

RADIO TEST REPORT

Test Report No. 16322080S-R1

Customer	NIDEC INSTRUMENTS CORPORATION
Description of EUT	PIN on Glass reader
Model Number of EUT	GPN600
FCC ID	2BOKGGPN600008
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	June 10, 2026
Remarks	-

Representative test engineerHiromasa Sato
Engineer**Approved by**Kazutaka Takeyama
Leader

CERTIFICATE 1266.03

- ☐ 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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REVISION HISTORY

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	16322080S	June 3, 2026	-
1	16322080S-R1	June 10, 2026	Correction the sentence in 3.3 From "However, the supply voltage was varied and tested at 95 % and 105 % of the nominal rated supply voltage during frequency tolerance test according to Section 15.225(e)." to "However, the test was carried out with minimum and maximum rating of the product specification according to ANSI C63.10-2020, 5.13 b) because the rating range of the EUT is - 10 % to +10 %."

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	NIDEC INSTRUMENTS CORPORATION
Address	5329,Shimosuwa-machi, Suwa-gun, Nagano, 393-8511 Japan
Telephone Number	+81-266-27-4715
Contact Person	Junro Takeuchi

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	PIN on Glass reader
Model Number	GPN600
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 30 and May 11, 2026
Test Date	May 11 and 12, 2026

2.2 Product Description

General Specification

Rating	DC 24 V $\pm$ 10 %
Operating Temperature	-20 deg. C to +55 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.

* The customer has declared that the EUT complies with FCC Part 15 Subpart B as SDoC.

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 ISED
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	Complied	-
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.

FCC Part 15.31 (e)

The EUT has its own regulator.

The EUT is constantly provided with voltage through the regulator regardless of input voltage.

Therefore, this EUT complies with the requirement.

However, the test was carried out with minimum and maximum rating of the product specification according to ANSI C63.10-2020, 5.13 b) because the rating range of the EUT is -10 % to +10 %.

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	<ISED> RSS-Gen 6.7	-	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 $k = 2$.

Item	Frequency range	Uncertainty (+/-)
Conducted Emission (AC Mains) LISN	150 kHz to 30 MHz	3.2 dB
Radiated Emission (Measurement distance: 3 m)	9 kHz to 30 MHz	3.4 dB
	30 MHz to 200 MHz	4.8 dB
	200 MHz to 1 GHz	6.0 dB
	1 GHz to 6 GHz	4.7 dB
	6 GHz to 18 GHz	5.3 dB
	18 GHz to 40 GHz	5.4 dB

Item	Uncertainty (+/-)
Frequency Measurement (13.56 MHz)	1.4×10^{-7}
Bandwidth Measurement	0.012 %
Duty Cycle and Time Measurement	0.27 %
Temperature	0.94 deg.C.
Humidity	3.2 %
Voltage	0.92 %

3.6 Test Location

UL Japan, Inc. Shonan EMC Lab.

1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 Japan

Telephone: +81-463-50-6400

A2LA Certificate Number: 1266.03

(FCC test firm registration number: 626366, ISED lab company number: 2973D / CAB identifier: JP0001)

Test room	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
No.1 Semi-anechoic chamber (SAC1)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.2 Semi-anechoic chamber (SAC2)	20.6 x 11.3 x 7.65	20.6 x 11.3	10 m
No.3 Semi-anechoic chamber (SAC3)	12.7 x 7.7 x 5.35	12.7 x 7.7	5 m
No.4 Semi-anechoic chamber (SAC4)	8.1 x 5.1 x 3.55	8.1 x 5.1	-
Wireless anechoic chamber 1 (WAC1)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
Wireless anechoic chamber 2 (WAC2)	9.5 x 6.0 x 5.4	9.5 x 6.0	3 m
No.1 Shielded room (SR1)	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.2 Shielded room (SR2)	6.8 x 4.1 x 2.7	6.8 x 4.1	-
No.3 Shielded room (SR3)	6.3 x 4.7 x 2.7	6.3 x 4.7	-
No.4 Shielded room (SR4)	4.4 x 4.7 x 2.7	4.4 x 4.7	-
No.5 Shielded room (SR5)	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.6 Shielded room (SR6)	7.8 x 6.4 x 2.7	7.8 x 6.4	-
No.8 Shielded room (SR8)	3.45 x 5.5 x 2.4	3.45 x 5.5	-
No.1 Measurement room (MR1)	2.55 x 4.1 x 2.5	-	-
No.2 Measurement room (MR2)	4.5 x 3.5 x 2.5	-	-
Wireless shielded room 1 (WSR1)	3.0 x 4.5 x 2.7	3.0 x 4.5	-
Wireless shielded room 2 (WSR2)	3.0 x 4.5 x 2.7	3.0 x 4.5	-

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) (13.56 MHz)	The EUT Transmits and Receives at the same time and there is no receiving mode.
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: Card Reader Utility Version: 3245-02g (Date: 2026.05 11, Storage location: Driven by connected PC)	
*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*
Conducted Emission	Tx, without Tag
Electric Field Strength of Fundamental Emission	Tx, without Tag
Spectrum Mask	Tx, without Tag
20 dB Bandwidth and 99 % Occupied Bandwidth	Tx, with Tag
Electric Field Strength of Spurious Emission	Tx, with Tag (Above 30MHz) Tx, without Tag (Below 30 MHz)
Frequency Tolerance	Tx, without Tag

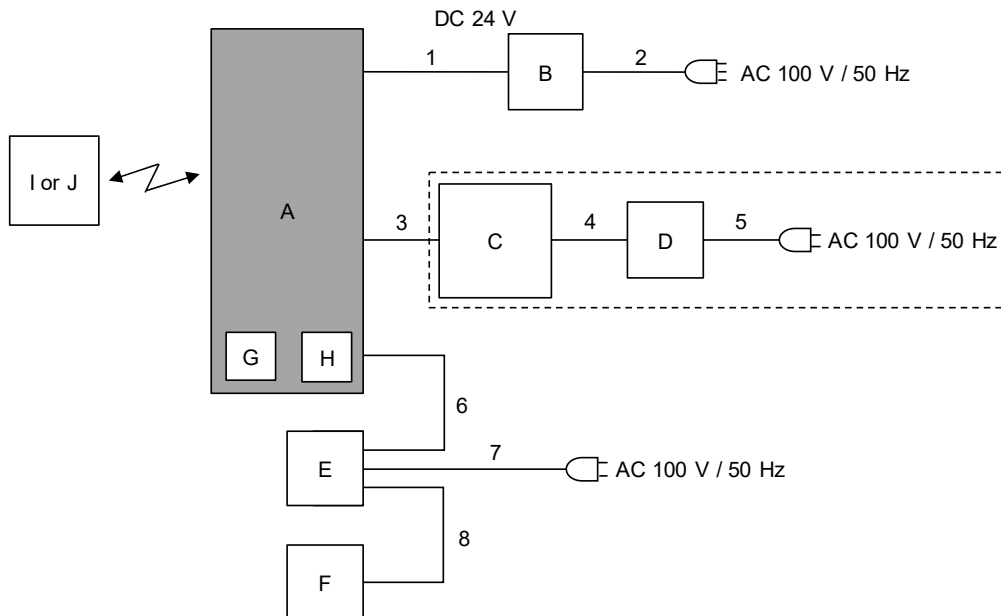
* After the comparison of the test data between with Tag and without Tag, the tests were performed with the worst case.

Frequency Tolerance	
Temperature	-20 deg. C to +50 deg.C Step 10 deg. C
Voltage *1)	Normal Voltage DC 24 V Maximum Voltage DC 26.4 V (DC 24 V +10 %) Minimum Voltage DC 21.6 V (DC 24 V -10 %)

*1) Since the EUT specifications are DC 24 V $\pm$ 10 %, the tests were performed within that range.

4.2 Configuration and peripherals

[Radiated Emission test and Other tests]



----- : Under the ground plane (Radiated Emission test only)

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

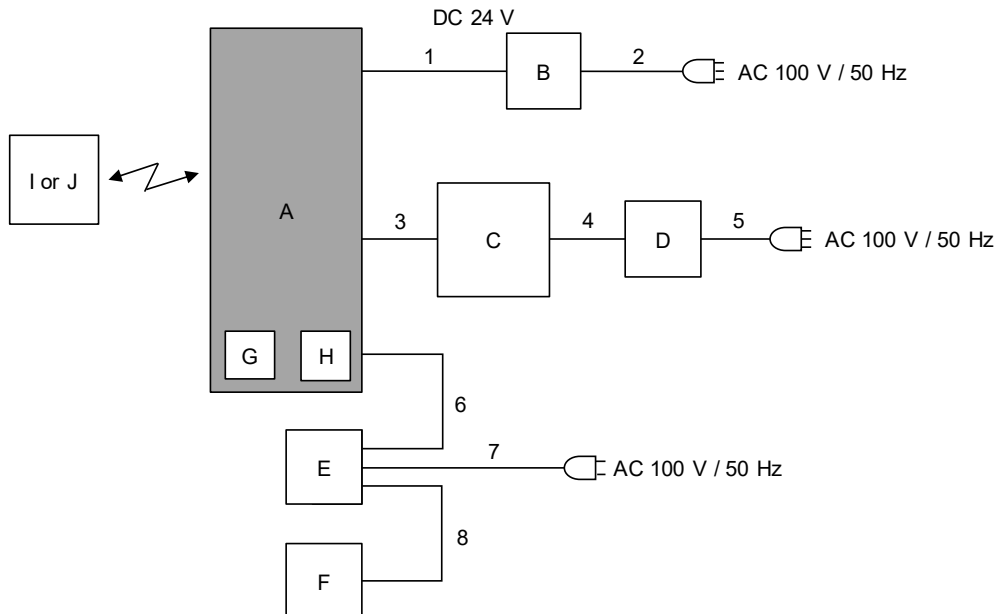
Description of EUT and Support Equipment

No.	Item	Model number	Serial Number	Manufacturer	Remark
A	PIN on Glass reader	GPN600	R-6010005	NIDEC INSTRUMENTS CORPORATION	EUT
B	Power Supply (DC)	PAN35-10A	DE001677	KIKUSUI	-
C	Laptop Computer	HP 255 G10	5CD4407TJY	HP	-
D	AC Adaptor	TPN-CA14	WHGRE0EV2JWJRT	HP	-
E	Active Speaker	BSPKMA01	A90514 (R)	BUFFALO	-
F	Active Speaker	BSPKMA01	A90514 (L)	BUFFALO	-
G	SIM Card	Hercules	No.1	Samsung	-
H	SIM Card	Hercules	No.2	Samsung	-
I	Tag (Type A)	Version 2.0	12FAB_001	FIME	-
J	Tag (Type B)	Version 1.0	21FAB1209D	FIME	-

List of Cables Used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC	5.0	Unshielded	Unshielded	-
2	AC	2.0	Unshielded	Unshielded	-
3	USB	4.0	Shielded	Shielded	-
4	DC	0.9	Unshielded	Unshielded	-
5	AC	1.8	Unshielded	Unshielded	-
6	Speaker	1.0	Unshielded	Unshielded	-
7	AC	1.0	Unshielded	Unshielded	-
8	Speaker	0.9	Unshielded	Unshielded	-

[Conducted Emission test]



* Cabling and setup 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	Remark
A	PIN on Glass reader	GPN600	R-6010005	NIDEC INSTRUMENTS CORPORATION	EUT
B	Power Supply (DC)	PAN35-10A	DE001677	KIKUSUI	-
C	Laptop Computer	E1Q57PA#ABJ	5CB3310KHW	HP	-
D	AC Adapter	PPP009L-E	3453442403	HP	-
E	Active Speaker	BSPKMA01	A90514 (R)	BUFFALO	-
F	Active Speaker	BSPKMA01	A90514 (L)	BUFFALO	-
G	SIM Card	Hercules	No.1	Samsung	-
H	SIM Card	Hercules	No.2	Samsung	-
I	Tag (Type A)	Version 2.0	12FAB 001	FIME	-
J	Tag (Type B)	Version 1.0	21FAB1209D	FIME	-

List of Cables Used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC	5.0	Unshielded	Unshielded	-
2	AC	2.0	Unshielded	Unshielded	-
3	USB	4.0	Shielded	Shielded	-
4	DC	1.7	Unshielded	Unshielded	-
5	AC	0.9	Unshielded	Unshielded	-
6	Speaker	1.0	Unshielded	Unshielded	-
7	AC	1.0	Unshielded	Unshielded	-
8	Speaker	0.9	Unshielded	Unshielded	-

SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on the platform of nominal size 1.0 m by 2.0 m, raised 0.8 m above the conducting ground plane.

The rear of the platform was located 40 cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of the platform. All other surfaces of the platform were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

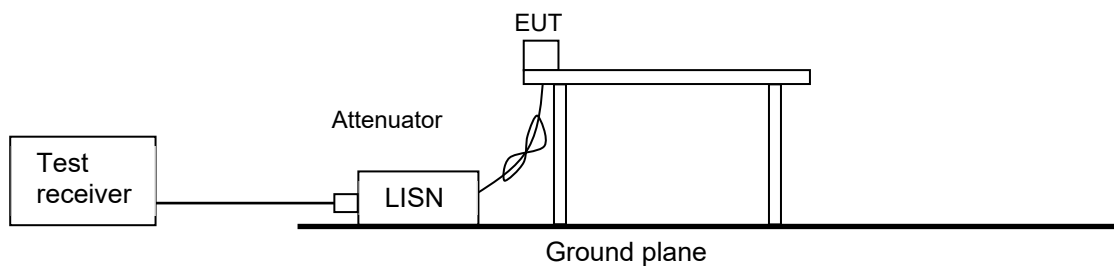
I/O cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. All unused 50 ohm connectors of the LISN (AMN) were resistivity terminated in 50 ohm when not connected to the measuring equipment.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Shielded Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Figure 1: Test Setup



Test results are rounded off and limits are rounded down, so some differences might be observed.

Detector	: QP and CISPR AV
Measurement range	: 0.15 MHz to 30 MHz
Test data	: APPENDIX
Test result	: Pass

SECTION 6: Radiated Emission (Fundamental, Spurious Emission and Spectrum Mask)

Test Procedure

EUT was placed on the platform of nominal size, 1.0 m by 2.0 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 3 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 300 MHz	300 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 2: Test Setup

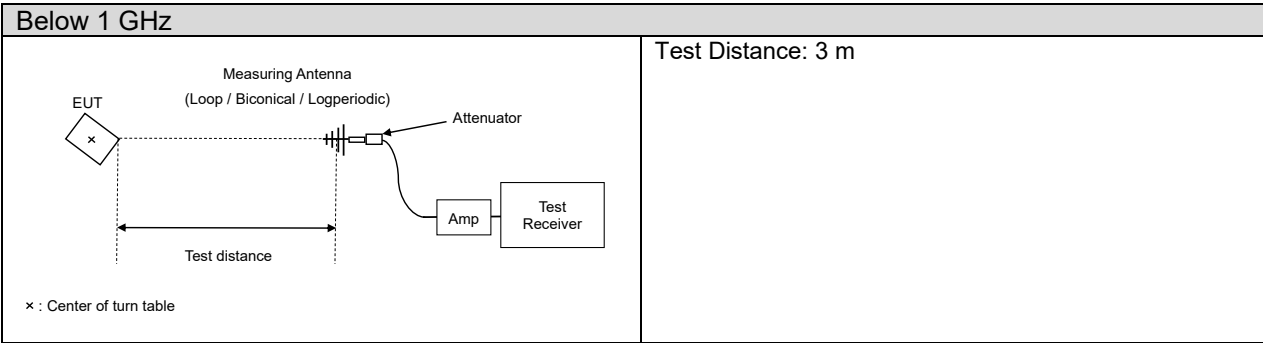
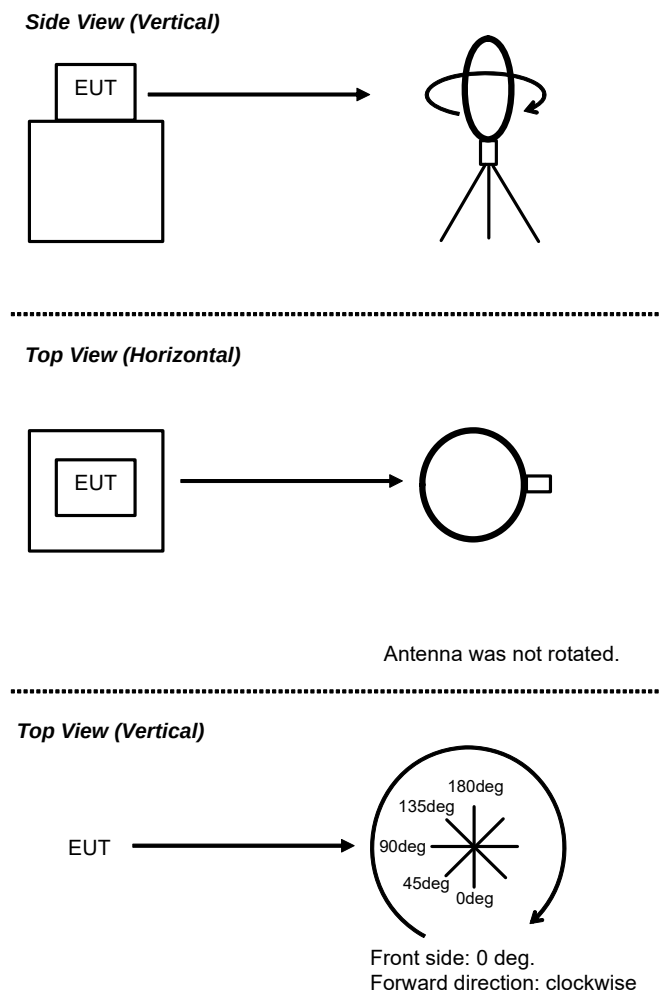


Figure 3: Direction of the Loop Antenna



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 0 deg., 15 deg. of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

Test results are rounded off and limits are rounded down, so some differences might be observed.

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

SECTION 7: Other tests

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20 dB Bandwidth	1 MHz	10 kHz	30 kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99 % Occupied Bandwidth	Enough width to display emission skirts	1 to 5 % of OBW	Three times of RBW	Auto	Peak *1)	Max Hold *1)	Spectrum Analyzer
Frequency Tolerance	-	-	-	-	-	-	Spectrum Analyzer *2)

*1) The measurement was performed with Peak detector, Max Hold since the duty cycle was not 100 %.
Peak hold was applied as Worst-case measurement.

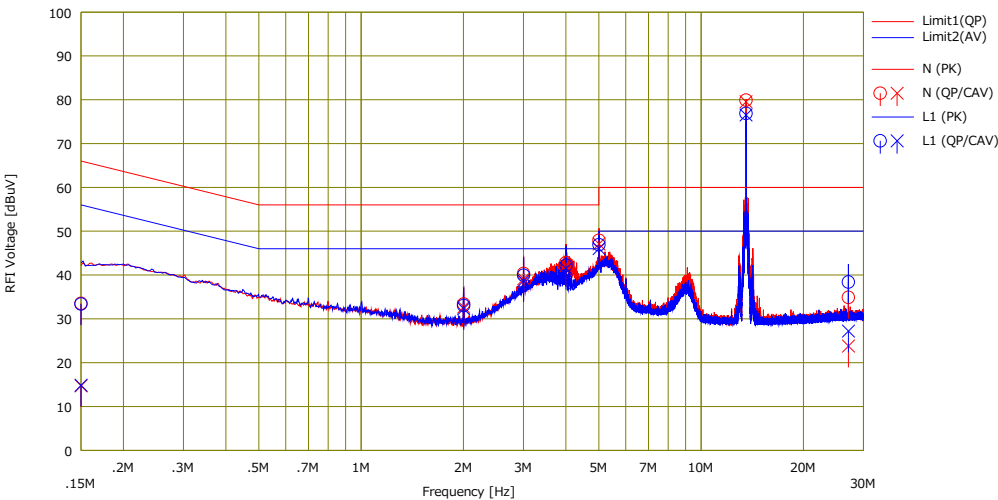
*2) The measurement was performed with Marker Frequency Counter Function.

Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

Mode	Tx, without Tag			
Date	Test site	Temperature	Humidity	Engineer
May 12, 2026	SR1	25 deg. C	50 % RH	Hiomasa Sato

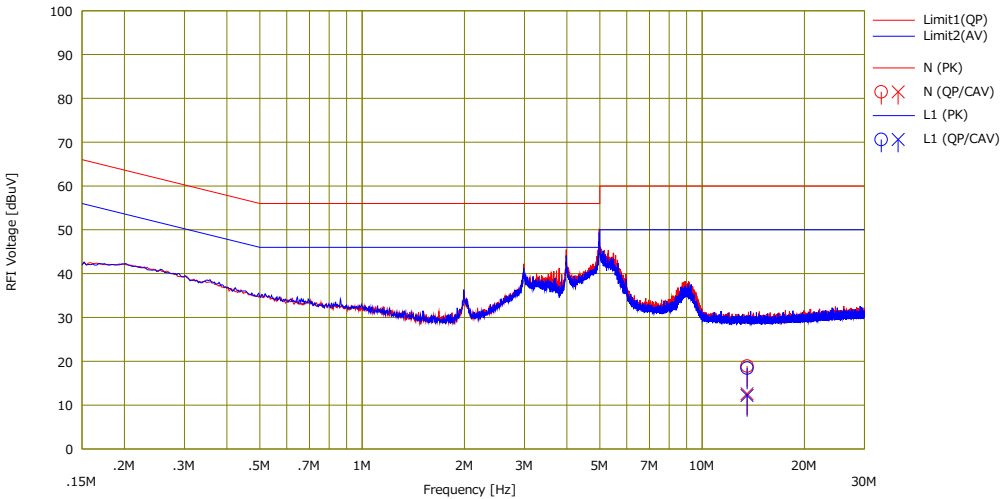


No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<CAV> [dBuV]		<QP> [dBuV]	<CAV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	18.39	-0.44	15.13	33.52	14.69	66.00	56.00	32.4	41.3	N	
2	2.00330	18.10	17.41	15.28	33.38	32.69	56.00	46.00	22.6	13.3	N	
3	3.00460	24.98	23.78	15.34	40.32	39.12	56.00	46.00	15.6	6.8	N	
4	4.00580	27.39	26.73	15.43	42.82	42.16	56.00	46.00	13.1	3.8	N	
5	5.00720	32.44	31.62	15.48	47.92	47.10	60.00	50.00	12.0	2.9	N	
6	13.56000	64.00	63.63	15.90	79.90	79.53	60.00	50.00	-19.9	-29.6	N	13.56 MHz is NFC Carrier
7	27.12000	18.45	7.35	16.44	34.89	23.79	60.00	50.00	25.1	26.2	N	
8	0.15000	18.20	-0.32	15.16	33.36	14.84	66.00	56.00	32.6	41.1	L1	
9	2.00350	17.72	17.00	15.30	33.02	32.30	56.00	46.00	22.9	13.7	L1	
10	3.00440	24.59	23.33	15.36	39.95	38.69	56.00	46.00	16.0	7.3	L1	
11	4.00580	26.76	26.06	15.42	42.18	41.48	56.00	46.00	13.8	4.5	L1	
12	5.00700	31.41	30.55	15.49	46.90	46.04	60.00	50.00	13.1	3.9	L1	
13	13.56000	61.04	60.67	15.83	76.87	76.50	60.00	50.00	-16.9	-26.5	L1	13.56 MHz is NFC Carrier
14	27.12000	22.16	10.97	16.23	38.39	27.20	60.00	50.00	21.6	22.8	L1	

Calculation: Result[dBuV]=Reading[dBuV]+C.Fac(LISN+Cable+ATT)[dB]
LISN(AMN):LIMS ID 145539

Conducted Emission

Mode	Tx, without Tag, Antenna Terminated			
Date	Test site	Temperature	Humidity	Engineer
May 12, 2026	SR1	25 deg. C	50 % RH	Hiromasu Sato



No.	Freq. [MHz]	Reading		C.Fac	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<CAV> [dBuV]		<QP> [dBuV]	<CAV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	13.56000	3.00	-3.32	15.90	18.90	12.58	60.00	50.00	41.1	37.4	N	13.56 MHz is NFC Carrier
2	13.56000	2.60	-3.63	15.83	18.43	12.20	60.00	50.00	41.5	37.8	L1	13.56 MHz is NFC Carrier

Calculation: Result[dBuV]=Reading[dBuV]+C.Fac(LISN+Cable+ATT)[dB]
LISN(AMN):LIMS ID 145539

Fundamental Emission and Spectrum Mask

Mode	Tx, without Tag			
Date	Test site	Temperature	Humidity	Engineer
May 11, 2026	SAC3	24 deg. C	44 % RH	Hiromasa Sato
Remarks	EUT: 15 deg., without Tag, Vertical polarization (antenna angle) of the worst case: 0 deg.			

Fundamental emission

No.	FREQ [MHz]	Test Receiver Reading		Antenna Factor [dB/m]	Loss [dB]	AMP GAIN [dB]	Distance factor [dB]	RESULT		LIMIT (30 m) [dBuV/m]	MARGIN	
		Hor [dBuV]	Ver [dBuV]					Hor [dBuV/m]	Ver [dBuV/m]		Hor [dB]	Ver [dB]
1	13.560	86.7	96.0	9.4	6.5	32.2	-40.0	30.4	39.7	83.9	53.5	44.2

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant. Fac[dB/m] + Loss(Cable+ATT)[dB] - Gain(AMP)[dB] + Distance factor[dB]

Distance factor: $40 \times \log(3 \text{ m} / 30 \text{ m}) = -40 \text{ dB}$

Spurious emission within the band

No.	FREQ [MHz]	Test Receiver Reading		Antenna Factor [dB/m]	Loss [dB]	AMP GAIN [dB]	Distance factor [dB]	RESULT		LIMIT (30 m) [dBuV/m]	MARGIN	
		Hor [dBuV]	Ver [dBuV]					Hor [dBuV/m]	Ver [dBuV/m]		Hor [dB]	Ver [dB]
1	13.110	30.6	38.7	9.5	6.5	32.2	-40.0	-25.7	-17.6	29.5	55.2	47.1
2	13.347	57.6	67.1	9.5	6.5	32.2	-40.0	1.3	10.8	40.5	39.2	29.7
3	13.410	55.1	64.3	9.5	6.5	32.2	-40.0	-1.3	8.0	40.5	41.8	32.5
4	13.484	57.0	66.3	9.5	6.5	32.2	-40.0	0.7	10.0	50.4	49.7	40.4
5	13.553	74.5	83.8	9.4	6.5	32.2	-40.0	18.1	27.4	50.4	32.3	23.0
6	13.567	69.6	78.9	9.4	6.5	32.2	-40.0	13.3	22.6	50.4	37.1	27.8
7	13.631	57.4	66.7	9.4	6.5	32.2	-40.0	1.0	10.3	50.4	49.4	40.1
8	13.710	54.1	63.4	9.4	6.5	32.2	-40.0	-2.2	7.1	40.5	42.8	33.4
9	13.770	57.3	66.5	9.4	6.5	32.2	-40.0	0.9	10.1	40.5	39.6	30.4
10	14.010	29.6	37.3	9.4	6.5	32.2	-40.0	-26.8	-19.1	29.5	56.3	48.6

Calculation: Result[dBuV/m] = Reading[dBuV] + Ant. Fac[dB/m] + Loss(Cable+ATT)[dB] - Gain(AMP)[dB] + Distance factor[dB]

Distance factor: $40 \times \log(3 \text{ m} / 30 \text{ m}) = -40 \text{ dB}$

Outside filed strength frequencies

- Fc±7 kHz: 13.553 MHz to 13.567 MHz
- Fc±150 kHz: 13.410 MHz to 13.710 MHz
- Fc±450 kHz: 13.110 MHz to 14.010 MHz
- Fc = 13.56 MHz

Spurious Emission

Mode	Tx
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
May 11, 2026	SAC3	21 deg. C	43 % RH	Shiro Kobayashi	Above 30 MHz
May 11, 2026	SAC3	24 deg. C	44 % RH	Hiromasa Sato	Below 30 MHz

Remarks	Above 30 MHz: EUT: 15 deg., with Tag NFC Type A Below 30 MHz: EUT: 15 deg., without Tag, Vertical polarization (antenna angle) of the worst case: 90 deg.
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Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Distance Factor [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	12.99	QP	43.0	9.5	6.5	32.2	-40.0	-13.3	29.5	42.8	-	187	* Limit: 30 m
Hori.	14.19	QP	44.0	19.0	6.3	32.2	-40.0	-2.9	29.5	32.4	-	187	* Limit: 30 m
Hori.	27.12	QP	47.2	7.0	6.8	32.2	-40.0	-11.3	29.5	40.8	-	277	* Limit: 30 m
Hori.	40.678	QP	34.3	14.6	6.8	32.2	0.0	23.5	40.0	16.5	327	177	
Hori.	162.713	QP	38.5	15.4	8.1	32.1	0.0	29.9	43.5	13.6	188	176	
Hori.	384.001	QP	48.0	16.6	9.4	32.0	0.0	42.0	46.0	4.0	100	87	
Hori.	448.001	QP	45.5	17.4	9.8	32.0	0.0	40.6	46.0	5.4	100	201	
Hori.	768.002	QP	35.7	21.5	11.2	31.8	0.0	36.5	46.0	9.5	100	201	
Vert.	12.99	QP	52.1	9.5	6.5	32.2	-40.0	-4.2	29.5	33.7	-	195	* Limit: 30 m
Vert.	14.19	QP	52.7	9.4	6.5	32.2	-40.0	-3.7	29.5	33.2	-	195	* Limit: 30 m
Vert.	27.12	QP	60.4	7.0	6.8	32.2	-40.0	1.8	29.5	27.7	-	228	* Limit: 30 m
Vert.	40.678	QP	47.3	14.6	6.8	32.2	0.0	36.5	40.0	3.5	100	283	
Vert.	54.238	QP	48.6	9.8	6.9	32.2	0.0	33.0	40.0	7.0	100	358	
Vert.	62.442	QP	45.9	7.7	6.7	32.2	0.0	28.1	40.0	11.9	100	269	
Vert.	67.798	QP	44.1	6.9	6.8	32.2	0.0	25.5	40.0	14.5	100	269	
Vert.	119.28	QP	44.0	13.0	7.5	32.2	0.0	32.3	43.5	11.2	100	72	
Vert.	135.59	QP	40.6	14.2	7.8	32.1	0.0	30.4	43.5	13.1	100	81	
Vert.	384.00	QP	45.5	16.6	9.4	32.0	0.0	39.5	46.0	6.5	142	148	
Vert.	448.00	QP	44.3	17.4	9.8	32.0	0.0	39.4	46.0	6.6	111	306	
Vert.	640.00	QP	42.0	20.0	10.6	32.0	0.0	40.6	46.0	5.4	100	32	
Vert.	768.00	QP	36.2	21.5	11.2	31.8	0.0	37.0	46.0	9.0	100	18	

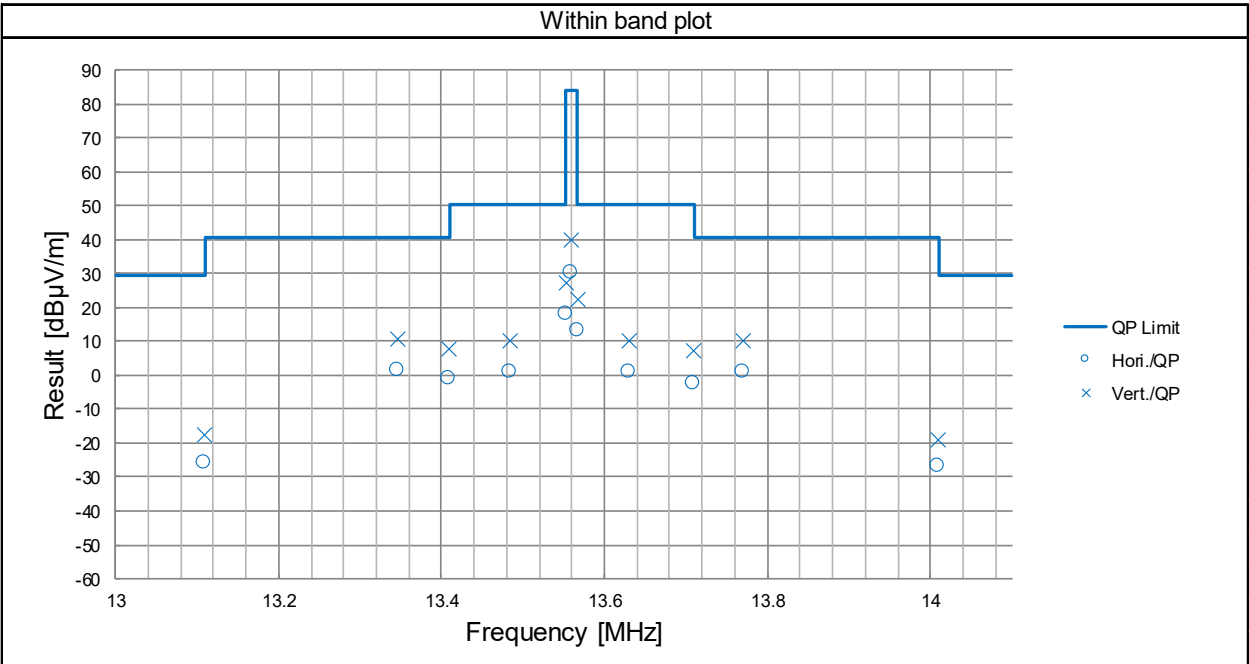
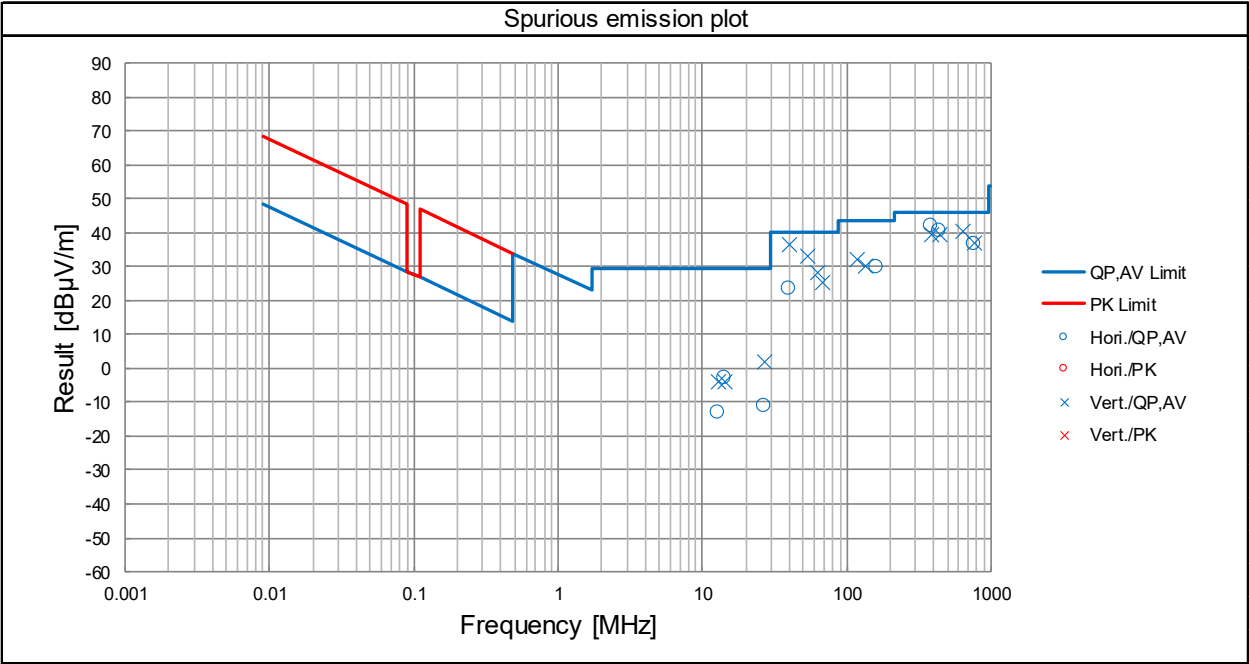
Result = Reading + Ant Factor + Loss (Cable+ATT+ΔAF(above 30 MHz)) - Gain(Amplifier) + Distance factor(below 30 MHz)

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

* Carrier level (Result at 3 m): Hor= 70.4 dBuV/m, Ver= 79.7 dBuV/m

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

Mode	Tx			
Date	Test site	Temperature	Humidity	Engineer
May 11, 2026	SAC3	21 deg. C	43 % RH	Shiro Kobayashi
May 11, 2026	SAC3	24 deg. C	44 % RH	Hiromasa Sato

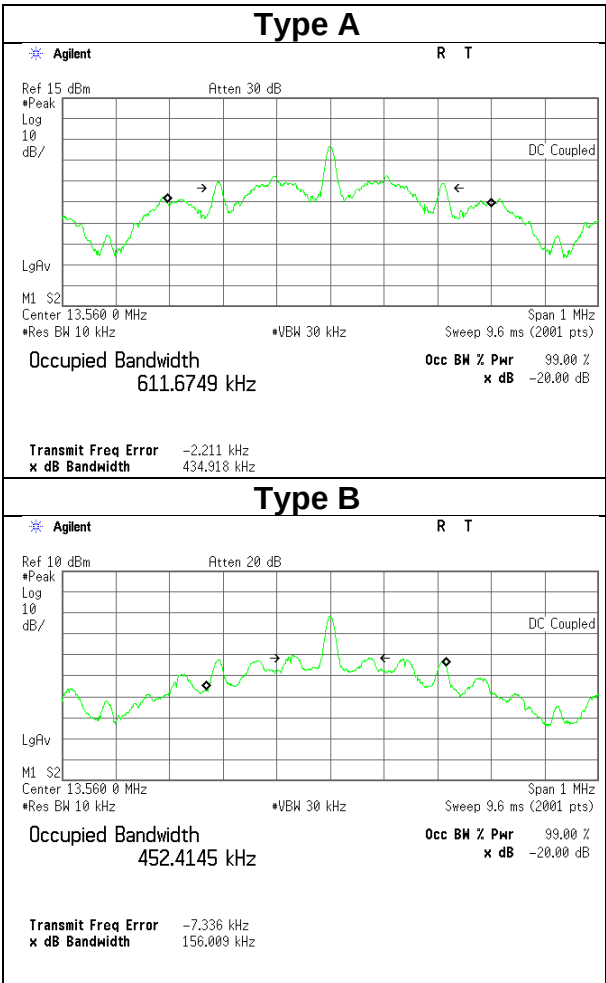


*These plots data contains sufficient number to show the trend of characteristic features for EUT.

20 dB Bandwidth and 99% Occupied Bandwidth

Mode	Tx, with Tag			
Date	Test site	Temperature	Humidity	Engineer
May 12, 2026	SR5	22 deg. C	44 % RH	Shiro Kobayashi

FREQ [MHz]	Mode	20dB Bandwidth [kHz]	99% Occupied Bandwidth [kHz]
13.56	NFC Type A	434.918	611.6749
	NFC Type B	156.009	452.4145



Since the transmitter signal is CW-like it is impractical to use a RBW setting of 1 – 5% of the emission bandwidth since the emission bandwidth will be proportional to the RBW.

Frequency Tolerance

Mode	Tx, without Tag			
Date	Test site	Temperature	Humidity	Engineer
May 12, 2026	SR5	22 deg. C	44 % RH	Shiro Kobayashi

Test condition Temp. [deg. C]	Voltage [V]	Tested timing	Measured frequency [MHz]	Frequency error [MHz]	Result		Limit [+/- %]
					[%]	[ppm]	
50	24	Power on	13.559392	-0.000608	-0.00448	-44.8	0.01
		+ 2 min.	13.559380	-0.000620	-0.00457	-45.7	0.01
		+ 5 min.	13.559380	-0.000620	-0.00458	-45.8	0.01
		+ 10 min.	13.559380	-0.000620	-0.00457	-45.7	0.01
40	24	Power on	13.559445	-0.000555	-0.00409	-40.9	0.01
		+ 2 min.	13.559431	-0.000569	-0.00419	-41.9	0.01
		+ 5 min.	13.559423	-0.000577	-0.00426	-42.6	0.01
		+ 10 min.	13.559416	-0.000584	-0.00431	-43.1	0.01
30	24	Power on	13.559527	-0.000473	-0.00349	-34.9	0.01
		+ 2 min.	13.559504	-0.000496	-0.00366	-36.6	0.01
		+ 5 min.	13.559489	-0.000511	-0.00377	-37.7	0.01
		+ 10 min.	13.559474	-0.000526	-0.00388	-38.8	0.01
20	24	Power on	13.559571	-0.000429	-0.00316	-31.6	0.01
		+ 2 min.	13.559546	-0.000454	-0.00335	-33.5	0.01
		+ 5 min.	13.559530	-0.000470	-0.00347	-34.7	0.01
		+ 10 min.	13.559514	-0.000486	-0.00359	-35.9	0.01
20	21.6 (24 V -10 %)	Power on	13.559543	-0.000457	-0.00337	-33.7	0.01
		+ 2 min.	13.559526	-0.000474	-0.00349	-34.9	0.01
		+ 5 min.	13.559519	-0.000481	-0.00355	-35.5	0.01
		+ 10 min.	13.559511	-0.000489	-0.00360	-36.0	0.01
20	26.4 (24 V +10 %)	Power on	13.559527	-0.000473	-0.00349	-34.9	0.01
		+ 2 min.	13.559514	-0.000486	-0.00358	-35.8	0.01
		+ 5 min.	13.559508	-0.000492	-0.00363	-36.3	0.01
		+ 10 min.	13.559503	-0.000497	-0.00366	-36.6	0.01
10	24	Power on	13.559640	-0.000360	-0.00266	-26.6	0.01
		+ 2 min.	13.559617	-0.000383	-0.00282	-28.2	0.01
		+ 5 min.	13.559602	-0.000398	-0.00294	-29.4	0.01
		+ 10 min.	13.559585	-0.000415	-0.00306	-30.6	0.01
0	24	Power on	13.559691	-0.000309	-0.00228	-22.8	0.01
		+ 2 min.	13.559673	-0.000327	-0.00241	-24.1	0.01
		+ 5 min.	13.559659	-0.000341	-0.00251	-25.1	0.01
		+ 10 min.	13.559643	-0.000357	-0.00263	-26.3	0.01
-10	24	Power on	13.559714	-0.000286	-0.00211	-21.1	0.01
		+ 2 min.	13.559705	-0.000295	-0.00218	-21.8	0.01
		+ 5 min.	13.559696	-0.000304	-0.00224	-22.4	0.01
		+ 10 min.	13.559681	-0.000319	-0.00235	-23.5	0.01
-20	24	Power on	13.559737	-0.000263	-0.00194	-19.4	0.01
		+ 2 min.	13.559719	-0.000281	-0.00208	-20.8	0.01
		+ 5 min.	13.559716	-0.000284	-0.00210	-21.0	0.01
		+ 10 min.	13.559713	-0.000287	-0.00212	-21.2	0.01

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

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

*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
CE	248304	Attenuator	JFW	50HFFA-006-2/18N	-	2025/05/14	12
CE	144971	Coaxial Cable&RF Selector	Suhner/Fujikura/Suhner/Suhner/TOYO	RG223U/12DSFA/141PE/NS4906	-/0901-269(RF Selector)	2026/04/10	12
CE	145792	Digital Hitester	HIOKI E. E. CORPORATION	3805-50	80997812	2025/09/10	12
CE	145538	LISN	Rohde & Schwarz	ENV216	100511	2026/02/06	12
CE	145539	LISN	Rohde & Schwarz	ENV216	100512	2026/02/06	12
CE	207279	Tape Measure	ASKUL	-	-	-	-
CE	145745	Terminator	TME	CT-01 BP	-	2025/11/12	12
CE	150463	Test Receiver	Rohde & Schwarz	ESW44	101581	2025/08/29	12
CE	259708	Thermo-Hygrometer	CUSTOM. Inc	CTH-230	-	2026/04/02	12
CE,RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,PE)	Ver 3.1.0612	-	-
FT, BW	146212	Digital Hitester	HIOKI E. E. CORPORATION	3805-50	80997828	2025/09/10	12
FT, BW	146178	Search coil	Langer	RF-R 400-1	02-0634	-	-
FT, BW	150461	Spectrum Analyzer	Keysight Technologies Inc	E4440A	MY46186392	2025/08/07	12
FT, BW	145200	Temperature and Humidity Chamber	Espec	PL-1KT	14020837	2026/04/01	12
FT, BW	259713	Thermo-Hygrometer	CUSTOM. Inc	CTH-230	-	2026/04/01	12
RE	167096	Attenuator	JFW	50HF-006N	-	2026/02/18	12
RE	264093	Attenuator	JFW	50HF-006N	-	2025/06/10	12
RE	145023	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA-9103+BBA9106	VHA91032666	2025/05/16	12
RE	194601	Coaxial Cable	Fjikura	5D-2W	-	2025/11/12	12
RE	253628	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	5D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	2026/04/01	12
RE	146210	Digital Hitester	HIOKI E. E. CORPORATION	3805-50	80997823	2025/09/10	12
RE	145529	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	196	2025/05/16	12
RE	245074	Loop(Active) Antenna	ETS-Lindgren	6502	00262458	2026/04/06	12
RE	145126	Pre Amplifier	SONOMA	310N	290213	2026/02/17	12
RE	145568	Semi Anechoic Chamber(ME)	TDK	Semi Anechoic Chamber 3m/10m	1, 2, 3	2024/10/12	24
RE	145565	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	2026/04/01	12
RE	146432	Tape Measure	TAJIMA	GL19-55	-	-	-
RE	213530	Test Receiver	Rohde & Schwarz	ESW44	103068	2026/02/17	12
RE	175822	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	-	2025/08/15	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:

CE: Conducted Emission

RE: Radiated Emission

FT: Frequency Tolerance

BW: 20 dB Bandwidth and 99% Occupied Bandwidth