

ANTENNA TEST REPORT

Test Report No. 15704384S-B-R1

Customer	CANON FINETECH NISCA INC.
Description of EUT	Antenna
Model Number of EUT	4G8-5541
Issue Date	September 9, 2025
Remarks	-

Representative test engineer**Approved by**Kenichi Adachi
EngineerToyokazu Imamura
Engineer

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REVISION HISTORY

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15704384S-B	July 25, 2025	-
1	15704384S-B-R1	September 9, 2025	p.1, p.5, Correction model name. ("4GB-5541" to "4G8-5541")

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	CANON FINETECH NISCA INC.
Address	1-14-1, Tyuuou, Misato-shi, Saitama, 341-8527, Japan
Telephone Number	+81-48-949-2111
Contact Person	Shingo Takada

The information provided by the customer is as follows;

- Customer, Description of EUT, Model Number of EUT 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)

Identification of EUT

Description	Antenna
Manufacturer	CANON FINETECH NISCA INC.
Model Number	4G8-5541
Serial Number	No.4H80675 02
Frequency of Operation	865 MHz to 928 MHz
Receipt Date	February 27, 2025
Test Date	February 28, 2025
Antenna Type	PCB Meander Line Antenna
Antenna connector	MMCX
Antenna cable	Length 150 mm, Cable Loss: 0.16 dB (865 MHz) 0.18 dB (902 MHz) 0.31 dB (915 MHz) 0.30 dB (928 MHz)

For the shape of the antenna is refer to APPENDIX 3.

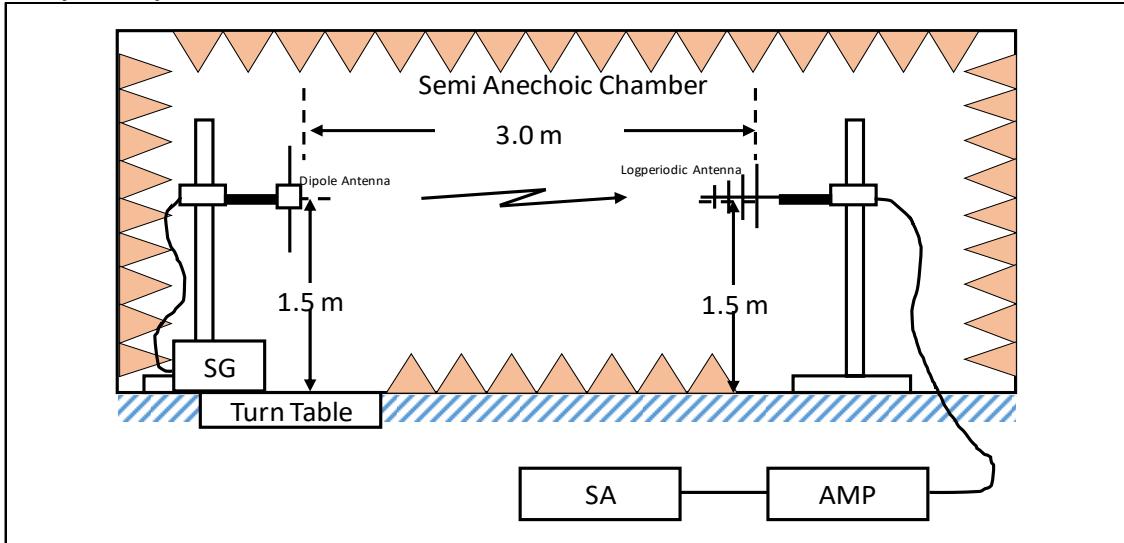
SECTION 3: Test Procedures

3.1 Test Procedures for Antenna Pattern and Gain

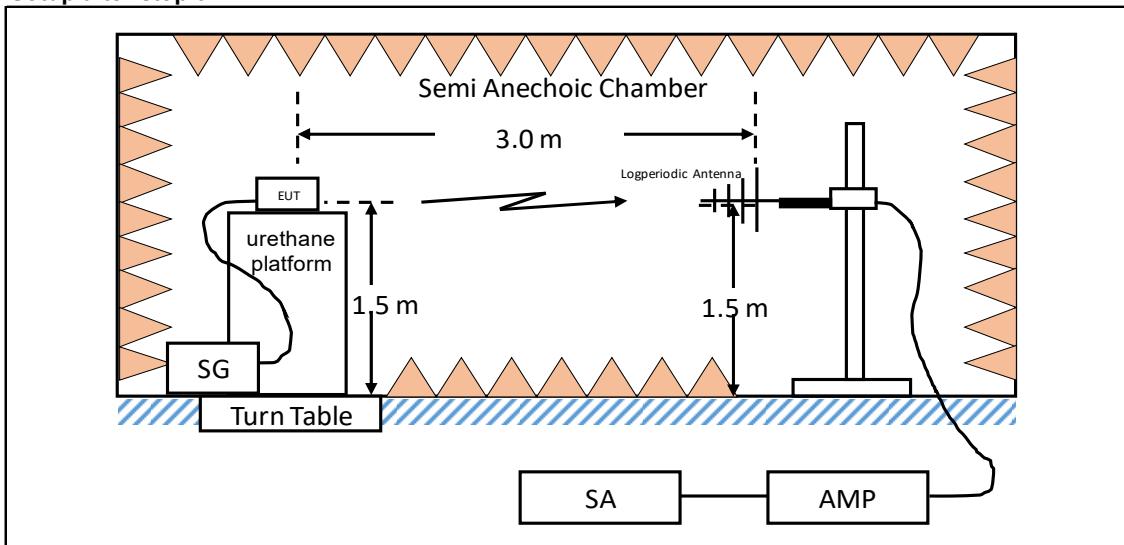
Test configuration	EUT was placed on a platform of nominal size, 0.5 m by 0.5 m, raised 1.5 m above the conducting ground plane. The measurements were performed for both vertical and horizontal antenna polarization with the Spectrum Analyzer. The setup are shown in Figure 1.
Test procedure	<p>Step 1 The tests have been measured in semi anechoic chamber at the distance of 3 m between the Substitution Antenna and the measuring Antenna, both Antennas were placed for the height 1.5 m. The Substitution Antenna has been connected to the Signal Generator.</p> <p>Step 2 The output power of the Signal Generator was setting value calculated by compensating the finite difference in the Antenna gain of Substitution Antenna.</p> <p>Step 3 The electric field strength at the distance of 3 m is received via the measurement antenna, and the reference value at that time is measured with a spectrum analyzer.</p> <p>Step 4 The measurements were performed for both vertical and horizontal antenna polarization.</p> <p>Step 5 Exchanged the Substitution Antenna to the EUT, the output power of the Signal Generator was setting value calculated by 0 dBm at the input of EUT.</p> <p>Step 6 The EUT was rotated a full revolution and recorded the electric field strength for each degree.</p> <p>Step 7 Calculate and record the difference from the value recorded in Step 6 to the value recorded in Step 3.</p> <p>Step 8 The measurement in steps 5 to 7 repeated with both vertical and horizontal antenna polarization, each position of XY, YZ and ZX-plane of EUT.</p>

Figure 1: Test Setup

Setup for step 1 to 4



Setup after step 5



SG: Signal Generator
SA: Spectrum Analyzer
AMP: Pre Amplifier

3.2 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	-

3.3 Test Data, Test Instruments, and Test Set Up

Refer to APPENDIX.

APPENDIX 1: Test Data

Antenna Pattern and Gain

Test place Shonan EMC Lab.
Semi Anechoic Chamber No.2 SAC
Date February 28, 2025
Temperature / Humidity 20 deg. C / 43 % RH
Engineer Kenichi Adachi
Mode Transmitting

Reference antenna measurement

Frequency [MHz]	Pol.	S/A Reading Er [dBuV]	cable loss 179108 [dB]	Attenuator loss ATT [dB]	Gain Gr [dBi]	SG output SG [dBm]
865	Hor	54.31	1.16	-	-9.18	0.00
902	Hor	53.68	1.18	-	-9.39	0.00
915	Hor	53.84	1.19	-	-9.45	0.00
928	Hor	54.29	1.19	-	-9.45	0.00
865	Ver	54.99	1.16	-	-9.18	0.00
902	Ver	55.40	1.18	-	-9.39	0.00
915	Ver	55.39	1.19	-	-9.45	0.00
928	Ver	55.17	1.19	-	-9.45	0.00

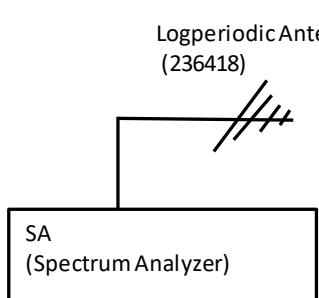
EUT antenna measurement

Frequency [MHz]	Pol.	S/A Reading Ee [dBuV]	(cable) 179108 [dB]	Customer's cable loss CC [dB]	EUT-ant. gain Ge [dBi]	SG level SG [dBm]	max gain [dBi]
865	Hor	51.70	1.16	0.16	-11.63	0.00	-11.30
902	Hor	50.33	1.18	0.18	-12.56	0.00	-11.29
915	Hor	49.99	1.19	0.31	-12.99	0.00	-11.73
928	Hor	48.64	1.19	0.30	-14.80	0.00	-13.25
865	Ver	52.71	1.16	0.16	-11.30	0.00	
902	Ver	53.32	1.18	0.18	-11.29	0.00	
915	Ver	52.80	1.19	0.31	-11.73	0.00	
928	Ver	51.07	1.19	0.30	-13.25	0.00	

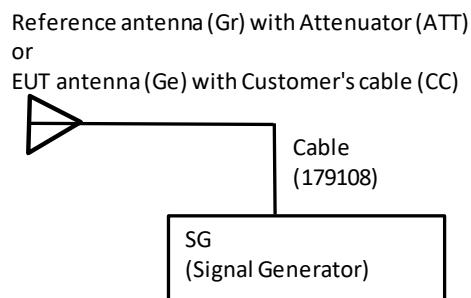
max gain: -11.29 dB

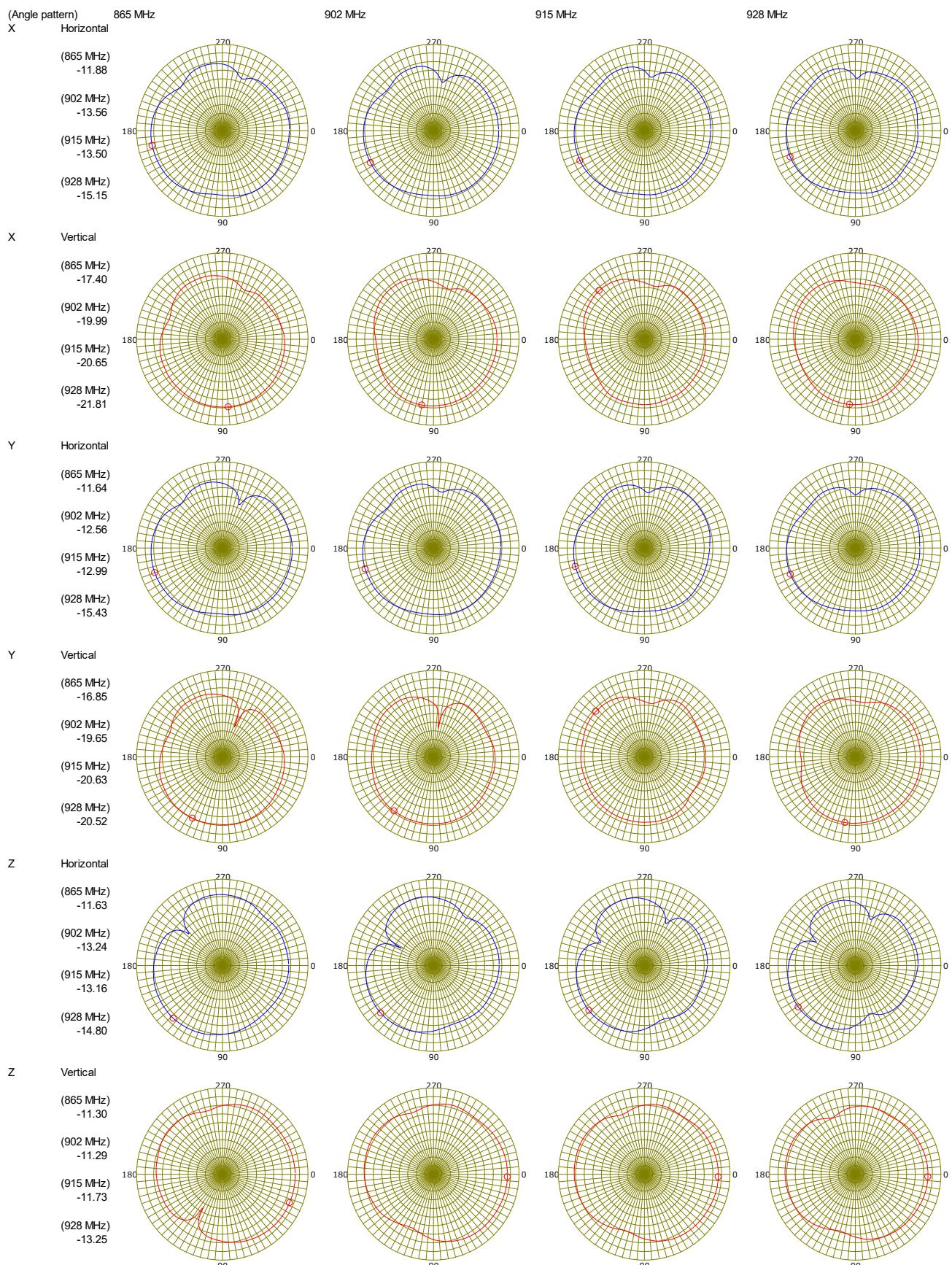
Calculation : $Ge = Gr - (Er - Ee) - (ATT - CC)$

[Receiving side]



[Transmitting side]





(Reference data (measured antenna cable loss))

February 28, 2025

No.2 Semi-Anechoic Chamber, 20 deg.C, 43 %RH, Kenichi Adachi.

Frequency [MHz]	(cable) 179108, with customer's cable [dBm]	(cable) 179108, without customer's cable [dBm]	customer's cable loss [dB]
865	-1.53	-1.37	0.16
902	-1.51	-1.33	0.18
915	-1.56	-1.25	0.31
928	-1.74	-1.44	0.30

APPENDIX 2: Test Instruments

Test Equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	150921	Attenuator	JFW	50HF-003N	-	2025/02/19	12
RE	179108	Coaxial Cable	Junkosha	MWX241-03000KMSKMS/B	1901Q033-R	2024/04/09	12
RE	144976	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-270(RF Selector)	2024/04/10	12
RE	145793	Digital Hitester	HIOKI E. E. CORPORATION	3805-50	80997819	2024/05/29	12
RE	145464	Dipole Antenna	Schwarzbeck Mess-Elektronik OHG	UHAP	1158	2024/08/10	12
RE	170932	EMI Software	TSJ (Techno Science Japan)	TEPTO-DV3(RE,CE,ME,P E)	Ver 3.1.0546	-	-
RE	236418	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VULP 9118 B	00975	2024/07/03	12
RE	145563	Semi-Anechoic Chamber	TDK	SAEC-02(NSA)	2	2024/03/22	12
RE	158037	Signal Generator	Rohde & Schwarz	SMBV100A	262877	2024/08/06	12
RE	207277	Tape Measure	ASKUL	-	-	-	-
RE	145790	Test Receiver	Rohde & Schwarz	ESU40	100093	2024/04/19	12
RE	235739	Thermo-Hygrometer	CUSTOM. Inc	CTH-230	-	2024/04/28	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: Antenna Pattern and Gain