

Report on the RF Testing of:

KYOCERA Corporation
Mobile Phone, Model: EB1084
FCC ID: JOYEB1084

In accordance with FCC Part 27 Subpart C
and FCC Part 27 Subpart L

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Hiroaki Suzuki	Deputy Manager of RF Group	Approved Signatory	2021.11.11

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EXECUTIVE SUMMARY

A sample(s) of this product was tested and found to be compliant with FCC Part 27 Subpart C and FCC Part 27 Subpart L.



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Contents

1	Summary of Test	3
1.1	Modification history of the test report	3
1.2	Standards	3
1.3	Test methods	3
1.4	Deviation from standards	3
1.5	List of applied test(s) of the EUT	3
1.6	Test information	4
1.7	Test set up	4
1.8	Test period	4
2	Equipment Under Test	5
2.1	EUT information	5
2.2	Modification to the EUT	7
2.3	Variation of family model(s)	7
2.4	Description of test mode	7
3	Configuration of Equipment	8
3.1	Equipment used	8
3.2	System configuration	8
4	Test Result	9
4.1	Equivalent Isotropic Radiated Power	9
4.2	Radiated Emissions and Harmonic Emissions	14
5	Measurement Uncertainty	23
6	Laboratory Information	24
	Appendix A. Test Equipment	25

1 Summary of Test

1.1 Modification history of the test report

Document Number	Modification History	Issue Date
JPD-TR-21224-0	First Issue	Refer to the cover page

1.2 Standards

CFR47 FCC Part 27 Subpart C
CFR47 FCC Part 27 Subpart L

1.3 Test methods

KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA/EIA 603-E-2016
ANSI C63.26-2015

1.4 Deviation from standards

None

1.5 List of applied test(s) of the EUT

Test item section	Test item	Condition	Result	Remark
2.1046	Conducted Output Power	Conducted	PASS	*1
27.50	Equivalent Isotropic Radiated Power	Radiated	PASS	-
27.50	Peak to Average Ratio	Conducted	N/A	*2
2.1049	Occupied Bandwidth	Conducted	N/A	*2
27.53 2.1051	Band Edge Spurious and Harmonic at Antenna Terminal	Conducted	N/A	*2
27.53 2.1053	Radiated emissions and Harmonic Emissions	Radiated	PASS	-
27.54 2.1055	Frequency Stability	Conducted	N/A	*2

*1: Refer to RF Exposure Report (Test Report_SAR)

*2: Since there is no change in Module from FCC ID: JOYEB1083, only the Radiated test items were performed. Please refer to the test report "JPD-TR-21199-0" of "FCC ID: JOYEB1083".



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1.6 Test information

None

1.7 Test set up

Table-top

1.8 Test period

22-October-2021 - 5-November-2021

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	EB1084
Serial number	359178870001485
Trade name	Kyocera
Number of sample(s)	1
EUT condition	Pre-Production
Power rating	Battery: DC 3.87 V
Size	(W) 69 mm × (D) 153 mm × (H) 10 mm
Environment	Indoor and Outdoor use
Terminal limitation	-20°C to 60°C
Hardware version	DMT
Software version	0039.a
Firmware version	Not applicable
RF Specification	
Frequency of Operation	Up Link WCDMA Band IV: 1712.4-1752.6 MHz LTE Band IV: 1710.0-1755.0 MHz Down Link WCDMA Band IV: 2112.4-2152.6 MHz LTE Band IV: 2110.0-2155.0 MHz
Modulation type	WCDMA Band IV: QPSK, 16QAM LTE Band IV: QPSK, 16QAM, 64QAM
Emission designator	WCDMA Band IV: 4M16F9W LTE Band IV: BW 1.4M QPSK: 1M10G7D, 16QAM: 1M10W7D, 64QAM: 1M09W7D BW 3M QPSK: 2M71G7D, 16QAM: 2M72W7D, 64QAM: 2M71W7D BW 5M QPSK: 4M52G7D, 16QAM: 4M51W7D, 64QAM: 4M54W7D BW 10M QPSK: 8M99G7D, 16QAM: 9M01W7D, 64QAM: 8M99W7D BW 15M QPSK: 13M5G7D, 16QAM: 13M5W7D, 64QAM: 13M5W7D BW 20M QPSK: 17M9G7D, 16QAM: 18M0W7D, 64QAM: 18M0W7D



Japan

Effective Radiated Power (E.I.R.P.)	WCDMA Band IV: 0.1622 W (22.1 dBm) LTE Band IV: 0.4074 W (26.1 dBm)
Antenna type	Internal antenna
Antenna gain	WCDMA Band IV: 0.8 dBi LTE Band IV: 0.8 dBi

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: EB1084, Serial Number: 359178870001485			
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

2.4 Description of test mode

The EUT had been tested under operating condition.
There are three channels have been tested as following:

Band	Modulation	Bandwidth [MHz]	Channel	Frequency [MHz]
WCDMA Band IV	QPSK	-	1312, 1413, 1513	1712.4, 1732.6, 1752.6
	16QAM	-	1312, 1413, 1513	1712.4, 1732.6, 1752.6
LTE Band IV	QPSK, 16QAM, 64QAM	1.4	19957, 20175, 20393	1710.7, 1732.5, 1754.3
		3	19965, 20175, 20385	1711.5, 1732.5, 1753.5
		5	19975, 20175, 20375	1712.5, 1732.5, 1752.5
		10	20000, 20175, 20350	1715.0, 1732.5, 1750.0
		15	20025, 20175, 20325	1717.5, 1732.5, 1747.5
		20	20050, 20175, 20300	1720.0, 1732.5, 1745.0

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 X-axis (WCDMA Band IV), Z-axis (LTE Band IV) 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.

3 Configuration of Equipment

Numbers assigned to equipment on the diagram in “3.2 System configuration” correspond to the list in “3.1 Equipment 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	EB1084	359178870001485	JOYEB1084	EUT

3.2 System configuration

1. Mobile Phone
(EUT)

4 Test Result

4.1 Equivalent Isotropic Radiated Power

4.1.1 Measurement procedure

[FCC 27.50]

<Step 1>

The EUT and support equipment are placed on a 1.0 meter x 1.0 meter surface, 0.8 meter height (Below 1GHz) or a 0.6 meter x 0.6 meter surface, 1.5 meter height (Above 1GHz) styrene foam table. Radiated emission measurements are performed at 3 meter distance with the broadband antenna (Log periodic antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1 to 4 meters and stopped at height producing the maximum emission. The bandwidth of the spectrum analyzer is set to 1 MHz. The turntable is rotated by 360 degrees and stopped at azimuth of producing the maximum emission.

<Step 2>

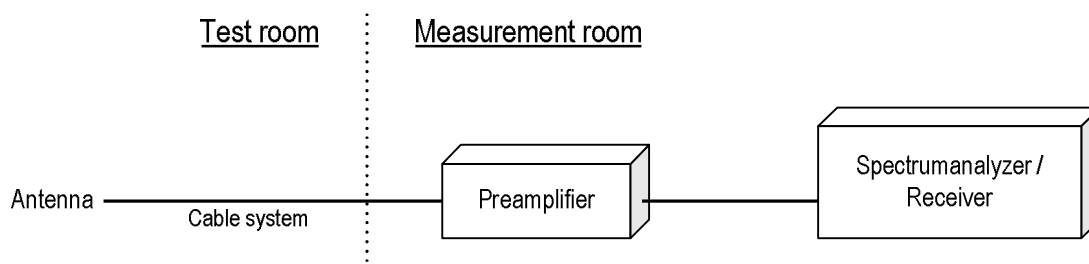
The substitution antenna is replaced by the transmitter antenna (EUT).
The frequency of the signal generator is adjusted to the measurement frequency.
Level of the signal generator is adjusted to the level that is obtained from step 1, and record the emission level of signal generator.

The spectrum analyzer is set to;

- Span = 1.5 times the OBW
- RBW = 1-5% of the expected OBW, not to exceed 1 MHz
- VBW $\geq 3 \times$ RBW
- Number of sweep points $\geq 2 \times$ span / RBW
- Sweep time = auto-couple
- Detector = RMS (power averaging)
- If the EUT can be configured to transmit continuously (i.e., burst duty cycle $\geq 98\%$), then set the trigger to free run.
- If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle $< 98\%$), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.
- Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges.

If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

- Test configuration



4.1.2 Calculation method

Result (EIRP) = Ant. Input - Cable loss + Antenna Gain
Margin = Limit – Result (EIRP)

Example:

Limit @ 1732.6MHz : 30.0 dBm
Ant. Input = 17.0 dBm Cable loss = 1.1 dB Ant. Gain = 5.1 dBi
Result = 17.0 - 1.1 + 5.1 = 21.0 dBm
Margin = 30.0 – 21.0 = 9.0 dB

4.1.3 Limit

1W (30 dBm)

4.1.4 Test data

Date	:	22~23-October-2021		
Temperature	:	23.6 [°C]		
Humidity	:	31.9 [%]	Test engineer	:
Test place	:	3m Semi-anechoic chamber		Chiaki Kanno
Date	:	28~29-October-2021		
Temperature	:	23.0 [°C]		
Humidity	:	38.4 [%]	Test engineer	:
Test place	:	3m Semi-anechoic chamber		Taiki Watanabe
Date	:	29~30-October-2021		
Temperature	:	22.8 [°C]		
Humidity	:	33.8 [%]	Test engineer	:
Test place	:	3m Semi-anechoic chamber		Taiki Watanabe
Date	:	30-October-2021		
Temperature	:	21.8 [°C]		
Humidity	:	38.9 [%]	Test engineer	:
Test place	:	3m Semi-anechoic chamber		Chiaki Kanno

[WCDMA Band IV]

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1712.4	-28.1	17.7	1.1	5.5	22.1	30.0	7.9
H	1732.6	-28.9	17.0	1.1	5.1	21.0	30.0	9.0
H	1752.6	-30.2	17.9	1.1	4.8	21.6	30.0	8.4

[LTE Band IV]**QPSK, BW 1.4MHz**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1710.7	-29.1	16.6	1.1	5.5	21.0	30.0	9.0
H	1732.5	-29.8	16.7	1.1	5.1	20.7	30.0	9.3
H	1754.3	-31.7	16.1	1.1	4.8	19.8	30.0	10.2

16QAM, BW 1.4MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1710.7	-30.6	15.1	1.1	5.5	19.5	30.0	10.5
H	1732.5	-31.0	15.5	1.1	5.1	19.5	30.0	10.5
H	1754.3	-32.4	15.4	1.1	4.8	19.1	30.0	10.9

64QAM, BW 1.4MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1710.7	-32.2	13.5	1.1	5.5	17.9	30.0	12.1
H	1732.5	-32.7	13.8	1.1	5.1	17.8	30.0	12.2
H	1754.3	-33.4	14.4	1.1	4.8	18.1	30.0	11.9

QPSK, BW 3MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1711.5	-28.9	17.2	1.1	5.5	21.6	30.0	8.4
H	1732.5	-29.4	17.1	1.1	5.1	21.1	30.0	8.9
H	1753.5	-32.0	15.9	1.1	4.8	19.6	30.0	10.4

16QAM, BW 3MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1711.5	-30.0	16.1	1.1	5.5	20.5	30.0	9.5
H	1732.5	-30.3	16.2	1.1	5.1	20.2	30.0	9.8
H	1753.5	-32.3	15.6	1.1	4.8	19.3	30.0	10.7

64QAM, BW 3MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1711.5	-31.5	14.6	1.1	5.5	19.0	30.0	11.0
H	1732.5	-31.4	15.1	1.1	5.1	19.1	30.0	10.9
H	1753.5	-32.2	15.7	1.1	4.8	19.4	30.0	10.6

QPSK, BW 5MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1712.5	-25.0	20.8	1.1	5.5	25.2	30.0	4.8
H	1732.5	-25.3	21.2	1.1	5.1	25.2	30.0	4.8
H	1752.5	-26.1	21.7	1.1	4.8	25.4	30.0	4.6

16QAM, BW 5MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1712.5	-25.6	20.2	1.1	5.5	24.6	30.0	5.4
H	1732.5	-25.4	21.1	1.1	5.1	25.1	30.0	4.9
H	1752.5	-25.9	21.9	1.1	4.8	25.6	30.0	4.4

64QAM, BW 5MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1712.5	-26.4	19.4	1.1	5.5	23.8	30.0	6.2
H	1732.5	-27.2	19.3	1.1	5.1	23.3	30.0	6.7
H	1752.5	-27.3	20.5	1.1	4.8	24.2	30.0	5.8

QPSK, BW 10MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1715.0	-25.5	20.3	1.1	5.4	24.6	30.0	5.4
H	1732.5	-25.6	20.9	1.1	5.1	24.9	30.0	5.1
H	1750.0	-25.4	22.4	1.1	4.8	26.1	30.0	3.9

16QAM, BW 10MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1715.0	-25.6	20.2	1.1	5.4	24.5	30.0	5.5
H	1732.5	-25.6	20.9	1.1	5.1	24.9	30.0	5.1
H	1750.0	-25.9	21.9	1.1	4.8	25.6	30.0	4.4

64QAM, BW 10MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1715.0	-26.3	19.5	1.1	5.4	23.8	30.0	6.2
H	1732.5	-26.4	20.1	1.1	5.1	24.1	30.0	5.9
H	1750.0	-27.0	20.8	1.1	4.8	24.5	30.0	5.5

QPSK, BW 15MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1717.5	-25.4	20.3	1.1	5.4	24.6	30.0	5.4
H	1732.5	-25.3	21.2	1.1	5.1	25.2	30.0	4.8
H	1747.5	-26.0	21.6	1.1	4.9	25.4	30.0	4.6

16QAM, BW 15MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1717.5	-25.6	20.1	1.1	5.4	24.4	30.0	5.6
H	1732.5	-25.5	21.0	1.1	5.1	25.0	30.0	5.0
H	1747.5	-25.1	20.7	1.1	4.9	24.5	30.0	5.5

64QAM, BW 15MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1717.5	-27.3	18.4	1.1	5.4	22.7	30.0	7.3
H	1732.5	-26.2	20.3	1.1	5.1	24.3	30.0	5.7
H	1747.5	-26.6	19.2	1.1	4.9	23.0	30.0	7.0

QPSK, BW 20MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1720.0	-25.7	19.9	1.1	5.4	24.1	30.0	5.9
H	1732.5	-25.4	20.7	1.1	5.1	24.7	30.0	5.3
H	1745.0	-25.2	22.1	1.1	4.9	25.9	30.0	4.1

16QAM, BW 20MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1720.0	-25.6	20.0	1.1	5.4	24.2	30.0	5.8
H	1732.5	-25.6	20.5	1.1	5.1	24.5	30.0	5.5
H	1745.0	-25.3	22.0	1.1	4.9	25.8	30.0	4.2

64QAM, BW 20MHz

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	1720.0	-27.4	18.2	1.1	5.4	22.4	30.0	7.6
H	1732.5	-26.5	19.6	1.1	5.1	23.6	30.0	6.4
H	1745.0	-27.1	20.2	1.1	4.9	24.0	30.0	6.0

4.2 Radiated Emissions and Harmonic Emissions

4.2.1 Measurement procedure

[FCC 27.53, 2.1053]

<Step 1>

The EUT and support equipment are placed on a 1.0 meter x 1.0 meter surface, 0.8 meter height (Below 1GHz) or a 0.6 meter x 0.6 meter surface, 1.5 meter height (Above 1GHz) styrene foam table. Radiated emission measurements are performed at 3 meter distance with the broadband antenna (Biconical antenna, Log periodic antenna and double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1 to 4 meters and stopped at height producing the maximum emission.

The bandwidth of the spectrum analyzer is set to 1 MHz. The turntable is rotated by 360 degrees and stopped at azimuth of producing the maximum emission. The frequency is investigated up to 20GHz.

<Step 2>

The substitution antenna is replaced by the transmitter antenna (EUT).

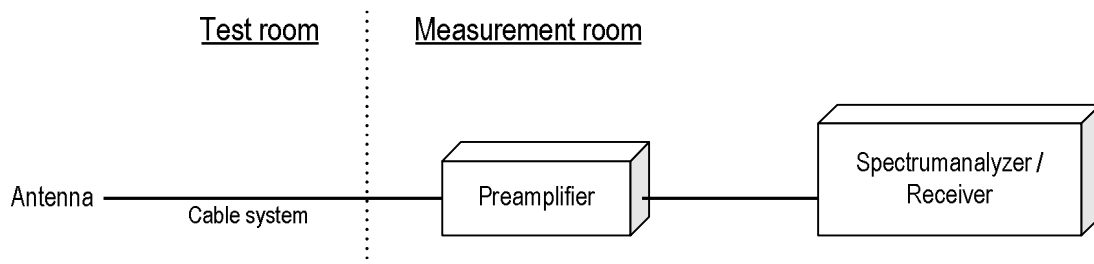
The frequency of the signal generator is adjusted to the measurement frequency.

Level of the signal generator is adjusted to the level that is obtained from step 1, and record the emission level of signal generator.

The spectrum analyzer is set to;

- a) RBW = 100 kHz for below 1GHz and 1MHz for above 1GHz / VBW $\geq 3 \times$ RBW
- b) Detector = Peak
- c) Trace mode = Max hold
- d) Sweep time = auto-couple

- Test configuration



4.2.2 Calculation method

Result (EIRP) = Ant. Input - Cable loss + Antenna Gain

Margin = Limit – Result (EIRP)

Example:

Limit @ 3465.2 MHz : -13.0 dBm

Ant. Input = -52.1 dBm Cable loss = 1.6dB Ant. Gain = 8.1 dBi

Result = -52.1 - 1.6 + 8.1 = -45.6 dBm

Margin = -13.0 - (-45.6) = 32.6 dB

4.2.3 Limit

-13 dBm or less

4.2.4 Test data

Date	: 22~23-October-2021		
Temperature	: 23.6 [°C]		
Humidity	: 31.9 [%]	Test engineer	:
Test place	: 3m Semi-anechoic chamber		<u>Chiaki Kanno</u>
Date	: 30-October-2021		
Temperature	: 21.8 [°C]		
Humidity	: 38.9 [%]	Test engineer	:
Test place	: 3m Semi-anechoic chamber		<u>Chiaki Kanno</u>
Date	: 31-October-2021		
Temperature	: 21.4 [°C]		
Humidity	: 33.6 [%]	Test engineer	:
Test place	: 3m Semi-anechoic chamber		<u>Kazunori Saito</u>
Date	: 1~2-November-2021		
Temperature	: 22.6 [°C]		
Humidity	: 42.6 [%]	Test engineer	:
Test place	: 3m Semi-anechoic chamber		<u>Chiaki Kanno</u>
Date	: 4~5-November-2021		
Temperature	: 22.3 [°C]		
Humidity	: 35.8 [%]	Test engineer	:
Test place	: 3m Semi-anechoic chamber		<u>Chiaki Kanno</u>

[WCDMA Band IV]**Channel: 1312**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3424.8	-55.0	-52.0	1.6	8.0	-45.6	-13.0	32.6

Channel: 1413

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.2	-55.0	-52.1	1.6	8.1	-45.6	-13.0	32.6

Channel: 1513

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3505.2	-54.9	-52.1	1.6	8.1	-45.6	-13.0	32.6

**[LTE Band IV]
QPSK, BW 1.4MHz
Channel: 19957**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3421.4	-54.9	-55.4	1.6	8.0	-49.0	-13.0	36.0

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.0	-54.5	1.6	8.1	-48.0	-13.0	35.0

Channel: 20393

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3508.6	-54.6	-55.3	1.6	8.1	-48.8	-13.0	35.8

16QAM, BW 1.4MHz

Channel: 19957

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3421.4	-54.8	-55.3	1.6	8.0	-48.9	-13.0	35.9

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.0	-54.5	1.6	8.1	-48.0	-13.0	35.0

Channel: 20393

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3508.6	-54.8	-55.5	1.6	8.1	-49.0	-13.0	36.0

64QAM, BW 1.4MHz

Channel: 19957

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3421.4	-54.8	-55.3	1.6	8.0	-48.9	-13.0	35.9

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.3	-54.8	1.6	8.1	-48.3	-13.0	35.3

Channel: 20393

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3508.6	-55.0	-55.7	1.6	8.1	-49.2	-13.0	36.2

QPSK, BW 3MHz**Channel: 19965**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3423.0	-55.2	-55.7	1.6	8.0	-49.3	-13.0	36.3

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.2	-54.7	1.6	8.1	-48.2	-13.0	35.2

Channel: 20385

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3507.0	-54.6	-55.3	1.6	8.1	-48.8	-13.0	35.8

16QAM, BW 3MHz**Channel: 19965**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3423.0	-55.1	-55.6	1.6	8.0	-49.2	-13.0	36.2

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.4	-54.9	1.6	8.1	-48.4	-13.0	35.4

Channel: 20385

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3507.0	-54.7	-55.4	1.6	8.1	-48.9	-13.0	35.9

64QAM, BW 3MHz**Channel: 19965**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3423.0	-55.1	-55.6	1.6	8.0	-49.2	-13.0	36.2

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.7	-55.2	1.6	8.1	-48.7	-13.0	35.7

Channel: 20385

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3507.0	-54.8	-55.5	1.6	8.1	-49.0	-13.0	36.0

QPSK, BW 5MHz**Channel: 19975**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3425.0	-55.6	-56.1	1.6	8.0	-49.7	-13.0	36.7

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.5	-55.0	1.6	8.1	-48.5	-13.0	35.5

Channel: 20375

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3505.0	-54.3	-55.0	1.6	8.1	-48.5	-13.0	35.5

16QAM, BW 5MHz**Channel: 19975**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3425.0	-55.6	-56.1	1.6	8.0	-49.7	-13.0	36.7

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.6	-55.1	1.6	8.1	-48.6	-13.0	35.6

Channel: 20375

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3505.0	-54.5	-55.2	1.6	8.1	-48.7	-13.0	35.7

64QAM, BW 5MHz**Channel: 19975**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3425.0	-55.2	-55.7	1.6	8.0	-49.3	-13.0	36.3

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.4	-54.9	1.6	8.1	-48.4	-13.0	35.4

Channel: 20375

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3505.0	-54.6	-55.3	1.6	8.1	-48.8	-13.0	35.8

QPSK, BW 10MHz**Channel: 20000**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3430.0	-55.1	-55.6	1.6	8.0	-49.2	-13.0	36.2

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.1	-54.6	1.6	8.1	-48.1	-13.0	35.1

Channel: 20350

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3500.0	-54.6	-55.3	1.6	8.1	-48.8	-13.0	35.8

16QAM, BW 10MHz**Channel: 20000**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3430.0	-55.5	-56.0	1.6	8.0	-49.6	-13.0	36.6

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.1	-54.6	1.6	8.1	-48.1	-13.0	35.1

Channel: 20350

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3500.0	-54.5	-55.2	1.6	8.1	-48.7	-13.0	35.7

64QAM, BW 10MHz**Channel: 20000**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3430.0	-55.5	-56.0	1.6	8.0	-49.6	-13.0	36.6

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.3	-54.8	1.6	8.1	-48.3	-13.0	35.3

Channel: 20350

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3500.0	-54.7	-55.4	1.6	8.1	-48.9	-13.0	35.9

QPSK, BW 15MHz**Channel: 20025**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3435.0	-55.3	-55.8	1.6	8.0	-49.4	-13.0	36.4

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.3	-54.8	1.6	8.1	-48.3	-13.0	35.3

Channel: 20325

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3495.0	-54.4	-55.1	1.6	8.1	-48.6	-13.0	35.6

16QAM, BW 15MHz**Channel: 20025**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3435.0	-55.6	-56.1	1.6	8.0	-49.7	-13.0	36.7

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.6	-55.1	1.6	8.1	-48.6	-13.0	35.6

Channel: 20325

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3495.0	-54.5	-55.2	1.6	8.1	-48.7	-13.0	35.7

64QAM, BW 15MHz**Channel: 20025**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3435.0	-55.3	-55.8	1.6	8.0	-49.4	-13.0	36.4

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.6	-55.1	1.6	8.1	-48.6	-13.0	35.6

Channel: 20325

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3495.0	-54.7	-55.4	1.6	8.1	-48.9	-13.0	35.9

QPSK, BW 20MHz**Channel: 20050**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3440.0	-55.4	-55.9	1.6	8.0	-49.4	-13.0	36.4

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.0	-54.5	1.6	8.1	-48.0	-13.0	35.0

Channel: 20300

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3490.0	-54.6	-55.3	1.6	8.1	-48.8	-13.0	35.8

16QAM, BW 20MHz**Channel: 20050**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3440.0	-55.3	-55.8	1.6	10.2	-47.1	-13.0	34.1

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.4	-54.9	1.6	10.3	-46.2	-13.0	33.2

Channel: 20300

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3490.0	-54.6	-55.3	1.6	10.3	-46.6	-13.0	33.6

64QAM, BW 20MHz**Channel: 20050**

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3440.0	-55.4	-55.9	1.6	10.2	-47.2	-13.0	34.2

Channel: 20175

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3465.0	-54.2	-54.7	1.6	10.3	-46.0	-13.0	33.0

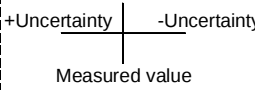
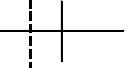
Channel: 20300

H/V	Frequency [MHz]	S.A Reading [dBm]	Ant. Input [dBm]	Cable loss [dB]	Ant.Gain [dBi]	Result [dBm]	Limit [dBm]	Margin [dB]
H	3490.0	-54.7	-55.4	1.6	10.3	-46.7	-13.0	33.7

5 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)	± 5.3 dB
Radiated emission (1 GHz – 6 GHz)	± 4.8 dB
Radiated emission (6 GHz – 18 GHz)	± 4.5 dB
Radiated emission (18 GHz – 40 GHz)	± 6.4 dB
Radio Frequency	$\pm 1.4 \cdot 10^{-8}$
RF power, conducted	± 0.8 dB
Adjacent channel power	± 2.4 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	Standard limit value +Uncertainty -Uncertainty Measured value Case1  Even if it takes uncertainty into consideration, a standard limit value is fulfilled.	
	Standard limit value +Uncertainty -Uncertainty Measured value Case2  Although measured value is in a standard limit value, a limit value won't be fulfilled if uncertainty is taken into consideration.	
FAIL	Standard limit value +Uncertainty -Uncertainty Measured value Case3  Although measured value exceeds a standard limit value, a limit value will be fulfilled if uncertainty is taken into consideration.	
	Standard limit value +Uncertainty -Uncertainty Measured value Case4  Even if it takes uncertainty into consideration, a standard limit value isn't fulfilled.	



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

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	30-Sep-2022	15-Sep-2021
Spectrum analyzer	Agilent Technologies	E4447A	MY46180188	31-Mar-2022	11-Mar-2021
Spectrum analyzer	Agilent Technologies	E4440A	US40420937	31-Dec-2021	11-Dec-2020
Spectrum analyzer	ROHDE&SCHWARZ	FSV40	101731	30-Jun-2022	08-Jun-2021
Preamplifier	SONOMA	310	372170	30-Sep-2022	15-Sep-2021
Biconical antenna	Schwarzbeck	VHBB9124/BBA9106	1333	31-Dec-2021	15-Dec-2020
Log periodic antenna	Schwarzbeck	VUSLP9111B	345	31-Oct-2021	19-Oct-2020
Log periodic antenna	Schwarzbeck	VUSLP9111B	346	31-Oct-2022	19-Oct-2021
Attenuator	TOYO Connector	NA-PJ-6/6dB	N/A(S541)	30-Sep-2022	16-Sep-2021
Attenuator	TAMAGAWA.ELEC	CFA-10/3dB	N/A(S503)	31-Jul-2022	20-Jul-2021
Preamplifier	TSJ	MLA-100M18-B02-40	1929118	31-Dec-2021	15-Dec-2020
Attenuator	AEROFLEX	26A-10	081217-08	31-Dec-2021	14-Dec-2020
Double ridged guide antenna	ETS LINDGREN	3117	00224193	31-Mar-2022	30-Mar-2021
Attenuator	HUBER+SUHNER	6803.17.B	N/A(2340)	31-Dec-2021	15-Dec-2020
Double ridged guide antenna	A.H.Systems Inc.	SAS-574	469	31-Aug-2022	02-Aug-2021
Preamplifier	TSJ	MLA-1840-B03-35	1240332	31-Aug-2022	02-Aug-2021
Band rejection filter	Micro-Tronics	BRC50719	014	31-Dec-2021	14-Dec-2020
Signal generator	ROHDE&SCHWARZ	SMB100A	177525	31-Dec-2021	23-Dec-2020
RF power amplifier	R&K	CGA020M602-2633R	B40240	30-Jun-2022	15-Jun-2021
Microwave cable	HUBER+SUHNER	SUCOFLEX102/2m	31648	31-Mar-2022	10-Mar-2021
Dipole antenna	Schwarzbeck	VHAP	1021	31-Jul-2022	28-Jul-2021
Dipole antenna	Schwarzbeck	UHAP	993	31-Jul-2022	28-Jul-2021
Double ridged guide antenna	ETS LINDGREN	3117	00218815	31-Dec-2021	07-Dec-2020
Wideband Radio Frequency Tester	ROHDE&SCHWARZ	CMW500	126079	31-Oct-2021	21-Oct-2020
Wideband Radio Frequency Tester	ROHDE&SCHWARZ	CMW500	116338	31-Aug-2022	04-Aug-2021
Microwave cable	HUBER+SUHNER	SUCOFLEX104/9m	MY30037/4	31-Dec-2021	15-Dec-2020
		SUCOFLEX104/1m	my24610/4	31-Dec-2021	15-Dec-2020
		SUCOFLEX104/8m	SN MY30033/4	31-Dec-2021	15-Dec-2020
		SUCOFLEX104/1m	MY32976/4	31-Dec-2021	15-Dec-2020
		SUCOFLEX104/2m	SN MY28404/4	31-Dec-2021	15-Dec-2020
		SUCOFLEX104/7m	41625/6	31-Dec-2021	15-Dec-2020
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V6.0.140	N/A	N/A
Absorber	RIKEN	PPF30	N/A	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	31-May-2022	20-May-2021
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	31-May-2022	20-May-2021

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