

Report on the RF Testing of:

KYOCERA Corporation
Mobile Phone, Model: EB1155
FCC ID: JOYEB1155

In accordance with FCC Part 15 Subpart C
(15.225)

Prepared for: KYOCERA Corporation
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Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	2023.01.06

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EXECUTIVE SUMMARY – Result: Complied

A sample of this product was tested and the result above was confirmed in accordance with FCC Part 15 Subpart C (15.225).



Certificate #3686.03

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1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-22222-0	First Issue	20-December-2022
JPD-TR-22222-1	Conducted test results for EB1146 added.	Refer to the cover page

1.2 Standards

CFR47 FCC Part 15 Subpart C (15.225)

1.3 Test methods

ANSI C63.10-2013

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

Test item section	Test item	Condition	Result	Remark
2.1049 RSS-Gen 6.7	Occupied Bandwidth	Conducted	PASS	*1
15.209 15.225 (a)(b)(c)(d)	Operation within the band 13.110-14.010MHz	Radiated	PASS	*1
15.209 15.225 (d)	Transmitter Radiated Spurious Emissions	Radiated	PASS	-
15.225 (e)	Frequency Tolerance	Conducted	PASS	*1
15.207	AC Power Line Conducted Emissions	Conducted	PASS	-

*1 Since there is no change in Module from FCC ID: JOYEB1146, only the Radiated test items were performed. Conduction test results are listed as "JPD-TR-22194-0" of "FCC ID: JOYEB1146".

1.6 Test information

None

1.7 Test set up

Table-top

1.8 Test period

14-November-2022 - 9-December-2022



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, Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment Under Test (EUT)	Mobile Phone
Model number	EB1155
Serial number	352034010006537
Trade name	Kyocera
Number of sample(s)	1
EUT condition	Pre-Production
Power rating	Battery: DC 3.87 V
Size	(W) 70 mm x (D) 161 mm x (H) 8.9 mm
Environment	Indoor and Outdoor use
Terminal limitation	-20 °C to 60 °C
Hardware version	DMT
Software version	0.100ML.9013.a
Firmware version	Not applicable
RF Specification	
Frequency range	13.56MHz
Modulation method	ASK
Antenna type	Loop antenna

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
Model: EB1155, Serial Number: 352034010006537			
0	As supplied by the applicant	Not Applicable	Not Applicable



Japan

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

2.4 Operating mode

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.

The worst emission was found in Z-axis and the worst case recorded.

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

2.5 Operating flow

[Tx mode]

- i) NFC test program setup to the Software
- ii) Start test mode

3 Configuration of Equipment

Numbers assigned to equipment on the diagram in “3.3 System configuration” correspond to the list in “3.1 Equipment used” and “3.2 Cable(s) used”.

This test configuration is based on the manufacture’s instruction.

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.	FCC ID/DoC	Comment
1	Mobile Phone	KYOCERA	EB1155	352034010006537	JOYEB1155	EUT
2	AC Adapter	KDDI	0602PQA	N/A	N/A	*

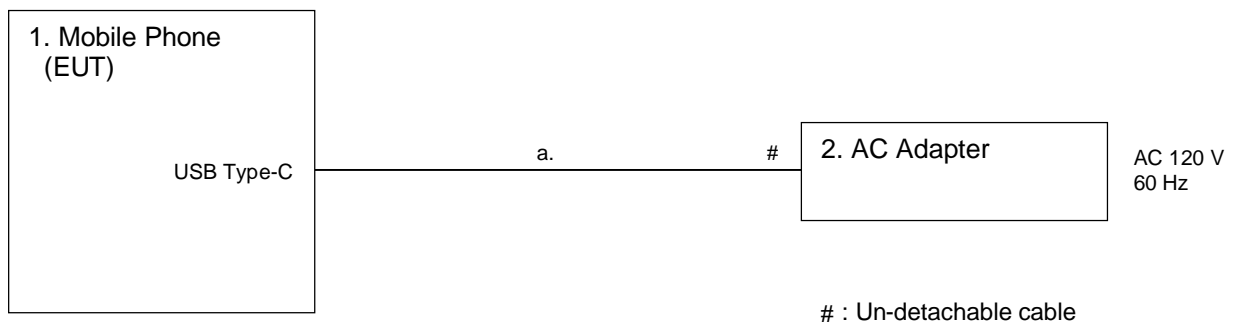
*:AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Equipment	Length[m]	Shield	Connector	Comment
a	USB cable (for AC Adapter)	1.5	No	Plastic	*

*:AC power line Conducted Emission Test.

3.3 System configuration





4 Test Result

4.1 Occupied Bandwidth

4.1.1 Measurement procedure

[FCC 2.1049, RSS-Gen 6.7]

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to approach 1% of the selected span or less than 1%. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

The spectrum analyzer is set to;

- RBW=1kHz, VBW=3kHz, Span=100kHz, Sweep=auto, Detector=Peak, Trace mode = max hold.

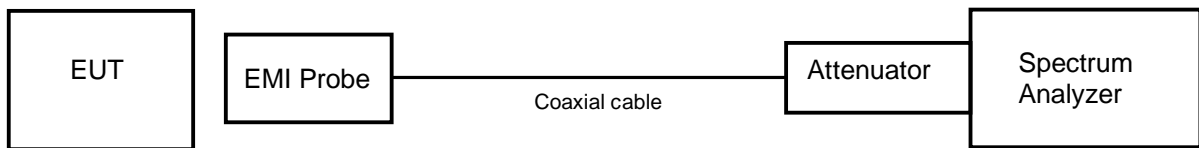
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



4.1.2 Limit

None

4.1.3 Measurement result

Date : 25-October-2022

Temperature : 17.3 [°C]

Humidity : 47.0 [%]

Test place : Shielded room No.4

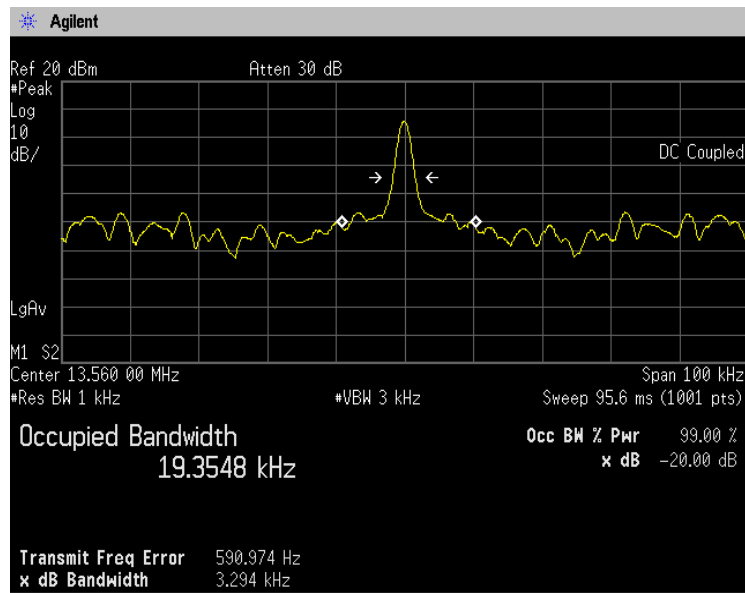
Test engineer :

Kazunori Saito

Frequency (MHz)	Occupied Bandwidth (kHz)
13.560591	19.3548

*: Tested by EB1146

4.1.4 Trace data



4.2 Operation within the band 13.110-14.010MHz

4.2.1 Measurement procedure

[FCC 15.209, 15.225 (a)(b)(c)(d)]

Test was applied by following conditions.

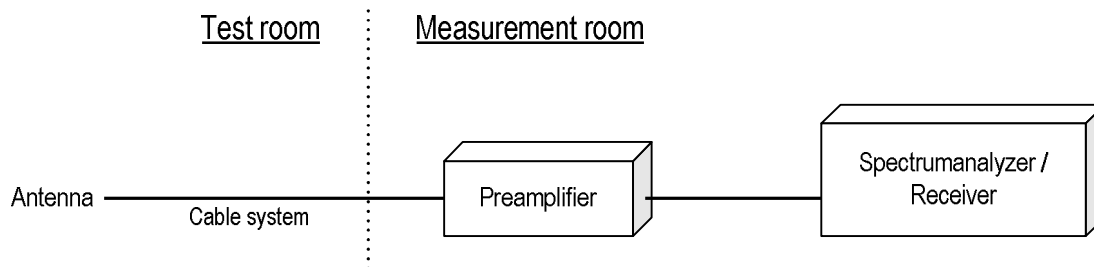
Test method	:	ANSI C63.10
Frequency range	:	13.110MHz to 14.010MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W)1.0m × (D)0.8m × (H)0.8m
Antenna distance	:	3m

Test receiver setting

- Detector	:	Quasi-peak
- Bandwidth	:	9kHz

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements frequency range 13.110MHz to 14.010MHz were performed with test receiver in above setting. The turntable and the Loop antenna are rotated by 360 degrees and stopped at azimuth of producing the maximum emission. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



4.2.2 Calculation method

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)

Margin = Limit – Emission level



4.2.3 Limit

- (a) The field strength of any emissions within the band 13.553-13.567MHz shall not exceed 15,848uV/m at 30m.
- (b) Within the band 13.410-13.553MHz and 13.567-13.710MHz, the field strength of any emissions shall not exceed 334uV/m at 30m.
- (c) Within the band 13.110-13.410MHz and 13.710-14.010MHz, the field strength of any emissions shall not exceed 106uV/m at 30m.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010MHz and shall not exceed the general radiated emission limits in FCC 15.209.

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. Measurements were corrected to 30m using $40\log(3/30) = -40.0\text{dB}$

4.2.4 Test data

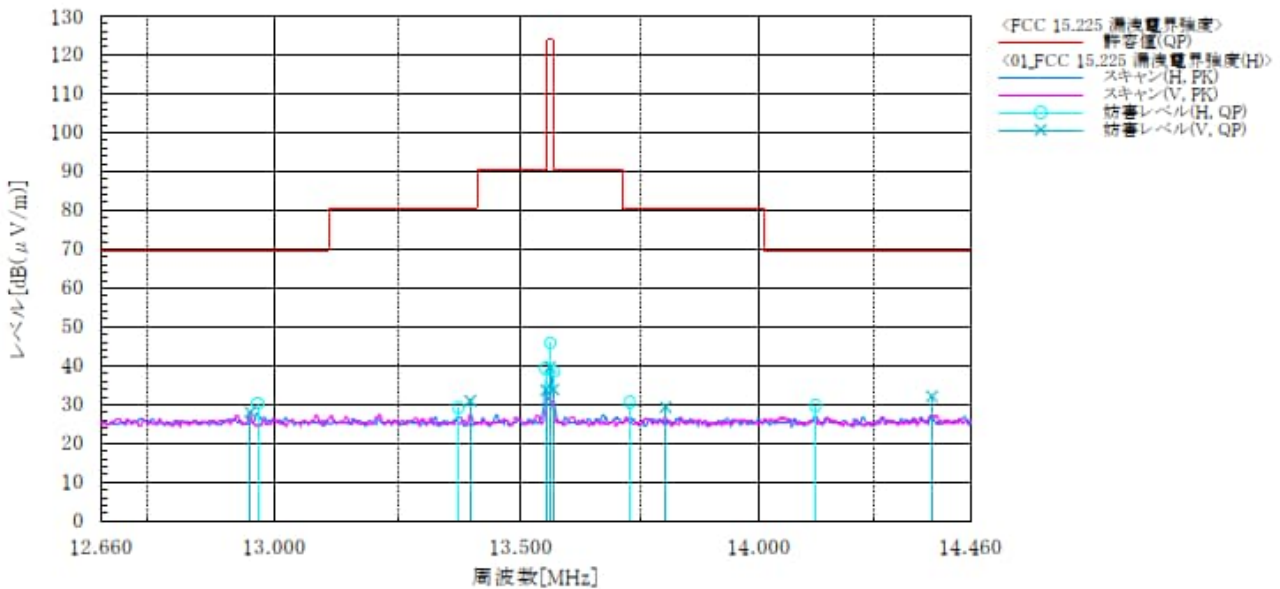
Date : 14-November-2022
 Temperature : 22.1 [°C]
 Humidity : 31.2 [%]
 Test place : 3m Semi-anechoic chamber

Test engineer : Chiaki Kanno

Frequency range (MHz)	Frequency (MHz)	Level		Limit (dBuV/m)	Margin (dB)	Result
		Measured at 3m (dBuV/m)	Measured at 30m (dBuV/m)			
13.553-13.567	13.560	54.1	14.1	84.0	69.9	PASS
13.41-13.553	13.552	47.0	7.0	50.5	43.5	PASS
13.567-13.71	13.568	46.4	6.4	50.5	44.1	PASS
13.11-13.41	13.345	35.9	-4.1	40.5	44.6	PASS
13.71-14.01	13.771	37.7	-2.3	40.5	42.8	PASS
12.66-13.11	12.749	30.9	-9.1	29.5	38.6	PASS
14.01-14.46	14.376	32.1	-7.9	29.5	37.4	PASS

4.2.5 Trace data

Company name	: KYOCERA Corporation	Sheet No.	: 01
EUT	: Mobile Phone	Standard	: FCC 15.225
Model No.	: EB1155	Operator	: C.Kanno
Serial No.	: N/A	Temp,Hum,Atm	: 22.1[° C] 31.2[%]
Test mode	: FeliCa	Note1	: Horizontal(X axis)



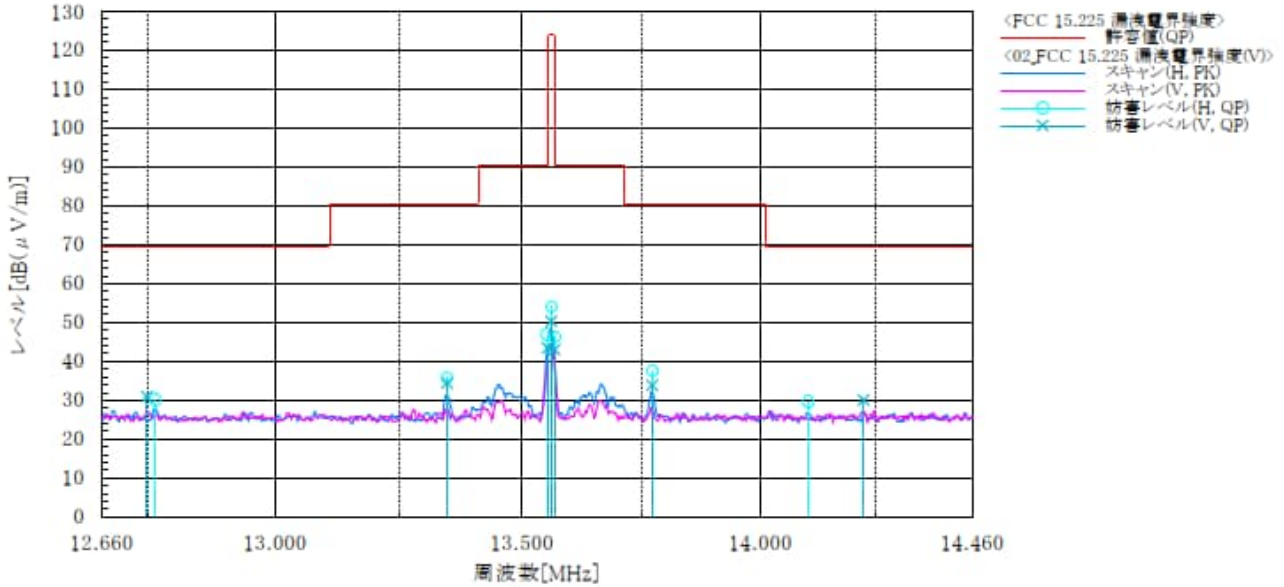
Final Result

No.	Frequency [MHz]	Pol	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	13.560	V	46.2	-6.5	39.7	124.0	84.3	100.0	332.0	
2	13.552	V	40.2	-6.5	33.7	90.5	56.8	100.0	332.0	
3	13.568	V	40.3	-6.5	33.8	90.5	56.7	100.0	332.0	
4	13.396	V	37.4	-6.5	30.9	80.5	49.6	100.0	256.0	
5	13.802	V	35.7	-6.4	29.3	80.5	51.2	100.0	165.0	
6	12.953	V	34.5	-6.5	28.0	69.5	41.5	100.0	345.0	
7	14.376	V	38.5	-6.4	32.1	69.5	37.4	100.0	223.0	
8	13.560	H	52.4	-6.5	45.9	124.0	78.1	100.0	73.0	
9	13.552	H	45.7	-6.5	39.2	90.5	51.3	100.0	73.0	
10	13.568	H	45.0	-6.5	38.5	90.5	52.0	100.0	73.0	
11	13.371	H	35.8	-6.5	29.3	80.5	51.2	100.0	312.0	
12	13.727	H	37.2	-6.5	30.7	80.5	49.8	100.0	133.0	
13	12.967	H	36.9	-6.5	30.4	69.5	39.1	100.0	334.0	
14	14.122	H	36.2	-6.4	29.8	69.5	39.7	100.0	0.0	



Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1155
 Serial No. : N/A
 Test mode : FeLiCa

Sheet No. : 02
 Standard : FCC 15.225
 Operator : C.Kanno
 Temp,Hum.Atm : 22.1[° C] 31.2[%]
 Note1 : Vertical(Z axis)



Final Result

No.	Frequency [MHz]	Pol	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	13.560	V	56.8	-6.5	50.3	124.0	73.7	100.0	271.0	
2	13.552	V	50.0	-6.5	43.5	90.5	47.0	100.0	271.0	
3	13.568	V	49.5	-6.5	43.0	90.5	47.5	100.0	271.0	
4	13.347	V	40.9	-6.5	34.4	80.5	46.1	100.0	243.0	
5	13.771	V	40.2	-6.4	33.8	80.5	46.7	100.0	37.0	
6	12.749	V	37.4	-6.5	30.9	69.5	38.6	100.0	261.0	
7	14.222	V	36.5	-6.4	30.1	69.5	39.4	100.0	3.0	
8	13.560	H	60.6	-6.5	54.1	124.0	69.9	100.0	349.0	
9	13.552	H	53.5	-6.5	47.0	90.5	43.5	100.0	349.0	
10	13.568	H	52.9	-6.5	46.4	90.5	44.1	100.0	349.0	
11	13.345	H	42.4	-6.5	35.9	80.5	44.6	100.0	120.0	
12	13.771	H	44.1	-6.4	37.7	80.5	42.8	100.0	358.0	
13	12.765	H	36.7	-6.5	30.2	69.5	39.3	100.0	185.0	
14	14.102	H	36.0	-6.4	29.6	69.5	39.9	100.0	2.0	

4.3 Radiated Emissions

4.3.1 Measurement procedure

[FCC 15.209, 15.225 (d)]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Frequency range	:	9kHz to 30MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W)1.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m

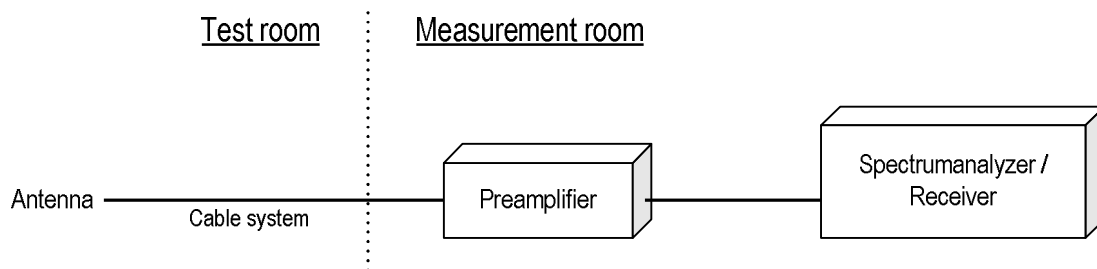
Test receiver setting

- Detector	:	Average (9kHz-90kHz, 110kHz-490kHz), Quasi-peak
- Bandwidth	:	200Hz, 9kHz

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 30MHz were performed with test receiver in above setting. The turntable and the Loop antenna are rotated by 360 degrees and stopped at azimuth of producing the maximum emission. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



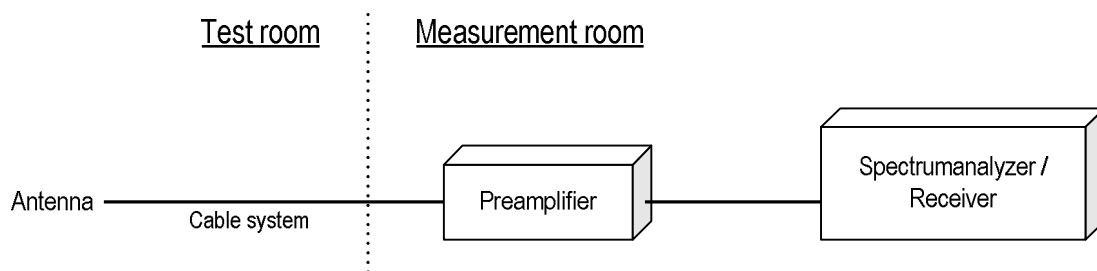
Test was applied by following conditions.

Test method : ANSI C63.10
 Frequency range : 30MHz to 1000MHz
 Test place : 3m Semi-anechoic chamber
 EUT was placed on : Styrofoam table / (W)1.0m x (D)0.8m x (H)0.8m
 Antenna distance : 3m

Test receiver setting
 - Detector : Quasi-peak
 - Bandwidth : 120kHz

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 1000MHz were performed with test receiver in above setting. In order to find the maximum emissions, antenna is adjusted between 1m and 4m in height and varied its polarization (horizontal and vertical), and EUT azimuth was also varied by rotating turntable 0 to 360 degrees. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



4.3.2 Calculation method

[9kHz to 150kHz]

Emission level = Reading + (Ant. factor + Cable system loss)

Margin = Limit – Emission level

[150kHz to 1000MHz]

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)

Margin = Limit – Emission level

4.3.3 Limit

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300
0.490-1.705	24000 / F [kHz]	20logE [uV/m]	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. Measurements were corrected to 300m using $40\log(3/300) = -80.0\text{dB}$
Measurements were corrected to 30m using $40\log(3/30) = -40.0\text{dB}$



4.3.4 Test data

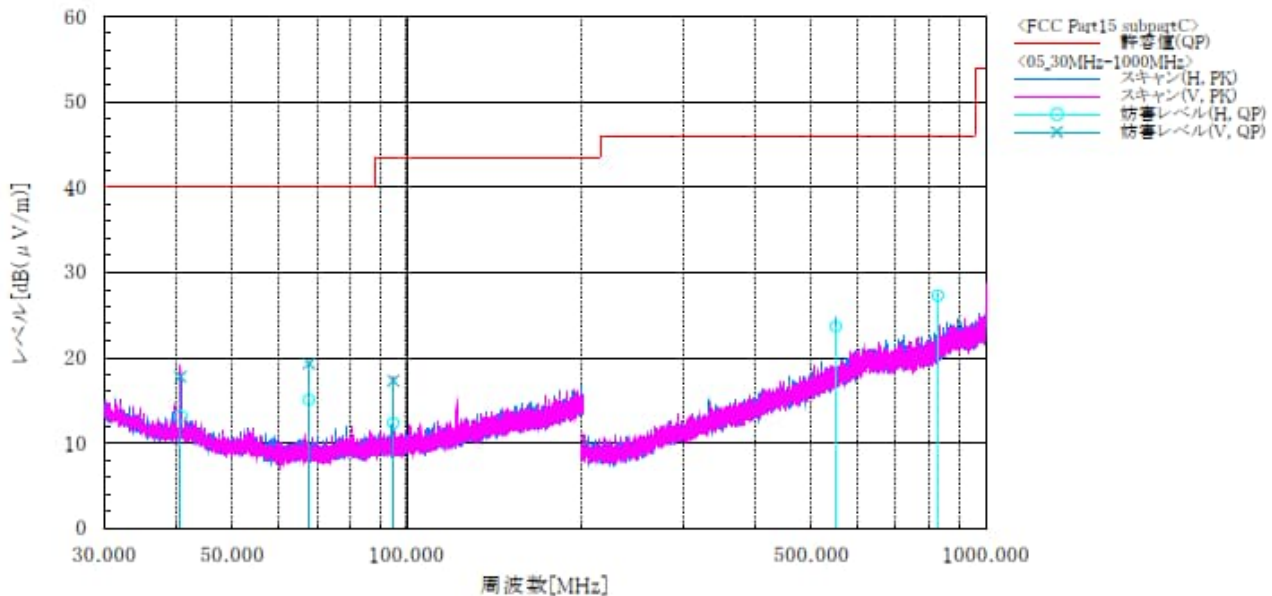
Date : 14-November-2022
 Temperature : 22.1 [°C]
 Humidity : 31.2 [%]
 Test place : 3m Semi-anechoic chamber
 Test engineer : Chiaki Kanno

[9kHz to 30MHz]

Frequency (MHz)	Reading [dBuV] At 3m	c.f [dB(1/m)]	Result [dBuV/m] At 3m	Result [dBuV/m] At 30m	Limit [dBuV/m] At 30m	Margin (dB)	Result
27.12	37.3	-5.5	31.8	-8.2	29.5	37.7	PASS

[30MHz to 1000MHz]

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1155
 Serial No. : N/A
 Test mode : NFC
 Sheet No. : 05
 Standard : FCC Part15 Class B
 Operator : C.Kanno
 Temp,Hum,Atm : 22.1[° C] 31.2[%]
 Note1 : Z axis



Final Result

No.	Frequency [MHz]	Pol	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]	Remark
1	40.680	H	28.0	-14.8	13.2	40.0	26.8	300.0	341.0	
2	40.680	V	32.6	-14.8	17.8	40.0	22.2	100.0	249.0	
3	67.800	H	32.2	-17.1	15.1	40.0	24.9	300.0	0.0	
4	67.800	V	36.4	-17.1	19.3	40.0	20.7	100.0	259.0	
5	94.900	H	28.5	-16.1	12.4	43.5	31.1	200.0	9.0	
6	94.900	V	33.4	-16.1	17.3	43.5	26.2	100.0	247.0	
7	551.000	H	33.1	-9.4	23.7	46.0	22.3	200.0	11.0	
8	826.500	H	32.5	-5.2	27.3	46.0	18.7	100.0	0.0	

4.4 Frequency Tolerance

4.4.1 Measurement procedure

[FCC 15.205 (e)]

The EUT was placed of an inside of a constant temperature chamber as the temperature in the chamber was varied between -30°C and $+50^{\circ}\text{C}$. The temperature was incremented by 10°C intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channels center frequency was recorded.

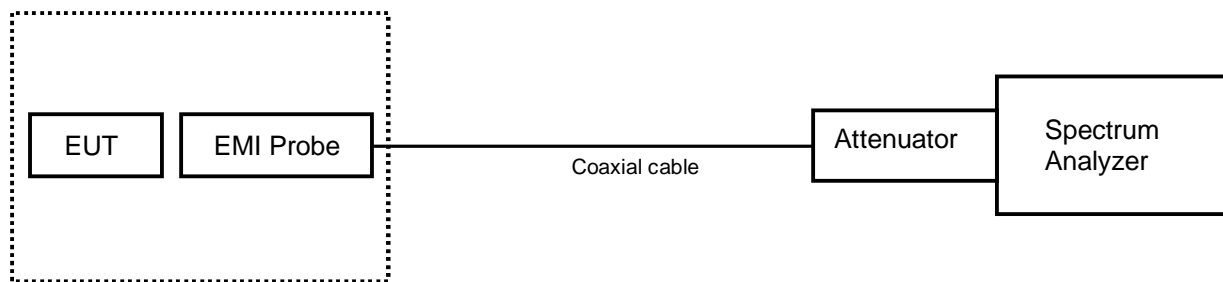
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



Constant Temperature Chamber

4.4.2 Limit

The Frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ over a temperature variation of -30 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.



4.4.3 Test data

Date : 25-October-2022
 Temperature : 17.3 [°C]
 Humidity : 47.0 [%]
 Test place : Shielded room No.4
 Test engineer : Kazunori Saito

Reference Frequency: EUT Channel 13.56MHz at 20°C											
Limit: ±0.01% = ±100ppm = ±0.135603MHz											
Power Supply	Temperature	Measurements Frequency (startup)	Frequency Tolerance (startup)	Measurements Frequency (2mins)	Frequency Tolerance (2mins)	Measurements Frequency (5mins)	Frequency Tolerance (5mins)	Measurements Frequency (10mins)	Frequency Tolerance (10mins)	Limit	Result
[V]	[°C]	[MHz]	[ppm]	[MHz]	[ppm]	[MHz]	[ppm]	[MHz]	[ppm]	[ppm]	
3.87	50	13.559941	-4.351	13.559933	-4.941	13.559941	-4.351	13.559940	-4.425	± 100	PASS
	40	13.559940	-4.425	13.559939	-4.499	13.559923	-5.678	13.559939	-4.499		
	30	13.559924	-5.605	13.559913	-6.416	13.559918	-6.047	13.559913	-6.416		
	20	13.560000	-	13.559915	-6.268	13.559910	-6.637	13.559903	-7.153		
	10	13.559939	-4.499	13.559950	-3.687	13.559942	-4.277	13.559943	-4.204		
	0	13.559961	-2.876	13.559963	-2.729	13.559951	-3.614	13.559951	-3.614		
	-10	13.559967	-2.434	13.559978	-1.622	13.559989	-0.811	13.559975	-1.844		
	-20	13.560019	1.401	13.560022	1.622	13.560023	1.696	13.560020	1.475		
	-30	13.560017	1.254	13.560019	1.401	13.560017	1.254	13.560160	11.799		
3.29	20	13.559907	-6.858	13.559901	-7.301	13.559899	-7.448	13.559902	-7.227		
4.45	20	13.559933	-4.941	13.559919	-5.973	13.559916	-6.195	13.559919	-5.973		

*: Tested by EB1146

Note. Frequency Tolerance (ppm) = (Measurements Frequency (MHz) – Reference Frequency (MHz)) / Reference Frequency (MHz) x 1000000

The primary power supply voltage rating of this EUT is 85% to 115%

4.5 AC Power Line Conducted Emissions

4.5.1 Measurement procedure

[FCC 15.207]

Test was applied by following conditions.

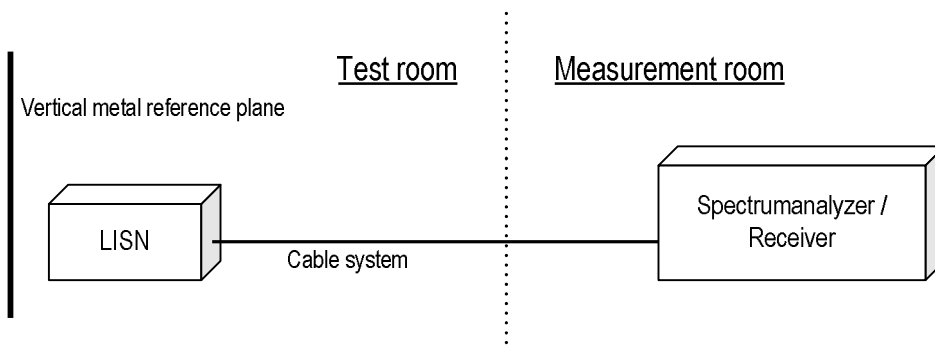
Test method	:	ANSI C63.10
Frequency range	:	0.15 MHz to 30 MHz
Test place	:	3 m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W)1.0m x (D)0.8m x (H)0.8m
Vertical Metal Reference Plane	:	(W)2.0 m x (H)2.0 m 0.4 m away from EUT
Test receiver setting		
- Detector	:	Quasi-peak, Average
- Bandwidth	:	9 kHz

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.

LISN for peripheral is terminated in 50Ω.

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration

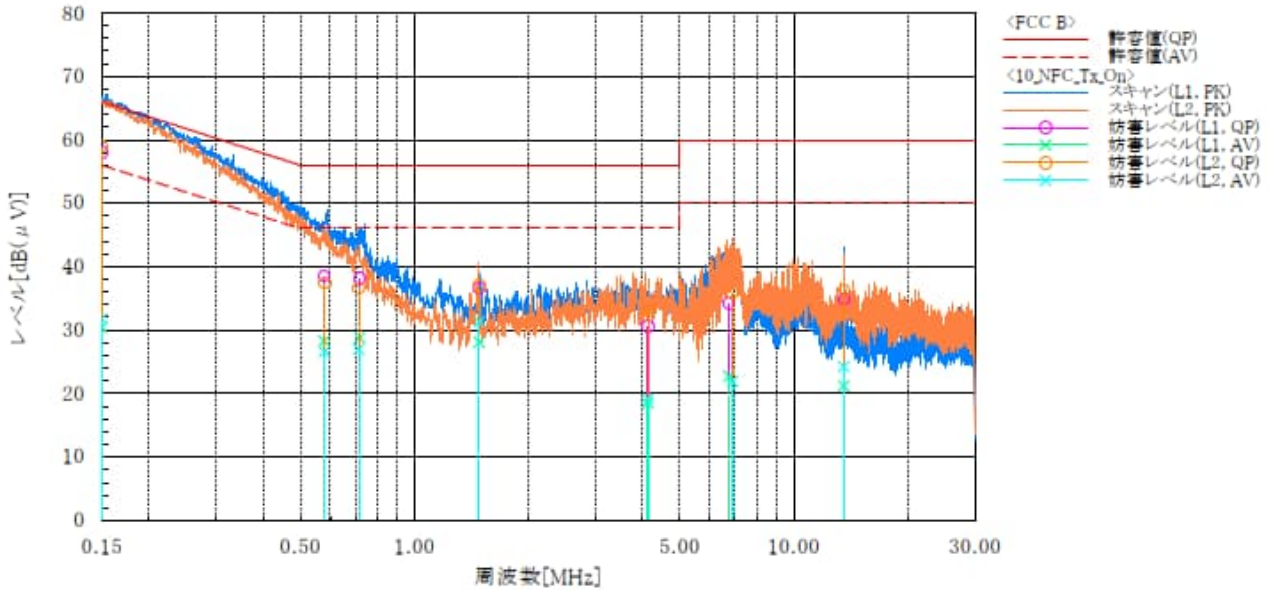


4.5.5 Test data

[Transmit ON]

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1155
 Serial No. : N/A
 Test mode : NFC_13.56MHz_Transmit_On

Standard : FCC Part 15 Class B
 Operator : T.Seino
 Temp,Hum,Atm : 20.4 [°C], 24.6 [%]
 Note1 :
 Note2 :



Final Result

--- L1 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]	Remark
1	0.150	47.4	19.8	10.6	58.0	30.4	66.0	56.0	8.0	25.6	
2	0.578	28.2	17.9	10.4	38.6	28.3	56.0	46.0	17.4	17.7	
3	0.719	27.7	18.4	10.4	38.1	28.8	56.0	46.0	17.9	17.2	
4	1.480	26.1	17.6	10.5	36.6	28.1	56.0	46.0	19.4	17.9	
5	4.129	19.9	7.8	10.7	30.6	18.5	56.0	46.0	25.4	27.5	
6	6.746	23.4	11.8	10.9	34.3	22.7	60.0	50.0	25.7	27.3	
7	13.560	23.4	9.7	11.5	34.9	21.2	60.0	50.0	25.1	28.8	

--- L2 ---

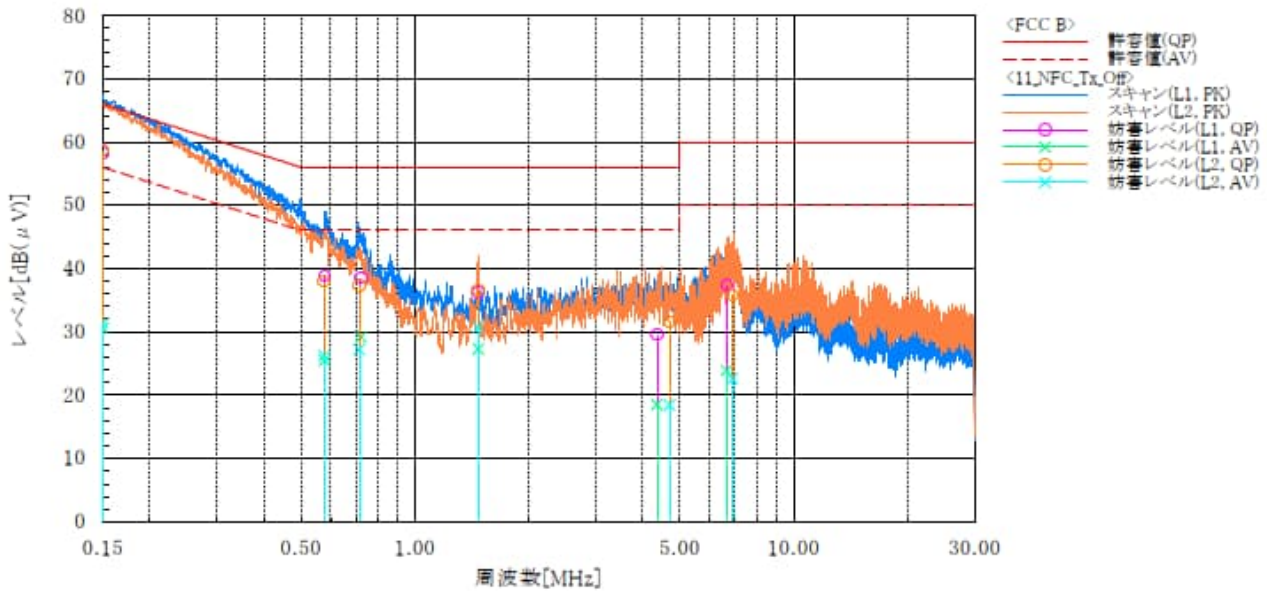
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]	Remark
1	0.150	48.4	21.2	10.6	59.0	31.8	66.0	56.0	7.0	24.2	
2	0.580	27.0	16.2	10.4	37.4	26.6	56.0	46.0	18.6	19.4	
3	0.713	26.3	16.5	10.4	36.7	26.9	56.0	46.0	19.3	19.1	
4	1.480	26.5	20.8	10.5	37.0	31.3	56.0	46.0	19.0	14.7	
5	4.142	22.3	8.4	10.7	33.0	19.1	56.0	46.0	23.0	26.9	
6	6.887	24.9	11.0	10.9	35.8	21.9	60.0	50.0	24.2	28.1	
7	13.560	24.7	12.6	11.6	36.3	24.2	60.0	50.0	23.7	25.8	



[Transmit OFF]

Company name : KYOCERA Corporation
 EUT : Mobile Phone
 Model No. : EB1155
 Serial No. : N/A
 Test mode : NFC_13.56MHz_Transmit_Off

Standard : FCC Part 15 Class B
 Operator : T.Seigo
 Temp,Hum,Atm : 20.4 [°C], 24.6 [%]
 Note1 :
 Note2 :



Final Result

--- L1 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]	Remark
1	0.150	47.7	20.0	10.6	58.3	30.6	66.0	56.0	7.7	25.4	
2	0.579	28.4	15.1	10.4	38.8	25.5	56.0	46.0	17.2	20.5	
3	0.721	28.2	18.8	10.4	38.6	29.2	56.0	46.0	17.4	16.8	
4	1.474	25.7	16.8	10.5	36.2	27.3	56.0	46.0	19.8	18.7	
5	4.353	18.9	7.8	10.7	29.6	18.5	56.0	46.0	26.4	27.5	
6	6.664	26.5	13.0	10.9	37.4	23.9	60.0	50.0	22.6	26.1	

--- L2 ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]	Remark
1	0.150	48.1	20.7	10.6	58.7	31.3	66.0	56.0	7.3	24.7	
2	0.576	27.5	15.8	10.4	37.9	26.2	56.0	46.0	18.1	19.8	
3	0.713	26.9	16.8	10.4	37.3	27.2	56.0	46.0	18.7	18.8	
4	1.473	26.2	20.2	10.5	36.7	30.7	56.0	46.0	19.3	15.3	
5	4.705	20.9	7.7	10.7	31.6	18.4	56.0	46.0	24.4	27.6	
6	6.902	24.9	11.6	10.9	35.8	22.5	60.0	50.0	24.2	27.5	



Japan

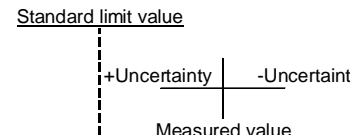
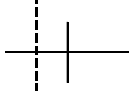
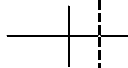
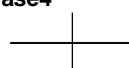
5 Antenna requirement

According to FCC section 15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. The antenna is a special antenna mounted inside of the EUT. Therefore, the EUT complies with the antenna requirement of FCC section 15.203.

6 Measurement Uncertainty

Expanded uncertainties stated are calculated with a coverage Factor k=2.
 Please note that these results are not taken into account when measurement uncertainty considerations contained in ETSI TR 100 028 Parts 1 and 2 determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission, AMN (9 kHz – 150 kHz)	±3.7 dB
Conducted emission, AMN (150 kHz – 30 MHz)	±3.3 dB
Radiated emission (9kHz – 30 MHz)	±3.2 dB
Radiated emission (30 MHz – 1000 MHz)	±5.5 dB
Radiated emission (1 GHz – 6 GHz)	±5.0 dB
Radiated emission (6 GHz – 18 GHz)	±4.6 dB
Radiated emission (18 GHz – 40 GHz)	±6.4 dB
Radio Frequency	±1.3 * 10 ⁻⁸
RF power, conducted	±0.7 dB
Adjacent channel power	±1.5 dB
Temperature	±0.6 °C
Humidity	±1.2 %
Voltage (DC)	±0.4 %
Voltage (AC, <10kHz)	±0.2 %

Judge	Measured value and standard limit value
PASS	<p>Case1</p>  <p>Standard limit value</p> <p>+Uncertainty -Uncertainty</p> <p>Measured value</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

7 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

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI receiver	ROHDE&SCHWARZ	ESW44	103171	30-Sep-2023	20-Sep-2022
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	30-Sep-2023	05-Sep-2022
Preamplifier	SONOMA	310	372170	30-Sep-2023	28-Sep-2022
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	30-Apr-2023	18-Apr-2022
Attenuator	TOYO Connector	NA-PJ-6	N/A(S507)	28-Feb-2023	03-Feb-2022
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1145	30-Jun-2023	28-Jun-2022
Log periodic antenna	Schwarzbeck	VUSLP9111B	345	30-Nov-2022	08-Nov-2021
			346	30-Nov-2023	16-Nov-2022
Attenuator	TOYO Connector	NA-PJ-6/6dB	N/A(S541)	30-Sep-2023	28-Sep-2022
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S503)	31-Jul-2023	14-Jul-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	MY30037/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/1m	my24610/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/2m	SN MY28404/4	31-Dec-2022	22-Dec-2021
		SUCOFLEX104/7m	41625/6	31-Dec-2022	22-Dec-2021
PC	DELL	OPTIPLEX9010	00186-228-073-851	N/A	N/A
Software	TOYO Technica	ES10/RE-AJ	Ver.2021.10.001	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	31-May-2023	28-May-2022
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	31-May-2023	28-May-2022

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI receiver	ROHDE&SCHWARZ	ESW44	103171	30-Sep-2023	20-Sep-2022
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	31-Dec-2022	22-Dec-2021
Line impedance stabilization network	Kyoritsu Electrical Works, Ltd.	TNW-407F2	12-17-110-2	30-Jun-2023	15-Jun-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/5m	MY33601/4	31-Oct-2023	22-Oct-2022
Microwave cable	HUBER+SUHNER	SUCOFLEX104/2m	MY37268/4	31-Oct-2023	22-Oct-2022
Coaxial cable	HUBER+SUHNER	RG214/U/10m	N/A (S194)	31-Dec-2022	22-Dec-2021
PC	DELL	OPTIPLEX9010	00186-228-073-851	N/A	N/A
Software	TOYO Technica	ES10/RE-AJ	Ver.2021.10.001	N/A	N/A

]*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.