Zacta

TEST REPORT

Report number : JPD-TR-17235-0
Issue date : December 14, 2017

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

FCC Part15 Subpart C

The test results are traceable to the international or national standards.

Applicant	:	KYOCERA Corporation
Equipment under test (EUT)	:	Mobile Phone
Model number	:	YKFA24
FCC ID	:	JOYYKFA24

Date of test	:	November 28, 29, 30, 2017
Test place	:	TÜV SÜD Zacta Ltd. Yonezawa Testing Center 5-4149-7, Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan Phone: +81-238-28-2881 Fax: +81-238-28-2888
Test results	:	Complied

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 Zacta Ltd.
This test report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, ILAC-MRA or any agency of the federal government.

Tested by : Tadahiro Seino Taiki Watanabe

Tadahiro Seino Taiki Watanabe

Approved by : Hiro Suzuki

Hiroaki Suzuki
Lab Manager of RF Lab

NVLAP TESTING
NVLAP LAB CODE 200306-0

ilac-MRA

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1. Summary of Test

1.1 Purpose of test

It is the original test in order to verify conformance to FCC Part 15 Subpart C.

1.2 Standards

CFR47 FCC Part 15 Subpart C

1.2.1 Test Methods

ANSI C63.10-2013

1.2.2 Deviation from standards

None

1.3 List of applied test to the EUT

Test items Section	Classification of EUT	Condition	Result
RSS-Gen 4.6.1	Occupied Bandwidth	Conducted	PASS
15.209 15.225 (a)(b)(c)(d)	Operation within the band 13.110-14.010MHz	Radiated	PASS
15.209 15.225 (d)	Transmitter Radiated Spurious Emissions	Radiated	PASS
15.225 (e)	Frequency Tolerance	Conducted	PASS
15.207	AC Power Line Conducted Emissions	Conducted	PASS

1.3.1 Test set up

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1.4 Modification to the EUT by laboratory

None

2. Equipment Under Test

2.1 General Description of equipment

EUT is the Mobile Phone.

2.2 EUT information

Applicant	:	KYOCERA Corporation Yokohama Office2-1-1 Kagahara, Tsuzuki-ku, Yokohama-shi, Kanagawa, Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment under test	:	Mobile Phone
Trade name	:	Kyocera
Model number	:	YKFA24
Serial number	:	N/A
EUT condition	:	Pre-production
Power ratings	:	Battery: DC 3.8V
Size	:	(W) 72.3mm×(D) 8.3mm×(H) 149.3mm
Environment	:	Indoor and Outdoor USE
Terminal limitation	:	-20˚C to 60˚C
RF Specification Frequency range	:	13.56MHz
Modulation method	:	ASK
Antenna type	:	Loop antenna

2.3 Variation of the family model(s)

Not applicable

2.4 Description of Test 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.

2.5 Operating mode

[Transmit mode]
i) NFC test program setup to the DM tool
ii) Start test mode

3. Configuration of equipment

3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Mobile Phone	KYOCERA	YKFA24	N/A	JOYYKFA24	EUT
2	AC Adapter	KYOCERA	AD03KC	N/A	N/A	*
3	USB conversion connector	ANKER	N/A	N/A	N/A	*

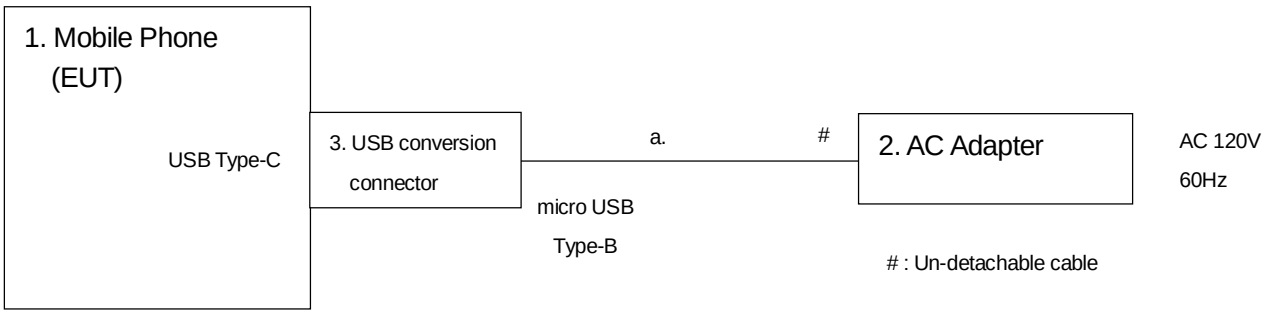
*: AC power line Conducted Emission Test.

3.2 Cable(s) used

No.	Cable	Length[m]	Shield	Connector	Comment
a	Micro USB cable (for AC Adapter)	1.0	Yes	Metal	*

*: AC power line Conducted Emission Test.

3.3 System configuration



Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in “3.1 Equipment(s) used” and “3.2 Cable(s) used”.

4. Occupied Bandwidth

4.1 Measurement procedure
[IC RSS-Gen 4.6.1]

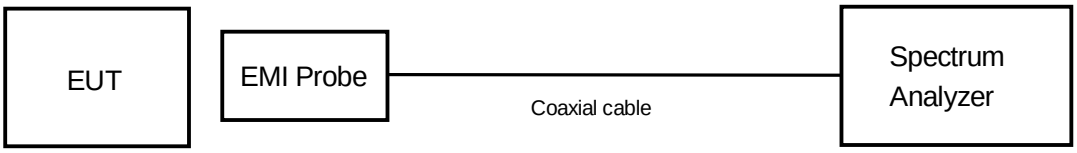
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to approach 1% of the selected span or less than 1%. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

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



4.2 Limit

None

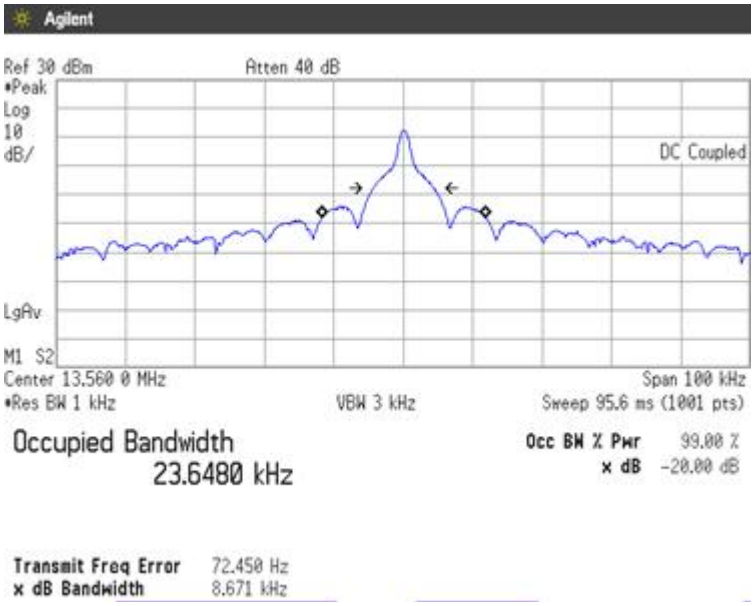
4.3 Measurement result

Date : November 30, 2017
Temperature : 21.6 [˚C]
Humidity : 46.1 [%]
Test place : Shielded room No.4

Test engineer : Taiki Watanabe

Frequency (MHz)	Occupied Bandwidth (kHz)
13.56	23.648

4.4 Trace data



5. Operation within the band 13.110-14.010MHz

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

Test was applied by following conditions.

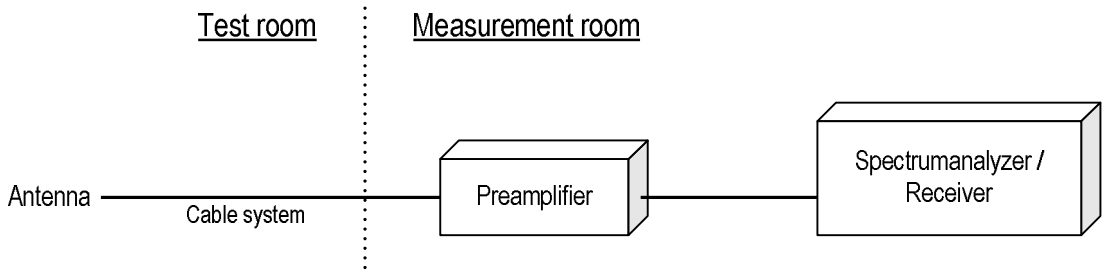
Test method	:	ANSI C63.10
Frequency range	:	13.110MHz to 14.010MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W)1.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m

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



5.2 Calculation method

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

5.3 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 40log (3/30) = -40.0dB

5.4 Test data

Date : November 28, 2017
Temperature : 21.0 [˚C]
Humidity : 22.0 [%]
Test place : 3m Semi-anechoic chamber
Test engineer : Tadahiro Seino

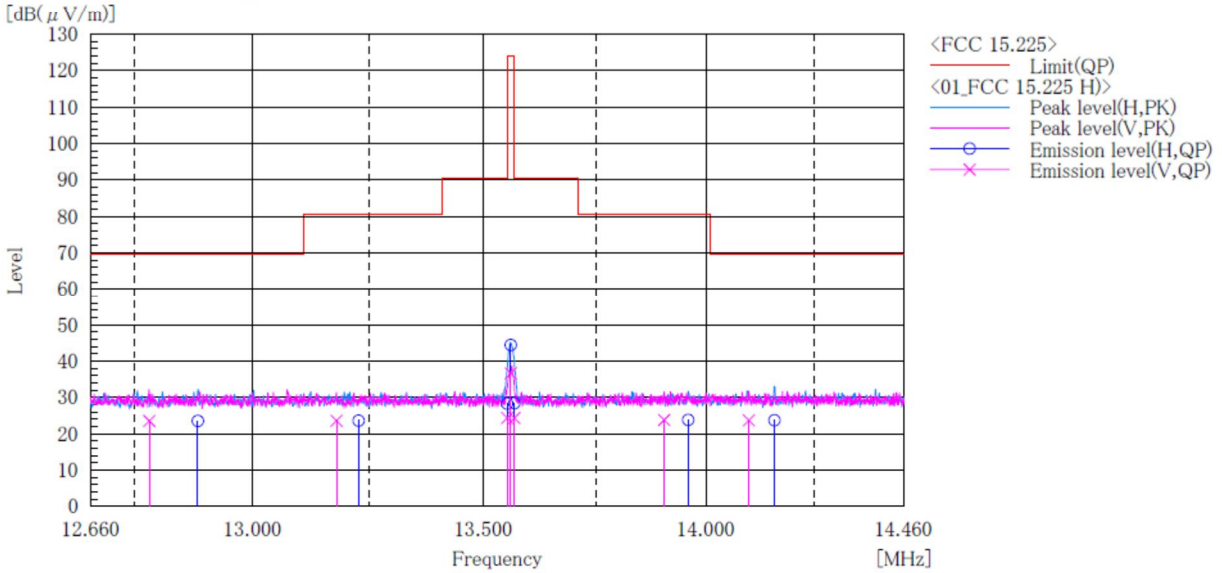
Frequency range (MHz)	Frequency (MHz)	Level		Limit (dBuV/m)	Margin (dB)	Result
		Measurered at 3m (dBuV/m)	Measurered at 30m (dBuV/m)			
13.553-13.567	13.560	52.9	12.9	84.0	71.1	PASS
13.41-13.553	13.552	38.6	-1.4	50.5	51.9	PASS
13.567-13.71	13.568	38.9	-1.1	50.5	51.6	PASS
13.11-13.41	13.145	23.6	-16.4	40.5	56.9	PASS
13.71-14.01	13.959	23.8	-16.2	40.5	56.7	PASS
12.66-13.11	12.677	23.5	-16.5	29.5	46.0	PASS
14.01-14.46	14.416	23.7	-16.3	29.5	45.8	PASS

5.5 Trace data

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. | <<DATA Sheet No.01>> | 28 November,2017 10:58

Company name	: KYOCERA Corporation	Standard	: FCC 15.225
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: YKFA24	Temp,Hum,Atm	: 21.0[℃] 22.0[%]
Serial No.	: N/A	Note1	: Horizontal (X axis)
Test mode	: NFC Type B	Note2	:



Final Result

No.	Frequency [MHz]	(P)	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 [°]
1	13.560	V	40.2	-3.6	36.6	124.0	87.4	100.0	330.0
2	13.552	V	27.9	-3.6	24.3	90.5	66.2	100.0	330.0
3	13.568	V	27.9	-3.6	24.3	90.5	66.2	100.0	330.0
4	13.179	V	27.2	-3.6	23.6	80.5	56.9	100.0	184.0
5	13.904	V	27.3	-3.5	23.8	80.5	56.7	100.0	352.0
6	12.782	V	27.1	-3.6	23.5	69.5	46.0	100.0	229.0
7	14.098	V	27.2	-3.5	23.7	69.5	45.8	100.0	278.0
8	13.560	H	48.0	-3.6	44.4	124.0	79.6	100.0	248.0
9	13.552	H	31.9	-3.6	28.3	90.5	62.2	100.0	248.0
10	13.568	H	32.0	-3.6	28.4	90.5	62.1	100.0	248.0
11	13.227	H	27.2	-3.6	23.6	80.5	56.9	100.0	301.0
12	13.959	H	27.3	-3.5	23.8	80.5	56.7	100.0	354.0
13	12.884	H	27.1	-3.6	23.5	69.5	46.0	100.0	163.0
14	14.157	H	27.2	-3.5	23.7	69.5	45.8	100.0	129.0

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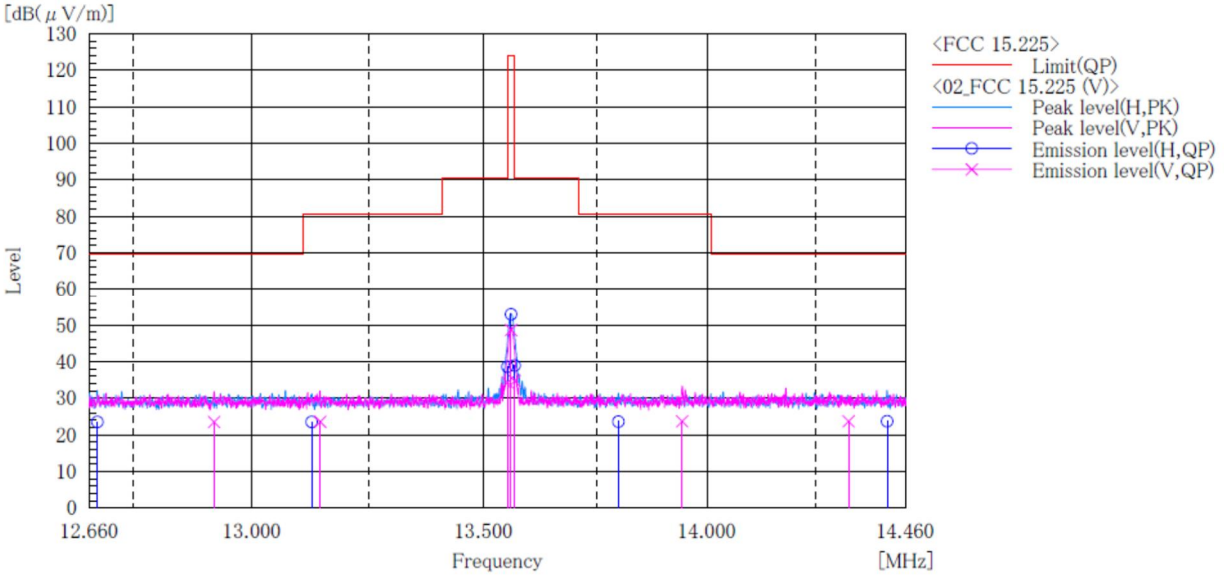
******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.02>> 28 November,2017 11:18

Company name	: KYOCERA Corporation	Standard	: FCC 15.225
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: YKFA24	Temp,Hum,Atm	: 21.0[℃] 22.0[%]
Serial No.	: N/A	Note1	: Vertical (Z axis)
Test mode	: NFC Type B	Note2	:



Final Result

No.	Frequency [MHz]	(P)	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 [°]
1	13.560	V	52.2	-3.6	48.6	124.0	75.4	100.0	88.0
2	13.552	V	37.9	-3.6	34.3	90.5	56.2	100.0	88.0
3	13.568	V	38.3	-3.6	34.7	90.5	55.8	100.0	88.0
4	13.145	V	27.2	-3.6	23.6	80.5	56.9	100.0	308.0
5	13.943	V	27.2	-3.5	23.7	80.5	56.8	100.0	287.0
6	12.920	V	27.1	-3.6	23.5	69.5	46.0	100.0	0.0
7	14.326	V	27.2	-3.5	23.7	69.5	45.8	100.0	0.0
8	13.560	H	56.5	-3.6	52.9	124.0	71.1	100.0	178.0
9	13.552	H	42.2	-3.6	38.6	90.5	51.9	100.0	178.0
10	13.568	H	42.5	-3.6	38.9	90.5	51.6	100.0	178.0
11	13.127	H	27.1	-3.6	23.5	80.5	57.0	100.0	280.0
12	13.799	H	27.1	-3.5	23.6	80.5	56.9	100.0	73.0
13	12.677	H	27.1	-3.6	23.5	69.5	46.0	100.0	94.0
14	14.416	H	27.2	-3.5	23.7	69.5	45.8	100.0	68.0

6. Radiated Emissions

6.1 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

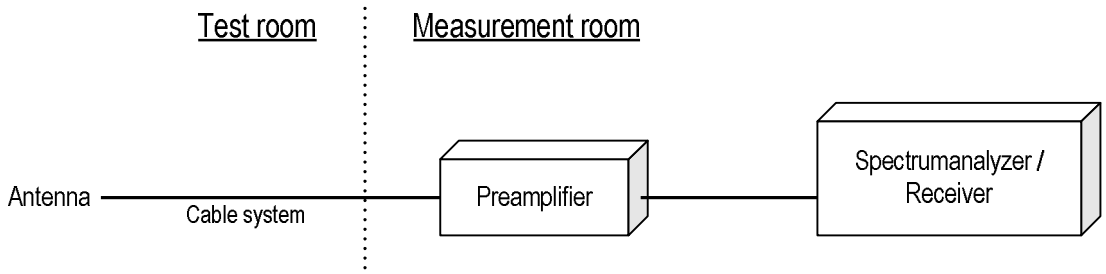
Test receiver setting

- 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 are 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.

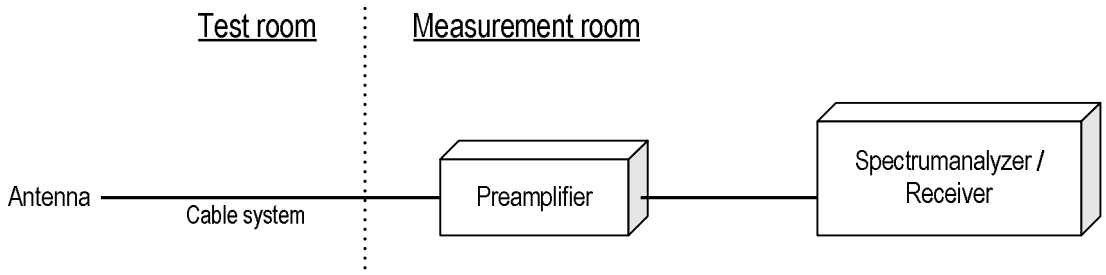
Test method	:	ANSI C63.10
Frequency range	:	30MHz to 1000MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	Styrofoam table / (W)1.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m

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



6.2 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

6.3 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 30m using 40log (3/30) = -40.0dB

6.4 Test data

Date : November 28, 2017
Temperature : 21.0 [˚C]
Humidity : 22.0 [%]
Test place : 3m Semi-anechoic chamber

Test engineer : Tadahiro Seino

[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	26.1	-2.3	23.8	-16.2	29.5	45.7	PASS

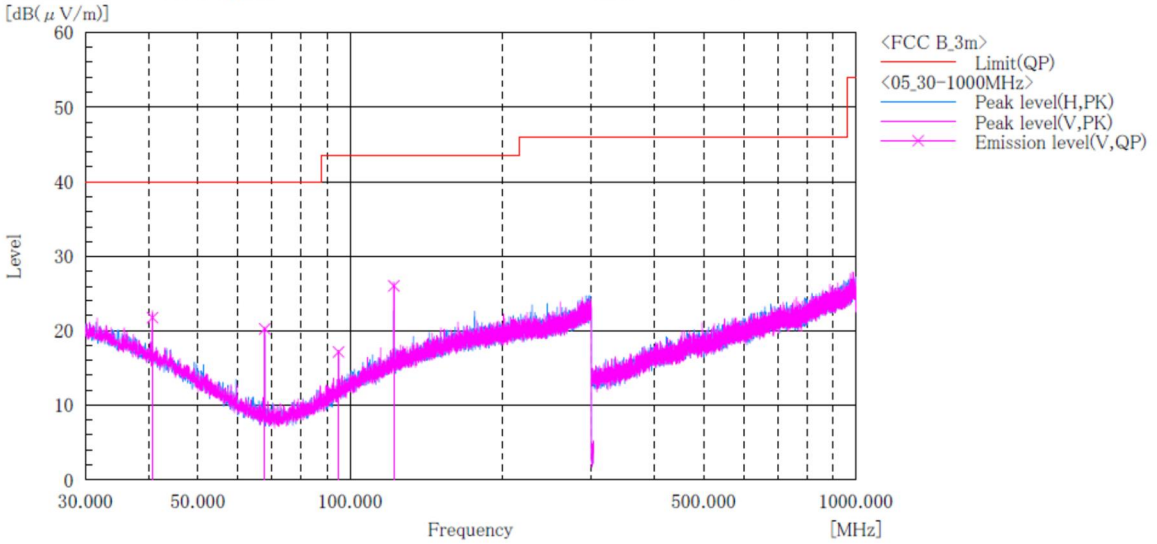
[30MHz to 1000MHz]

******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.01>> 28 November,2017 13:52

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : YKFA24
Serial No. : N/A
Test mode : NFC Type B

Standard : FCC 15.225
Operator : T.Seino
Temp,Hum,Atm : 21.0[℃] 22.0[%]
Note1 : Z axis
Note2 :



Final Result

No.	Frequency [MHz]	(P)	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 [°]
1	40.680	V	30.0	-8.3	21.7	40.0	18.3	100.0	259.0
2	67.800	V	36.3	-16.1	20.2	40.0	19.8	100.0	31.0
3	94.900	V	30.0	-12.9	17.1	43.5	26.4	100.0	163.0
4	122.040	V	35.1	-9.0	26.1	43.5	17.4	100.0	342.0

7. Frequency Tolerance

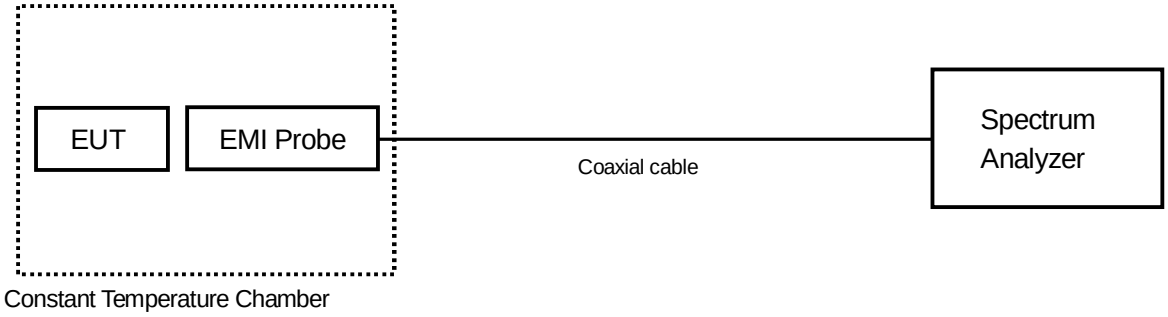
7.1 Measurement procedure
[FCC 15.205 (e)]

The EUT was placed of an inside of an constant temperature chamber as the temperature in the chamber was varied between -30˚C and +50˚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



7.2 Limit

The Frequency tolerance of the carrier signal shall be maintained within +/- 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.

7.3 Test data

Date : November 30, 2017
Temperature : 21.6 [˚C]
Humidity : 46.1 [%]
Test place : Shielded room No.4

Test engineer : Taiki Watanabe

Reference Frequency: EUT Channel 13.56MHz at 20ºC Limit: ±0.01% = ±100ppm = ±0.135603MHz											
Power Supply [V]	Temperature [ºC]	Measurements Frequency (startup) [MHz]	Frequency Tolerance (startup) [ppm]	Measurements Frequency (2mins) [MHz]	Frequency Tolerance (2mins) [ppm]	Measurements Frequency (5mins) [MHz]	Frequency Tolerance (5mins) [ppm]	Measurements Frequency (10mins) [MHz]	Frequency Tolerance (10mins) [ppm]	Limit [ppm]	Result
3.80	50	13.560095	-0.369	13.560105	0.369	13.560065	-2.581	13.560090	-0.737	± 100	PASS
	40	13.560065	-2.581	13.560075	-1.844	13.560095	-0.369	13.560070	-2.212		
	30	13.560120	1.475	13.560110	0.737	13.560130	2.212	13.560100	0.000		
	20	13.560100	-	13.560110	0.737	13.560120	1.475	13.560135	2.581		
	10	13.560125	1.844	13.560140	2.950	13.560120	1.475	13.560130	2.212		
	0	13.560145	3.319	13.560160	4.425	13.560140	2.950	13.560155	4.056		
	-10	13.560120	1.475	13.560135	2.581	13.560140	2.950	13.560115	1.106		
	-20	13.560110	0.737	13.560100	0.000	13.560100	0.000	13.560120	1.475		
	-30	13.560100	0.000	13.560075	-1.844	13.560080	-1.475	13.560130	2.212		
3.42	20	13.560130	2.212	13.560100	0.000	13.560135	2.581	13.560105	0.369		
4.18	20	13.560135	2.581	13.560115	1.106	13.560100	0.000	13.560135	2.581		

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 90% to 110%.

8. AC Power Line Conducted Emissions

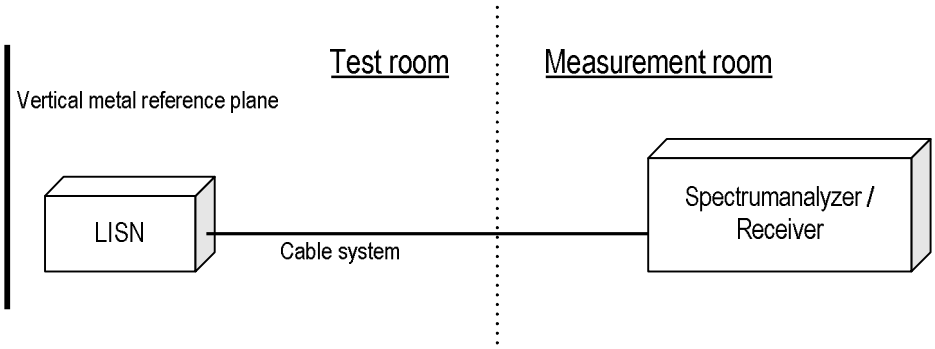
8.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

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

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



8.2 Calculation method

Emission level = Reading + (LISN. factor + Cable system loss)
Margin = Limit – Emission level

8.3 Limit

Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

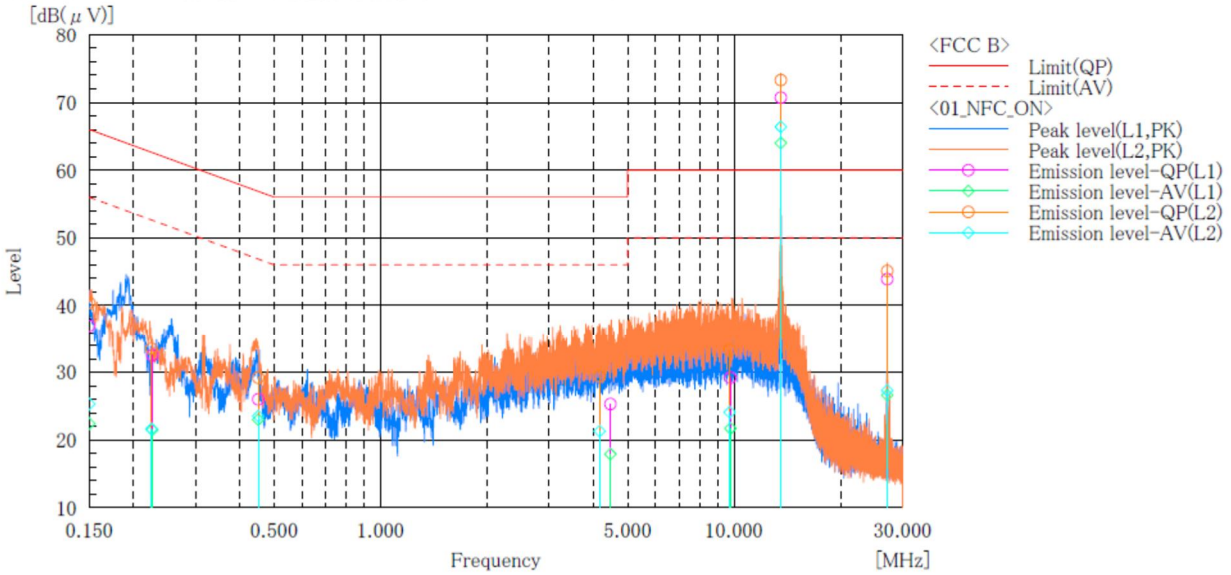
*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

8.4 Test data
[Transmit ON]

***** CONDUCTED EMISSION at MAINS PORT *****
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<Data Sheet No.01>> 29 November,2017 09:38

Company Name	: KYOCERA Corporation	Standard	: FCC Part.15 Subpart C
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: YKFA24	Temp,Hum,Atm	: 20.0[℃] 22.6[%]
Serial No.	: N/A	Note1	:
Test mode	: NFC_13.56MHz_Transmit_ON	Note2	:



Final Result

--- L1 Phase ---

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]
1	0.150	26.5	11.9	10.5	37.0	22.4	66.0	56.0	29.0	33.6
2	0.226	22.1	11.1	10.4	32.5	21.5	62.6	52.6	30.1	31.1
3	0.451	15.6	12.6	10.4	26.0	23.0	56.9	46.9	30.9	23.9
4	4.472	14.7	7.3	10.6	25.3	17.9	56.0	46.0	30.7	28.1
5	9.771	18.2	10.7	11.0	29.2	21.7	60.0	50.0	30.8	28.3
6	13.560	59.3	52.6	11.4	70.7	64.0	60.0	50.0	-10.7	-14.0
7	27.120	31.9	14.6	12.0	43.9	26.6	60.0	50.0	16.1	23.4

--- L2 Phase ---

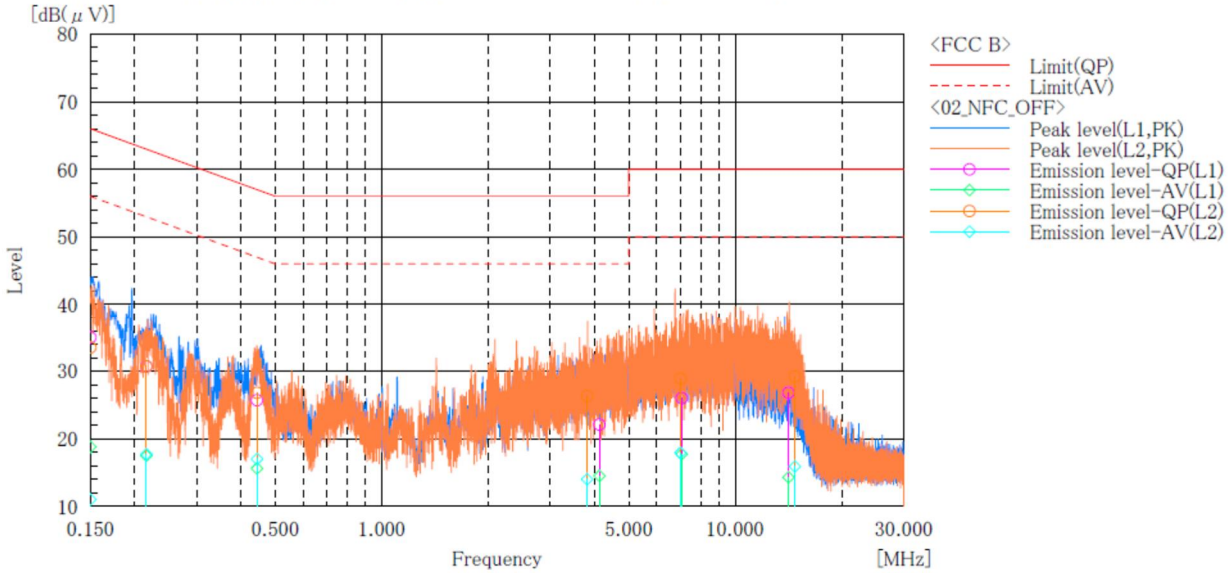
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.150	29.8	14.7	10.6	40.4	25.3	66.0	56.0	25.6	30.7
2	0.225	23.1	11.2	10.4	33.5	21.6	62.6	52.6	29.1	31.0
3	0.451	18.8	13.1	10.4	29.2	23.5	56.9	46.9	27.7	23.4
4	4.167	18.8	10.7	10.6	29.4	21.3	56.0	46.0	26.6	24.7
5	9.719	22.2	13.0	11.1	33.3	24.1	60.0	50.0	26.7	25.9
6	13.560	61.9	55.0	11.4	73.3	66.4	60.0	50.0	-13.3	-16.4
7	27.120	33.2	15.4	11.9	45.1	27.3	60.0	50.0	14.9	22.7

[Transmit OFF]

***** CONDUCTED EMISSION at MAINS PORT *****
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<Data Sheet No.02>> 29 November,2017 10:31

Company Name	: KYOCERA Corporation	Standard	: FCC Part.15 Subpart C
EUT	: Mobile Phone	Operator	: T.Seino
Model No.	: YKFA24	Temp,Hum,Atm	: 20.0[℃] 22.6[%]
Serial No.	: N/A	Note1	:
Test mode	: NFC_13.56MHz_Transmit_OFF	Note2	:



Final Result

--- L1 Phase ---

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]
1	0.150	24.5	8.3	10.5	35.0	18.8	66.0	56.0	31.0	37.2
2	0.216	20.3	7.1	10.4	30.7	17.5	63.0	53.0	32.3	35.5
3	0.444	15.3	5.2	10.4	25.7	15.6	57.0	47.0	31.3	31.4
4	4.128	11.5	3.9	10.6	22.1	14.5	56.0	46.0	33.9	31.5
5	7.059	15.2	6.9	10.8	26.0	17.7	60.0	50.0	34.0	32.3
6	14.147	15.4	2.9	11.4	26.8	14.3	60.0	50.0	33.2	35.7

--- L2 Phase ---

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]
1	0.150	22.9	0.4	10.6	33.5	11.0	66.0	56.0	32.5	45.0
2	0.216	20.3	7.3	10.4	30.7	17.7	63.0	53.0	32.3	35.3
3	0.444	16.4	6.6	10.4	26.8	17.0	57.0	47.0	30.2	30.0
4	3.813	15.7	3.4	10.6	26.3	14.0	56.0	46.0	29.7	32.0
5	7.000	18.0	7.0	10.9	28.9	17.9	60.0	50.0	31.1	32.1
6	14.759	17.7	4.4	11.5	29.2	15.9	60.0	50.0	30.8	34.1

9. Uncertainty of measurement

Expanded uncertainties stated are calculated with a coverage Factor k=2.
Please note that these results are not taken into account when determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission, AMN (9kHz – 150kHz)	±3.8dB
Conducted emission, AMN (150kHz – 30MHz)	±3.3dB
Radiated emission (9kHz – 30MHz)	±3.0dB
Radiated emission (30MHz – 1000MHz)	±4.7dB
Radiated emission (1GHz – 6GHz)	±4.9dB
Radiated emission (6GHz – 18GHz)	±5.2dB
Radiated emission (18GHz – 40GHz)	±5.8dB

10. Laboratory Information

1. Location
   Name: Yonezawa Testing Center
   Address: 5-4149-7, Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan
   Phone: +81-238-28-2881
   Fax: +81-238-28-2888

2. Accreditation and Registration
   1) NVLAP
      LAB CODE: 200306-0

   2) VLAC
      Accreditation No.: VLAC-013

   3) BSMI
      Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

   4) Industry Canada

Site number	Facility	Expiration date
4224A-4	3m Semi-anechoic chamber	2020-11-27
4224A-5	10m Semi-anechoic chamber No.1	2020-11-27
4224A-6	10m Semi-anechoic chamber No.2	2019-12-14

   5) VCCI Council

Registration number	Expiration date
A-0166	2019-07-03

Appendix A. Test equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	Jun. 30, 2018	Jun. 28, 2017
Microwave cable	SUHNER	SUCOFLEX102/2m	MY3385/2	Feb. 28, 2018	Feb. 2, 2017
EMI Probe	ANRITSU	MA2601C	N/A(1753)	Oct. 31, 2018	Oct. 25, 2017
Temperature and humidity chamber	ESPEC	PL1KP	14007261	Jan. 31, 2018	Jan. 20, 2017

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Sep. 30, 2018	Sep. 13, 2017
Preamplifier	ANRITSU	MH648A	M96057	Feb. 28, 2018	Feb. 1, 2017
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	Feb. 28, 2018	Feb. 17, 2017
Attenuator	TDC	TAT-43B-06	N/A(S209)	May 31, 2018	May 23, 2017
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2155	Jul. 31, 2018	Jul. 18, 2017
Log periodic antenna	Schwarzbeck	UHALP9108A	0560	Jul. 31, 2018	Jul. 18, 2017
Attenuator	TME	CFA-01NPJ-6	N/A(S275)	Feb. 28, 2018	Feb. 3, 2017
Attenuator	TME	CFA-01NPJ-3	N/A(S272)	Feb. 28, 2018	Feb. 2, 2017
Microwave cable	SUHNER	SUCOFLEX104/9m	MY30037/4	Feb. 28, 2018	Feb. 3, 2017
		SUCOFLEX104/1m	my24610/4	Feb. 28, 2018	Feb. 2, 2017
		SUCOFLEX104/1.5m	MY19309/4	Feb. 28, 2018	Feb. 3, 2017
		SUCOFLEX106/7m	41625/6	Feb. 28, 2018	Feb. 3, 2017
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.6.0	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	May 31, 2018	May 30, 2017

Conducted at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Sep. 30, 2018	Sep. 13, 2017
Attenuator	HUBER+SUHNER	6810.01.A	N/A(S411)	Feb. 28, 2018	Feb. 2, 2017
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407F2	12-17-110-2	Apr. 30, 2018	Apr. 25, 2017
Coaxial cable	FUJIKURA	5D-2W/4m	N/A(S350)	Feb. 28, 2018	Feb. 2, 2017
Coaxial cable	FUJIKURA	5D-2W/1m	N/A(S193)	Feb. 28, 2018	Feb. 3, 2017
Coaxial cable	SUHNER	RG214/U/10m	N/A(S194)	Feb. 28, 2018	Feb. 3, 2017
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/CE-AJ	0611193/V5.4.11	N/A	N/A

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