

Report on the EMC Testing of:

KYOCERA Corporation
Mobile Phone, Model: EB1173

In accordance with FCC Part 15 Subpart B Class B

Prepared for: KYOCERA Corporation
Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku,
Yokohama-shi, Kanagawa, 224-8502 Japan
Phone: +81-45-943-6253 Fax: +81-45-943-6314



Japan

Add value.
Inspire trust.

COMMERCIAL-IN-CONFIDENCE

Document Number: JPD-TR-23072-0

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD Japan Ltd. document control rules.

EXECUTIVE SUMMARY – Result: Complied

A sample of this product was tested and the result above was confirmed in accordance with FCC Part 15 Subpart B. (Applied only the test items mentioned in section 1.5 and excluded the deviations mentioned in section 1.4 of this document.)



DISCLAIMER AND COPYRIGHT

The results in this report are applicable only to the equipment tested.
This report shall not be re-produced except in full without the written approval of TÜV SÜD Japan Ltd.

Client provided data, for which TÜV SÜD Japan Ltd. takes no responsibility, which can affect validity of results within this report is clearly identified.

ACCREDITATION

This test report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the federal government.

TÜV SÜD Japan Ltd.
Yonezawa Testing Center
5-4149-7 Hachimanpara,
Yonezawa-shi, Yamagata,
992-1128 Japan

Phone: +81 (0) 238 28 2881
www.tuvsud.com/ja-jp



Japan

Additional signatures required by FCC 47 CFR Part 2, § 2.938 (b) (10)

Signatures of the individuals responsible for testing the product

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC Part 15 Subpart B. The sample tested was found Complied compliant with the requirements defined in the applied rules.

NAME	RESPONSIBLE FOR	SIGNATURE
Yuki Shindo	Testing	
Mitsuhiro Takeda	Testing	
Hiroomi Tsuchiya	Testing	



Contents

1	Summary of Test	4
1.1	Modification history of the test report	4
1.2	Standards	4
1.3	Measurement standards	4
1.4	Deviation from standards	4
1.5	List of applied test(s) of the EUT	4
1.6	Test information.....	4
1.7	Test set up.....	5
1.8	Test period	5
2	Equipment Under Test	6
2.1	EUT information	6
2.2	Modification to the EUT	6
2.3	Variation of family model(s).....	6
2.4	Operation mode.....	7
3	Configuration of Equipment.....	8
3.1	Equipment used	8
3.2	Cable(s) used	8
3.3	System configuration.....	9
4	Test Result	11
4.1	Conducted emission at mains port.....	11
4.2	Radiated emission (below 1 GHz).....	14
4.3	Radiated emission (above 1 GHz)	22
5	Measurement Uncertainty	31
6	Laboratory Information.....	32
	Appendix A. Test Equipment.....	33

1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-23072-0	First Issue	Refer to the cover page

1.2 Standards

FCC Part 15 Subpart B

1.3 Measurement standards

ANSI C63.4 2014

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

Regarding determination of conformity to the emission test, a value of measurement uncertainty was taken in account.

Test Name	Classification of EUT	Test	Worst Point (Margin)	Result	Remarks
Conducted emission at mains port	Class B	Applied	S/N: 350614610006466 L2 0.151 MHz QP 9.8 dB	Pass	-
Radiated emission (below 1 GHz)	Class B	Applied	S/N: 350614610006532 H 152.500 MHz QP 9.4 dB	Pass	-
Radiated emission (above 1 GHz)	Class B	Applied	S/N: 350614610006466 V 2666.096 MHz AV 16.7 dB	Pass	-

1.6 Test information

The following EMC test conditions were applied based on the conditions specified by the applicant.

- Tested supply voltage and supply frequency
- Operation mode

Conducted emission at mains port

At the applicant's judgment, the test was performed with power supplied from the PC.

Some tests were performed using AC adapter to maintain test operation

This product supports two types of main memory Samsung (model number: KM2L9001CM-B518) and SK Hynix (model number: H9QT0GECN6X145).

All operation modes were performed on the EUT with Samsung Main memory and in its worst case on the EUT with SK Hynix main memory in accordance with the judgment of the applicant.



Japan

1.7 Test set up

Table-top

1.8 Test period

28-July-2023 - 31-July-2023

2 Equipment Under Test

All information in this chapter was provided by the applicant.

2.1 EUT information

Applicant	KYOCERA Corporation Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa, 224-8502 Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment Under Test (EUT)	Mobile Phone
Model number	EB1173
Serial number	350614610006466, 350614610006532
Trade name	KYOCERA
Authorization	JOYEB1173
Number of sample(s)	2
EUT condition	DMT1
Maximum frequency	2200 MHz
Power rating	Battery: DC 3.87 V DC 5 V (USB) DC 5 V (AC adapter)
Size	(W) 81.2 mm x (D) 164.9 mm x (H) 17.5 mm

2.2 Modification to the EUT

The table below details modifications made to the EUT during the test project.

Modification State	Description of Modification	Modification fitted by	Date of Modification
EB1173, S/N: 350614610006466			
0	As supplied by the applicant	Not Applicable	Not Applicable
EB1173, S/N: 350614610006532			
0	As supplied by the applicant	Not Applicable	Not Applicable

2.3 Variation of family model(s)

2.3.1 List of family model(s)

Not applicable

2.3.2 Reason for selection of EUT

Not applicable



Japan

2.4 Operation mode

1. Out Camera + Earphone with ADP mode
 - i) Power ON
 - ii) Record

2. In Camera + Earphone with ADP mode
 - i) Power ON
 - ii) Record

3. MP4 + Earphone with ADP mode
 - i) Power ON
 - ii) Execution of Color Bar moving picture data

4. MP4 with ADP mode
 - i) Power ON
 - ii) Execution of Color Bar moving picture data

5. MP4 with Earphone + USB Read with PC mode
 - i) Power ON
 - ii) EUT connects to PC via USB cable
 - iii) Read/write of MP4 moving picture data
 - iv) Execution of Color Bar moving picture data

3 Configuration of Equipment

Numbers assigned to equipment or cables in "3.1 Equipment(s) used" and "3.2 Cable(s) used" correspond to numbers in "3.3 System configuration".

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

3.1 Equipment used

No.	Equipment	Company	Model No.	Serial No.	Authorization	Remarks
EUT1	Mobile Phone	KYOCERA	EB1173	350614610006466	JOYEB1173	EUT*1
				350614610006532	JOYEB1173	EUT*2
AE1	AC adapter	KYOCERA	KYCAV1	IKA	N/A	*3
AE2	Earphone	N/A	N/A	N/A	N/A	-
AE3	Personal Computer	Lenovo	4334	CB07410173	DoC	*4
AE4	AC adapter	Lenovo	CPA-A065	11S36001943ZZ20011116S	N/A	*4

*1: Memory: Samsung

*2: Memory: SK Hynix

*3: AC adapter is connected to keep operating.

*4: The property of TÜV SÜD Japan was used.

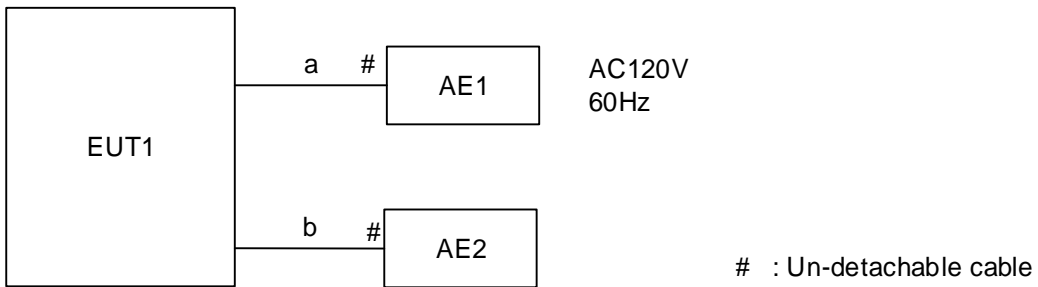
3.2 Cable(s) used

No.	Cable	Length (m)	Shield	EUT accessory Ferrite core	Remarks
a	DC cable	1.2	Yes	-	-
b	Earphone cable	1.0	No	-	-
c	USB cable	1.0	Yes	-	-
d	DC cable for PC AC adapter	1.8	No	-	*1
e	AC power cord for PC AC adapter	1.0	No	-	*1

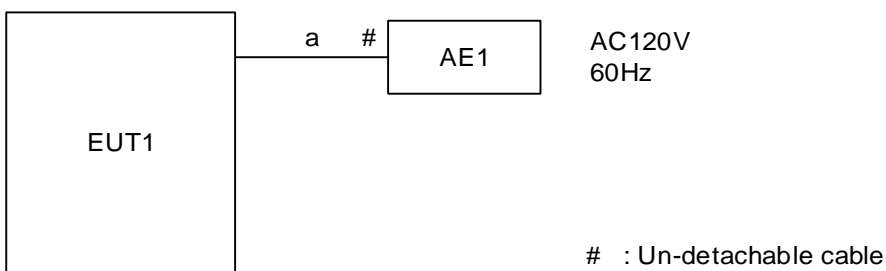
*1: The property of TÜV SÜD Japan was used.

3.3 System configuration

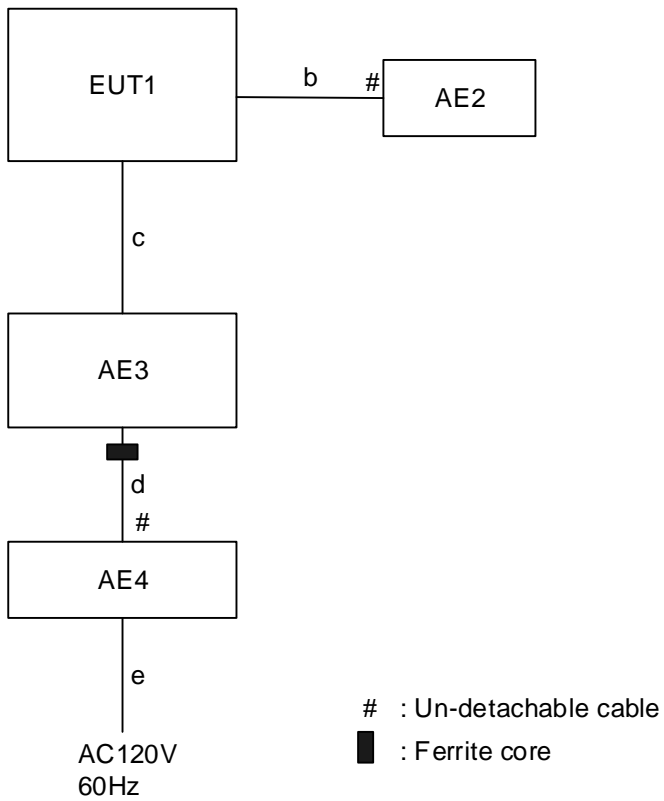
1. Out Camera + Earphone with ADP mode
2. In Camera + Earphone with ADP mode
3. MP4 + Earphone with ADP mode



4. MP4 with ADP mode



5. MP4 with Earphone + USB Read with PC mode



4 Test Result

4.1 Conducted emission at mains port

4.1.1 Measurement condition

EUT is placed on a non-conducting table for table-top equipment or on insulation material for a floor-standing equipment. In addition, a table-top equipment is located 0.4 m to a metal reference plane.

Line Impedance Stabilization Network (LISN) is placed 0.8 m away from the EUT. The power code of the EUT is connected to LISN and its excess part is bundled in the center. The length of bundling is 0.3-0.4 m.

A power code of a peripheral is connected to LISN and terminated into 50 Ω .

Excess cables between equipment are bundled in the center. The length of bundling is 0.3-0.4 m.

Where LISN cannot be applied, the test is performed using a voltage probe.

After overall frequency range is investigated with spectrum analyzer using peak detector, measurements are performed with test receiver in setting to the defined values.

Items	Description
Frequency range	0.15 MHz-30 MHz
Test place	10 m Semi-Anechoic Chamber No. 1
EUT was placed on	Styrene foam table (W) 2.0 x (D) 1.0 x (H) 0.8 m
Metal reference plane	Vertical
Test receiver setting	Detector: Quasi-peak, Average Bandwidth: 9 kHz
Line Impedance Stabilization Network (LISN)	Specification: 50 Ω /50 μ H Distance from EUT: 0.8 m

4.1.2 Calculation method

Emission Level = Reading + Factor*

Margin = Limit – Emission Level

*Note: Factor = LISN factor + Cable system loss + ATT. loss

Example)

Limit @ 6.770 MHz: 60.0 dB μ V (Quasi-peak)
50.0 dB μ V (Average)

Quasi-peak Reading = 41.2 dB μ V Factor = 10.3 dB
Emission level = 41.2 + 10.3 = 51.5 dB μ V
Margin = 60.0 - 51.5 = 8.5 dB

Average Reading = 35.0 dB μ V Factor = 10.3 dB
Emission level = 35.0 + 10.3 = 45.3 dB μ V
Margin = 50.0 - 45.3 = 4.7 dB

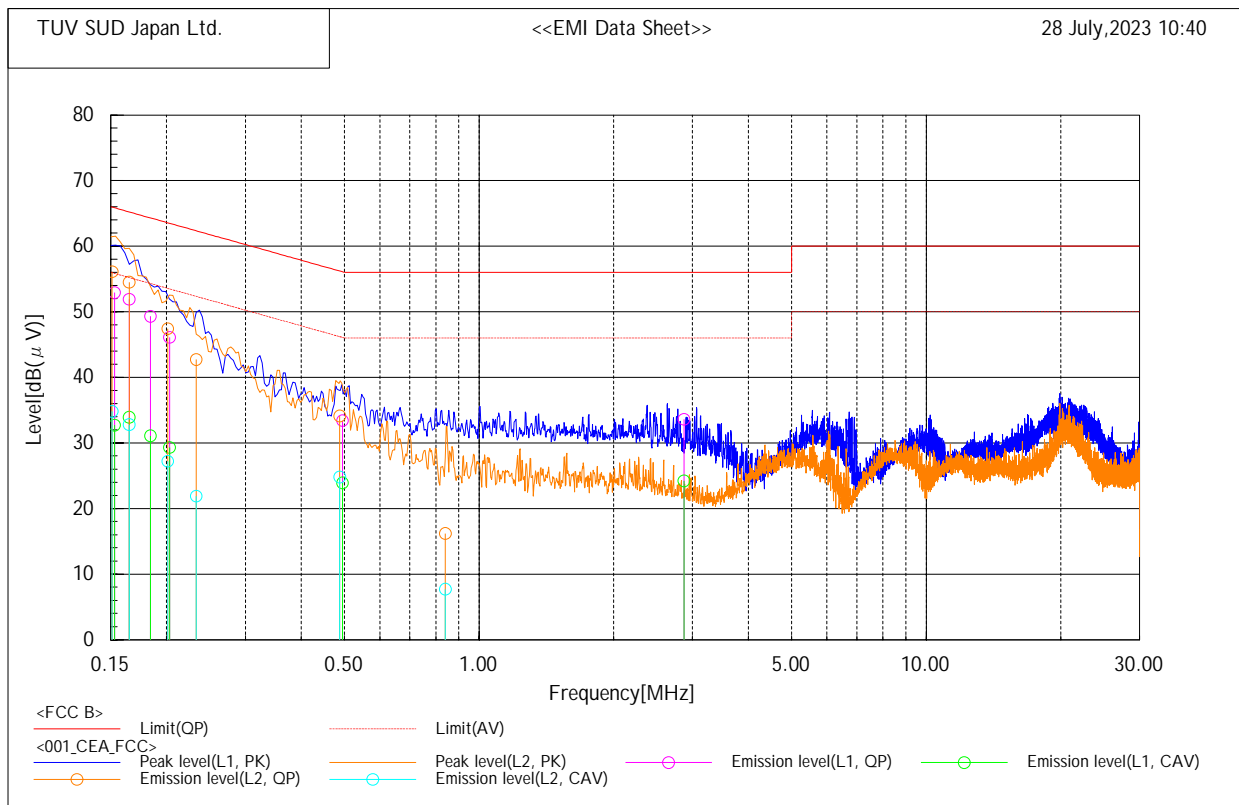


4.1.3 Test data and Configuration photographs

Operation mode	MP4 with Earphone + USB Read with PC mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0 EB1173, S/N: 350614610006532 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 10:40
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : DC 5 V

***** CONDUCTED EMISSION *****
 [10m Semi-anechoic chamber #1]



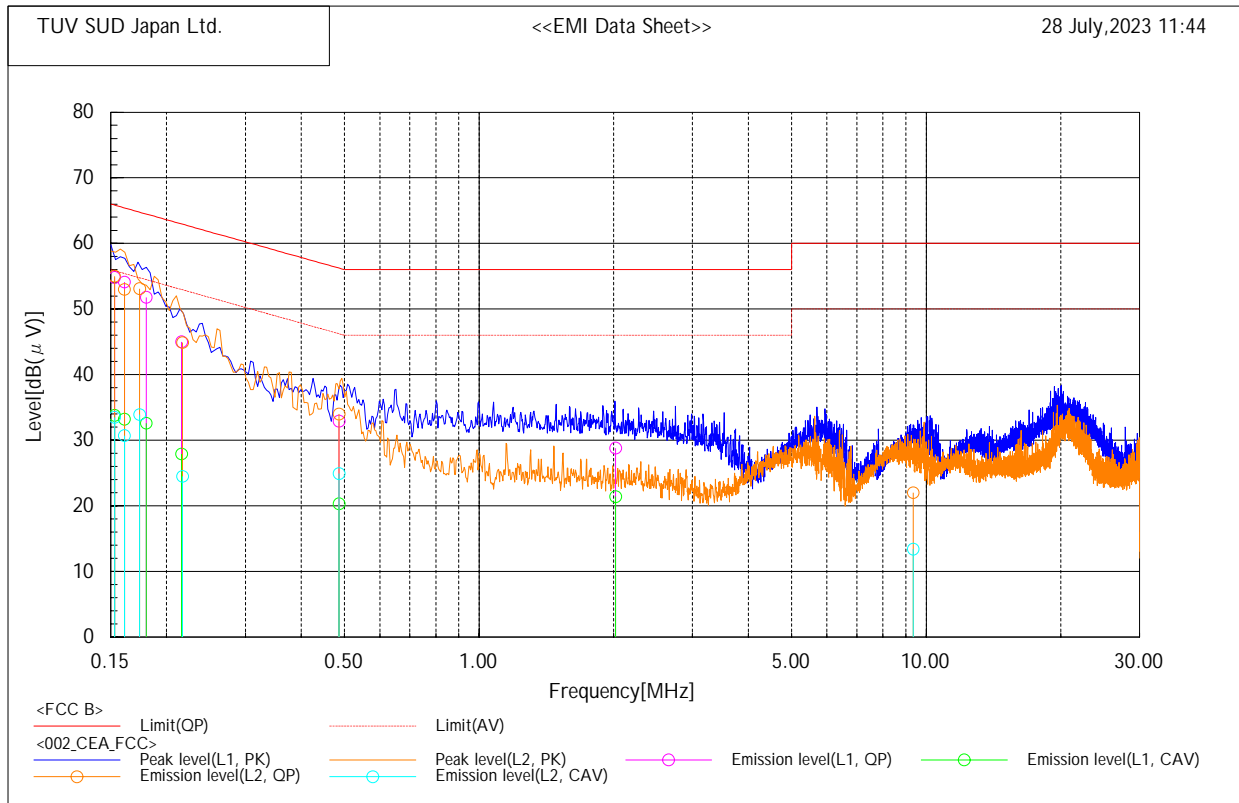
Final Result

Line	Frequency MHz	Reading dB(uV)		Factor dB	Level dB(uV)		Limit dB(uV)		Margin dB	
		QP	CAV		QP	CAV	QP	AV	QP	AV
L1	0.153	42.4	22.2	10.5	52.9	32.7	65.8	55.8	12.9	23.1
L1	0.165	41.5	23.5	10.4	51.9	33.9	65.2	55.2	13.3	21.3
L1	0.184	38.9	20.7	10.4	49.3	31.1	64.3	54.3	15.0	23.2
L1	0.203	35.7	18.9	10.4	46.1	29.3	63.5	53.5	17.4	24.2
L1	0.495	23.1	13.6	10.3	33.4	23.9	56.1	46.1	22.7	22.2
L1	2.871	23.1	13.7	10.5	33.6	24.2	56.0	46.0	22.4	21.8
L2	0.151	45.6	24.3	10.5	56.1	34.8	65.9	55.9	9.8	21.1
L2	0.165	44.1	22.4	10.4	54.5	32.8	65.2	55.2	10.7	22.4
L2	0.201	37.0	16.8	10.4	47.4	27.2	63.6	53.6	16.2	26.4
L2	0.233	32.3	11.5	10.4	42.7	21.9	62.3	52.3	19.6	30.4
L2	0.488	23.8	14.5	10.3	34.1	24.8	56.2	46.2	22.1	21.4
L2	0.840	5.9	-2.6	10.3	16.2	7.7	56.0	46.0	39.8	38.3



S/N: 350614610006532 (Memory: SK Hynix)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 11:44
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : DC 5 V

***** CONDUCTED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

Line	Frequency MHz	Reading		Factor dB	Level		Limit		Margin	
		dB(μV)			dB(μV)		dB(μV)		dB	
		QP	CAV		QP	CAV	QP	AV	QP	AV
L1	0.153	44.3	23.3	10.5	54.8	33.8	65.8	55.8	11.0	22.0
L1	0.161	43.6	22.7	10.5	54.1	33.2	65.4	55.4	11.3	22.2
L1	0.180	41.4	22.2	10.4	51.8	32.6	64.5	54.5	12.7	21.9
L1	0.216	34.6	17.5	10.4	45.0	27.9	63.0	53.0	18.0	25.1
L1	0.486	22.6	10.0	10.3	32.9	20.3	56.2	46.2	23.3	25.9
L1	2.019	18.3	10.9	10.5	28.8	21.4	56.0	46.0	27.2	24.6
L2	0.153	44.5	23.0	10.5	55.0	33.5	65.8	55.8	10.8	22.3
L2	0.161	42.5	20.2	10.5	53.0	30.7	65.4	55.4	12.4	24.7
L2	0.174	42.7	23.5	10.4	53.1	33.9	64.8	54.8	11.7	20.9
L2	0.217	34.5	14.1	10.4	44.9	24.5	62.9	52.9	18.0	28.4
L2	0.486	23.7	14.6	10.3	34.0	24.9	56.2	46.2	22.2	21.3
L2	9.354	11.1	2.5	10.9	22.0	13.4	60.0	50.0	38.0	36.6

4.2 Radiated emission (below 1 GHz)

4.2.1 Measurement condition

EUT is placed on a non-conducting table for table-top equipment or on insulation material for a floor-standing equipment. The non-conducting table or the insulation material is placed on a rotating turn table. Excess cables between equipment are bundled in the center. The length of bundling is 0.3-0.4 m. An antenna is adjusted between 1-4 m in height and varied its polarization (horizontal and vertical), and the EUT azimuth is varied by the rotating turntable 0 to 360 degrees. After overall frequency range is investigated with spectrum analyzer using peak detector, measurements are performed with test receiver in setting to the defined values.

Items	Description
Frequency range	30 MHz-1000 MHz
Test place	10 m Semi-Anechoic Chamber No. 1
EUT was placed on	Styrene foam table (W) 2.0 x (D) 1.0 x (H) 0.8 m
Axis	0°-360°
Antenna	Distance from EUT: 3 m Height: 1-4 m Polarity: Horizontal/Vertical
Test receiver setting	Detector: Quasi-peak Bandwidth: 120 kHz

4.2.2 Calculation method

Emission level = Reading + Factor*

Margin = Limit - Emission level

*Note: Factor = Antenna factor + Cable system loss + ATT. loss - Amplifier Gain

Example)

Limit @ 350.0 MHz: 37.0 dB μ V/m (Quasi-peak)

Quasi-peak Reading = 41.1 dB μ V Factor = -11.8 dB/m
Emission level = 41.1 - 11.8 = 29.3 dB μ V/m
Margin = 37.0 - 29.3 = 7.7 dB

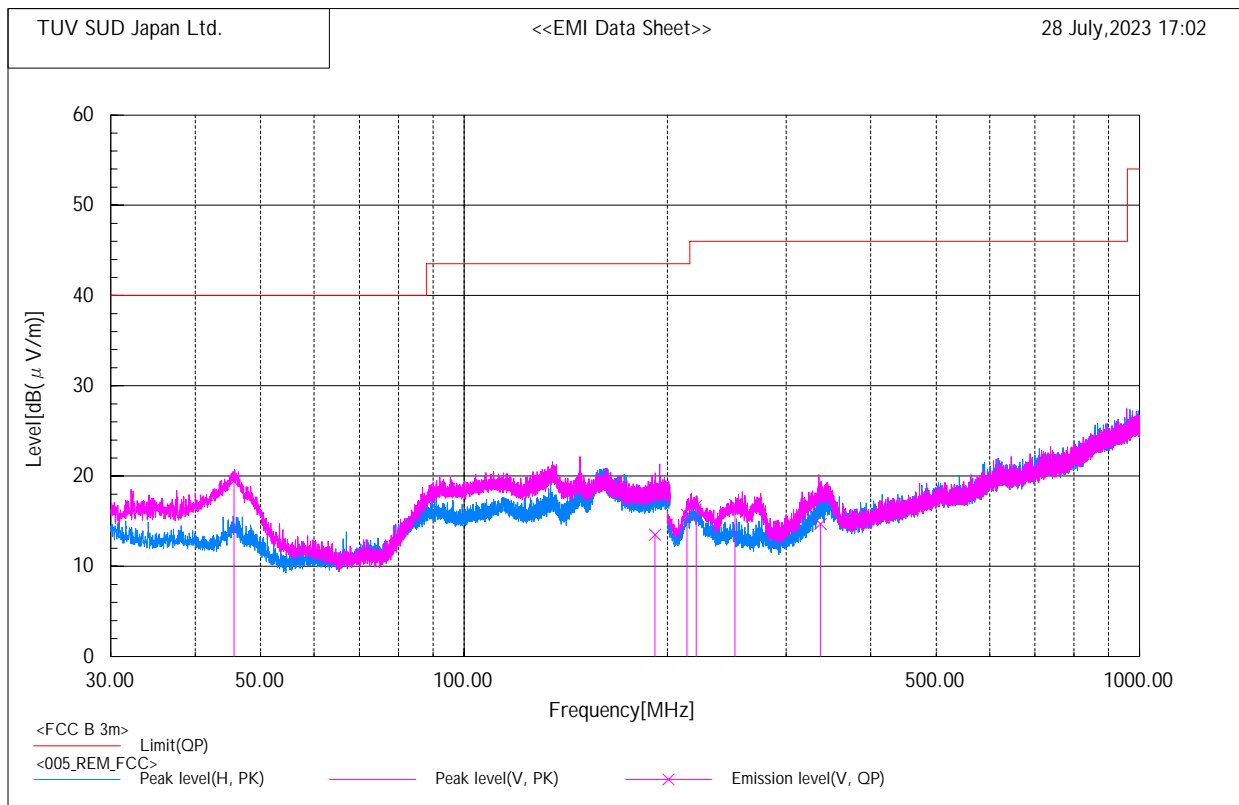


4.2.3 Test data and Configuration photographs

Operation mode	Out Camera + Earphone with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0 EB1173, S/N: 350614610006532 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 17:02
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : DC 5 V

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



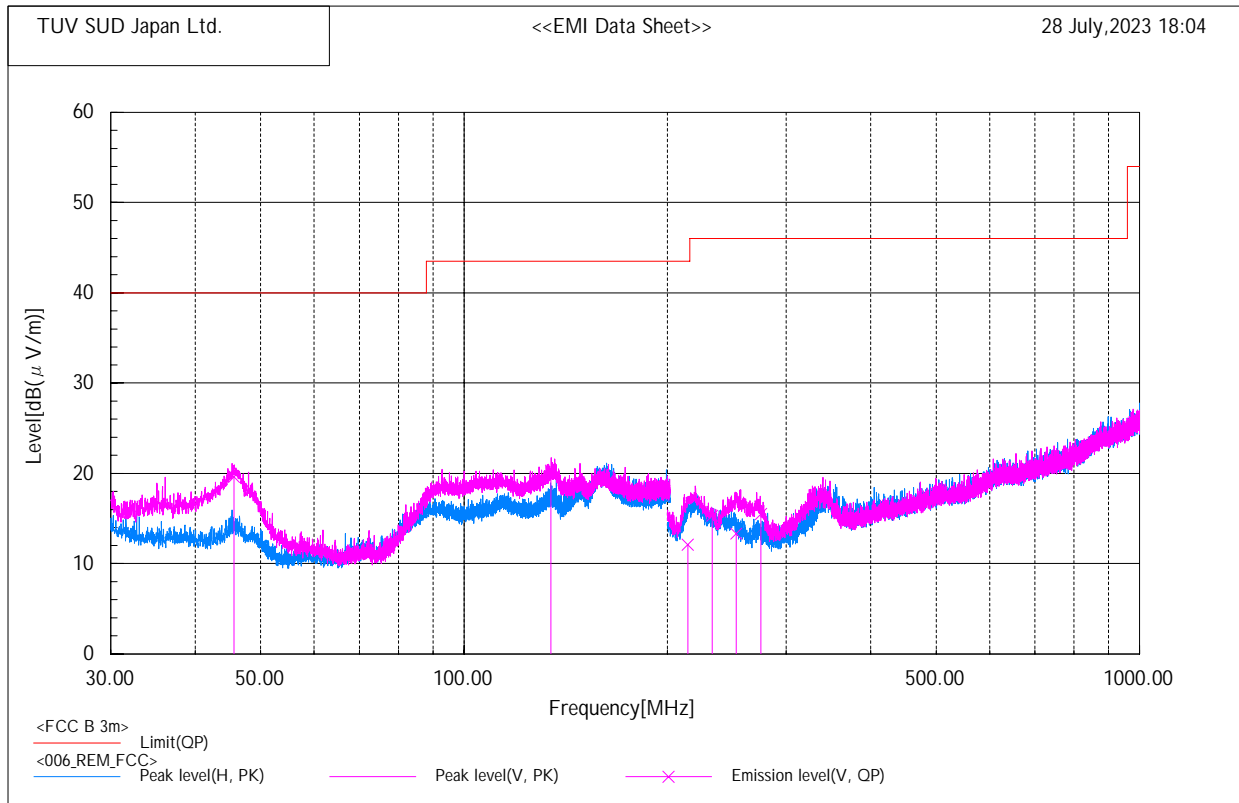
Final Result

Frequency MHz	Pol.	Reading	Factor	Level	Limit	Margin	Height cm	Angle deg
		dB(μV) QP	dB(1/m)	dB(μV/m) QP	dB(μV/m) QP	dB QP		
45.635	V	35.0	-15.6	19.4	40.0	20.6	100.0	136.0
191.734	V	24.8	-11.3	13.5	43.5	30.0	100.0	62.0
213.759	V	32.2	-16.5	15.7	43.5	27.8	226.0	246.0
220.722	V	33.2	-16.5	16.7	46.0	29.3	202.0	269.0
251.857	V	32.5	-15.7	16.8	46.0	29.2	211.0	346.0
337.086	V	27.2	-12.5	14.7	46.0	31.3	230.0	347.0



S/N: 350614610006532 (Memory: SK Hynix)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 18:04
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : DC 5 V

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

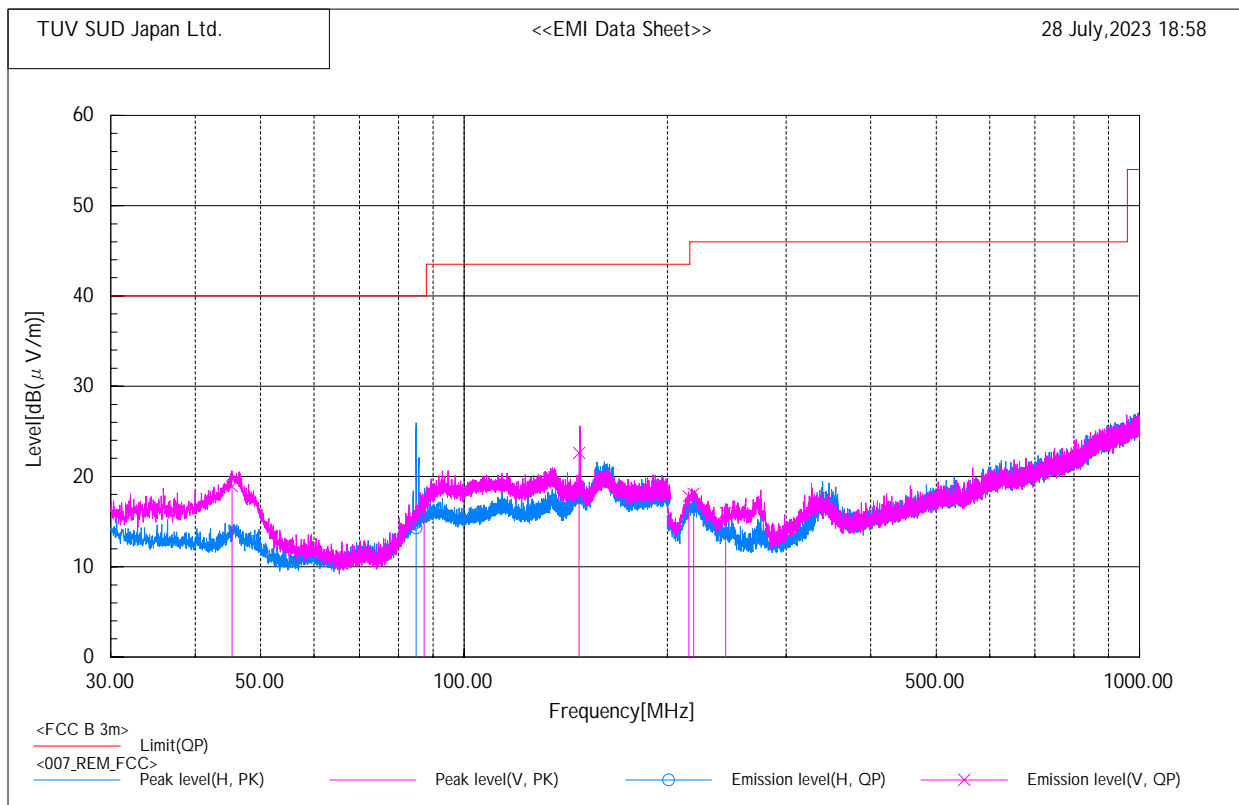
Frequency	Pol.	Reading	Factor	Level	Limit	Margin	Height	Angle
MHz		$\text{dB}(\mu\text{V})$ QP	$\text{dB}(1/\text{m})$	$\text{dB}(\mu\text{V}/\text{m})$ QP	$\text{dB}(\mu\text{V}/\text{m})$ QP	dB QP	cm	deg
45.673	V	35.2	-15.6	19.6	40.0	20.4	102.0	134.0
134.525	V	34.0	-13.7	20.3	43.5	23.2	101.0	115.0
214.497	V	28.6	-16.5	12.1	43.5	31.4	235.0	269.0
233.055	V	31.6	-16.3	15.3	46.0	30.7	242.0	251.0
252.943	V	29.0	-15.7	13.3	46.0	32.7	217.0	225.0
275.202	V	29.9	-14.4	15.5	46.0	30.5	197.0	353.0



Operation mode	In Camera + Earphone with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 18:58
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : DC 5 V

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



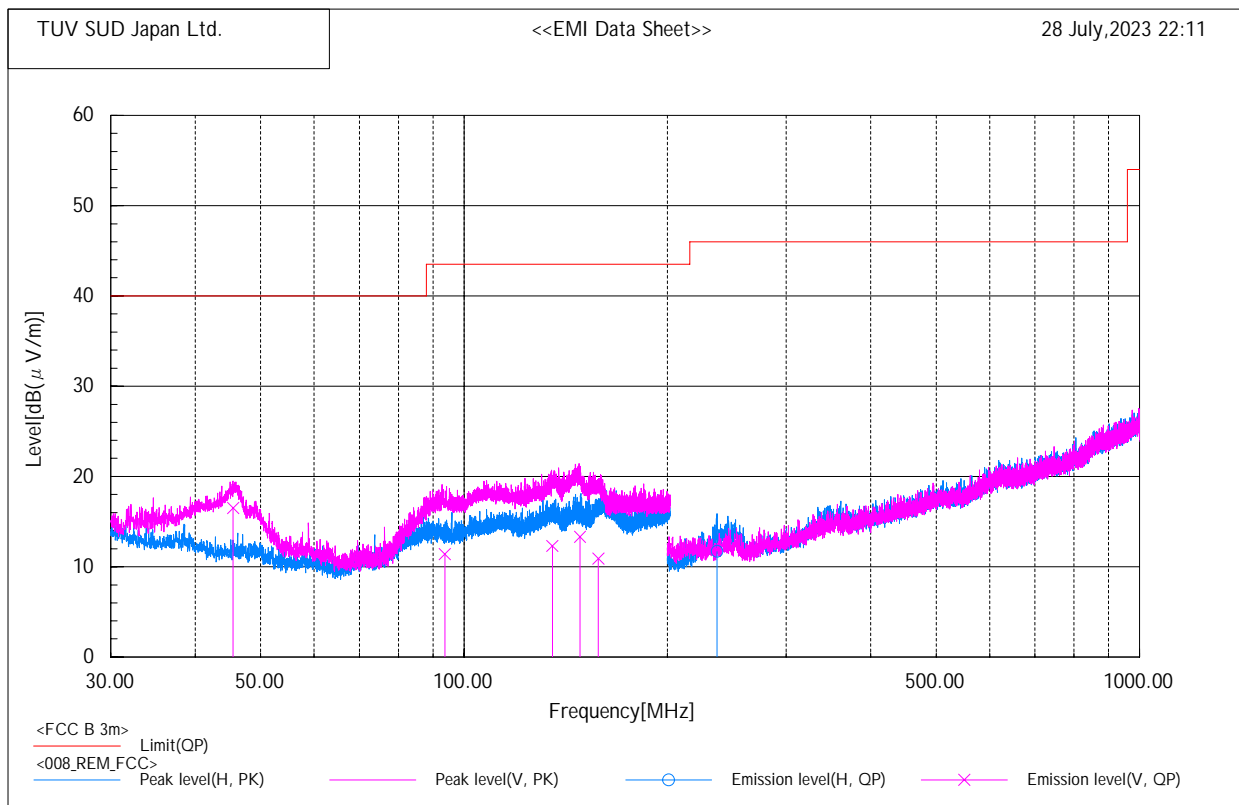
Final Result

Frequency	Pol.	Reading	Factor	Level	Limit	Margin	Height	Angle
MHz		dB(μV)		dB(1/m)				
		QP		QP	QP	QP	cm	deg
45.339	V	34.5	-15.6	18.9	40.0	21.1	100.0	345.0
84.924	H	30.6	-16.3	14.3	40.0	25.7	219.0	274.0
87.282	V	33.5	-16.2	17.3	40.0	22.7	100.0	204.0
148.051	V	35.6	-13.0	22.6	43.5	20.9	100.0	183.0
215.097	V	34.3	-16.5	17.8	43.5	25.7	192.0	343.0
218.665	V	34.6	-16.5	18.1	46.0	27.9	174.0	27.0
244.009	V	32.0	-16.0	16.0	46.0	30.0	202.0	5.0

Operation mode	MP4 + Earphone with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 22:11
 Operator : Mitsuhiro Takeda
 Temp, Hum, Atm : 23.3 [°C], 68.1 [%], 988 [hPa]
 Supply power : DC 5 V

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

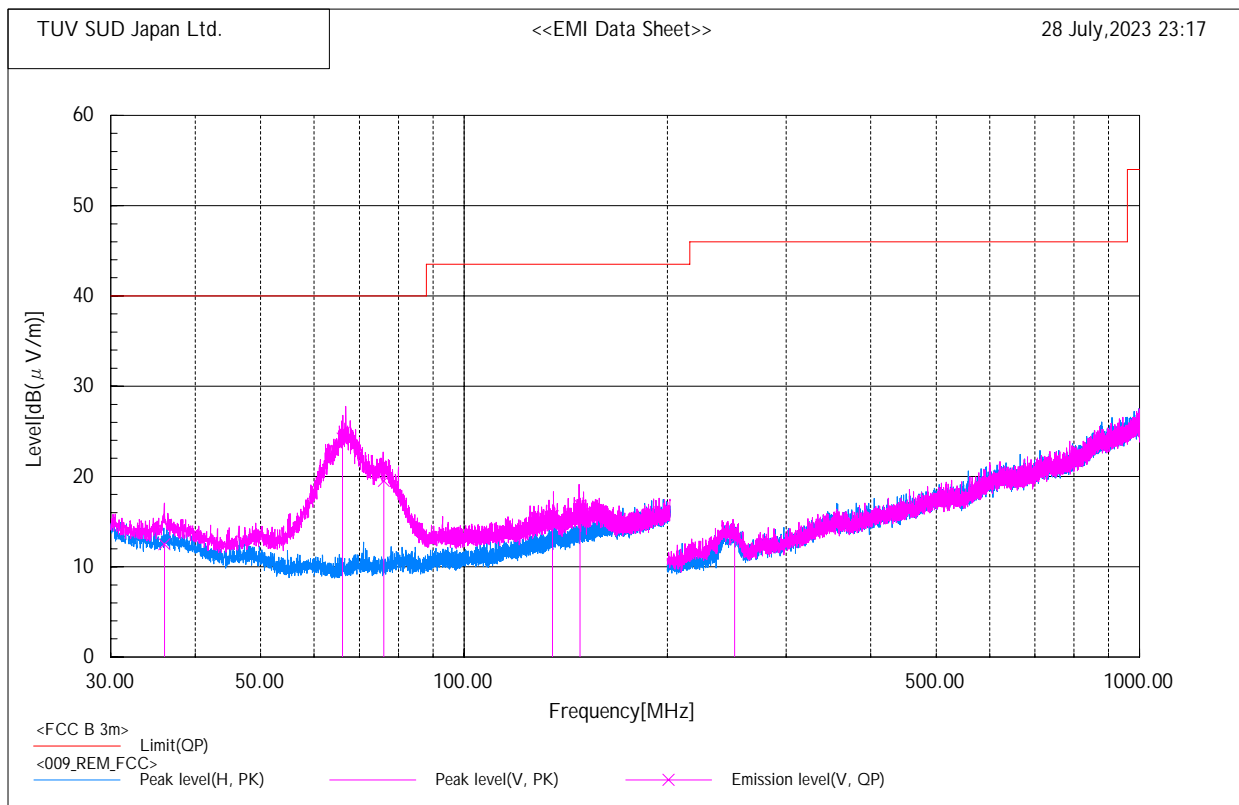
Frequency	Pol.	Reading	Factor	Level	Limit	Margin	Height	Angle
MHz		dB(μV) QP	dB(1/m)	dB(μV/m) QP	dB(μV/m) QP	dB QP	cm	deg
45.509	V	32.1	-15.6	16.5	40.0	23.5	100.0	155.0
93.676	V	27.4	-16.0	11.4	43.5	32.1	100.0	147.0
135.159	V	26.0	-13.7	12.3	43.5	31.2	100.0	238.0
148.501	V	26.3	-13.0	13.3	43.5	30.2	100.0	91.0
158.150	V	23.6	-12.7	10.9	43.5	32.6	100.0	218.0
236.865	H	27.9	-16.2	11.7	46.0	34.3	155.0	245.0



Operation mode	MP4 with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 23:17
 Operator : Mitsuhiro Takeda
 Temp, Hum, Atm : 23.3 [°C], 68.1 [%], 988 [hPa]
 Supply power : DC 5 V

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

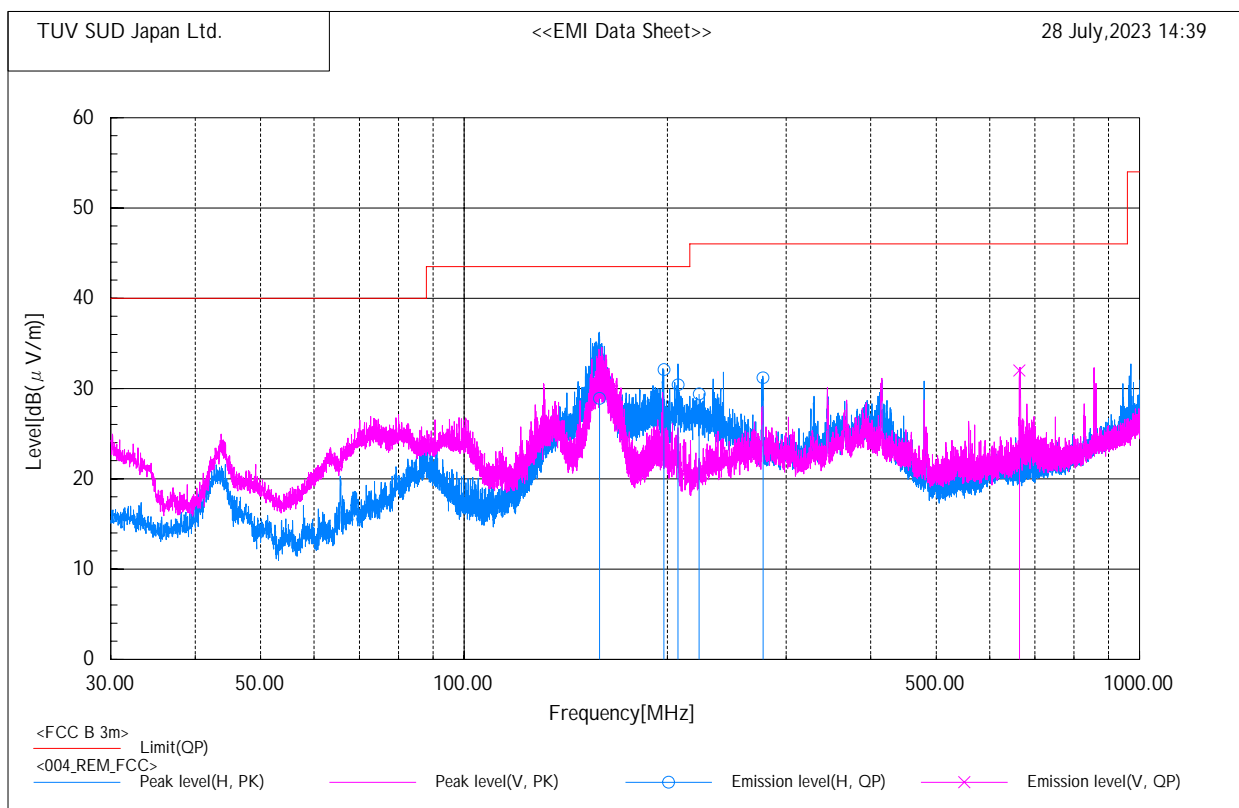
Frequency	Pol.	Reading	Factor	Level	Limit	Margin	Height	Angle
MHz		dB(μV) QP	dB(1/m)	dB(μV/m) QP	dB(μV/m) QP	dB QP	cm	deg
36.008	V	26.8	-14.3	12.5	40.0	27.5	100.0	190.0
66.108	V	41.3	-17.1	24.2	40.0	15.8	100.0	172.0
76.089	V	36.0	-16.5	19.5	40.0	20.5	100.0	142.0
135.207	V	29.3	-13.7	15.6	43.5	27.9	100.0	263.0
148.501	V	29.8	-13.0	16.8	43.5	26.7	100.0	174.0
251.473	V	28.8	-15.7	13.1	46.0	32.9	208.0	191.0



Operation mode	MP4 with Earphone + USB Read with PC mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0 EB1173, S/N: 350614610006532 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 14:39
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : AC 120 V 60 Hz 1 phase

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



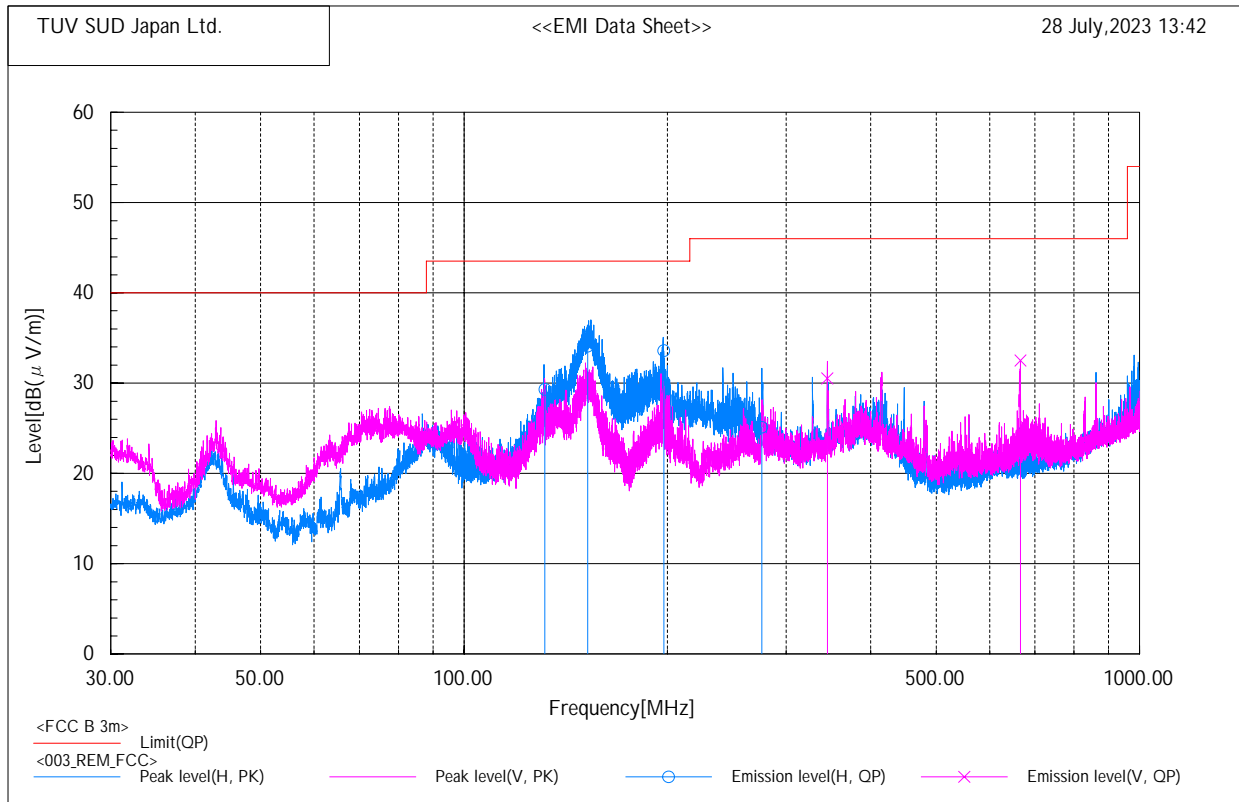
Final Result

Frequency	Pol.	Reading	Factor	Level	Limit	Margin	Height	Angle
MHz		$\text{dB}(\mu\text{V})$		$\text{dB}(1/\text{m})$				
		QP		QP	QP	QP	cm	deg
158.665	H	41.6	-12.7	28.9	43.5	14.6	300.0	213.0
197.711	H	43.1	-11.0	32.1	43.5	11.4	177.0	102.0
207.491	H	46.9	-16.5	30.4	43.5	13.1	191.0	123.0
222.984	H	45.9	-16.5	29.4	46.0	16.6	170.0	87.0
276.985	H	45.6	-14.4	31.2	46.0	14.8	103.0	96.0
663.840	V	38.0	-6.0	32.0	46.0	14.0	107.0	6.0



S/N: 350614610006532 (Memory: SK Hynix)
 Standard : FCC Part 15 Class B
 Date of test : 28 July,2023 13:42
 Operator : Yuki Shindo
 Temp, Hum, Atm : 21.7 [°C], 70.8 [%], 987 [hPa]
 Supply power : AC 120 V 60 Hz 1 phase

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

Frequency	Pol.	Reading	Factor	Level	Limit	Margin	Height	Angle
MHz		dB(μV) QP	dB(1/m)	dB(μV/m) QP	dB(μV/m) QP	dB QP	cm	deg
131.734	H	43.2	-13.9	29.3	43.5	14.2	148.0	218.0
152.500	H	47.0	-12.9	34.1	43.5	9.4	189.0	59.0
197.575	H	44.6	-11.0	33.6	43.5	9.9	161.0	267.0
276.002	H	39.5	-14.4	25.1	46.0	20.9	107.0	171.0
344.980	V	42.7	-12.2	30.5	46.0	15.5	158.0	175.0
666.444	V	38.5	-6.0	32.5	46.0	13.5	100.0	3.0

4.3 Radiated emission (above 1 GHz)

4.3.1 Measurement condition

EUT is placed on a styrene form table for table-top equipment or on insulation material for a floor-standing equipment. The styrene form table or the insulation material is placed on a rotating turn table.

Excess cables between equipment are bundled in the center. The length of bundling is 0.3-0.4 m.

Absorbers are placed between the EUT and an antenna.

The antenna is adjusted between 1-4 m in height and varied its polarization (horizontal and vertical), and the EUT azimuth is varied by the rotating turntable 0 to 360 degrees. Where height of the antenna is changed, its angle is also adjusted to the position of the EUT.

After overall frequency range is investigated with spectrum analyzer using peak detector, measurements are performed with test receiver in setting to the defined values.

The antenna is positioned from the test volume that was predetermined by the site VSWR measurement.

Since this predetermined test volume is different from maximum circumference where the EUT and the peripheral devices are actually placed, the measurement distance conversion factor is added to the measurement data.

Items	Description
Frequency range	1000 MHz-11000 MHz
Test place	10 m Semi-Anechoic Chamber No. 1
EUT was placed on	Styrene foam table (W) 2.0 × (D) 1.0 × (H) 0.8 m
Axis	0°-360°
Antenna	Distance from EUT: 4.05 m, 3.86m Height: 1-4 m Polarity: Horizontal/Vertical
Test receiver setting	Detector: Peak, Average Bandwidth: 1 MHz

Antenna 3 dB beamwidth

Antenna: 3117

Frequency (GHz)	θ3 dB (°)	3 dB beamwidth w (m)
1.0	83	5.31
2.0	51	2.86
3.0	64	3.75
4.0	51	2.86
5.0	52	2.93
6.0	51	2.86

Measurement distance: $d = 3.0$ m

$W = 2 \times d \times \tan(0.5 \times \theta_{3\text{ dB}})$

4.3.2 Calculation method

Emission level = Reading + CF*

Margin = Limit - Emission level

*Note: CF (correction factor) = TF (Transducer Factor; Antenna factor) + PF (Path Factor; Cable system loss + ATT. loss - Amplifier Gain) + DF (Distance correction Factor)

Example)

Limit @ 1100.0 MHz: 70.0 dB μ V/m (Peak)
50.0 dB μ V/m (Average)

Measurement distance: 3.25 m

Distance conversion Factor: $20 \log (3.25\text{m}/3.0\text{m}) = 0.7 \text{ dB}$

Peak Reading = 50.2 dB μ V CF = 2.4 dB
 Emission level = $50.2 + 2.4 = 52.6 \text{ dB}\mu\text{V/m}$
 Margin = $70.0 - 52.6 = 17.4 \text{ dB}$

Average Reading = 32.0 dB μ V CF = 2.4 dB
 Emission level = $32.0 + 2.4 = 34.4 \text{ dB}\mu\text{V/m}$
 Margin = $50.0 - 34.4 = 15.6 \text{ dB}$

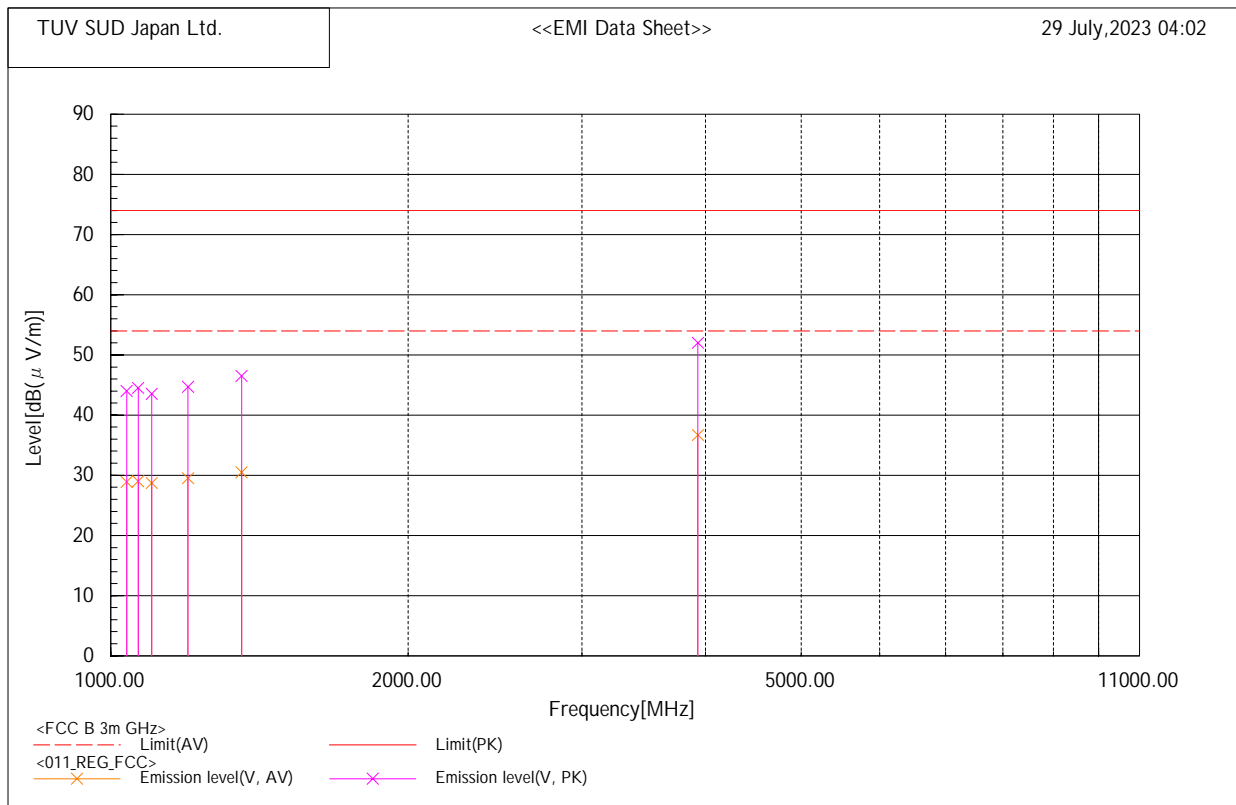


4.3.3 Test data and Configuration photographs

Operation mode	Out Camera + Earphone with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0 EB1173, S/N: 350614610006532 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 29 July,2023 04:02
 Operator : Mitsuhiro Takeda
 Temp, Hum, Atm : 24.5 [°C], 71.5 [%], 988 [hPa]
 Supply power : DC 5 V
 Antenna distance (cm) : 405
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



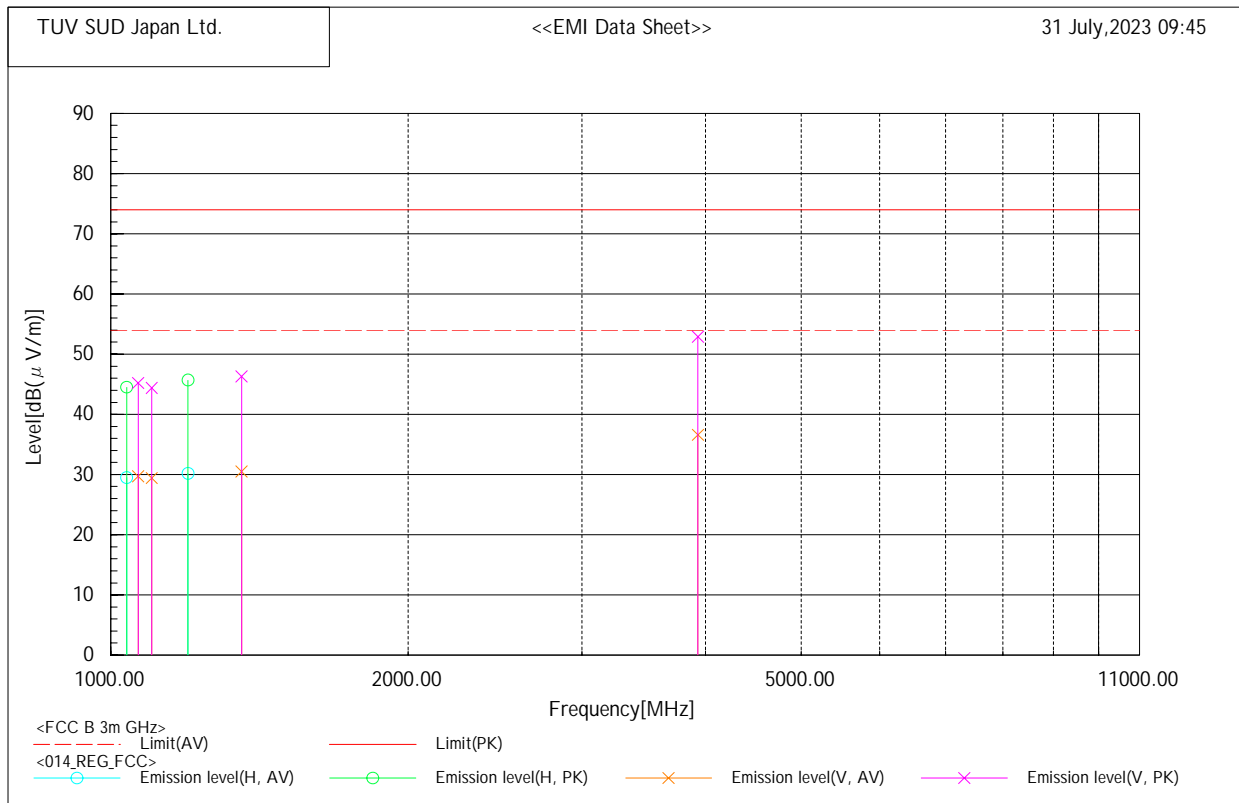
Final Result

Frequency MHz	Pol.	Reading		Factor				Level		Limit		Margin		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1037.773	V	36.0	51.1	-7.1	27.7	-37.4	2.6	28.9	44.0	54.0	74.0	25.1	30.0	105.0	21.0	1.0
1066.000	V	36.1	51.6	-7.1	27.6	-37.3	2.6	29.0	44.5	54.0	74.0	25.0	29.5	154.0	238.0	10.1
1100.000	V	35.8	50.6	-7.1	27.4	-37.1	2.6	28.7	43.5	54.0	74.0	25.3	30.5	112.0	137.0	2.3
1197.172	V	35.3	50.5	-5.8	28.5	-36.9	2.6	29.5	44.7	54.0	74.0	24.5	29.3	107.0	161.0	1.3
1356.279	V	35.4	51.4	-4.9	28.9	-36.4	2.6	30.5	46.5	54.0	74.0	23.5	27.5	143.0	137.0	8.1
3929.971	V	31.8	47.1	4.9	33.2	-30.9	2.6	36.7	52.0	54.0	74.0	17.3	22.0	125.0	63.0	4.5



S/N: 350614610006532 (Memory: SK Hynix)
 Standard : FCC Part 15 Class B
 Date of test : 31 July,2023 09:45
 Operator : Hiroomi Tsuchiya
 Temp, Hum, Atm : 22.1 [°C], 70.7 [%], 986 [hPa]
 Supply power : DC 5 V
 Antenna distance (cm) : 405
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

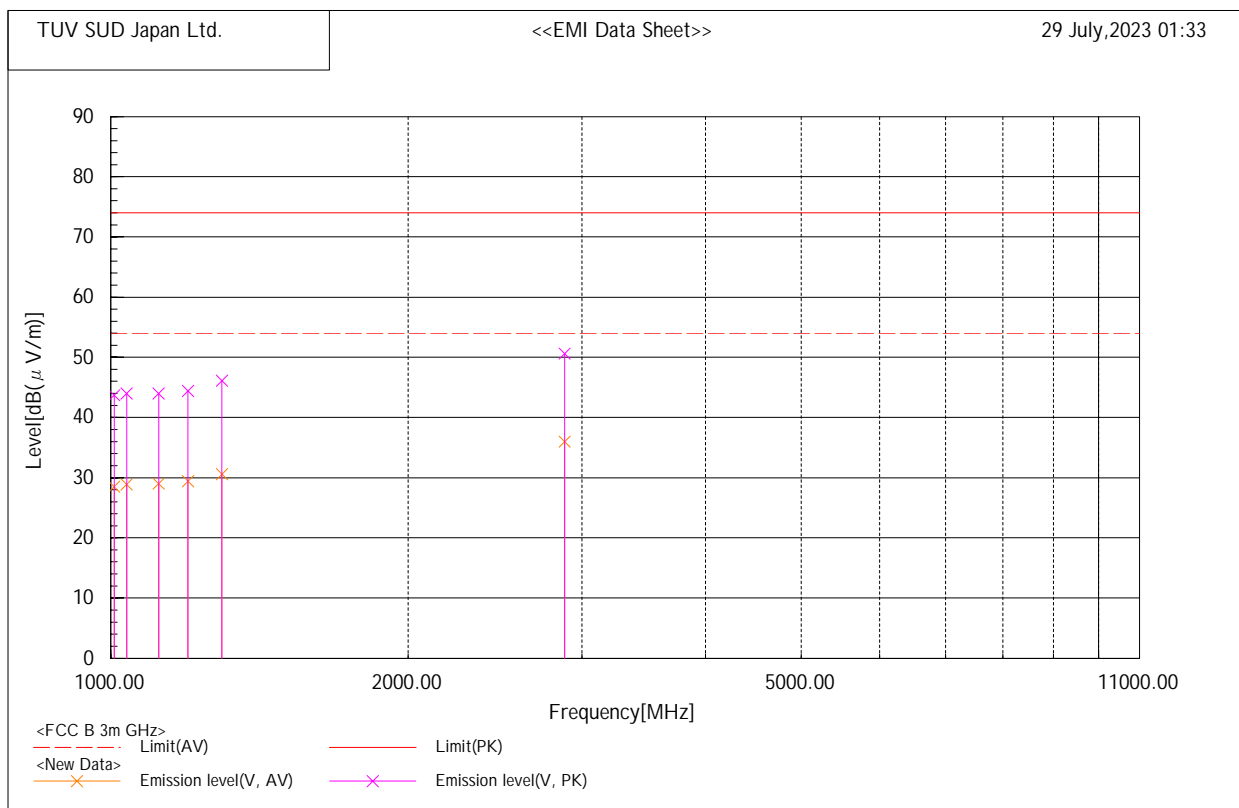
Frequency MHz	Pol.	Reading dB(μV)		Factor dB(1/m)				Level dB(μV/m)		Limit dB(μV/m)		Margin dB		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1037.773	H	36.6	51.6	-7.1	27.7	-37.4	2.6	29.5	44.5	54.0	74.0	24.5	29.5	188.0	98.0	16.1
1066.004	V	36.8	52.3	-7.1	27.6	-37.3	2.6	29.7	45.2	54.0	74.0	24.3	28.8	342.0	1.0	36.1
1100.000	V	36.5	51.5	-7.1	27.4	-37.1	2.6	29.4	44.4	54.0	74.0	24.6	29.6	223.0	68.0	21.8
1197.172	H	36.0	51.5	-5.8	28.5	-36.9	2.6	30.2	45.7	54.0	74.0	23.8	28.3	144.0	180.0	8.3
1356.279	V	35.4	51.2	-4.9	28.9	-36.4	2.6	30.5	46.3	54.0	74.0	23.5	27.7	100.0	159.0	0.0
3929.971	V	31.7	48.0	4.9	33.2	-30.9	2.6	36.6	52.9	54.0	74.0	17.4	21.1	100.0	57.0	0.0



Operation mode	In Camera + Earphone with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 29 July,2023 01:33
 Operator : Mitsuhiro Takeda
 Temp, Hum, Atm : 24.5 [°C], 71.5 [%], 988 [hPa]
 Supply power : DC 5 V
 Antenna distance (cm) : 405
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

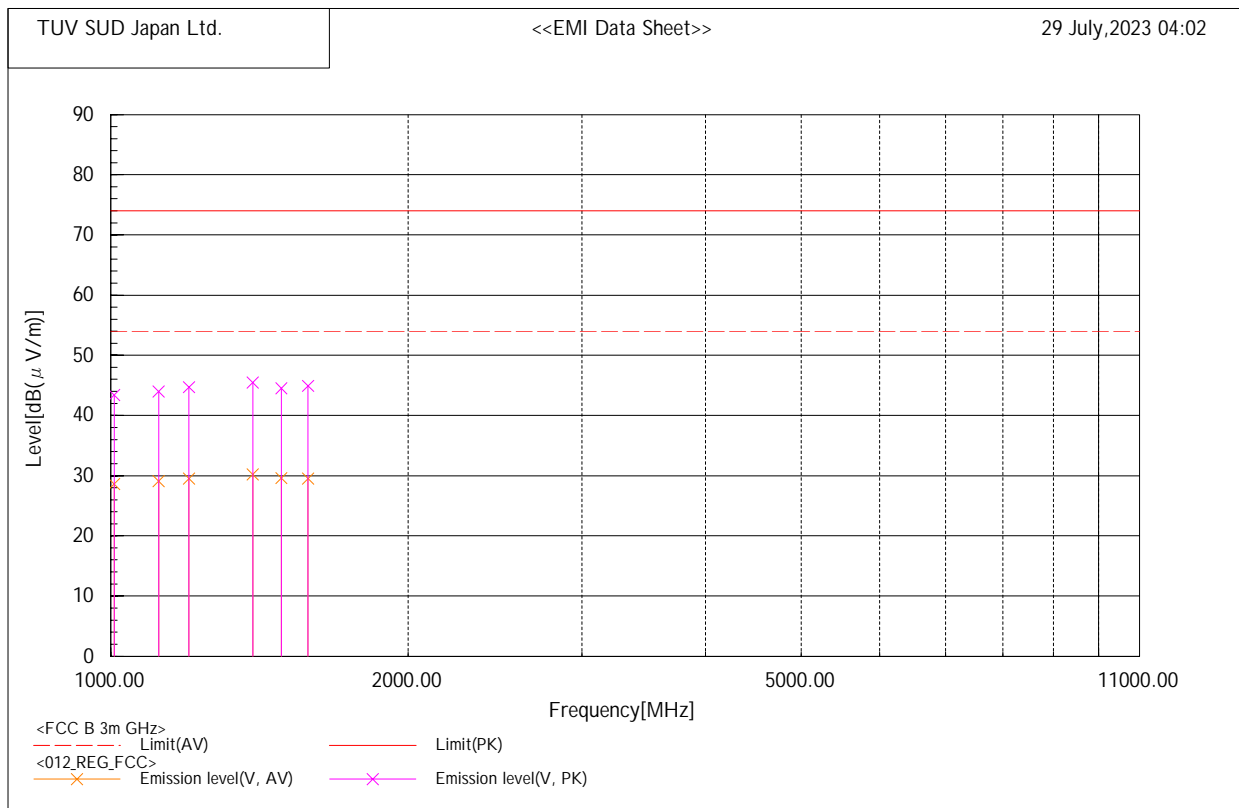
Frequency MHz	Pol.	Reading dB(μV)		Factor dB(1/m)				Level dB(μV/m)		Limit dB(μV/m)		Margin dB		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1007.999	V	35.6	50.8	-7.1	27.8	-37.5	2.6	28.5	43.7	54.0	74.0	25.5	30.3	132.0	193.0	6.0
1037.773	V	36.0	51.1	-7.1	27.7	-37.4	2.6	28.9	44.0	54.0	74.0	25.1	30.0	109.0	21.0	1.5
1117.998	V	35.9	50.9	-6.9	27.6	-37.1	2.6	29.0	44.0	54.0	74.0	25.0	30.0	135.0	82.0	6.7
1197.172	V	35.2	50.2	-5.8	28.5	-36.9	2.6	29.4	44.4	54.0	74.0	24.6	29.6	124.0	249.0	4.5
1295.992	V	35.1	50.6	-4.5	29.5	-36.6	2.6	30.6	46.1	54.0	74.0	23.4	27.9	100.0	316.0	0
2879.989	V	33.8	48.4	2.2	32.5	-32.9	2.6	36.0	50.6	54.0	74.0	18.0	23.4	100.0	216.0	0



Operation mode	MP4 + Earphone with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 29 July,2023 04:02
 Operator : Mitsuhiro Takeda
 Temp, Hum, Atm : 24.5 [°C], 71.5 [%], 988 [hPa]
 Supply power : DC 5 V
 Antenna distance (cm) : 405
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

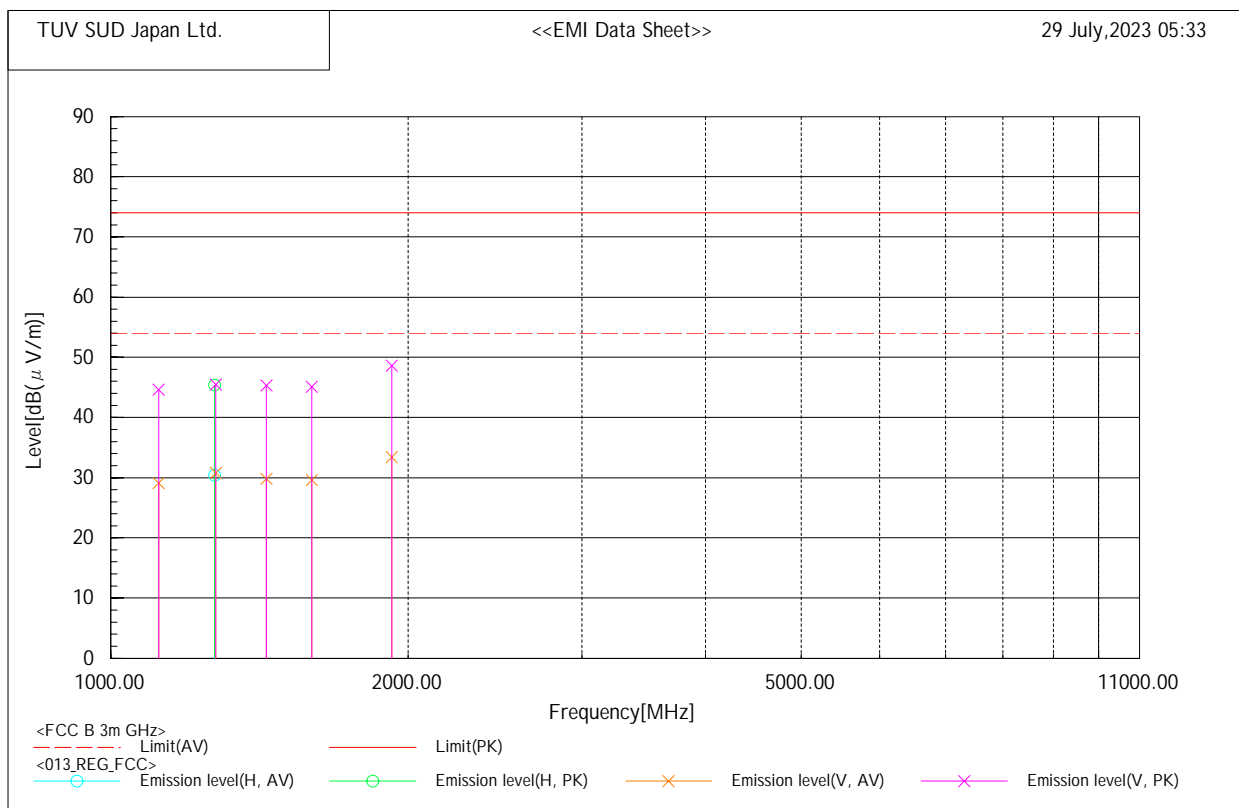
Frequency MHz	Pol.	Reading dB(μV)		Factor dB(1/m)				Level dB(μV/m)		Limit dB(μV/m)		Margin dB		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1007.999	V	35.7	50.5	-7.1	27.8	-37.5	2.6	28.6	43.4	54.0	74.0	25.4	30.6	189.0	42.0	16.3
1118.000	V	36.0	50.9	-6.9	27.6	-37.1	2.6	29.1	44.0	54.0	74.0	24.9	30.0	106.0	119.0	1.3
1200.005	V	35.3	50.5	-5.8	28.5	-36.9	2.6	29.5	44.7	54.0	74.0	24.5	29.3	127.0	48.0	5.3
1391.912	V	35.4	50.7	-5.2	28.5	-36.3	2.6	30.2	45.5	54.0	74.0	23.8	28.5	100.0	41.0	0
1487.966	V	35.0	49.9	-5.4	28.0	-36.0	2.6	29.6	44.5	54.0	74.0	24.4	29.5	100.0	122.0	0
1583.940	V	34.9	50.3	-5.4	27.7	-35.7	2.6	29.5	44.9	54.0	74.0	24.5	29.1	125.0	6.0	4.9



Operation mode	MP4 with ADP mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Standard : FCC Part 15 Class B
 Date of test : 29 July,2023 05:33
 Operator : Mitsuhiro Takeda
 Temp, Hum, Atm : 24.5 [°C], 71.5 [%], 988 [hPa]
 Supply power : DC 5 V
 Antenna distance (cm) : 405
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

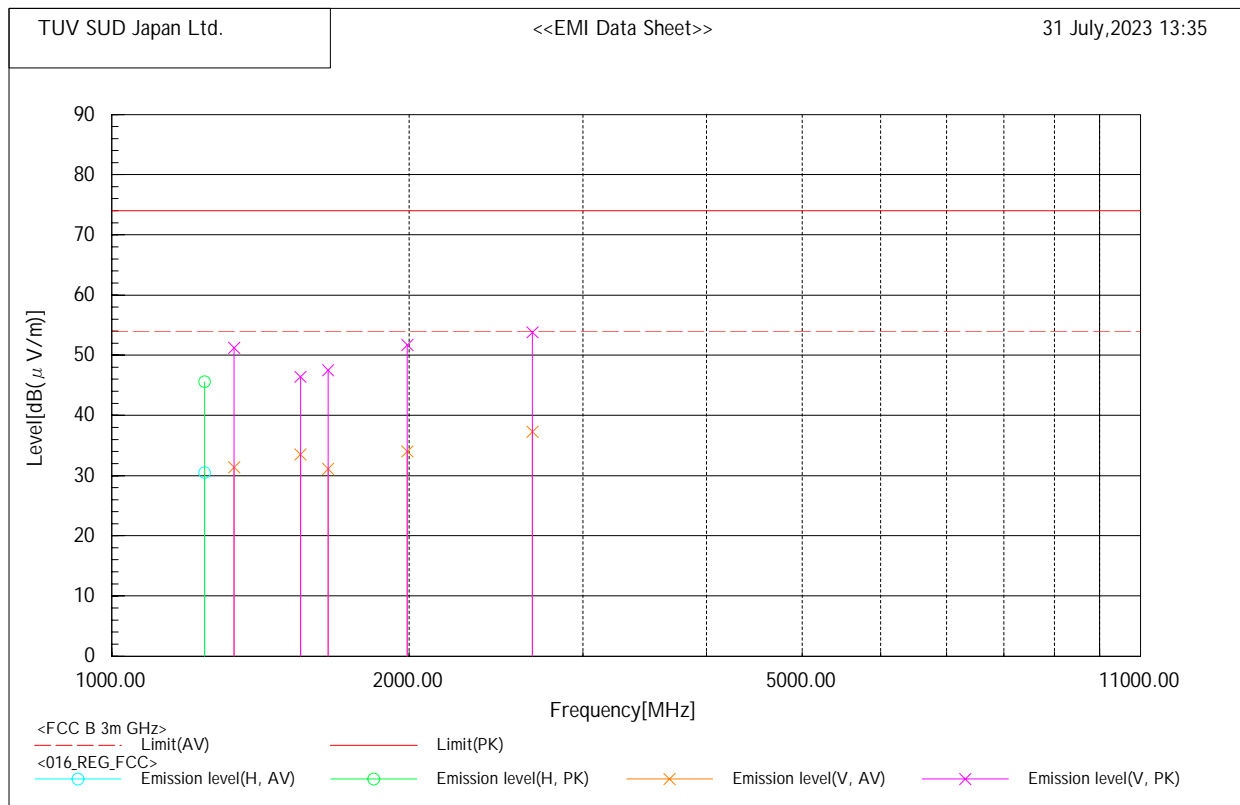
Frequency MHz	Pol.	Reading dB(μV)		Factor dB(1/m)				Level dB(μV/m)		Limit dB(μV/m)		Margin dB		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1117.997	V	36.0	51.5	-6.9	27.6	-37.1	2.6	29.1	44.6	54.0	74.0	24.9	29.4	111.0	345.0	2.1
1273.995	H	35.2	50.2	-4.8	29.3	-36.7	2.6	30.4	45.4	54.0	74.0	23.6	28.6	100.0	34.0	0
1277.865	V	35.5	50.2	-4.7	29.3	-36.6	2.6	30.8	45.5	54.0	74.0	23.2	28.5	124.0	53.0	4.5
1437.317	V	35.1	50.6	-5.3	28.3	-36.2	2.6	29.8	45.3	54.0	74.0	24.2	28.7	108.0	285.0	1.5
1597.206	V	35.0	50.5	-5.4	27.7	-35.7	2.6	29.6	45.1	54.0	74.0	24.4	28.9	100.0	202.0	0
1924.998	V	34.6	49.8	-1.2	31.2	-35.0	2.6	33.4	48.6	54.0	74.0	20.6	25.4	134.0	141.0	6.4



Operation mode	MP4 with Earphone + USB Read with PC mode
EUT	EB1173, S/N: 350614610006466 - Modification State 0 EB1173, S/N: 350614610006532 - Modification State 0

S/N: 350614610006466 (Memory: Samsung)
 Date of test: 31-July-2023 Supply voltage: AC 120 V Supply frequency: 60 Hz
 Standard : FCC Part 15 Class B
 Date of test : 31 July,2023 13:35
 Operator : Hiroomi Tsuchiya
 Temp, Hum, Atm : 22.1 [°C], 70.7 [%], 986 [hPa]
 Supply power : AC 120 V, 60 Hz, 1 phase
 Antenna distance (cm) : 386
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



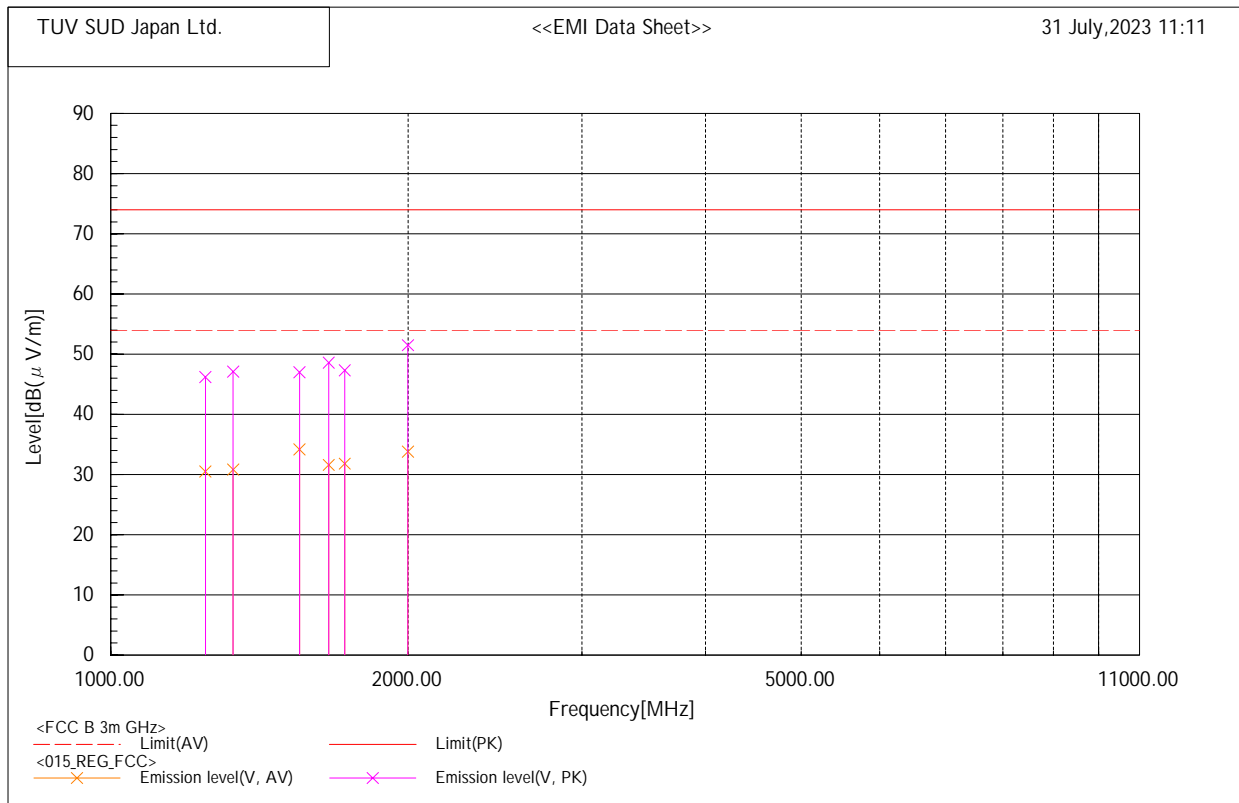
Final Result

Frequency MHz	Pol.	Reading dB(μV)		Factor dB(1/m)				Level dB(μV/m)		Limit dB(μV/m)		Margin dB		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1241.743	H	36.1	51.2	-5.6	28.9	-36.7	2.2	30.5	45.6	54.0	74.0	23.5	28.4	100.0	133.0	0.0
1330.178	V	36.5	56.3	-5.1	29.2	-36.5	2.2	31.4	51.2	54.0	74.0	22.6	22.8	284.0	280.0	30.5
1552.440	V	39.3	52.2	-5.8	27.8	-35.8	2.2	33.5	46.4	54.0	74.0	20.5	27.6	245.0	1.0	25.1
1655.634	V	35.8	52.2	-4.7	28.7	-35.6	2.2	31.1	47.5	54.0	74.0	22.9	26.5	100.0	203.0	0.0
1991.435	V	35.7	53.4	-1.7	30.9	-34.8	2.2	34.0	51.7	54.0	74.0	20.0	22.3	374.0	280.0	38.6
2666.096	V	36.0	52.5	1.3	32.4	-33.3	2.2	37.3	53.8	54.0	74.0	16.7	20.2	372.0	262.0	38.6



S/N: 350614610006532 (Memory: SK Hynix)
 Standard : FCC Part 15 Class B
 Date of test : 31 July,2023 11:11
 Operator : Hiroomi Tsuchiya
 Temp, Hum, Atm : 22.1 [°C], 70.7 [%], 986 [hPa]
 Supply power : AC 120 V, 60 Hz, 1 phase
 Antenna distance (cm) : 386
 Antenna height (cm) : 100 - 400

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



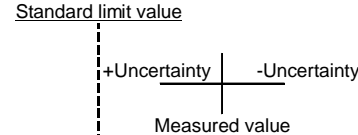

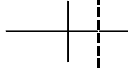

Final Result

Frequency MHz	Pol.	Reading dB(μV)		Factor dB(1/m)				Level dB($\mu\text{V/m}$)		Limit dB($\mu\text{V/m}$)		Margin dB		Height cm	Angle deg	Tilt deg
		AV	PK	CF	TF	PF	DF	AV	PK	AV	PK	AV	PK			
1246.730	V	36.0	51.7	-5.5	29.0	-36.7	2.2	30.5	46.2	54.0	74.0	23.5	27.8	100.0	195.0	0.0
1330.214	V	35.9	52.2	-5.1	29.2	-36.5	2.2	30.8	47.1	54.0	74.0	23.2	26.9	100.0	46.0	0.0
1552.440	V	40.0	52.8	-5.8	27.8	-35.8	2.2	34.2	47.0	54.0	74.0	19.8	27.0	254.0	352.0	26.2
1662.354	V	36.1	53.1	-4.5	28.9	-35.6	2.2	31.6	48.6	54.0	74.0	22.4	25.4	100.0	162.0	0.0
1724.935	V	35.3	50.8	-3.5	29.7	-35.4	2.2	31.8	47.3	54.0	74.0	22.2	26.7	100.0	184.0	0.0
1999.526	V	35.6	53.3	-1.8	30.9	-34.9	2.2	33.8	51.5	54.0	74.0	20.2	22.5	374.0	280.0	38.6

5 Measurement Uncertainty

The reported measurement uncertainty is based on a value obtained by multiplying standard uncertainty by coverage factor of $k=2$, and a level of confidence becomes 95 %.

Item	Parameter	U_{lab}	U_{cispr}
Conducted Emission, V-AMN	9 kHz to 150 kHz	± 3.7 dB	± 3.8 dB
Conducted Emission, V-AMN	150 kHz to 30 MHz	± 3.3 dB	± 3.4 dB
Conducted Emission, Δ -AN	150 kHz to 30 MHz	± 4.9 dB	-
Conducted Emission, AN	150 kHz to 30 MHz	± 3.3 dB	-
Conducted Emission, AAN	150 kHz to 30 MHz	± 4.8 dB	± 5.0 dB
Conducted Emission, Voltage Probe	9 kHz to 30 MHz	± 2.9 dB	± 2.9 dB
Conducted Emission, Current Probe	150 kHz to 30 MHz	± 2.9 dB	± 2.9 dB
Disturbance Power	30 MHz to 300 MHz	± 3.8 dB	± 4.5 dB
Radiated Emission	30 MHz to 1000 MHz	± 5.4 dB	± 6.3 dB
Radiated Emission	1 GHz to 6 GHz	± 5.2 dB	± 5.2 dB
Radiated Emission	6 GHz to 18 GHz	± 4.9 dB	± 5.5 dB
Radiated Emission	9 kHz to 30 MHz	± 3.8 dB	-

Judge	Measured value and standard limit value	
PASS	<p>Case1</p>  <p>Even if it takes uncertainty into consideration, a standard limit value is fulfilled.</p>	
	<p>Case2</p>  <p>Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.</p>	
FAIL	<p>Case3</p>  <p>Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.</p>	
	<p>Case4</p>  <p>Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.</p>	



Japan

6 Laboratory Information

Testing was performed and the report was issued at:

TÜV SÜD Japan Ltd. Yonezawa Testing Center

Address: 5-4149-7 Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan

Phone: +81-238-28-2881

Accreditation and Registration

A2LA

Certificate #3686.03

VLAC

Accreditation No.: VLAC-013

BSMI

Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

Innovation, Science and Economic Development Canada

ISED#: 4224A

VCCI Council

Registration number: A-0166

Appendix A. Test Equipment

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. Date
EMI receiver	ROHDE&SCHWARZ	ESR7	101742	31-Jan-2024	18-Jan-2023
Line impedance stabilization network	Kyoritsu Technology Corporation	TNW-407F2	12-17-110-2	30-Jun-2024	22-Jun-2023
Attenuator	HUBER+SUHNER	6810.01.A	N/A(S442)	29-Feb-2024	21-Feb-2023
Coaxial cable	FUJIKURA	5D-2W/4m	N/A(S349)	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	317672/4	31-Oct-2023	27-Oct-2022
Coaxial cable	HUBER+SUHNER	RG214/U/25m	N/A(S191)	31-Oct-2023	27-Oct-2022
Coaxial cable	TUV SUD Zacta	N/A	N/A (S475)	30-Jun-2024	22-Jun-2023
Software	TOYO Technica	ES10/CE-AJ	Ver.2023.01.001	N/A	N/A

Radiated emission (below 1 GHz)

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI receiver	ROHDE&SCHWARZ	ESR7	101742	31-Jan-2024	18-Jan-2023
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1332	29-Feb-2024	17-Feb-2023
Log-periodic antenna	Schwarzbeck	VUSLP9111B	345	31-Dec-2023	12-Dec-2022
Attenuator	TDC	TAT-43B-06	N/A(S209)	31-Jul-2024	14-Jul-2023
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S504)	31-Jul-2024	14-Jul-2023
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	MY23758/4	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/1m	MY24628/4	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	MY37295/4	31-Jul-2023	15-Jul-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX106/13m	MY1159/6	31-Oct-2023	27-Oct-2022
Preamplifier	SONOMA	310	400315	31-Mar-2024	16-Mar-2023
10m Semi-anechoic Chamber	TOKIN	N/A	N/A(9001-NSA3m)	31-May-2024	27-May-2023
Software	TOYO Technica	ES10/RE-AJ	Ver.2023.01.001	N/A	N/A

Radiated emission (above 1 GHz)

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
Spectrum analyzer	ROHDE&SCHWARZ	FSV40	101732	30-Apr-2024	07-Apr-2023
Preamplifier	TSJ	MLA-0118-J02-40	14882	31-Oct-2023	26-Oct-2022
Double ridged guide antenna	ETS LINDGREN	3117	00209352	29-Feb-2024	17-Feb-2023
Attenuator	Agilent Technologies	8491B	MY39268633	30-Jun-2024	22-Jun-2023
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	811445/4	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/1.5m	SN MY19304/4	31-Oct-2023	27-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	MY37295/4	31-Jul-2023	15-Jul-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX106/13m	MY1159/6	31-Oct-2023	27-Oct-2022
Absorber	RIKEN	PFP30	N/A	N/A	N/A
10m Semi-anechoic Chamber	TOKIN	N/A	N/A(9001-SVSWR)	31-May-2024	28-May-2023
Software	TOYO Technica	ES10/RE-AJ	Ver.2023.01.001	N/A	N/A