT

Test Report No. 15861063H-R1

Customer	Tokai Rika Co Ltd
Description of EUT	Electronic Key
Model Number of EUT	B4L2K2R
FCC ID	MOZB4L2K2R
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	November 28, 2025
Remarks	-

Representative test engineerYuichiro Yamazaki
Engineer**Approved by**Akihiko Maeda
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".

Report Cover Page - Form-ULID-003532 (DCS:13-EM-F0429) Issue# 25.0

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REVISION HISTORY

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15861063H	October 28, 2025	-
1	15861063H-R1	November 28, 2025	Addition of the variation models in Clause 2.2.
1	15861063H-R1	November 28, 2025	Correction of the following information to Section 5: - Settings table - Test Setup Diagram (below 1 GHz)

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	Tokai Rika Co Ltd
Address	3-260 Toyota, Oguchi-cho, Niwa-gun, Aichi 480-0195, Japan
Telephone Number	+81-70-2244-3504
Contact Person	Tomoki Kuwabara

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	Electronic Key
Model Number	B4L2K2R
Serial Number	Refer to SECTION 4.2
Condition	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	June 10, 2025
Test Date	September 17 to 19, 2025

2.2 Product Description

General Specification

Rating	DC 3.0 V
Operating temperature	-20 deg. C to 60 deg. C

Radio Specification

[Transmitter part]

Equipment Type	Transmitter
Frequency of Operation	CH1: 433.58 MHz CH2: 434.42 MHz
Type of Modulation	FSK

[Receiver part]

Equipment Type	Receiver
Frequency of Operation	125 kHz

*Tested model has variation models: original (5 switches), Variation A (4 switches), Variation B (3 switches), Variation C (2+1 switches) and Variation D (2 switches).
The differences of these variations are appearance and the number of switches.
The test was performed with original model.

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 15.231 Periodic operation in the band 40.66-40.70 MHz and above 70 MHz.

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 (incl. Errata) for ISSED
ANSI C63.25.1-2018

3.3 Summary of Test Results

Item	Specification	Results	Remarks
Conducted emission	FCC: Section 15.207 ISED: RSS-Gen 8.8	N/A	*1)
Automatically deactivate	FCC: Section 15.231(a)(1) ISED: RSS-210 A1.2	Complied	Radiated
Electric Field Strength of Fundamental Emission	FCC: Section 15.231(b) ISED: RSS-210 A1.3	Complied	Radiated
Electric Field Strength of Spurious Emission	FCC: Section 15.205 Section 15.209 Section 15.231(b) ISED: RSS-210 A1.3 RSS-Gen 8.9	Complied	Radiated
-20 dB Bandwidth	FCC: Section 15.231(c) ISED: Reference data	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 does not have AC Mains.

FCC Part 15.31 (e)

The test was performed with the New Battery during the tests.
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	Reference data	-	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
3 m	1 GHz to 6 GHz		dB	5.1
	6 GHz to 18 GHz		dB	5.4
1 m	10 GHz to 18 GHz		dB	5.4
	18 GHz to 26.5 GHz		dB	5.3
	26.5 GHz to 40 GHz		dB	4.8
0.5 m	26.5 GHz to 40 GHz		dB	5.0

Automatically deactivate, -20 dB Bandwidth and 99% Occupied Bandwidth

Item	Unit	Calculated Uncertainty (+/-)
Bandwidth (OBW)	%	0.96
Time readout (time span upto 100 msec)	%	0.11
Time readout (time span upto 1000 msec)	%	0.11
Time readout (time span upto 60 sec)	%	0.02

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

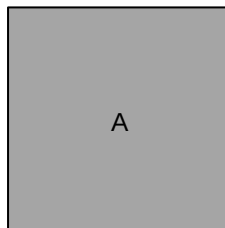
4.1 Operating Mode(s)

Test mode	Remarks
1) Transmitting mode (Tx 433.58 MHz) *1)	-
2) Transmitting mode (Tx 434.42 MHz) *1)	-
* The system was configured in typical fashion (as a user would normally use it) for testing.	
*Power of the EUT was set by the software as follows; Software: 20250528_0A020108 Version: 0A020108 (Date: 2025.05.28, 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.	

*1) The software of this mode is the same as one of normal product, except that EUT continues to transmit during being pressed transmitter button (For Normal use mode, EUT stops to transmit in a given time, even if transmitter button is being pressed.).

*This EUT has two modes which mechanical key is inserted or not. The worst case was confirmed with and without mechanical key inserted, as a result, the test with mechanical key inserted was the worst case. In addition, after checking the worst case with two types of covers, one with metal decoration and one without metal decoration, as a result, the test with metal decoration cover was the worst case. Therefore, the tests with mechanical key inserted and with metal decoration cover were only performed.

4.2 Configuration and Peripherals



* Setup was taken into consideration and test data was taken under worse case conditions.

Description of EUT

No.	Item	Model number	Serial Number	Manufacturer	Remark
A	Electronic Key	B4L2K2R	No.5-v1	Tokai Rika Co Ltd	EUT

SECTION 5: Radiated Spurious Emission

Test Procedure

[For below 30 MHz]

The noise level was checked by moving a search-coil (Loop Antenna) close to the EUT.

[For 30 MHz to 1 GHz]

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.

[For above 1 GHz]

EUT was placed on the platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane.

The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane.

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

Test antenna was aimed at the EUT for receiving the maximum signal and always kept within the illumination area of the 3 dB beamwidth of the antenna.

The measurements were performed for both vertical and horizontal antenna polarization.

The radiated emission measurements were made with the following detector function of the test receiver / spectrum analyzer.

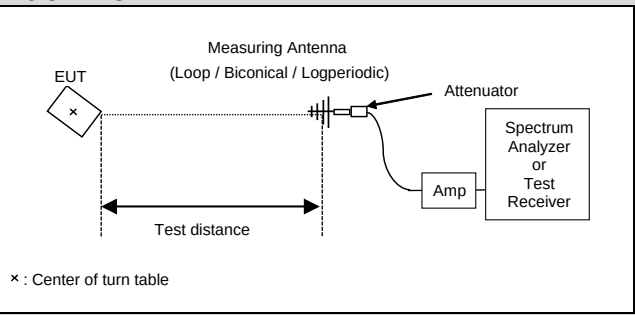
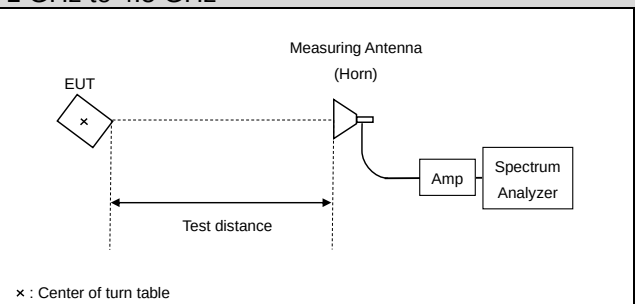
Test Antennas are used as below;

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

Setting;

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	Above 1 GHz
Instrument Used	Spectrum Analyzer				Test Receiver	Spectrum Analyzer
Detector Type	Peak				Peak, Peak with Duty factor	Peak, Peak with Duty factor and Average
Bandwidth setting	RBW: 200 Hz, VBW: 620 Hz		RBW: 10 kHz, VBW: 30 kHz		BW: 120 kHz	PK: RBW: 1 MHz, VBW: 3 MHz, AV: RBW 1 MHz, VBW: 10 Hz

[Test Setup]

Below 1 GHz	
 × : Center of turn table	Test Distance: 3 m
1 GHz to 4.5 GHz	
 × : Center of turn table	Test Distance: 3 m

- 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 4.5 GHz
Test data : APPENDIX
Test result : Pass

SECTION 6: Automatically deactivate

Test Procedure

The measurement was performed with Electric field strength using a spectrum analyzer.

Test data : APPENDIX
Test result : Pass

SECTION 7: -20 dB Bandwidth and 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
-20 dB Bandwidth / 99% emission bandwidth	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak *1)	Max Hold *1)	Spectrum Analyzer
*1) Peak hold was applied as Worst-case measurement.							

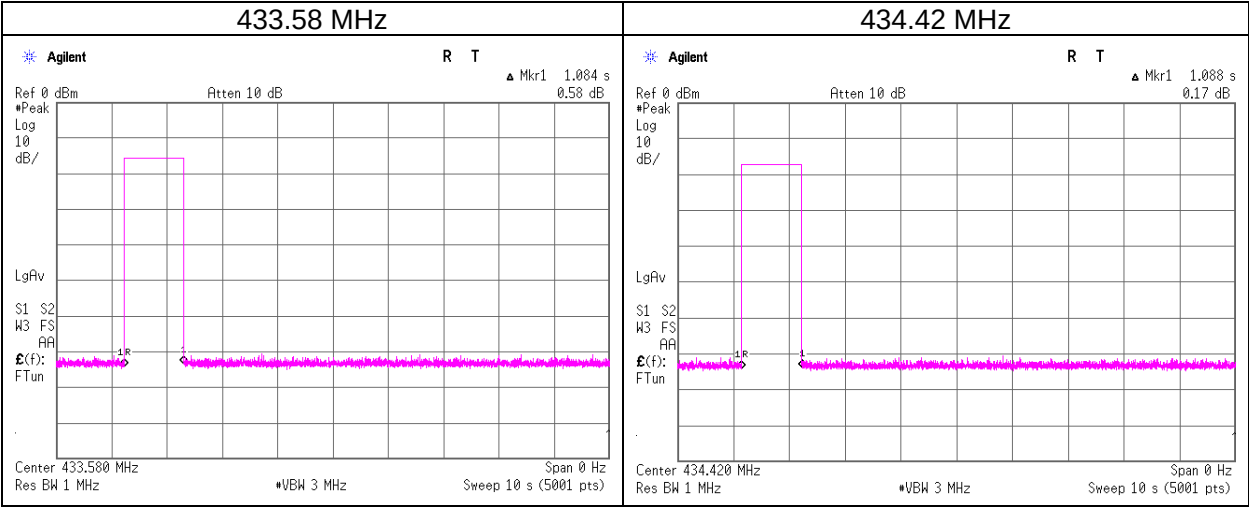
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test Data

Automatically deactivate

Mode	Mode 1, 2			
Date	Test site	Temperature	Humidity	Engineer
September 17, 2025	SAC3	22 deg. C	50 % RH	Yuichiro Yamazaki

Frequency [MHz]	Time of Transmitting [s]	Limit [s]	Result
433.58	1.084	5.000	Pass
434.42	1.088	5.000	Pass



Radiated Emission (Fundamental and Spurious Emission)

Mode	Mode 1
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
September 17, 2025	SAC3	22 deg. C	50 % RH	Yuichiro Yamazaki	30 MHz to 1 GHz
September 18, 2025	SAC3	23 deg. C	59 % RH	Yuichiro Yamazaki	1 GHz to 3.2 GHz
September 19, 2025	SAC3	22 deg. C	56 % RH	Yuichiro Yamazaki	3.2 GHz to 4.5 GHz

Polarity [Hori/Vert]	Frequency [MHz]	Reading (AV) [dBuV]	Reading (PK) [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result (PK) [dBuV/m]	Result (PK with Duty Factor or AV) [dBuV/m]	Limit (PK) [dBuV/m]	Limit (AV) [dBuV/m]	Margin (PK) [dB]	Margin (AV) [dB]	Inside or Outside of Restricted Bands	Remarks
Hori.	433.580	-	82.7	16.3	10.6	32.0	0.0	77.6	77.6	100.8	80.8	23.2	3.2	Carrier	*1)
Hori.	867.160	-	49.2	21.8	12.8	31.1	0.0	52.7	52.7	80.8	60.8	28.1	8.1	Outside	*1)
Hori.	1300.740	-	45.9	25.7	2.1	33.8	0.0	39.9	39.9	73.9	53.9	34.0	14.0	Inside	*1)
Hori.	1734.320	-	46.1	25.1	2.2	32.8	0.0	40.6	40.6	80.8	60.8	40.2	20.2	Outside	*1)
Hori.	2167.900	-	45.3	28.0	2.4	32.1	0.0	43.6	43.6	80.8	60.8	37.2	17.2	Outside	*1)
Hori.	2601.480	-	46.7	27.6	2.6	31.9	0.0	45.0	45.0	80.8	60.8	35.8	15.8	Outside	*1)
Hori.	3035.060	-	50.1	28.7	2.8	31.7	0.0	49.9	49.9	80.8	60.8	30.9	10.9	Outside	*1)
Hori.	3468.640	55.4	58.3	28.8	3.0	31.5	0.0	58.6	55.7	80.8	60.8	22.2	5.1	Outside	
Hori.	3902.220	49.3	53.4	29.8	3.2	31.3	0.0	55.1	51.0	73.9	53.9	18.8	3.0	Inside	
Hori.	4335.800	44.2	50.7	30.6	3.3	31.1	0.0	53.5	47.0	73.9	53.9	20.4	6.9	Inside	
Vert.	433.580	-	83.6	16.3	10.6	32.0	0.0	78.5	78.5	100.8	80.8	22.3	2.3	Carrier	*1)
Vert.	867.160	-	45.4	21.8	12.8	31.1	0.0	48.9	48.9	80.8	60.8	31.9	11.9	Outside	*1)
Vert.	1300.740	-	46.8	25.7	2.1	33.8	0.0	40.8	40.8	73.9	53.9	33.1	13.1	Inside	*1)
Vert.	1734.320	-	45.3	25.1	2.2	32.8	0.0	39.8	39.8	80.8	60.8	41.0	21.0	Outside	*1)
Vert.	2167.900	-	46.0	28.0	2.4	32.1	0.0	44.3	44.3	80.8	60.8	36.5	16.5	Outside	*1)
Vert.	2601.480	-	48.0	27.6	2.6	31.9	0.0	46.3	46.3	80.8	60.8	34.5	14.5	Outside	*1)
Vert.	3035.060	-	48.0	28.7	2.8	31.7	0.0	47.8	47.8	80.8	60.8	33.0	13.0	Outside	*1)
Vert.	3468.640	54.9	58.4	28.8	3.0	31.5	0.0	58.7	55.2	80.8	60.8	22.1	5.6	Outside	
Vert.	3902.220	49.5	53.9	29.8	3.2	31.3	0.0	55.6	51.2	73.9	53.9	18.3	2.7	Inside	
Vert.	4335.800	43.8	50.0	30.6	3.3	31.1	0.0	52.8	46.6	73.9	53.9	21.1	7.3	Inside	

Sample calculation:

Result of PK = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz)} - Gain (Amplifier)

Result of PK with Duty factor (PK / W) = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz)} - Gain (Amplifier)
+ Duty factor

Result of AV = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz)} - Gain (Amplifier)

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

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

If Gain 0.0 dB 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.

Radiated Emission (Fundamental and Spurious Emission)

Mode	Mode 2
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
September 17, 2025	SAC3	22 deg. C	50 % RH	Yuichiro Yamazaki	30 MHz to 1 GHz
September 18, 2025	SAC3	23 deg. C	59 % RH	Yuichiro Yamazaki	1 GHz to 3.2 GHz
September 19, 2025	SAC3	22 deg. C	56 % RH	Yuichiro Yamazaki	3.2 GHz to 4.5 GHz

Polarity [Hori/Vert]	Frequency [MHz]	Reading (AV) [dBuV]	Reading (PK) [dBuV]	Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result (PK) [dBuV/m]	Result (PK with Duty Factor or AV) [dBuV/m]	Limit (PK) [dBuV/m]	Limit (AV) [dBuV/m]	Margin (PK) [dB]	Margin (AV) [dB]	Inside or Outside of Restricted Bands	Remarks
Hori.	434.420	-	82.7	16.3	10.6	32.0	0.0	77.6	77.6	100.8	80.8	23.2	3.2	Carrier	*1)
Hori.	868.840	-	48.7	21.8	12.9	31.1	0.0	52.3	52.3	80.8	60.8	28.5	8.5	Outside	*1)
Hori.	1303.260	-	46.3	25.7	2.1	33.8	0.0	40.3	40.3	73.9	53.9	33.6	13.6	Inside	*1)
Hori.	1737.680	-	45.7	25.1	2.2	32.8	0.0	40.2	40.2	80.8	60.8	40.6	20.6	Outside	*1)
Hori.	2172.100	-	45.1	28.0	2.4	32.1	0.0	43.4	43.4	80.8	60.8	37.4	17.4	Outside	*1)
Hori.	2606.520	-	46.6	27.7	2.6	31.9	0.0	45.0	45.0	80.8	60.8	35.8	15.8	Outside	*1)
Hori.	3040.940	-	49.6	28.7	2.8	31.7	0.0	49.4	49.4	80.8	60.8	31.4	11.4	Outside	*1)
Hori.	3475.360	55.0	57.8	28.9	3.0	31.5	0.0	58.2	55.4	80.8	60.8	22.6	5.4	Outside	
Hori.	3909.780	49.6	53.6	29.8	3.2	31.3	0.0	55.3	51.3	73.9	53.9	18.6	2.6	Inside	
Hori.	4344.200	43.6	50.5	30.6	3.3	31.1	0.0	53.3	46.4	73.9	53.9	20.6	7.5	Inside	
Vert.	434.420	-	84.0	16.3	10.6	32.0	0.0	78.9	78.9	100.8	80.8	21.9	1.9	Carrier	*1)
Vert.	868.840	-	45.2	21.8	12.9	31.1	0.0	48.8	48.8	80.8	60.8	32.0	12.0	Outside	*1)
Vert.	1303.260	-	47.2	25.7	2.1	33.8	0.0	41.2	41.2	73.9	53.9	32.7	12.7	Inside	*1)
Vert.	1737.680	-	45.1	25.1	2.2	32.8	0.0	39.6	39.6	80.8	60.8	41.2	21.2	Outside	*1)
Vert.	2172.100	-	46.2	28.0	2.4	32.1	0.0	44.5	44.5	80.8	60.8	36.3	16.3	Outside	*1)
Vert.	2606.520	-	47.2	27.7	2.6	31.9	0.0	45.6	45.6	80.8	60.8	35.2	15.2	Outside	*1)
Vert.	3040.940	-	47.3	28.7	2.8	31.7	0.0	47.1	47.1	80.8	60.8	33.7	13.7	Outside	*1)
Vert.	3475.360	54.7	58.3	28.9	3.0	31.5	0.0	58.7	55.1	80.8	60.8	22.1	5.7	Outside	
Vert.	3909.780	50.3	54.3	29.8	3.2	31.3	0.0	56.0	52.0	73.9	53.9	17.9	1.9	Inside	
Vert.	4344.200	43.6	49.8	30.6	3.3	31.1	0.0	52.6	46.4	73.9	53.9	21.3	7.5	Inside	

Sample calculation:

Result of PK = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz)} - Gain (Amplifier)

Result of PK with Duty factor (PK / W) = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz)} - Gain (Amplifier)
+ Duty factor

Result of AV = Reading + Ant Factor + Loss {Cable + Attenuator + Filter (above 1 GHz)} - Gain (Amplifier)

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

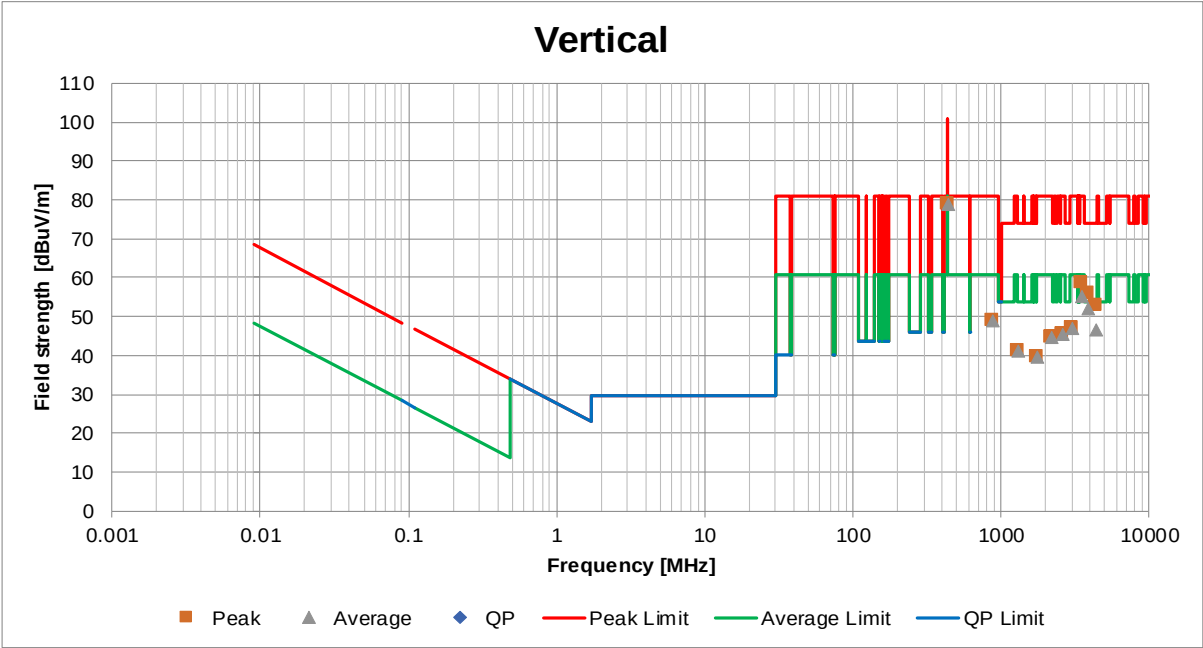
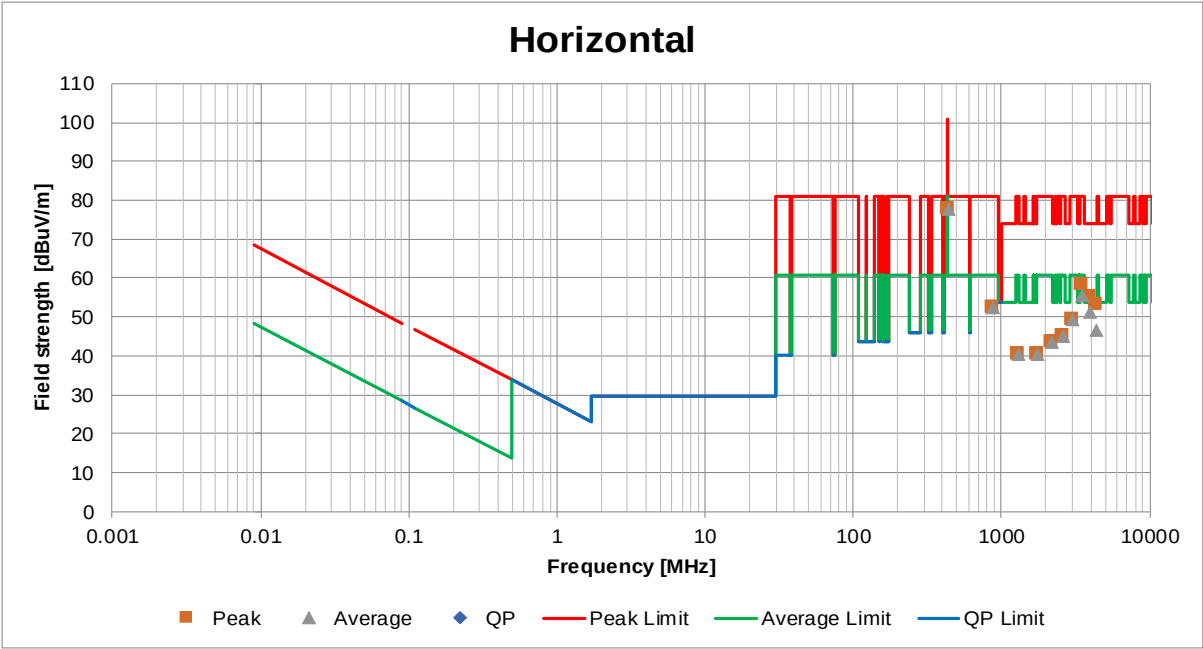
*1) Since the peak emission result satisfied the average limit, duty factor was omitted.

If Gain 0.0 dB 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.

Radiated Spurious Emission

(Plot data, Worst case for Spurious Emission)

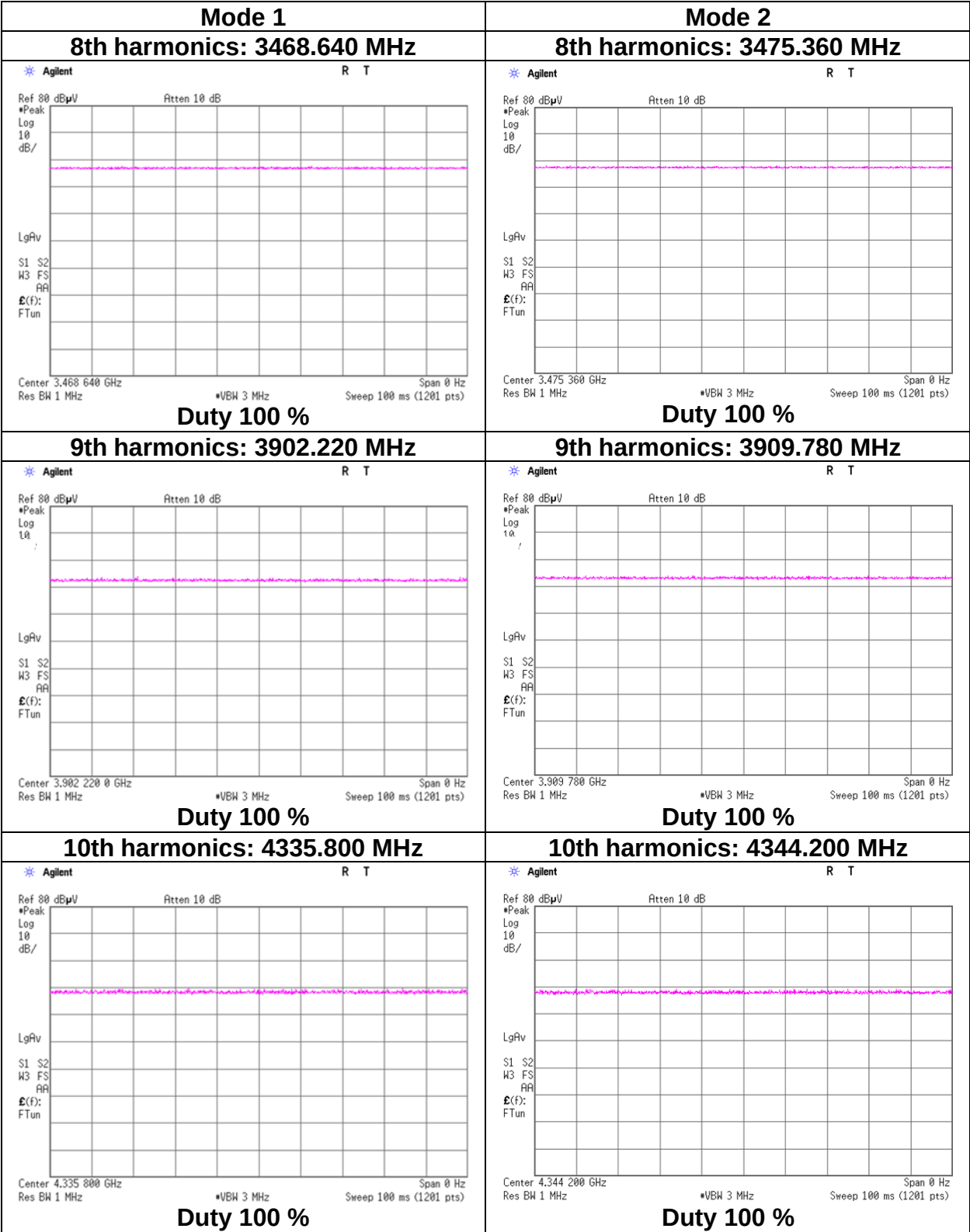
Mode	Mode 2				
Date	Test site	Temperature	Humidity	Engineer	Measurement Range
September 17, 2025	SAC3	22 deg. C	50 % RH	Yuichiro Yamazaki	30 MHz to 1 GHz
September 18, 2025	SAC3	23 deg. C	59 % RH	Yuichiro Yamazaki	1 GHz to 3.2 GHz
September 19, 2025	SAC3	22 deg. C	56 % RH	Yuichiro Yamazaki	3.2 GHz to 4.5 GHz



Duty consideration

Mode	Mode 1, 2
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
September 18, 2025	SAC3	23 deg. C	59 % RH	Yuichiro Yamazaki	1 GHz to 4.5 GHz



-20 dB Bandwidth / 99% emission bandwidth

Mode	Mode 1, 2				
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
September 17, 2025	SAC3	22 deg. C	50 % RH	Yuichiro Yamazaki	30 MHz to 1 GHz

Bandwidth Limit : Fundamental Frequency $433.58 \text{ MHz} \times 0.25 \% = 1083.950 \text{ kHz}$

* The above limit was calculated from more stringent nominal frequency.

* Method of KDB 926416 for systems employing non sweeping frequencies was referred.

433.58 MHz

-20 dB Bandwidth [kHz]
70.047

434.42 MHz

-20 dB Bandwidth [kHz]
70.131

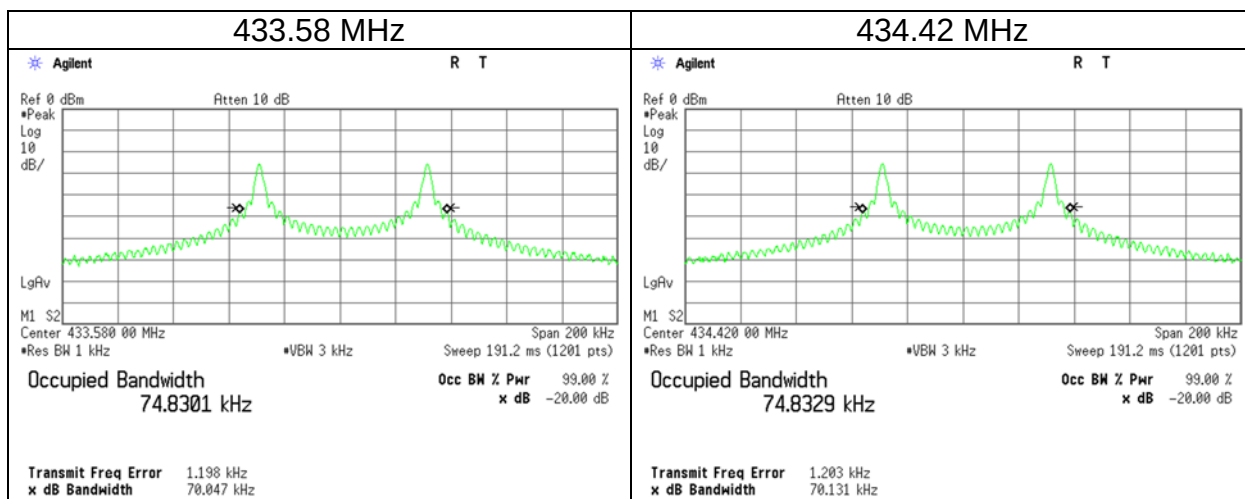
-20 dB Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
140.178	1083.950	Pass

Bandwidth Limit : Fundamental Frequency $433.58 \text{ MHz} \times 0.25 \% = 1083.950 \text{ kHz}$

99% emission bandwidth [kHz]	Bandwidth Limit [kHz]	Result
74.8301	1083.950	Pass

Bandwidth Limit : Fundamental Frequency $434.42 \text{ MHz} \times 0.25 \% = 1086.050 \text{ kHz}$

99% emission bandwidth [kHz]	Bandwidth Limit [kHz]	Result
74.8329	1086.050	Pass



APPENDIX 2: Test Instruments

Test Equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141266	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-191	08/14/2025	12
RE	141323	Coaxial cable	UL-ISE	-	-	09/08/2025	12
RE	141507	Horn Antenna 1-18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	258	11/11/2024	12
RE	141532	DIGITAL HITESTER	HIOKI E. E. CORPORATION	3805	051201197	01/16/2025	12
RE	141580	MicroWave System Amplifier	Keysight Technologies Inc	83017A	MY39500779	03/24/2025	12
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/14/2025	12
RE	141884	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY44020357	05/15/2025	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	05/07/2025	12
RE	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	07/09/2025	24
RE	142013	AC3_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/14/2025	24
RE	142183	Measure	KOMELON	KMC-36	-	10/21/2024	12
RE	142314	Attenuator	Pasternack Enterprises	PE7390-6	D/C 1504	06/24/2025	12
RE	142645	Loop Antenna	UL-ISE	-	-	-	-
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	197990	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHBB 9124 + BBA 9106	01365	11/18/2024	12
RE	242978	High Pass Filter 1-13 GHz	Pasternak	PE87FL1018	D.C. 2215	02/14/2025	12
RE	244709	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202103	01/19/2025	12
RE	263275	Microwave Cable	Junkosha	MWX221-05000DMSDMS+ MWX221-01000DMSDMS	2505S043+ 2503S145	05/20/2025	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