

RADIO TEST REPORT

Test Report No.: 15706341H-R1

Customer	Fujikura Ltd.
Description of EUT	60 GHz Millimeter-Wave Wireless Communication Module
Model Number of EUT	FCM604
FCC ID	2BOE2FCM604
Test Regulation	FCC Part 15 Subpart C
Test Result	Complied
Issue Date	April 28, 2025
Remarks	-

Representative test engineer  Yuichiro Yamazaki Engineer	Approved by  Ryota Yamanaka Engineer
  CERTIFICATE 5107.02	
☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc. ☒ There is no testing item of "Non-accreditation".	

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REVISION HISTORY

Original Test Report No.: 15706341H

This report is a revised version of 15706341H. 15706341H is replaced with this report.

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15706341H	April 17, 2025	-
1	15706341H-R1	April 28, 2025	Section 2.2 -Added 62.64 GHz to frequency of Operation Section 3.2 -Modified frequency of worst margin for conducted emission test. 2.977205 MHz → 2.97205 MHz -Modified specification of EIRP (Peak, Average) Duty cycle. Section 15.255(c) → Section 15.255(c)(1)(i) -Modified below text for FCC Part 15.31 (e). This EUT provides the stable voltage constantly to RF Module regardless of input voltage. → This EUT provides the stable voltage constantly to RF part regardless of input voltage. Section 4.1 -Modified below text for the Details of Operating Mode(s). *1) The mode was tested as a representative, because it had EIRP (Peak). → *1) These modes were tested as representative because they showed the maximum value in EIRP (peak) for each modulation. Section 6 -Modified below text for test procedure [For below 30 MHz]. The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with absorbent materials lined on a ground plane. → The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane. APPENDIX 1 Spurious Emissions (Above 40 GHz) -All 0.00 dB parts in the table are highlighted in light blue below mode. P 45 Mode: Tx MCS 0 58.32 GHz [Average Result] P 63 Mode: Tx MCS 10 58.32 GHz [Peak Result] P 64, 68, 69 -Modified mode name. Tx MCS 6 60.48 GHz → Tx MCS 10 60.48 GHz P 68, 69 Replaced plot data Frequency Stability (Mode: Tx MCS 10) -Modified CH1 Lower Result of 30 deg. C in the table. 57.081 → 57.007 -Modified CH1 Lower Result of 10 deg. C in the table. 57.114 → 57.144 -Replaced chart data of 30 deg. C for Ch 1: 58.32 GHz. APPENDIX 2 -Modified Last Calibration Date of 142008 for RE and CE. 2023/12/22 → 12/22/2023

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	Fujikura Ltd.
Address	1440 Mutsuzaki, Sakura-shi, Chiba-ken 285-8550 Japan
Telephone Number	+81-434-84-1705
Contact Person	Takayuki Tanaka

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	60 GHz Millimeter-Wave Wireless Communication Module
Model Number	FCM604
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	March 28, 2025
Test Date	March 31 to April 25, 2025

2.2 Product Description

General Specification

Rating	DC 11.4 V to DC 12.6 V
Operating temperature	-30 deg. C to 70 deg. C

Radio Specification

Equipment Type	Transceiver
Frequency of Operation	58.32 GHz 60.48 GHz 62.64 GHz 64.80 GHz
Bandwidth	2.16 GHz
Type of Modulation	DBPSK, $\pi/2$ -BPSK, $\pi/2$ -QPSK, $\pi/2$ -16QAM

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	FCC Part 15 Subpart C The latest version on the first day of the testing period
Title	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 Conducted limits. Section 15.255 Operation within the band 57-71 GHz.

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted Emission	ANSI C63.10-2020, 6. Standard test methods	Section 15.207	14.68 dB, 2.97205 MHz, N, AV	Complied	-
Duty cycle	-	-	See data	Complied	Radiated
6dB Bandwidth	Section 15.255(e) (2) ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	Section 15.255(e) (1)	See data	Complied	Radiated
99% Occupied Bandwidth	ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	-		Complied	Radiated
20dB Bandwidth	Section 15.255(e) (2) ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	Section 15.215 (c)		Complied	Radiated
EIRP (Peak, Average) Duty cycle	ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	Section 15.255(c)(1)(i)		Complied	Radiated
Peak Output Power	ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	Section 15.255(e)		Complied	Radiated
Spurious Emissions	Section 15.255(e) ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	Section 15.255(d) Section 15.209	0.6 dB 3520.0 MHz, AV, Horizontal	Complied	Radiated
Frequency Stability	ANSI C63.10 2020, 9. Procedures for testing millimeter-wave systems	Section 15.255(f)	See data.	Complied	Radiated
Group Installation	-	Section 15.255(h)	See data.	Complied	*1)

Note: UL Japan, Inc.'s EMI Work Procedures: Work Instructions-ULID-003591 and Work Instructions-ULID-003593.
In case any questions arise about test procedure, ANSI C63.10-2020 are also referred.

*1) The test is not applicable since there are no external phase-locking inputs in this EUT.

FCC Part 15.31 (e)

This EUT provides the stable voltage constantly to RF part regardless of input voltage.
Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.3 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.

Conducted emission

Item	Frequency range	Unit	Calculated Uncertainty (+/-)
AMN (LISN)	0.15 MHz to 30 MHz	dB	3.3

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	4.7
		Vertical	4.7
	200 MHz to 1000 MHz	Horizontal	4.8
		Vertical	6.0
10 m	30 MHz to 200 MHz	Horizontal	5.2
		Vertical	5.1
	200 MHz to 1000 MHz	Horizontal	5.2
		Vertical	5.2
3 m	1 GHz to 6 GHz	dB	5.0
	6 GHz to 18 GHz	dB	5.2
1 m	10 GHz to 18 GHz	dB	5.3
	18 GHz to 26.5 GHz	dB	5.2
	26.5 GHz to 40 GHz	dB	4.7
0.5 m	26.5 GHz to 40 GHz	dB	4.8
>= 0.5 m	40 GHz to 50 GHz	dB	4.3
>= 0.5 m	50 GHz to 75 GHz	dB	5.9
>= 0.5 m	75 GHz to 110 GHz	dB	5.7
>= 3.8 cm	110 GHz to 170 GHz	dB	5.8
>= 2.5 cm	170 GHz to 260 GHz	dB	5.0

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	-	-

* Size of vertical conducting plane (for Conducted Emission test): 2.0 m x 3.0 m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test data, RF Exposure, Test instruments, and Test set up

Refer to APPENDIX.

SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode	CH / Frequency	Modulation	Remarks*
IEEE 802.11ad (11ad)	1 / 58.32 GHz	DBPSK	MCS 0, PN9
	2 / 60.48 GHz	$\pi/2$ BPSK	MCS 1, PN9
	4 / 64.80 GHz	$\pi/2$ QPSK	MCS 6, PN9
		$\pi/2$ 16QAM	MCS 10, PN9

*The worst condition was determined based on the test result of EIRP (Peak).

*The Details of Operating Mode(s)

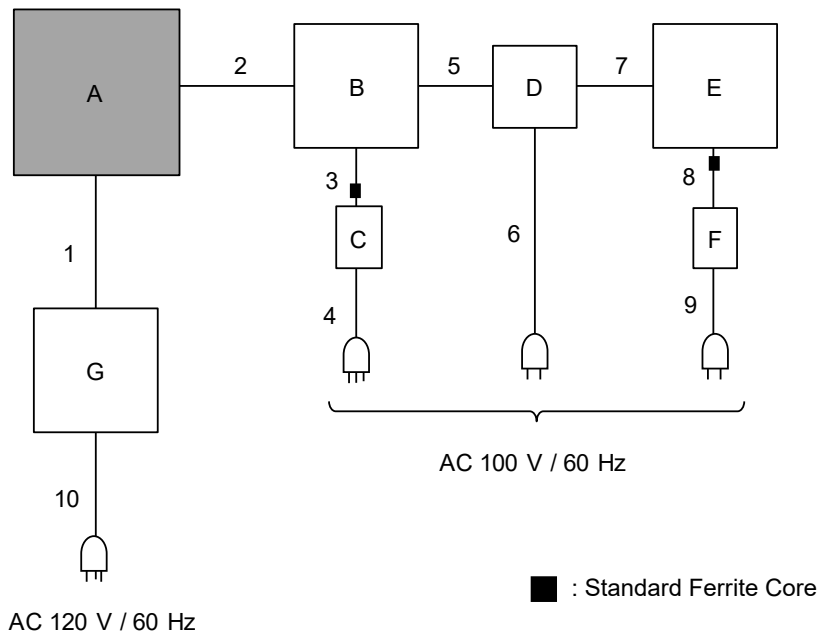
Rate		MCS 0			MCS 1			MCS 6			MCS 10		
Modulation		DBPSK			$\pi/2$ -BPSK			$\pi/2$ -QPSK			$\pi/2$ -16QAM		
CH		1	2	4	1	2	4	1	2	4	1	2	4
Test Item	Conducted Emission	-	x*1)	-	x*1)	-	-	-	x*1)	-	-	x*1)	-
	EIRP	x	x	x	x	x	x	x	x	x	x	x	x
	Peak Output Power	x	x	x	x	x	x	x	x	x	x	x	x
	Duty cycle	x	-	-	x	-	-	x	-	-	x	-	-
	6 dB Bandwidth	x	x	x	x	x	x	x	x	x	x	x	x
	20 dB Bandwidth	x	x	x	x	x	x	x	x	x	x	x	x
	99 % Occupied bandwidth	x	x	x	x	x	x	x	x	x	x	x	x
	Spurious Emissions (Above 1 GHz)	x	x	x	x	x	x	x	x	x	x	x	x
	Spurious Emissions (Below 1 GHz)	-	x*1)	-	x*1)	-	-	-	x*1)	-	-	x*1)	-
	Frequency Stability	x	-	x	x	-	x	x	-	x	x	-	x

x: Tested

*1) These modes were tested as representative because they showed the maximum value in EIRP (peak) for each modulation.

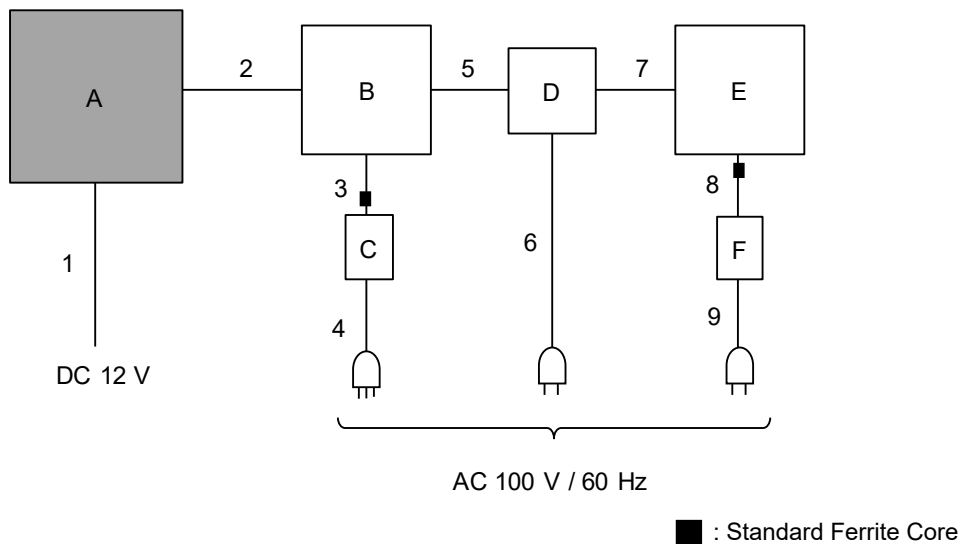
4.2 Configuration and peripherals

Conducted Emission test



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

All tests except for Conducted Emission test



* 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	60GHz Milliwave Communication Module	FCM604	GA532500001	Fujikura Ltd.	EUT
B	Network Processing Unit	ODK-1 PCP	-	-	-
C	AC Adapter	IPU61A-105-P09B115-S	2105010339	Sinpro Electronics Co.Ltd.	-
D	HUB	LSW5-GT-8NS	30172480331507	BUFFALO	-
E	Laptop PC	Vostro 15 3510	BX5Y1Q3	DELL	-
F	AC Adapter	LA65NS2-01	0W1N63	DELL	-
G	DC Power Supply	PW16-5ADP	171116437	GW Instek	*1)

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	2.2	Unshielded	Unshielded	-
2	Signal Cable	0.7	Unshielded	Unshielded	-
3	DC Cable	1.2	Unshielded	Unshielded	-
4	AC Cable	1.6	Unshielded	Unshielded	-
5	LAN Cable	5.0	Unshielded	Unshielded	-
6	AC Cable	1.8	Unshielded	Unshielded	-
7	LAN Cable	3.0	Unshielded	Unshielded	-
8	DC Cable	1.8	Unshielded	Unshielded	-
9	AC Cable	0.8	Unshielded	Unshielded	-
10	AC Cable	1.0	Unshielded	Unshielded	*1)

*1) Used for Conducted Emission test only

SECTION 5: Conducted Emission

Test Procedure and Conditions

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

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

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber.

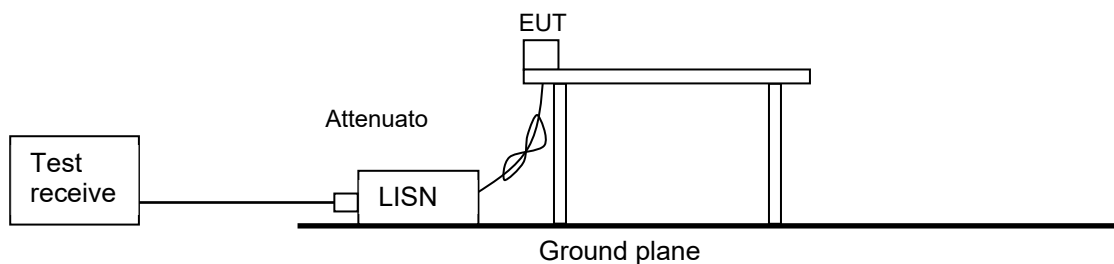
The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

The test results and limit are rounded off to one decimal place, so some differences might be observed.

Detector : QP and CISPR AV
Measurement Range : 0.15 MHz to 30 MHz
Test Data : APPENDIX
Test Result : Pass

Figure 1: Test Setup



SECTION 6: Radiated Emissions

Test Procedure

[For below 30 MHz]

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

The loop antenna was fixed height at 1.0 m.

The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for vertical polarization (antenna angle: 0 deg., 45 deg., 90 deg., 135 deg., and 180 deg.) and horizontal polarization.

*Refer to Figure 1 about Direction of the Loop Antenna.

[For above 30 MHz, up to 1 GHz]

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

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

[For above 1 GHz, up to 40 GHz]

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

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

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

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

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The measurements were made with the following detector function of the test receiver and the Spectrum analyzer.

The test was made with the detector (RBW/VBW) in the following table.

Test Antennas are used as below;

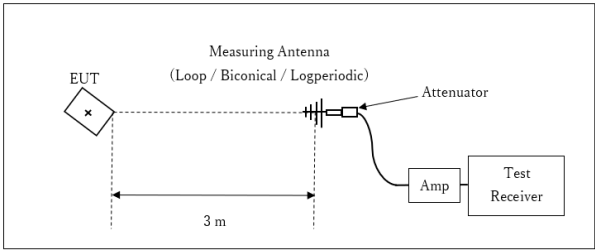
Frequency	Below 30 MHz	30 MHz to 200 MHz	200 MHz to 1 GHz	Above 1 GHz
Antenna Type	Loop	Biconical	Logperiodic	Horn

Frequency	From 9 kHz to 90 kHz and From 110 kHz to 150 kHz	From 90 kHz to 110 kHz	From 150 kHz to 490 kHz	From 490 kHz to 30 MHz
Instrument used	Test Receiver			
Detector	PK / AV	QP	PK / AV	QP
IF Bandwidth	200 Hz	200 Hz	9 kHz	9 kHz

Frequency	From 30 MHz to 1 GHz	From 1 GHz to 40 GHz		
Instrument used	Test Receiver		Spectrum Analyzer	
Detector	QP		PK *a)	AV
IF Bandwidth	120 kHz		RBW: 1 MHz VBW: 3 MHz	RBW: 1 MHz VBW: 3 MHz

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

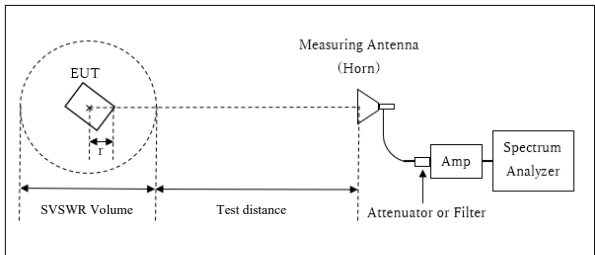
[Test setup]
Below 1 GHz



x : Center of turn table

Test Distance: 3 m

1 GHz to 10 GHz



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

[1 GHz to 6 GHz]

Distance Factor: $20 \times \log (3.95 \text{ m}^* / 3.00 \text{ m}) = 2.39 \text{ dB}$
*(Test Distance + SVSWR Volume / 2) - r = 3.95 m

Test Distance: 3.00 m
SVSWR Volume: 2.00 m

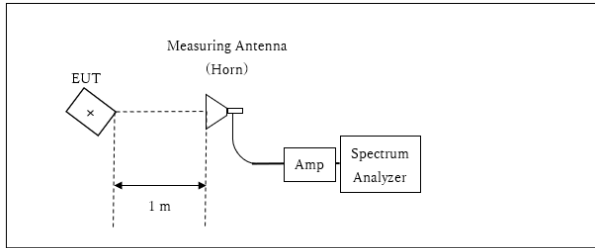
[6 GHz to 10 GHz]

Distance Factor: $20 \times \log (4.95 \text{ m}^* / 3.00 \text{ m}) = 4.35 \text{ dB}$
*(Test Distance + SVSWR Volume / 2) - r = 4.95 m

Test Distance: 4.30 m
SVSWR Volume: 1.40 m

(SVSWR Volume has been calibrated based on CISPR 16-1-4.)
r: 0.05 m

10 GHz to 40 GHz

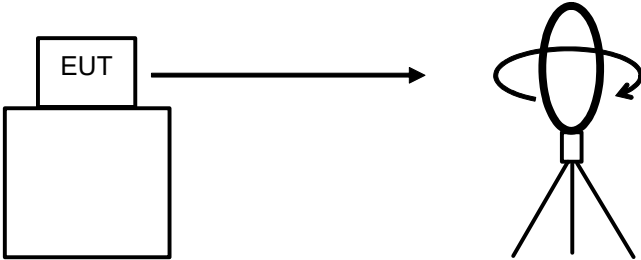


x : Center of turn table

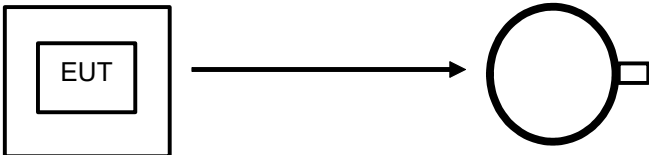
Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$
*Test Distance: 1 m

Figure 1: Direction of the Loop Antenna

Side View (Vertical)

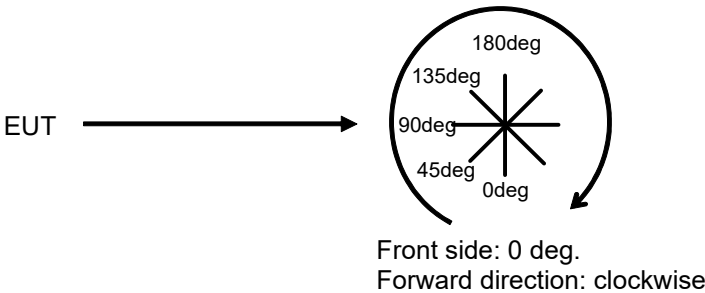


Top View (Horizontal)



Antenna was not rotated.

Top View (Vertical)



[Above 40 GHz]

The test was performed based on “Procedures for testing millimeter-wave systems” of ANSI C63.10-2020.

The EUT was placed on a urethane platform, raised 1.5 m above the conducting ground plane. The measurements were performed on handheld method.

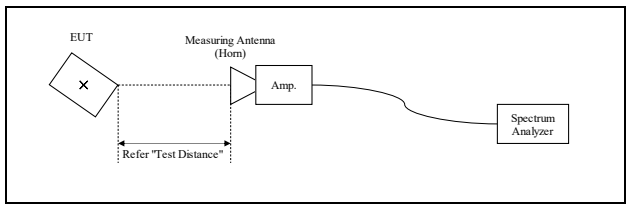
Set spectrum analyzer RBW, VBW, span, etc., to the proper values. Note these values. Enable two traces—one set to “clear write,” and the other set to “max hold.” Begin hand-held measurements with the test antenna (horn) at a distance of 1 m from the EUT in a horizontally polarized position. Slowly adjust its position, entirely covering the plane 1 m from the EUT. Observation of the two active traces on the spectrum analyzer will allow refined horn positioning at the point(s) of maximum field intensity. Repeat with the horn in a vertically polarized position. If the emission cannot be detected at 1 m, reduce the RBW to increase system sensitivity. Note the value. If the emission still cannot be detected, move the horn closer to the EUT, noting the distance at which a measurement is made.

Note the maximum level indicated on the spectrum analyzer. Adjust this level, if necessary, by the antenna gain, filter loss, conversion loss of the external mixer and gain of LNA used, at the frequency under investigation. Calculate the field strength of the emission at the measurement distance from the Friis’ transmission equation.

The final test was performed with a 1 MHz RMS detector and Peak detector at the following distances;

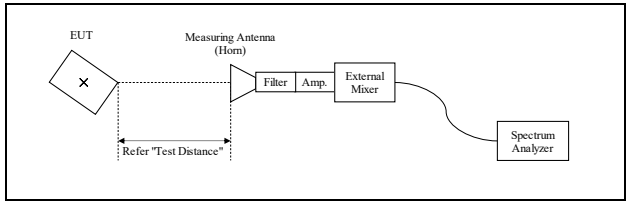
[Test setup]

40 GHz to 50 GHz



*Test Distance: 1.0 m

Above 50 GHz



*Test Distance:

50 GHz to 55 GHz	2.0 m
55 GHz to 57 GHz	2.5 m
71 GHz to 83 GHz	2.0 m
83 GHz to 110 GHz	1.5 m
110 GHz to 170 GHz	0.01 m
170 GHz to 200GHz	0.005 m

The test results and limit are rounded off to one decimal place, so some differences might be observed.

The noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

[About fundamental measurement]

Test Procedure

The test was performed based on “Procedures for testing millimeter-wave systems” of ANSI C63.10-2020.

The peak power were measured with an RF detector that has a detection bandwidth that encompasses the 57-71 GHz band and has a video bandwidth of at least 10 MHz.

The carrier levels were measured in the far field. The distance of the far field was calculated from follow equation.

$$r = \frac{2D^2}{\lambda}$$

where

r is the distance from the radiating element of the EUT to the edge of the far field, in m

D is the largest dimension of both the radiating element and the test antenna (horn), in m

λ is the wavelength of the emission under investigation [$300/f$ (MHz)], in m

Frequency [GHz]	Wavelength λ [mm]	Maximum Dimension			Far Field Boundary r [m]	Tested Distance [m]
		EUT [m]	Test Antenna [m]	Maximum D [m]		
66	4.5	0.04035	0.03759	0.04035	0.717	2.00

The test was performed based on stages 1-4 following;

Stage 1:

Connect the measurement antenna for the fundamental frequency band to the mm-wave RF detector.

Place the measurement antenna at a test distance that is in the far-field of the measurement antenna.

Place the measurement antenna in the main beam of the EUT then maximize the fundamental emission.

The maximum direction was searched under carefully since beam-widths are extremely narrow.

Record the peak voltage from DSO as DSO Reading.

Stage 2:

Disconnect the measurement antenna from the RF input port of the instrumentation system.

Connect a mm-wave source to the RF input port of the instrumentation system via a waveguide variable attenuator.

The mm-wave source shall be unmodulated.

Adjust the frequency of the mm-wave source to the center of the frequency range occupied by the transmitter.

Adjust the amplitude of the mm-wave source and/or the variable attenuator such that the DSO indicates a voltage equal to the peak voltage recorded in Stage 1.

The output level of mm-wave source at this time is recorded as SG Reading.

Stage 3:

Disconnect the waveguide variable attenuator from the RF input port of the instrumentation system.

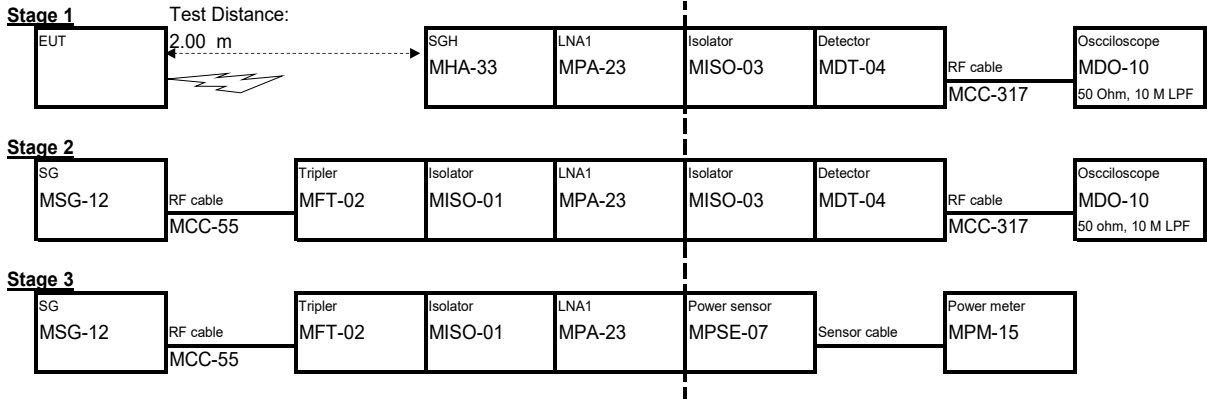
Without changing any settings, connect the waveguide variable attenuator to a wideband mm-wave power meter with a thermocouple detector or equivalent.

Measure the power and record it as PM reading.

Stage 4:

Correct the peak substitution power at the input to the measurement instrument, as recorded in Stage 3, for any external gain and/or attenuation between the measurement antenna and the measurement instrument that was not included in the substitution power measurement.

[Test configuration]



The test results and limit are rounded off to one decimal place, so some differences might be observed.

Measurement range : 9 kHz to 200 GHz
Test data : APPENDIX
Test result : Pass

SECTION 7: Frequency Stability

Test Procedure

The block downconverter was placed in side of the temperature chamber's drain hole.

The power supply was set to nominal operating voltage (100 %), and the spectrum mask was measured at 20 deg. C. After that, EUT power supply was varied between 85 % and 115 % of nominal voltage and the frequency excursion of the EUT emission mask was recorded.

The EUT operating temperature was raised to 50 deg. C., and the frequency excursion of the EUT emission mask was recorded. Measurements were repeated at each 10 deg. C. decrement down to -20 deg. C.

Both lower and upper frequencies of the -20 dB Bandwidth were recorded.

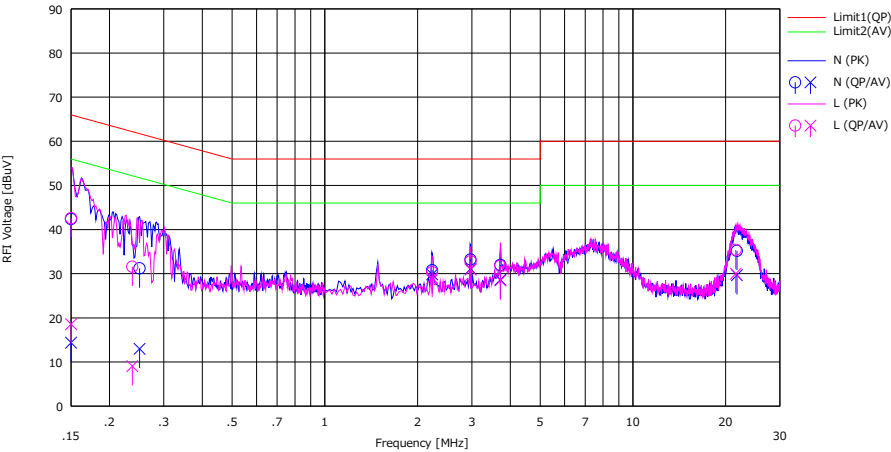
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Test data

Conducted Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 3
Date	April 6, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 0 60.48 GHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		USN	LOSS	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]			<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	29.20	1.20	0.06	13.12	42.38	14.38	66.00	56.00	23.62	41.62	N	
2	0.25030	18.00	-0.20	0.05	13.14	31.19	12.99	61.75	51.75	30.56	38.76	N	
3	2.23056	17.40	16.50	0.08	13.28	30.76	29.86	56.00	46.00	25.24	16.14	N	
4	2.97189	19.80	17.70	0.09	13.33	33.22	31.12	56.00	46.00	22.78	14.88	N	
5	3.71544	18.50	15.20	0.10	13.36	31.96	28.66	56.00	46.00	24.04	17.34	N	
6	21.75000	20.80	15.30	0.50	13.87	35.17	29.67	60.00	50.00	24.83	20.33	N	
7	0.15000	29.40	5.40	0.04	13.12	42.56	18.56	66.00	56.00	23.44	37.44	L	
8	0.23724	18.40	-4.10	0.04	13.13	31.57	9.07	62.19	52.19	30.62	43.12	L	
9	2.23148	17.00	15.70	0.07	13.28	30.35	29.05	56.00	46.00	25.65	16.95	L	
10	2.97274	19.40	17.50	0.08	13.33	32.81	30.91	56.00	46.00	23.19	15.09	L	
11	3.71398	18.30	15.00	0.10	13.36	31.76	28.46	56.00	46.00	24.24	17.54	L	
12	21.56920	21.10	15.70	0.44	13.87	35.41	30.01	60.00	50.00	24.59	19.99	L	

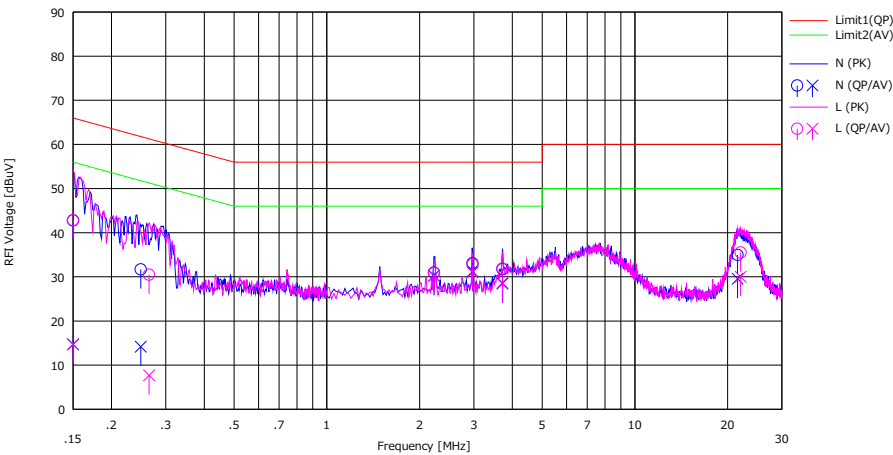
CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + CABLE + ATT)
Except for the above table: adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 3
Date	April 6, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 1 58.32 GHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN	LOSS	Results		Limit		Margin		Phase	Comment
		(QP) [dBuV]	(AV) [dBuV]			(QP) [dBuV]	(AV) [dBuV]	(QP) [dBuV]	(AV) [dBuV]	(QP) [dB]	(AV) [dB]		
1	0.15000	29.60	1.50	0.06	13.12	42.78	14.68	66.00	56.00	23.22	41.32	N	
2	0.24900	18.50	1.00	0.05	13.13	31.68	14.18	61.79	51.79	30.11	37.61	N	
3	2.22800	17.60	16.90	0.08	13.28	30.96	30.26	56.00	46.00	25.04	15.74	N	
4	2.97180	19.70	17.80	0.09	13.33	33.12	31.22	56.00	46.00	22.88	14.78	N	
5	3.71600	18.30	15.00	0.10	13.36	31.76	28.46	56.00	46.00	24.24	17.54	N	
6	21.54200	20.60	15.20	0.50	13.87	34.97	29.57	60.00	50.00	25.03	20.43	N	
7	0.15000	29.70	1.60	0.04	13.12	42.86	14.76	66.00	56.00	23.14	41.24	L	
8	0.26490	17.30	-5.50	0.04	13.14	30.48	7.68	61.28	51.28	30.80	43.60	L	
9	2.22890	17.50	16.80	0.07	13.28	30.85	30.15	56.00	46.00	25.15	15.85	L	
10	2.97150	19.40	17.60	0.08	13.33	32.81	31.01	56.00	46.00	23.19	14.99	L	
11	3.71505	18.40	15.20	0.10	13.36	31.86	28.66	56.00	46.00	24.14	17.34	L	
12	22.04000	21.20	15.70	0.45	13.88	35.53	30.03	60.00	50.00	24.47	19.97	L	

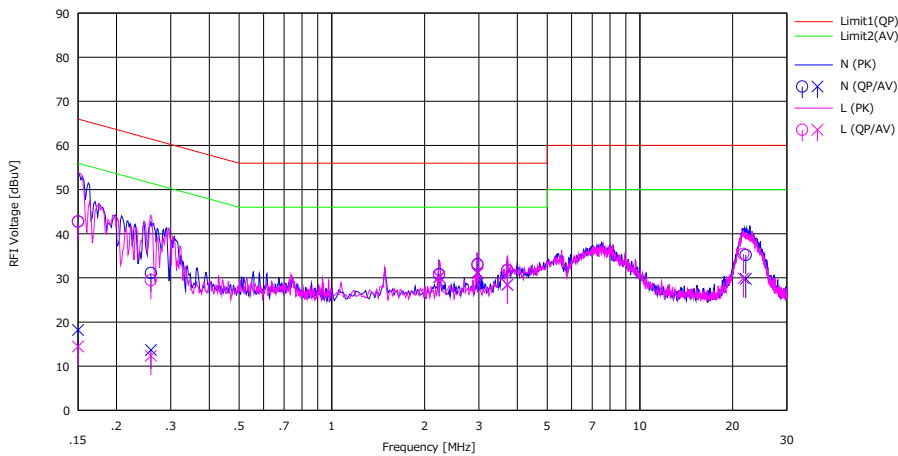
CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + CABLE + ATT)
Except for the above table: adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 3
Date	April 6, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 6 60.48 GHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN	LOSS	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]			<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	29.60	5.00	0.06	13.12	42.78	18.18	66.00	56.00	23.22	37.82	N	
2	0.25880	17.90	0.50	0.05	13.14	31.09	13.69	61.47	51.47	30.38	37.78	N	
3	2.22994	17.50	16.80	0.08	13.28	30.86	30.16	56.00	46.00	25.14	15.84	N	
4	2.97153	19.70	17.80	0.09	13.33	33.12	31.22	56.00	46.00	22.88	14.78	N	
5	3.71468	18.30	15.00	0.10	13.36	31.76	28.46	56.00	46.00	24.24	17.54	N	
6	22.05184	20.80	15.40	0.51	13.88	35.19	29.79	60.00	50.00	24.81	20.21	N	
7	0.15000	29.60	1.30	0.04	13.12	42.76	14.46	66.00	56.00	23.24	41.54	L	
8	0.25856	16.30	-0.80	0.04	13.14	29.48	12.38	61.48	51.48	32.00	39.10	L	
9	2.23040	17.30	16.80	0.07	13.28	30.65	30.15	56.00	46.00	25.35	15.85	L	
10	2.97040	19.50	17.60	0.08	13.33	32.91	31.01	56.00	46.00	23.09	14.99	L	
11	3.71568	18.30	15.00	0.10	13.36	31.76	28.46	56.00	46.00	24.24	17.54	L	
12	21.68000	21.10	15.60	0.45	13.87	35.42	29.92	60.00	50.00	24.58	20.08	L	

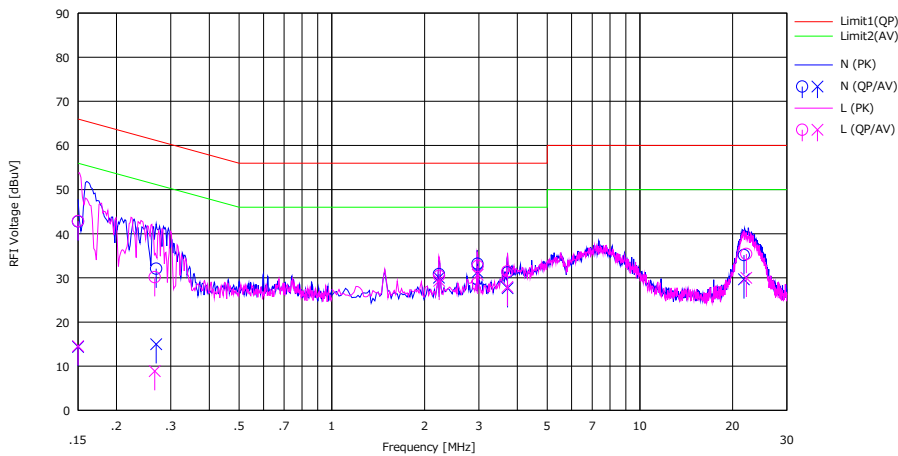
CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + CABLE + ATT)
Except for the above table: adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Conducted Emission

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 3
Date	April 6, 2025
Temperature / Humidity	21 deg. C / 41 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 10 60.48 GHz

Limit : FCC_Part 15 Subpart C(15.207)



No.	Freq. [MHz]	Reading		LISN [dB]	LOSS [dB]	Results		Limit		Margin		Phase	Comment
		<QP> [dBuV]	<AV> [dBuV]			<QP> [dBuV]	<AV> [dBuV]	<QP> [dBuV]	<AV> [dBuV]	<QP> [dB]	<AV> [dB]		
1	0.15000	29.60	1.20	0.06	13.12	42.78	14.38	66.00	56.00	23.22	41.62	N	
2	0.26900	18.90	1.80	0.05	13.14	32.09	14.99	61.15	51.15	29.06	36.16	N	
3	2.22774	17.50	16.70	0.08	13.28	30.86	30.06	56.00	46.00	25.14	15.94	N	
4	2.97205	19.80	17.90	0.09	13.33	33.22	31.32	56.00	46.00	22.78	14.68	N	
5	3.71832	17.80	14.20	0.10	13.36	31.26	27.66	56.00	46.00	24.74	18.34	N	
6	21.76400	20.80	15.30	0.50	13.87	35.17	29.67	60.00	50.00	24.83	20.33	N	
7	0.15000	29.70	1.40	0.04	13.12	42.86	14.56	66.00	56.00	23.14	41.44	L	
8	0.26618	17.00	-4.30	0.04	13.14	30.18	8.88	61.24	51.24	31.06	42.36	L	
9	2.23148	17.10	16.00	0.07	13.28	30.45	29.35	56.00	46.00	25.55	16.65	L	
10	2.97457	19.30	17.30	0.08	13.33	32.71	30.71	56.00	46.00	23.29	15.29	L	
11	3.71408	18.00	14.50	0.10	13.36	31.46	27.96	56.00	46.00	24.54	18.04	L	
12	22.14976	21.10	15.70	0.45	13.88	35.43	30.03	60.00	50.00	24.57	19.97	L	

CHART: WITH FACTOR Peak hold data. CALCULATION : RESULT = READING + C.F (LISN + CABLE + ATT)
Except for the above table: adequate margin data below the limits.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Duty Cycle
(Reference)

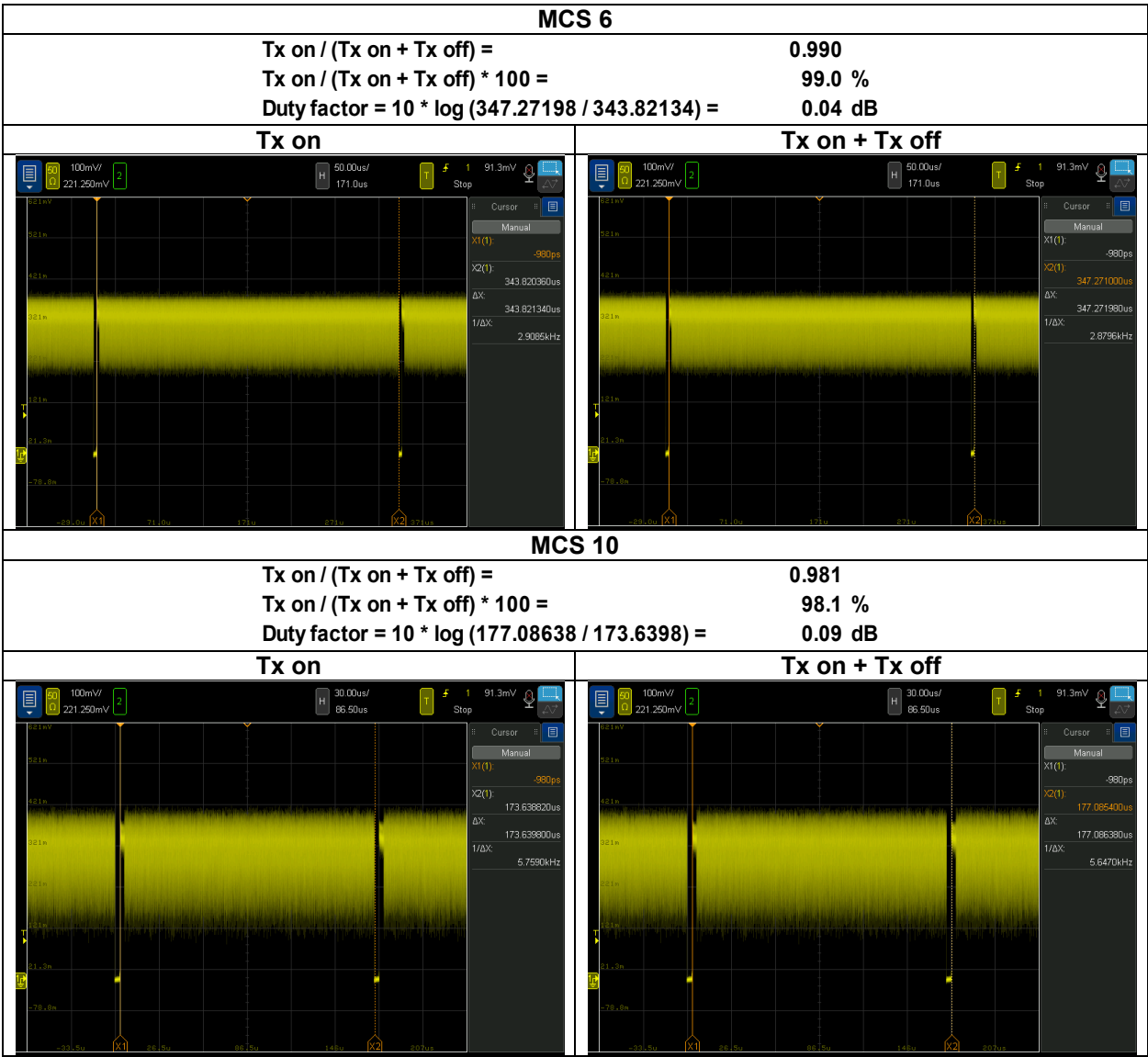
Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	20 deg. C / 42 % RH
Engineer	Nachi Konegawa
Mode	Tx



* Since the burst rate is not different between the channels, the data has been obtained on the representative channel 1(58.32 GHz).

Duty Cycle
(Reference)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	20 deg. C / 42 % RH
Engineer	Nachi Konegawa
Mode	Test Mode



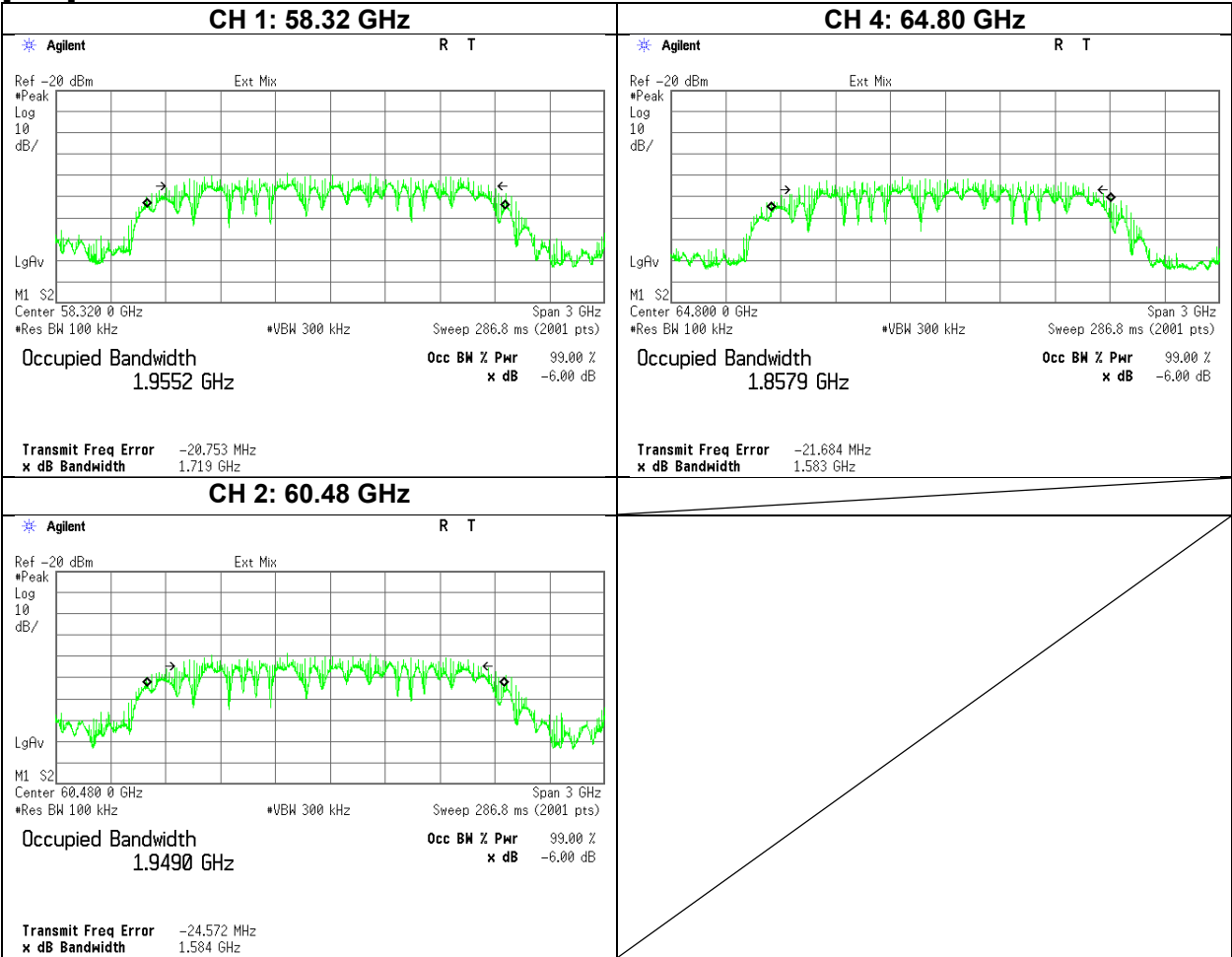
* Since the burst rate is not different between the channels, the data has been obtained on the representative channel 1(58.32 GHz).

6 dB Bandwidth
(Reference)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Test Mode MCS 0

CH	Center Freq. [GHz]	6 dB bandwidth [MHz]
1	58.32	1719
2	60.48	1584
4	64.80	1583

[Data]

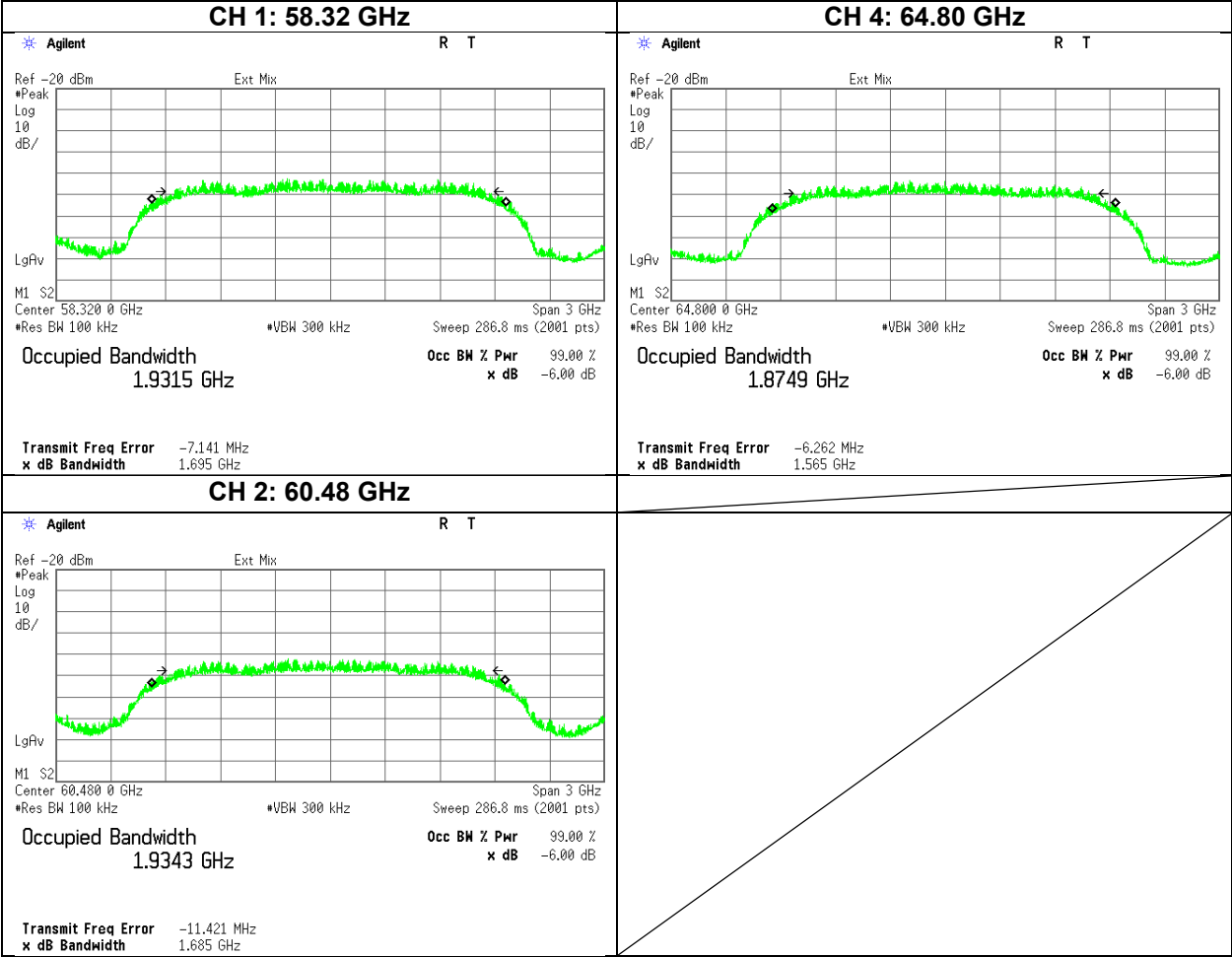


6 dB Bandwidth
(Reference)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 1

CH	Center Freq. [GHz]	6 dB bandwidth [MHz]
1	58.32	1695
2	60.48	1685
4	64.80	1565

[Data]

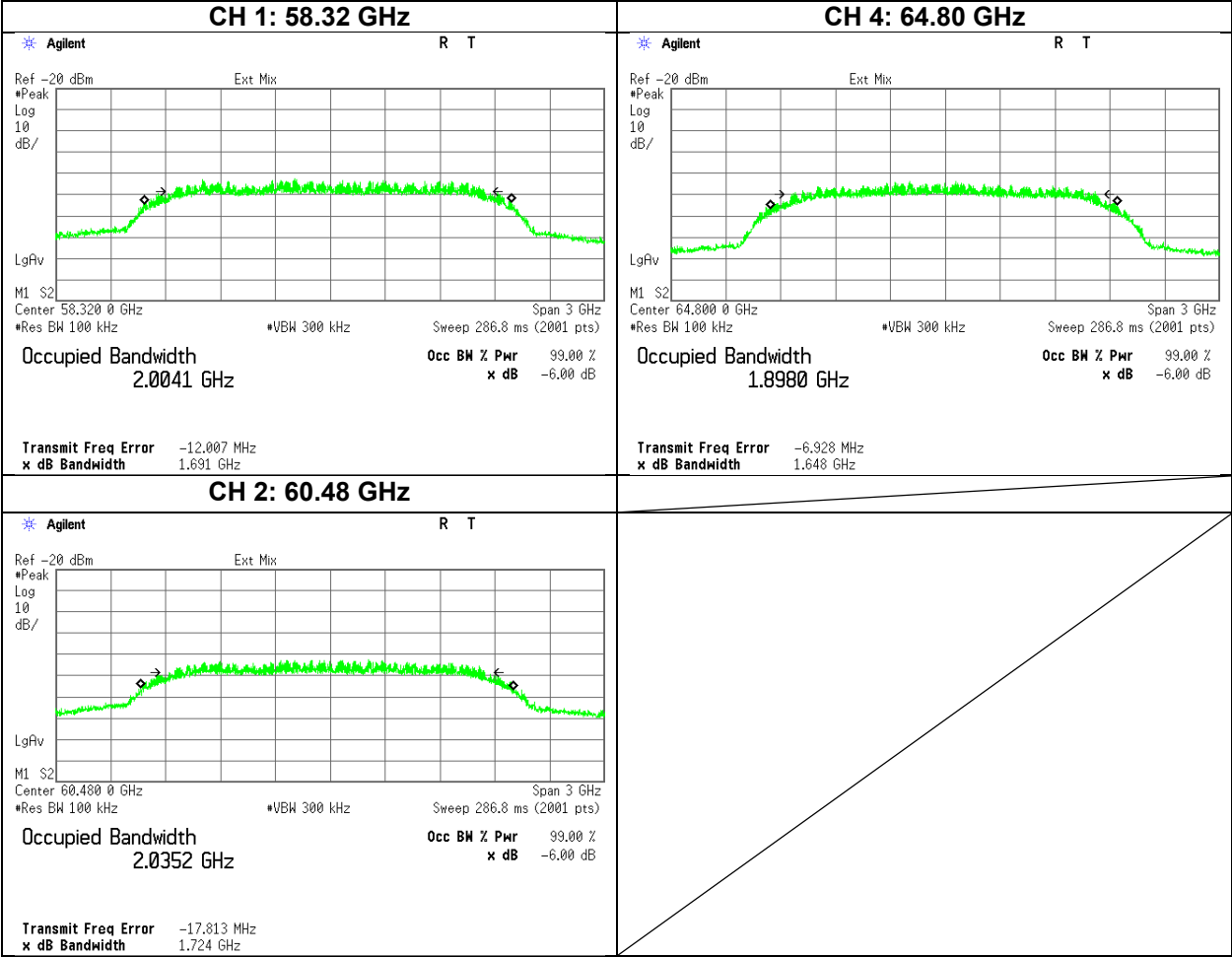


6 dB Bandwidth
(Reference)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 6

CH	Center Freq. [GHz]	6 dB bandwidth [MHz]
1	58.32	1691
2	60.48	1724
4	64.80	1648

[Data]

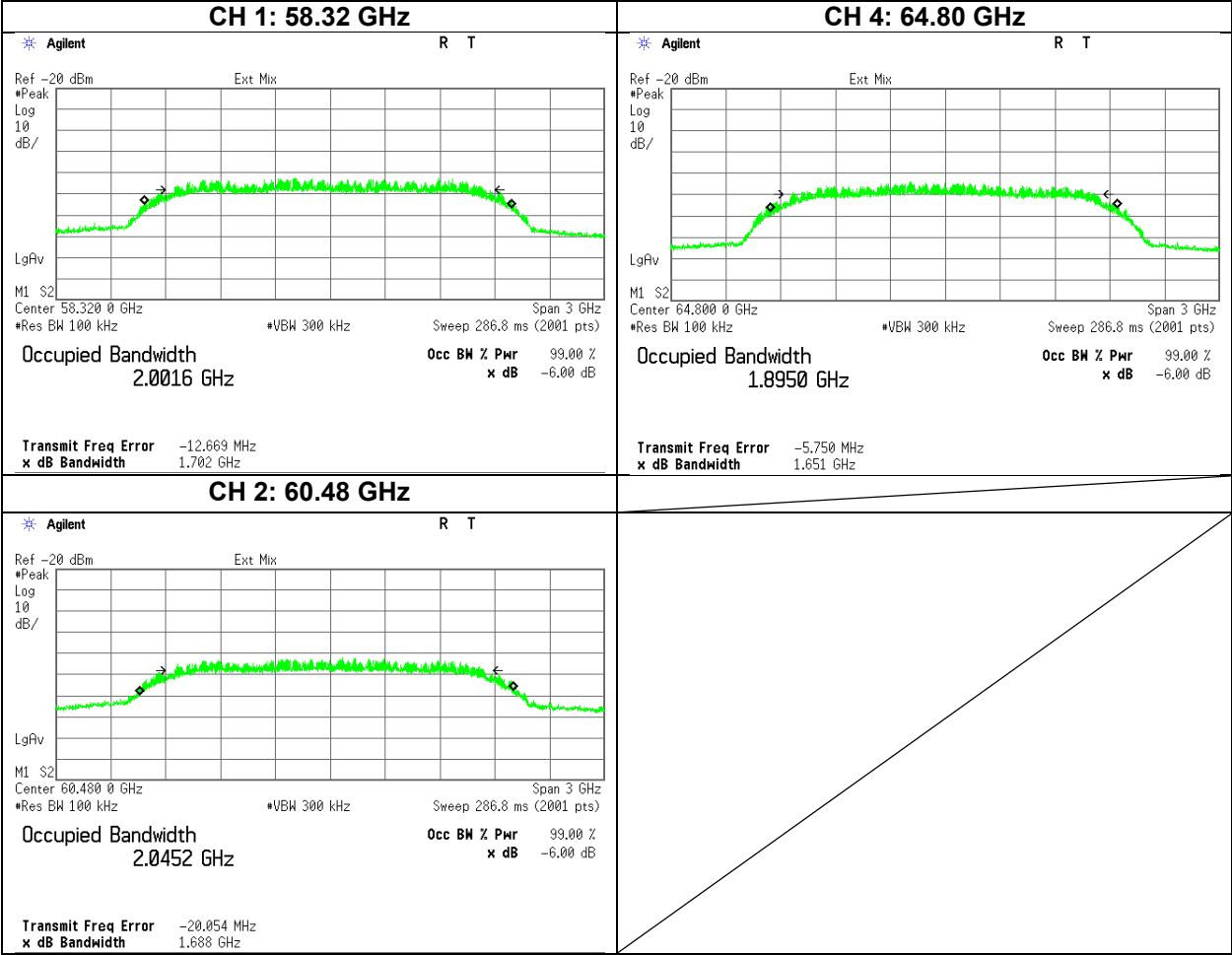


6 dB Bandwidth
(Reference)

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 10

CH	Center Freq. [GHz]	6 dB bandwidth [MHz]
1	58.32	1702
2	60.48	1688
4	64.80	1651

[Data]



20 dB Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 0

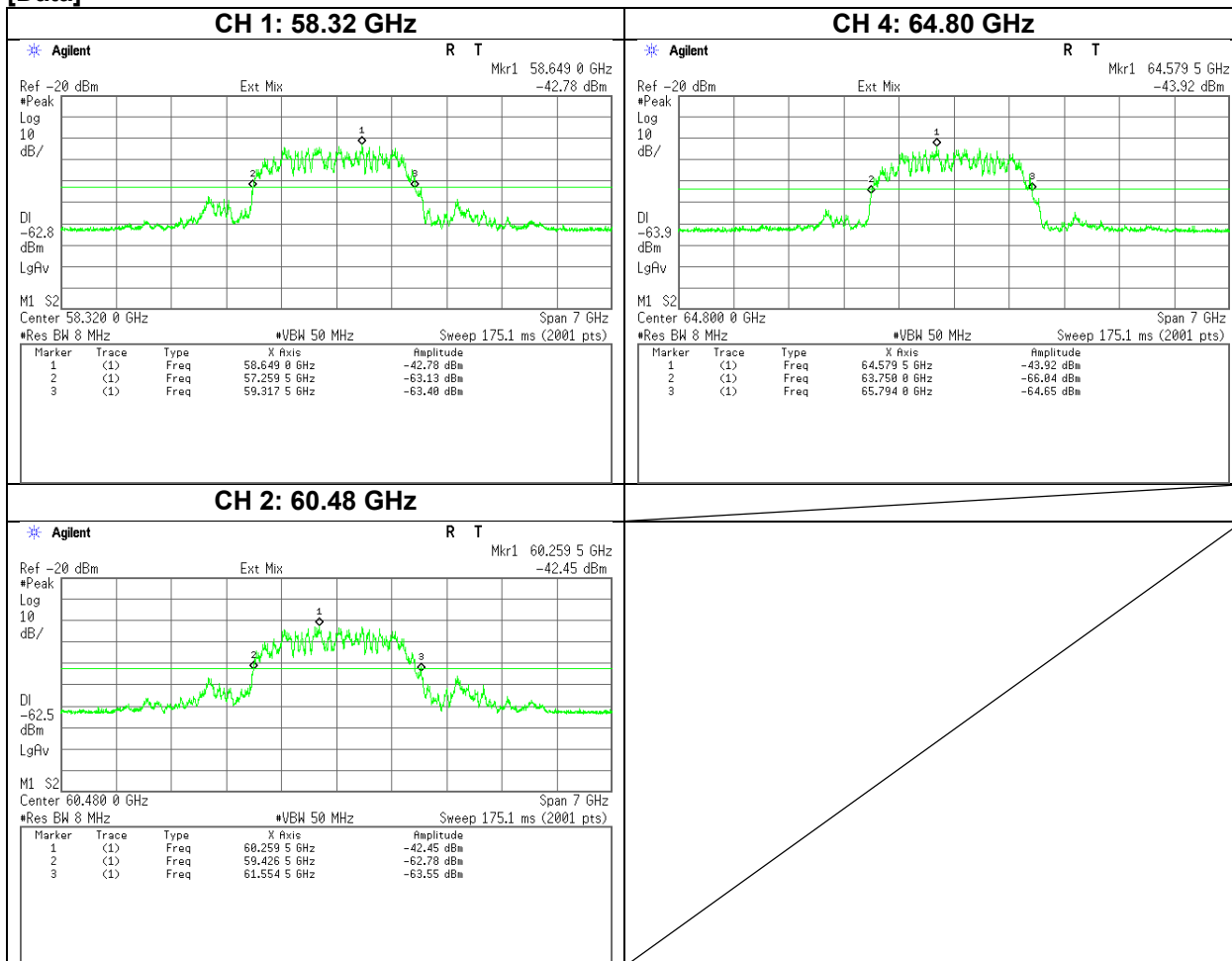
CH	Center Freq. [GHz]	Measured -20 dBc Frequency Lower Result [GHz]	Measured -20 dBc Frequency Upper Result [GHz]	20 dB bandwidth [MHz]	Lower Limit [GHz]	Upper Limit [GHz]	Result
1	58.32	57.25950	59.31750	2058.00	57	71	Pass
2	60.48	59.42650	61.55450	2128.00			Pass
4	64.80	63.75000	65.79400	2044.00			Pass

Calculating formula:

20 dB bandwidth

= (Measured -20 dBc Frequency Upper Result) - (Measured -20 dBc Frequency Lower Result)

[Data]



*Span setting: Enough width to display emission skirts.

20 dB Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 1

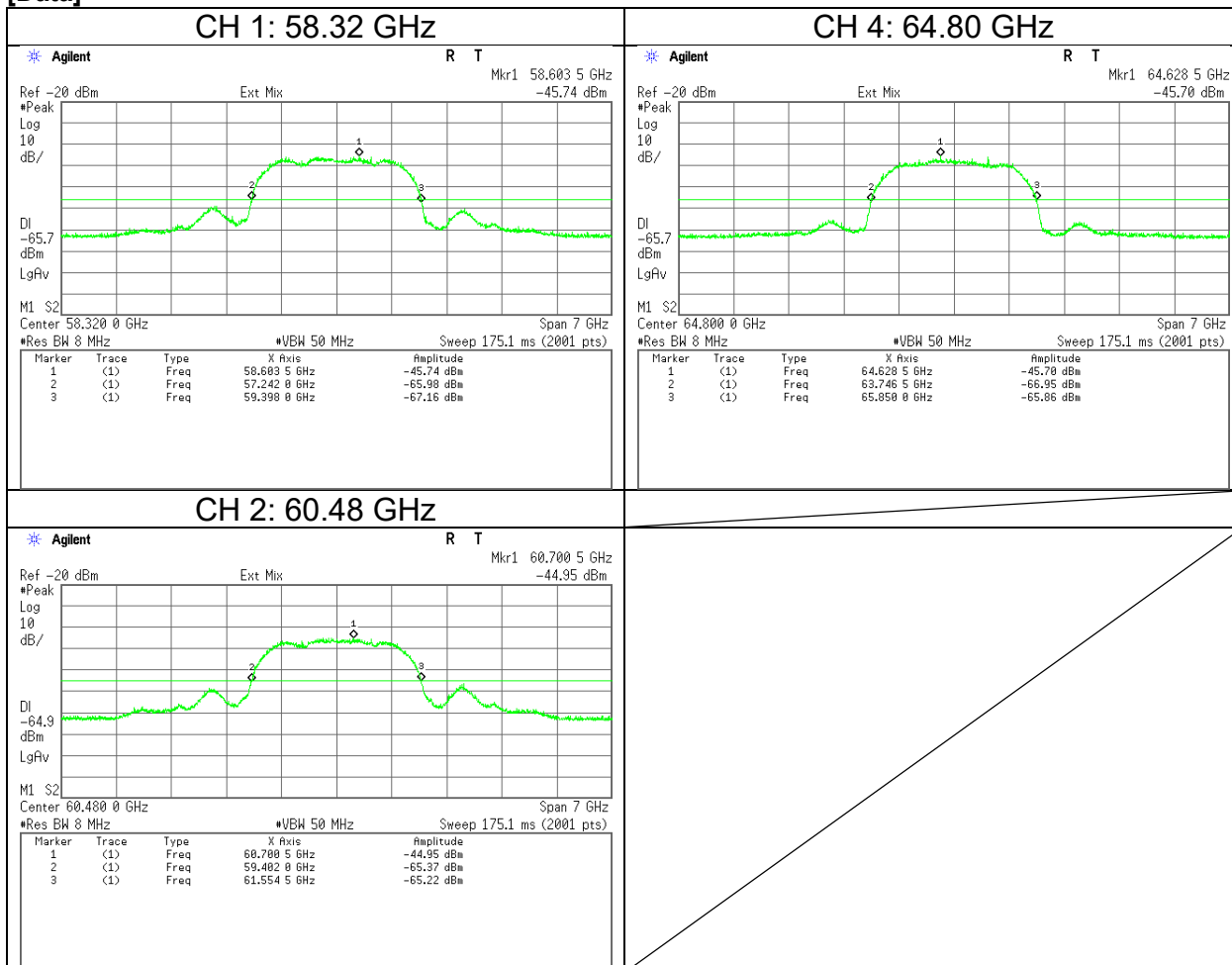
CH	Center Freq. [GHz]	Measured -20 dBc Frequency Lower Result [GHz]	Measured -20 dBc Frequency Upper Result [GHz]	20 dB bandwidth [MHz]	Lower Limit [GHz]	Upper Limit [GHz]	Result
1	58.32	57.24200	59.39800	2156.00	57	71	Pass
2	60.48	59.40200	61.55450	2152.50			Pass
4	64.80	63.74650	65.85000	2103.50			Pass

Calculating formula:

20 dB bandwidth

= (Measured -20 dBc Frequency Upper Result) - (Measured -20 dBc Frequency Lower Result)

[Data]



20 dB Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 6

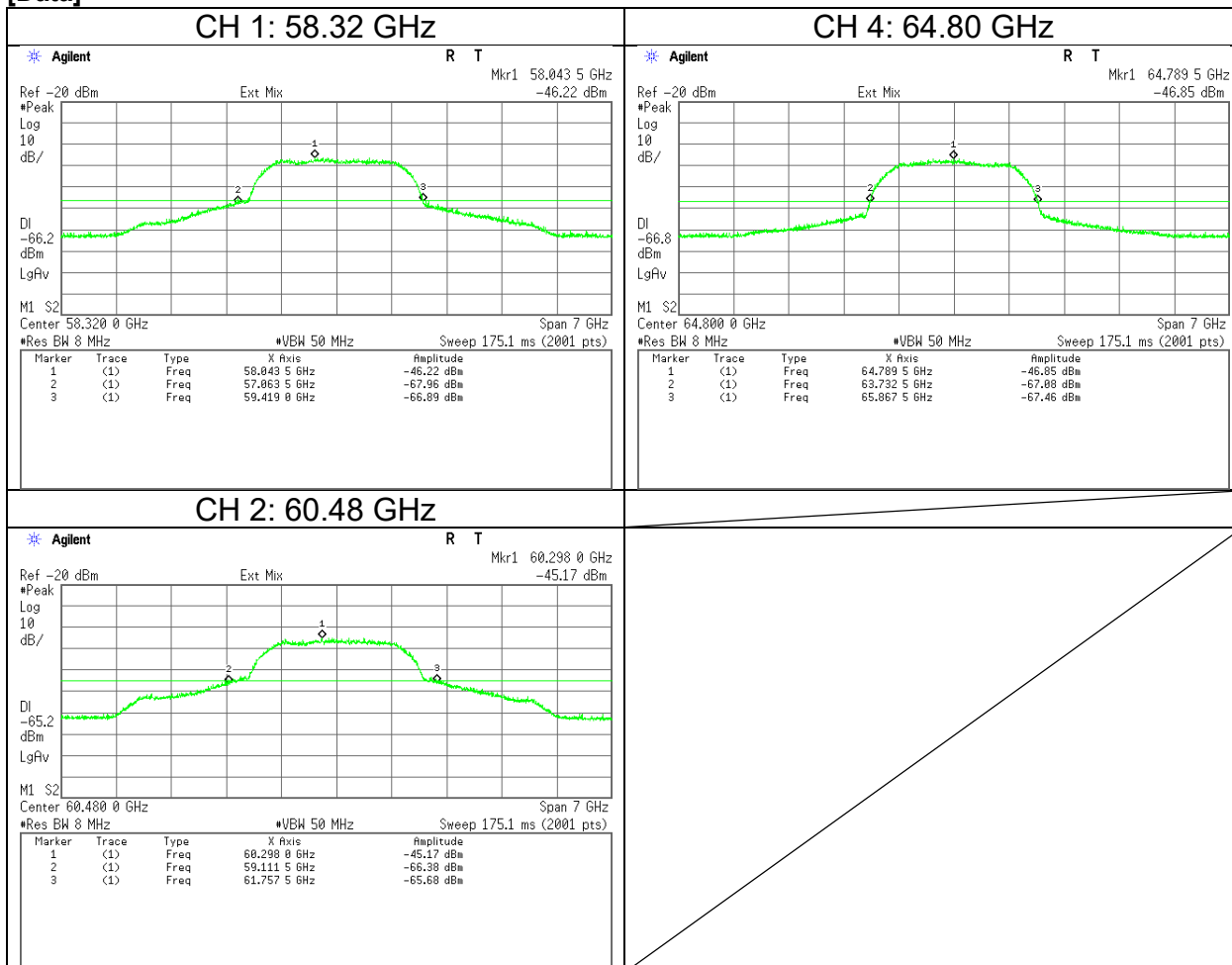
CH	Center Freq. [GHz]	Measured -20 dBc Frequency Lower Result [GHz]	Measured -20 dBc Frequency Upper Result [GHz]	20 dB bandwidth [MHz]	Lower Limit [GHz]	Upper Limit [GHz]	Result
1	58.32	57.06350	59.41900	2355.50	57	71	Pass
2	60.48	59.11150	61.75750	2646.00			Pass
4	64.80	63.73250	65.86750	2135.00			Pass

Calculating formula:

20 dB bandwidth

= (Measured -20 dBc Frequency Upper Result) - (Measured -20 dBc Frequency Lower Result)

[Data]



*Span setting: Enough width to display emission skirts.

20 dB Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 10

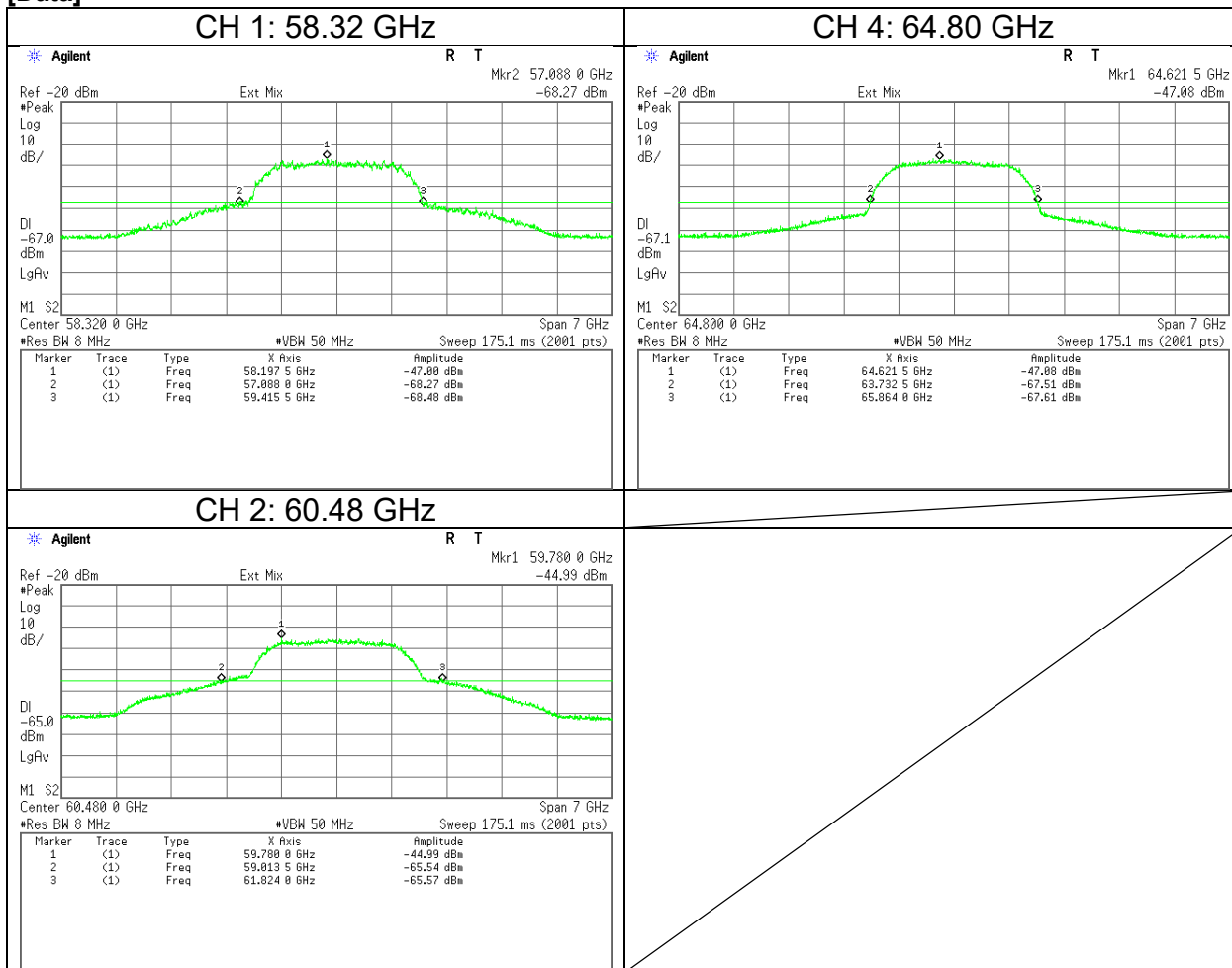
CH	Center Freq. [GHz]	Measured -20 dBc Frequency Lower Result [GHz]	Measured -20 dBc Frequency Upper Result [GHz]	20 dB bandwidth [MHz]	Lower Limit [GHz]	Upper Limit [GHz]	Result
1	58.32	57.08800	59.41550	2327.50	57	71	Pass
2	60.48	59.01350	61.82400	2810.50			Pass
4	64.80	63.73250	65.86400	2131.50			Pass

Calculating formula:

20 dB bandwidth

= (Measured -20 dBc Frequency Upper Result) - (Measured -20 dBc Frequency Lower Result)

[Data]



*Span setting: Enough width to display emission skirts.

99 % Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 0

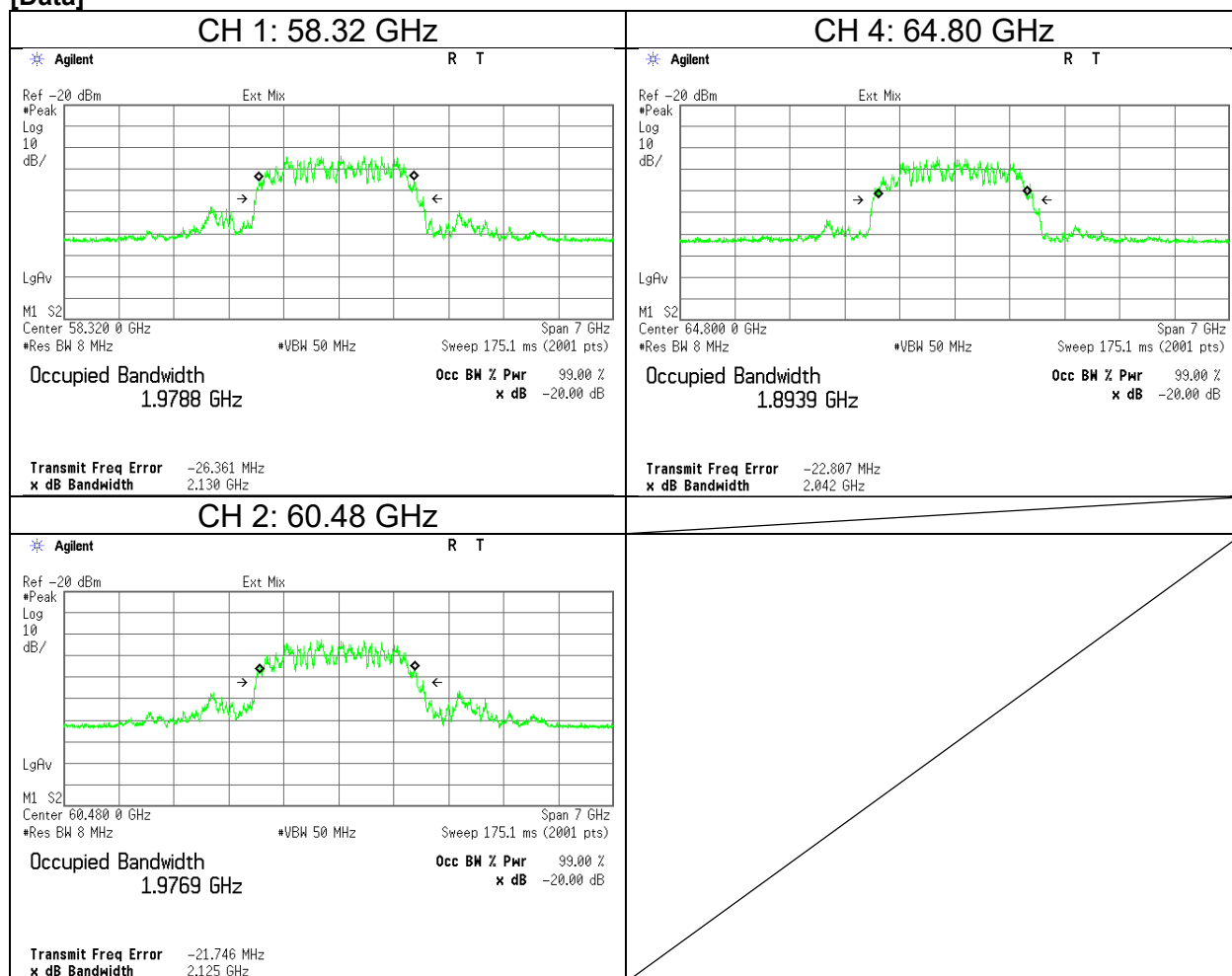
CH	Center Freq. [GHz]	Frequency error [MHz]	99% OBW [MHz]	99 % OBW		Lower Limit [GHz]	Upper Limit [GHz]	Result
				The Lower frequency [GHz]	The Upper frequency [GHz]			
1	58.32	-26.361	1978.800	57.304	59.283	57.0	71.0	Pass
2	60.48	-21.746	1976.900	59.470	61.447			Pass
4	64.80	-22.807	1893.900	63.830	65.724			Pass

Calculation:

The Lower frequency = Center frequency + Frequency error – 99 % OBW / 2

The Upper frequency = Center frequency + Frequency error + 99 % OBW / 2

[Data]



*Span setting: Enough width to display emission skirts.

99 % Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 1

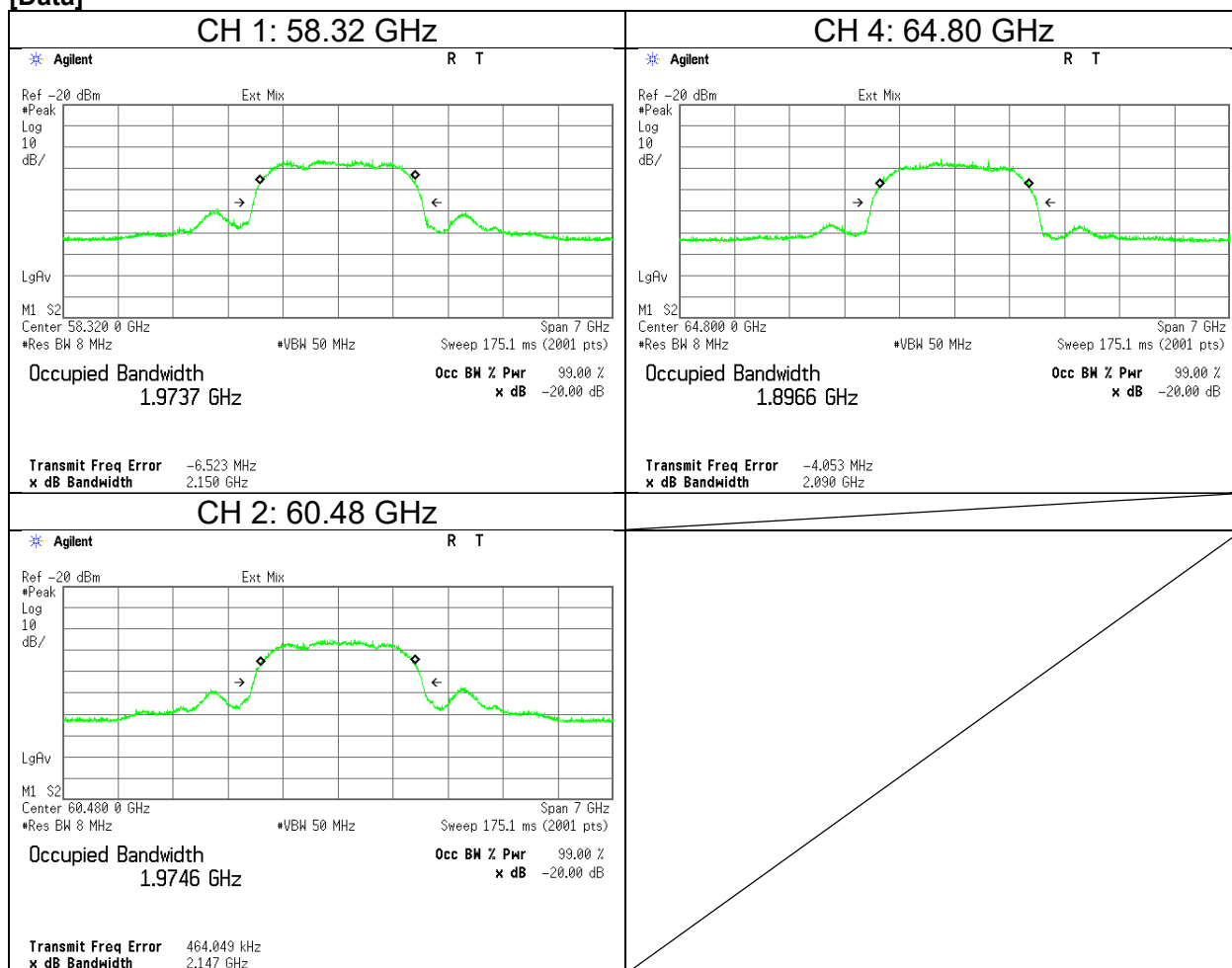
CH	Center Freq. [GHz]	Frequency error [MHz]	99% OBW [MHz]	99 % OBW		Lower Limit [GHz]	Upper Limit [GHz]	Result
				The Lower frequency [GHz]	The Upper frequency [GHz]			
1	58.32	-6.523	1973.700	57.327	59.300	57.0	71.0	Pass
2	60.48	0.464	1974.600	59.493	61.468			Pass
4	64.80	-4.053	1896.600	63.848	65.744			Pass

Calculation:

The Lower frequency = Center frequency + Frequency error – 99 % OBW / 2

The Upper frequency = Center frequency + Frequency error + 99 % OBW / 2

[Data]



*Span setting: Enough width to display emission skirts.

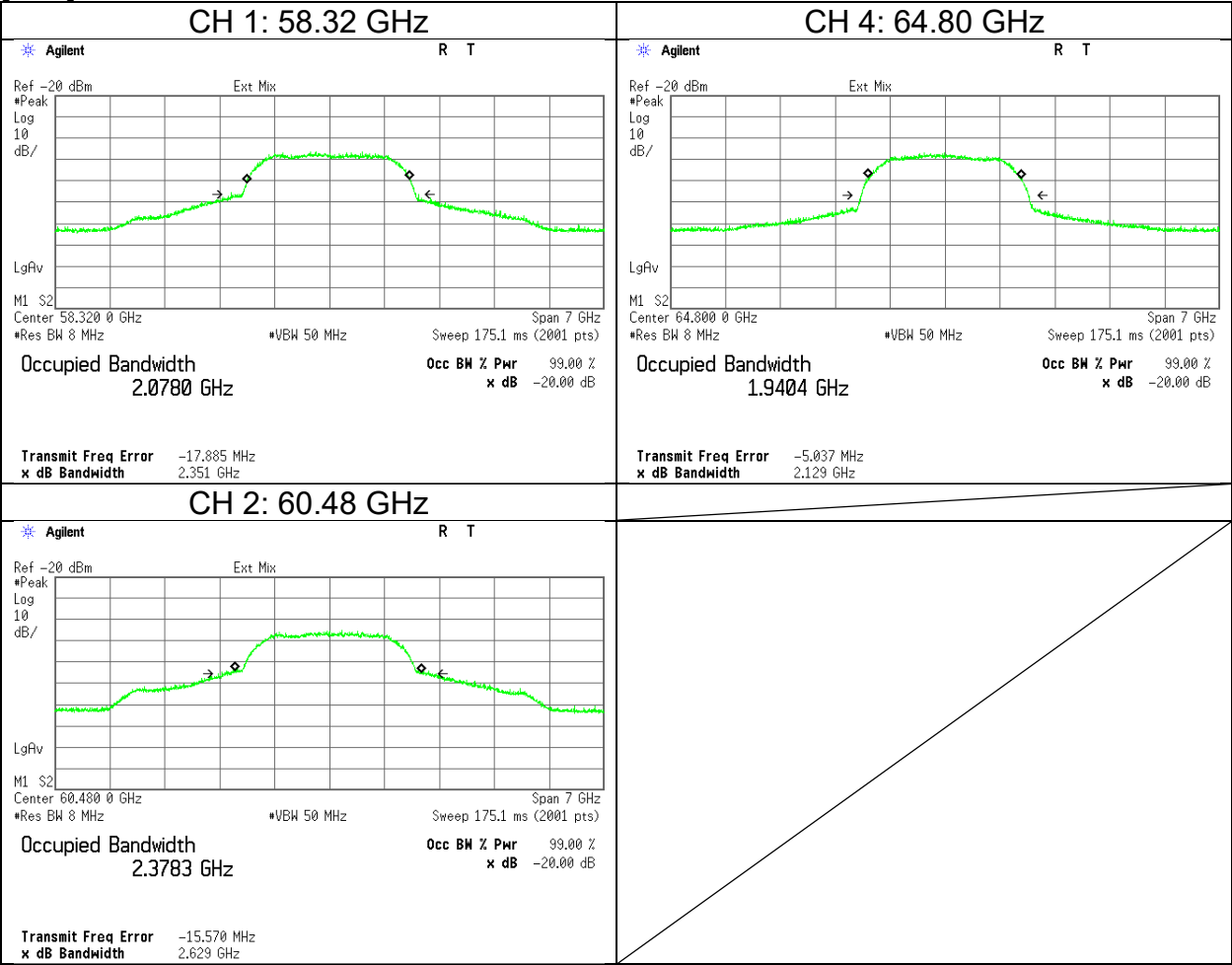
99 % Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 6

CH	Center Freq. [GHz]	Frequency error [MHz]	99% OBW [MHz]	99 % OBW		Lower Limit [GHz]	Upper Limit [GHz]	Result
				The Lower frequency [GHz]	The Upper frequency [GHz]			
1	58.32	-17.885	2078.000	57.263	59.341	57.0	71.0	Pass
2	60.48	-15.570	2378.300	59.275	61.654			Pass
4	64.80	-5.037	1940.400	63.825	65.765			Pass

Calculation:
The Lower frequency = Center frequency + Frequency error – 99 % OBW / 2
The Upper frequency = Center frequency + Frequency error + 99 % OBW / 2

[Data]



*Span setting: Enough width to display emission skirts.

99 % Occupied Bandwidth

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	March 31, 2025
Temperature / Humidity	21 deg. C / 38 % RH
Engineer	Yuichiro Yamazaki
Mode	Tx MCS 10

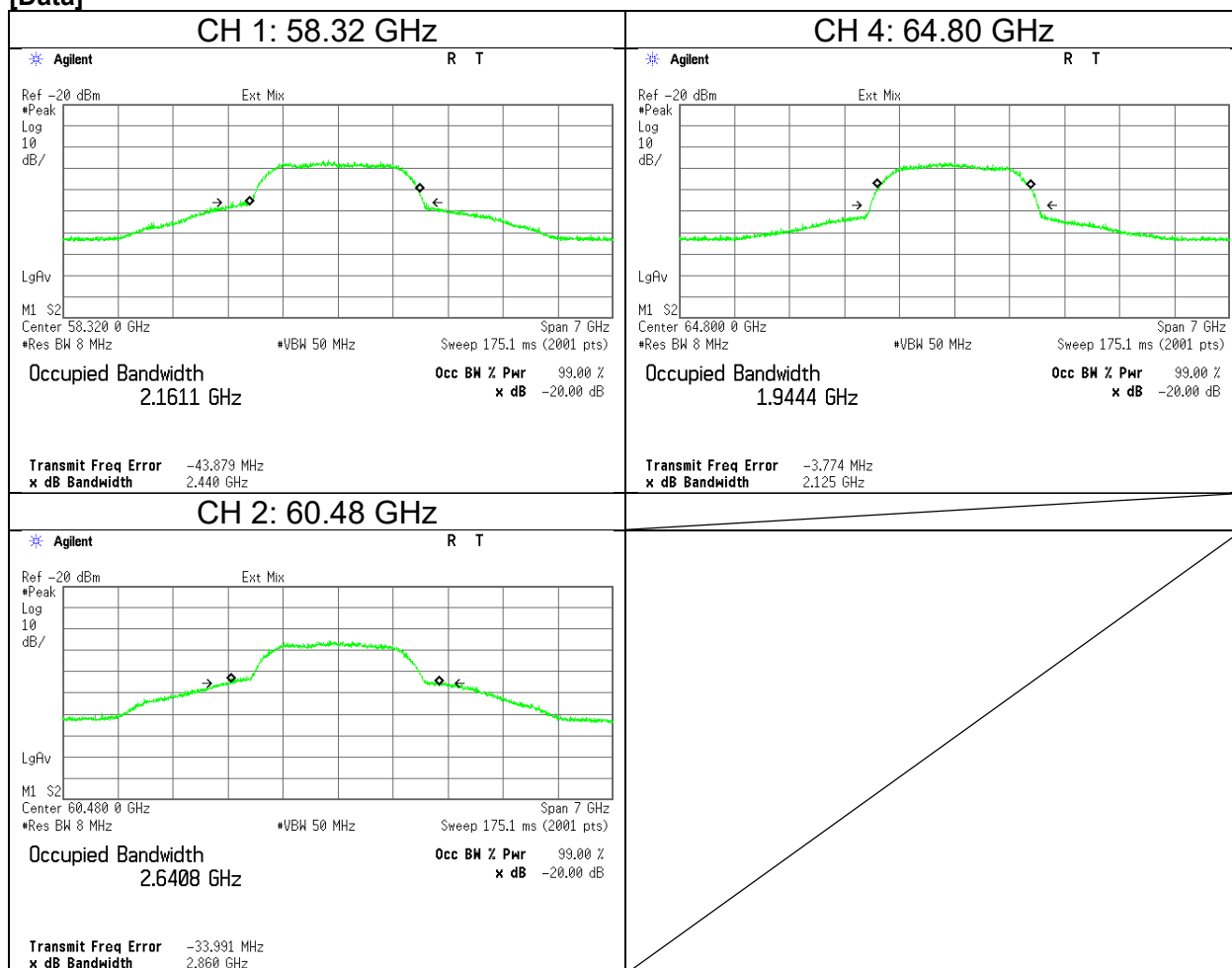
CH	Center Freq. [GHz]	Frequency error [MHz]	99% OBW [MHz]	99 % OBW		Lower Limit [GHz]	Upper Limit [GHz]	Result
				The Lower frequency [GHz]	The Upper frequency [GHz]			
1	58.32	-43.879	2161.100	57.196	59.357	57.0	71.0	Pass
2	60.48	-33.991	2640.800	59.126	61.766			Pass
4	64.80	-3.774	1944.400	63.824	65.768			Pass

Calculation:

The Lower frequency = Center frequency + Frequency error – 99 % OBW / 2

The Upper frequency = Center frequency + Frequency error + 99 % OBW / 2

[Data]



*Span setting: Enough width to display emission skirts.

EIRP, Peak Output Power

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	April 1, 2025
Temperature / Humidity	21 deg. C / 45 % RH
Engineer	Yuichiro Yamazaki
Mode	Test Mode MCS 0

EIRP (Average) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (RMS) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	Duty Factor *1) [dB]	EIRP (Average)		Limit [dBm]	Margin [dBm]
1	58.32	354.00	8.81	13.38	25.66	23.62	2.0	73.78	0.05	37.93	6208.7	40	2.07
2	60.48	342.00	9.43	12.93	24.95	23.73	2.0	74.09	0.05	38.40	6918.31	40	1.60
4	64.80	273.00	10.43	10.40	23.34	24.06	2.0	74.69	0.05	37.75	5956.63	40	2.25

Calculating formula:

$$FSL \text{ (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$EIRP \text{ (Average)} = P/M \text{ Reading} - Rx \text{ Ant. Gain} - LNA \text{ Gain} + FSL + \text{Duty Factor}$$

*1) Refer to Test data for Duty cycle

EIRP (Peak) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (Peak) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	EIRP (Peak)		Limit [dBm]	Margin [dB]
1	58.32	414.00	9.32	14.36	25.66	23.62	2.0	73.78	38.86	7691.31	43	4.14
2	60.48	387.00	9.74	13.55	24.95	23.73	2.0	74.09	38.97	7888.61	43	4.03
4	64.80	313.00	10.59	10.87	23.34	24.06	2.0	74.69	38.17	6561.46	43	4.83

Calculating formula:

$$FSL \text{ (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$EIRP \text{ (Peak)} = P/M \text{ Reading} - Rx \text{ Ant. Gain} - LNA \text{ Gain} + FSL$$

Peak Output Power

CH	Center Frequency [GHz]	6dB BW*2) [MHz]	EIRP (Peak) [dBm]	Max Ant. Gain*3) [dBi]	Peak Output Power		Limit *4) [mW]	Margin	
					[dBm]	[mW]		[mW]	[dB]
1	58.32	1719	38.86	20.50	18.36	68.5488	500	431.45	8.63
2	60.48	1584	38.97	20.50	18.47	70.3072	500	429.69	8.52
4	64.80	1583	38.17	20.50	17.67	58.4790	500	441.52	9.32

Calculating formula:

$$\text{Peak Output Power} = EIRP \text{ (Peak)} - \text{Max Ant. Gain}$$

*2) Refer to Test data for 6 dB Bandwidth

*3) Refer to the application document.

*4) 6 dB BW >= 100 MHz : 500 mW, 6 dB BW < 100 MHz : (6dB BW / 100 MHz)

EIRP, Peak Output Power

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	April 1, 2025
Temperature / Humidity	21 deg. C / 45 % RH
Engineer	Yuichiro Yamazaki
Mode	Test Mode MCS 1

EIRP (Average) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (RMS) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	Duty Factor *1) [dB]	EIRP (Average)		Limit [dBm]	Margin [dBm]
1	58.32	355.00	8.82	13.40	25.66	23.62	2.0	73.78	0.01	37.91	6180.17	40	2.09
2	60.48	343.00	9.44	12.96	24.95	23.73	2.0	74.09	0.01	38.39	6902.4	40	1.61
4	64.80	274.00	10.44	10.43	23.34	24.06	2.0	74.69	0.01	37.74	5942.93	40	2.26

Calculating formula:

$$FSL \text{ (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$EIRP \text{ (Average)} = P/M \text{ Reading} - Rx \text{ Ant. Gain} - LNA \text{ Gain} + FSL + \text{Duty Factor}$$

*1) Refer to Test data for Duty cycle

EIRP (Peak) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (Peak) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	EIRP (Peak)		Limit [dBm]	Margin [dB]
1	58.32	421.00	9.47	14.61	25.66	23.62	2.0	73.78	39.11	8147.05	43	3.89
2	60.48	387.00	9.74	13.55	24.95	23.73	2.0	74.09	38.97	7888.61	43	4.03
4	64.80	320.00	10.65	11.05	23.34	24.06	2.0	74.69	38.35	6839.12	43	4.65

Calculating formula:

$$FSL \text{ (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$EIRP \text{ (Peak)} = P/M \text{ Reading} - Rx \text{ Ant. Gain} - LNA \text{ Gain} + FSL$$

Peak Output Power

CH	Center Frequency [GHz]	6dB BW*2) [MHz]	EIRP (Peak) [dBm]	Max Ant. Gain*3) [dBi]	Peak Output Power		Limit *4) [mW]	Margin	
1	58.32	1695	39.11	20.50	18.61	72.6106	500	427.39	8.38
2	60.48	1685	38.97	20.50	18.47	70.3072	500	429.69	8.52
4	64.80	1565	38.35	20.50	17.85	60.9537	500	439.05	9.14

Calculating formula:

$$\text{Peak Output Power} = EIRP \text{ (Peak)} - \text{Max Ant. Gain}$$

*2) Refer to Test data for 6 dB Bandwidth

*3) Refer to the application document.

*4) 6 dB BW >= 100 MHz : 500 mW, 6 dB BW < 500 mW * (6dB BW / 100 MHz)

Rate Check

CH	MCS	DSO Reading (Peak) [mV]	Remark
1	1	410	*
1	2	410	
1	3	410	
1	4	410	
1	5	410	

EIRP, Peak Output Power

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	April 1, 2025
Temperature / Humidity	21 deg. C / 45 % RH
Engineer	Yuichiro Yamazaki
Mode	Test Mode MCS 6

EIRP (Average) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (RMS) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	Duty Factor *1)	EIRP (Average)		Limit	Margin
										[dBm]	[mW]	[dBm]	[dBm]
1	58.32	338.00	8.61	12.94	25.66	23.62	2.0	73.78	0.04	37.48	5597.58	40	2.52
2	60.48	350.00	9.53	13.14	24.95	23.73	2.0	74.09	0.04	38.60	7244.36	40	1.40
4	64.80	261.00	10.31	10.02	23.34	24.06	2.0	74.69	0.04	37.36	5445.03	40	2.64

Calculating formula:

$$FSL \text{ (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$EIRP \text{ (Average)} = P/M \text{ Reading} - Rx \text{ Ant. Gain} - LNA \text{ Gain} + FSL + \text{Duty Factor}$$

*1) Refer to Test data for Duty cycle

EIRP (Peak) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (Peak) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	EIRP (Peak)		Limit	Margin
									[dBm]	[mW]	[dBm]	[dB]
1	58.32	421.00	9.47	14.61	25.66	23.62	2.0	73.78	39.11	8147.05	43	3.89
2	60.48	421.00	10.25	14.43	24.95	23.73	2.0	74.09	39.85	9660.51	43	3.15
4	64.80	347.00	10.98	11.92	23.34	24.06	2.0	74.69	39.22	8356.04	43	3.78

Calculating formula:

$$FSL \text{ (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$EIRP \text{ (Peak)} = P/M \text{ Reading} - Rx \text{ Ant. Gain} - LNA \text{ Gain} + FSL$$

Peak Output Power

CH	Center Frequency [GHz]	6dB BW*2)	EIRP (Peak) [dBm]	Max Ant. Gain*3)	Peak Output Power		Limit *4)	Margin	
		[MHz]	[dBm]	[dBi]	[dBm]	[mW]	[mW]	[mW]	[dB]
1	58.32	1691	39.11	20.50	18.61	72.6106	500	427.39	8.38
2	60.48	1724	39.85	20.50	19.35	86.0994	500	413.90	7.64
4	64.80	1648	39.22	20.50	18.72	74.4732	500	425.53	8.27

Calculating formula:

$$\text{Peak Output Power} = EIRP \text{ (Peak)} - \text{Max Ant. Gain}$$

*2) Refer to Test data for 6 dB Bandwidth

*3) Refer to the application document.

*4) 6 dB BW >= 100 MHz : 500 mW, 6 dB BW < 500 mW * (6dB BW / 100 MHz)

Rate Check

CH	MCS	DSO Reading (Peak) [mV]	Remark
1	6	417	*
1	7	417	
1	8	417	
1	9	417	

EIRP, Peak Output Power

Test place	Ise EMC Lab.
Semi Anechoic Chamber	No. 4
Date	April 1, 2025
Temperature / Humidity	21 deg. C / 45 % RH
Engineer	Yuichiro Yamazaki
Mode	Test Mode MCS 10

EIRP (Average) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (RMS) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	Duty Factor *1) [dB]	EIRP (Average)		Limit [dBm]	Margin [dBm]
1	58.32	326.00	8.47	12.62	25.66	23.62	2.0	73.78	0.09	37.21	5260.18	40	2.79
2	60.48	336.00	9.35	12.77	24.95	23.73	2.0	74.09	0.09	38.28	6729.77	40	1.72
4	64.80	251.00	10.22	9.72	23.34	24.06	2.0	74.69	0.09	37.11	5140.44	40	2.89

Calculating formula:

$$\text{FSL (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$\text{EIRP (Average)} = \text{P/M Reading} - \text{Rx Ant. Gain} - \text{LNA Gain} + \text{FSL} + \text{Duty Factor}$$

*1) Refer to Test data for Duty cycle

EIRP (Peak) Stage 1 Stage 2 Stage 3 Stage 4

CH	Center Frequency [GHz]	DSO Reading (Peak) [mV]	S/G Setting Power [dBm]	P/M Reading [dBm]	LNA Gain [dB]	Rx Ant. Gain [dBi]	Tested Distance [m]	FSL [dB]	EIRP (Peak)		Limit [dBm]	Margin [dB]
1	58.32	447.00	9.80	15.13	25.66	23.62	2.0	73.78	39.63	9183.33	43	3.37
2	60.48	434.00	10.47	14.77	24.95	23.73	2.0	74.09	40.19	10447.2	43	2.81
4	64.80	380.00	11.40	12.85	23.34	24.06	2.0	74.69	40.15	10351.4	43	2.85

Calculating formula:

$$\text{FSL (Free Space path Loss)} = 10 * \log_{10}((4 * \pi * \text{Tested Distance} / \text{Lambda})^2)$$

$$\text{EIRP (Peak)} = \text{P/M Reading} - \text{Rx Ant. Gain} - \text{LNA Gain} + \text{FSL}$$

Peak Output Power

CH	Center Frequency [GHz]	6dB BW*2) [MHz]	EIRP (Peak) [dBm]	Max Ant. Gain*3) [dBi]	Peak Output Power		Limit *4)	Margin	
					[dBm]	[mW]	[mW]	[mW]	[dB]
1	58.32	1702	39.63	20.50	19.13	81.8465	500	418.15	7.86
2	60.48	1688	40.19	20.50	19.69	93.1108	500	406.89	7.30
4	64.80	1651	40.15	20.50	19.65	92.2571	500	407.74	7.34

Calculating formula:

$$\text{Peak Output Power} = \text{EIRP (Peak)} - \text{Max Ant. Gain}$$

*2) Refer to Test data for 6 dB Bandwidth

*3) Refer to the application document.

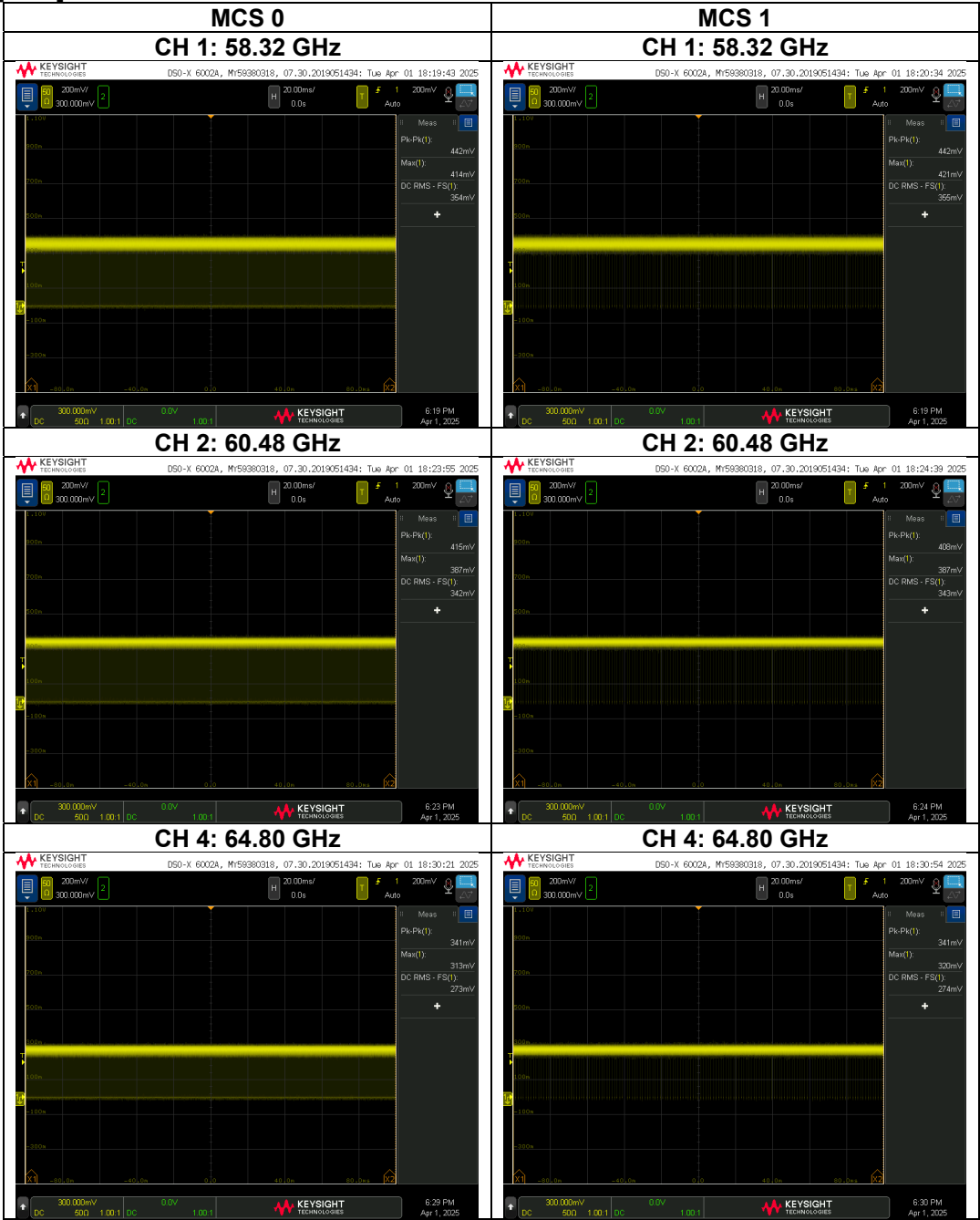
*4) 6 dB BW >= 100 MHz : 500 mW, 6 dB BW < 500 mW * (6dB BW / 100 MHz)

Rate Check

CH	MCS	DSO Reading (Peak) [mV]	Remark
1	10	444	*
1	11	443	
1	12	443	

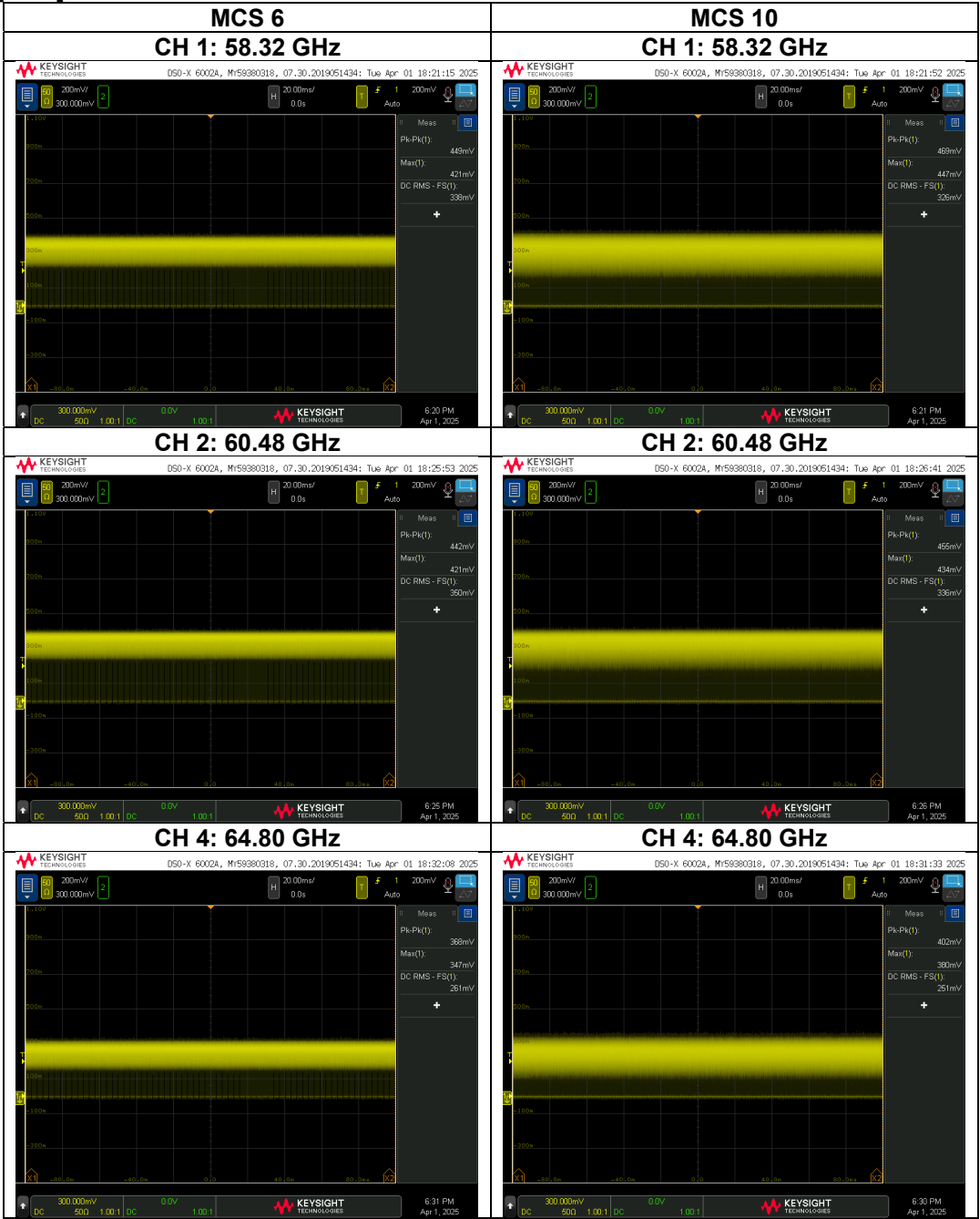
EIRP, Peak Output Power

[Data]



EIRP, Peak Output Power

[Data]



Spurious Emissions
(Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 0 58.32 GHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	3520.0	52.4	50.3	28.9	5.2	31.4	-	55.0	52.9	73.9	53.9	18.9	1.0	
Hori.	10560.0	47.0	44.1	36.6	-4.5	32.9	-	46.3	43.4	73.9	53.9	27.7	10.5	
Hori.	14080.0	47.2	40.9	38.9	-3.6	32.3	-	50.2	43.9	73.9	53.9	23.7	10.0	
Hori.	17600.0	44.4	36.9	40.6	-2.8	32.4	-	49.8	42.3	73.9	53.9	24.1	11.6	
Hori.	38720.0	67.6	61.4	44.1	5.0	72.8	-	43.9	37.7	73.9	53.9	30.0	16.2	
Hori.	38880.1	71.3	68.4	44.1	5.0	73.1	-	47.4	44.5	73.9	53.9	26.5	9.5	
Vert.	3520.0	51.5	48.9	28.9	5.3	31.4	-	54.3	51.7	73.9	53.9	19.6	2.2	
Vert.	10560.0	47.3	44.2	36.6	-4.5	32.9	-	46.6	43.5	73.9	53.9	27.3	10.4	
Vert.	14080.0	47.4	40.9	38.9	-3.6	32.3	-	50.4	43.9	73.9	53.9	23.5	10.0	
Vert.	17600.0	43.1	36.6	40.6	-2.8	32.4	-	48.5	41.9	73.9	53.9	25.5	12.0	
Vert.	38720.0	66.6	58.6	44.1	5.0	72.8	-	42.9	34.9	73.9	53.9	31.0	19.0	
Vert.	38880.1	73.6	70.8	44.1	5.0	73.1	-	49.7	46.9	73.9	53.9	24.2	7.0	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz $20\log (3.95 \text{ m} / 3.0 \text{ m}) = 2.39 \text{ dB}$
 6 GHz - 10 GHz $20\log (4.95 \text{ m} / 3.0 \text{ m}) = 4.35 \text{ dB}$
 10 GHz - 40 GHz $20\log (1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 0 58.32 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.930	-52.20	21.73	0.00	32.80	0.00	0.00	8.41	1.00	65.49	-32.83	0.000521	0.46	9000	42.91	NS
49.942	-48.40	22.62	0.00	32.77	0.00	0.00	8.91	1.00	66.41	-28.46	0.001424	1.26	9000	38.54	NS
50.628	-66.65	22.83	0.59	25.70	47.66	31.99	0.08	2.00	72.55	-26.29	0.002351	2.08	9000	36.36	NS
56.684	-78.51	23.46	0.00	26.19	45.35	0.00	0.00	2.50	75.47	-7.34	0.184705	163.31	9000	17.41	
71.332	-67.49	24.38	1.03	20.63	48.81	31.99	0.08	2.00	75.53	-19.04	0.012480	11.03	9000	29.11	NS
82.516	-66.89	23.51	0.18	0.00	-12.82	0.00	3.56	2.00	76.79	-22.68	0.005392	4.77	9000	32.76	NS
88.608	-57.04	23.88	0.86	32.59	41.78	31.99	0.08	1.50	74.91	-27.86	0.001635	1.45	9000	37.94	NS
95.780	-56.53	24.22	0.78	33.83	42.55	31.99	0.08	1.50	75.59	-27.57	0.001748	1.55	9000	37.65	NS
101.332	-55.03	24.52	0.73	32.22	43.30	31.99	0.08	1.50	76.08	-23.57	0.004393	3.88	9000	33.65	NS
108.349	-55.86	24.77	1.44	21.85	43.55	31.99	0.08	1.50	76.66	-12.74	0.053249	47.08	9000	22.81	NS
116.650	-84.86	22.52	0.00	17.86	53.35	0.00	0.00	0.01	33.78	-38.11	0.000154	0.14	9000	48.19	NS
120.951	-84.66	22.67	0.00	19.45	50.45	0.00	0.00	0.01	34.09	-42.24	0.000060	0.05	9000	52.31	NS
129.168	-85.79	22.92	0.00	20.04	52.35	0.00	0.00	0.01	34.66	-41.74	0.000067	0.06	9000	51.81	NS
141.458	-86.49	23.21	0.00	19.04	53.52	0.00	0.00	0.01	35.45	-39.76	0.000106	0.09	9000	49.84	NS
143.334	-88.52	23.24	0.00	18.71	53.63	0.00	0.00	0.01	35.57	-41.27	0.000075	0.07	9000	51.35	NS
150.425	-88.52	23.33	0.00	17.24	56.61	0.00	0.00	0.01	35.99	-36.50	0.000224	0.20	9000	46.57	NS
160.390	-89.49	23.40	0.00	16.58	58.21	0.00	0.00	0.01	36.55	-34.71	0.000338	0.30	9000	44.79	NS
167.601	-90.39	23.41	0.00	13.06	60.71	0.00	0.00	0.01	36.93	-29.22	0.001197	1.06	9000	39.30	NS
171.333	-82.69	22.42	0.00	0.00	59.33	0.00	0.00	0.005	31.10	-14.68	0.034009	30.07	9000	24.76	NS
178.476	-83.00	22.60	0.00	0.00	59.57	0.00	0.00	0.005	31.45	-14.58	0.034824	30.79	9000	24.66	NS
187.474	-83.01	22.79	0.00	0.00	58.92	0.00	0.00	0.005	31.88	-15.00	0.031594	27.93	9000	25.08	NS
198.337	-85.44	22.99	0.00	0.00	59.33	0.00	0.00	0.005	32.37	-16.73	0.021229	18.77	9000	26.81	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.918	-56.65	21.73	0.00	32.79	0.00	0.00	8.41	1.00	65.49	-37.27	0.000187	0.17	90	27.35	NS
49.917	-53.09	22.61	0.00	32.78	0.00	0.00	8.90	1.00	66.41	-33.17	0.000482	0.43	90	23.25	NS
51.116	-74.94	22.83	0.56	26.00	46.92	31.99	0.08	2.00	72.63	-35.56	0.000278	0.25	90	25.64	NS
56.700	-89.12	23.47	0.00	26.19	45.35	0.00	0.00	2.50	75.47	-17.96	0.015989	14.14	90	8.04	
71.015	-75.70	24.40	0.82	20.72	48.89	31.99	0.08	2.00	75.49	-27.53	0.001766	1.56	90	17.61	NS
80.881	-70.15	23.37	0.15	0.00	-12.26	0.00	3.18	2.00	76.62	-25.83	0.002612	2.31	90	15.91	NS
88.301	-60.80	23.89	0.90	32.29	41.49	31.99	0.08	1.50	74.88	-31.61	0.000690	0.61	90	21.69	NS
95.965	-61.56	24.21	0.79	34.02	42.57	31.99	0.08	1.50	75.61	-32.74	0.000533	0.47	90	22.81	NS
100.376	-60.38	24.52	0.68	32.52	43.52	31.99	0.08	1.50	76.00	-29.13	0.001221	1.08	90	19.21	NS
108.578	-61.36	24.81	1.68	21.46	43.78	31.99	0.08	1.50	76.68	-17.40	0.018207	16.10	90	7.47	NS
117.614	-90.05	22.56	0.00	18.72	53.39	0.00	0.00	0.01	33.85	-44.09	0.000039	0.03	90	34.16	NS
120.200	-89.84	22.65	0.00	18.99	50.81	0.00	0.00	0.01	34.04	-46.63	0.000022	0.02	90	36.70	NS
129.077	-90.66	22.92	0.00	19.97	52.48	0.00	0.00	0.01	34.66	-46.41	0.000023	0.02	90	36.49	NS
141.546	-93.75	23.21	0.00	19.04	53.39	0.00	0.00	0.01	35.46	-47.15	0.000019	0.02	90	37.22	NS
145.862	-93.44	23.28	0.00	19.26	54.01	0.00	0.00	0.01	35.72	-46.25	0.000024	0.02	90	36.32	NS
151.856	-93.69	23.34	0.00	17.16	54.90	0.00	0.00	0.01	36.07	-43.22	0.000048	0.04	90	33.30	NS
160.136	-94.50	23.39	0.00	16.75	58.24	0.00	0.00	0.01	36.53	-39.87	0.000103	0.09	90	29.95	NS
167.210	-97.16	23.41	0.00	13.27	61.08	0.00	0.00	0.01	36.91	-35.85	0.000260	0.23	90	25.93	NS
172.613	-86.78	22.46	0.00	0.00	61.04	0.00	0.00	0.005	31.16	-17.04	0.019791	17.50	90	7.11	NS
178.596	-88.33	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-19.91	0.010218	9.03	90	9.98	NS
187.800	-88.03	22.80	0.00	0.00	59.53	0.00	0.00	0.005	31.90	-19.41	0.011458	10.13	90	9.49	NS
197.231	-90.07	22.97	0.00	0.00	57.81	0.00	0.00	0.005	32.32	-22.91	0.005116	4.52	90	12.99	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 3
Date	April 3, 2025	April 3, 2025	April 4, 2025	April 6, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH	21 deg. C / 41 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (30 MHz to 6 GHz)	Yuichiro Yamazaki (9 kHz to 30 MHz)
Mode	Tx MCS 0 60.48 GHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	68.7	38.7	-	6.5	7.3	32.1	-	20.4	-	40.0	-	19.6	-	
Hori.	125.0	34.3	-	13.4	7.9	32.1	-	23.6	-	43.5	-	20.0	-	
Hori.	250.0	42.1	-	12.1	9.0	32.0	-	31.1	-	46.0	-	14.9	-	
Hori.	299.9	39.8	-	13.7	9.5	32.0	-	31.0	-	46.0	-	15.0	-	
Hori.	366.5	36.2	-	15.3	9.8	32.1	-	29.2	-	46.0	-	16.8	-	
Hori.	845.7	22.0	-	21.5	12.0	31.4	-	24.0	-	46.0	-	22.0	-	
Hori.	3520.0	52.5	50.6	28.9	5.2	31.4	-	55.2	53.3	73.9	53.9	18.7	0.6	
Hori.	10560.0	47.6	44.4	36.6	-4.5	32.9	-	46.9	43.7	73.9	53.9	27.1	10.2	
Hori.	14080.0	47.1	41.1	38.9	-3.6	32.3	-	50.1	44.1	73.9	53.9	23.8	9.8	
Hori.	17600.0	43.8	36.3	40.6	-2.8	32.4	-	49.2	41.7	73.9	53.9	24.8	12.2	
Hori.	38720.0	68.0	61.4	44.1	5.0	72.8	-	44.4	37.7	73.9	53.9	29.6	16.2	
Vert.	30.5	34.2	-	18.5	6.8	32.1	-	27.4	-	40.0	-	12.6	-	
Vert.	67.7	36.3	-	6.5	7.3	32.1	-	18.1	-	40.0	-	21.9	-	
Vert.	125.0	36.2	-	13.4	7.9	32.1	-	25.5	-	43.5	-	18.1	-	
Vert.	299.1	36.4	-	13.7	9.5	32.0	-	27.6	-	46.0	-	18.4	-	
Vert.	367.7	36.7	-	15.3	9.8	32.1	-	29.7	-	46.0	-	16.3	-	
Vert.	844.6	22.7	-	21.5	12.0	31.4	-	24.7	-	46.0	-	21.3	-	
Vert.	3520.0	51.3	49.1	28.9	5.2	31.4	-	54.0	51.7	73.9	53.9	20.0	2.2	
Vert.	10560.0	47.8	44.8	36.6	-4.5	32.9	-	47.1	44.1	73.9	53.9	26.8	9.8	
Vert.	14080.0	47.3	40.4	38.9	-3.6	32.3	-	50.3	43.4	73.9	53.9	23.6	10.5	
Vert.	17600.0	44.7	36.9	40.6	-2.8	32.4	-	50.1	42.3	73.9	53.9	23.8	11.6	
Vert.	38720.0	66.6	58.5	44.1	5.0	72.8	-	42.9	34.8	73.9	53.9	31.0	19.1	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
 6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 0 60.48 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.994	-52.05	21.73	0.00	32.88	0.00	0.00	8.41	1.00	65.50	-32.74	0.000532	0.47	9000	42.82	NS
49.960	-48.63	22.63	0.00	32.76	0.00	0.00	8.91	1.00	66.41	-28.69	0.001351	1.19	9000	38.77	NS
51.735	-66.52	23.04	0.52	26.46	46.27	31.99	0.08	2.00	72.74	-28.40	0.001446	1.28	9000	38.47	NS
56.475	-92.81	23.45	0.00	26.15	45.42	0.00	0.00	2.50	75.44	-21.55	0.006993	6.18	9000	31.63	NS
71.349	-67.30	24.38	1.04	20.63	48.81	31.99	0.08	2.00	75.53	-18.84	0.013062	11.55	9000	28.92	NS
80.925	-66.56	23.37	0.16	0.00	-12.44	0.00	3.19	2.00	76.62	-22.40	0.005760	5.09	9000	32.47	NS
88.124	-56.53	23.90	0.93	32.12	41.32	31.99	0.08	1.50	74.87	-27.34	0.001843	1.63	9000	37.42	NS
95.094	-56.30	24.26	0.74	33.14	42.44	31.99	0.08	1.50	75.53	-26.90	0.002040	1.80	9000	36.98	NS
99.600	-55.82	24.46	0.60	32.79	43.48	31.99	0.08	1.50	75.93	-24.97	0.003181	2.81	9000	35.05	NS
108.180	-56.79	24.75	1.25	22.14	43.38	31.99	0.08	1.50	76.65	-14.31	0.037073	32.78	9000	24.39	NS
117.680	-84.53	22.56	0.00	18.78	53.51	0.00	0.00	0.01	33.86	-38.51	0.000141	0.12	9000	48.58	NS
120.148	-84.90	22.65	0.00	18.96	50.83	0.00	0.00	0.01	34.04	-41.64	0.000068	0.06	9000	51.72	NS
127.329	-86.31	22.87	0.00	20.62	52.15	0.00	0.00	0.01	34.54	-43.11	0.000049	0.04	9000	53.19	NS
138.589	-87.45	23.16	0.00	19.22	51.42	0.00	0.00	0.01	35.28	-43.13	0.000049	0.04	9000	53.21	NS
143.315	-88.05	23.24	0.00	18.72	53.64	0.00	0.00	0.01	35.57	-40.80	0.000083	0.07	9000	50.88	NS
150.531	-88.76	23.33	0.00	17.24	56.64	0.00	0.00	0.01	35.99	-36.70	0.000214	0.19	9000	46.77	NS
160.429	-89.28	23.40	0.00	16.55	58.21	0.00	0.00	0.01	36.55	-34.47	0.000357	0.32	9000	44.55	NS
168.987	-90.33	23.41	0.00	12.05	62.23	0.00	0.00	0.01	37.00	-26.56	0.002207	1.95	9000	36.64	NS
170.827	-82.87	22.41	0.00	0.00	59.70	0.00	0.00	0.005	31.07	-14.51	0.035410	31.31	9000	24.59	NS
178.024	-83.82	22.59	0.00	0.00	59.62	0.00	0.00	0.005	31.43	-15.36	0.029126	25.75	9000	25.43	NS
187.479	-83.42	22.79	0.00	0.00	58.93	0.00	0.00	0.005	31.88	-15.40	0.028829	25.49	9000	25.48	NS
194.437	-85.33	22.93	0.00	0.00	58.46	0.00	0.00	0.005	32.20	-17.60	0.017365	15.35	9000	27.68	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.935	-56.95	21.73	0.00	32.81	0.00	0.00	8.41	1.00	65.49	-37.59	0.000174	0.15	90	27.66	NS
49.890	-53.25	22.60	0.00	32.80	0.00	0.00	8.90	1.00	66.40	-33.35	0.000463	0.41	90	23.42	NS
50.764	-75.06	22.82	0.58	25.78	47.44	31.99	0.08	2.00	72.57	-34.98	0.000318	0.28	90	25.06	NS
55.518	-100.17	23.36	0.00	26.18	45.76	0.00	0.00	2.50	75.29	-28.66	0.001363	1.20	90	18.73	NS
71.007	-75.20	24.40	0.81	20.72	48.89	31.99	0.08	2.00	75.49	-27.04	0.001975	1.75	90	17.12	NS
80.859	-70.45	23.36	0.15	0.00	-12.17	0.00	3.18	2.00	76.62	-26.03	0.002494	2.21	90	16.11	NS
86.146	-61.66	23.73	1.38	30.23	41.36	31.99	0.08	1.50	74.67	-30.12	0.000972	0.86	90	20.20	NS
95.026	-60.93	24.26	0.74	33.08	42.43	31.99	0.08	1.50	75.52	-31.49	0.000710	0.63	90	21.57	NS
100.016	-60.44	24.51	0.59	32.47	43.63	31.99	0.08	1.50	75.96	-29.15	0.001216	1.08	90	19.23	NS
108.405	-61.15	24.78	1.50	21.76	43.61	31.99	0.08	1.50	76.66	-17.83	0.016499	14.59	90	7.90	NS
117.753	-89.61	22.56	0.00	18.84	53.65	0.00	0.00	0.01	33.86	-43.50	0.000045	0.04	90	33.58	NS
120.217	-89.66	22.65	0.00	19.00	50.80	0.00	0.00	0.01	34.04	-46.47	0.000023	0.02	90	36.55	NS
127.290	-90.81	22.87	0.00	20.62	52.28	0.00	0.00	0.01	34.54	-47.49	0.000018	0.02	90	37.56	NS
139.076	-93.61	23.17	0.00	19.23	51.48	0.00	0.00	0.01	35.31	-49.22	0.000012	0.01	90	39.30	NS
143.380	-93.52	23.24	0.00	18.67	53.63	0.00	0.00	0.01	35.57	-46.23	0.000024	0.02	90	36.30	NS
150.390	-93.88	23.33	0.00	17.23	56.60	0.00	0.00	0.01	35.99	-41.85	0.000065	0.06	90	31.93	NS
160.334	-94.62	23.40	0.00	16.62	58.22	0.00	0.00	0.01	36.54	-39.87	0.000103	0.09	90	29.95	NS
168.988	-95.21	23.41	0.00	12.05	62.23	0.00	0.00	0.01	37.00	-31.44	0.000717	0.63	90	21.52	NS
170.998	-86.99	22.42	0.00	0.00	59.32	0.00	0.00	0.005	31.08	-19.01	0.012569	11.11	90	9.08	NS
185.906	-88.26	22.76	0.00	0.00	57.80	0.00	0.00	0.005	31.81	-21.41	0.007223	6.39	90	11.49	NS
186.328	-87.93	22.77	0.00	0.00	57.94	0.00	0.00	0.005	31.83	-20.93	0.008074	7.14	90	11.01	NS
194.402	-90.34	22.92	0.00	0.00	58.53	0.00	0.00	0.005	32.20	-22.54	0.005575	4.93	90	12.61	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log ((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions
(Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 0 64.80 GHz		

Polarity	Frequency	Reading	Reading	Ant.	Loss	Gain	Duty	Result	Result	Limit	Limit	Margin	Margin	Remark
[Hori/Vert]	[MHz]	(QP / PK) [dBuV]	(AV) [dBuV]	Factor [dB/m]	[dB]	[dB]	[dB]	(QP / PK) [dBuV/m]	(AV) [dBuV/m]	(QP / PK) [dBuV/m]	(AV) [dBuV/m]	(QP / PK) [dB]	(AV) [dB]	
Hori.	3520.0	52.6	50.3	28.9	5.2	31.4	-	55.2	53.0	73.9	53.9	18.7	0.9	
Hori.	10560.0	47.0	43.9	36.6	-4.5	32.9	-	46.2	43.2	73.9	53.9	27.7	10.7	
Hori.	14080.0	46.8	41.2	38.9	-3.6	32.3	-	49.8	44.2	73.9	53.9	24.1	9.7	
Hori.	17600.0	44.2	36.6	40.6	-2.8	32.4	-	49.6	41.9	73.9	53.9	24.3	12.0	
Hori.	38720.0	67.6	61.4	44.1	5.0	72.8	-	43.9	37.8	73.9	53.9	30.0	16.2	
Vert.	3520.0	51.7	49.5	28.9	5.2	31.4	-	54.4	52.2	73.9	53.9	19.6	1.7	
Vert.	10560.0	47.5	44.6	36.6	-4.5	32.9	-	46.8	43.8	73.9	53.9	27.1	10.1	
Vert.	14080.0	47.0	40.3	38.9	-3.6	32.3	-	50.0	43.3	73.9	53.9	23.9	10.6	
Vert.	17600.0	43.9	36.8	40.6	-2.8	32.4	-	49.3	42.2	73.9	53.9	24.6	11.7	
Vert.	38720.0	66.6	58.6	44.1	5.0	72.8	-	43.0	34.9	73.9	53.9	31.0	19.0	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
 6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 0 64.80 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.994	-51.92	21.73	0.00	32.88	0.00	0.00	8.41	1.00	65.50	-32.62	0.000547	0.48	9000	42.70	NS
49.973	-48.05	22.64	0.00	32.75	0.00	0.00	8.91	1.00	66.42	-28.11	0.001546	1.37	9000	38.19	NS
51.644	-66.67	23.01	0.52	26.39	46.37	31.99	0.08	2.00	72.72	-28.37	0.001457	1.29	9000	38.44	NS
55.310	-92.79	23.33	0.00	26.24	45.84	0.00	0.00	2.50	75.26	-21.27	0.007472	6.61	9000	31.34	NS
71.242	-67.02	24.38	0.97	20.65	48.83	31.99	0.08	2.00	75.52	-18.64	0.013662	12.08	9000	28.72	NS
82.511	-66.08	23.51	0.18	0.00	-12.82	0.00	3.56	2.00	76.79	-21.87	0.006495	5.74	9000	31.95	NS
88.031	-56.53	23.90	0.94	32.03	41.23	31.99	0.08	1.50	74.86	-27.34	0.001844	1.63	9000	37.42	NS
95.712	-55.90	24.22	0.78	33.76	42.54	31.99	0.08	1.50	75.58	-26.88	0.002050	1.81	9000	36.96	NS
100.224	-55.94	24.52	0.65	32.50	43.56	31.99	0.08	1.50	75.98	-24.67	0.003410	3.01	9000	34.75	NS
108.918	-56.22	24.86	2.05	20.88	44.12	31.99	0.08	1.50	76.71	-10.99	0.079553	70.34	9000	21.07	NS
117.641	-84.72	22.56	0.00	18.74	53.44	0.00	0.00	0.01	33.85	-38.73	0.000134	0.12	9000	48.81	NS
120.086	-84.89	22.65	0.00	18.92	50.86	0.00	0.00	0.01	34.03	-41.57	0.000070	0.06	9000	51.64	NS
129.065	-86.34	22.92	0.00	19.96	52.50	0.00	0.00	0.01	34.66	-42.06	0.000062	0.06	9000	52.14	NS
139.132	-87.07	23.17	0.00	19.21	51.57	0.00	0.00	0.01	35.31	-42.57	0.000055	0.05	9000	52.65	NS
143.262	-88.93	23.24	0.00	18.76	53.64	0.00	0.00	0.01	35.56	-41.72	0.000067	0.06	9000	51.80	NS
150.454	-88.83	23.33	0.00	17.24	56.62	0.00	0.00	0.01	35.99	-36.79	0.000210	0.19	9000	46.87	NS
161.886	-89.64	23.40	0.00	15.61	57.11	0.00	0.00	0.01	36.63	-34.92	0.000322	0.29	9000	44.99	NS
169.062	-90.73	23.41	0.00	12.08	62.31	0.00	0.00	0.01	37.00	-26.90	0.002040	1.80	9000	36.98	NS
172.688	-82.49	22.46	0.00	0.00	61.24	0.00	0.00	0.005	31.17	-12.55	0.055647	49.20	9000	22.62	NS
181.093	-83.96	22.66	0.00	0.00	58.21	0.00	0.00	0.005	31.58	-16.83	0.020764	18.36	9000	26.90	NS
186.344	-83.35	22.77	0.00	0.00	57.94	0.00	0.00	0.005	31.83	-16.35	0.023187	20.50	9000	26.42	NS
194.245	-85.45	22.92	0.00	0.00	58.82	0.00	0.00	0.005	32.19	-17.36	0.018345	16.22	9000	27.44	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.997	-56.85	21.73	0.00	32.89	0.00	0.00	8.41	1.00	65.51	-37.56	0.000175	0.16	90	27.63	NS
49.972	-52.53	22.64	0.00	32.75	0.00	0.00	8.91	1.00	66.42	-32.59	0.000551	0.49	90	22.67	NS
51.685	-74.95	23.02	0.52	26.43	46.33	31.99	0.08	2.00	72.73	-36.73	0.000212	0.19	90	26.81	NS
55.782	-100.67	23.40	0.00	26.11	45.65	0.00	0.00	2.50	75.33	-29.20	0.001203	1.06	90	19.27	NS
71.396	-75.62	24.37	1.08	20.61	48.79	31.99	0.08	2.00	75.54	-27.10	0.001949	1.72	90	17.18	NS
80.821	-70.36	23.36	0.15	0.00	-12.01	0.00	3.17	2.00	76.61	-25.80	0.002633	2.33	90	15.87	NS
88.380	-61.03	23.88	0.89	32.37	41.57	31.99	0.08	1.50	74.89	-31.84	0.000655	0.58	90	21.91	NS
95.818	-61.04	24.22	0.78	33.87	42.55	31.99	0.08	1.50	75.59	-32.12	0.000614	0.54	90	22.20	NS
97.044	-60.86	24.35	0.73	34.66	42.67	31.99	0.08	1.50	75.70	-32.68	0.000539	0.48	90	22.76	NS
108.411	-61.46	24.78	1.50	21.75	43.61	31.99	0.08	1.50	76.67	-18.13	0.015389	13.61	90	8.20	NS
117.023	-89.60	22.54	0.00	18.19	52.26	0.00	0.00	0.01	33.81	-44.27	0.000037	0.03	90	34.34	NS
120.147	-90.86	22.65	0.00	18.96	50.83	0.00	0.00	0.01	34.04	-47.60	0.000017	0.02	90	37.68	NS
129.081	-91.43	22.92	0.00	19.97	52.47	0.00	0.00	0.01	34.66	-47.19	0.000019	0.02	90	37.26	NS
138.718	-91.58	23.16	0.00	19.23	51.40	0.00	0.00	0.01	35.28	-47.28	0.000019	0.02	90	37.36	NS
143.367	-93.14	23.24	0.00	18.68	53.63	0.00	0.00	0.01	35.57	-45.85	0.000026	0.02	90	35.93	NS
150.479	-94.31	23.33	0.00	17.24	56.62	0.00	0.00	0.01	35.99	-42.26	0.000059	0.05	90	32.34	NS
160.890	-94.16	23.40	0.00	16.24	58.16	0.00	0.00	0.01	36.57	-39.07	0.000124	0.11	90	29.15	NS
168.954	-95.46	23.41	0.00	12.08	62.16	0.00	0.00	0.01	37.00	-31.79	0.000663	0.59	90	21.86	NS
172.716	-87.06	22.46	0.00	0.00	61.32	0.00	0.00	0.005	31.17	-17.03	0.019805	17.51	90	7.11	NS
178.735	-88.48	22.60	0.00	0.00	59.55	0.00	0.00	0.005	31.47	-20.06	0.009857	8.72	90	10.14	NS
187.180	-88.19	22.79	0.00	0.00	58.37	0.00	0.00	0.005	31.87	-20.75	0.008420	7.45	90	10.82	NS
199.794	-90.08	23.01	0.00	0.00	60.21	0.00	0.00	0.005	32.43	-20.45	0.009015	7.97	90	10.53	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 3
Date	April 3, 2025	April 3, 2025	April 4, 2025	April 6, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH	21 deg. C / 41 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (30 MHz to 6 GHz)	Yuichiro Yamazaki (9 kHz to 30 MHz)
Mode	Tx MCS 1 58.32 GHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	69.3	38.7	-	6.4	7.4	32.1	-	20.4	-	40.0	-	19.6	-	
Hori.	125.0	34.2	-	13.4	7.9	32.1	-	23.5	-	43.5	-	20.1	-	
Hori.	250.0	40.4	-	12.1	9.0	32.0	-	29.4	-	46.0	-	16.6	-	
Hori.	299.9	39.7	-	13.7	9.5	32.0	-	30.9	-	46.0	-	15.1	-	
Hori.	366.5	36.2	-	15.3	9.8	32.1	-	29.2	-	46.0	-	16.8	-	
Hori.	845.7	23.1	-	21.5	12.0	31.4	-	25.1	-	46.0	-	20.9	-	
Hori.	3520.0	52.3	50.2	28.9	5.2	31.4	-	55.0	52.9	73.9	53.9	18.9	1.0	
Hori.	10560.0	46.7	43.9	36.6	-4.5	32.9	-	46.0	43.2	73.9	53.9	27.9	10.7	
Hori.	14080.0	46.8	41.1	38.9	-3.6	32.3	-	49.8	44.1	73.9	53.9	24.1	9.8	
Hori.	17600.0	43.8	36.3	40.6	-2.8	32.4	-	49.2	41.7	73.9	53.9	24.7	12.2	
Hori.	38720.0	67.4	61.4	44.1	5.0	72.8	-	43.8	37.7	73.9	53.9	30.1	16.2	
Hori.	38880.1	71.7	68.4	44.1	5.0	73.1	-	47.8	44.5	73.9	53.9	26.2	9.4	
Vert.	30.5	34.0	-	18.5	6.8	32.1	-	27.2	-	40.0	-	12.8	-	
Vert.	68.7	36.1	-	6.5	7.3	32.1	-	17.8	-	40.0	-	22.2	-	
Vert.	125.0	36.1	-	13.4	7.9	32.1	-	25.4	-	43.5	-	18.2	-	
Vert.	299.2	36.3	-	13.7	9.5	32.0	-	27.5	-	46.0	-	18.5	-	
Vert.	367.7	36.7	-	15.3	9.8	32.1	-	29.7	-	46.0	-	16.3	-	
Vert.	844.7	22.7	-	21.5	12.0	31.4	-	24.7	-	46.0	-	21.3	-	
Vert.	3520.0	52.1	49.6	28.9	5.2	31.4	-	54.7	52.3	73.9	53.9	19.2	1.6	
Vert.	10560.0	47.4	44.5	36.6	-4.5	32.9	-	46.7	43.8	73.9	53.9	27.2	10.1	
Vert.	14080.0	47.2	40.8	38.9	-3.6	32.3	-	50.2	43.8	73.9	53.9	23.7	10.1	
Vert.	17600.0	43.4	36.6	40.6	-2.8	32.4	-	48.8	42.0	73.9	53.9	25.2	11.9	
Vert.	38720.0	67.0	58.9	44.1	5.0	72.8	-	43.4	35.2	73.9	53.9	30.5	18.7	
Vert.	38880.1	73.8	71.4	44.1	5.0	73.1	-	49.9	47.5	73.9	53.9	24.0	6.4	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
 6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 1 58.32 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.939	-52.08	21.73	0.00	32.82	0.00	0.00	8.41	1.00	65.49	-32.72	0.000534	0.47	9000	42.80	NS
49.984	-48.96	22.64	0.00	32.74	0.00	0.00	8.92	1.00	66.42	-29.00	0.001259	1.11	9000	39.08	NS
51.714	-66.93	23.03	0.52	26.45	46.30	31.99	0.08	2.00	72.73	-28.76	0.001330	1.18	9000	38.84	NS
56.794	-78.93	23.47	0.00	26.21	45.32	0.00	0.00	2.50	75.49	-7.81	0.165715	146.52	9000	17.88	
73.233	-67.52	24.45	0.44	20.85	49.56	31.99	0.08	2.00	75.76	-18.97	0.012663	11.20	9000	29.05	NS
80.843	-66.59	23.36	0.15	0.00	-12.10	0.00	3.17	2.00	76.62	-22.11	0.006152	5.44	9000	32.19	NS
83.516	-56.61	23.55	3.05	32.50	41.49	31.99	0.08	1.50	74.40	-25.63	0.002737	2.42	9000	35.70	NS
95.939	-55.60	24.21	0.78	33.99	42.57	31.99	0.08	1.50	75.60	-26.75	0.002113	1.87	9000	36.83	NS
100.864	-55.85	24.54	0.81	32.59	43.38	31.99	0.08	1.50	76.04	-24.66	0.003422	3.03	9000	34.73	NS
109.412	-56.58	24.85	2.79	20.07	45.13	31.99	0.08	1.50	76.74	-8.74	0.133564	118.10	9000	18.82	NS
117.706	-84.84	22.56	0.00	18.80	53.56	0.00	0.00	0.01	33.86	-38.78	0.000132	0.12	9000	48.86	NS
119.922	-84.49	22.64	0.00	18.90	50.89	0.00	0.00	0.01	34.02	-41.12	0.000077	0.07	9000	51.19	NS
127.577	-86.25	22.88	0.00	20.64	51.33	0.00	0.00	0.01	34.56	-43.89	0.000041	0.04	9000	53.96	NS
138.593	-87.37	23.16	0.00	19.22	51.42	0.00	0.00	0.01	35.28	-43.05	0.000050	0.04	9000	53.13	NS
142.292	-88.63	23.23	0.00	19.02	52.99	0.00	0.00	0.01	35.51	-42.38	0.000058	0.05	9000	52.46	NS
151.777	-89.15	23.34	0.00	17.17	55.07	0.00	0.00	0.01	36.07	-38.53	0.000140	0.12	9000	48.60	NS
164.630	-89.60	23.40	0.00	14.10	59.63	0.00	0.00	0.01	36.77	-30.70	0.000851	0.75	9000	40.78	NS
167.480	-90.90	23.41	0.00	13.13	60.83	0.00	0.00	0.01	36.92	-29.69	0.001073	0.95	9000	39.77	NS
170.616	-82.15	22.41	0.00	0.00	60.17	0.00	0.00	0.005	31.06	-13.33	0.046500	41.12	9000	23.40	NS
178.074	-84.00	22.59	0.00	0.00	59.61	0.00	0.00	0.005	31.43	-15.54	0.027914	24.68	9000	25.62	NS
187.219	-83.41	22.79	0.00	0.00	58.44	0.00	0.00	0.005	31.87	-15.89	0.025764	22.78	9000	25.97	NS
194.540	-85.31	22.93	0.00	0.00	58.27	0.00	0.00	0.005	32.20	-17.77	0.016716	14.78	9000	27.85	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.976	-56.57	21.73	0.00	32.86	0.00	0.00	8.41	1.00	65.50	-37.25	0.000188	0.17	90	27.32	NS
49.962	-52.82	22.63	0.00	32.75	0.00	0.00	8.91	1.00	66.41	-32.87	0.000516	0.46	90	22.95	NS
51.837	-74.94	23.08	0.51	26.54	46.17	31.99	0.08	2.00	72.76	-37.03	0.000198	0.18	90	27.11	NS
56.770	-90.19	23.47	0.00	26.20	45.33	0.00	0.00	2.50	75.48	-19.05	0.012445	11.00	90	9.13	
71.090	-75.63	24.39	0.87	20.70	48.87	31.99	0.08	2.00	75.50	-27.39	0.001823	1.61	90	17.47	NS
82.499	-70.37	23.51	0.18	0.00	-12.80	0.00	3.56	2.00	76.79	-26.15	0.002425	2.14	90	16.23	NS
86.819	-61.68	23.75	0.90	30.67	41.72	31.99	0.08	1.50	74.74	-30.65	0.000861	0.76	90	20.73	NS
95.727	-61.46	24.22	0.78	33.78	42.54	31.99	0.08	1.50	75.58	-32.46	0.000567	0.50	90	22.54	NS
102.163	-61.02	24.51	0.52	31.30	43.19	31.99	0.08	1.50	76.15	-28.88	0.001295	1.14	90	18.96	NS
108.610	-60.93	24.81	1.72	21.41	43.81	31.99	0.08	1.50	76.68	-16.85	0.020659	18.27	90	6.93	NS
117.748	-89.18	22.56	0.00	18.84	53.64	0.00	0.00	0.01	33.86	-43.07	0.000049	0.04	90	33.15	NS
120.099	-89.99	22.65	0.00	18.93	50.85	0.00	0.00	0.01	34.03	-46.69	0.000021	0.02	90	36.77	NS
127.295	-90.80	22.87	0.00	20.62	52.27	0.00	0.00	0.01	34.54	-47.68	0.000018	0.02	90	37.56	NS
141.514	-91.59	23.21	0.00	19.04	53.44	0.00	0.00	0.01	35.46	-44.94	0.000032	0.03	90	35.02	NS
142.951	-93.34	23.24	0.00	18.96	53.62	0.00	0.00	0.01	35.55	-46.38	0.000023	0.02	90	36.45	NS
151.802	-93.46	23.34	0.00	17.17	55.02	0.00	0.00	0.01	36.07	-42.88	0.000052	0.05	90	32.96	NS
160.852	-94.48	23.40	0.00	16.27	58.16	0.00	0.00	0.01	36.57	-39.42	0.000114	0.10	90	29.49	NS
167.137	-95.30	23.41	0.00	13.31	61.15	0.00	0.00	0.01	36.90	-33.97	0.000401	0.35	90	24.05	NS
172.586	-87.40	22.46	0.00	0.00	60.96	0.00	0.00	0.005	31.16	-17.74	0.016820	14.87	90	7.82	NS
178.750	-88.65	22.60	0.00	0.00	59.54	0.00	0.00	0.005	31.47	-20.24	0.009458	8.36	90	10.32	NS
187.796	-87.90	22.80	0.00	0.00	59.53	0.00	0.00	0.005	31.89	-19.27	0.011822	10.45	90	9.35	NS
197.607	-90.15	22.98	0.00	0.00	58.94	0.00	0.00	0.005	32.34	-21.85	0.006524	5.77	90	11.93	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log ((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 1 60.48 GHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	3520.0	52.6	50.5	28.9	5.2	31.4	-	55.2	53.1	73.9	53.9	18.7	0.8	
Hori.	10560.0	47.8	44.4	36.6	-4.5	32.9	-	47.1	43.6	73.9	53.9	26.8	10.3	
Hori.	14080.0	46.7	40.8	38.9	-3.6	32.3	-	49.7	43.8	73.9	53.9	24.2	10.1	
Hori.	17600.0	44.4	36.3	40.6	-2.8	32.4	-	49.8	41.7	73.9	53.9	24.1	12.2	
Hori.	38720.0	67.6	61.4	44.1	5.0	72.8	-	43.9	37.8	73.9	53.9	30.0	16.1	
Vert.	3520.0	52.0	49.5	28.9	5.2	31.4	-	54.7	52.2	73.9	53.9	19.2	1.7	
Vert.	10560.0	47.8	44.8	36.6	-4.5	32.9	-	47.1	44.1	73.9	53.9	26.8	9.8	
Vert.	14080.0	47.4	40.7	38.9	-3.6	32.3	-	50.4	43.7	73.9	53.9	23.5	10.2	
Vert.	17600.0	44.5	36.9	40.6	-2.8	32.4	-	49.9	42.3	73.9	53.9	24.0	11.6	
Vert.	38720.0	65.5	58.4	44.1	5.0	72.8	-	41.8	34.8	73.9	53.9	32.1	19.1	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
 6 GHz - 10 GHz $20\log(4.95\text{ m} / 3.0\text{ m}) = 4.35\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 1 60.48 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.914	-52.07	21.72	0.00	32.78	0.00	0.00	8.41	1.00	65.49	-32.67	0.000540	0.48	9000	42.75	NS
49.953	-48.19	22.63	0.00	32.76	0.00	0.00	8.91	1.00	66.41	-28.26	0.001492	1.32	9000	38.34	NS
54.401	-66.72	23.26	2.12	26.49	45.86	31.99	0.08	2.00	73.17	-27.23	0.001893	1.67	9000	37.31	NS
55.970	-92.74	23.43	0.00	26.06	45.57	0.00	0.00	2.50	75.36	-21.30	0.007416	6.56	9000	31.38	NS
73.062	-67.52	24.44	0.48	20.94	49.53	31.99	0.08	2.00	75.74	-19.06	0.012411	10.97	9000	29.14	NS
81.705	-66.86	23.46	0.08	0.00	-12.52	0.00	3.38	2.00	76.71	-22.68	0.005401	4.78	9000	32.75	NS
86.149	-56.66	23.73	1.38	30.23	41.36	31.99	0.08	1.50	74.67	-25.12	0.003076	2.72	9000	35.20	NS
95.904	-56.17	24.21	0.79	33.95	42.57	31.99	0.08	1.50	75.60	-27.28	0.001870	1.65	9000	37.36	NS
100.677	-55.12	24.53	0.76	32.56	43.43	31.99	0.08	1.50	76.02	-23.91	0.004068	3.60	9000	33.98	NS
108.333	-55.75	24.77	1.42	21.88	43.53	31.99	0.08	1.50	76.66	-12.70	0.053664	47.45	9000	22.78	NS
117.733	-84.38	22.56	0.00	18.82	53.61	0.00	0.00	0.01	33.86	-38.29	0.000148	0.13	9000	48.36	NS
120.729	-85.11	22.67	0.00	19.32	50.56	0.00	0.00	0.01	34.08	-42.46	0.000057	0.05	9000	52.54	NS
127.226	-86.19	22.87	0.00	20.61	52.50	0.00	0.00	0.01	34.53	-42.64	0.000054	0.05	9000	52.71	NS
141.402	-87.30	23.21	0.00	19.04	53.61	0.00	0.00	0.01	35.45	-40.48	0.000089	0.08	9000	50.56	NS
142.015	-87.80	23.22	0.00	19.04	52.72	0.00	0.00	0.01	35.49	-41.86	0.000065	0.06	9000	51.93	NS
153.317	-89.21	23.35	0.00	17.53	56.23	0.00	0.00	0.01	36.15	-37.71	0.000170	0.15	9000	47.78	NS
160.354	-89.97	23.40	0.00	16.60	58.21	0.00	0.00	0.01	36.54	-35.21	0.000301	0.27	9000	45.29	NS
169.018	-90.40	23.41	0.00	12.05	62.27	0.00	0.00	0.01	37.00	-26.59	0.002192	1.94	9000	36.67	NS
171.402	-82.26	22.43	0.00	0.00	59.33	0.00	0.00	0.005	31.10	-14.26	0.037527	33.18	9000	24.33	NS
183.355	-83.94	22.70	0.00	0.00	56.93	0.00	0.00	0.005	31.69	-18.02	0.015776	13.95	9000	28.10	NS
191.494	-83.10	22.87	0.00	0.00	58.40	0.00	0.00	0.005	32.06	-15.50	0.028166	24.90	9000	25.58	NS
198.109	-85.46	22.99	0.00	0.00	59.87	0.00	0.00	0.005	32.36	-16.22	0.023858	21.09	9000	26.30	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.982	-56.69	21.73	0.00	32.87	0.00	0.00	8.41	1.00	65.50	-37.37	0.000183	0.16	90	27.45	NS
49.917	-52.19	22.61	0.00	32.78	0.00	0.00	8.90	1.00	66.41	-32.27	0.000593	0.52	90	22.35	NS
50.237	-74.93	22.88	0.61	25.48	48.33	31.99	0.08	2.00	72.48	-33.77	0.000419	0.37	90	23.85	NS
56.882	-100.66	23.47	0.00	26.23	45.30	0.00	0.00	2.50	75.50	-29.56	0.001107	0.98	90	19.64	NS
72.489	-75.09	24.38	1.00	20.71	49.08	31.99	0.08	2.00	75.67	-26.34	0.002323	2.05	90	16.42	NS
80.847	-70.14	23.36	0.15	0.00	-12.12	0.00	3.17	2.00	76.62	-25.68	0.002703	2.39	90	15.76	NS
86.075	-61.27	23.73	1.32	30.18	41.32	31.99	0.08	1.50	74.66	-29.79	0.001049	0.93	90	19.87	NS
95.933	-61.34	24.21	0.78	33.98	42.57	31.99	0.08	1.50	75.60	-32.48	0.000564	0.50	90	22.56	NS
100.719	-60.80	24.53	0.77	32.57	43.42	31.99	0.08	1.50	76.03	-29.59	0.001099	0.97	90	19.67	NS
108.385	-60.72	24.78	1.47	21.79	43.59	31.99	0.08	1.50	76.66	-17.48	0.017869	15.80	90	7.56	NS
116.991	-89.57	22.53	0.00	18.16	52.25	0.00	0.00	0.01	33.80	-44.20	0.000038	0.03	90	34.28	NS
119.976	-89.52	22.64	0.00	18.88	50.90	0.00	0.00	0.01	34.02	-46.12	0.000024	0.02	90	36.20	NS
127.254	-90.73	22.87	0.00	20.61	52.40	0.00	0.00	0.01	34.54	-47.28	0.000019	0.02	90	37.35	NS
141.418	-92.18	23.21	0.00	19.04	53.58	0.00	0.00	0.01	35.45	-45.40	0.000029	0.03	90	35.48	NS
142.014	-93.35	23.22	0.00	19.04	52.72	0.00	0.00	0.01	35.49	-47.40	0.000018	0.02	90	37.47	NS
150.434	-93.36	23.33	0.00	17.24	56.61	0.00	0.00	0.01	35.99	-41.33	0.000074	0.07	90	31.41	NS
160.303	-94.99	23.40	0.00	16.64	58.22	0.00	0.00	0.01	36.54	-40.26	0.000094	0.08	90	30.34	NS
168.929	-94.82	23.41	0.00	12.10	62.11	0.00	0.00	0.01	37.00	-31.22	0.000755	0.67	90	21.30	NS
171.386	-86.60	22.43	0.00	0.00	59.33	0.00	0.00	0.005	31.10	-18.60	0.013800	12.20	90	8.68	NS
185.888	-88.46	22.76	0.00	0.00	57.78	0.00	0.00	0.005	31.81	-21.63	0.006863	6.07	90	11.71	NS
187.211	-88.56	22.79	0.00	0.00	58.43	0.00	0.00	0.005	31.87	-21.05	0.007854	6.94	90	11.13	NS
198.370	-90.20	22.99	0.00	0.00	59.25	0.00	0.00	0.005	32.37	-21.56	0.006975	6.17	90	11.64	NS

Calculation:

$$\text{FSL (Free Space path Loss)} = 10 * \log ((4 * \pi * D / \lambda)^2)$$

$$\text{EIRP} = \text{Reading} - \text{Rx Ant. gain} + \text{Filter loss} - \text{LNA gain} + \text{Mixer conversion loss} - \text{IF Amp. gain} + \text{IF Cable loss} + \text{FSL}$$

$$\text{Power density Result at 3 m} = \text{EIRP} / (4 * \pi * 300^2)$$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 1 64.80 GHz		

Polarity [Hori/Vert]	Frequency [MHz]	Reading (QP / PK) [dBuV]	Reading (AV) [dBuV]	Ant. Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result (QP / PK) [dBuV/m]	Result (AV) [dBuV/m]	Limit (QP / PK) [dBuV/m]	Limit (AV) [dBuV/m]	Margin (QP / PK) [dB]	Margin (AV) [dB]	Remark
Hori.	3520.0	52.3	50.2	28.9	5.2	31.4	-	55.0	52.9	73.9	53.9	18.9	1.0	
Hori.	10560.0	47.6	44.3	36.6	-4.5	32.9	-	46.9	43.6	73.9	53.9	27.0	10.4	
Hori.	14080.0	46.9	40.9	38.9	-3.6	32.3	-	49.9	43.9	73.9	53.9	24.0	10.0	
Hori.	17600.0	43.3	36.5	40.6	-2.8	32.4	-	48.7	41.9	73.9	53.9	25.3	12.0	
Hori.	38720.0	66.9	61.5	44.1	5.0	72.8	-	43.2	37.8	73.9	53.9	30.7	16.1	
Vert.	3520.0	51.5	49.4	28.9	5.2	31.4	-	54.2	52.1	73.9	53.9	19.7	1.8	
Vert.	10560.0	47.2	44.6	36.6	-4.5	32.9	-	46.5	43.9	73.9	53.9	27.4	10.0	
Vert.	14080.0	47.0	40.6	38.9	-3.6	32.3	-	50.0	43.6	73.9	53.9	23.9	10.3	
Vert.	17600.0	43.9	37.0	40.6	-2.8	32.4	-	49.3	42.3	73.9	53.9	24.6	11.6	
Vert.	38720.0	65.2	58.3	44.1	5.0	72.8	-	41.5	34.6	73.9	53.9	32.4	19.3	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
 6 GHz - 10 GHz $20\log(4.95\text{ m} / 3.0\text{ m}) = 4.35\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 1 64.80 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.956	-51.76	21.73	0.00	32.84	0.00	0.00	8.41	1.00	65.50	-32.42	0.000572	0.51	9000	42.50	NS
49.935	-47.92	22.62	0.00	32.77	0.00	0.00	8.91	1.00	66.41	-27.99	0.001588	1.40	9000	38.07	NS
54.723	-67.02	23.27	2.47	26.40	45.92	31.99	0.08	2.00	73.23	-26.98	0.002003	1.77	9000	37.06	NS
56.887	-92.89	23.47	0.00	26.23	45.29	0.00	0.00	2.50	75.50	-21.80	0.006614	5.85	9000	31.87	NS
71.178	-67.54	24.39	0.93	20.67	48.85	31.99	0.08	2.00	75.51	-19.22	0.011974	10.59	9000	29.29	NS
80.778	-66.86	23.36	0.15	0.00	-11.97	0.00	3.16	2.00	76.61	-22.28	0.005921	5.24	9000	32.35	NS
88.133	-56.70	23.89	0.93	32.13	41.33	31.99	0.08	1.50	74.87	-27.51	0.001775	1.57	9000	37.58	NS
95.451	-55.75	24.24	0.76	33.50	42.50	31.99	0.08	1.50	75.56	-26.58	0.002195	1.94	9000	36.66	NS
97.201	-55.93	24.36	0.73	34.63	42.73	31.99	0.08	1.50	75.72	-27.66	0.001715	1.52	9000	37.73	NS
108.339	-56.07	24.77	1.43	21.87	43.54	31.99	0.08	1.50	76.66	-12.99	0.050191	44.38	9000	23.07	NS
117.769	-85.27	22.56	0.00	18.86	53.68	0.00	0.00	0.01	33.86	-39.15	0.000122	0.11	9000	49.22	NS
119.899	-84.67	22.64	0.00	18.91	50.89	0.00	0.00	0.01	34.02	-41.31	0.000074	0.07	9000	51.38	NS
130.214	-85.92	22.95	0.00	20.57	51.55	0.00	0.00	0.01	34.73	-43.16	0.000048	0.04	9000	53.24	NS
139.102	-87.23	23.17	0.00	19.22	51.52	0.00	0.00	0.01	35.31	-42.79	0.000053	0.05	9000	52.87	NS
142.024	-88.14	23.22	0.00	19.04	52.73	0.00	0.00	0.01	35.49	-42.18	0.000061	0.05	9000	52.26	NS
150.378	-88.92	23.33	0.00	17.23	56.59	0.00	0.00	0.01	35.99	-36.90	0.000204	0.18	9000	46.98	NS
160.340	-89.36	23.40	0.00	16.61	58.22	0.00	0.00	0.01	36.54	-34.61	0.000346	0.31	9000	44.69	NS
169.131	-90.65	23.41	0.00	12.13	62.38	0.00	0.00	0.01	37.01	-26.81	0.002086	1.84	9000	36.88	NS
171.337	-82.71	22.42	0.00	0.00	59.33	0.00	0.00	0.005	31.10	-14.70	0.033902	29.98	9000	24.77	NS
178.576	-83.90	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-15.48	0.028318	25.04	9000	25.56	NS
187.164	-83.07	22.78	0.00	0.00	58.34	0.00	0.00	0.005	31.87	-15.65	0.027237	24.08	9000	25.73	NS
198.918	-85.21	23.00	0.00	0.00	57.95	0.00	0.00	0.005	32.39	-17.87	0.016341	14.45	9000	27.94	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.950	-56.35	21.73	0.00	32.83	0.00	0.00	8.41	1.00	65.50	-37.00	0.000199	0.18	90	27.08	NS
49.938	-53.11	22.62	0.00	32.77	0.00	0.00	8.91	1.00	66.41	-33.18	0.000480	0.42	90	23.26	NS
50.650	-74.94	22.83	0.59	25.72	47.63	31.99	0.08	2.00	72.55	-34.63	0.000345	0.30	90	24.70	NS
56.067	-100.77	23.43	0.00	26.06	45.54	0.00	0.00	2.50	75.37	-29.35	0.001163	1.03	90	19.42	NS
72.489	-75.09	24.38	1.00	20.71	49.08	31.99	0.08	2.00	75.67	-26.34	0.002323	2.05	90	16.42	NS
80.929	-69.88	23.37	0.16	0.00	-12.46	0.00	3.19	2.00	76.62	-25.73	0.002670	2.36	90	15.81	NS
86.593	-61.93	23.75	1.13	30.52	41.60	31.99	0.08	1.50	74.71	-30.67	0.000858	0.76	90	20.74	NS
92.945	-61.05	24.06	0.70	32.72	42.61	31.99	0.08	1.50	75.33	-31.10	0.000776	0.69	90	21.18	NS
102.211	-60.79	24.52	0.53	31.26	43.18	31.99	0.08	1.50	76.15	-28.62	0.001374	1.21	90	18.70	NS
108.339	-60.93	24.77	1.43	21.87	43.54	31.99	0.08	1.50	76.66	-17.85	0.016392	14.49	90	7.93	NS
117.679	-88.79	22.56	0.00	18.78	53.51	0.00	0.00	0.01	33.86	-42.77	0.000053	0.05	90	32.84	NS
119.932	-89.79	22.64	0.00	18.90	50.89	0.00	0.00	0.01	34.02	-46.42	0.000023	0.02	90	36.50	NS
130.474	-90.88	22.96	0.00	20.43	52.02	0.00	0.00	0.01	34.75	-47.49	0.000018	0.02	90	37.57	NS
137.277	-92.17	23.13	0.00	18.94	52.93	0.00	0.00	0.01	35.19	-46.11	0.000024	0.02	90	36.19	NS
142.016	-93.16	23.22	0.00	19.04	52.73	0.00	0.00	0.01	35.49	-47.20	0.000019	0.02	90	37.28	NS
150.476	-93.65	23.33	0.00	17.24	56.62	0.00	0.00	0.01	35.99	-41.60	0.000069	0.06	90	31.68	NS
160.370	-94.18	23.40	0.00	16.59	58.21	0.00	0.00	0.01	36.54	-39.41	0.000114	0.10	90	29.49	NS
169.067	-95.23	23.41	0.00	12.09	62.31	0.00	0.00	0.01	37.00	-31.42	0.000721	0.64	90	21.49	NS
171.073	-87.34	22.42	0.00	0.00	59.32	0.00	0.00	0.005	31.08	-19.35	0.011606	10.26	90	9.43	NS
178.566	-88.04	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-19.62	0.010915	9.65	90	9.70	NS
187.261	-88.54	22.79	0.00	0.00	58.52	0.00	0.00	0.005	31.87	-20.94	0.008048	7.12	90	11.02	NS
196.684	-90.58	22.96	0.00	0.00	58.09	0.00	0.00	0.005	32.30	-23.15	0.004843	4.28	90	13.23	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 6 58.32 GHz		

Polarity [Hori/Vert]	Frequency [MHz]	Reading (QP / PK) [dBuV]	Reading (AV) [dBuV]	Ant. Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result (QP / PK) [dBuV/m]	Result (AV) [dBuV/m]	Limit (QP / PK) [dBuV/m]	Limit (AV) [dBuV/m]	Margin (QP / PK) [dB]	Margin (AV) [dB]	Remark
Hori.	3520.0	53.1	49.8	28.9	5.2	31.4	-	55.8	52.5	73.9	53.9	18.1	1.4	
Hori.	10560.0	47.0	44.0	36.6	-4.5	32.9	-	46.3	43.3	73.9	53.9	27.6	10.6	
Hori.	14080.0	46.8	41.0	38.9	-3.6	32.3	-	49.8	44.0	73.9	53.9	24.1	9.9	
Hori.	17600.0	43.7	36.3	40.6	-2.8	32.4	-	49.1	41.7	73.9	53.9	24.9	12.2	
Hori.	38720.0	67.4	61.4	44.1	5.0	72.8	-	43.8	37.7	73.9	53.9	30.1	16.2	
Hori.	38880.1	71.7	68.4	44.1	5.0	73.1	-	47.8	44.5	73.9	53.9	26.1	9.4	
Vert.	3520.0	51.9	49.5	28.9	5.2	31.4	-	54.5	52.2	73.9	53.9	19.4	1.7	
Vert.	10560.0	47.5	44.3	36.6	-4.5	32.9	-	46.8	43.6	73.9	53.9	27.1	10.3	
Vert.	14080.0	47.1	40.2	38.9	-3.6	32.3	-	50.1	43.2	73.9	53.9	23.8	10.7	
Vert.	17600.0	44.0	36.8	40.6	-2.8	32.4	-	49.4	42.1	73.9	53.9	24.5	11.8	
Vert.	38720.0	65.9	58.3	44.1	5.0	72.8	-	42.3	34.7	73.9	53.9	31.6	19.2	
Vert.	38880.1	73.6	71.4	44.1	5.0	73.1	-	49.7	47.5	73.9	53.9	24.2	6.4	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz $20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
 6 GHz - 10 GHz $20\log(4.95\text{ m} / 3.0\text{ m}) = 4.35\text{ dB}$
 10 GHz - 40 GHz $20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 6 58.32 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.925	-51.99	21.73	0.00	32.80	0.00	0.00	8.41	1.00	65.49	-32.61	0.000548	0.48	9000	42.69	NS
49.917	-48.51	22.61	0.00	32.78	0.00	0.00	8.90	1.00	66.41	-28.60	0.001382	1.22	9000	38.67	NS
52.052	-66.52	23.13	0.54	26.65	45.99	31.99	0.08	2.00	72.79	-28.89	0.001290	1.14	9000	38.97	NS
56.794	-78.02	23.47	0.00	26.21	45.32	0.00	0.00	2.50	75.49	-6.89	0.204674	180.97	9000	16.97	
71.579	-67.61	24.36	1.20	20.56	48.75	31.99	0.08	2.00	75.56	-18.93	0.012800	11.32	9000	29.00	NS
81.680	-66.96	23.46	0.09	0.00	-12.44	0.00	3.37	2.00	76.70	-22.69	0.005381	4.76	9000	32.77	NS
88.102	-56.42	23.90	0.93	32.10	41.30	31.99	0.08	1.50	74.86	-27.24	0.001890	1.67	9000	37.31	NS
95.150	-56.30	24.25	0.75	33.20	42.45	31.99	0.08	1.50	75.53	-26.93	0.002028	1.79	9000	37.01	NS
100.949	-55.44	24.54	0.83	32.60	43.35	31.99	0.08	1.50	76.05	-24.27	0.003745	3.31	9000	34.34	NS
108.487	-55.79	24.79	1.59	21.62	43.69	31.99	0.08	1.50	76.67	-12.16	0.060872	53.82	9000	22.23	NS
117.791	-84.61	22.56	0.00	18.87	53.72	0.00	0.00	0.01	33.86	-38.45	0.000143	0.13	9000	48.53	NS
120.185	-85.27	22.65	0.00	18.98	50.81	0.00	0.00	0.01	34.04	-42.05	0.000062	0.06	9000	52.13	NS
127.238	-86.33	22.87	0.00	20.61	52.46	0.00	0.00	0.01	34.53	-42.81	0.000052	0.05	9000	52.89	NS
138.703	-87.43	23.16	0.00	19.23	51.40	0.00	0.00	0.01	35.28	-43.14	0.000049	0.04	9000	53.22	NS
139.068	-87.18	23.17	0.00	19.23	51.46	0.00	0.00	0.01	35.31	-42.81	0.000052	0.05	9000	52.89	NS
152.852	-89.09	23.35	0.00	17.57	55.76	0.00	0.00	0.01	36.13	-38.12	0.000154	0.14	9000	48.20	NS
158.910	-89.80	23.39	0.00	16.60	55.03	0.00	0.00	0.01	36.46	-38.29	0.000148	0.13	9000	48.37	NS
168.956	-90.28	23.41	0.00	12.08	62.17	0.00	0.00	0.01	37.00	-26.60	0.002187	1.93	9000	36.68	NS
170.870	-82.17	22.41	0.00	0.00	59.61	0.00	0.00	0.005	31.07	-13.90	0.040771	36.05	9000	23.97	NS
178.766	-83.36	22.60	0.00	0.00	59.54	0.00	0.00	0.005	31.47	-14.95	0.031988	28.28	9000	25.03	NS
186.419	-83.70	22.77	0.00	0.00	57.95	0.00	0.00	0.005	31.83	-16.69	0.021444	18.96	9000	26.76	NS
195.233	-85.57	22.94	0.00	0.00	58.07	0.00	0.00	0.005	32.23	-18.21	0.015095	13.35	9000	28.29	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.955	-56.54	21.73	0.00	32.84	0.00	0.00	8.41	1.00	65.50	-37.20	0.000190	0.17	90	27.28	NS
49.823	-52.96	22.56	0.00	32.84	0.00	0.00	8.88	1.00	66.39	-33.08	0.000492	0.43	90	23.16	NS
50.389	-75.05	22.86	0.60	25.57	48.07	31.99	0.08	2.00	72.51	-34.21	0.000379	0.34	90	24.29	NS
56.994	-88.76	23.48	0.00	26.25	45.26	0.00	0.00	2.50	75.52	-17.71	0.016924	14.96	90	7.79	
71.304	-76.51	24.38	1.01	20.64	48.82	31.99	0.08	2.00	75.52	-28.08	0.001555	1.38	90	18.16	NS
80.866	-70.26	23.37	0.15	0.00	-12.19	0.00	3.18	2.00	76.62	-25.87	0.002589	2.29	90	15.95	NS
87.624	-61.42	23.85	0.94	31.55	41.43	31.99	0.08	1.50	74.82	-31.54	0.000702	0.62	90	21.62	NS
89.344	-61.26	23.87	0.87	33.17	42.15	31.99	0.08	1.50	74.98	-32.20	0.000602	0.53	90	22.28	NS
96.935	-60.55	24.34	0.72	34.63	42.65	31.99	0.08	1.50	75.69	-32.37	0.000580	0.51	90	22.44	NS
108.540	-61.26	24.80	1.65	21.52	43.74	31.99	0.08	1.50	76.68	-17.42	0.018098	16.00	90	7.50	NS
117.654	-89.46	22.56	0.00	18.75	53.46	0.00	0.00	0.01	33.85	-43.46	0.000045	0.04	90	33.53	NS
120.822	-89.67	22.67	0.00	19.37	50.51	0.00	0.00	0.01	34.08	-47.12	0.000019	0.02	90	37.19	NS
126.262	-90.42	22.84	0.00	21.08	52.82	0.00	0.00	0.01	34.47	-47.05	0.000020	0.02	90	37.13	NS
139.067	-91.69	23.17	0.00	19.23	51.46	0.00	0.00	0.01	35.31	-47.32	0.000019	0.02	90	37.40	NS
139.067	-91.69	23.17	0.00	19.23	51.46	0.00	0.00	0.01	35.31	-47.32	0.000019	0.02	90	37.40	NS
152.827	-93.88	23.35	0.00	17.56	55.73	0.00	0.00	0.01	36.13	-42.93	0.000051	0.05	90	33.01	NS
160.871	-93.88	23.40	0.00	16.26	58.16	0.00	0.00	0.01	36.57	-38.81	0.000132	0.12	90	28.89	NS
168.507	-95.17	23.41	0.00	12.44	61.31	0.00	0.00	0.01	36.97	-32.73	0.000533	0.47	90	22.81	NS
171.213	-87.34	22.42	0.00	0.00	59.33	0.00	0.00	0.005	31.09	-19.34	0.011654	10.30	90	9.41	NS
184.707	-88.60	22.73	0.00	0.00	57.18	0.00	0.00	0.005	31.75	-22.40	0.005750	5.08	90	12.48	NS
191.687	-87.77	22.87	0.00	0.00	58.70	0.00	0.00	0.005	32.07	-19.86	0.010316	9.12	90	9.94	NS
197.574	-90.08	22.98	0.00	0.00	58.85	0.00	0.00	0.005	32.34	-21.88	0.006489	5.74	90	11.96	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions
(Below 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 3
Date	April 3, 2025	April 3, 2025	April 4, 2025	April 6, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH	21 deg. C / 41 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (30 MHz to 6 GHz)	Yuichiro Yamazaki (9 kHz to 30 MHz)
Mode	Tx MCS 6 60.48 GHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	69.3	38.6	-	6.4	7.4	32.1	-	20.3	-	40.0	-	19.7	-	
Hori.	125.0	34.2	-	13.4	7.9	32.1	-	23.5	-	43.5	-	20.1	-	
Hori.	250.0	40.4	-	12.1	9.0	32.0	-	29.4	-	46.0	-	16.6	-	
Hori.	299.8	39.4	-	13.7	9.5	32.0	-	30.6	-	46.0	-	15.4	-	
Hori.	366.5	36.1	-	15.3	9.8	32.1	-	29.1	-	46.0	-	16.9	-	
Hori.	845.6	23.3	-	21.5	12.0	31.4	-	25.3	-	46.0	-	20.7	-	
Hori.	3520.0	52.4	50.0	28.9	5.2	31.4	-	55.1	52.7	73.9	53.9	18.8	1.2	
Hori.	10560.0	47.5	44.1	36.6	-4.5	32.9	-	46.8	43.4	73.9	53.9	27.1	10.5	
Hori.	14080.0	46.6	41.2	38.9	-3.6	32.3	-	49.6	44.2	73.9	53.9	24.3	9.7	
Hori.	17600.0	44.1	36.7	40.6	-2.8	32.4	-	49.5	42.1	73.9	53.9	24.4	11.8	
Hori.	38720.0	67.4	61.6	44.1	5.0	72.8	-	43.7	37.9	73.9	53.9	30.2	16.0	
Vert.	30.5	34.1	-	18.5	6.8	32.1	-	27.3	-	40.0	-	12.7	-	
Vert.	68.7	36.1	-	6.5	7.3	32.1	-	17.8	-	40.0	-	22.2	-	
Vert.	125.0	37.3	-	13.4	7.9	32.1	-	26.6	-	43.5	-	17.0	-	
Vert.	299.2	36.1	-	13.7	9.5	32.0	-	27.3	-	46.0	-	18.7	-	
Vert.	367.7	36.6	-	15.3	9.8	32.1	-	29.6	-	46.0	-	16.4	-	
Vert.	844.7	22.6	-	21.5	12.0	31.4	-	24.6	-	46.0	-	21.4	-	
Vert.	3520.0	51.5	49.1	28.9	5.2	31.4	-	54.1	51.7	73.9	53.9	19.8	2.2	
Vert.	10560.0	47.9	44.7	36.6	-4.5	32.9	-	47.1	43.9	73.9	53.9	26.8	10.0	
Vert.	14080.0	47.2	40.3	38.9	-3.6	32.3	-	50.2	43.3	73.9	53.9	23.7	10.6	
Vert.	17600.0	44.3	36.3	40.6	-2.8	32.4	-	49.7	41.7	73.9	53.9	24.2	12.2	
Vert.	38720.0	65.7	58.2	44.1	5.0	72.8	-	42.0	34.5	73.9	53.9	31.9	19.4	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)
Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor
*Other frequency noises omitted in this report were not seen or had enough margin (more than 20 dB).
*QP detector was used up to 1GHz

Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
 6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 6 60.48 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.997	-52.16	21.73	0.00	32.89	0.00	0.00	8.41	1.00	65.51	-32.87	0.000517	0.46	9000	42.95	NS
49.912	-48.31	22.61	0.00	32.79	0.00	0.00	8.90	1.00	66.41	-28.40	0.001446	1.28	9000	38.48	NS
52.141	-66.53	23.12	0.61	26.64	45.98	31.99	0.08	2.00	72.81	-28.81	0.001316	1.16	9000	38.88	NS
55.701	-92.57	23.39	0.00	26.13	45.68	0.00	0.00	2.50	75.32	-21.09	0.007775	6.87	9000	31.17	NS
72.479	-67.59	24.38	1.01	20.70	49.07	31.99	0.08	2.00	75.67	-18.84	0.013076	11.56	9000	28.91	NS
82.601	-66.41	23.51	0.20	0.00	-12.93	0.00	3.58	2.00	76.80	-22.26	0.005939	5.25	9000	32.34	NS
88.565	-56.36	23.88	0.87	32.55	41.74	31.99	0.08	1.50	74.91	-27.18	0.001916	1.69	9000	37.25	NS
95.082	-57.00	24.26	0.74	33.13	42.44	31.99	0.08	1.50	75.53	-27.59	0.001740	1.54	9000	37.67	NS
100.860	-55.42	24.54	0.81	32.59	43.38	31.99	0.08	1.50	76.04	-24.23	0.003774	3.34	9000	34.31	NS
108.265	-55.70	24.76	1.35	22.00	43.47	31.99	0.08	1.50	76.65	-12.89	0.051349	45.40	9000	22.97	NS
116.979	-84.86	22.53	0.00	18.15	52.29	0.00	0.00	0.01	33.80	-39.44	0.000114	0.10	9000	49.52	NS
120.207	-84.83	22.65	0.00	19.00	50.80	0.00	0.00	0.01	34.04	-41.64	0.000068	0.06	9000	51.72	NS
129.107	-86.65	22.92	0.00	19.99	52.44	0.00	0.00	0.01	34.66	-42.46	0.000057	0.05	9000	52.54	NS
139.111	-87.37	23.17	0.00	19.22	51.54	0.00	0.00	0.01	35.31	-42.91	0.000051	0.05	9000	52.99	NS
142.920	-88.45	23.24	0.00	18.97	53.59	0.00	0.00	0.01	35.54	-41.53	0.000070	0.06	9000	51.61	NS
150.439	-89.14	23.33	0.00	17.24	56.61	0.00	0.00	0.01	35.99	-37.11	0.000195	0.17	9000	47.18	NS
161.949	-89.69	23.40	0.00	15.57	57.04	0.00	0.00	0.01	36.63	-34.99	0.000317	0.28	9000	45.07	NS
167.159	-90.39	23.41	0.00	13.30	61.13	0.00	0.00	0.01	36.90	-29.07	0.001239	1.10	9000	39.15	NS
171.072	-82.73	22.42	0.00	0.00	59.32	0.00	0.00	0.005	31.08	-14.74	0.033541	29.66	9000	24.82	NS
178.645	-84.36	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-15.94	0.025498	22.54	9000	26.01	NS
187.982	-83.83	22.80	0.00	0.00	59.88	0.00	0.00	0.005	31.90	-14.85	0.032768	28.97	9000	24.92	NS
196.666	-85.57	22.96	0.00	0.00	58.14	0.00	0.00	0.005	32.30	-18.10	0.015505	13.71	9000	28.17	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.909	-56.76	21.72	0.00	32.78	0.00	0.00	8.41	1.00	65.49	-37.36	0.000184	0.16	90	27.44	NS
49.540	-53.29	22.43	0.00	33.02	0.00	0.00	8.82	1.00	66.34	-33.58	0.000439	0.39	90	23.66	NS
52.770	-74.75	23.06	1.11	26.55	45.88	31.99	0.08	2.00	72.91	-36.37	0.000231	0.20	90	26.44	NS
56.720	-100.49	23.47	0.00	26.19	45.34	0.00	0.00	2.50	75.48	-29.34	0.001164	1.03	90	19.42	NS
71.490	-75.43	24.37	1.14	20.59	48.77	31.99	0.08	2.00	75.55	-26.84	0.002070	1.83	90	16.92	NS
80.816	-70.44	23.36	0.15	0.00	-11.99	0.00	3.16	2.00	76.61	-25.87	0.002588	2.29	90	15.95	NS
83.124	-61.51	23.52	2.77	32.72	41.20	31.99	0.08	1.50	74.36	-31.34	0.000735	0.65	90	21.41	NS
94.961	-60.58	24.26	0.74	33.05	42.43	31.99	0.08	1.50	75.51	-31.11	0.000774	0.68	90	21.19	NS
102.193	-60.74	24.52	0.52	31.28	43.18	31.99	0.08	1.50	76.15	-28.60	0.001381	1.22	90	18.68	NS
108.357	-60.94	24.77	1.44	21.84	43.56	31.99	0.08	1.50	76.66	-17.80	0.016599	14.68	90	7.88	NS
117.675	-88.00	22.56	0.00	18.77	53.50	0.00	0.00	0.01	33.86	-42.78	0.000053	0.05	90	32.85	NS
120.831	-90.07	22.67	0.00	19.38	50.51	0.00	0.00	0.01	34.09	-47.53	0.000018	0.02	90	37.60	NS
129.020	-90.75	22.92	0.00	19.93	52.56	0.00	0.00	0.01	34.65	-46.39	0.000023	0.02	90	36.47	NS
139.022	-91.98	23.17	0.00	19.25	51.39	0.00	0.00	0.01	35.30	-47.70	0.000017	0.02	90	37.78	NS
142.070	-93.45	23.22	0.00	19.03	52.78	0.00	0.00	0.01	35.49	-47.43	0.000018	0.02	90	37.51	NS
150.461	-93.87	23.33	0.00	17.24	56.62	0.00	0.00	0.01	35.99	-41.83	0.000066	0.06	90	31.91	NS
163.253	-94.61	23.40	0.00	15.00	59.85	0.00	0.00	0.01	36.70	-36.46	0.000226	0.20	90	26.54	NS
167.195	-94.88	23.41	0.00	13.28	61.10	0.00	0.00	0.01	36.91	-33.56	0.000440	0.39	90	23.64	NS
172.699	-86.19	22.46	0.00	0.00	61.27	0.00	0.00	0.005	31.17	-16.22	0.023894	21.13	90	6.29	NS
178.132	-87.86	22.59	0.00	0.00	59.61	0.00	0.00	0.005	31.44	-19.41	0.011466	10.14	90	9.48	NS
188.800	-88.35	22.82	0.00	0.00	59.23	0.00	0.00	0.005	31.94	-20.00	0.009996	8.84	90	10.08	NS
198.392	-90.28	22.99	0.00	0.00	59.20	0.00	0.00	0.005	32.37	-21.70	0.006762	5.98	90	11.78	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 6 64.80 GHz		

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	3520.0	51.9	49.8	28.9	5.2	31.4	-	54.6	52.5	73.9	53.9	19.3	1.4	
Hori.	10560.0	47.7	44.1	36.6	-4.5	32.9	-	47.0	43.4	73.9	53.9	26.9	10.5	
Hori.	14080.0	46.5	40.9	38.9	-3.6	32.3	-	49.6	43.9	73.9	53.9	24.4	10.0	
Hori.	17600.0	43.6	36.7	40.6	-2.8	32.4	-	49.0	42.1	73.9	53.9	25.0	11.8	
Hori.	38720.0	67.3	61.5	44.1	5.0	72.8	-	43.6	37.9	73.9	53.9	30.3	16.0	
Vert.	3520.0	51.3	49.0	28.9	5.2	31.4	-	54.0	51.7	73.9	53.9	19.9	2.2	
Vert.	10560.0	47.8	44.8	36.6	-4.5	32.9	-	47.1	44.1	73.9	53.9	26.8	9.9	
Vert.	14080.0	47.0	40.4	38.9	-3.6	32.3	-	50.0	43.4	73.9	53.9	23.9	10.5	
Vert.	17600.0	44.0	37.0	40.6	-2.8	32.4	-	49.4	42.4	73.9	53.9	24.5	11.5	
Vert.	38720.0	65.4	58.4	44.1	5.0	72.8	-	41.8	34.7	73.9	53.9	32.2	19.2	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor:

1 GHz - 6 GHz	$20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
6 GHz - 10 GHz	$20\log(4.95\text{ m} / 3.0\text{ m}) = 4.35\text{ dB}$
10 GHz - 40 GHz	$20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 6 64.80 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.887	-52.14	21.72	0.00	32.75	0.00	0.00	8.41	1.00	65.48	-32.71	0.000536	0.47	9000	42.79	NS
49.941	-52.52	22.62	0.00	32.77	0.00	0.00	8.91	1.00	66.41	-32.59	0.000551	0.49	9000	42.67	NS
53.252	-66.89	23.09	1.39	26.54	45.83	31.99	0.08	2.00	72.99	-28.22	0.001505	1.33	9000	38.30	NS
55.519	-93.29	23.36	0.00	26.18	45.76	0.00	0.00	2.50	75.29	-21.78	0.006633	5.87	9000	31.86	NS
71.950	-67.69	24.33	1.45	20.46	48.66	31.99	0.08	2.00	75.60	-18.68	0.013555	11.99	9000	28.76	NS
81.638	-66.70	23.46	0.09	0.00	-12.30	0.00	3.36	2.00	76.70	-22.31	0.005881	5.20	9000	32.38	NS
87.788	-56.07	23.87	0.94	31.74	41.33	31.99	0.08	1.50	74.83	-26.49	0.002244	1.98	9000	36.57	NS
95.973	-56.10	24.21	0.79	34.02	42.58	31.99	0.08	1.50	75.61	-27.26	0.001878	1.66	9000	37.34	NS
102.072	-55.54	24.50	0.51	31.37	43.20	31.99	0.08	1.50	76.14	-23.46	0.004505	3.98	9000	33.54	NS
107.206	-56.65	24.71	0.71	24.75	42.82	31.99	0.08	1.50	76.57	-17.92	0.016151	14.28	9000	27.99	NS
116.685	-84.03	22.52	0.00	17.89	53.24	0.00	0.00	0.01	33.78	-37.42	0.000181	0.16	9000	47.49	NS
120.163	-84.62	22.65	0.00	18.97	50.82	0.00	0.00	0.01	34.04	-41.39	0.000073	0.06	9000	51.46	NS
127.692	-85.90	22.88	0.00	20.65	50.95	0.00	0.00	0.01	34.57	-43.92	0.000041	0.04	9000	54.00	NS
140.527	-87.56	23.20	0.00	18.96	53.65	0.00	0.00	0.01	35.40	-40.67	0.000086	0.08	9000	50.75	NS
142.025	-88.46	23.22	0.00	19.04	52.73	0.00	0.00	0.01	35.49	-42.50	0.000056	0.05	9000	52.58	NS
152.859	-89.35	23.35	0.00	17.58	55.77	0.00	0.00	0.01	36.13	-38.39	0.000145	0.13	9000	48.46	NS
160.275	-89.13	23.40	0.00	16.66	58.22	0.00	0.00	0.01	36.54	-34.43	0.000361	0.32	9000	44.50	NS
167.239	-90.43	23.41	0.00	13.25	61.05	0.00	0.00	0.01	36.91	-29.13	0.001223	1.08	9000	39.20	NS
177.133	-82.54	22.57	0.00	0.00	59.28	0.00	0.00	0.005	31.39	-14.44	0.035985	31.82	9000	24.52	NS
178.107	-84.08	22.59	0.00	0.00	59.61	0.00	0.00	0.005	31.43	-15.62	0.027395	24.22	9000	25.70	NS
187.033	-84.02	22.78	0.00	0.00	58.09	0.00	0.00	0.005	31.86	-16.85	0.020633	18.24	9000	26.93	NS
196.602	-85.14	22.96	0.00	0.00	58.34	0.00	0.00	0.005	32.29	-17.47	0.017918	15.84	9000	27.54	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.936	-55.98	21.73	0.00	32.81	0.00	0.00	8.41	1.00	65.49	-36.61	0.000218	0.19	90	26.69	NS
49.991	-48.33	22.65	0.00	32.74	0.00	0.00	8.92	1.00	66.42	-28.38	0.001451	1.28	90	18.46	NS
51.576	-74.87	22.99	0.53	26.34	46.44	31.99	0.08	2.00	72.71	-36.42	0.000228	0.20	90	26.50	NS
55.360	-100.79	23.33	0.00	26.22	45.82	0.00	0.00	2.50	75.26	-29.25	0.001187	1.05	90	19.33	NS
72.023	-75.43	24.33	1.46	20.46	48.67	31.99	0.08	2.00	75.61	-26.39	0.002297	2.03	90	16.47	NS
80.835	-70.04	23.36	0.15	0.00	-12.07	0.00	3.17	2.00	76.61	-25.53	0.002796	2.47	90	15.61	NS
87.140	-61.02	23.78	0.94	30.96	41.73	31.99	0.08	1.50	74.77	-30.24	0.000947	0.84	90	20.31	NS
95.994	-61.15	24.21	0.79	34.04	42.58	31.99	0.08	1.50	75.61	-32.33	0.000585	0.52	90	22.41	NS
102.041	-60.75	24.50	0.50	31.40	43.20	31.99	0.08	1.50	76.14	-28.72	0.001343	1.19	90	18.80	NS
108.272	-60.97	24.76	1.36	21.98	43.47	31.99	0.08	1.50	76.65	-18.14	0.015353	13.57	90	8.22	NS
117.780	-89.31	22.56	0.00	18.86	53.70	0.00	0.00	0.01	33.86	-43.17	0.000048	0.04	90	33.25	NS
120.169	-89.80	22.65	0.00	18.97	50.82	0.00	0.00	0.01	34.04	-46.57	0.000022	0.02	90	36.64	NS
126.260	-91.05	22.84	0.00	21.09	52.81	0.00	0.00	0.01	34.47	-47.70	0.000017	0.02	90	37.78	NS
138.652	-92.37	23.16	0.00	19.23	51.41	0.00	0.00	0.01	35.28	-48.07	0.000016	0.01	90	38.14	NS
142.088	-93.58	23.22	0.00	19.03	52.79	0.00	0.00	0.01	35.49	-47.55	0.000018	0.02	90	37.63	NS
152.850	-93.85	23.35	0.00	17.57	55.76	0.00	0.00	0.01	36.13	-42.88	0.000051	0.05	90	32.96	NS
159.891	-94.69	23.39	0.00	16.81	57.89	0.00	0.00	0.01	36.52	-40.48	0.000090	0.08	90	30.55	NS
167.574	-95.13	23.41	0.00	13.08	60.74	0.00	0.00	0.01	36.93	-33.95	0.000403	0.36	90	24.03	NS
170.509	-87.28	22.40	0.00	0.00	60.41	0.00	0.00	0.005	31.06	-18.22	0.015077	13.33	90	8.29	NS
184.651	-88.23	22.73	0.00	0.00	57.25	0.00	0.00	0.005	31.75	-21.97	0.006359	5.62	90	12.04	NS
186.408	-87.48	22.77	0.00	0.00	57.95	0.00	0.00	0.005	31.83	-20.47	0.008973	7.93	90	10.55	NS
199.621	-89.92	23.01	0.00	0.00	59.67	0.00	0.00	0.005	32.43	-20.83	0.008259	7.30	90	10.91	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 10 58.32 GHz		

Polarity	Frequency	Reading	Reading	Ant.	Loss	Gain	Duty	Result	Result	Limit	Limit	Margin	Margin	Remark
[Hori/Vert]	[MHz]	(QP / PK) [dBuV]	(AV) [dBuV]	Factor [dB/m]	[dB]	[dB]	[dB]	(QP / PK) [dBuV/m]	(AV) [dBuV/m]	(QP / PK) [dBuV/m]	(AV) [dBuV/m]	(QP / PK) [dB]	(AV) [dB]	
Hori.	3520.0	52.8	49.8	28.9	5.2	31.4	-	55.5	52.5	73.9	53.9	18.5	1.5	
Hori.	10560.0	47.2	43.9	36.6	-4.5	32.9	-	46.4	43.2	73.9	53.9	27.5	10.7	
Hori.	14080.0	46.5	41.0	38.9	-3.6	32.3	-	49.5	44.0	73.9	53.9	24.4	9.9	
Hori.	17600.0	43.7	36.7	40.6	-2.8	32.4	-	49.1	42.1	73.9	53.9	24.8	11.8	
Hori.	38720.0	67.7	61.3	44.1	5.0	72.8	-	44.1	37.6	73.9	53.9	29.8	16.3	
Hori.	38880.1	71.4	68.3	44.1	5.0	73.1	-	47.5	44.4	73.9	53.9	26.4	9.5	
Vert.	3520.0	51.6	49.1	28.9	5.2	31.4	-	54.3	51.8	73.9	53.9	19.6	2.1	
Vert.	10560.0	47.3	43.9	36.6	-4.5	32.9	-	46.6	43.2	73.9	53.9	27.3	10.7	
Vert.	14080.0	47.3	40.4	38.9	-3.6	32.3	-	50.3	43.4	73.9	53.9	23.6	10.5	
Vert.	17600.0	43.7	36.8	40.6	-2.8	32.4	-	49.1	42.2	73.9	53.9	24.9	11.7	
Vert.	38720.0	65.0	58.5	44.1	5.0	72.8	-	41.4	34.8	73.9	53.9	32.6	19.1	
Vert.	38880.1	73.6	71.4	44.1	5.0	73.1	-	49.7	47.5	73.9	53.9	24.2	6.4	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor:

1 GHz - 6 GHz	20log (3.95 m / 3.0 m) = 2.39 dB
6 GHz - 10 GHz	20log (4.95 m / 3.0 m) = 4.35 dB
10 GHz - 40 GHz	20log (1.0 m / 3.0 m) = -9.5 dB

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 10 58.32 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.957	-52.45	21.73	0.00	32.84	0.00	0.00	8.41	1.00	65.50	-33.11	0.000489	0.43	9000	43.18	NS
49.931	-48.47	22.62	0.00	32.77	0.00	0.00	8.91	1.00	66.41	-28.54	0.001401	1.24	9000	38.61	NS
51.014	-66.83	22.79	0.57	25.92	47.03	31.99	0.08	2.00	72.62	-27.23	0.001893	1.67	9000	37.31	NS
56.794	-77.59	23.47	0.00	26.21	45.32	0.00	0.00	2.50	75.49	-6.46	0.225976	199.81	9000	16.54	
71.572	-67.74	24.36	1.19	20.57	48.75	31.99	0.08	2.00	75.56	-19.08	0.012357	10.93	9000	29.16	NS
81.690	-66.44	23.46	0.08	0.00	-12.47	0.00	3.38	2.00	76.71	-22.20	0.006020	5.32	9000	32.28	NS
88.192	-56.42	23.89	0.92	32.19	41.39	31.99	0.08	1.50	74.87	-27.23	0.001892	1.67	9000	37.31	NS
89.382	-56.31	23.87	0.88	33.20	42.15	31.99	0.08	1.50	74.99	-27.27	0.001874	1.66	9000	37.35	NS
100.630	-55.92	24.53	0.74	32.56	43.45	31.99	0.08	1.50	76.02	-24.71	0.003383	2.99	9000	34.78	NS
108.432	-56.67	24.78	1.52	21.71	43.63	31.99	0.08	1.50	76.67	-13.26	0.047247	41.78	9000	23.33	NS
117.728	-84.59	22.56	0.00	18.82	53.60	0.00	0.00	0.01	33.86	-38.51	0.000141	0.12	9000	48.59	NS
120.180	-84.69	22.65	0.00	18.98	50.82	0.00	0.00	0.01	34.04	-41.46	0.000071	0.06	9000	51.54	NS
127.744	-86.48	22.88	0.00	20.66	50.78	0.00	0.00	0.01	34.57	-44.67	0.000034	0.03	9000	54.74	NS
140.527	-87.42	23.20	0.00	18.96	53.65	0.00	0.00	0.01	35.40	-40.53	0.000088	0.08	9000	50.61	NS
142.000	-87.43	23.22	0.00	19.04	52.71	0.00	0.00	0.01	35.49	-41.49	0.000071	0.06	9000	51.56	NS
150.050	-89.28	23.33	0.00	17.21	56.49	0.00	0.00	0.01	35.97	-37.36	0.000184	0.16	9000	47.44	NS
160.084	-89.56	23.39	0.00	16.78	58.24	0.00	0.00	0.01	36.53	-34.96	0.000319	0.28	9000	45.03	NS
166.188	-90.48	23.41	0.00	13.28	59.48	0.00	0.00	0.01	36.85	-30.84	0.000824	0.73	9000	40.92	NS
172.135	-82.77	22.44	0.00	0.00	59.72	0.00	0.00	0.005	31.14	-14.35	0.036750	32.49	9000	24.42	NS
178.639	-84.22	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-15.80	0.026313	23.27	9000	25.88	NS
191.605	-83.59	22.87	0.00	0.00	58.57	0.00	0.00	0.005	32.07	-15.82	0.026190	23.16	9000	25.90	NS
196.562	-85.62	22.96	0.00	0.00	58.47	0.00	0.00	0.005	32.29	-17.82	0.016509	14.60	9000	27.90	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.930	-56.52	21.73	0.00	32.80	0.00	0.00	8.41	1.00	65.49	-37.15	0.000193	0.17	90	27.22	NS
49.978	-52.62	22.64	0.00	32.74	0.00	0.00	8.92	1.00	66.42	-32.66	0.000542	0.48	90	22.74	NS
51.657	-74.84	23.01	0.52	26.40	46.35	31.99	0.08	2.00	72.72	-36.56	0.000221	0.20	90	26.64	NS
56.986	-87.61	23.48	0.00	26.25	45.26	0.00	0.00	2.50	75.52	-16.56	0.022075	19.52	90	6.64	
71.033	-75.41	24.40	0.83	20.71	48.88	31.99	0.08	2.00	75.49	-27.23	0.001891	1.67	90	17.31	NS
80.899	-70.65	23.37	0.15	0.00	-12.33	0.00	3.19	2.00	76.62	-26.39	0.002295	2.03	90	16.47	NS
88.032	-61.62	23.90	0.94	32.03	41.23	31.99	0.08	1.50	74.86	-32.43	0.000572	0.51	90	22.51	NS
95.638	-61.09	24.23	0.78	33.69	42.53	31.99	0.08	1.50	75.58	-32.03	0.000627	0.55	90	22.11	NS
100.665	-60.41	24.53	0.75	32.56	43.44	31.99	0.08	1.50	76.02	-29.19	0.001204	1.06	90	19.27	NS
108.384	-60.42	24.78	1.47	21.79	43.59	31.99	0.08	1.50	76.66	-17.18	0.019160	16.94	90	7.25	NS
117.731	-89.22	22.56	0.00	18.82	53.61	0.00	0.00	0.01	33.86	-43.13	0.000049	0.04	90	33.20	NS
120.189	-89.96	22.65	0.00	18.99	50.81	0.00	0.00	0.01	34.04	-46.75	0.000021	0.02	90	36.83	NS
128.102	-90.98	22.89	0.00	20.60	50.20	0.00	0.00	0.01	34.59	-49.67	0.000011	0.01	90	39.75	NS
138.986	-91.97	23.17	0.00	19.26	51.35	0.00	0.00	0.01	35.30	-47.74	0.000017	0.01	90	37.82	NS
142.360	-93.26	23.23	0.00	19.01	53.06	0.00	0.00	0.01	35.51	-46.93	0.000020	0.02	90	37.01	NS
150.482	-94.26	23.33	0.00	17.24	56.62	0.00	0.00	0.01	35.99	-42.22	0.000060	0.05	90	32.30	NS
160.726	-94.80	23.40	0.00	16.35	58.18	0.00	0.00	0.01	36.56	-39.80	0.000105	0.09	90	29.88	NS
167.263	-95.32	23.41	0.00	13.24	61.03	0.00	0.00	0.01	36.91	-34.03	0.000396	0.35	90	24.10	NS
171.244	-86.68	22.42	0.00	0.00	59.33	0.00	0.00	0.005	31.09	-18.68	0.013553	11.98	90	8.76	NS
181.631	-88.69	22.67	0.00	0.00	58.78	0.00	0.00	0.005	31.60	-20.97	0.007998	7.07	90	11.05	NS
186.311	-88.56	22.77	0.00	0.00	57.94	0.00	0.00	0.005	31.83	-21.57	0.006973	6.17	90	11.64	NS
196.757	-90.20	22.96	0.00	0.00	57.86	0.00	0.00	0.005	32.30	-23.00	0.005017	4.44	90	13.07	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 3
Date	April 3, 2025	April 3, 2025	April 4, 2025	April 6, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH	21 deg. C / 41 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (30 MHz to 6 GHz)	Yuichiro Yamazaki (9 kHz to 30 MHz)
Mode	Tx MCS 10 60.48 GHz			

Polarity	Frequency	Reading (QP / PK)	Reading (AV)	Ant. Factor	Loss	Gain	Duty Factor	Result (QP / PK)	Result (AV)	Limit (QP / PK)	Limit (AV)	Margin (QP / PK)	Margin (AV)	Remark
[Hori/Vert]	[MHz]	[dBuV]	[dBuV]	[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	[dB]	
Hori.	69.3	37.8	-	6.4	7.4	32.1	-	19.5	-	40.0	-	20.5	-	
Hori.	125.0	33.8	-	13.4	7.9	32.1	-	23.1	-	43.5	-	20.5	-	
Hori.	250.0	39.8	-	12.1	9.0	32.0	-	28.8	-	46.0	-	17.2	-	
Hori.	299.8	38.8	-	13.7	9.5	32.0	-	30.0	-	46.0	-	16.0	-	
Hori.	367.9	38.2	-	15.3	9.8	32.1	-	31.2	-	46.0	-	14.8	-	
Hori.	845.6	23.3	-	21.5	12.0	31.4	-	25.3	-	46.0	-	20.7	-	
Hori.	3520.0	52.3	50.2	28.9	5.2	31.4	-	55.0	52.8	73.9	53.9	18.9	1.1	
Hori.	10560.0	47.0	43.9	36.6	-4.5	32.9	-	46.3	43.2	73.9	53.9	27.6	10.7	
Hori.	14080.0	46.8	41.0	38.9	-3.6	32.3	-	49.8	44.0	73.9	53.9	24.1	9.9	
Hori.	17600.0	43.3	36.2	40.6	-2.8	32.4	-	48.6	41.6	73.9	53.9	25.3	12.3	
Hori.	38720.0	67.4	61.4	44.1	5.0	72.8	-	43.7	37.8	73.9	53.9	30.2	16.2	
Vert.	30.5	33.9	-	18.5	6.8	32.1	-	27.1	-	40.0	-	12.9	-	
Vert.	68.8	36.4	-	6.5	7.4	32.1	-	18.1	-	40.0	-	21.9	-	
Vert.	125.0	37.0	-	13.4	7.9	32.1	-	26.3	-	43.5	-	17.3	-	
Vert.	298.8	37.4	-	13.7	9.5	32.0	-	28.6	-	46.0	-	17.4	-	
Vert.	367.8	36.4	-	15.3	9.8	32.1	-	29.4	-	46.0	-	16.6	-	
Vert.	844.7	22.5	-	21.5	12.0	31.4	-	24.5	-	46.0	-	21.5	-	
Vert.	3520.0	51.2	49.0	28.9	5.2	31.4	-	53.8	51.6	73.9	53.9	20.1	2.3	
Vert.	10560.0	47.2	44.4	36.6	-4.5	32.9	-	46.5	43.7	73.9	53.9	27.4	10.3	
Vert.	14080.0	47.0	40.1	38.9	-3.6	32.3	-	50.0	43.1	73.9	53.9	23.9	10.8	
Vert.	17600.0	44.1	36.5	40.6	-2.8	32.4	-	49.5	41.8	73.9	53.9	24.4	12.1	
Vert.	38720.0	66.4	58.3	44.1	5.0	72.8	-	42.7	34.6	73.9	53.9	31.2	19.3	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor: 1 GHz - 6 GHz 20log (3.95 m / 3.0 m) = 2.39 dB
 6 GHz - 10 GHz 20log (4.95 m / 3.0 m) = 4.35 dB
 10 GHz - 40 GHz 20log (1.0 m / 3.0 m) = -9.5 dB

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 10 60.48 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.952	-52.14	21.73	0.00	32.83	0.00	0.00	8.41	1.00	65.50	-32.80	0.000525	0.46	9000	42.87	NS
49.987	-48.65	22.64	0.00	32.74	0.00	0.00	8.92	1.00	66.42	-28.69	0.001351	1.19	9000	38.77	NS
51.693	-66.88	23.03	0.52	26.43	46.32	31.99	0.08	2.00	72.73	-28.68	0.001355	1.20	9000	38.76	NS
56.788	-92.01	23.47	0.00	26.21	45.32	0.00	0.00	2.50	75.49	-20.88	0.008165	7.22	9000	30.96	NS
72.148	-67.65	24.35	1.33	20.53	48.78	31.99	0.08	2.00	75.63	-18.70	0.013495	11.93	9000	28.78	NS
82.511	-66.83	23.51	0.18	0.00	-12.82	0.00	3.56	2.00	76.79	-22.63	0.005458	4.83	9000	32.71	NS
83.927	-56.85	23.57	1.56	32.27	41.79	31.99	0.08	1.50	74.44	-26.81	0.002084	1.84	9000	36.89	NS
95.932	-55.98	24.21	0.78	33.98	42.57	31.99	0.08	1.50	75.60	-27.12	0.001939	1.71	9000	37.20	NS
100.655	-55.28	24.53	0.75	32.56	43.44	31.99	0.08	1.50	76.02	-24.07	0.003917	3.46	9000	34.15	NS
108.464	-55.87	24.79	1.57	21.65	43.67	31.99	0.08	1.50	76.67	-12.31	0.058767	51.96	9000	22.39	NS
117.708	-84.05	22.56	0.00	18.80	53.57	0.00	0.00	0.01	33.86	-37.99	0.000159	0.14	9000	48.06	NS
118.899	-84.83	22.60	0.00	19.22	51.11	0.00	0.00	0.01	33.95	-41.60	0.000069	0.06	9000	51.67	NS
127.310	-86.38	22.87	0.00	20.62	52.22	0.00	0.00	0.01	34.54	-43.11	0.000049	0.04	9000	53.18	NS
138.660	-87.77	23.16	0.00	19.23	51.41	0.00	0.00	0.01	35.28	-43.47	0.000045	0.04	9000	53.55	NS
142.093	-88.81	23.22	0.00	19.03	52.80	0.00	0.00	0.01	35.49	-42.77	0.000053	0.05	9000	52.84	NS
150.486	-88.86	23.33	0.00	17.24	56.63	0.00	0.00	0.01	35.99	-36.80	0.000209	0.18	9000	46.88	NS
159.059	-89.68	23.39	0.00	16.61	55.10	0.00	0.00	0.01	36.47	-38.11	0.000155	0.14	9000	48.19	NS
169.015	-90.95	23.41	0.00	12.05	62.26	0.00	0.00	0.01	37.00	-27.15	0.001928	1.70	9000	37.23	NS
175.628	-82.94	22.53	0.00	0.00	60.56	0.00	0.00	0.005	31.31	-13.59	0.043722	38.66	9000	23.67	NS
184.893	-83.94	22.74	0.00	0.00	56.95	0.00	0.00	0.005	31.76	-17.97	0.015954	14.11	9000	28.05	NS
187.702	-83.72	22.80	0.00	0.00	59.35	0.00	0.00	0.005	31.89	-15.28	0.029625	26.19	9000	25.36	NS
196.595	-85.72	22.96	0.00	0.00	58.36	0.00	0.00	0.005	32.29	-18.03	0.015746	13.92	9000	28.11	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
45.000	-56.93	21.73	0.00	32.89	0.00	0.00	8.41	1.00	65.51	-37.64	0.000172	0.15	90	27.71	NS
49.988	-52.88	22.64	0.00	32.74	0.00	0.00	8.92	1.00	66.42	-32.92	0.000510	0.45	90	23.00	NS
51.140	-74.83	22.84	0.56	26.02	46.89	31.99	0.08	2.00	72.64	-35.51	0.000281	0.25	90	25.59	NS
56.582	-100.54	23.46	0.00	26.17	45.38	0.00	0.00	2.50	75.45	-29.34	0.001165	1.03	90	19.41	NS
71.050	-76.45	24.40	0.84	20.71	48.88	31.99	0.08	2.00	75.49	-28.25	0.001495	1.32	90	18.33	NS
80.779	-70.48	23.36	0.15	0.00	-11.97	0.00	3.16	2.00	76.61	-25.89	0.002575	2.28	90	15.97	NS
83.830	-61.68	23.57	2.02	32.32	41.72	31.99	0.08	1.50	74.43	-31.31	0.000740	0.65	90	21.38	NS
95.050	-61.08	24.26	0.75	33.10	42.44	31.99	0.08	1.50	75.52	-31.64	0.000685	0.61	90	21.72	NS
99.385	-60.82	24.43	0.62	32.95	43.40	31.99	0.08	1.50	75.91	-30.18	0.000960	0.85	90	20.26	NS
108.266	-61.15	24.76	1.35	21.99	43.47	31.99	0.08	1.50	76.65	-18.34	0.014657	12.96	90	8.42	NS
117.675	-89.36	22.56	0.00	18.77	53.50	0.00	0.00	0.01	33.86	-43.33	0.000046	0.04	90	33.41	NS
119.794	-89.20	22.64	0.00	18.95	50.87	0.00	0.00	0.01	34.01	-45.91	0.000026	0.02	90	35.99	NS
126.199	-90.89	22.84	0.00	21.13	52.78	0.00	0.00	0.01	34.46	-47.62	0.000017	0.02	90	37.70	NS
141.465	-91.96	23.21	0.00	19.04	53.51	0.00	0.00	0.01	35.45	-45.25	0.000030	0.03	90	35.32	NS
143.383	-93.30	23.25	0.00	18.67	53.63	0.00	0.00	0.01	35.57	-46.02	0.000025	0.02	90	36.10	NS
150.419	-94.07	23.33	0.00	17.24	56.60	0.00	0.00	0.01	35.99	-42.05	0.000062	0.06	90	32.13	NS
160.026	-94.85	23.39	0.00	16.82	58.25	0.00	0.00	0.01	36.53	-40.28	0.000094	0.08	90	30.36	NS
169.025	-95.35	23.41	0.00	12.06	62.27	0.00	0.00	0.01	37.00	-31.55	0.000700	0.62	90	21.62	NS
172.537	-87.24	22.45	0.00	0.00	60.83	0.00	0.00	0.005	31.16	-17.70	0.016990	15.02	90	7.78	NS
178.630	-88.35	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-19.93	0.010163	8.99	90	10.01	NS
192.157	-88.16	22.88	0.00	0.00	58.82	0.00	0.00	0.005	32.09	-20.12	0.009717	8.59	90	10.20	NS
196.705	-89.89	22.96	0.00	0.00	58.02	0.00	0.00	0.005	32.30	-22.53	0.005579	4.93	90	12.61	NS

Calculation:

FSL (Free Space path Loss) = $10 * \log ((4 * \pi * D / \lambda)^2)$

EIRP = Reading - Rx Ant. gain + Filter loss - LNA gain + Mixer conversion loss - IF Amp. gain + IF Cable loss + FSL

Power density Result at 3 m = $EIRP / (4 * \pi * 300^2)$

These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

Spurious Emissions (Below 40 GHz)

Test place	Ise EMC Lab.		
Semi Anechoic Chamber	No. 4	No. 4	No. 4
Date	April 3, 2025	April 3, 2025	April 4, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (1 GHz to 6 GHz)
Mode	Tx MCS 10 64.80 GHz		

Polarity	Frequency	Reading	Reading	Ant.	Loss	Gain	Duty	Result	Result	Limit	Limit	Margin	Margin	Remark
[Hori/Vert]	[MHz]	(QP / PK) [dBuV]	(AV) [dBuV]	Factor [dB/m]	[dB]	[dB]	[dB]	(QP / PK) [dBuV/m]	(AV) [dBuV/m]	(QP / PK) [dBuV/m]	(AV) [dBuV/m]	(QP / PK) [dB]	(AV) [dB]	
Hori.	3520.0	51.9	49.8	28.9	5.2	31.4	-	54.5	52.5	73.9	53.9	19.4	1.5	
Hori.	10560.0	47.0	44.0	36.6	-4.5	32.9	-	46.3	43.3	73.9	53.9	27.6	10.6	
Hori.	14080.0	46.6	40.6	38.9	-3.6	32.3	-	49.6	43.6	73.9	53.9	24.3	10.3	
Hori.	17600.0	43.7	36.3	40.6	-2.8	32.4	-	49.0	41.6	73.9	53.9	24.9	12.3	
Hori.	38720.0	61.3	67.2	44.1	5.0	72.8	-	37.6	43.6	73.9	53.9	36.3	10.3	
Vert.	3520.0	51.7	49.0	28.9	5.2	31.4	-	54.4	51.7	73.9	53.9	19.5	2.2	
Vert.	10560.0	47.4	44.2	36.6	-4.5	32.9	-	46.7	43.5	73.9	53.9	27.2	10.4	
Vert.	14080.0	46.9	40.2	38.9	-3.6	32.3	-	49.9	43.2	73.9	53.9	24.0	10.7	
Vert.	17600.0	43.8	36.9	40.6	-2.8	32.4	-	49.1	42.3	73.9	53.9	24.8	11.7	
Vert.	38720.0	66.7	58.4	44.1	5.0	72.8	-	43.0	34.7	73.9	53.9	30.9	19.2	

Result (QP / PK) = Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier)

Result (AV)= Reading + Ant Factor + Loss (Cable+Attenuator+Filter+Distance factor(above 1 GHz)) - Gain(Amplifier) + Duty factor

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

*QP detector was used up to 1GHz.

Distance factor:

1 GHz - 6 GHz	$20\log(3.95\text{ m} / 3.0\text{ m}) = 2.39\text{ dB}$
6 GHz - 10 GHz	$20\log(4.95\text{ m} / 3.0\text{ m}) = 4.35\text{ dB}$
10 GHz - 40 GHz	$20\log(1.0\text{ m} / 3.0\text{ m}) = -9.5\text{ dB}$

Spurious Emissions (Above 40 GHz)

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 10 64.80 GHz			

Peak Result

Freq.	Reading (Peak)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Peak)	Limit Peak	Margin Peak	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.961	-51.94	21.73	0.00	32.84	0.00	0.00	8.41	1.00	65.50	-32.60	0.000550	0.49	9000	42.67	NS
49.927	-48.62	22.61	0.00	32.78	0.00	0.00	8.90	1.00	66.41	-28.70	0.001348	1.19	9000	38.78	NS
50.263	-67.47	22.88	0.61	25.50	48.28	31.99	0.08	2.00	72.49	-26.38	0.002301	2.03	9000	36.46	NS
56.174	-92.85	23.44	0.00	26.09	45.51	0.00	0.00	2.50	75.39	-21.48	0.007114	6.29	9000	31.56	NS
71.540	-67.97	24.36	1.17	20.57	48.76	31.99	0.08	2.00	75.55	-19.33	0.011669	10.32	9000	29.41	NS
82.660	-66.76	23.51	0.22	0.00	-12.58	0.00	3.59	2.00	76.81	-22.23	0.005987	5.29	9000	32.30	NS
86.071	-56.13	23.73	1.32	30.18	41.32	31.99	0.08	1.50	74.66	-24.65	0.003427	3.03	9000	34.73	NS
94.871	-55.96	24.25	0.74	33.06	42.42	31.99	0.08	1.50	75.51	-26.51	0.002232	1.97	9000	36.59	NS
97.174	-55.84	24.36	0.73	34.63	42.72	31.99	0.08	1.50	75.71	-27.58	0.001746	1.54	9000	37.66	NS
109.241	-56.54	24.86	2.52	20.35	44.74	31.99	0.08	1.50	76.73	-9.67	0.107952	95.45	9000	19.74	NS
117.717	-84.53	22.52	0.00	17.92	53.15	0.00	0.00	0.01	33.86	-37.96	0.000160	0.14	9000	48.04	NS
120.739	-85.50	22.67	0.00	19.32	50.55	0.00	0.00	0.01	34.08	-42.87	0.000052	0.05	9000	52.94	NS
127.605	-86.00	22.88	0.00	20.64	51.24	0.00	0.00	0.01	34.56	-43.72	0.000042	0.04	9000	53.79	NS
140.421	-87.01	23.19	0.00	18.94	53.53	0.00	0.00	0.01	35.39	-40.22	0.000095	0.08	9000	50.30	NS
142.372	-88.71	23.23	0.00	19.01	53.07	0.00	0.00	0.01	35.51	-42.36	0.000058	0.05	9000	52.44	NS
150.030	-89.07	23.33	0.00	17.21	56.48	0.00	0.00	0.01	35.97	-37.17	0.000192	0.17	9000	47.24	NS
160.351	-89.21	23.40	0.00	16.60	58.21	0.00	0.00	0.01	36.54	-34.46	0.000358	0.32	9000	44.53	NS
168.880	-90.48	23.41	0.00	12.14	62.02	0.00	0.00	0.01	36.99	-27.02	0.001987	1.76	9000	37.09	NS
171.159	-82.44	22.42	0.00	0.00	59.32	0.00	0.00	0.005	31.09	-14.45	0.035918	31.76	9000	24.52	NS
185.733	-84.16	22.75	0.00	0.00	57.61	0.00	0.00	0.005	31.80	-17.51	0.017762	15.71	9000	27.58	NS
192.175	-83.33	22.88	0.00	0.00	58.78	0.00	0.00	0.005	32.10	-15.33	0.029283	25.89	9000	25.41	NS
197.589	-85.42	22.98	0.00	0.00	58.89	0.00	0.00	0.005	32.34	-17.17	0.019184	16.96	9000	27.25	NS

Average Result

Freq.	Reading (Average)	Rx Ant. Gain	Filter Loss	LNA Gain	Mixer Conv. Loss	IF Amp. Gain	IF Cable Loss	Test Distance D	FSL	EIRP		Power density Result at 3 m (Average)	Limit Average	Margin Average	Remarks
[GHz]	[dBm]	[dBi]	[dB]	[dB]	[dB]	[dB]	[dB]	[m]	[dB]	[dBm]	[mW]	[pW/cm ²]	[pW/cm ²]	[dB]	
44.970	-56.09	21.73	0.00	32.85	0.00	0.00	8.41	1.00	65.50	-36.76	0.000211	0.19	90	26.84	NS
49.975	-52.53	22.64	0.00	32.75	0.00	0.00	8.91	1.00	66.42	-32.59	0.000551	0.49	90	22.67	NS
50.414	-74.94	22.86	0.60	25.58	48.03	31.99	0.08	2.00	72.51	-34.14	0.000385	0.34	90	24.22	NS
56.104	-100.61	23.44	0.00	26.07	45.53	0.00	0.00	2.50	75.38	-29.21	0.001200	1.06	90	19.28	NS
74.090	-76.48	24.47	0.24	20.46	49.78	31.99	0.08	2.00	75.86	-27.44	0.001802	1.59	90	17.52	NS
81.680	-70.15	23.46	0.09	0.00	-12.44	0.00	3.37	2.00	76.70	-25.88	0.002580	2.28	90	15.96	NS
87.023	-61.29	23.76	0.95	30.82	41.81	31.99	0.08	1.50	74.76	-30.27	0.000940	0.83	90	20.34	NS
95.016	-61.00	24.26	0.74	33.07	42.43	31.99	0.08	1.50	75.52	-31.55	0.000701	0.62	90	21.62	NS
102.199	-60.23	24.52	0.52	31.27	43.18	31.99	0.08	1.50	76.15	-28.08	0.001558	1.38	90	18.15	NS
108.355	-60.40	24.77	1.44	21.84	43.56	31.99	0.08	1.50	76.66	-17.26	0.018787	16.61	90	7.34	NS
117.807	-89.76	22.56	0.00	18.89	53.75	0.00	0.00	0.01	33.87	-43.60	0.000044	0.04	90	33.67	NS
120.873	-90.02	22.67	0.00	19.40	50.49	0.00	0.00	0.01	34.09	-47.51	0.000018	0.02	90	37.58	NS
127.222	-90.91	22.87	0.00	20.61	52.51	0.00	0.00	0.01	34.53	-47.35	0.000018	0.02	90	37.42	NS
140.454	-92.60	23.19	0.00	18.94	53.57	0.00	0.00	0.01	35.39	-45.77	0.000026	0.02	90	35.85	NS
142.020	-93.49	23.22	0.00	19.04	52.73	0.00	0.00	0.01	35.49	-47.53	0.000018	0.02	90	37.61	NS
150.467	-93.82	23.33	0.00	17.24	56.62	0.00	0.00	0.01	35.99	-41.78	0.000066	0.06	90	31.85	NS
161.784	-84.37	23.40	0.00	15.68	57.23	0.00	0.00	0.01	36.62	-39.60	0.000110	0.10	90	29.67	NS
169.044	-95.50	23.41	0.00	12.07	62.29	0.00	0.00	0.01	37.00	-31.69	0.000678	0.60	90	21.77	NS
176.514	-87.01	22.55	0.00	0.00	59.33	0.00	0.00	0.005	31.36	-18.87	0.012974	11.47	90	8.95	NS
178.593	-88.39	22.60	0.00	0.00	59.56	0.00	0.00	0.005	31.46	-19.97	0.010070	8.90	90	10.05	NS
187.863	-88.16	22.80	0.00	0.00	59.65	0.00	0.00	0.005	31.90	-19.41	0.011452	10.13	90	9.49	NS
194.199	-90.31	22.92	0.00	0.00	58.90	0.00	0.00	0.005	32.19	-22.14	0.006103	5.40	90	12.22	NS

Calculation:

$$\text{FSL (Free Space path Loss)} = 10 * \log ((4 * \text{Pi} * D / \lambda)^2)$$

$$\text{EIRP} = \text{Reading} - \text{Rx Ant. gain} + \text{Filter loss} - \text{LNA gain} + \text{Mixer conversion loss} - \text{IF Amp. gain} + \text{IF Cable loss} + \text{FSL}$$

$$\text{Power density Result at 3 m} = \text{EIRP} / (4 * \text{Pi} * 300^2)$$

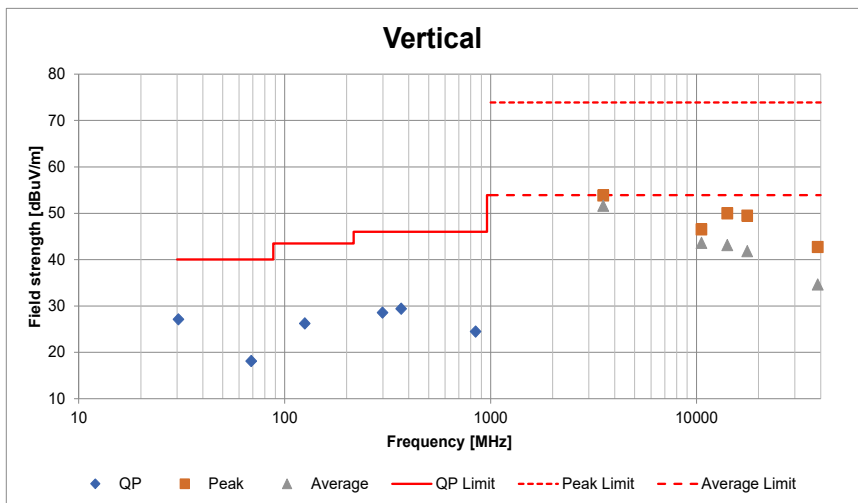
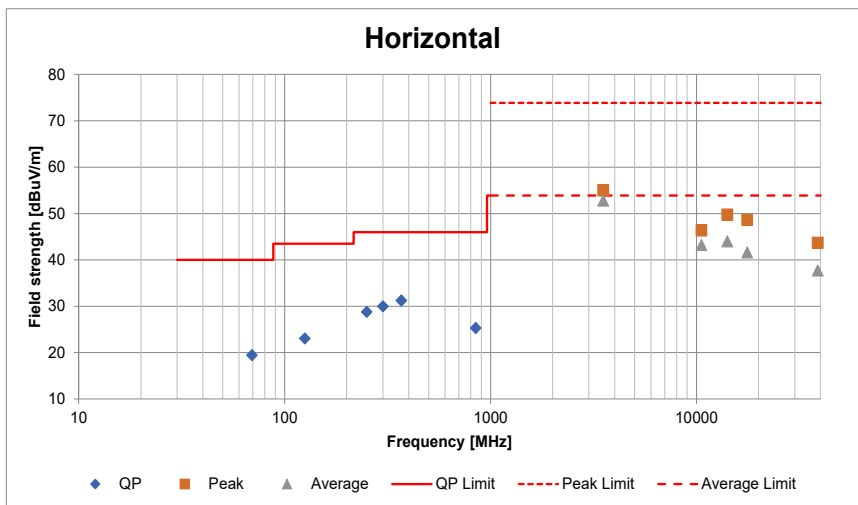
These calculation results are same as results which were calculated with formulas described in the Section 9 of ANSI C63.10-2020.

NS: No signal detected.

The equipment were not used for factor 0 dB of the data sheets.

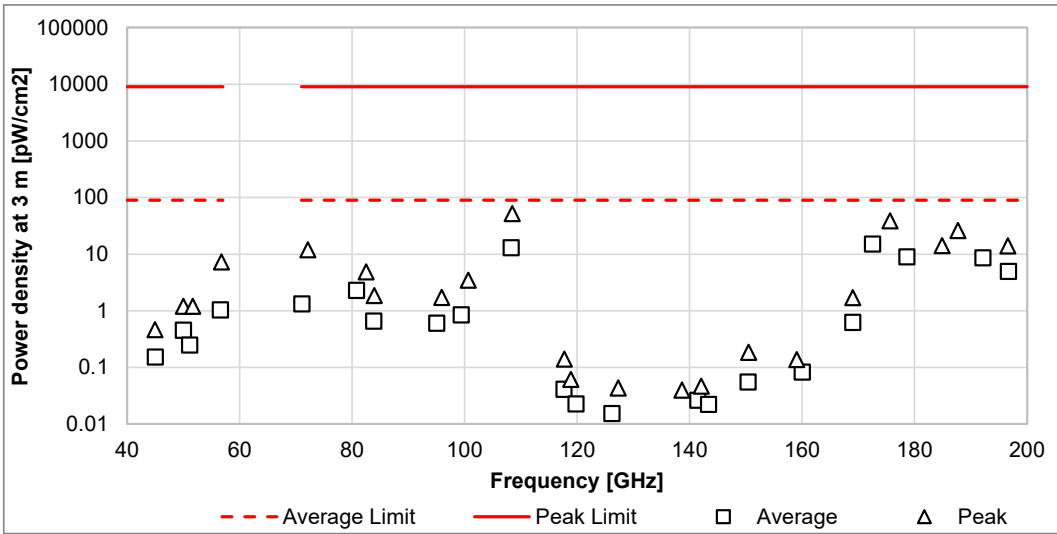
Spurious Emissions
(Plot data, Worst case mode for Maximum EIRP (Peak))
Below 40 GHz

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 3
Date	April 3, 2025	April 3, 2025	April 4, 2025	April 6, 2025
Temperature / Humidity	21 deg. C / 40 % RH	23 deg. C / 43 % RH	20 deg. C / 42 % RH	21 deg. C / 41 % RH
Engineer	Junki Nagatomi (26.5 GHz to 40 GHz)	Yuichiro Yamazaki (6 GHz to 26.5 GHz)	Junki Nagatomi (30 MHz to 6 GHz)	Yuichiro Yamazaki (9 kHz to 30 MHz)
Mode	Tx MCS 10 60.48 GHz			



Spurious Emissions
(Plot data, Worst case mode for Maximum EIRP (Peak))
Above 40 GHz

Test place	Ise EMC Lab.			
Semi Anechoic Chamber	No. 4	No. 4	No. 4	No. 4
Date	April 1, 2025	April 2, 2025	April 2, 2025	April 3, 2025
Temperature / Humidity	21 deg. C / 45 % RH	21 deg. C / 42 % RH	20 deg. C / 55 % RH	21 deg. C / 40 % RH
Engineer	Yuichiro Yamazaki (40 GHz to 50 GHz)	Junki Nagatomi (50 GHz to 55 GHz, 71 GHz to 75 GHz,)	Yuichiro Yamazaki (55 GHz to 57 GHz, 75 GHz to 110 GHz, Above 170 GHz)	Junki Nagatomi (110 GHz to 170 GHz)
Mode	Tx MCS 10 60.48 GHz			



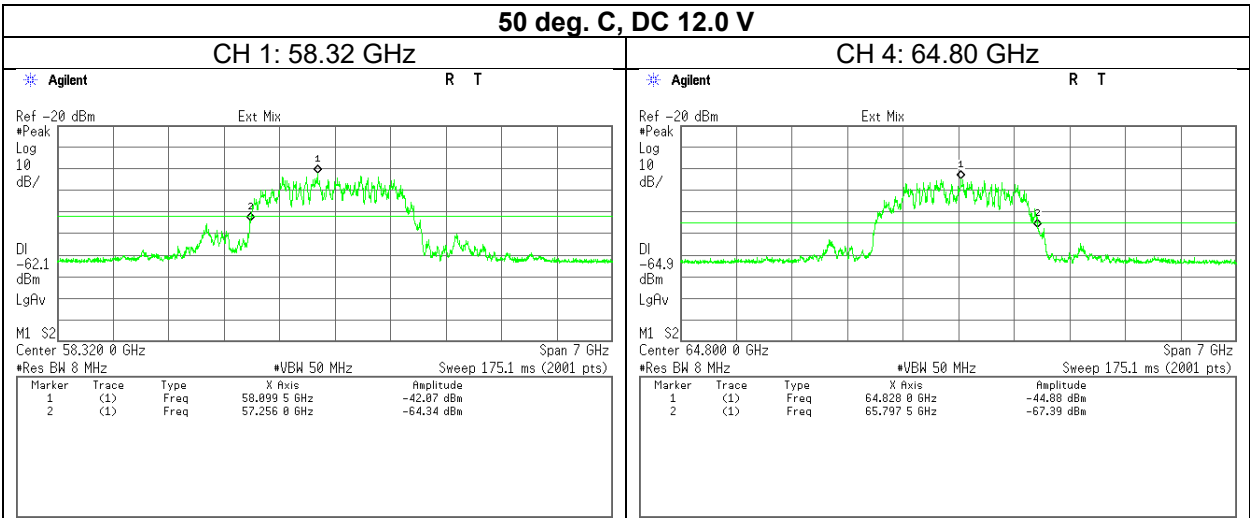
Frequency Stability

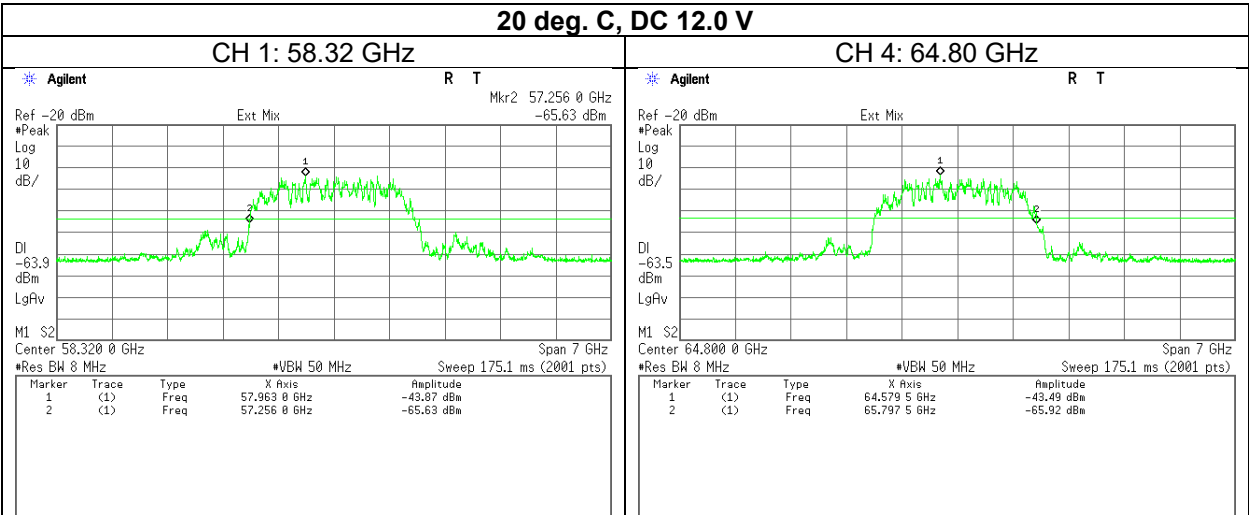
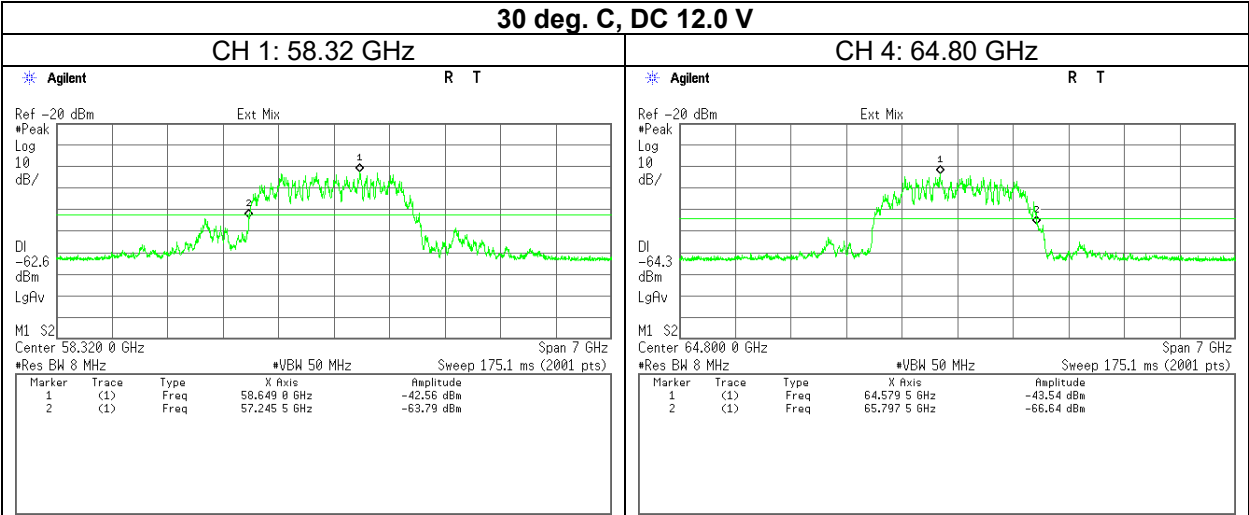
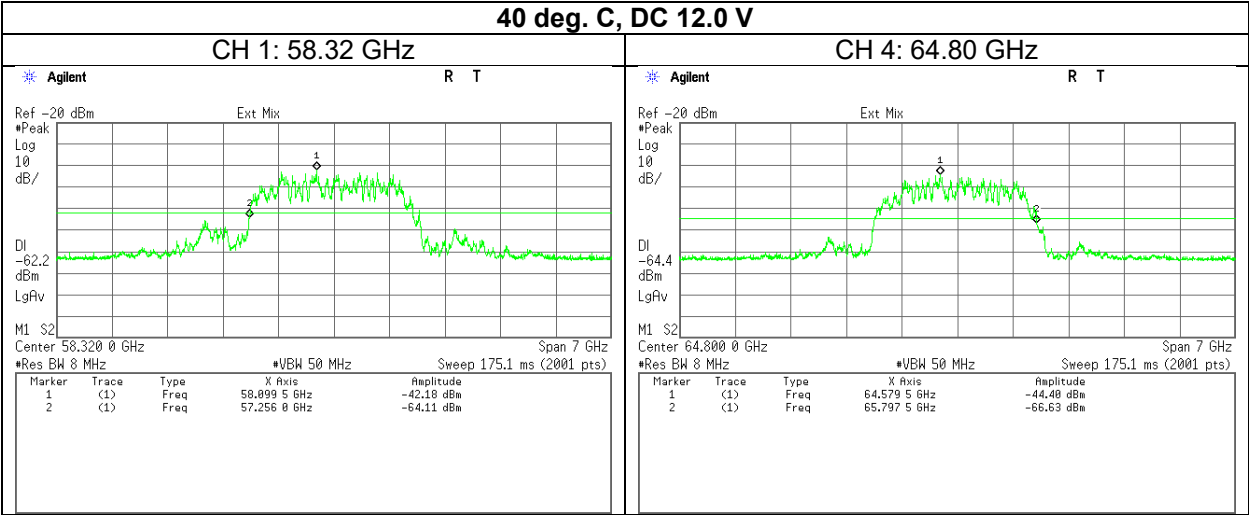
Test place	Ise EMC Lab.	
Measurement Room	No. 6	No. 6
Date	April 7, 2025	April 8, 2025
Temperature / Humidity	26 deg. C / 46 % RH	24 deg. C / 41 % RH
Engineer	Nachi Konegawa	Nachi Konegawa
Mode	Tx MCS 0	

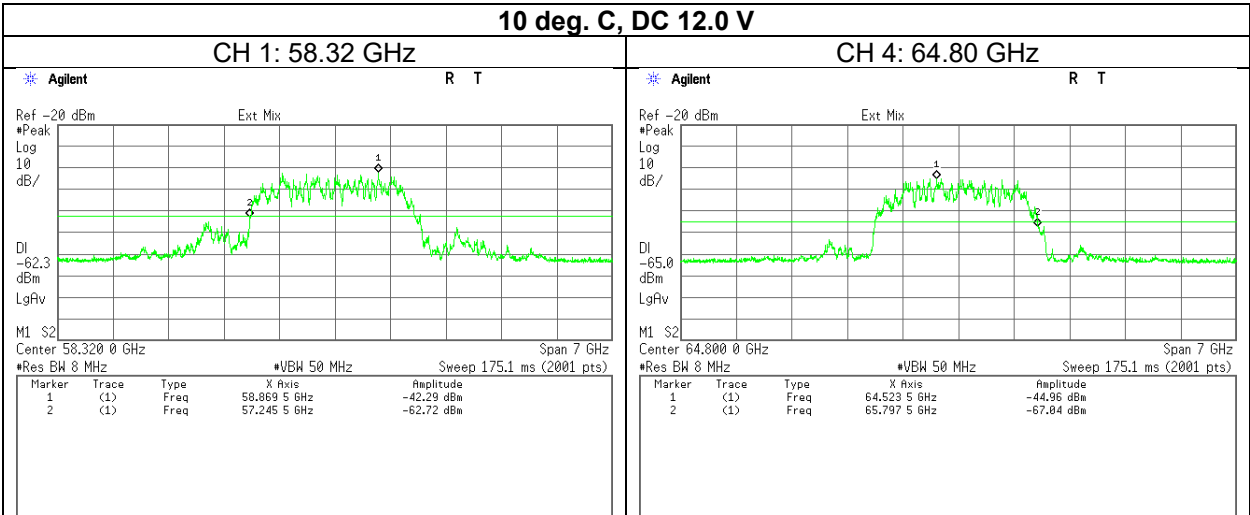
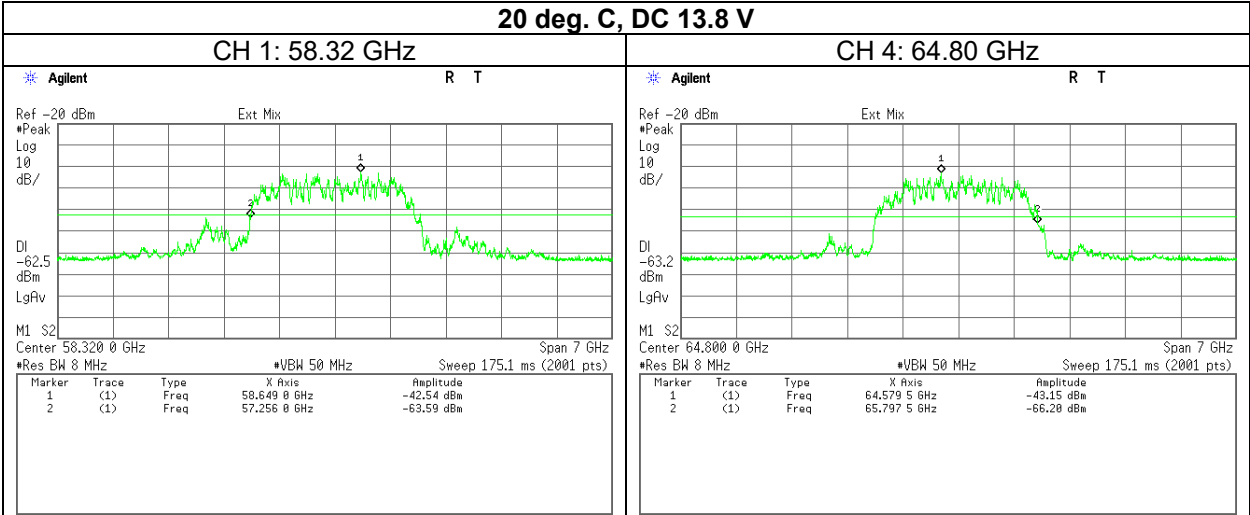
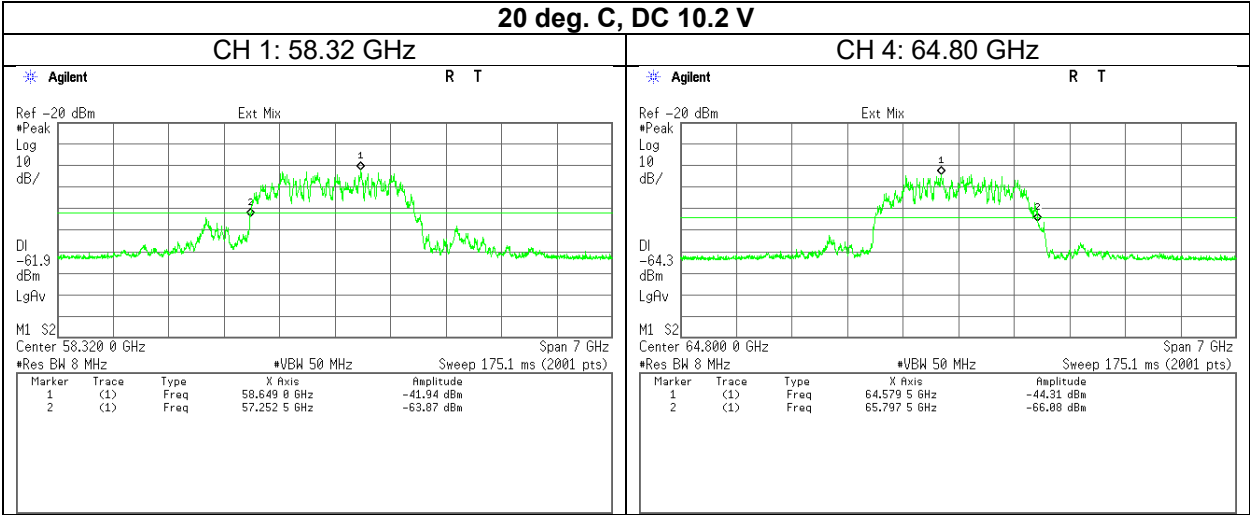
Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	CH 1 Lower Result [GHz]	CH 4 Upper Result [GHz]	
50	12.0	57.256	65.798	
40	12.0	57.256	65.798	
30	12.0	57.246	65.798	
20	12.0	57.256	65.798	
20	10.2	57.253	65.798	85 % of the minimum operating voltage, DC 12 V * 0.85
20	13.8	57.256	65.798	115 % of the maximum operating voltage, DC 12 V * 1.15
10	12.0	57.246	65.798	
0	12.0	57.246	65.798	
-10	12.0	57.242	65.798	
-20	12.0	57.256	65.798	

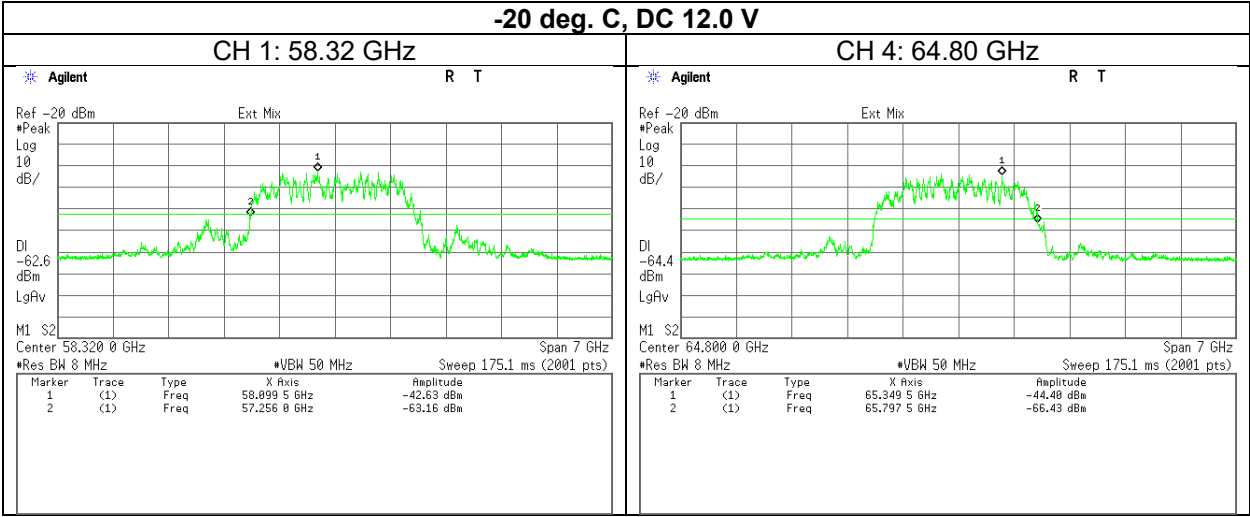
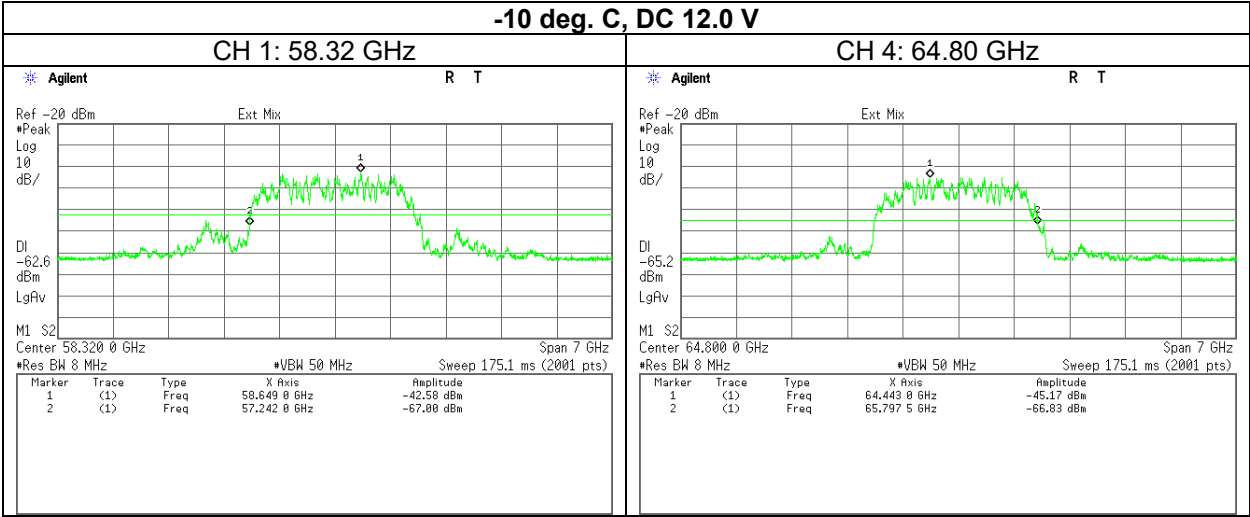
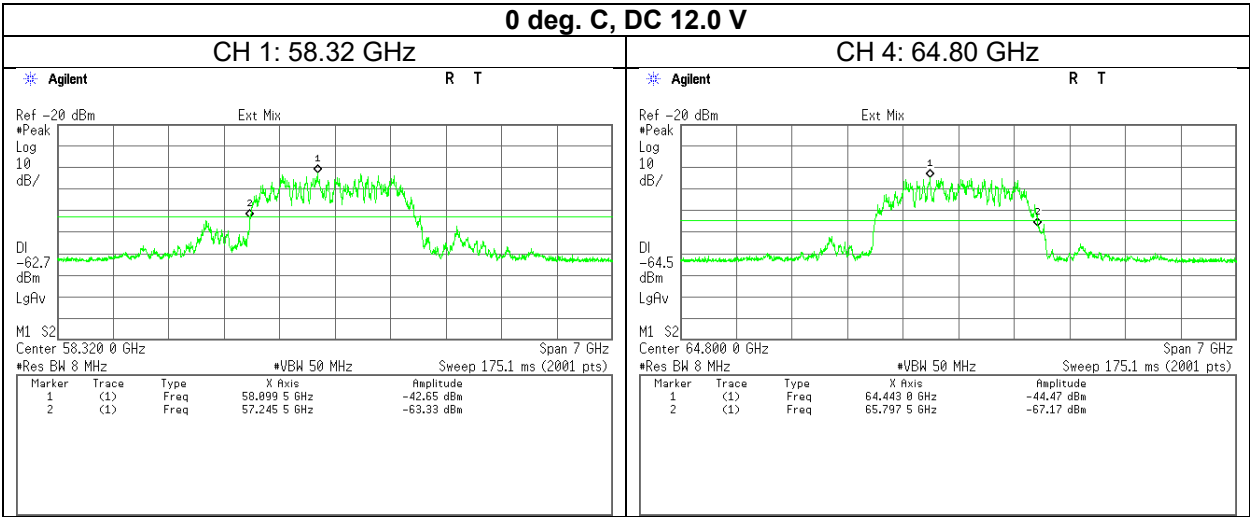
Fundamental emissions were contained within the frequency band 57 GHz to 71 GHz during all conditions of operation.

[Data]









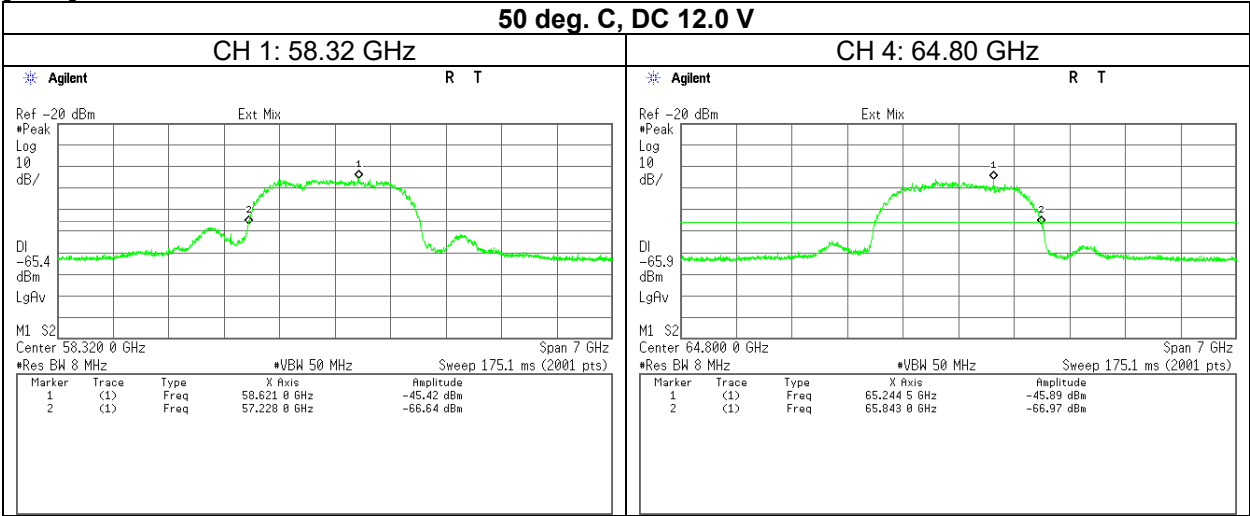
Frequency Stability

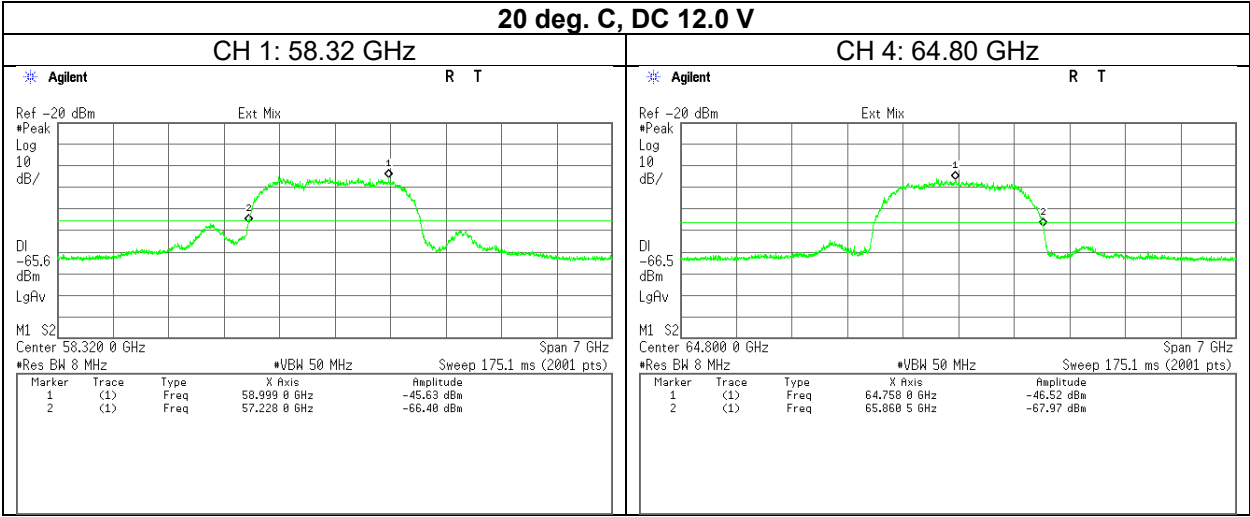
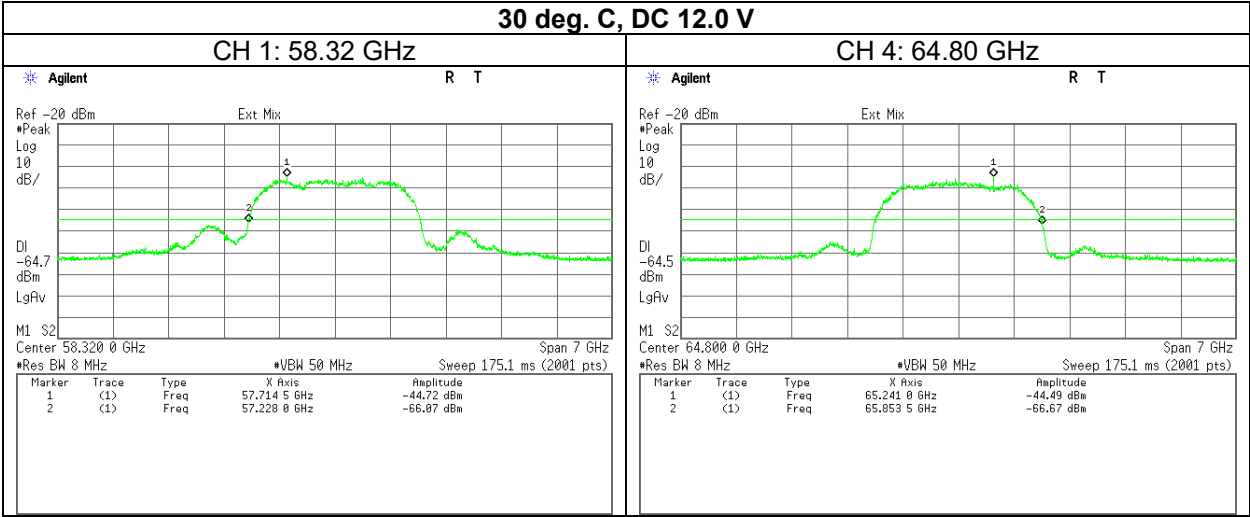
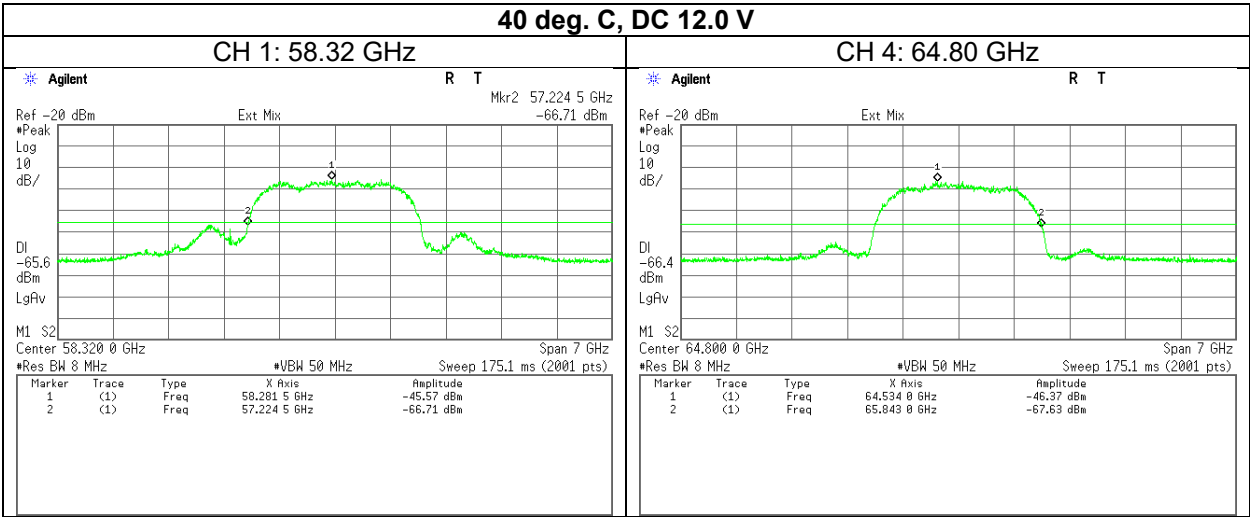
Test place	Ise EMC Lab.	
Measurement Room	No. 6	No. 6
Date	April 7, 2025	April 8, 2025
Temperature / Humidity	26 deg. C / 46 % RH	24 deg. C / 41 % RH
Engineer	Nachi Konegawa	Nachi Konegawa
Mode	Tx MCS 1	

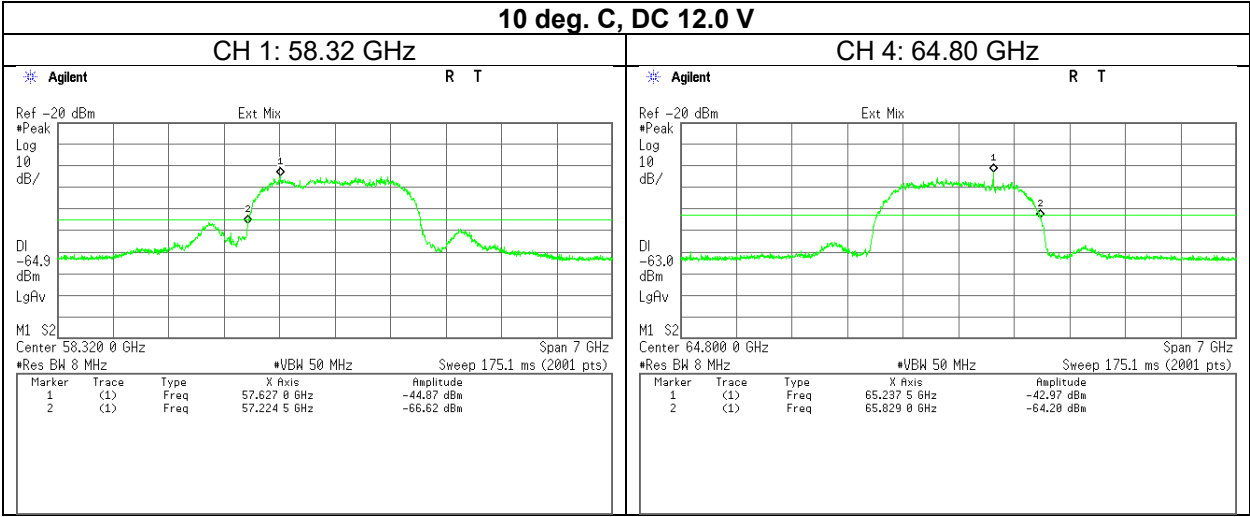
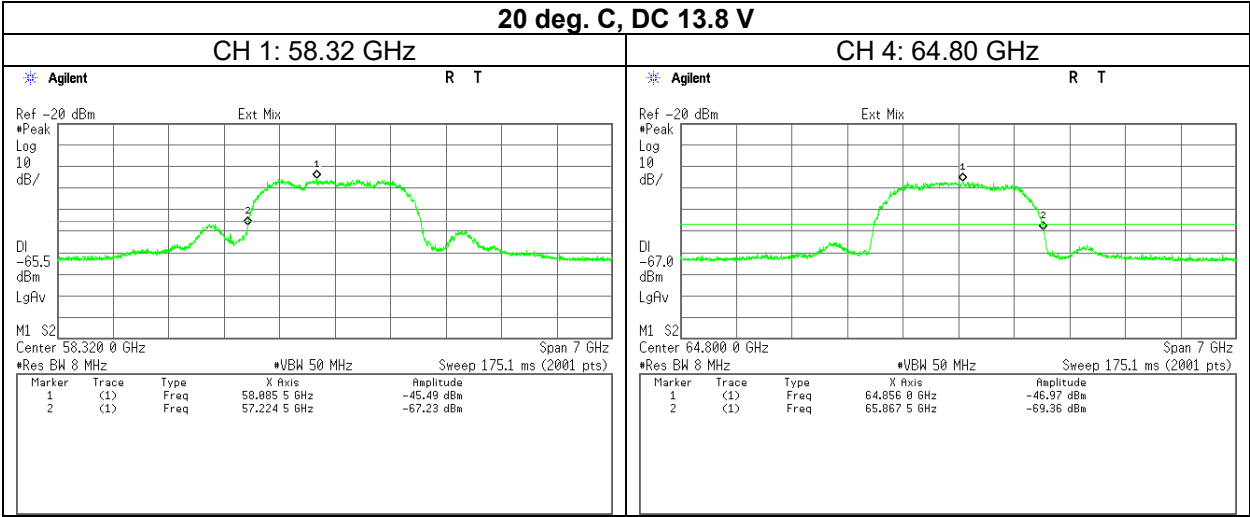
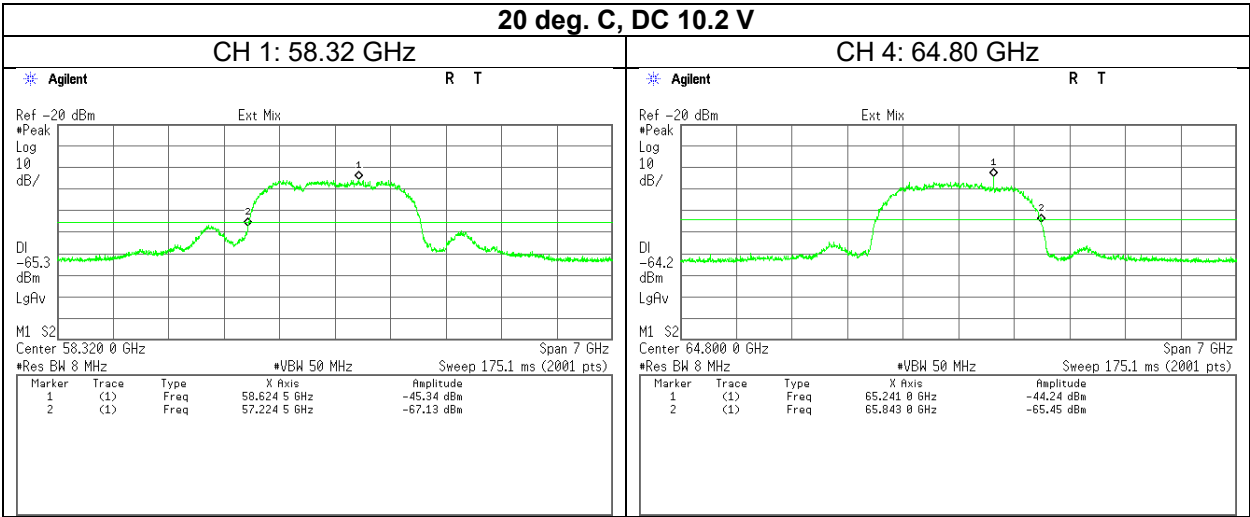
Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	CH 1 Lower Result [GHz]	CH 4 Upper Result [GHz]	
50	12.0	57.228	65.843	
40	12.0	57.225	65.843	
30	12.0	57.228	65.854	
20	12.0	57.228	65.861	
20	10.2	57.225	65.843	85 % of the minimum operating voltage, DC 12 V * 0.85
20	13.8	57.225	65.868	115 % of the maximum operating voltage, DC 12 V * 1.15
10	12.0	57.225	65.829	
0	12.0	57.225	65.850	
-10	12.0	57.228	65.861	
-20	12.0	57.225	65.864	

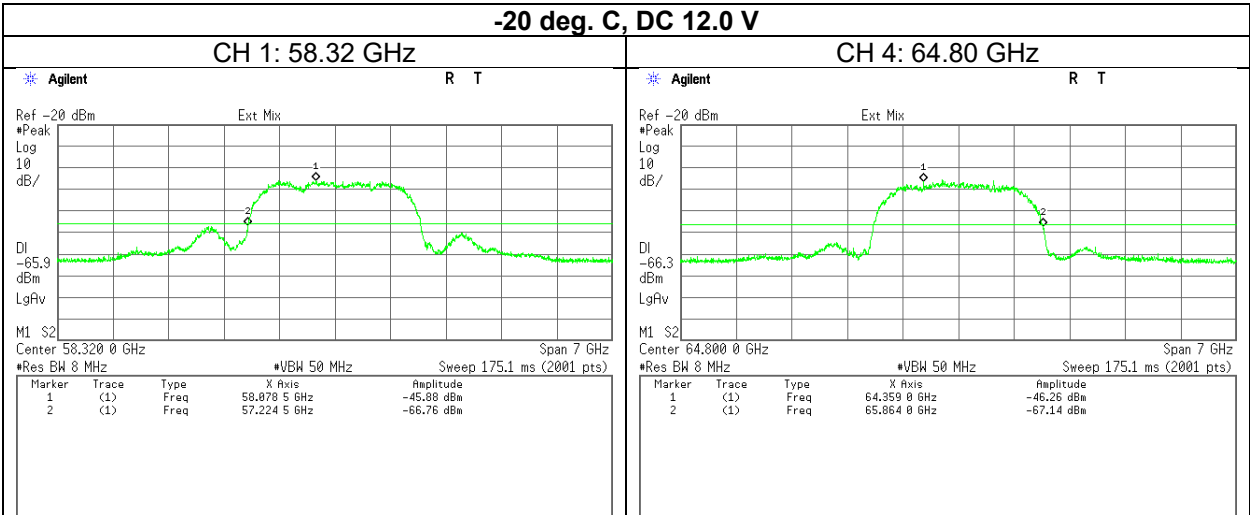
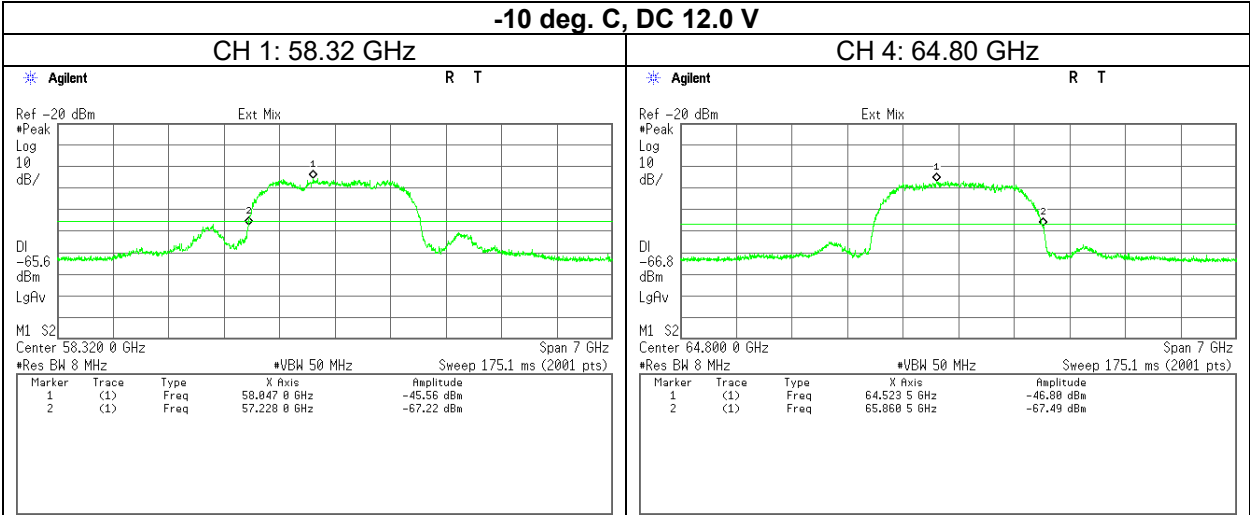
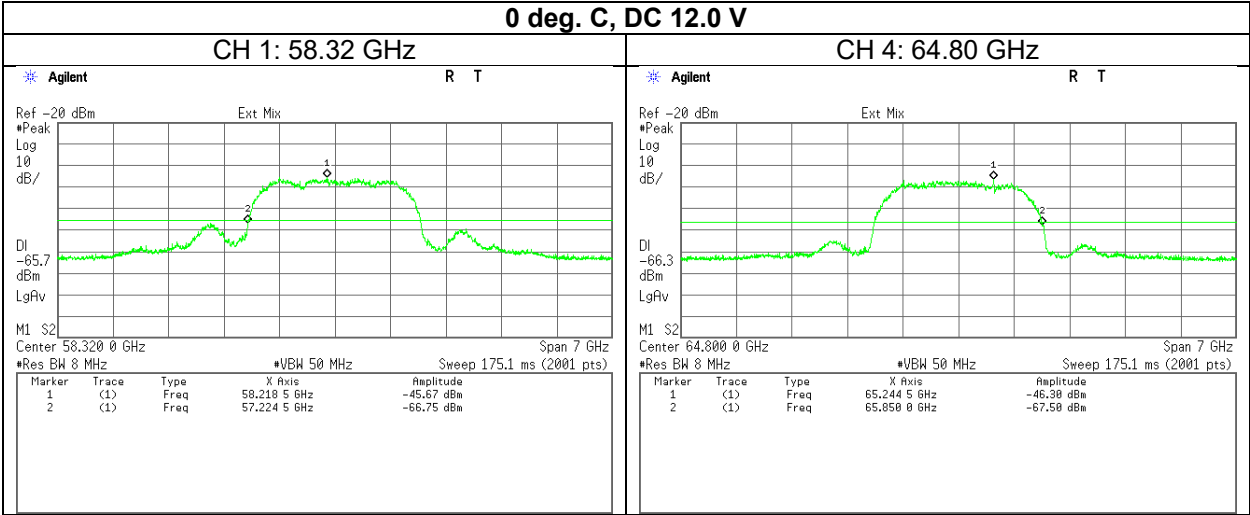
Fundamental emissions were contained within the frequency band 57 GHz to 71 GHz during all conditions of operation.

[Data]









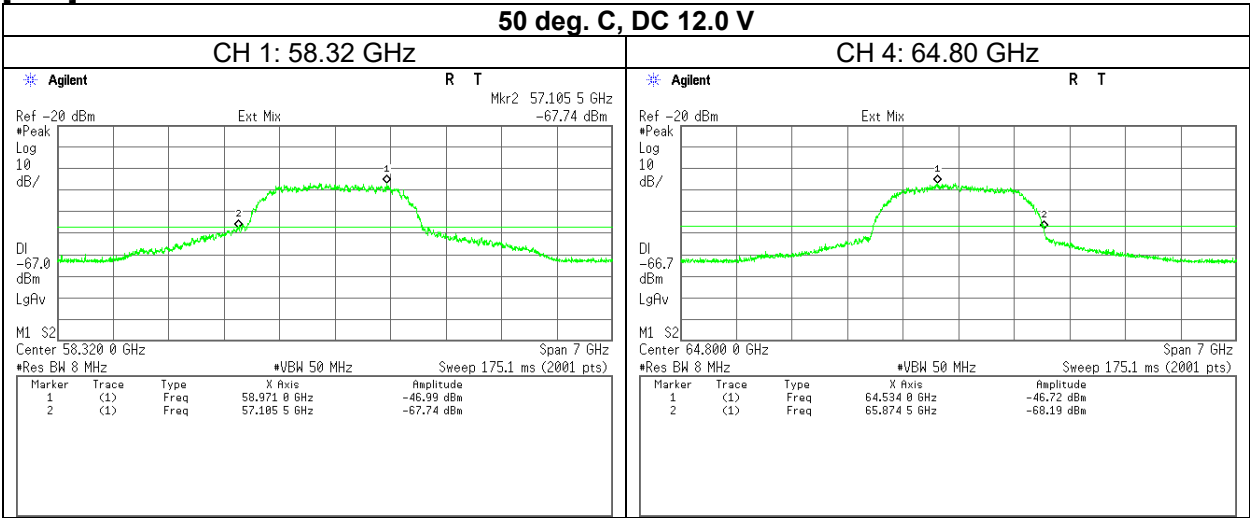
Frequency Stability

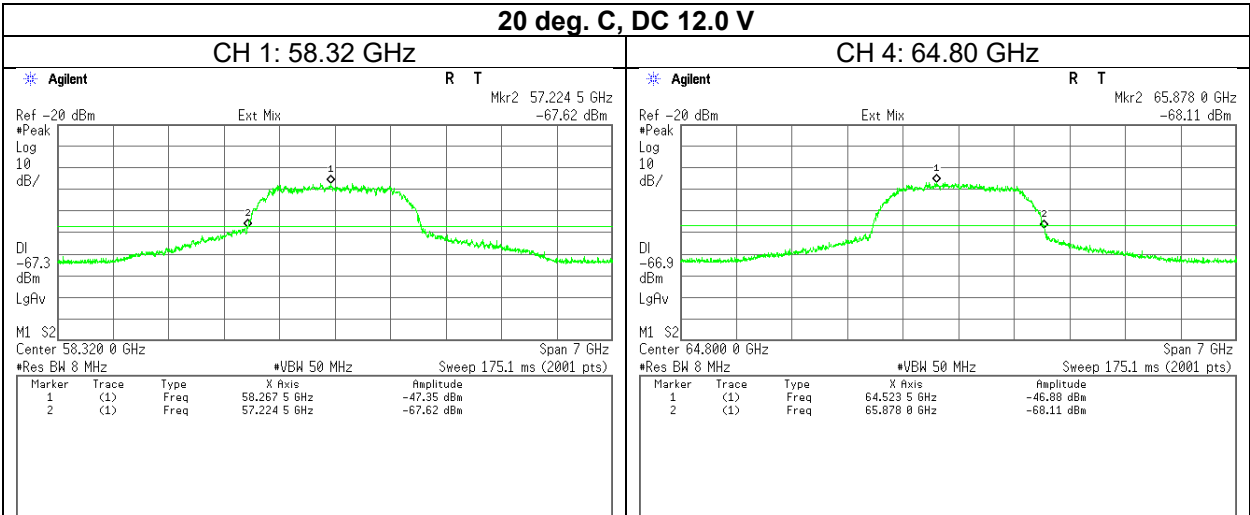
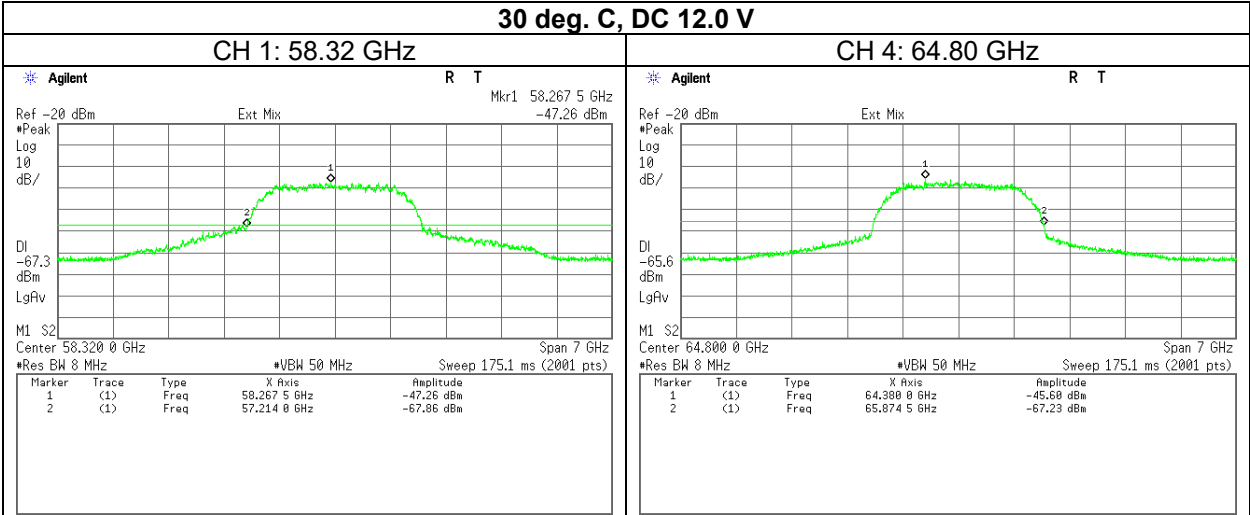
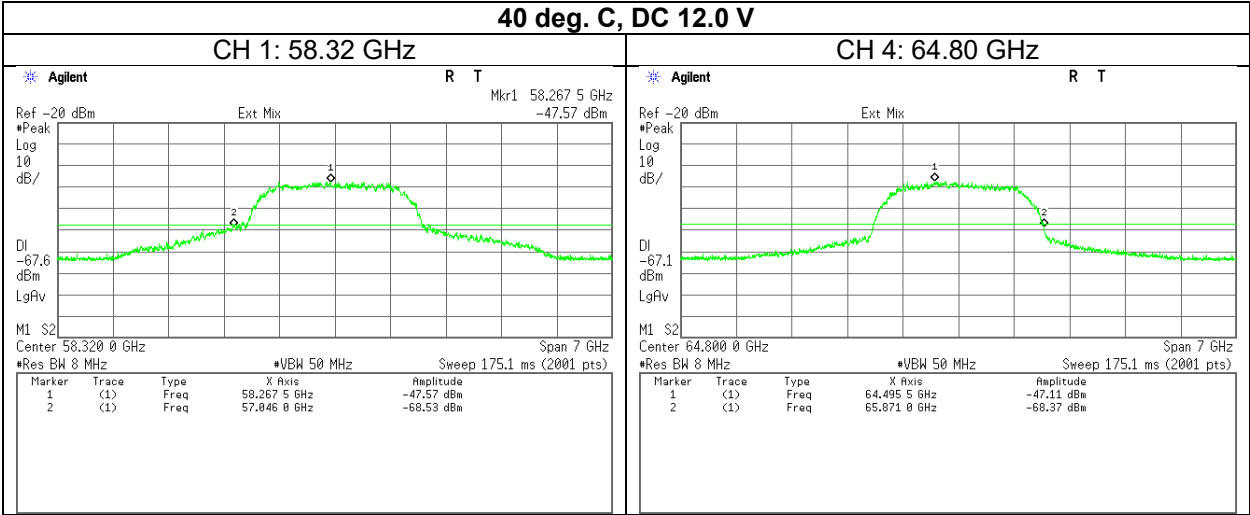
Test place	Ise EMC Lab.	
Measurement Room	No. 6	No. 6
Date	April 7, 2025	April 8, 2025
Temperature / Humidity	26 deg. C / 46 % RH	24 deg. C / 41 % RH
Engineer	Nachi Konegawa	Nachi Konegawa
Mode	Tx MCS 6	

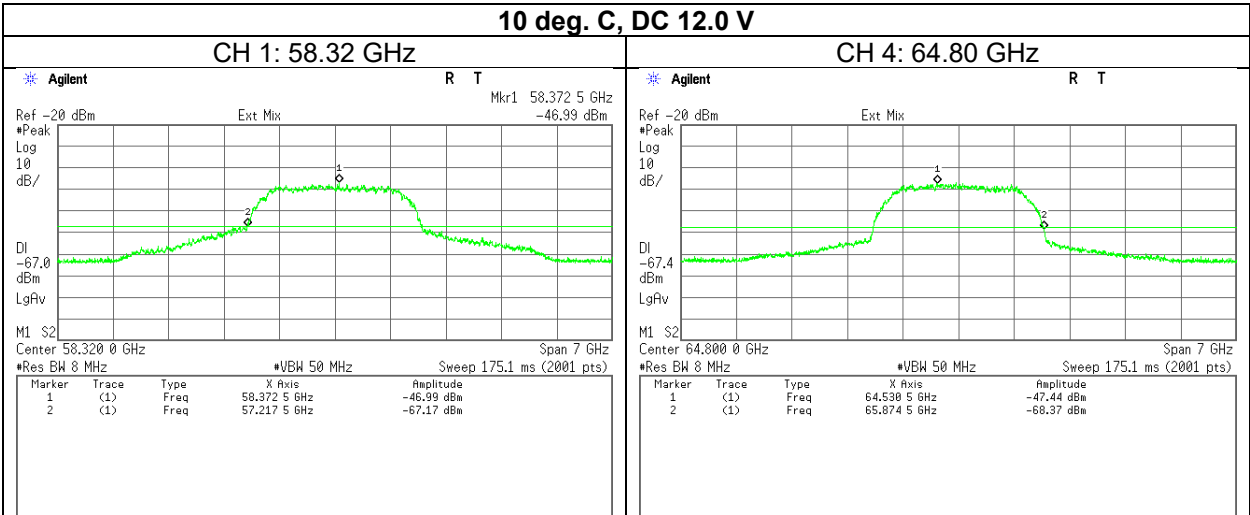
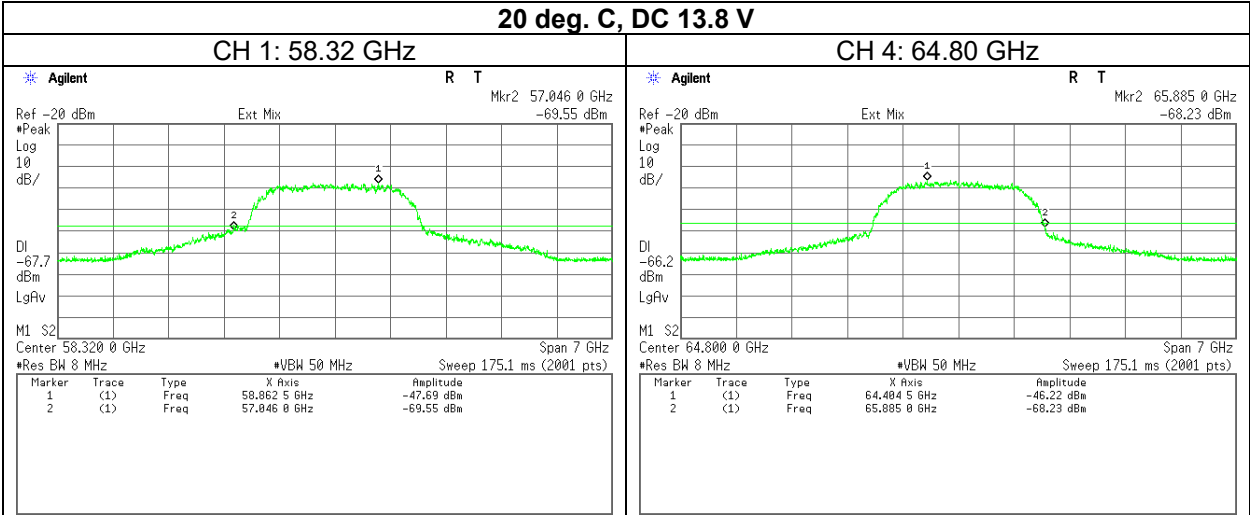
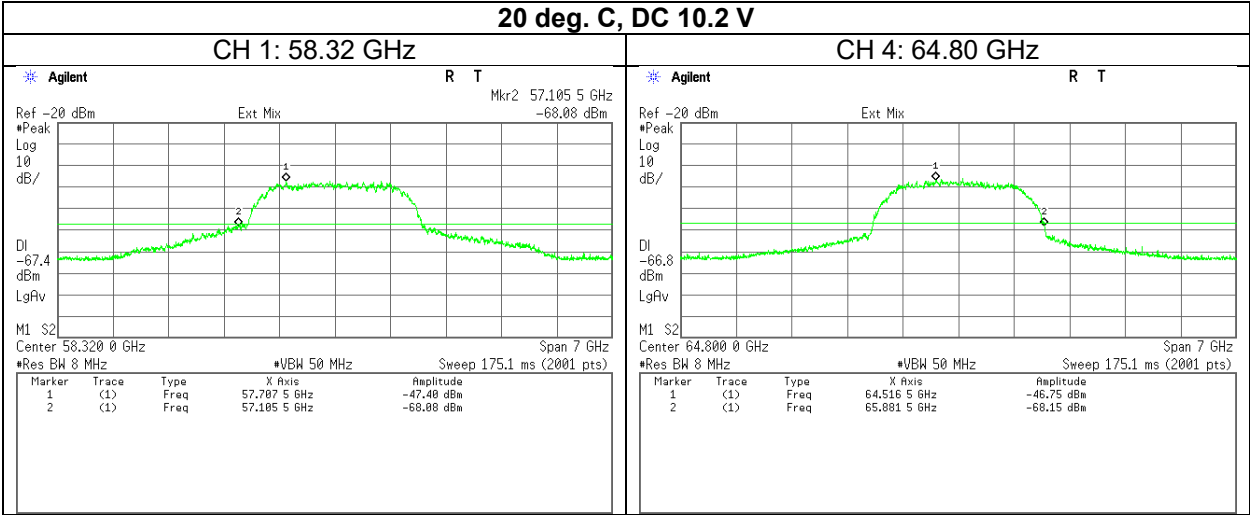
Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	CH 1 Lower Result [GHz]	CH 4 Upper Result [GHz]	
50	12.0	57.106	65.875	
40	12.0	57.046	65.871	
30	12.0	57.214	65.875	
20	12.0	57.225	65.878	
20	10.2	57.106	65.882	85 % of the minimum operating voltage, DC 12 V * 0.85
20	13.8	57.046	65.885	115 % of the maximum operating voltage, DC 12 V * 1.15
10	12.0	57.218	65.875	
0	12.0	57.221	65.878	
-10	12.0	57.204	65.882	
-20	12.0	57.221	65.871	

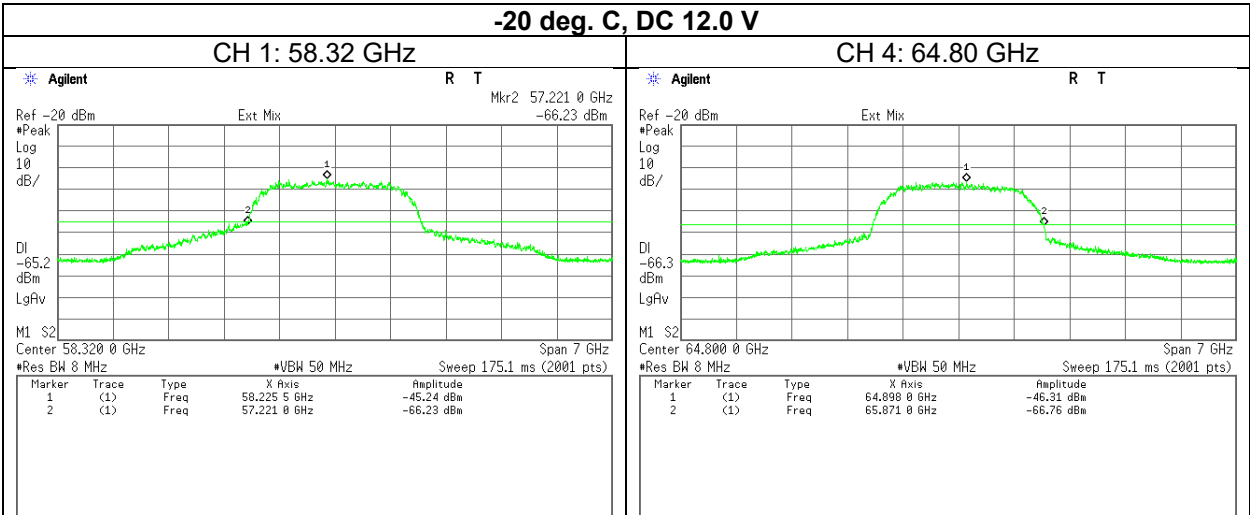
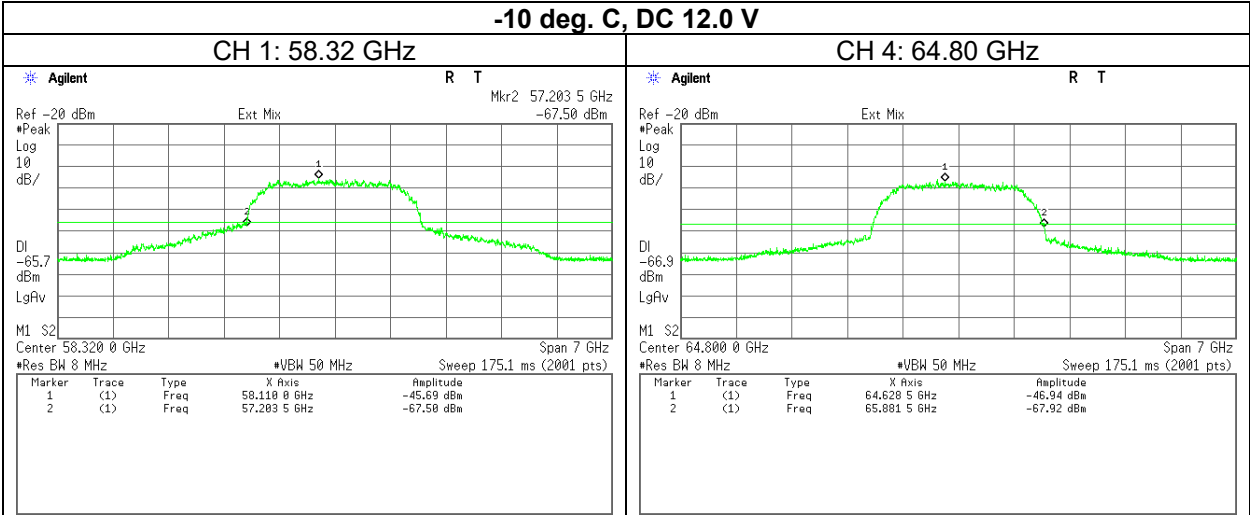
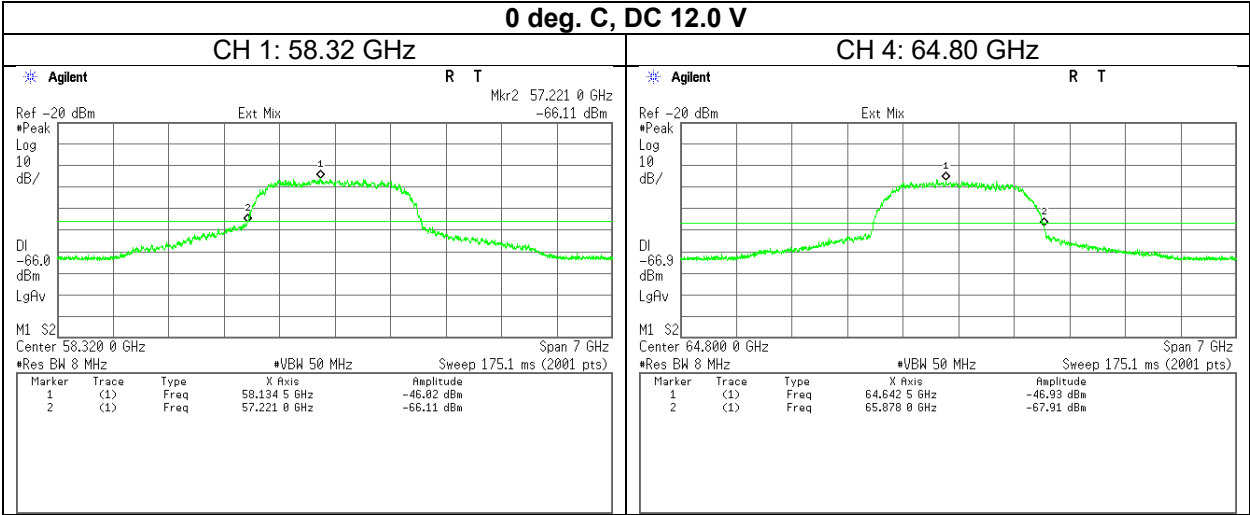
Fundamental emissions were contained within the frequency band 57 GHz to 71 GHz during all conditions of operation.

[Data]









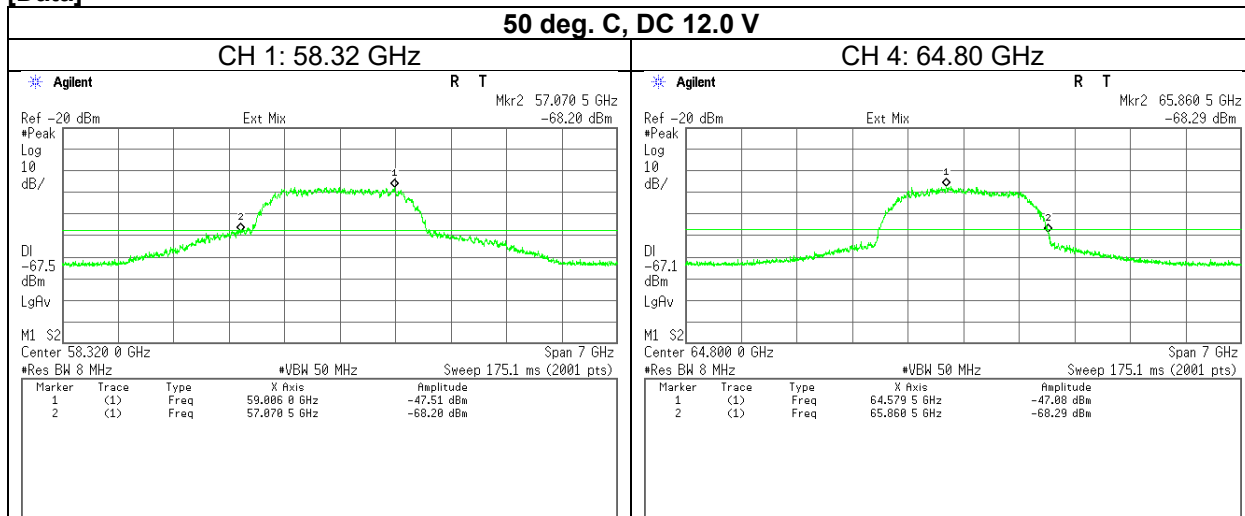
Frequency Stability

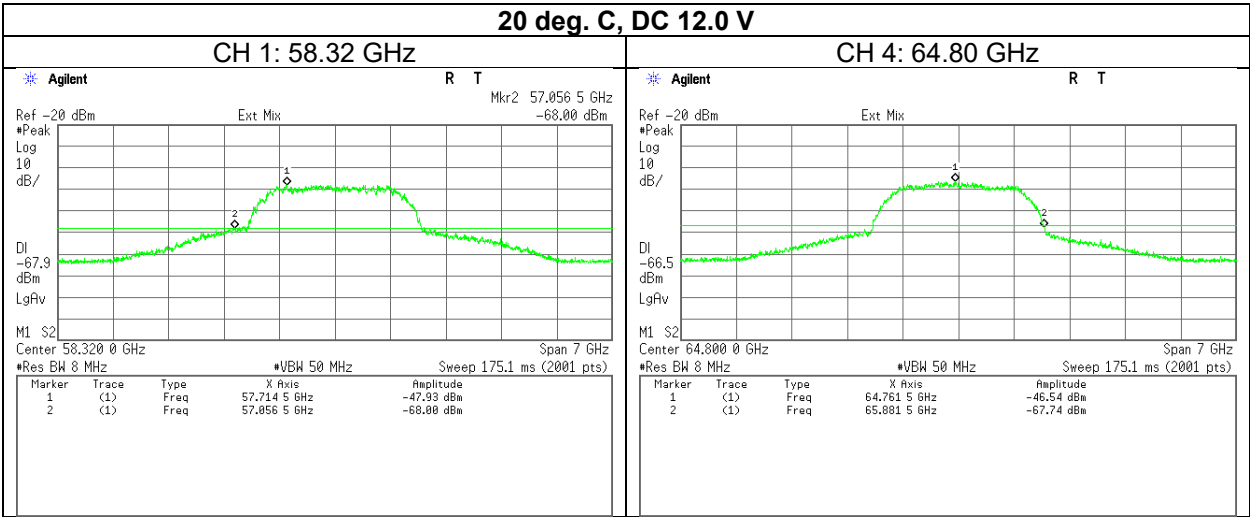
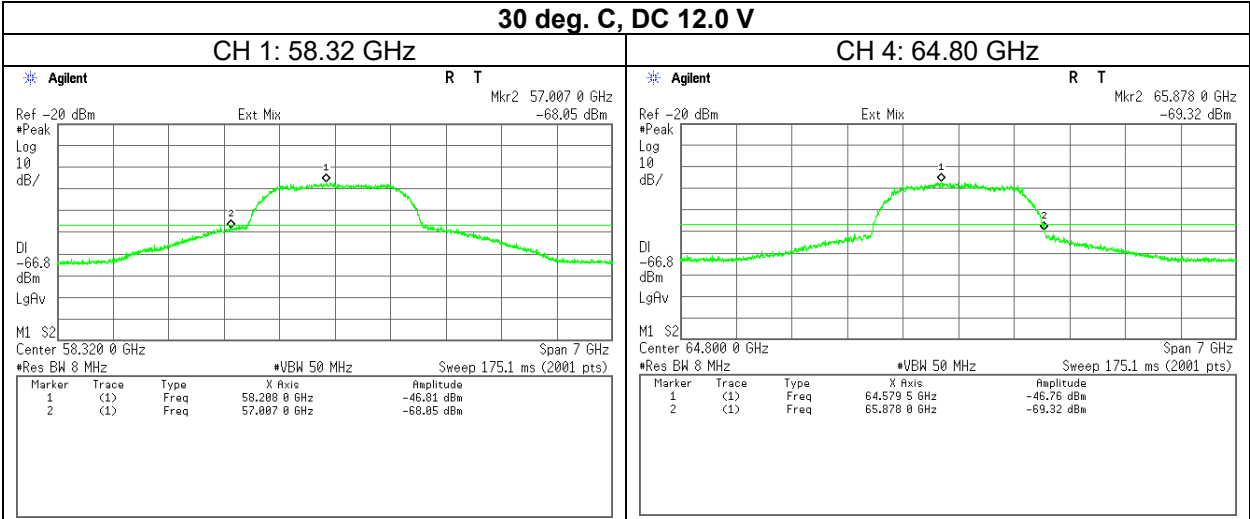
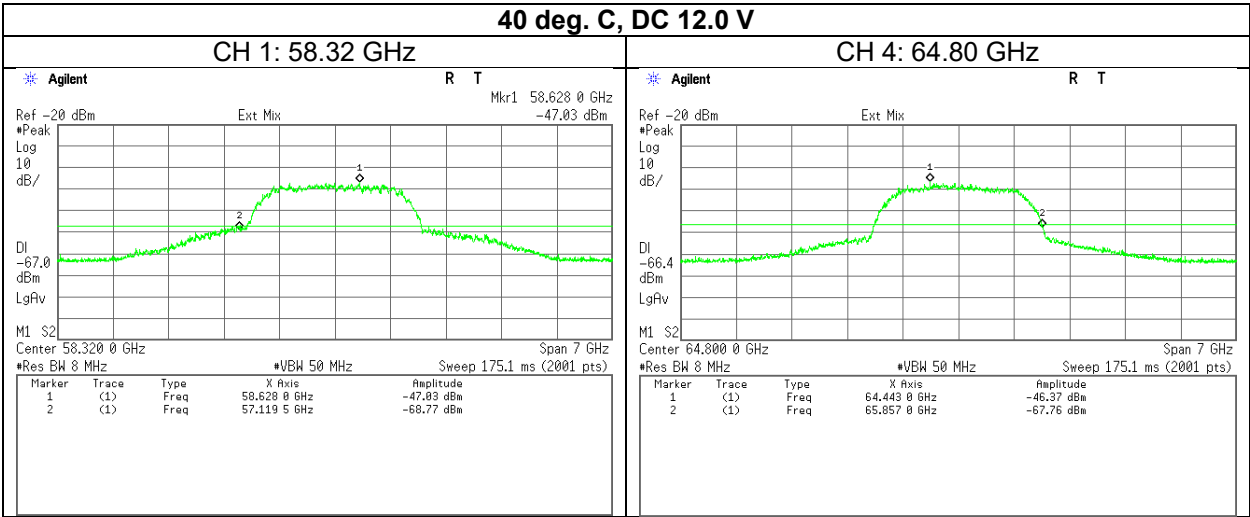
Test place	Ise EMC Lab.		
Measurement Room	No. 6	No. 6	No. 6
Date	April 7, 2025	April 8, 2025	April 25, 2025
Temperature / Humidity	26 deg. C / 46 % RH	24 deg. C / 41 % RH	22 deg. C / 40 % RH
Engineer	Nachi Konegawa	Nachi Konegawa	Junki Nagatomi
Mode	Tx MCS 10		

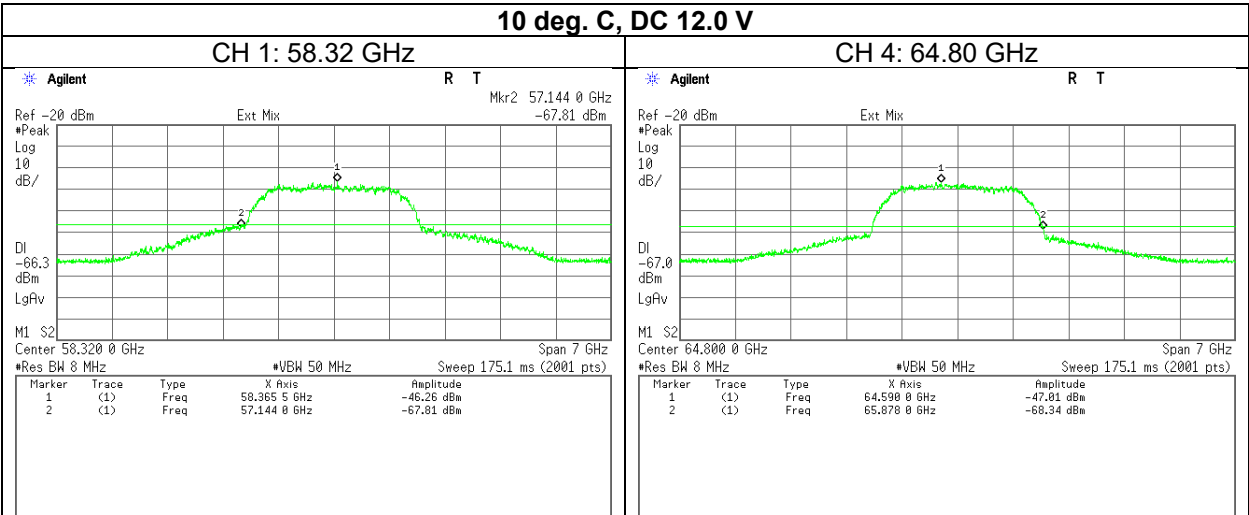
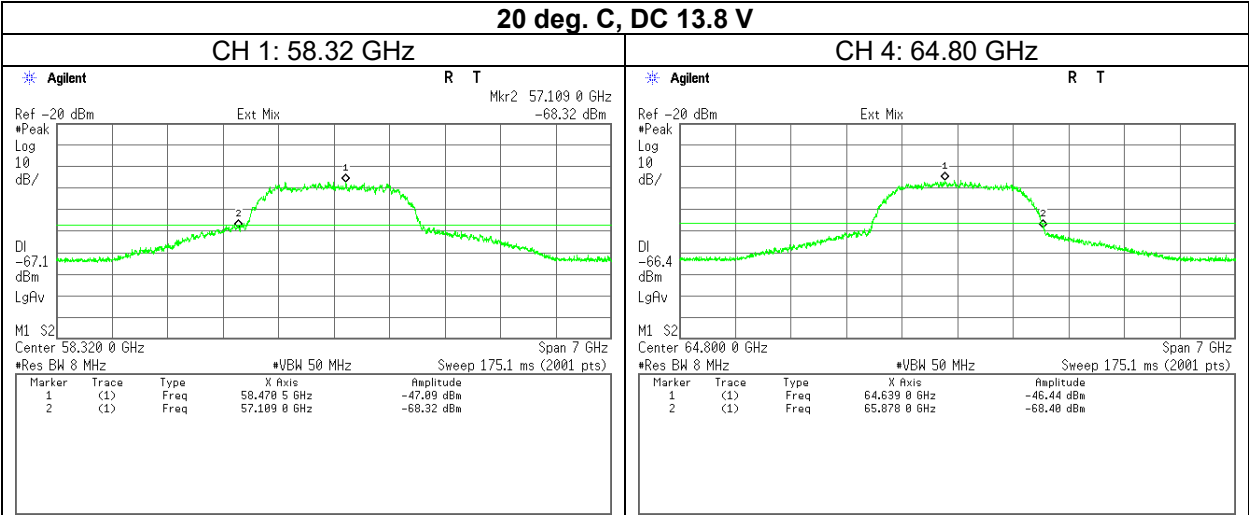
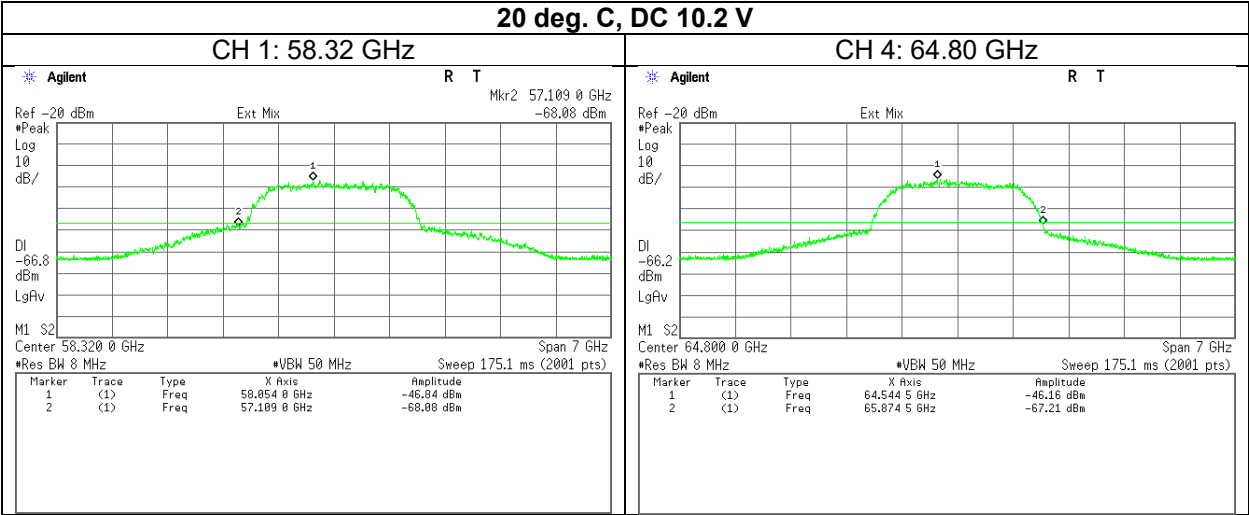
Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	CH 1 Lower Result [GHz]	CH 4 Upper Result [GHz]	
50	12.0	57.071	65.861	
40	12.0	57.120	65.857	
30	12.0	57.007	65.878	
20	12.0	57.057	65.882	
20	10.2	57.109	65.875	85 % of the minimum operating voltage, DC 12 V * 0.85
20	13.8	57.109	65.878	115 % of the maximum operating voltage, DC 12 V * 1.15
10	12.0	57.144	65.878	
0	12.0	57.172	65.875	
-10	12.0	57.043	65.868	
-20	12.0	57.218	65.878	

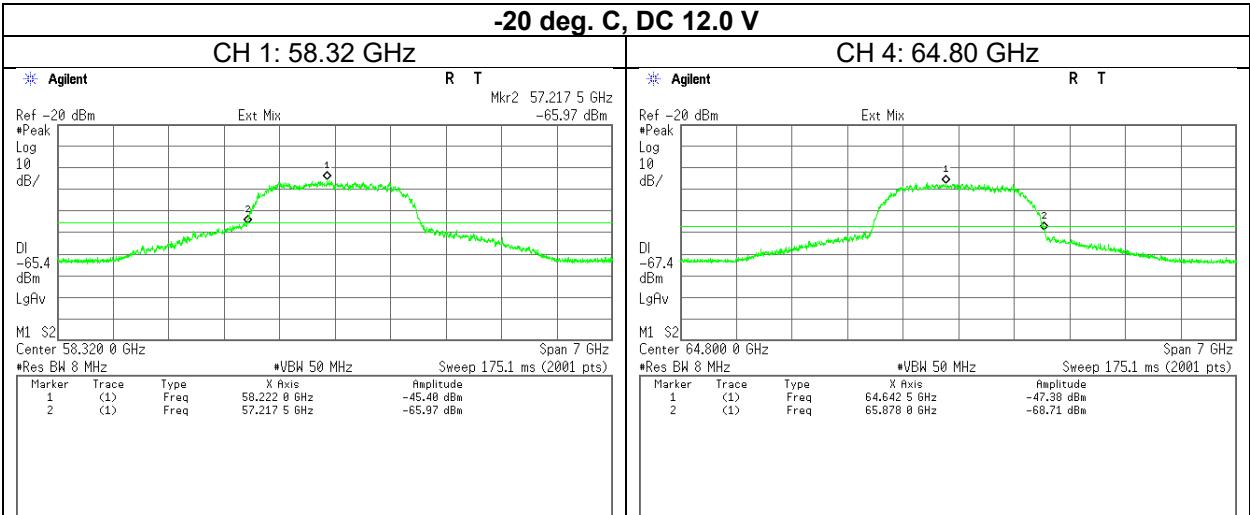
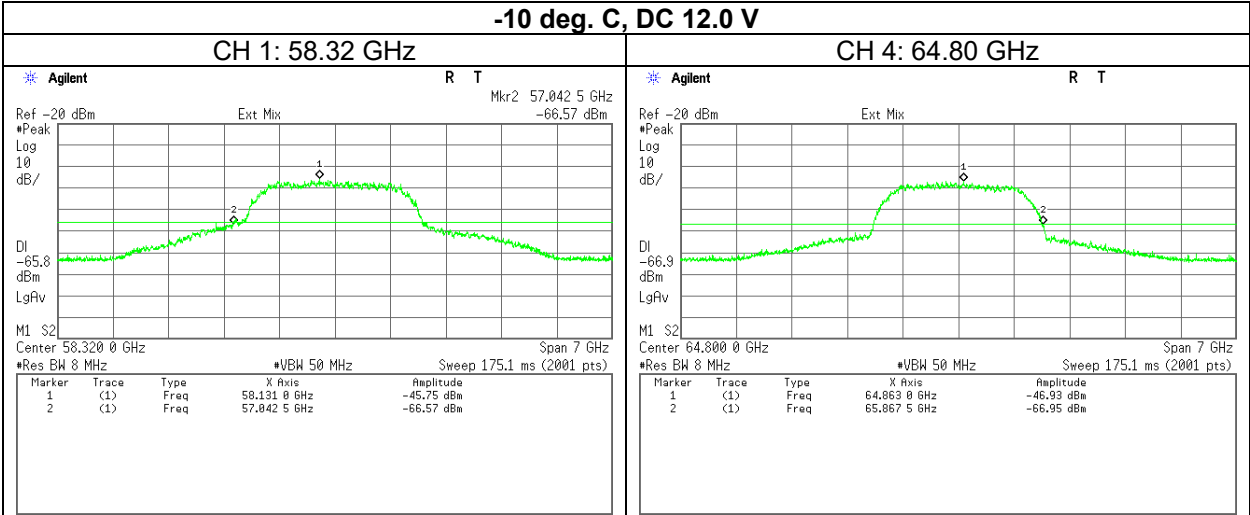
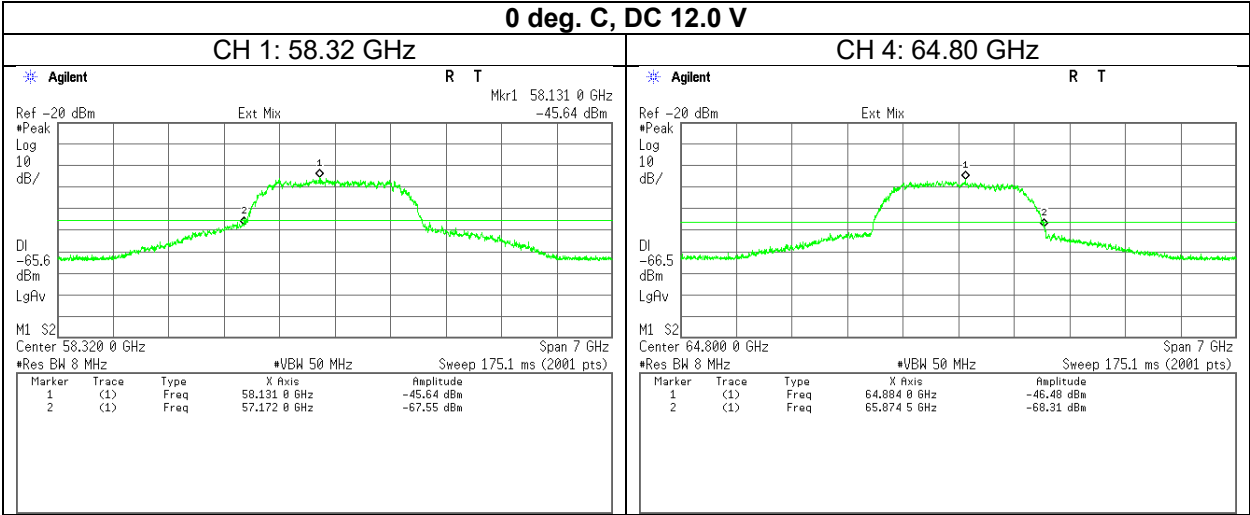
Fundamental emissions were contained within the frequency band 57 GHz to 71 GHz during all conditions of operation.

[Data]









Group Instillation

There are no external phase-locking inputs in this EUT.
Therefore, the EUT comply this requirement.

APPENDIX 2: Test instruments

Test equipment (1/3)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
CE	141216	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM14/ suciform141-PE/ 421-010/ RFM-E321(SW)	-/00640	07/06/2024	12
CE	141248	Attenuator	JFW Industries, Inc.	50FP-013H2 N	-	12/03/2024	12
CE	141358	LISN (AMN)	Schwarzbeck Mess-Elektronik OHG	NSLK8127	8127-730	07/09/2024	12
CE	141532	DIGITAL HiTESTER	HIOKI E. E. CORPORATION	3805	051201197	01/16/2025	12
CE	141538	LISN (AMN)	Schwarzbeck Mess-Elektronik OHG	NSLK8127	8127-732	07/14/2024	12
CE	141938	Terminator	TME	CT-01BP	-	12/03/2024	12
CE	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	06/05/2024	12
CE	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/22/2023	24
CE	142183	Measure	KOMELON	KMC-36	-	10/21/2024	12
CE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
CE	244709	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202103	01/19/2025	12
RE	141216	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM14/ suciform141-PE/ 421-010/ RFM-E321(SW)	-/00640	07/06/2024	12
RE	141227	Microwave Cable	Junkosha	MMX221- 00500DMSDMS	1502S305	03/03/2025	12
RE	141267	Logperiodic Antenna (200-1000MHz)	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	9111B-192	09/18/2024	12
RE	141326	Microwave Cable	Suhner	SUCOFLEX101	2874(1m) / 2877(5m)	03/03/2025	12
RE	141397	Coaxial Cable	UL-ISE EMC	-	-	11/29/2024	12
RE	141425	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+BBA9106	VHA 91031302	08/23/2024	12
RE	141429	Temperature and Humidity Chamber	Espec	PL-2KP	14015723	08/23/2024	12
RE	141506	Horn Antenna 15- 40GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9170	BBHA9170307	08/07/2024	12
RE	141508	Horn Antenna 1- 18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	557	05/17/2024	12
RE	141517	Horn Antenna 26.5- 40GHz	ETS-Lindgren	3160-10	152399	11/11/2024	12
RE	141532	DIGITAL HiTESTER	HIOKI E. E. CORPORATION	3805	051201197	01/16/2025	12
RE	141545	DIGITAL HiTESTER	HIOKI E. E. CORPORATION	3805	51201148	02/25/2025	12
RE	141558	Digital Tester (TRUE RMS MULTIMETER)	Fluke Corporation	115	17930030	05/17/2024	12
RE	141581	Microwave System Amplifier	Keysight Technologies Inc	83017A	00650	10/30/2024	12
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/14/2025	12
RE	141583	Pre Amplifier	SONOMA INSTRUMENT	310	260833	04/02/2025	12
RE	141588	Pre Amplifier	L3 Narda-MITEQ	AMF-6F-2600400- 33-8P / AMF-4F- 2600400-33-8P	1871355 / 1871328	01/23/2025	12
RE	141811	Power Meter	Keysight Technologies Inc	N1914A	MY53060017	06/06/2024	12
RE	141885	Spectrum Analyzer	Keysight Technologies Inc	E4448A	US44300523	01/24/2025	12
RE	141892	Signal Generator	Keysight Technologies Inc	E8257D	US49280311	11/22/2024	12
RE	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	06/05/2024	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	05/17/2024	12

Test equipment (2/3)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/22/2023	24
RE	142011	AC4_Semi Anechoic Chamber (NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	12/13/2023	24
RE	142017	AC4_Semi Anechoic Chamber (SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/14/2023	24
RE	142026	Diplexer	OML INC.	DPL26	-	-	-
RE	142032	Microwave Cable	Huber+Suhner	SUCOFLEX102	37511/2	-	-
RE	142036	Horn Antenna	Custom Microwave Inc.	HO6R	-	09/03/2024	12
RE	142039	Horn Antenna	Custom Microwave Inc.	HO4R	-	09/03/2024	12
RE	142041	Horn Antenna	Oshima Prototype Engineering Co.	A16-187	1	09/03/2024	12
RE	142047	Preselected Millimeter Mixer	Keysight Technologies Inc	11974V-E01	3001A00412	12/12/2024	12
RE	142048	Harmonic Mixer	Keysight Technologies Inc	11970W	2521 A01909	12/10/2024	12
RE	142049	Harmonic Mixer	OML INC.	M06HWD	D100709-1	12/16/2024	12
RE	142050	Block Downconverter	Keysight Technologies Inc	PS-X30-W10117A	13715	12/02/2024	12
RE	142053	Harmonic Mixer	OML INC.	M04HWD	Y100709-1	12/18/2024	12
RE	142055	Power Amplifier	SAGE Millimeter, Inc.	SBP-5037532015-1515-N1	11599-01	12/11/2024	12
RE	142183	Measure	KOMELON	KMC-36	-	10/21/2024	12
RE	142225	Tape Measure	ASKUL	-	-	-	-
RE	142230	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	142238	Power sensor	Keysight Technologies Inc	V8486A	MY44420112	06/06/2024	12
RE	142314	Attenuator	Pasternack Enterprises	PE7390-6	D/C 1504	06/06/2024	12
RE	142528	Detector	Millitech	DET-15-RPFW0	34	-	-
RE	142545	Fullband Tripler	Millitech	MUT-15-LF000	19	-	-
RE	142590	Waveguide Isolator	Keysight Technologies Inc	V365A	60004	-	-
RE	142592	Waveguide Isolator	Millitech	FBI-15-RSES0	1858	-	-
RE	151897	Microwave Cable	Huber+Suhner	SF101EA/11PC24/11PC24/2.5M	SN MY1726/1EA	04/14/2024	12
RE	154635	High Pass Filter 83 GHz - 110 GHz	Oshima Prototype Engineering Co.	A17-016	1	12/09/2024	12
RE	159919	Power Amplifier	SAGE Millimeter, Inc.	SBP-4035033018-2F2F-S1	12559-01	12/12/2024	12
RE	160324	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	10/25/2024	12
RE	176027	D-Band Low Noise Amplifier	SAGE Millimeter, Inc.	SBL-1141741860-0606-EI	15235-01	07/10/2024	12
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	180544	Horn Antenna	SAGE Millimeter, Inc.	SAZ-2410-10-S1	17343-01	06/03/2024	12
RE	180607	Power Amplifier	SAGE Millimeter, Inc.	SBP-7531142515-1010-E1	17343-01	09/06/2024	12
RE	180634	Horn Antenna	SAGE Millimeter, Inc.	SAZ-2410-15-S1	17343-01	06/03/2024	12
RE	199856	WR-10 HighPass Filter	Oshima Prototype Engineering Co.	A20-110-A01	001	03/06/2025	12
RE	200415	WR-15 Band Elimination Filter 57-66GHz	Oshima Prototype Engineering Co.	A20-110-A02	001	08/05/2024	12
RE	200436	WR-15 Band Elimination Filter 57-64GHz	Oshima Prototype Engineering Co.	A20-110-A03	001	08/05/2024	12
RE	207745	Coaxial Cable	UL-ISE	-	-	03/19/2025	12
RE	211944	Digital Storage Oscilloscope	Keysight Technologies Inc	DSOX6002A	MY59380318	12/20/2024	12
RE	220646	Attenuator	Huber+Suhner	6806 N-50-1	-	03/06/2025	12
RE	244709	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202103	01/19/2025	12
RE	244710	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202104	01/19/2025	12
RE	244712	Thermo-Hygrometer	HIOKI E. E. CORPORATION	LR5001	231202106	01/19/2025	12
RE	245788	Double Ridge Horn Antenna	Schwarzbeck Mess-Elektronik OHG	BBHA 9120 C	690	03/11/2025	12

Test equipment (3/3)

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	246002	Microwave Cable	Huber+Suhner	SF103/11PC35/ 11PC35/1000mm / SF126E/5000mm	800674(1m) / 610205(5m)	03/18/2025	12
RE	246778	Microwave Cable	Huber+Suhner	SF126E/11PC35/ 11PC35/2000MM	SN 537000/126E	-	-
RE	252514	Active Loop Antenna	Schwarzbeck Mess-Elektronik OHG	FMZB 1519-60 D	1519-60 D-067	09/26/2024	12
RE	254838	Microwave Cable	Huber+Suhner	SUCOFLEX102	2001316 /2	12/03/2024	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:

CE: Conducted Emission

RE: Radiated Emission