

RADIO TEST REPORT

Test Report No. 16387069H-A-R1

Customer	Minebea AccessSolutions Inc.
Description of EUT	NFC Reader
Model Number of EUT	MASNFC-5
FCC ID	MLBMASNFC-5
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	October 15, 2026
Remarks	-

Representative test engineerKiyoshiro Okazaki
Engineer**Approved by**Shinichi Miyazono
Test report signatory

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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- If the latest version is a revision, it replaces the previous version. See the table below for revisions and versions.

REVISION HISTORY

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	16387069H-A	August 17, 2026	-
1	16387069H-A-R1	October 15, 2026	Correction of the Operating mode table in Clause 4.1. Correction of the description under the diagram in Clause 4.2. Correction of the Loss of "Result of the fundamental Emission at 3 m without Distance factor" in Fundamental Emission and Spectrum Mask test data.

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	Minebea AccessSolutions Inc.
Address	3700 Shimonaka, sadowara-cho, Miyazaki-shi, 880-0293 Japan
Telephone Number	+81-80-9834-1891
Contact Person	Keishiro Kimura

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	NFC Reader
Model Number	MASNFC-5
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 19, 2026
Test Date	July 29 and 30, 2026

2.2 Product Description

General Specification

Rating	DC 12 V
Operating Temperature	-40 deg. C to +85 deg. C

Radio Specification

Equipment Type	Transceiver
Frequency of Operation	13.56 MHz
Type of Modulation	ASK

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 15.225 Operation within the band 13.110-14.010 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)
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)
Electric Field Strength of Fundamental Emission	<FCC> Section 15.225(a) ----- <ISED> RSS-210 B.6 (a)	Complied	Radiated
Spectrum Mask	<FCC> Section 15.225(b)(c) ----- <ISED> RSS-210 B.6 (a)	Complied	Radiated
20 dB Bandwidth	<FCC> Section15.215(c) ----- <ISED> -	Complied	Radiated
Electric Field Strength of Spurious Emission	<FCC> Section 15.209, Section 15.225 (d) ----- <ISED> RSS-210 B.6 (a) RSS-Gen 8.9	Complied	Radiated
Frequency Tolerance	<FCC> Section 15.225(e) ----- <ISED> RSS-210 B.6 (b)	Complied	Radiated

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

*1) The test was not performed since the EUT was DC device.

FCC Part 15.31 (e)

This EUT provides stable voltage constantly to RF part regardless of input voltage.

Therefore, the EUT complies with the requirement.

However, the supply voltage was varied and tested at 85 % and 115 % of the nominal rated supply voltage during frequency tolerance test according to Section 15.225(e).

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	Test Procedure	Results	Remarks
99% emission bandwidth	<FCC> 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	4.8
10 m			dB	4.7
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, Frequency Tolerance

Item	Unit	Calculated Uncertainty (+/-)
Bandwidth (OBW)	%	0.96
Frequency Readout (Frequency counter)	ppm	0.67
Frequency Readout (Spectrum analyzer frequency readout function)	ppm	2.13

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)

The mode is used:

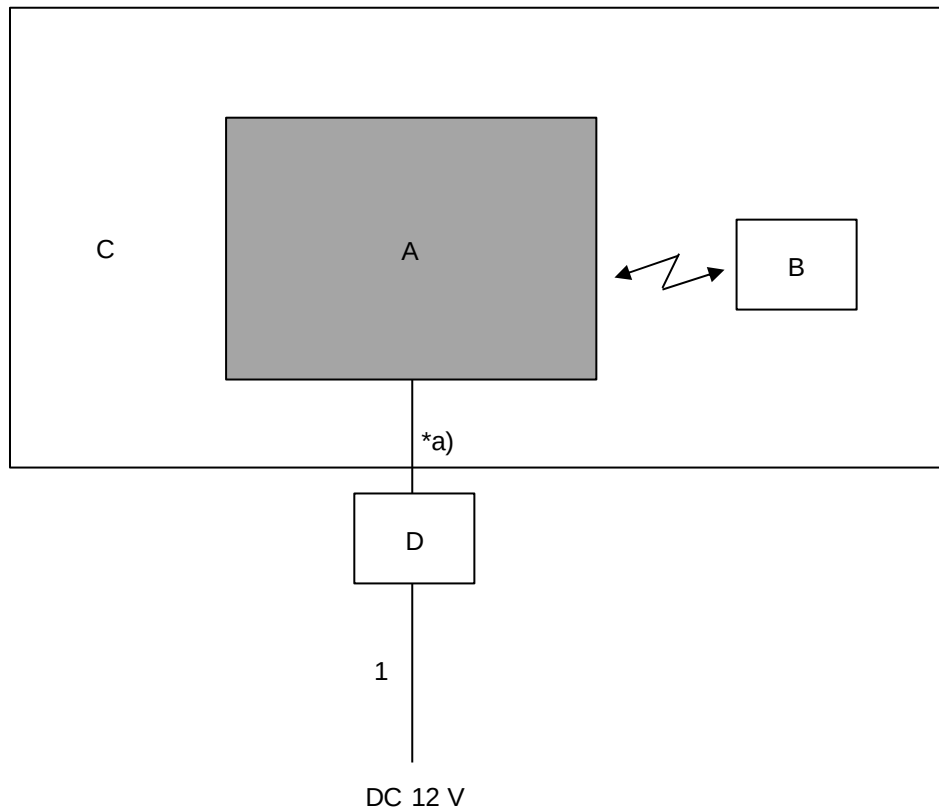
Test mode	Remarks
1) Transmitting mode (Tx) Mod on without Tag	The EUT Transmits and Receives at the same time and there is no receiving mode.
2) Transmitting mode (Tx) Mod on with Tag	
The EUT was operated in a manner similar to typical use during the tests.	
*Power of the EUT was set by the software as follows; Software: 34C_Ver_1.1.0_NoEntryRM120min Version: 1.1.0 (Date: 2026.06.18, 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.	

Test Item	Operating mode
Electric Field Strength of Fundamental Emission	Mode 1, Mode 2
Spectrum Mask	Mode 1, Mode 2
20 dB Bandwidth and 99 % Occupied Bandwidth	Mode 1, Mode 2
Electric Field Strength of Spurious Emission	Mode 1, Mode 2
Frequency Tolerance	Mode 2 ^{*1)}

*1) After the comparison of the test data between with Tag and without Tag, the tests were performed with the worst case.

Frequency Tolerance	
Temperature	-20 deg. C to +50 deg. C: Step 10 deg. C
Voltage	Normal Voltage DC 12 V Maximum Voltage DC 13.8 V (DC 12 V +15 %) Minimum Voltage DC 10.2 V (DC 12 V -15 %)
*This EUT provides stable voltage constantly to RF Part regardless of input voltage.	

4.2 Configuration and peripherals



*a) Item D: 0.3 m from Item A

- * Cabling and setup were taken into consideration and test data was taken under worse case conditions.
- * After comparing the test results of the large and small sizes of Item C, the tests were conducted using the worst-case configuration.
- * Items A and B were tested at a separation distance of 3.5 cm, which was determined to be the worst-case condition based on the pre-check results for radiated emissions below 30 MHz.
- * Items A and B were tested at a separation distance of 0 cm, which was determined to be the worst-case condition based on the pre-check results for radiated emissions above 30 MHz.

Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remark
A	NFC Reader	MASNFC-5	01	Minebea AccessSolutions Inc.	EUT
B	Tag	3MA-2G001-000	00000033	IDEMIA	-
C	Door skin	-	-	Minebea AccessSolutions Inc.	-
D	Vehicle Structure Emulation Filter	VSEF-01	-	-	-

List of Cables Used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	0.9	Unshielded	Unshielded	-

SECTION 5: Radiated Emission (Fundamental, Spurious Emission and Spectrum Mask)

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 ohms. 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 loop antenna is oriented vertically, and its center point is positioned 1 m above ground level.

The field strength radiated from the EUT is measured using a loop antenna connected to a measurement receiver as below procedures.

- 1) With the loop antenna set at vertical-axis angles of 0 deg., 45 deg., 90 deg., 135 deg., and the horizontal position, the EUT is rotated through 360 deg. to detect the maximum noise level. (The horizontal position has no rotation angle; therefore, the result obtained in Procedure 1 is used as the final data.)
- 2) The EUT is rotated through 360 deg. at two antenna angles: the angle that produced the maximum noise level in Procedure 1, and the angle that is reversed by 180 deg. from that angle. The noise levels from these two patterns are compared.
- 3) The EUT is rotated through 360 deg. at three antenna angles: the angle that produced the maximum noise level in Procedure 2, and the angles shifted by +15 deg. and -15 deg. from that angle. The noise levels from these three patterns are compared.
- 4) The EUT and antenna are set to the worst angle identified in Procedure 3, and point data is recorded. This data constitutes the final test result.

Refer to Figure 2 for the definition of the loop antenna angles.

The measurement bandwidth and detector type of the receiver are configured as shown in the table below.

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: $40 \times \log (3 \text{ m} / 300 \text{ m}) = -80 \text{ dB}$
*2) Distance Factor: $40 \times \log (3 \text{ m} / 30 \text{ m}) = -40 \text{ dB}$

Figure 1: Test Setup

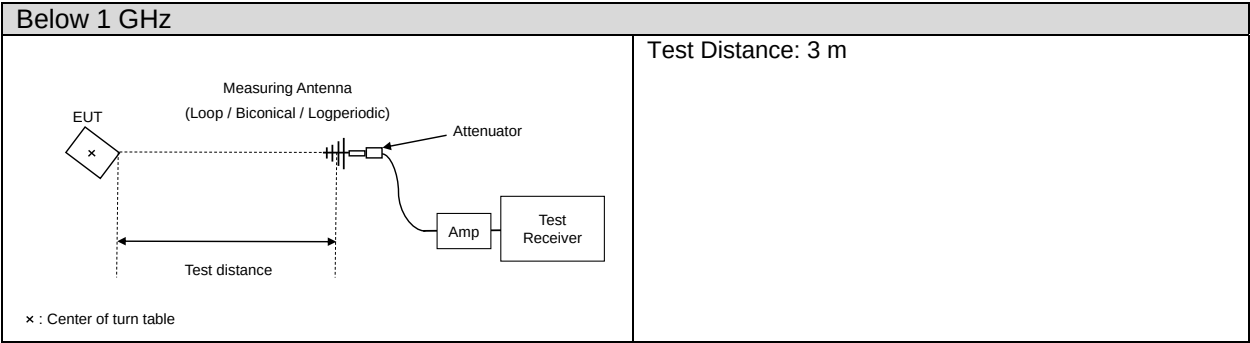
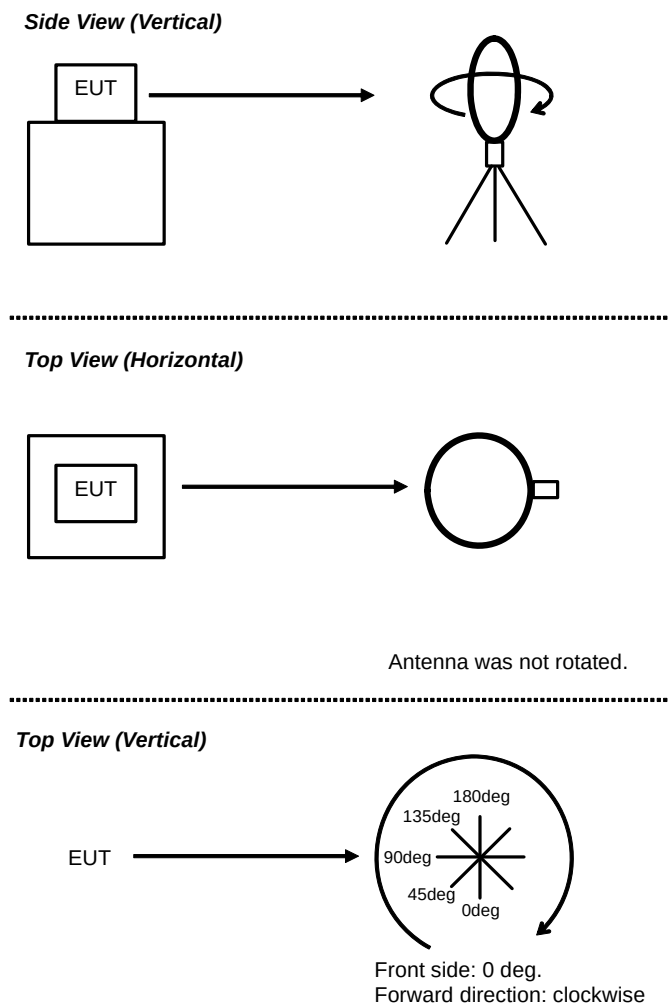


Figure 2: Direction of the Loop Antenna



The rotation angles of the loop antenna are defined in the above figure.

- The carrier level and noise levels were confirmed at each position of X 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: Other tests

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20 dB Bandwidth	2 times to 5 times of OBW	1 to 5 % of OBW *3)	Three times of RBW	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth	1.5 times to 5 times of OBW	1 to 5 % of OBW *3)	Three times of RBW	Auto	Peak *1)	Max Hold *2)	Spectrum Analyzer
Frequency Tolerance	-	-	-	-	-	-	Spectrum Analyzer *3)
*1) The measurement was performed with Peak detector, Max Hold since the duty cycle was not 100 %. *2) The measurement was performed with Max Hold since the duty cycle was not 100 %. Peak hold was applied as Worst-case measurement. *3) The measurement was performed with Marker Frequency Counter Function.							

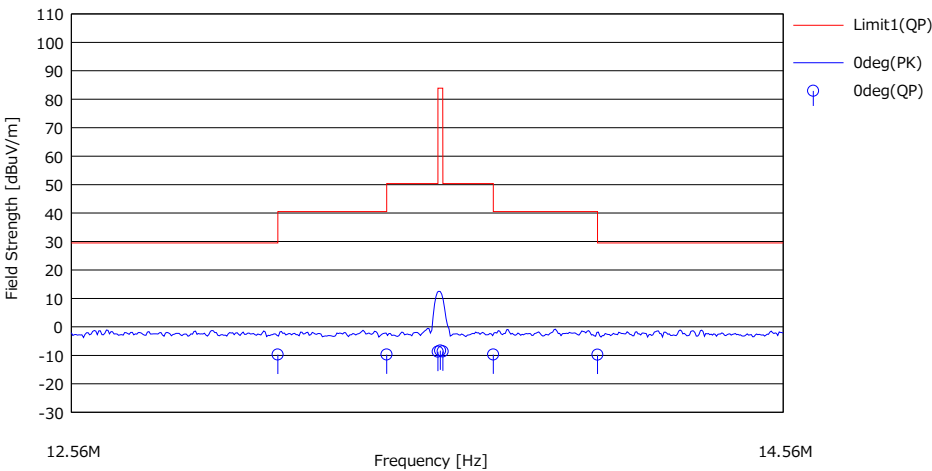
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Fundamental Emission and Spectrum Mask

Mode	1			
Date	Test site	Temperature	Humidity	Engineer
July 29, 2026	SAC4	20 deg. C	60 % RH	Tetsuro Yoshida

Limit : FCC15.225(a), 9-90kHz:PK, 110-490kHz:PK, other:QP



No.	Freq. [MHz]	Reading [QP]	Ant.Fac	Loss	Gain	Result [QP]	Limit [QP]	Margin [QP]	Antenna	Table	Comment
		[dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]		[deg]	
1	13.11000	35.80	19.94	-33.36	32.15	-9.77	29.50	39.27	0deg	0	
2	13.41000	35.80	19.95	-33.35	32.15	-9.75	40.50	50.25	0deg	0	
3	13.55300	36.80	19.96	-33.35	32.15	-8.74	50.40	59.14	0deg	0	
4	13.56000	37.20	19.96	-33.35	32.15	-8.34	83.90	92.24	0deg	0	
5	13.56700	36.90	19.96	-33.35	32.15	-8.64	50.40	59.04	0deg	0	
6	13.71000	35.80	19.96	-33.34	32.15	-9.73	40.50	50.23	0deg	0	
7	14.01000	35.70	19.97	-33.33	32.15	-9.81	29.50	39.31	0deg	0	

RESULT = READING + ANT FACTOR + LOSS (CABLE + Attenuator + Distance Factor*) - GAIN(AMP))
*) Distance Factor: 40 x log (3 m / 30 m) = -40 dB

Result of the fundamental Emission at 3 m without Distance factor

QP

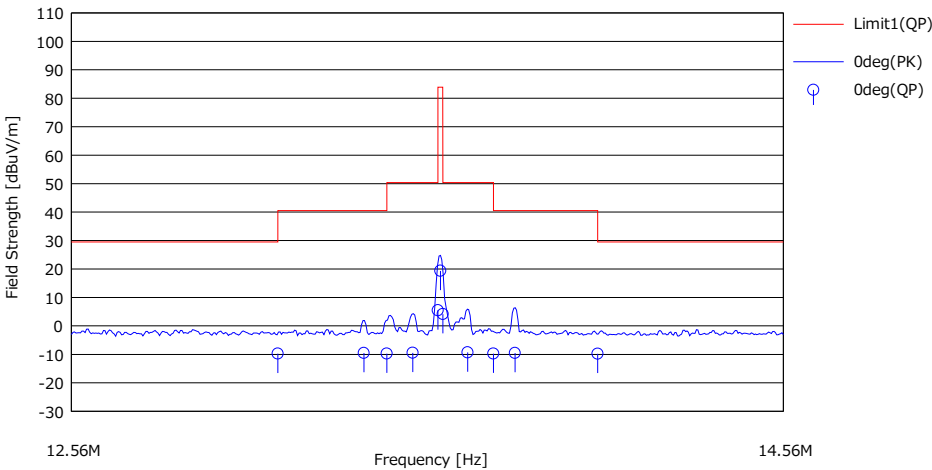
Ant Deg [deg]	Frequency	Detector	Reading	Ant Factor	Loss	Gain	Duty Factor	Result	Limit	Margin	Remark
	[MHz]		[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	
0deg	13.56000	QP	37.20	19.96	6.65	32.15	-	31.66	-	-	Fundamental

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

Fundamental Emission and Spectrum Mask

Mode	2			
Date	Test site	Temperature	Humidity	Engineer
July 29, 2026	SAC4	20 deg. C	60 % RH	Tetsuro Yoshida

Limit : FCC15.225(a), 9-90kHz:PK, 110-490kHz:PK, other:QP



No.	Freq. [MHz]	Reading (QP)	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result (QP)	Limit (QP)	Margin (QP)	Antenna	Table	Comment
		[dBuV]				[dBuV/m]	[dBuV/m]	[dB]			
1	13.11000	35.80	19.94	-33.36	32.15	-9.77	29.50	39.27	0deg	0	
2	13.34625	36.00	19.95	-33.35	32.15	-9.55	40.50	50.05	0deg	0	
3	13.41000	35.80	19.95	-33.35	32.15	-9.75	40.50	50.25	0deg	0	
4	13.48233	36.10	19.95	-33.35	32.15	-9.45	50.40	59.85	0deg	0	
5	13.55300	51.00	19.96	-33.35	32.15	5.46	50.40	44.94	0deg	0	
6	13.56000	64.90	19.96	-33.35	32.15	19.36	83.90	64.54	0deg	0	
7	13.56700	49.70	19.96	-33.35	32.15	4.16	50.40	46.24	0deg	0	
8	13.63683	36.20	19.96	-33.35	32.15	-9.34	50.40	59.74	0deg	0	
9	13.71000	35.80	19.96	-33.34	32.15	-9.73	40.50	50.23	0deg	0	
10	13.77146	36.00	19.96	-33.33	32.15	-9.52	40.50	50.02	0deg	0	
11	14.01000	35.70	19.97	-33.33	32.15	-9.81	29.50	39.31	0deg	0	

RESULT = READING + ANT FACTOR + LOSS (CABLE + Attenuator + Distance Factor*) - GAIN(AMP))
*) Distance Factor: 40 x log (3 m / 30 m) = -40 dB

Result of the fundamental Emission at 3 m without Distance factor

QP

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	13.56000	QP	64.90	19.96	6.65	32.15	-	59.36	-	-	Fundamental

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

Spurious Emission

Mode	1
------	---

Date	Test site	Temperature	Humidity	Engineer
July 29, 2026	SAC4	21 deg. C	59 % RH	Kiyoshiro Okazaki
July 29, 2026	SAC4	20 deg. C	60 % RH	Tetsuro Yoshida

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
0 deg	27.120	QP	34.00	20.56	-33.00	32.13	-	-10.57	29.5	40.07	
Hori.	40.704	QP	21.42	14.56	7.17	32.12	-	11.03	40.0	28.97	
Hori.	67.446	QP	21.10	6.50	7.51	32.10	-	3.01	40.0	36.99	
Hori.	176.364	QP	20.80	15.98	8.54	32.03	-	13.29	43.5	30.23	
Hori.	181.250	QP	20.90	16.17	8.58	32.03	-	13.62	43.5	29.90	
Hori.	542.438	QP	20.20	17.53	10.68	32.24	-	16.17	46.0	29.85	
Hori.	709.008	QP	20.10	19.78	11.41	32.26	-	19.03	46.0	26.99	
Hori.	872.136	QP	19.40	21.62	12.08	31.29	-	21.81	46.0	24.21	
Vert.	40.704	QP	28.10	14.56	7.17	32.12	-	17.71	40.0	22.29	
Vert.	67.446	QP	27.50	6.50	7.51	32.10	-	9.41	40.0	30.59	
Vert.	176.364	QP	21.10	15.98	8.54	32.03	-	13.59	43.5	29.93	
Vert.	542.438	QP	20.20	17.53	10.68	32.24	-	16.17	46.0	29.85	
Vert.	709.008	QP	20.30	19.78	11.41	32.26	-	19.23	46.0	26.79	
Vert.	872.136	QP	19.70	21.62	12.08	31.29	-	22.1	46.0	23.91	

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

Spurious Emission

Mode	2
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Date	Test site	Temperature	Humidity	Engineer
July 29, 2026	SAC4	21 deg. C	59 % RH	Kiyoshiro Okazaki
July 29, 2026	SAC4	20 deg. C	60 % RH	Tetsuro Yoshida

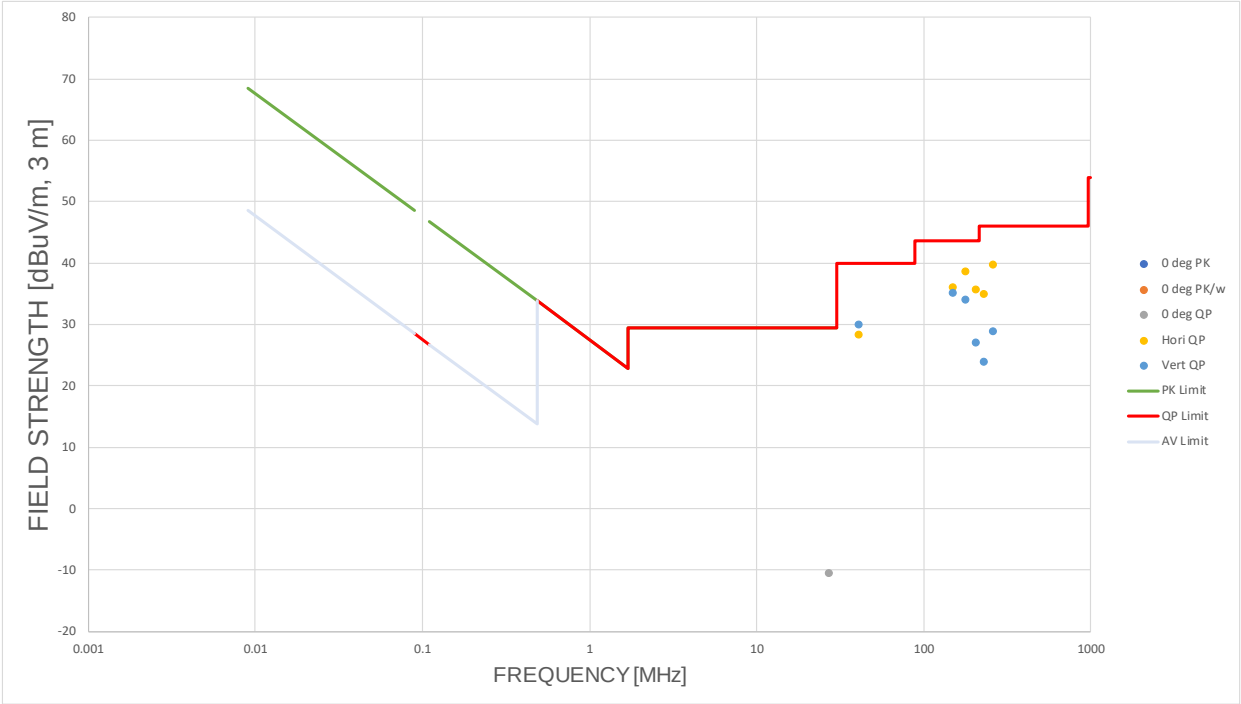
PK or QP

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
0 deg	27.120	QP	34.00	20.56	-33.00	32.13	-	-10.57	29.5	40.07	
Hori.	40.707	QP	38.70	14.56	7.17	32.12	-	28.31	40.0	11.69	
Hori.	149.217	QP	45.00	14.90	8.30	32.05	-	36.15	43.5	7.37	
Hori.	176.370	QP	46.10	15.98	8.54	32.03	-	38.59	43.5	4.93	
Hori.	203.197	QP	47.40	11.47	8.77	32.02	-	35.62	43.5	7.90	
Hori.	230.396	QP	46.60	11.28	9.01	32.02	-	34.87	46.0	11.15	
Hori.	257.598	QP	50.60	12.00	9.25	32.03	-	39.82	46.0	6.20	
Vert.	40.702	QP	40.30	14.56	7.17	32.12	-	29.91	40.0	10.09	
Vert.	149.230	QP	44.00	14.90	8.30	32.05	-	35.15	43.5	8.37	
Vert.	176.377	QP	41.50	15.99	8.54	32.03	-	34.00	43.5	9.52	
Vert.	203.197	QP	38.80	11.47	8.77	32.02	-	27.02	43.5	16.50	
Vert.	230.396	QP	35.70	11.28	9.01	32.02	-	23.97	46.0	22.05	
Vert.	257.598	QP	39.60	12.00	9.25	32.03	-	28.82	46.0	17.20	

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

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

Mode	2			
Date	Test site	Temperature	Humidity	Engineer
July 29, 2026	SAC4	21 deg. C	59 % RH	Kiyoshiro Okazaki
July 29, 2026	SAC4	20 deg. C	60 % RH	Tetsuro Yoshida



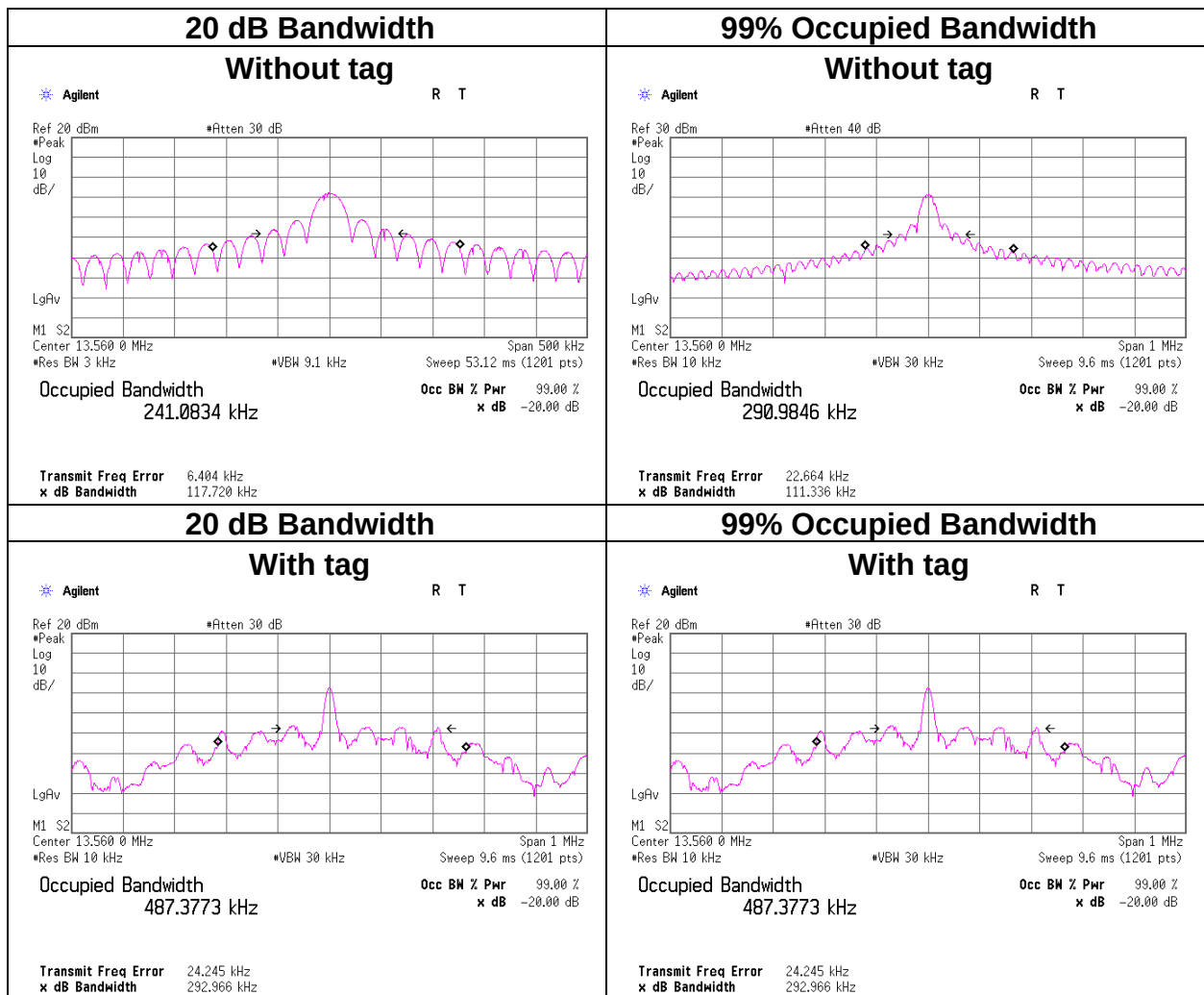
*These plots data contains sufficient number to show the trend of characteristic features for EUT.

20 dB Bandwidth and 99% Occupied Bandwidth

Mode	1, 2
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Date	Test site	Temperature	Humidity	Engineer
July 30, 2026	MR6	21 deg. C	55 % RH	Kiyoshiro Okazaki

Frequency [MHz]	Mode	20dB Bandwidth [kHz]	99% Occupied Bandwidth [kHz]
13.56	Without Tag	117.720	290.9846
	With Tag	292.966	487.3773



Frequency Tolerance

Mode	2
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Date	Test site	Temperature	Humidity	Engineer
July 30, 2026	MR6	21 deg. C	55 % RH	Kiyoshiro Okazaki

Test condition		Tested timing	Measured frequency [MHz]	Frequency error [MHz]	Result		Limit
Temp. [deg. C]	Voltage [V]				[%]	[ppm]	
50	12	Power on	13.559891	-0.000109	-0.00080	-8.0	0.01
		+ 2 min.	13.559575	-0.000425	-0.00313	-31.3	0.01
		+ 5 min.	13.559663	-0.000337	-0.00249	-24.9	0.01
		+ 10 min.	13.559739	-0.000261	-0.00192	-19.2	0.01
40	12	Power on	13.559808	-0.000192	-0.00142	-14.2	0.01
		+ 2 min.	13.559495	-0.000505	-0.00372	-37.2	0.01
		+ 5 min.	13.559835	-0.000165	-0.00122	-12.2	0.01
		+ 10 min.	13.559285	-0.000715	-0.00527	-52.7	0.01
30	12	Power on	13.559995	-0.000005	-0.00004	-0.4	0.01
		+ 2 min.	13.559631	-0.000369	-0.00272	-27.2	0.01
		+ 5 min.	13.559933	-0.000067	-0.00049	-4.9	0.01
		+ 10 min.	13.559397	-0.000603	-0.00445	-44.5	0.01
20	12	Power on	13.560305	0.000305	0.00225	22.5	0.01
		+ 2 min.	13.559712	-0.000288	-0.00212	-21.2	0.01
		+ 5 min.	13.559787	-0.000213	-0.00157	-15.7	0.01
		+ 10 min.	13.560741	0.000741	0.00546	54.6	0.01
20	10.2 (12V -15%)	Power on	13.560051	0.000051	0.00038	3.8	0.01
		+ 2 min.	13.560253	0.000253	0.00187	18.7	0.01
		+ 5 min.	13.560085	0.000085	0.00063	6.3	0.01
		+ 10 min.	13.560077	0.000077	0.00057	5.7	0.01
20	13.8 (12V +15%)	Power on	13.560317	0.000317	0.00234	23.4	0.01
		+ 2 min.	13.560260	0.000260	0.00192	19.2	0.01
		+ 5 min.	13.560056	0.000056	0.00041	4.1	0.01
		+ 10 min.	13.560069	0.000069	0.00051	5.1	0.01
10	12	Power on	13.560085	0.000085	0.00063	6.3	0.01
		+ 2 min.	13.560240	0.000240	0.00177	17.7	0.01
		+ 5 min.	13.560858	0.000858	0.00633	63.3	0.01
		+ 10 min.	13.560172	0.000172	0.00127	12.7	0.01
0	12	Power on	13.560305	0.000305	0.00225	22.5	0.01
		+ 2 min.	13.560421	0.000421	0.00310	31.0	0.01
		+ 5 min.	13.560141	0.000141	0.00104	10.4	0.01
		+ 10 min.	13.560283	0.000283	0.00209	20.9	0.01
-10	12	Power on	13.560209	0.000209	0.00154	15.4	0.01
		+ 2 min.	13.560325	0.000325	0.00240	24.0	0.01
		+ 5 min.	13.560339	0.000339	0.00250	25.0	0.01
		+ 10 min.	13.560423	0.000423	0.00312	31.2	0.01
-20	12	Power on	13.560357	0.000357	0.00263	26.3	0.01
		+ 2 min.	13.560170	0.000170	0.00125	12.5	0.01
		+ 5 min.	13.560249	0.000249	0.00184	18.4	0.01
		+ 10 min.	13.560201	0.000201	0.00148	14.8	0.01

Calculation formula: Frequency error = Measured frequency - Tested frequency
Result [%] = Frequency error / Tested frequency * 100

Tested frequency: 13.56 MHz
Limit (+/-): 0.01 % (+/- 100ppm)

*The test was begun from 50 deg. C and the temperature was lowered each 10 deg. C.

APPENDIX 2: Test instruments

Test Equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141222	Coaxial Cable	Fujikura,HP,Mini-Circuits,Fujikura	3D-2W(12m)/ 5D-2W(5m)/ 5D-2W(0.8m)/ 5D-2W(1m)	-	02/11/2026	12
RE	141267	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-192	09/12/2025	12
RE	141397	Coaxial Cable	UL-ISE EMC	-	-	11/12/2025	12
RE	141424	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+BBA9106	1915	10/21/2025	12
RE	141558	Digital Tester(TRUE RMS MULTIMETER)	Fluke Corporation	115	17930030	05/07/2026	12
RE	141583	Pre Amplifier	SONOMA INSTRUMENT	310	260833	04/16/2026	12
RE	141885	Spectrum Analyzer	Keysight Technologies Inc	E4448A	US44300523	04/07/2026	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	06/11/2026	12
RE	142011	AC4_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	07/10/2025	24
RE	142230	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	202512	Loop Antenna	UL-ISE	-	-	-	-
RE	207745	Coaxial Cable	UL-ISE	-	-	03/17/2026	12
RE	220646	Attenuator	Huber+Suhner	6806_N-50-1	-	03/06/2026	12
RE	244710	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202104	01/14/2026	12
RE	244712	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202106	01/13/2026	12
RE	252514	Active Loop Antenna	Schwarzbeck Mess-Elektronik OHG	FMZB 1519-60 D	1519-60 D-067	10/14/2025	12
RE	272098	DIGITAL MULTIMETER	HIOKI E. E. CORPORATION	DT4255	250902199	11/27/2025	12
FT	141429	Temperature and Humidity Chamber	Espec	PL-2KP	14015723	08/28/2025	12
FT	141558	Digital Tester(TRUE RMS MULTIMETER)	Fluke Corporation	115	17930030	05/07/2026	12
FT	141885	Spectrum Analyzer	Keysight Technologies Inc	E4448A	US44300523	04/07/2026	12
FT	202512	Loop Antenna	UL-ISE	-	-	-	-
FT	244712	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202106	01/13/2026	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

FT: Frequency Tolerance