





EMI TEST REPORT

Test Report No. 14913509H-A-R2

Customer	Panasonic Automotive Systems Co., Ltd.
Description of EUT	Car Navigation
Model Number of EUT	AT2402
FCC ID	ACJ932AT2402
Test Regulation	FCC Part 15 Subpart B
Test Result	Complied
Issue Date	April 23, 2025
Remarks	-

Representative test engineer	Approved by
	
Yuichiro Yamazaki Engineer	Takumi Shimada Engineer
 	
CERTIFICATE 5107.02	
<input type="checkbox"/> The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.	
<input checked="" type="checkbox"/> There is no testing item of "Non-accreditation".	

Report Cover Page - Form-ULID-003532 (DCS:13-EM-F0429) Issue# 23.0

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REVISION HISTORY

Original Test Report No. 14913509H-A

This report is a revised version of 14913509H-A-R1. 14913509H-A-R1 is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14913509H-A	August 26, 2024	-
1	14913509H-A-R1	March 24, 2025	Cover page Deleted "Class B" from Test Regulation
2	14913509H-A-R2	April 23, 2025	4.2 Configuration and Peripherals Table for List of Cables Used - Corrected information of Cable 12 and 13: DC Cable -> Signal Cable

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	Hori.	Horizontal
AAN	Asymmetric Artificial Network	ICES	Interference-Causing Equipment Standard
AC	Alternating Current	I/O	Input/Output
AE	Auxiliary equipment	IEC	International Electrotechnical Commission
AM	Amplitude Modulation	IEEE	Institute of Electrical and Electronics Engineers
AMN	Artificial Mains Network	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	ISN	Impedance Stabilization Network
AP	Access Point	ISO	International Organization for Standardization
ASK	Amplitude Shift Keying	JAB	Japan Accreditation Board
Atten., ATT	Attenuator	LAN	Local Area Network
AV	Average	LCL	Longitudinal Conversion Loss
BPSK	Binary Phase-Shift Keying	LIMS	Laboratory Information Management System
BR	Bluetooth Basic Rate	LISN	Line Impedance Stabilization Network
BT	Bluetooth	MRA	Mutual Recognition Arrangement
BT LE	Bluetooth Low Energy	N/A	Not Applicable
BW	BandWidth	NIST	National Institute of Standards and Technology
C.F	Correction Factor	NS	No signal detect.
Cal Int	Calibration Interval	NSA	Normalized Site Attenuation
CAV	CISPR AV	OBW	Occupied BandWidth
CCK	Complementary Code Keying	OFDM	Orthogonal Frequency Division Multiplexing
CDN	Coupling Decoupling Network	PER	Packet Error Rate
Ch., CH	Channel	PK	Peak
CISPR	Comite International Special des Perturbations Radioelectriques	P _{LT}	long-term flicker severity
Corr.	Correction	POHC(A)	Partial Odd Harmonic Current
CPE	Customer premise equipment	Pol., Pola.	Polarization
CW	Continuous Wave	PR-ASK	Phase Reversal ASK
DBPSK	Differential BPSK	P _{ST}	short-term flicker severity
DC	Direct Current	QAM	Quadrature Amplitude Modulation
DET	Detector	QP	Quasi-Peak
D-factor, D.fac.	Distance factor	QPSK	Quadrature Phase Shift Keying
Dmax	maximum absolute voltage change during an observation period	r.m.s., RMS	Root Mean Square
DQPSK	Differential QPSK	RBW	Resolution BandWidth
DSSS	Direct Sequence Spread Spectrum	RE	Radio Equipment
DUT	Device Under Test	REV	Reverse
EDR	Enhanced Data Rate	RF	Radio Frequency
e.i.r.p., EIRP	Equivalent Isotropically Radiated Power	RFID	Radio Frequency Identifier
EM clamp	Electromagnetic clamp	RNSS	Radio Navigation Satellite Service
EMC	ElectroMagnetic Compatibility	RSS	Radio Standards Specifications
EMI	ElectroMagnetic Interference	Rx	Receiving
EMS	ElectroMagnetic Susceptibility	S.fac.	Site factor
EN	European Norm	SINAD	Ratio of (Signal + Noise + Distortion) to (Noise + Distortion)
e.r.p., ERP	Effective Radiated Power	S/N	Signal to Noise ratio
ETSI	European Telecommunications Standards Institute	SA, S/A	Spectrum Analyzer
EU	European Union	SABS	South African Bureau of Standards
EUT	Equipment Under Test	SANS	South African National Standards
Fac.	Factor	SG	Signal Generator
FCC	Federal Communications Commission	SVSWR	Site-Voltage Standing Wave Ratio
FHSS	Frequency Hopping Spread Spectrum	THC(A)	Total Harmonic Current
FM	Frequency Modulation	THD(%)	Total Harmonic Distortion
Freq.	Frequency	TR, T/R	Test Receiver
FSK	Frequency Shift Keying	Tx	Transmitting
Fund	Fundamental	UFA	Uniform field area
FWD	Forward	VBW	Video BandWidth
GFSK	Gaussian Frequency-Shift Keying	Vert.	Vertical
GNSS	Global Navigation Satellite System	WLAN	Wireless LAN
GPS	Global Positioning System	xDSL	Generic term for all types of DSL technology (DSL: Digital Subscriber Line)

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SECTION 1: Customer information

Company Name	Panasonic Automotive Systems Co., Ltd. *1)
Address	4261, Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken 224-8520, Japan
Telephone Number	+81-50-1802-5117
Contact Person	Daisuke Takahata

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

The information provided by the customer is as follows;

- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Description	Car Navigation
Model Number	AT2402
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	June 26, 2024
Test Date	July 23 to 28, 2024

2.2 Product Description

General Specification

Rating	DC 13.2 V
Clock frequency (ies) in the system	(SOC) 38.4 MHz, (CPU) 20 MHz, 0.03277 MHz, (AM/FM) 36.4 MHz, 36.864 MHz, (GNSS) 26 MHz, 0.03277 MHz, (Ether) 25 MHz, (Video) 32 MHz

Radio Specification

Bluetooth (BR / EDR / BT LE)

Equipment Type	Transceiver	
Frequency of Operation	2402 MHz to 2480 MHz	
Type of Modulation	FHSS, GFSK / $\pi/4$ -DQPSK, 8DPSK / GFSK	
Antenna Gain	4 dBi	

WLAN (IEEE802.11b/11g/11n-20/11ax-20)

Equipment Type	Transceiver	
Frequency of Operation	2412 MHz to 2462 MHz	
Type of Modulation	DSSS, OFDM	
	OFDMA (IEEE802.11ax only)	26/52/106/242-tone RU
Antenna Gain	4 dBi	

WLAN (IEEE802.11a/11n-20/11ac-20/11ax-20/11n-40/11ac-40/11ax-40/11ac-80/11ax-80)

Equipment Type	Transceiver	
Frequency of Operation	20 MHz Band	5180 MHz to 5240 MHz 5745 MHz to 5825 MHz
	40 MHz Band	5190 MHz to 5230 MHz 5755 MHz to 5795 MHz
	80 MHz Band	5210 MHz, 5775 MHz
Type of Modulation	OFDM	
	OFDMA (IEEE802.11ax only)	20 MHz: 26/52/106/242-tone RU
		40 MHz: 26/52/106/242/484-tone RU
80 MHz: 26/52/106/242/484/996-tone RU		
Antenna Gain	RF0: 5 dBi RF1: 5 dBi	

AM / FM

Equipment Type	Receiver
Frequency of Operation	AM: 530 kHz to 1710 kHz FM: 87.75 MHz to 107.9 MHz
Type of Modulation	AM FM
Antenna Connector Type	Car manufacturer original
Impedance	75 ohm

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart B The latest version on the first day of the testing period
Title	FCC 47CFR Part15 Radio Frequency Device Subpart B Unintentional Radiators

3.2 Procedures and results

Item	Test Procedure	Limits	Worst margin	Result	Remarks
Conducted emission	ANSI C63.4: 2014 + C63.4a: 2017 7. AC power - line conducted emission measurements	Part 15 Subpart B 15.107(a)	-	N/A	*1)
Radiated emission	ANSI C63.4: 2014 + C63.4a: 2017 8. Radiated emission measurements	Part 15 Subpart B 15.109(a)	9.69 dB 2857.677 MHz Vertical, AV (Mode 1, Digital Other)	Complied	-
Antenna Terminal	ANSI C63.4: 2014 + C63.4a: 2017 12. Measurement of unintentional radiators other than ITE	Part 15 Subpart B 15.111(a)	25.42 dB 36.403 MHz (Mode 1, Analog/Digital Other)	Complied	-

* Note: UL Japan, Inc.'s EMI Work Procedure: Work Instructions-ULID-003591.

*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 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

Antenna Terminal test

Item	Unit	Calculated Uncertainty (+/-)
Antenna terminal conducted emission	dB	3.1

3.5 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	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	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room	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	-	-

3.6 Test data, Test instruments, and Test set up

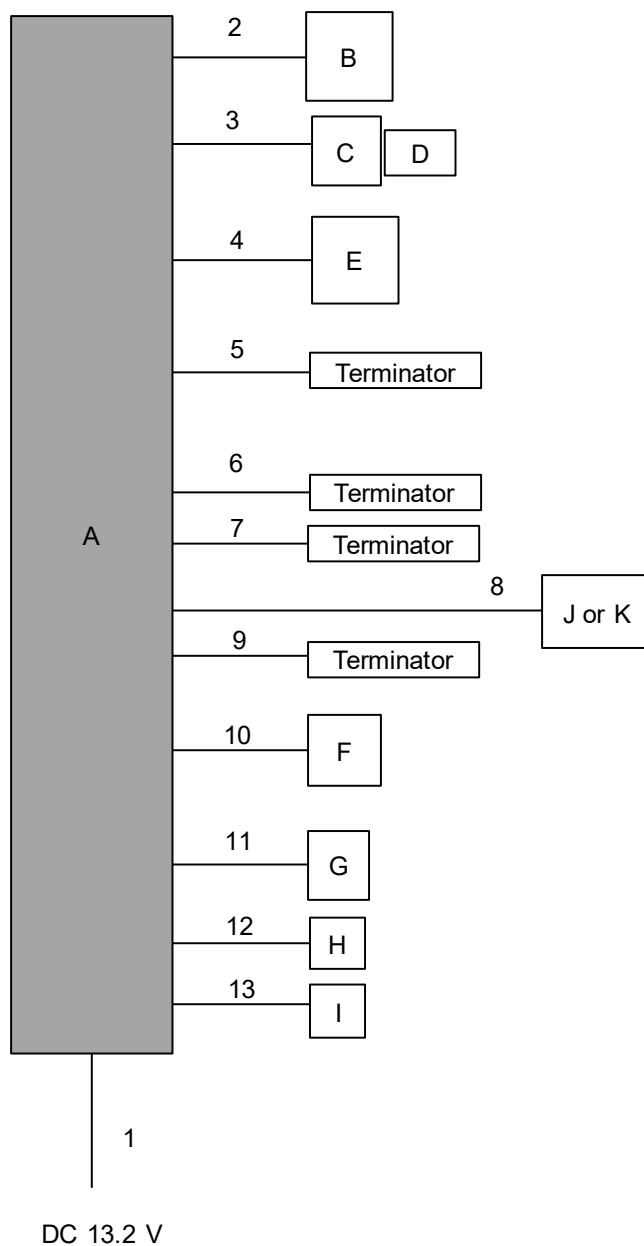
Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode	1. FM Receiving (Local) mode (Analog / Digital): for RE 2. FM Receiving (Other) mode (Analog / Digital): for RE 3. Antenna Terminal mode (Local) (Analog / Digital): for AT 4. Antenna Terminal mode (Other) (Analog / Digital): for AT
Software(s)	YEPYEP1RM09303B
Abbreviations for test items	RE: Radiated Emission, AT: Antenna Terminal Conducted Emission

4.2 Configuration and peripherals



* Cabling and setup(s) 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	Remarks
A	Car Navigation	AT2402	500071	Panasonic	EUT
B	ADAS Jig	GVIF3OUT2A	8	Persol AVC Technology Co., Ltd.	-
C	USB BOX	DEP38-10029	-	Japan Aviation Electronics Industry, Ltd.	-
D	USB Memory	RUF3-K16GB	P10416	Buffalo Inc.	-
E	Speaker Dummy	HS50 4RF	-	ARCOL UK Limited	-
F	Steering Switch	-	1400	Panasonic	-
G	GPS Antenna	ANN-MS	20N40132	U-Blox	-
H	Microphone	SDA3520A	4AC011627	Panasonic	-
I	Microphone	SDA3520A	4AC011628	Panasonic	-
J	Signal Generator	SMC100A	103408	Rohde & Schwarz	*1)
K	HD Radio Vector Signal Generator	MSG-3100	2100109	MEGURO ELECTRONICS CORPORATION	*2)

*1) RE (Analog mode) only

*2) RE (Digital mode) only

List of Cables Used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	4.3	Unshielded	Unshielded	-
2	Signal Cable	1.9	Unshielded	Unshielded	-
3	USB Cable	2.3	Shielded	Shielded	-
4	Audio Cable	2.5	Shielded	Shielded	-
5	XM Antenna Cable	3.0	Shielded	Shielded	-
6	LAN Cable	3.0	Shielded	Shielded	-
7	Signal Cable	1.0	Shielded	Shielded	-
8	FM Cable	3.0	Shielded	Shielded	-
9	Radio Cable	3.0	Shielded	Shielded	-
10	Signal Cable	4.3	Unshielded	Unshielded	-
11	GPS Antenna Cable	2.0	Shielded	Shielded	-
12	Signal Cable	4.3	Unshielded	Unshielded	-
13	Signal Cable	4.3	Unshielded	Unshielded	-

SECTION 5: Radiated Emission

5.1 Operating environment

Date : See data
 Test place : See data
 Temperature : See data
 Humidity : See data
 Test engineer : See data

5.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane.

The EUT was set on the edge of the tabletop.

Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Photographs of the set up are shown in APPENDIX 3.

5.3 Test conditions

Frequency range : 30 MHz to 200 MHz (Biconical antenna)
 200 MHz to 1000 MHz (Logperiodic antenna)
 1000 MHz to 40000 MHz (Horn antenna)
 Test distance : 3 m / 1 m (See Figure 1)
 EUT position : Table top
 EUT operation mode : See Clause 4.1

5.4 Test procedure

The height of the measuring antenna 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 with the Test Receiver, or the Spectrum Analyzer.

The radiated emission measurements were made with the following detector function of the Test Receiver and the Spectrum Analyzer.

The test of Local oscillator spurious has been measured up to appropriate frequency based on the result of the antenna terminal test.

Test antenna was aimed at the emission source for receiving the maximum signal and always kept. (Above 1 GHz)

Frequency	Below 1 GHz	1 GHz to 26 GHz *1)	26 GHz to 40 GHz *1)
Instrument used	Test Receiver	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120 kHz	PK: BW 1 MHz, CAV: BW 1 MHz	PK: RBW: 1 MHz / VBW: 3 MHz AV *2): RBW: 1 MHz / VBW: 10 Hz

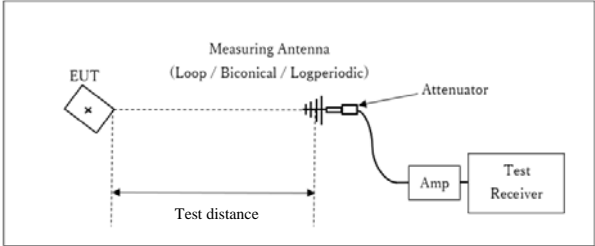
*1) The measurement data was adjusted to a 3 m distance using the following Distance Factor.

Distance Factor: See Figure 1.

*2) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Figure 1: Test Setup

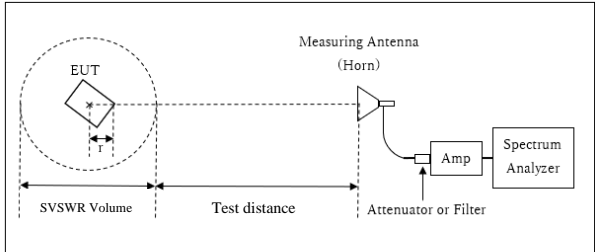
Below 1 GHz



× : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz

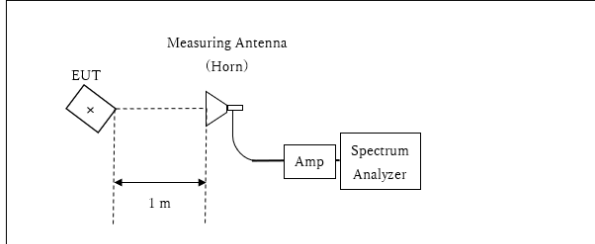


r : Radius of an outer periphery of EUT
 × : Center of turn table

Distance Factor: $20 \times \log(3.25 \text{ m} / 3.0 \text{ m}) = 0.70 \text{ dB}$
 *(Test Distance + SVSWR Volume / 2) - r = 3.25 m

Test Distance: 3 m
 SVSWR Volume: 2 m
 (SVSWR Volume has been calibrated based on CISPR 16-1-4.)
 r: 0.75m

10 GHz to 40 GHz



× : Center of turn table

Distance Factor: $20 \times \log(1.0 \text{ m} / 3.0 \text{ m}) = -9.54 \text{ dB}$
 *Test Distance: 1 m

The test was made on EUT at the normal use position.

5.5 Test result

Summary of the test results: Pass

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

SECTION 6: Antenna Terminal

6.1 Operating environment

Date : See data
Test place : See data
Temperature : See data
Humidity : See data
Test engineer : See data

6.2 Test configuration

EUT was placed on a wooden table of nominal size, 1.0 m by 1.5 m, raised 0.8 m from the ground. Photographs of the set up are shown in APPENDIX 3.

6.3 Test conditions

Frequency range : 30 MHz to 40000 MHz
Test distance : N/A
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

The Antenna Terminal was measured with a spectrum analyzer connected to the antenna port.

Frequency	Below 1 GHz	Above 1 GHz
Instrument used	Spectrum Analyzer	Spectrum Analyzer *1)
IF Bandwidth	PK: RBW: 100 kHz / VBW: 100 kHz	PK: RBW: 1 MHz / VBW: 3 MHz

*1) The Spectrum Analyzer was used in 3 dB resolution bandwidth.

6.5 Test result

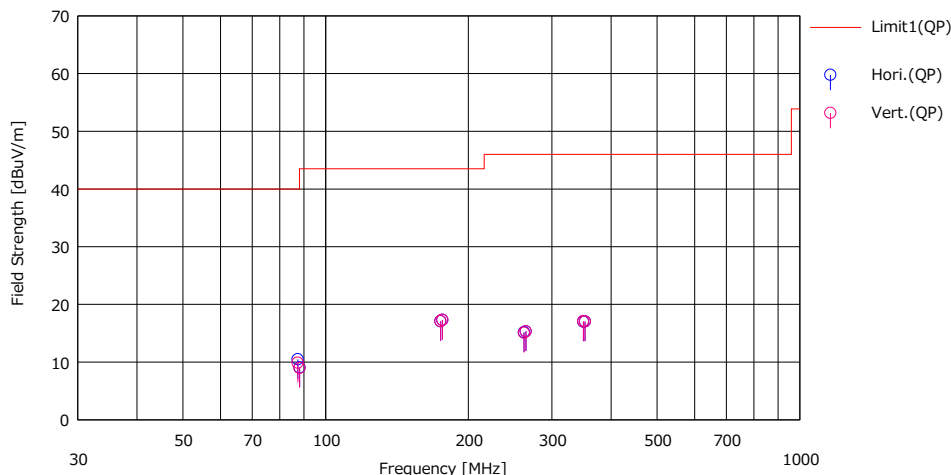
Summary of the test results: Pass

APPENDIX 1: Test data

**Radiated Emission
(Analog)**

Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date July 23, 2024
Temperature / Humidity 23 deg. C / 66 % RH
Engineer Hiroki Numata
(Below 1 GHz)
Mode Mode 1 (87.75 MHz)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[QP]				[dBuV/m]	[QP]	[QP]					
1	87.362	23.70	7.95	7.26	28.44	10.47	40.00	29.53	Hori.	221	286	BA	
2	88.138	22.10	8.12	7.26	28.44	9.04	43.50	34.46	Hori.	400	308	BA	
3	174.724	21.30	15.95	7.93	28.11	17.07	43.50	26.43	Hori.	100	0	BA	
4	176.276	21.30	16.16	7.94	28.10	17.30	43.50	26.20	Hori.	100	0	BA	
5	262.086	22.10	12.32	8.48	27.74	15.16	46.00	30.84	Hori.	100	0	LA23	
6	264.414	22.10	12.46	8.50	27.74	15.32	46.00	30.68	Hori.	100	0	LA23	
7	349.448	21.00	15.01	9.00	28.03	16.98	46.00	29.02	Hori.	100	0	LA23	
8	352.552	21.00	15.05	9.02	28.05	17.02	46.00	28.98	Hori.	100	0	LA23	
9	87.362	23.10	7.95	7.26	28.44	9.87	40.00	30.13	Vert.	100	313	BA	
10	88.138	22.00	8.12	7.26	28.44	8.94	43.50	34.56	Vert.	100	202	BA	
11	174.724	21.30	15.95	7.93	28.11	17.07	43.50	26.43	Vert.	100	0	BA	
12	176.276	21.30	16.16	7.94	28.10	17.30	43.50	26.20	Vert.	100	0	BA	
13	262.086	22.00	12.32	8.48	27.74	15.06	46.00	30.94	Vert.	100	0	LA23	
14	264.414	22.10	12.46	8.50	27.74	15.32	46.00	30.68	Vert.	100	0	LA23	
15	349.448	21.10	15.01	9.00	28.03	17.08	46.00	28.92	Vert.	100	0	LA23	
16	352.552	21.00	15.05	9.02	28.05	17.02	46.00	28.98	Vert.	100	0	LA23	

CHART: WITH FACTOR

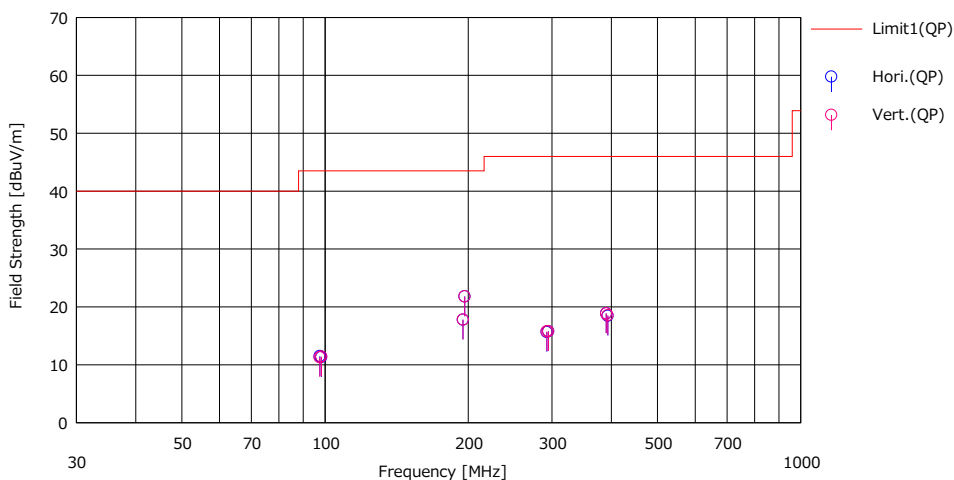
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)

Except for the above table: adequate margin data below the limits.

Radiated Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 1 (97.9 MHz)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(QP) [dBuV]				(QP) [dBuV/m]	(QP) [dB]						
1	97.512	22.80	9.76	7.35	28.42	11.49	43.50	32.01	Hori.	337	307	BA	
2	98.288	22.50	9.88	7.35	28.41	11.32	43.50	32.18	Hori.	400	251	BA	
3	195.024	21.20	16.52	8.07	28.00	17.79	43.50	25.71	Hori.	100	0	BA	
4	196.576	25.20	16.52	8.08	28.00	21.80	43.50	21.70	Hori.	100	0	BA	
5	292.536	21.10	13.61	8.67	27.73	15.65	46.00	30.35	Hori.	100	0	LA23	
6	294.864	21.20	13.63	8.68	27.73	15.78	46.00	30.22	Hori.	100	0	LA23	
7	390.048	22.50	15.45	9.30	28.39	18.86	46.00	27.14	Hori.	100	0	LA23	
8	393.152	22.00	15.54	9.32	28.42	18.44	46.00	27.56	Hori.	100	0	LA23	
9	97.512	22.60	9.76	7.35	28.42	11.29	43.50	32.21	Vert.	100	228	BA	
10	98.288	22.60	9.88	7.35	28.41	11.42	43.50	32.08	Vert.	100	342	BA	
11	195.024	21.20	16.52	8.07	28.00	17.79	43.50	25.71	Vert.	100	0	BA	
12	196.576	25.20	16.52	8.08	28.00	21.80	43.50	21.70	Vert.	100	0	BA	
13	292.536	21.20	13.61	8.67	27.73	15.75	46.00	30.25	Vert.	100	0	LA23	
14	294.864	21.20	13.63	8.68	27.73	15.78	46.00	30.22	Vert.	100	0	LA23	
15	390.048	22.50	15.45	9.30	28.39	18.86	46.00	27.14	Vert.	100	0	LA23	
16	393.152	22.10	15.54	9.32	28.42	18.54	46.00	27.46	Vert.	100	0	LA23	

CHART: WITH FACTOR

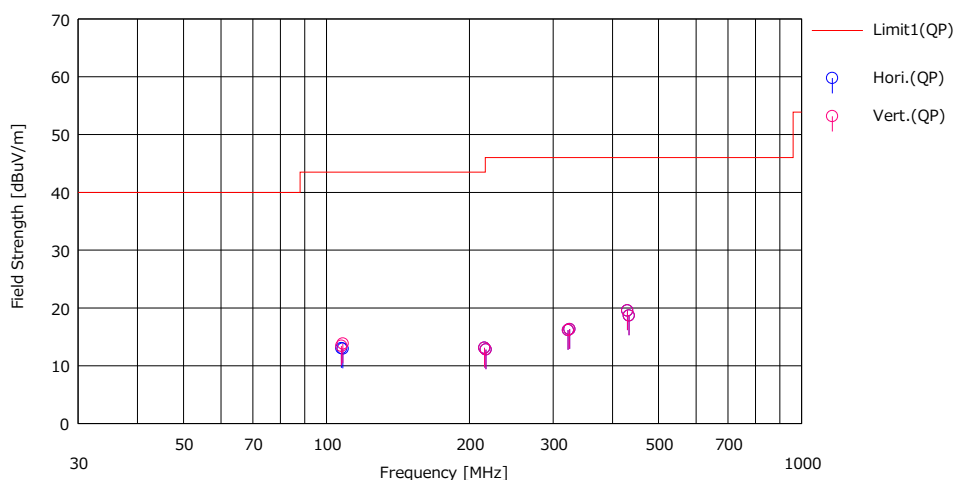
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)

Except for the above table: adequate margin data below the limits.

Radiated Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 1 (107.9 MHz)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(QP)				[dBuV/m]	(QP)	(QP)					
1	107.512	22.70	11.28	7.43	28.38	13.03	43.50	30.47	Hori.	400	321	BA	
2	108.288	22.50	11.39	7.43	28.38	12.94	43.50	30.56	Hori.	400	268	BA	
3	215.024	21.60	11.21	8.19	27.91	13.09	43.50	30.41	Hori.	100	0	LA23	
4	216.576	21.30	11.20	8.20	27.90	12.80	46.00	33.20	Hori.	100	0	LA23	
5	322.536	20.90	14.28	8.84	27.87	16.15	46.00	29.85	Hori.	100	0	LA23	
6	324.864	21.00	14.36	8.85	27.88	16.33	46.00	29.67	Hori.	100	0	LA23	
7	430.048	22.70	16.08	9.48	28.71	19.55	46.00	26.45	Hori.	100	0	LA23	
8	433.152	21.80	16.12	9.49	28.73	18.68	46.00	27.32	Hori.	100	0	LA23	
9	107.512	23.10	11.28	7.43	28.38	13.43	43.50	30.07	Vert.	100	347	BA	
10	108.288	23.40	11.39	7.43	28.38	13.84	43.50	29.66	Vert.	100	241	BA	
11	215.024	21.60	11.21	8.19	27.91	13.09	43.50	30.41	Vert.	100	0	LA23	
12	216.576	21.30	11.20	8.20	27.90	12.80	46.00	33.20	Vert.	100	0	LA23	
13	322.536	20.90	14.28	8.84	27.87	16.15	46.00	29.85	Vert.	100	0	LA23	
14	324.864	21.00	14.36	8.85	27.88	16.33	46.00	29.67	Vert.	100	0	LA23	
15	430.048	22.70	16.08	9.48	28.71	19.55	46.00	26.45	Vert.	100	0	LA23	
16	433.152	21.80	16.12	9.49	28.73	18.68	46.00	27.32	Vert.	100	0	LA23	

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN

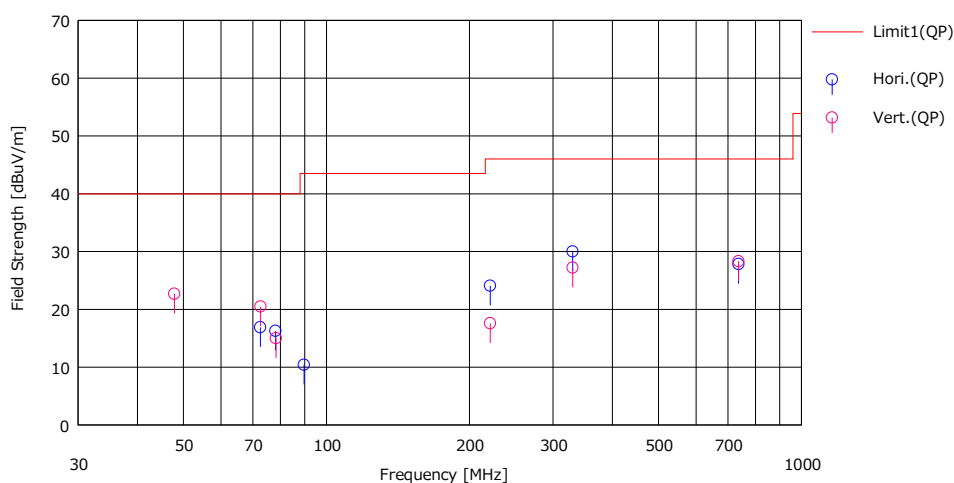
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)

Except for the above table: adequate margin data below the limits.

Radiated Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 2

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(QP) [dBuV]				(QP) [dBuV/m]	(QP) [dB]						
1	72.600	31.90	6.33	7.12	28.47	16.88	40.00	23.12	Hori.	214	310	BA	
2	78.137	30.90	6.65	7.17	28.46	16.26	40.00	23.74	Hori.	225	241	BA	
3	89.735	23.10	8.45	7.28	28.43	10.40	43.50	33.10	Hori.	315	298	BA	
4	221.188	32.50	11.23	8.23	27.88	24.08	46.00	21.92	Hori.	137	13	LA23	
5	330.005	34.50	14.53	8.88	27.91	30.00	46.00	16.00	Hori.	100	82	LA23	
6	737.414	26.20	20.18	10.62	29.18	27.82	46.00	18.18	Hori.	100	298	LA23	
7	47.852	32.50	11.84	6.86	28.52	22.68	40.00	17.32	Vert.	100	257	BA	
8	72.649	35.50	6.33	7.12	28.47	20.48	40.00	19.52	Vert.	100	321	BA	
9	78.340	29.60	6.67	7.18	28.46	14.99	40.00	25.01	Vert.	100	273	BA	
10	221.188	26.00	11.23	8.23	27.88	17.68	46.00	28.42	Vert.	138	160	LA23	
11	330.005	31.70	14.53	8.88	27.91	27.20	46.00	18.80	Vert.	100	291	LA23	
12	737.414	26.70	20.18	10.62	29.18	28.32	46.00	17.68	Vert.	161	341	LA23	

CHART: WITH FACTOR

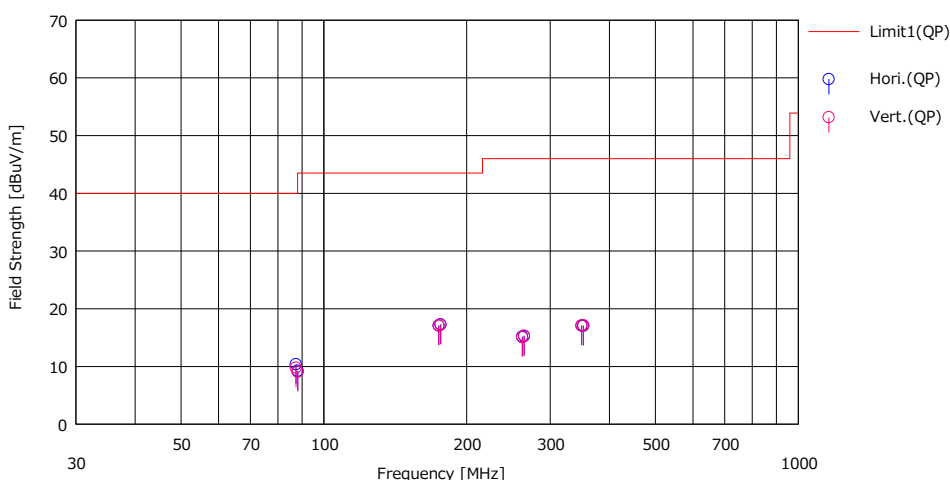
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)

Except for the above table: adequate margin data below the limits.

Radiated Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 1 (87.75 MHz)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(QP) [dBuV]				(QP) [dBuV/m]	(QP) [dB]						
1	87.362	23.60	7.95	7.26	28.44	10.37	40.00	29.63	Hori.	221	283	BA	
2	88.138	22.30	8.12	7.26	28.44	9.24	43.50	34.26	Hori.	400	310	BA	
3	174.724	21.30	15.95	7.93	28.11	17.07	43.50	26.43	Hori.	100	0	BA	
4	176.276	21.30	16.16	7.94	28.10	17.30	43.50	26.20	Hori.	100	0	BA	
5	262.086	22.10	12.32	8.48	27.74	15.16	46.00	30.84	Hori.	100	0	LA23	
6	264.414	22.00	12.46	8.50	27.74	15.22	46.00	30.78	Hori.	100	0	LA23	
7	349.448	21.10	15.01	9.00	28.03	17.08	46.00	28.92	Hori.	100	0	LA23	
8	352.552	21.00	15.05	9.02	28.05	17.02	46.00	28.98	Hori.	100	0	LA23	
9	87.362	23.00	7.95	7.26	28.44	9.77	40.00	30.23	Vert.	100	317	BA	
10	88.138	22.10	8.12	7.26	28.44	9.04	43.50	34.46	Vert.	100	211	BA	
11	174.724	21.30	15.95	7.93	28.11	17.07	43.50	26.43	Vert.	100	0	BA	
12	176.276	21.20	16.16	7.94	28.10	17.20	43.50	26.30	Vert.	100	0	BA	
13	262.086	22.00	12.32	8.48	27.74	15.06	46.00	30.94	Vert.	100	0	LA23	
14	264.414	22.10	12.46	8.50	27.74	15.32	46.00	30.68	Vert.	100	0	LA23	
15	349.448	21.10	15.01	9.00	28.03	17.08	46.00	28.92	Vert.	100	0	LA23	
16	352.552	21.10	15.05	9.02	28.05	17.12	46.00	28.88	Vert.	100	0	LA23	

CHART: WITH FACTOR

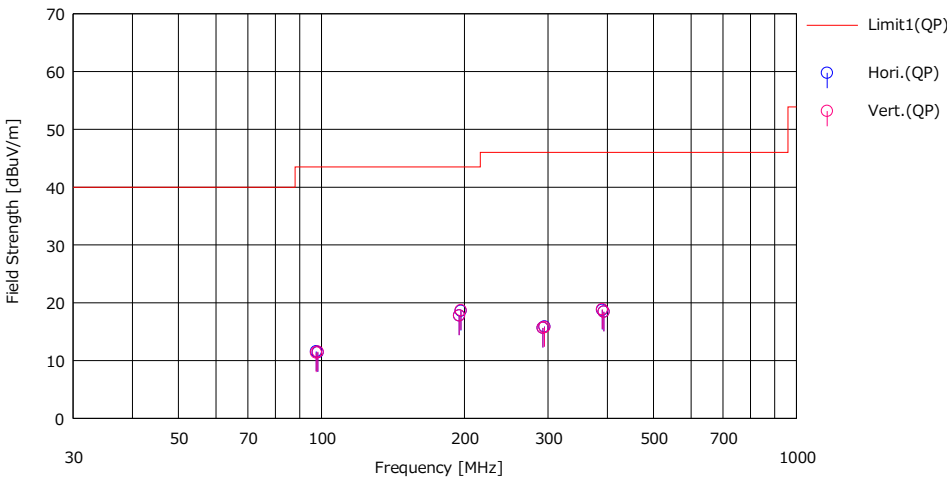
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)

Except for the above table: adequate margin data below the limits.

Radiated Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 1 (97.9 MHz)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



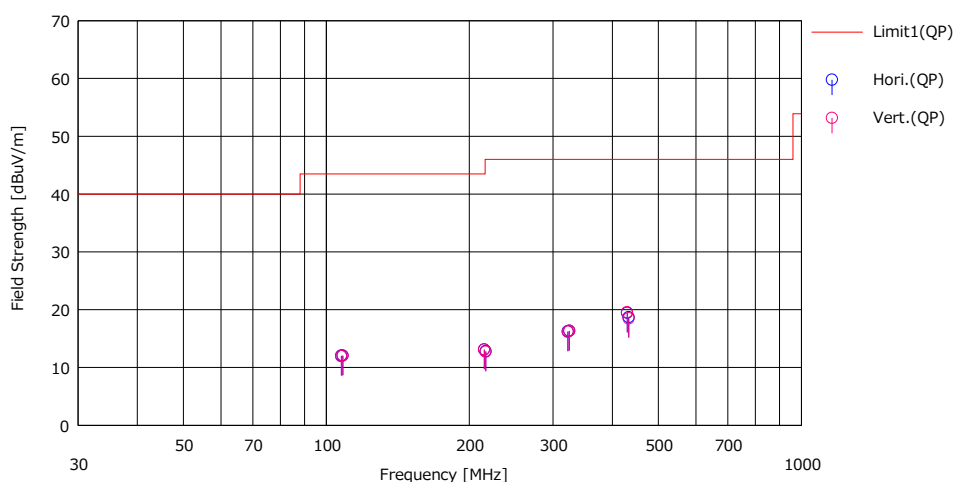
No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[dBuV/m]	[dBuV/m]	[dB]					
1	97.512	22.90	9.76	7.35	28.42	11.59	43.50	31.91	Hori.	337	306	BA	
2	98.288	22.60	9.88	7.35	28.41	11.42	43.50	32.08	Hori.	400	254	BA	
3	195.024	21.20	16.52	8.07	28.00	17.79	43.50	25.71	Hori.	100	0	BA	
4	196.576	22.00	16.52	8.08	28.00	18.60	43.50	24.90	Hori.	100	0	BA	
5	292.536	21.10	13.61	8.67	27.73	15.65	46.00	30.35	Hori.	100	0	LA23	
6	294.864	21.30	13.63	8.68	27.73	15.88	46.00	30.12	Hori.	100	0	LA23	
7	390.048	22.40	15.45	9.30	28.39	18.76	46.00	27.24	Hori.	100	0	LA23	
8	393.152	22.00	15.54	9.32	28.42	18.44	46.00	27.56	Hori.	100	0	LA23	
9	97.512	22.70	9.76	7.35	28.42	11.39	43.50	32.11	Vert.	100	227	BA	
10	98.288	22.70	9.88	7.35	28.41	11.52	43.50	31.98	Vert.	100	341	BA	
11	195.024	21.20	16.52	8.07	28.00	17.79	43.50	25.71	Vert.	100	0	BA	
12	196.576	22.10	16.52	8.08	28.00	18.70	43.50	24.80	Vert.	100	0	BA	
13	292.536	21.10	13.61	8.67	27.73	15.65	46.00	30.35	Vert.	100	0	LA23	
14	294.864	21.20	13.63	8.68	27.73	15.78	46.00	30.22	Vert.	100	0	LA23	
15	390.048	22.50	15.45	9.30	28.39	18.86	46.00	27.14	Vert.	100	0	LA23	
16	393.152	22.00	15.54	9.32	28.42	18.44	46.00	27.56	Vert.	100	0	LA23	

CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

Radiated Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 1 (107.9 MHz)

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[QP]	[QP]	[QP]					
1	107.512	21.70	11.28	7.43	28.38	12.03	43.50	31.47	Hori.	100	0	BA	
2	108.288	21.60	11.39	7.43	28.38	12.04	43.50	31.46	Hori.	100	0	BA	
3	215.024	21.60	11.21	8.19	27.91	13.09	43.50	30.41	Hori.	100	0	LA23	
4	216.576	21.30	11.20	8.20	27.90	12.80	46.00	33.20	Hori.	100	0	LA23	
5	322.536	21.00	14.28	8.84	27.87	16.25	46.00	29.75	Hori.	100	0	LA23	
6	324.864	21.00	14.36	8.85	27.88	16.33	46.00	29.67	Hori.	100	0	LA23	
7	430.048	22.60	16.08	9.48	28.71	19.45	46.00	26.55	Hori.	100	0	LA23	
8	433.152	21.80	16.12	9.49	28.73	18.68	46.00	27.32	Hori.	100	0	LA23	
9	107.512	21.60	11.28	7.43	28.38	11.93	43.50	31.57	Vert.	100	0	BA	
10	108.288	21.60	11.39	7.43	28.38	12.04	43.50	31.46	Vert.	100	0	BA	
11	215.024	21.60	11.21	8.19	27.91	13.09	43.50	30.41	Vert.	100	0	LA23	
12	216.576	21.20	11.20	8.20	27.90	12.70	46.00	33.30	Vert.	100	0	LA23	
13	322.536	20.90	14.28	8.84	27.87	16.15	46.00	29.85	Vert.	100	0	LA23	
14	324.864	21.00	14.36	8.85	27.88	16.33	46.00	29.67	Vert.	100	0	LA23	
15	430.048	22.70	16.08	9.48	28.71	19.55	46.00	26.45	Vert.	100	0	LA23	
16	433.152	21.60	16.12	9.49	28.73	18.48	46.00	27.52	Vert.	100	0	LA23	

CHART: WITH FACTOR

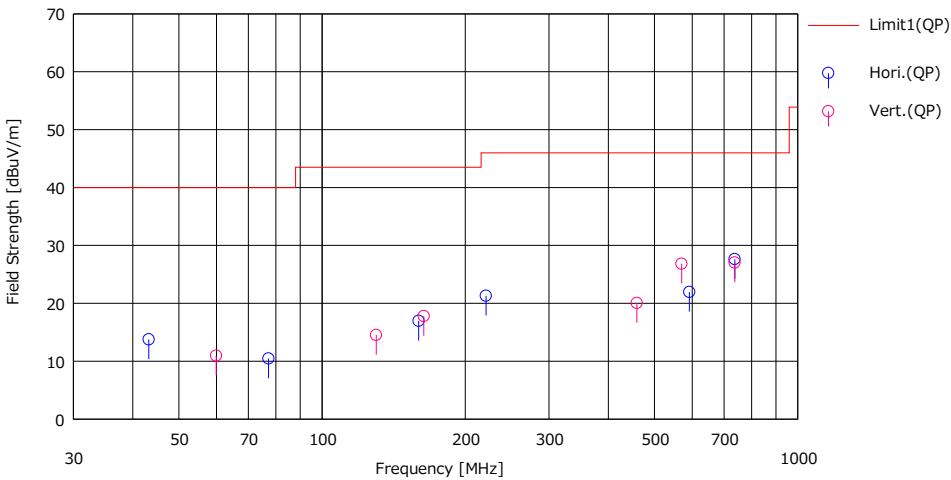
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)

Except for the above table: adequate margin data below the limits.

Radiated Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 23, 2024
Temperature / Humidity	23 deg. C / 66 % RH
Engineer	Hiroki Numata
	(Below 1 GHz)
Mode	Mode 2

Limit : FCC_Part 15 Subpart B(15.109)_Class B



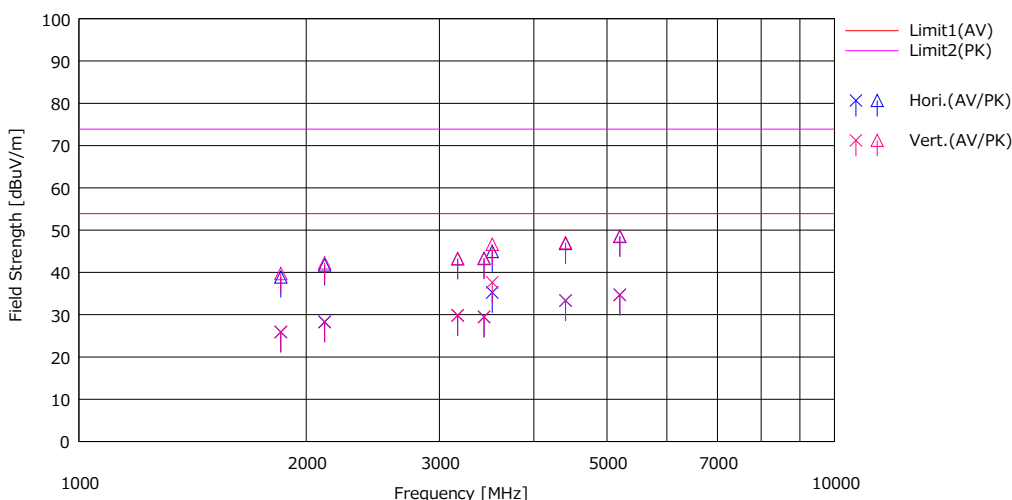
No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[dBuV/m]	[dBuV/m]	[dB]					
1	43.236	21.90	13.57	6.81	28.53	13.75	40.00	26.25	Hori.	400	214	BA	
2	77.177	25.20	6.55	7.16	28.46	10.45	40.00	29.55	Hori.	400	348	BA	
3	159.697	22.00	15.31	7.83	28.18	16.96	43.50	26.54	Hori.	400	109	BA	
4	221.223	29.70	11.23	8.23	27.88	21.28	46.00	24.72	Hori.	155	0	LA23	
5	592.075	22.00	19.12	10.11	29.28	21.95	46.00	24.05	Hori.	100	243	LA23	
6	737.440	26.00	20.18	10.62	29.18	27.62	46.00	18.38	Hori.	100	311	LA23	
7	59.908	24.60	7.85	7.00	28.50	10.95	40.00	29.05	Vert.	100	102	BA	
8	129.950	21.60	13.60	7.61	28.30	14.51	43.50	28.99	Vert.	100	310	BA	
9	163.692	22.50	15.59	7.85	28.16	17.78	43.50	25.72	Vert.	100	289	BA	
10	459.214	22.70	16.67	9.59	28.91	20.05	46.00	25.95	Vert.	100	358	LA23	
11	570.032	27.70	18.35	10.04	29.27	26.82	46.00	19.18	Vert.	100	0	LA23	
12	737.516	25.40	20.18	10.63	29.18	27.03	46.00	18.97	Vert.	162	350	LA23	

CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

Radiated Emission (Analog)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 1 (87.75 MHz)	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV)	(PK)				(AV)	(PK)	(AV)	(PK)							
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dB]	[dB]							
1	1850.898	30.60	43.60	25.27	2.76	32.72	25.91	38.91	53.90	73.90	27.99	34.99	Hori.	100	0	H20	
2	2115.312	30.20	43.70	27.45	2.92	32.32	28.25	41.75	53.90	73.90	25.65	32.15	Hori.	100	0	H20	
3	3172.968	29.60	43.00	28.66	3.46	31.88	29.84	43.24	53.90	73.90	24.06	30.66	Hori.	100	0	H20	
4	3437.382	29.20	43.00	28.46	3.57	31.75	29.48	43.28	53.90	73.90	24.42	30.62	Hori.	100	0	H20	
5	3525.520	34.50	44.20	28.85	3.61	31.71	35.25	44.95	53.90	73.90	18.65	28.95	Hori.	166	195	H20	
6	4406.900	30.10	43.60	30.57	3.98	31.32	33.33	46.83	53.90	73.90	20.57	27.07	Hori.	100	0	H20	
7	5200.142	29.90	43.70	31.63	4.29	31.12	34.70	48.50	53.90	73.90	19.20	25.40	Hori.	100	0	H20	
8	1850.898	30.60	44.40	25.27	2.76	32.72	25.91	39.71	53.90	73.90	27.99	34.19	Vert.	100	0	H20	
9	2115.312	30.30	44.20	27.45	2.92	32.32	28.35	42.25	53.90	73.90	25.55	31.65	Vert.	100	0	H20	
10	3172.968	29.60	43.00	28.66	3.46	31.88	29.84	43.24	53.90	73.90	24.06	30.66	Vert.	100	0	H20	
11	3437.382	29.20	43.10	28.46	3.57	31.75	29.48	43.38	53.90	73.90	24.42	30.52	Vert.	100	0	H20	
12	3525.520	36.90	45.90	28.85	3.61	31.71	37.65	46.65	53.90	73.90	16.25	27.25	Vert.	196	184	H20	
13	4406.900	30.10	43.80	30.57	3.98	31.32	33.33	47.03	53.90	73.90	20.57	26.87	Vert.	100	0	H20	
14	5200.142	29.90	43.80	31.63	4.29	31.12	34.70	48.60	53.90	73.90	19.20	25.30	Vert.	100	0	H20	

CHART: WITH FACTOR

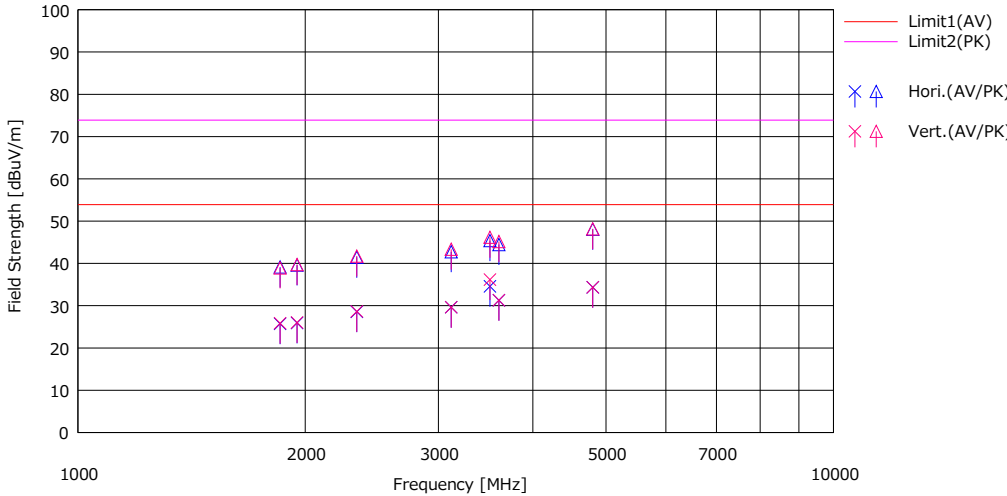
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Analog)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 1 (97.9 MHz)	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]	(AV) [dB]	(PK) [dB]					
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dB]	[dB]	[dB]	[dB]					
1	1852.728	30.40	43.80	25.28	2.76	32.71	25.73	39.13	53.90	73.90	28.17	34.77	Hori.	100	0	H20	
2	1950.240	29.80	43.50	25.76	2.83	32.48	25.91	39.61	53.90	73.90	27.99	34.29	Hori.	100	0	H20	
3	2340.288	30.00	42.90	27.73	3.04	32.23	28.54	41.44	53.90	73.90	25.36	32.46	Hori.	100	0	H20	
4	3120.384	29.40	42.50	28.72	3.43	31.91	29.64	42.74	53.90	73.90	24.26	31.16	Hori.	100	0	H20	
5	3510.432	33.90	44.70	28.78	3.60	31.71	34.57	45.37	53.90	73.90	19.33	28.53	Hori.	165	197	H20	
6	3607.944	30.20	43.40	29.09	3.65	31.67	31.27	44.47	53.90	73.90	22.63	29.43	Hori.	100	0	H20	
7	4802.968	30.00	43.70	31.40	4.14	31.18	34.36	48.06	53.90	73.90	19.54	25.84	Hori.	100	0	H20	
8	1852.728	30.50	43.60	25.28	2.76	32.71	25.83	38.93	53.90	73.90	28.07	34.97	Vert.	100	0	H20	
9	1950.240	29.90	43.60	25.76	2.83	32.48	26.01	39.71	53.90	73.90	27.89	34.19	Vert.	100	0	H20	
10	2340.288	30.10	43.20	27.73	3.04	32.23	28.64	41.74	53.90	73.90	25.26	32.16	Vert.	100	0	H20	
11	3120.384	29.40	43.10	28.72	3.43	31.91	29.64	43.34	53.90	73.90	24.26	30.56	Vert.	100	0	H20	
12	3510.432	35.50	45.50	28.78	3.60	31.71	36.17	46.17	53.90	73.90	17.73	27.73	Vert.	200	186	H20	
13	3607.944	30.20	44.10	29.09	3.65	31.67	31.27	45.17	53.90	73.90	22.63	28.73	Vert.	100	0	H20	
14	4802.968	30.00	43.80	31.40	4.14	31.18	34.36	48.16	53.90	73.90	19.54	25.74	Vert.	100	0	H20	

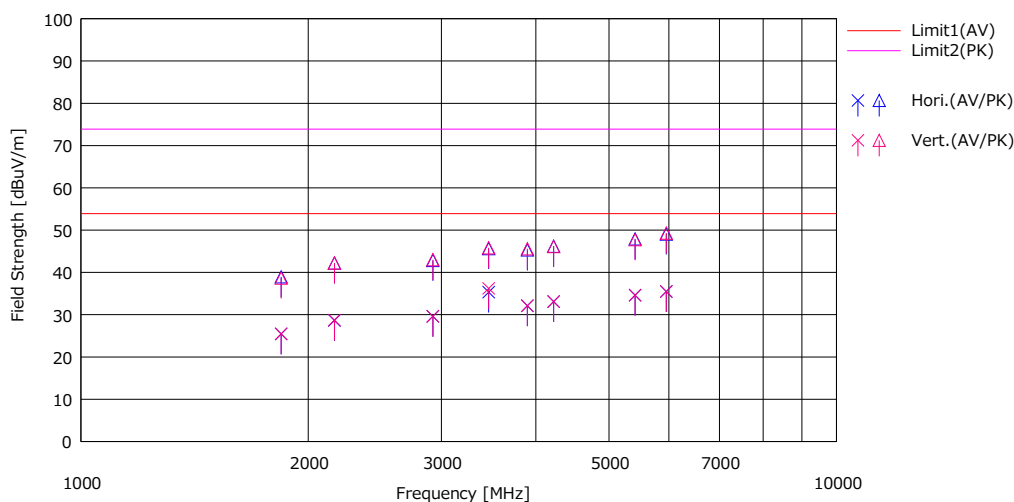
CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Analog)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 1 (107.9 MHz)	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV)	(PK)				(AV)	(PK)	(AV)	(PK)	(AV)	(PK)					
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]					
1	1840.896	30.20	43.70	25.23	2.76	32.74	25.45	38.95	53.90	73.90	28.45	34.95	Hori.	100	0	H20	
2	2165.760	30.00	43.60	27.97	2.95	32.30	28.62	42.22	53.90	73.90	25.28	31.68	Hori.	100	0	H20	
3	2923.776	29.70	42.90	28.58	3.34	32.00	29.62	42.82	53.90	73.90	24.28	31.08	Hori.	100	0	H20	
4	3465.216	34.90	45.20	28.58	3.58	31.74	35.32	45.62	53.90	73.90	18.58	28.28	Hori.	140	230	H20	
5	3898.368	30.20	43.40	29.65	3.78	31.52	32.11	45.31	53.90	73.90	21.79	28.59	Hori.	100	0	H20	
6	4223.232	30.30	43.40	30.28	3.91	31.39	33.10	46.20	53.90	73.90	20.80	27.70	Hori.	100	0	H20	
7	5414.400	29.70	43.00	31.68	4.37	31.13	34.62	47.92	53.90	73.90	19.28	25.98	Hori.	100	0	H20	
8	5955.840	29.80	43.40	32.30	4.56	31.17	35.49	49.09	53.90	73.90	18.41	24.81	Hori.	100	0	H20	
9	1840.896	30.20	43.40	25.23	2.76	32.74	25.45	38.65	53.90	73.90	28.45	35.25	Vert.	100	0	H20	
10	2165.760	30.10	43.60	27.97	2.95	32.30	28.72	42.22	53.90	73.90	25.18	31.68	Vert.	100	0	H20	
11	2923.776	29.70	43.10	28.58	3.34	32.00	29.62	43.02	53.90	73.90	24.28	30.88	Vert.	100	0	H20	
12	3465.216	35.80	45.40	28.58	3.58	31.74	36.22	45.82	53.90	73.90	17.68	28.08	Vert.	132	189	H20	
13	3898.368	30.20	43.70	29.65	3.78	31.52	32.11	45.61	53.90	73.90	21.79	28.29	Vert.	100	0	H20	
14	4223.232	30.30	43.30	30.28	3.91	31.39	33.10	46.10	53.90	73.90	20.80	27.80	Vert.	100	0	H20	
15	5414.400	29.70	42.80	31.68	4.37	31.13	34.62	47.72	53.90	73.90	19.28	26.18	Vert.	100	0	H20	
16	5955.840	29.80	43.60	32.30	4.56	31.17	35.49	49.29	53.90	73.90	18.41	24.61	Vert.	100	0	H20	

CHART: WITH FACTOR

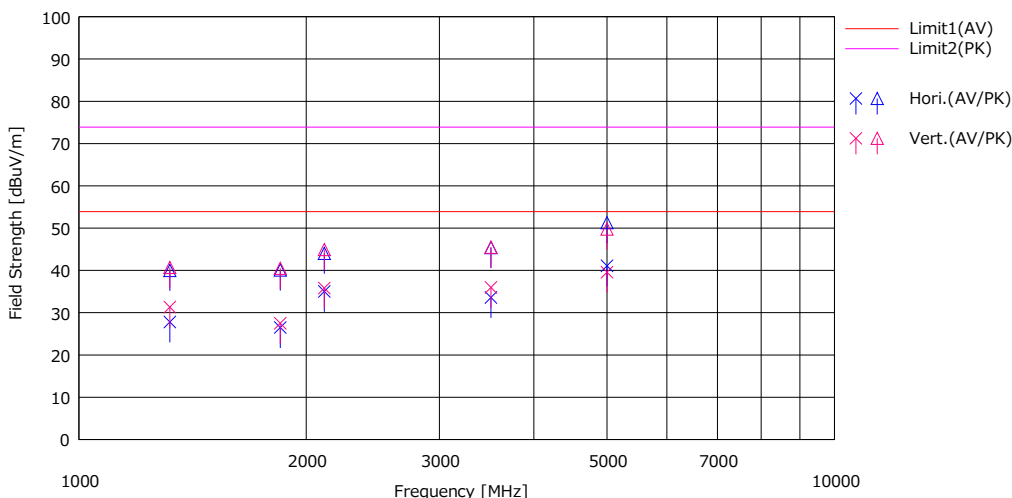
ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Analog)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 2	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV)	(PK)				(AV)	(PK)	(AV)	(PK)							
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dB]	[dB]							
1	1320.002	33.70	45.90	25.68	2.42	34.00	27.80	40.00	53.90	73.90	26.10	33.90	Hori.	186	193	H20	
2	1848.005	31.20	44.80	25.26	2.76	32.73	26.49	40.09	53.90	73.90	27.41	33.81	Hori.	232	58	H20	
3	2112.561	37.00	46.00	27.42	2.92	32.32	35.02	44.02	53.90	73.90	18.88	29.88	Hori.	100	141	H20	
4	3510.427	32.90	44.70	28.78	3.60	31.71	33.57	45.37	53.90	73.90	20.33	28.53	Hori.	125	247	H20	
5	5000.018	36.30	46.50	31.67	4.22	31.11	41.08	51.28	53.90	73.90	12.82	22.62	Hori.	115	215	H20	
6	1320.002	37.20	46.60	25.68	2.42	34.00	31.30	40.70	53.90	73.90	22.60	33.20	Vert.	100	227	H20	
7	1848.005	32.20	45.20	25.26	2.76	32.73	27.49	40.49	53.90	73.90	26.41	33.41	Vert.	100	201	H20	
8	2112.561	37.80	46.90	27.42	2.92	32.32	35.82	44.92	53.90	73.90	18.08	28.98	Vert.	109	134	H20	
9	3510.427	35.30	44.80	28.78	3.60	31.71	35.97	45.47	53.90	73.90	17.93	28.43	Vert.	100	192	H20	
10	5000.018	34.80	45.00	31.67	4.22	31.11	39.58	49.78	53.90	73.90	14.32	24.12	Vert.	100	162	H20	

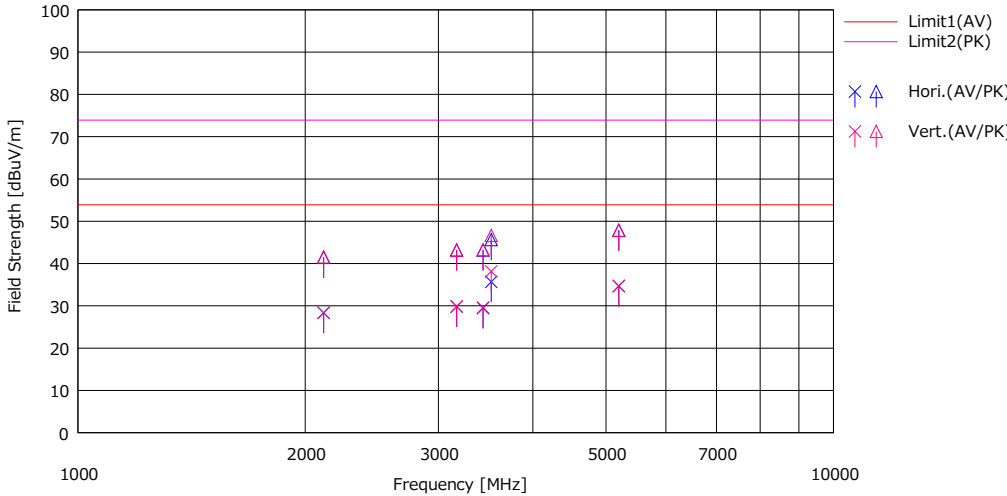
CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Digital)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 1 (87.75 MHz)	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]	(AV) [dB]	(PK) [dB]					
		1	2115.312				30.30	43.40	27.45	2.92	32.32	28.35					
2	3172.968	29.60	43.00	28.66	3.46	31.88	29.84	43.24	53.90	73.90	24.06	30.66	Hori.	100	0	H20	
3	3437.382	29.20	42.90	28.46	3.57	31.75	29.48	43.18	53.90	73.90	24.42	30.72	Hori.	100	0	H20	
4	3525.520	34.90	44.90	28.85	3.61	31.71	35.65	45.65	53.90	73.90	18.25	28.25	Hori.	171	198	H20	
5	5200.142	29.90	43.10	31.63	4.29	31.12	34.70	47.90	53.90	73.90	19.20	26.00	Hori.	100	0	H20	
6	2115.312	30.30	43.50	27.45	2.92	32.32	28.35	41.55	53.90	73.90	25.55	32.35	Vert.	100	0	H20	
7	3172.968	29.60	42.90	28.66	3.46	31.88	29.84	43.14	53.90	73.90	24.06	30.76	Vert.	100	0	H20	
8	3437.382	29.30	43.00	28.46	3.57	31.75	29.58	43.28	53.90	73.90	24.32	30.62	Vert.	100	0	H20	
9	3525.520	37.40	45.90	28.85	3.61	31.71	38.15	46.65	53.90	73.90	15.75	27.25	Vert.	192	170	H20	
10	5200.142	29.90	43.00	31.63	4.29	31.12	34.70	47.80	53.90	73.90	19.20	26.10	Vert.	100	0	H20	

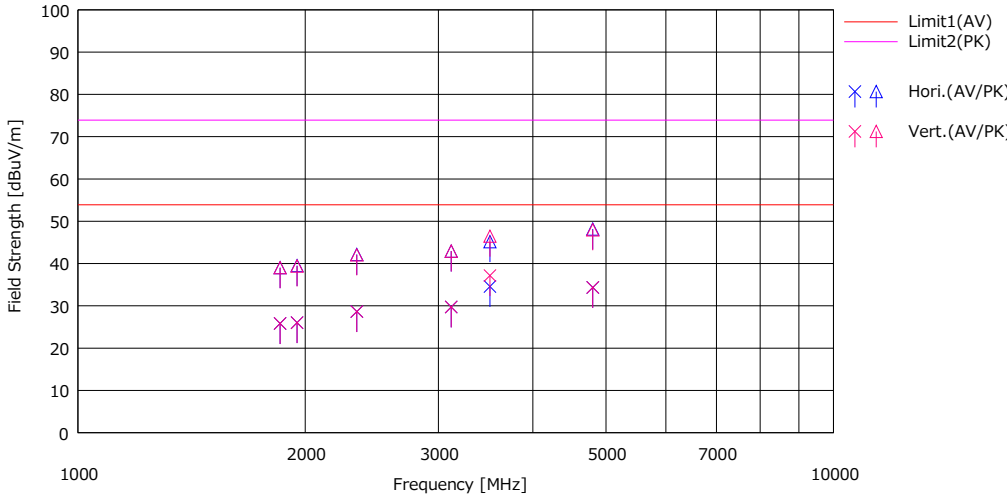
CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Digital)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 1 (97.9 MHz)	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV)	(PK)				(AV)	(PK)	(AV)	(PK)							
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dB]	[dB]							
1	1852.528	30.50	43.70	25.28	2.76	32.72	25.82	39.02	53.90	73.90	28.08	34.88	Hori.	100	0	H20	
2	1950.240	29.90	43.40	25.76	2.83	32.48	26.01	39.51	53.90	73.90	27.89	34.39	Hori.	100	0	H20	
3	2340.288	30.10	43.60	27.73	3.04	32.23	28.64	42.14	53.90	73.90	25.26	31.76	Hori.	100	0	H20	
4	3120.384	29.50	42.70	28.72	3.43	31.91	29.74	42.94	53.90	73.90	24.16	30.96	Hori.	100	0	H20	
5	3510.432	33.90	44.50	28.78	3.60	31.71	34.57	45.17	53.90	73.90	19.33	28.73	Hori.	100	197	H20	
6	4802.968	30.00	43.80	31.40	4.14	31.18	34.36	48.16	53.90	73.90	19.54	25.74	Hori.	100	0	H20	
7	1852.528	30.50	43.70	25.28	2.76	32.72	25.82	39.02	53.90	73.90	28.08	34.88	Vert.	100	0	H20	
8	1950.240	29.90	43.30	25.76	2.83	32.48	26.01	39.41	53.90	73.90	27.89	34.49	Vert.	100	0	H20	
9	2340.288	30.10	43.50	27.73	3.04	32.23	28.64	42.04	53.90	73.90	25.26	31.86	Vert.	100	0	H20	
10	3120.384	29.50	42.70	28.72	3.43	31.91	29.74	42.94	53.90	73.90	24.16	30.96	Vert.	100	0	H20	
11	3510.432	36.50	45.80	28.78	3.60	31.71	37.17	46.47	53.90	73.90	16.73	27.43	Vert.	100	185	H20	
12	4802.968	30.00	43.60	31.40	4.14	31.18	34.36	47.96	53.90	73.90	19.54	25.94	Vert.	100	0	H20	

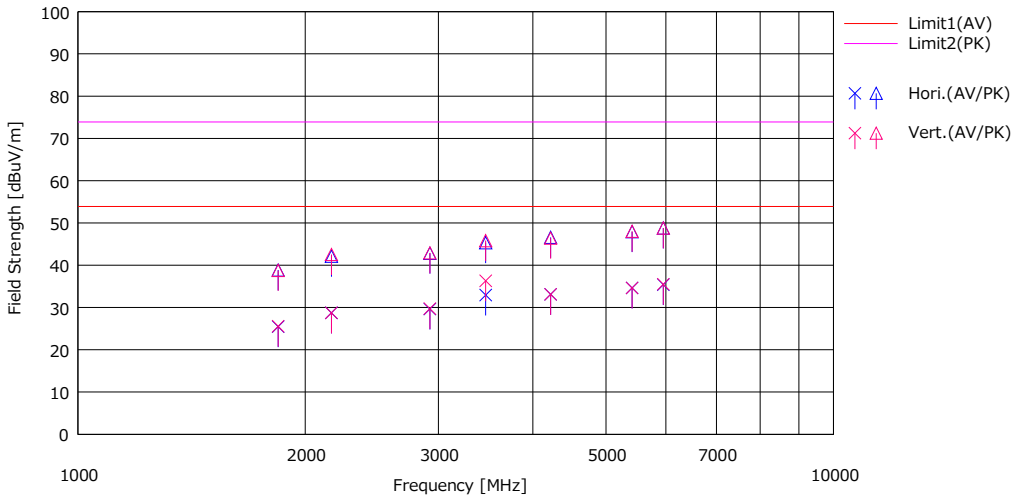
CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Digital)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 1 (107.9 MHz)	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV)	(PK)				(AV)	(PK)	(AV)	(PK)	(AV)	(PK)					
		[dBuV]	[dBuV]				[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]					
1	1840.896	30.20	43.60	25.23	2.76	32.74	25.45	38.85	53.90	73.90	28.45	35.05	Hori.	100	0	H20	
2	2165.760	30.10	43.50	27.97	2.95	32.30	28.72	42.12	53.90	73.90	25.18	31.78	Hori.	100	0	H20	
3	2923.776	29.70	42.90	28.58	3.34	32.00	29.62	42.82	53.90	73.90	24.28	31.08	Hori.	100	0	H20	
4	3465.216	32.50	44.90	28.58	3.58	31.74	32.92	45.32	53.90	73.90	20.98	28.58	Hori.	168	197	H20	
5	4223.232	30.30	43.80	30.28	3.91	31.39	33.10	46.60	53.90	73.90	20.80	27.30	Hori.	100	0	H20	
6	5414.400	29.70	43.00	31.68	4.37	31.13	34.62	47.92	53.90	73.90	19.28	25.98	Hori.	100	0	H20	
7	5955.840	29.70	43.10	32.30	4.56	31.17	35.39	48.79	53.90	73.90	18.51	25.11	Hori.	100	0	H20	
8	1840.896	30.30	43.50	25.23	2.76	32.74	25.55	38.75	53.90	73.90	28.35	35.15	Vert.	100	0	H20	
9	2165.760	30.10	43.90	27.97	2.95	32.30	28.72	42.52	53.90	73.90	25.18	31.38	Vert.	100	0	H20	
10	2923.776	29.80	43.00	28.58	3.34	32.00	29.72	42.92	53.90	73.90	24.18	30.98	Vert.	100	0	H20	
11	3465.216	35.90	45.40	28.58	3.58	31.74	36.32	45.82	53.90	73.90	17.58	28.08	Vert.	112	187	H20	
12	4223.232	30.30	43.60	30.28	3.91	31.39	33.10	46.40	53.90	73.90	20.80	27.50	Vert.	100	0	H20	
13	5414.400	29.70	43.10	31.68	4.37	31.13	34.62	48.02	53.90	73.90	19.28	25.88	Vert.	100	0	H20	
14	5955.840	29.80	43.10	32.30	4.56	31.17	35.49	48.79	53.90	73.90	18.41	25.11	Vert.	100	0	H20	

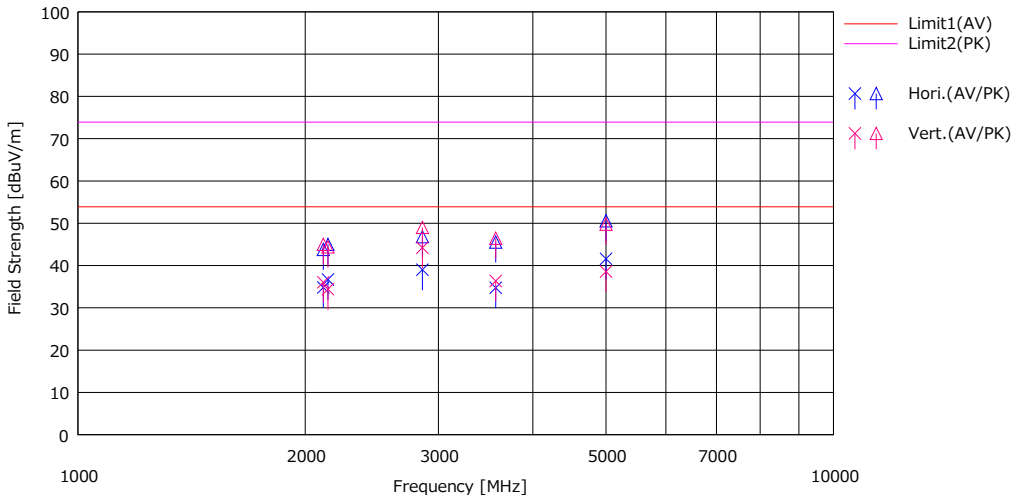
CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Radiated Emission (Digital)

Test place	Ise EMC Lab.	No.3
Semi Anechoic Chamber	No.3	No.3
Date	July 24, 2024	July 28, 2024
Temperature / Humidity	23 deg. C / 65 % RH	22 deg. C / 53 % RH
Engineer	Yuichiro Yamazaki	Tetsuro Yoshida
	(1 GHz - 26 GHz)	(Above 26 GHz)
Mode	Mode 2	

Limit : FCC_Part 15 Subpart B(15.109)_Class B



No.	Freq. [MHz]	Reading		Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result		Limit		Margin		Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(AV) [dBuV]	(PK) [dBuV]				(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dBuV/m]	(PK) [dBuV/m]	(AV) [dB]	(PK) [dB]					
1	2112.561	36.80	45.80	27.42	2.92	32.32	34.82	43.82	53.90	73.90	19.08	30.08	Hori.	100	143	H20	
2	2143.258	38.30	46.60	27.76	2.94	32.30	36.70	45.00	53.90	73.90	17.20	28.90	Hori.	100	224	H20	
3	2857.677	39.20	47.00	28.53	3.31	32.03	39.01	46.81	53.90	73.90	14.89	27.09	Hori.	109	243	H20	
4	3572.097	33.80	44.60	29.00	3.63	31.68	34.75	45.55	53.90	73.90	19.15	28.35	Hori.	100	123	H20	
5	5000.018	36.80	45.80	31.67	4.22	31.11	41.58	50.58	53.90	73.90	12.32	23.32	Hori.	116	213	H20	
6	2112.561	38.00	47.00	27.42	2.92	32.32	36.02	45.02	53.90	73.90	17.88	28.88	Vert.	110	132	H20	
7	2143.258	36.00	46.00	27.76	2.94	32.30	34.40	44.40	53.90	73.90	19.50	29.50	Vert.	113	184	H20	
8	2857.677	44.40	49.20	28.53	3.31	32.03	44.21	49.01	53.90	73.90	9.69	24.69	Vert.	117	214	H20	
9	3572.097	35.40	45.50	29.00	3.63	31.68	36.35	46.45	53.90	73.90	17.55	27.45	Vert.	171	176	H20	
10	5000.018	33.80	45.00	31.67	4.22	31.11	38.58	49.78	53.90	73.90	15.32	24.12	Vert.	100	179	H20	

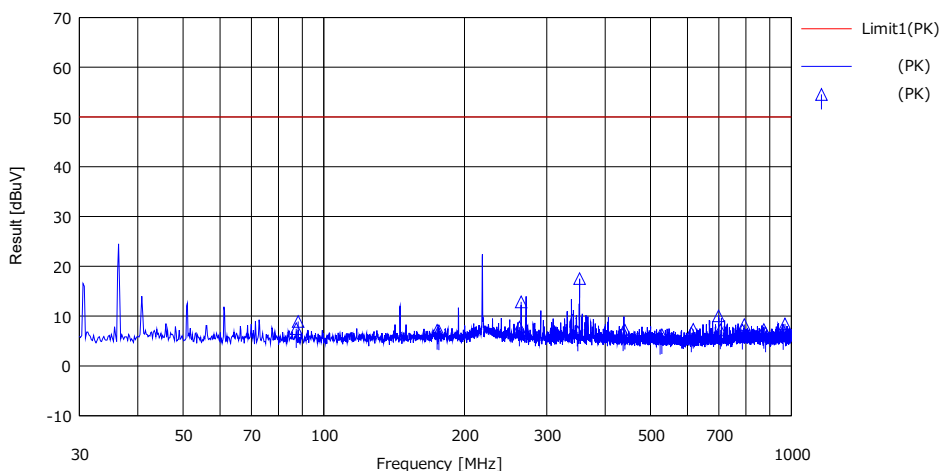
CHART: WITH FACTOR
 ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS(CABLE + ATT) - GAIN(AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (87.75 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	87.362	29.81	0.00	6.11	28.44	7.48	50.00	42.52				---	
2	88.138	31.23	0.00	6.12	28.44	8.91	50.00	41.09				---	
3	174.724	29.10	0.00	6.15	28.11	7.14	50.00	42.86				---	
4	176.276	28.98	0.00	6.15	28.10	7.03	50.00	42.97				---	
5	262.086	29.33	0.00	6.19	27.74	7.78	50.00	42.22				---	
6	264.414	34.41	0.00	6.19	27.74	12.86	50.00	37.14				---	
7	349.448	28.65	0.00	6.21	28.03	6.83	50.00	43.17				---	
8	352.552	39.38	0.00	6.22	28.05	17.55	50.00	32.45				---	
9	436.810	29.36	0.00	6.24	28.76	6.84	50.00	43.16				---	
10	440.690	29.73	0.00	6.24	28.79	7.18	50.00	42.82				---	
11	524.172	29.03	0.00	6.27	29.18	6.12	50.00	43.88				---	
12	528.828	29.19	0.00	6.27	29.19	6.27	50.00	43.73				---	
13	611.534	29.63	0.00	6.29	29.29	6.63	50.00	43.37				---	
14	616.966	30.34	0.00	6.29	29.29	7.34	50.00	42.66				---	
15	698.896	32.96	0.00	6.31	29.23	10.04	50.00	39.96				---	
16	705.104	30.12	0.00	6.32	29.22	7.22	50.00	42.78				---	
17	786.258	29.92	0.00	6.34	29.09	7.17	50.00	42.83				---	
18	793.242	31.05	0.00	6.34	29.07	8.32	50.00	41.68				---	
19	873.620	29.85	0.00	6.36	28.90	7.31	50.00	42.69				---	
20	881.380	29.14	0.00	6.36	28.88	6.62	50.00	43.38				---	
21	960.982	29.41	0.00	6.37	28.68	7.10	50.00	42.90				---	
22	969.518	30.74	0.00	6.37	28.66	8.45	50.00	41.55				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

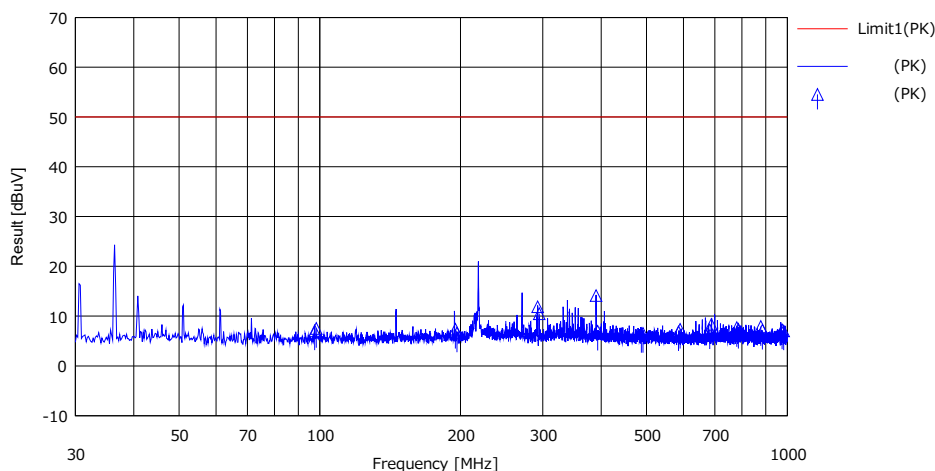
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (97.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	97.512	29.34	0.00	6.12	28.42	7.04	50.00	42.96					
2	98.288	29.80	0.00	6.12	28.41	7.51	50.00	42.49					
3	195.024	29.20	0.00	6.16	28.00	7.36	50.00	42.64					
4	196.576	28.45	0.00	6.16	28.00	6.61	50.00	43.39					
5	292.536	33.40	0.00	6.20	27.73	11.87	50.00	38.13					
6	294.864	32.01	0.00	6.20	27.73	10.48	50.00	39.52					
7	390.048	36.27	0.00	6.23	28.39	14.11	50.00	35.89					
8	393.152	29.15	0.00	6.23	28.42	6.96	50.00	43.04					
9	487.560	29.30	0.00	6.27	29.05	6.52	50.00	43.48					
10	491.440	29.34	0.00	6.27	29.07	6.54	50.00	43.46					
11	585.072	29.87	0.00	6.28	29.28	6.87	50.00	43.13					
12	589.728	30.35	0.00	6.28	29.28	7.35	50.00	42.65					
13	682.584	30.19	0.00	6.31	29.25	7.25	50.00	42.75					
14	688.016	31.28	0.00	6.31	29.24	8.35	50.00	41.65					
15	780.096	30.46	0.00	6.34	29.10	7.70	50.00	42.30					
16	786.304	30.11	0.00	6.34	29.09	7.36	50.00	42.64					
17	877.608	30.44	0.00	6.36	28.89	7.91	50.00	42.09					
18	884.592	29.68	0.00	6.36	28.87	7.17	50.00	42.83					
19	975.120	29.49	0.00	6.37	28.64	7.22	50.00	42.78					
20	982.880	29.26	0.00	6.37	28.62	7.01	50.00	42.99					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

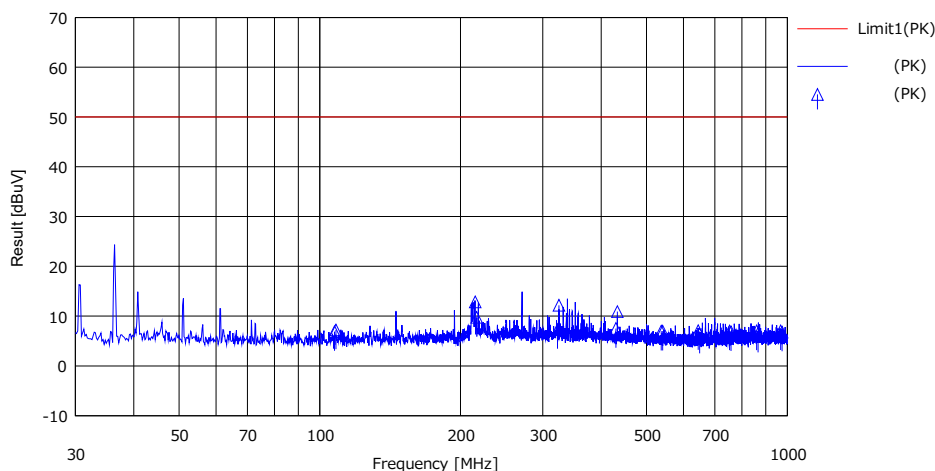
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (107.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	107.512	29.15	0.00	6.12	28.38	6.89	50.00	43.11				---	
2	108.288	29.47	0.00	6.12	28.38	7.21	50.00	42.79				---	
3	215.024	34.60	0.00	6.16	27.91	12.85	50.00	37.15				---	
4	216.576	31.49	0.00	6.16	27.90	9.75	50.00	40.25				---	
5	322.536	28.98	0.00	6.20	27.87	7.31	50.00	42.69				---	
6	324.864	33.87	0.00	6.20	27.88	12.19	50.00	37.81				---	
7	430.048	29.99	0.00	6.24	28.71	7.52	50.00	42.48				---	
8	433.152	33.41	0.00	6.24	28.73	10.92	50.00	39.08				---	
9	537.560	29.93	0.00	6.27	29.22	6.98	50.00	43.02				---	
10	541.440	29.94	0.00	6.27	29.23	6.98	50.00	43.02				---	
11	645.072	30.08	0.00	6.30	29.28	7.10	50.00	42.90				---	
12	649.728	29.37	0.00	6.30	29.28	6.39	50.00	43.61				---	
13	752.584	29.83	0.00	6.33	29.15	7.01	50.00	42.99				---	
14	758.016	29.68	0.00	6.33	29.14	6.87	50.00	43.13				---	
15	860.096	29.61	0.00	6.36	28.93	7.04	50.00	42.96				---	
16	866.304	29.13	0.00	6.36	28.92	6.57	50.00	43.43				---	
17	967.608	29.35	0.00	6.37	28.66	7.06	50.00	42.94				---	
18	974.592	29.09	0.00	6.37	28.65	6.81	50.00	43.19				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

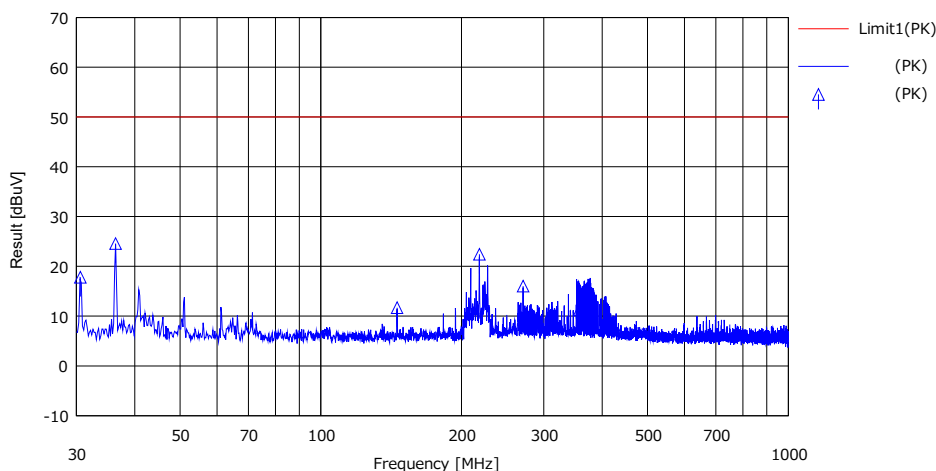
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 4

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margin	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	30.613	40.30	0.00	6.07	28.55	17.82	50.00	32.18					---
2	36.403	47.05	0.00	6.07	28.54	24.58	50.00	25.42					---
3	145.604	33.80	0.00	6.14	28.25	11.69	50.00	38.31					---
4	218.440	44.13	0.00	6.17	27.89	22.41	50.00	27.59					---
5	270.947	37.58	0.00	6.19	27.74	16.03	50.00	33.97					---
6	357.121	33.11	0.00	6.22	28.09	11.24	50.00	38.76					Local 87.75 MHz

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

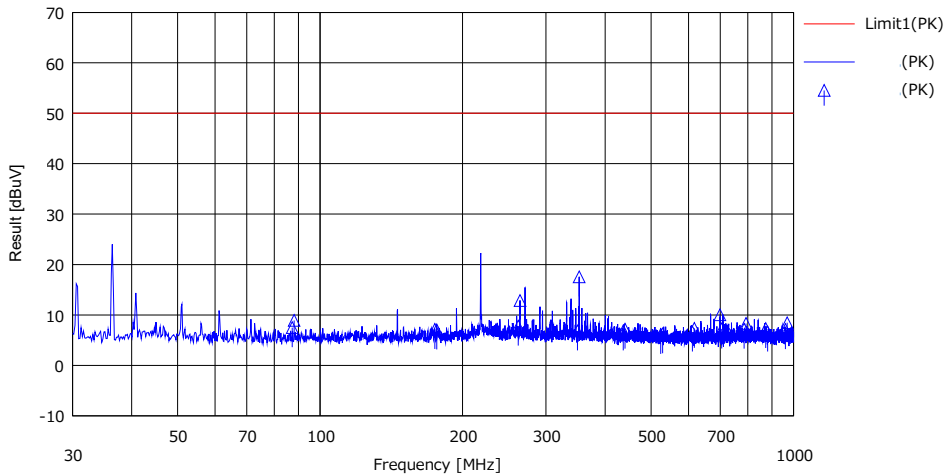
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (87.75 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading (PK)	Ant Fac [dB/m]	Loss [dB]	Gain [dB]	Result (PK)	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[dBuV]	[dB]						
1	87.362	29.81	0.00	6.11	28.44	7.48	50.00	42.52				---	
2	88.138	31.23	0.00	6.12	28.44	8.91	50.00	41.09				---	
3	174.724	29.10	0.00	6.15	28.11	7.14	50.00	42.86				---	
4	176.276	28.98	0.00	6.15	28.10	7.03	50.00	42.97				---	
5	262.086	29.33	0.00	6.19	27.74	7.78	50.00	42.22				---	
6	264.414	34.41	0.00	6.19	27.74	12.86	50.00	37.14				---	
7	349.448	28.65	0.00	6.21	28.03	6.83	50.00	43.17				---	
8	352.552	39.38	0.00	6.22	28.05	17.55	50.00	32.45				---	
9	436.810	29.36	0.00	6.24	28.76	6.84	50.00	43.16				---	
10	440.690	29.73	0.00	6.24	28.79	7.18	50.00	42.82				---	
11	524.172	29.03	0.00	6.27	29.18	6.12	50.00	43.88				---	
12	528.828	29.19	0.00	6.27	29.19	6.27	50.00	43.73				---	
13	611.534	29.63	0.00	6.29	29.29	6.63	50.00	43.37				---	
14	616.966	30.34	0.00	6.29	29.29	7.34	50.00	42.66				---	
15	698.896	32.96	0.00	6.31	29.23	10.04	50.00	39.96				---	
16	705.104	30.12	0.00	6.32	29.22	7.22	50.00	42.78				---	
17	786.258	29.92	0.00	6.34	29.09	7.17	50.00	42.83				---	
18	793.242	31.05	0.00	6.34	29.07	8.32	50.00	41.68				---	
19	873.620	29.85	0.00	6.36	28.90	7.31	50.00	42.69				---	
20	881.380	29.14	0.00	6.36	28.88	6.62	50.00	43.38				---	
21	960.982	29.41	0.00	6.37	28.68	7.10	50.00	42.90				---	
22	969.518	30.74	0.00	6.37	28.66	8.45	50.00	41.55				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

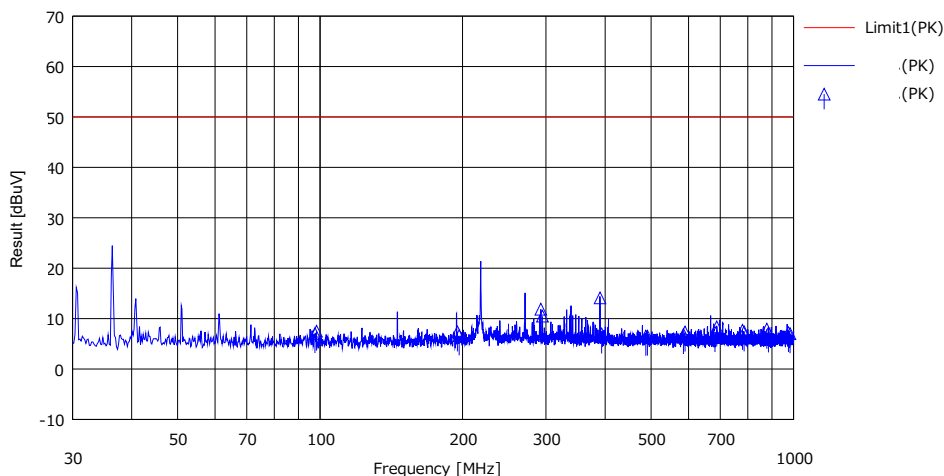
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (97.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit*1)	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		[dBuV]				[dBuV]	[dB]						
1	97.512	29.34	0.00	6.12	28.42	7.04	50.00	42.96				---	
2	98.288	29.80	0.00	6.12	28.41	7.51	50.00	42.49				---	
3	195.024	29.20	0.00	6.16	28.00	7.36	50.00	42.64				---	
4	196.576	28.45	0.00	6.16	28.00	6.61	50.00	43.39				---	
5	292.536	33.40	0.00	6.20	27.73	11.87	50.00	38.13				---	
6	294.864	32.01	0.00	6.20	27.73	10.48	50.00	39.52				---	
7	390.048	36.27	0.00	6.23	28.39	14.11	50.00	35.89				---	
8	393.152	29.15	0.00	6.23	28.42	6.96	50.00	43.04				---	
9	487.560	29.30	0.00	6.27	29.05	6.52	50.00	43.48				---	
10	491.440	29.34	0.00	6.27	29.07	6.54	50.00	43.46				---	
11	585.072	29.87	0.00	6.28	29.28	6.87	50.00	43.13				---	
12	589.728	30.35	0.00	6.28	29.28	7.35	50.00	42.65				---	
13	682.584	30.19	0.00	6.31	29.25	7.25	50.00	42.75				---	
14	688.016	31.28	0.00	6.31	29.24	8.35	50.00	41.65				---	
15	780.096	30.46	0.00	6.34	29.10	7.70	50.00	42.30				---	
16	786.304	30.11	0.00	6.34	29.09	7.36	50.00	42.64				---	
17	877.608	30.44	0.00	6.36	28.89	7.91	50.00	42.09				---	
18	884.592	29.68	0.00	6.36	28.87	7.17	50.00	42.83				---	
19	975.120	29.49	0.00	6.37	28.64	7.22	50.00	42.78				---	
20	982.880	29.26	0.00	6.37	28.62	7.01	50.00	42.99				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

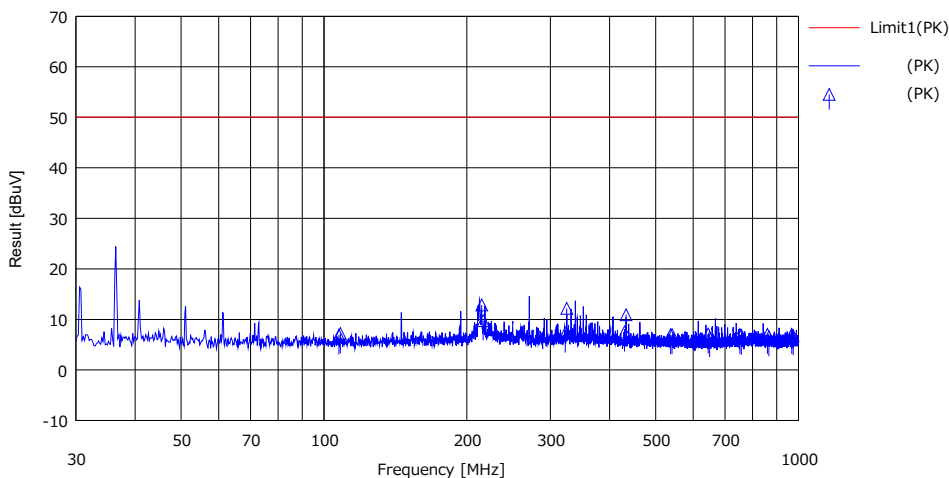
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (107.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit*1)	Margn	Pda. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK)				[dBuV]	(PK)	[dB]					
1	107.512	29.15	0.00	6.12	28.38	6.89	50.00	43.11				---	
2	108.288	29.47	0.00	6.12	28.38	7.21	50.00	42.79				---	
3	215.024	34.60	0.00	6.16	27.91	12.85	50.00	37.15				---	
4	216.576	31.49	0.00	6.16	27.90	9.75	50.00	40.25				---	
5	322.536	28.98	0.00	6.20	27.87	7.31	50.00	42.69				---	
6	324.864	33.87	0.00	6.20	27.88	12.19	50.00	37.81				---	
7	430.048	29.99	0.00	6.24	28.71	7.52	50.00	42.48				---	
8	433.152	33.41	0.00	6.24	28.73	10.92	50.00	39.08				---	
9	537.560	29.93	0.00	6.27	29.22	6.98	50.00	43.02				---	
10	541.440	29.94	0.00	6.27	29.23	6.98	50.00	43.02				---	
11	645.072	30.08	0.00	6.30	29.28	7.10	50.00	42.90				---	
12	649.728	29.37	0.00	6.30	29.28	6.39	50.00	43.61				---	
13	752.584	29.83	0.00	6.33	29.15	7.01	50.00	42.99				---	
14	758.016	29.68	0.00	6.33	29.14	6.87	50.00	43.13				---	
15	860.096	29.61	0.00	6.36	28.93	7.04	50.00	42.96				---	
16	866.304	29.13	0.00	6.36	28.92	6.57	50.00	43.43				---	
17	967.608	29.35	0.00	6.37	28.66	7.06	50.00	42.94				---	
18	974.592	29.09	0.00	6.37	28.65	6.81	50.00	43.19				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

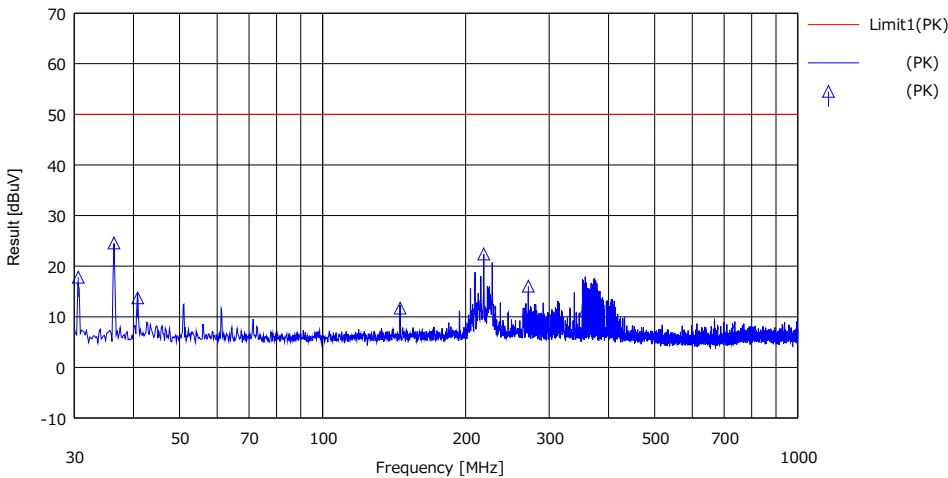
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 4

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK)				[dBuV]	(PK)	(PK)					
1	30.613	40.30	0.00	6.07	28.55	17.82	50.00	32.18				---	
2	36.403	47.05	0.00	6.07	28.54	24.58	50.00	25.42				---	
3	40.819	36.17	0.00	6.09	28.53	13.73	50.00	36.27				---	
4	145.604	33.80	0.00	6.14	28.25	11.69	50.00	38.31				---	
5	218.440	44.13	0.00	6.17	27.89	22.41	50.00	27.59				---	Local 87.75 MHz
6	270.947	37.58	0.00	6.19	27.74	16.03	50.00	33.97				---	
7	357.121	33.11	0.00	6.22	28.09	11.24	50.00	38.76				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

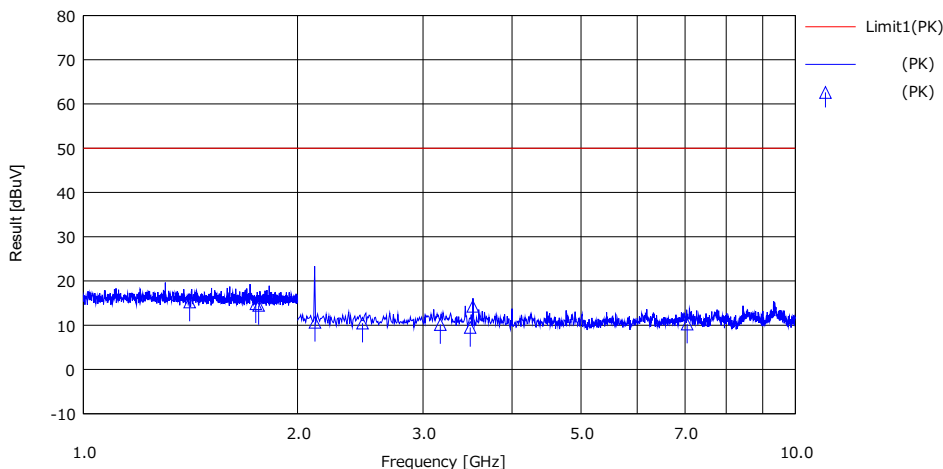
CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (87.75 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	1410.208	43.96	0.00	6.44	35.16	15.24	50.00	34.76					
2	1747.240	43.14	0.00	6.50	34.82	14.82	50.00	35.18					
3	1762.760	42.76	0.00	6.50	34.80	14.46	50.00	35.54					
4	2115.312	42.93	0.00	2.22	34.51	10.64	50.00	39.36					
5	2467.864	42.52	0.00	2.27	34.34	10.45	50.00	39.55					
6	3172.968	41.90	0.00	2.34	34.09	10.15	50.00	39.85					
7	3494.480	40.94	0.00	2.36	33.84	9.46	50.00	40.54					
8	3525.520	45.70	0.00	2.37	33.82	14.25	50.00	35.75					
9	7051.040	40.98	0.00	2.64	33.39	10.23	50.00	39.77					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

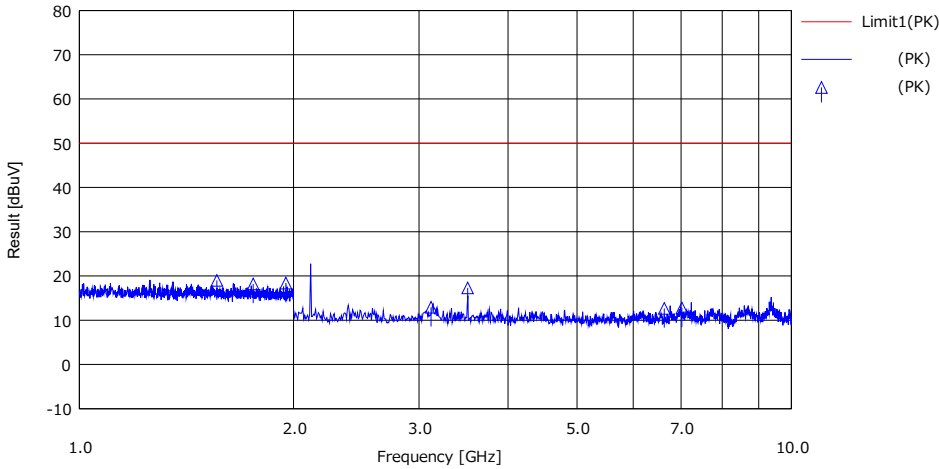
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (97.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pda [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	1560.192	47.50	0.00	6.47	35.00	18.97	50.00	31.03					
2	1755.216	46.51	0.00	6.50	34.81	18.20	50.00	31.80					
3	1950.240	46.49	0.00	6.52	34.61	18.40	50.00	31.60					
4	3120.384	44.70	0.00	2.33	34.13	12.90	50.00	37.10					
5	3510.432	48.74	0.00	2.37	33.83	17.28	50.00	32.72					
6	6630.816	43.43	0.00	2.63	33.39	12.67	50.00	37.33					
7	7020.864	43.52	0.00	2.64	33.38	12.78	50.00	37.22					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

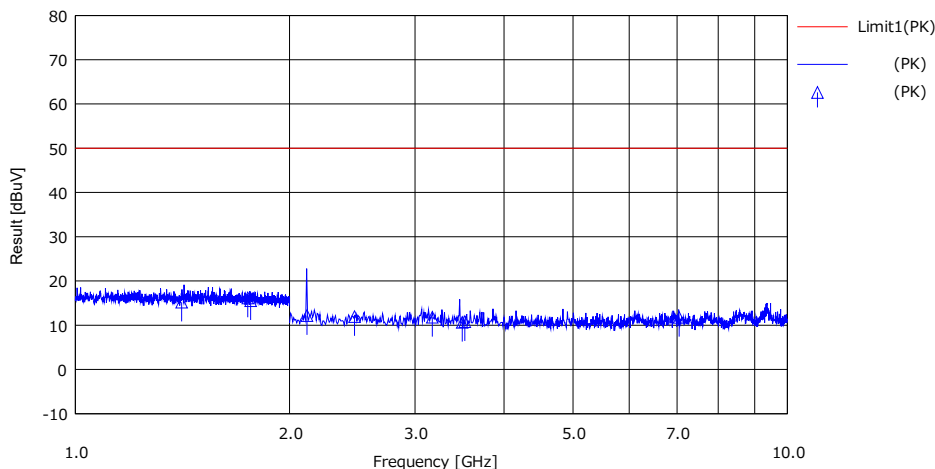
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (107.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	1410.208	43.91	0.00	6.44	35.16	15.19	50.00	34.81					
2	1747.240	44.48	0.00	6.50	34.82	16.16	50.00	33.84					
3	1762.760	43.83	0.00	6.50	34.80	15.53	50.00	34.47					
4	2115.312	44.45	0.00	2.22	34.51	12.16	50.00	37.84					
5	2467.864	43.99	0.00	2.27	34.34	11.92	50.00	38.08					
6	3172.968	43.52	0.00	2.34	34.09	11.77	50.00	38.23					
7	3494.480	42.13	0.00	2.36	33.84	10.65	50.00	39.35					
8	3525.520	42.24	0.00	2.37	33.82	10.79	50.00	39.21					
9	7051.040	42.50	0.00	2.64	33.39	11.75	50.00	38.25					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

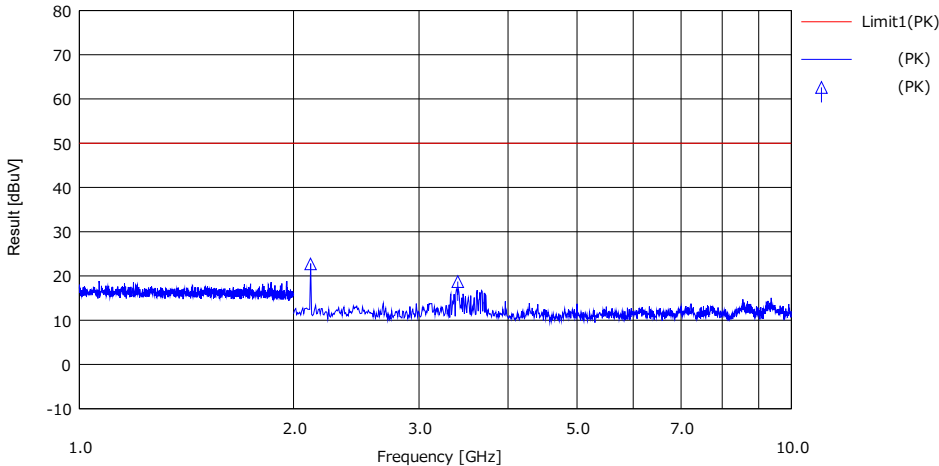
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Analog)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 4

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pda	Height	Angle	Ant. Type	Comment
		[dBuV]				[dBuV]	[dB]	[dB]					
1	2112.972	55.02	0.00	2.22	34.51	22.73	50.00	27.27				---	
2	3400.274	50.26	0.00	2.36	33.91	18.71	50.00	31.29				---	Local 94.1 MHz

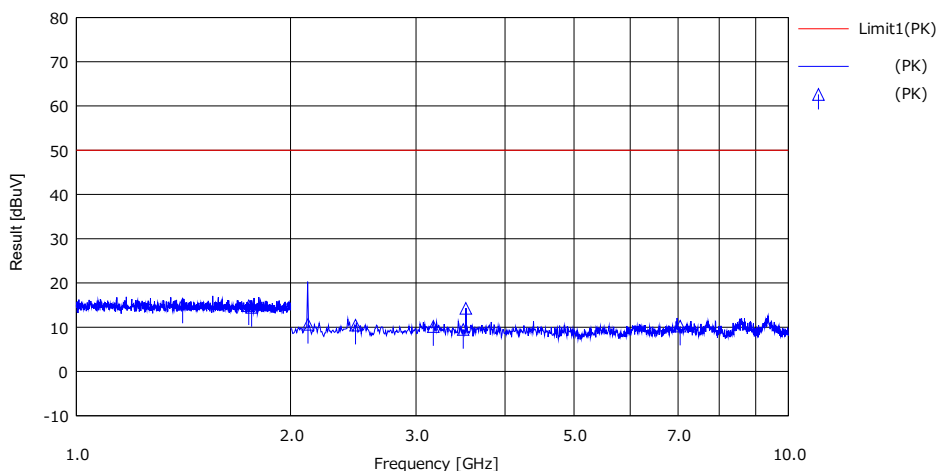
* 2 nW = -57 dBm = 50 dBuV
 CHART: WITH FACTOR
 CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)
 Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (87.75 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pda	Height	Angle	Ant. Type	Comment
		(PK)				[dBuV]	(PK)	(PK)					
1	1410.208	43.96	0.00	6.44	35.16	15.24	50.00	34.76					
2	1747.240	43.14	0.00	6.50	34.82	14.82	50.00	35.18					
3	1762.760	42.76	0.00	6.50	34.80	14.46	50.00	35.54					
4	2115.312	42.93	0.00	2.22	34.51	10.64	50.00	39.36					
5	2467.864	42.52	0.00	2.27	34.34	10.45	50.00	39.55					
6	3172.968	41.90	0.00	2.34	34.09	10.15	50.00	39.85					
7	3494.480	40.94	0.00	2.36	33.84	9.46	50.00	40.54					
8	3525.520	45.70	0.00	2.37	33.82	14.25	50.00	35.75					
9	7051.040	40.98	0.00	2.64	33.39	10.23	50.00	39.77					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

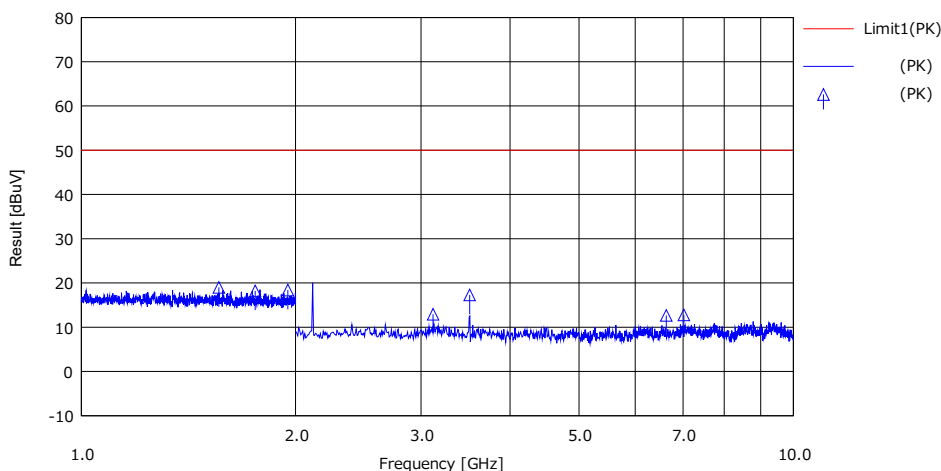
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (97.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pola [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	1560.192	47.50	0.00	6.47	35.00	18.97	50.00	31.03				---	
2	1755.216	46.51	0.00	6.50	34.81	18.20	50.00	31.80				---	
3	1950.240	46.49	0.00	6.52	34.61	18.40	50.00	31.60				---	
4	3120.384	44.70	0.00	2.33	34.13	12.90	50.00	37.10				---	
5	3510.432	48.74	0.00	2.37	33.83	17.28	50.00	32.72				---	
6	6630.816	43.43	0.00	2.63	33.39	12.67	50.00	37.33				---	
7	7020.864	43.52	0.00	2.64	33.38	12.78	50.00	37.22				---	

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

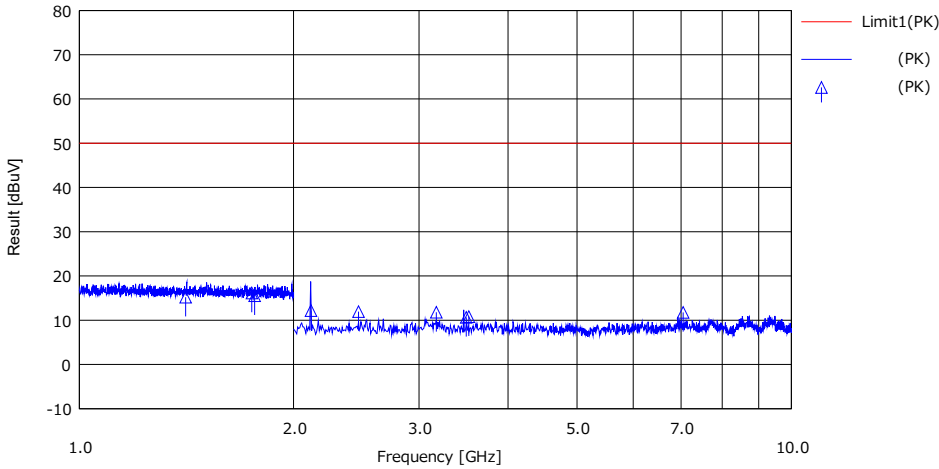
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 3 (107.9 MHz)

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pda	Height	Angle	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	1410.208	43.91	0.00	6.44	35.16	15.19	50.00	34.81					
2	1747.240	44.48	0.00	6.50	34.82	16.16	50.00	33.84					
3	1762.760	43.83	0.00	6.50	34.80	15.53	50.00	34.47					
4	2115.312	44.45	0.00	2.22	34.51	12.16	50.00	37.84					
5	2467.864	43.99	0.00	2.27	34.34	11.92	50.00	38.08					
6	3172.968	43.52	0.00	2.34	34.09	11.77	50.00	38.23					
7	3494.480	42.13	0.00	2.36	33.84	10.65	50.00	39.35					
8	3525.520	42.24	0.00	2.37	33.82	10.79	50.00	39.21					
9	7051.040	42.50	0.00	2.64	33.39	11.75	50.00	38.25					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

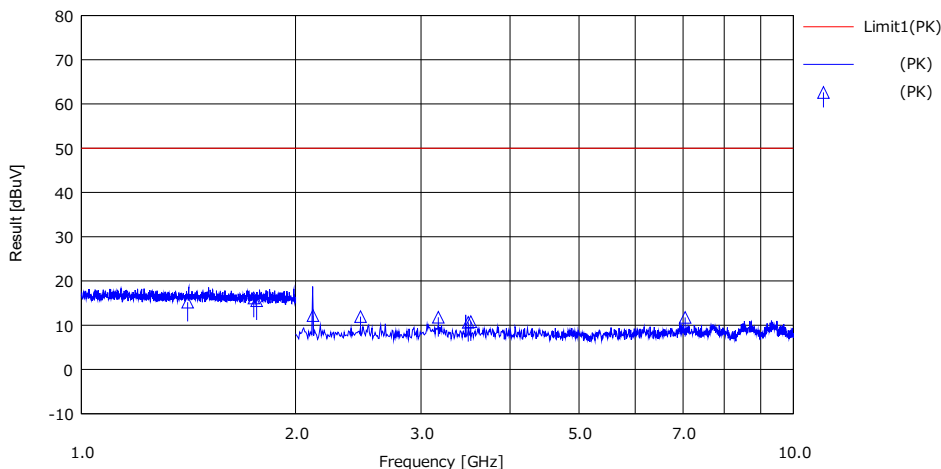
Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

Antenna Terminal Conducted Emission (Digital)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No.2
Date	July 24, 2024
Temperature / Humidity	23 deg. C / 64 % RH
Engineer	Hiroki Numata
Mode	Mode 4

Limit : FCC15.111 Antenna terminal measurement



No.	Freq. [MHz]	Reading	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result	Limit *1)	Margn	Pda	Height	Angle	Ant. Type	Comment
		(PK) [dBuV]				(PK) [dBuV]	(PK) [dB]						
1	1410.208	43.91	0.00	6.44	35.16	15.19	50.00	34.81					
2	1747.240	44.48	0.00	6.50	34.82	16.16	50.00	33.84					
3	1762.760	43.83	0.00	6.50	34.80	15.53	50.00	34.47					
4	2115.312	44.45	0.00	2.22	34.51	12.16	50.00	37.84					
5	2467.864	43.99	0.00	2.27	34.34	11.92	50.00	38.08					
6	3172.968	43.52	0.00	2.34	34.09	11.77	50.00	38.23					
7	3494.480	42.13	0.00	2.36	33.84	10.65	50.00	39.35					
8	3525.520	42.24	0.00	2.37	33.82	10.79	50.00	39.21					
9	7051.040	42.50	0.00	2.64	33.39	11.75	50.00	38.25					

* 2 nW = -57 dBm = 50 dBuV

CHART: WITH FACTOR

CALCULATION: RESULT = READING + LOSS (CABLE + Matching Pad) – GAIN (AMP)

Except for the above table: adequate margin data below the limits.

* No signal was detected above 10 GHz.

APPENDIX 2: Test instruments

Test equipment (1/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
AT	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	08/01/2023	12
AT	141550	Matching Pad Anritsu	Anritsu Corporation	MB-009	40063	07/04/2024	12
AT	141579	Pre Amplifier	Keysight Technologies Inc	8449B	3008A02142	02/17/2024	12
AT	141588	Pre Amplifier	L3 Narda-MITEQ	AMF-6F-2600400-33-8P / AMF-4F-2600400-33-8P	1871355 /1871328	01/22/2024	12
AT	141594	Pre Amplifier	Keysight Technologies Inc	8447D	2944A10150	02/17/2024	12
AT	141884	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY44020357	05/09/2024	12
AT	160324	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	10/05/2023	12
AT	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
AT	156190	DC Block	EMC Instruments Corporation	N9398C	MY46457635	07/04/2024	12
AT	244707	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202102	01/25/2024	12
AT	248911	Microwave Cable	Huber+Suhner	SF126E/11PC35/11PC35/1000MM	537060/126E	05/29/2024	12
RE	141267	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-192	09/21/2023	12
RE	141317	Coaxial Cable	UL Japan	-	-	09/12/2023	12
RE	141427	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103B+ BBA9106	08031	07/11/2023	12
RE	141506	Horn Antenna 15-40GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9170	BBHA9170307	08/09/2023	12
RE	141507	Horn Antenna 1-18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	258	11/20/2023	12
RE	141517	Horn Antenna 26.5-40GHz	ETS-Lindgren	3160-10	152399	11/20/2023	12
RE	141532	DIGITAL HiTESTER	HIOKI E.E. CORPORATION	3805	051201197	01/31/2024	12
RE	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	08/01/2023	12
RE	141580	MicroWave System Amplifier	Keysight Technologies Inc	83017A	MY39500779	03/08/2024	12
RE	141588	Pre Amplifier	L3 Narda-MITEQ	AMF-6F-2600400-33-8P / AMF-4F-2600400-33-8P	1871355 /1871328	01/22/2024	12
RE	141594	Pre Amplifier	Keysight Technologies Inc	8447D	2944A10150	02/17/2024	12
RE	141894	Signal Generator	Rohde & Schwarz	SMC100A	103408	10/05/2023	12
RE	141899	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY46180655	05/09/2024	12
RE	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	06/05/2024	12
RE	141950	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	11/20/2023	12
RE	142004	AC2_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	12/12/2023	24
RE	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/11/2023	24
RE	142013	AC3_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/12/2023	24
RE	142183	Measure	KOMELON	KMC-36	-	10/20/2023	12
RE	142228	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	145817	HD Radio Vector Signal Generator	MEGURO ELECTRONICS CORPORATION	MSG-3100	2100109	-	-
RE	160324	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	10/05/2023	12
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	220646	Attenuator	Huber+Suhner	6806_N-50-1	-	03/12/2024	12

Test equipment (2/2)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	244707	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202102	01/25/2024	12
RE	244709	Thermo-Hygrometer	HIOKI E.E. CORPORATION	LR5001	231202103	01/25/2024	12
RE	245787	Double Ridge Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	689	03/06/2024	12
RE	246001	Microwave Cable	Huber+Suhner	SF103/11PC35/11P C35/1000mm / SF126E/5000mm	800673(1m) / 610204(5m)	03/06/2024	12

*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

RE: Radiated emission

AT: Antenna Terminal Conducted