

TEST REPORT

Report number : Z101C-15034

Issue date : May 15, 2015

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	: KA43
FCC ID	: JOYKA43

Date of test : April 21-23, 2015
Test place : TÜV SÜD Zacta Ltd. Yonezawa Testing Center
4149-7 Hachimanpara 5-chome
Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 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, or any agency of the federal government.

Tested by : Hikaru Shibata
Hikaru Shibata

Authorized by : Eiji Akiba
Eiji Akiba
Deputy General Manager of technical Department

Table of contents

	Page
1.1 Purpose of test.....	3
1.2 Standards	3
1.3 List of applied test to the EUT	3
1.4 Modification to the EUT by laboratory.....	3
2. Equipment Under Test	4
2.1 General Description of equipment.....	4
2.2 EUT information	4
2.3 Variation of the family model(s).....	4
2.4 Description of Test mode	5
2.5 Operating mode	5
3. Configuration of equipment	6
3.1 Equipment(s) used.....	6
3.2 Cable(s) used	6
3.3 System configuration	6
4. Occupied Bandwidth.....	7
4.1 Measurement procedure	7
4.2 Limit.....	7
4.3 Measurement result.....	7
4.4 Trace data	8
5. Operation within the band 13.110-14.010MHz	9
5.1 Measurement procedure	9
5.2 Calculation method.....	9
5.3 Limit.....	10
5.4 Test data.....	10
5.5 Trace data	11
6.1 Measurement procedure	13
6.2 Calculation method.....	14
6.3 Limit.....	15
6.4 Test data.....	16
7. Frequency Tolerance	17
7.1 Measurement procedure	17
7.2 Limit.....	17
7.3 Test data.....	18
8. AC Power Line Conducted Emissions.....	19
8.1 Measurement procedure	19
8.2 Calculation method.....	19
8.3 Limit.....	19
8.4 Test data.....	20
9. Uncertainty of measurement.....	22
10. Laboratory description	23
Appendix A. Test equipment	24

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 C63.10-2009

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	N/A
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	N/A
15.207	AC Power Line Conducted Emissions	Conducted	N/A

1.3.1 Test set up

Table-Top

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 : KA43

Serial number : N/A

EUT condition : Pre-production

Power ratings : Battery: DC 3.8V

Size : (W) 72.2 × (D) 15.5 × (H) 147.2 mm

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 Y 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	KA43	N/A	JOYKA43	EUT
2	AC Adapter	au	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



: Un-detachable cable

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 RBW is set to 1% to 3% of the 99% bandwidth. 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=Sample

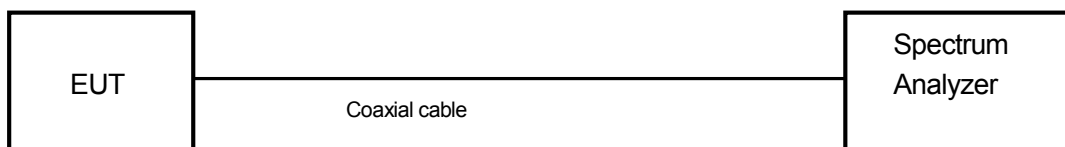
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



4.2 Limit

None

4.3 Measurement result

Date : April 23, 2015

Temperature : 22.3 [°C]

Humidity : 41.9 [%]

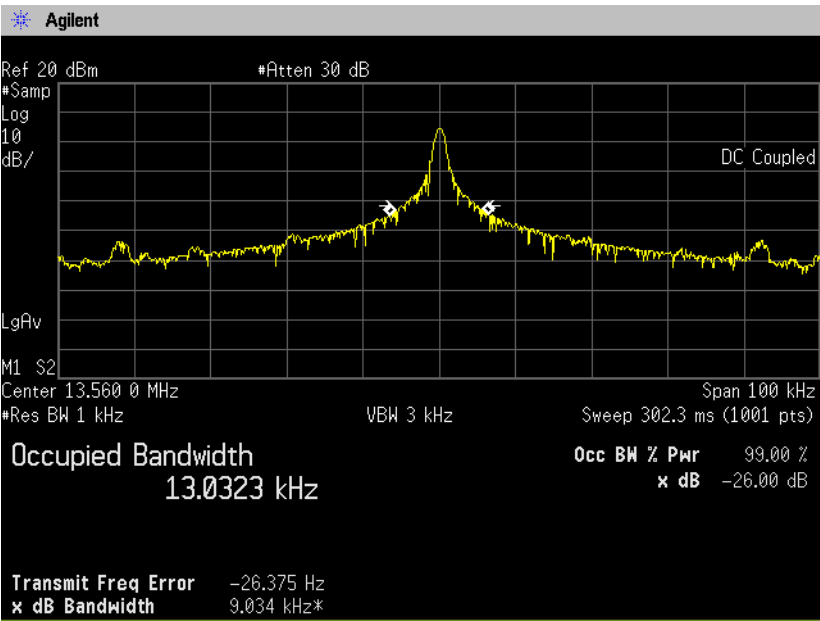
Test place : Shielded room No.4

Test engineer :

Hikaru Shibata

Frequency (MHz)	Occupied Bandwidth (kHz)
13.56	13.0323

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)]

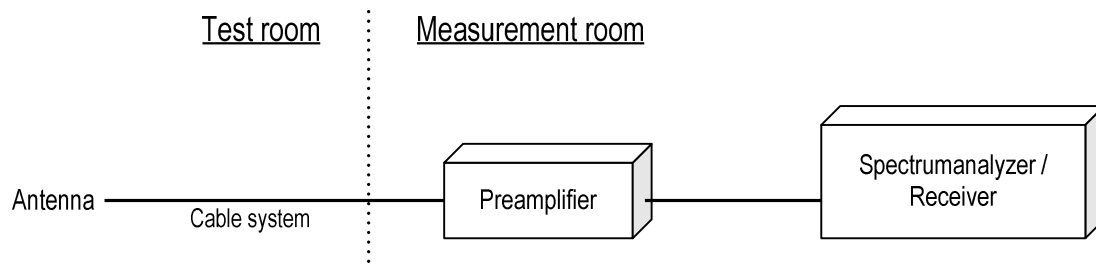
Test was applied by following conditions.

Test method	: ANSI C63.10
Frequency range	: 13.110MHz to 14.010MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: FRP table / (W)2.0m × (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 $40\log(3/30) = -40.0\text{dB}$

5.4 Test data

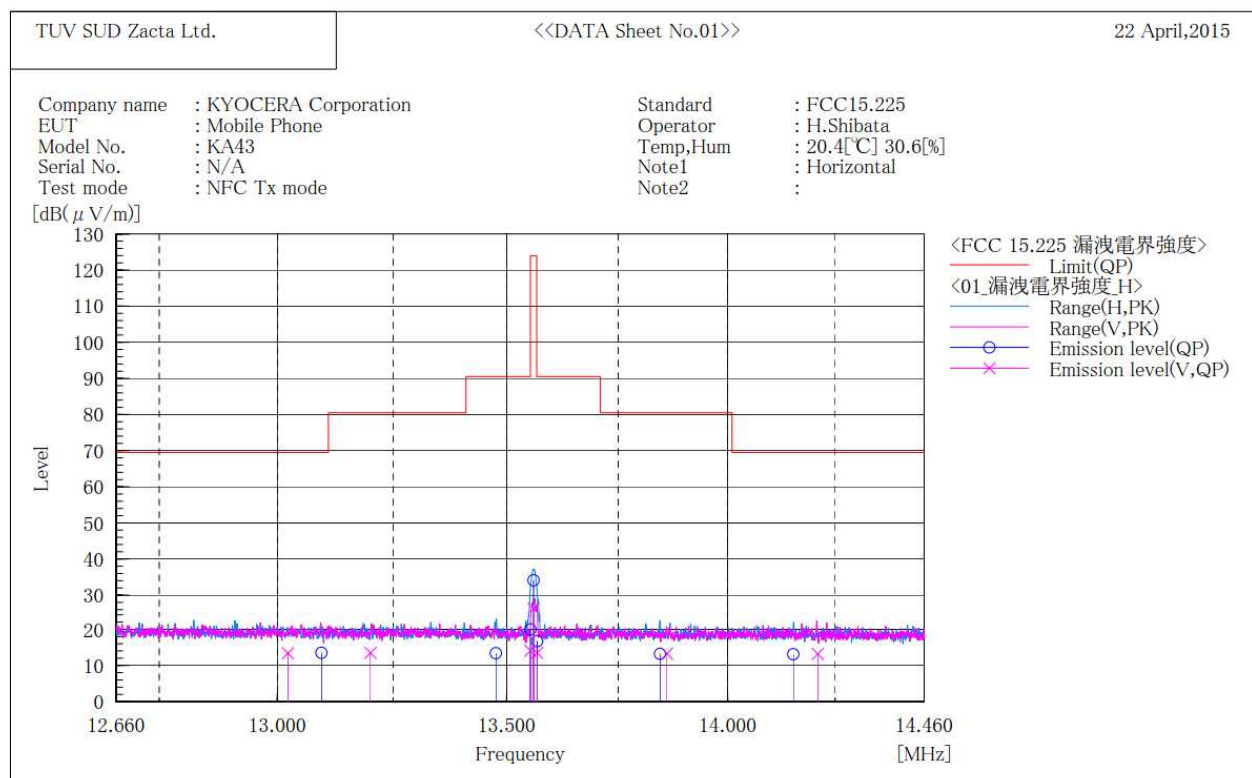
Date : April 22, 2015
 Temperature : 20.4 [°C]
 Humidity : 30.6 [%]
 Test place : 3m Semi-anechoic chamber

Test engineer : Hikaru Shibata

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	42.9	2.9	84.0	81.1	PASS
13.41-13.553	13.553	28.7	-11.3	50.5	61.8	PASS
13.567-13.71	13.568	26.6	-13.4	50.5	63.9	PASS
13.11-13.41	13.201	13.5	-26.5	40.5	67.0	PASS
13.71-14.01	13.843	13.4	-26.6	40.5	67.1	PASS
12.66-13.11	13.040	13.5	-26.5	29.5	56.0	PASS
14.01-14.46	14.142	13.2	-26.8	29.5	56.3	PASS

5.5 Trace data

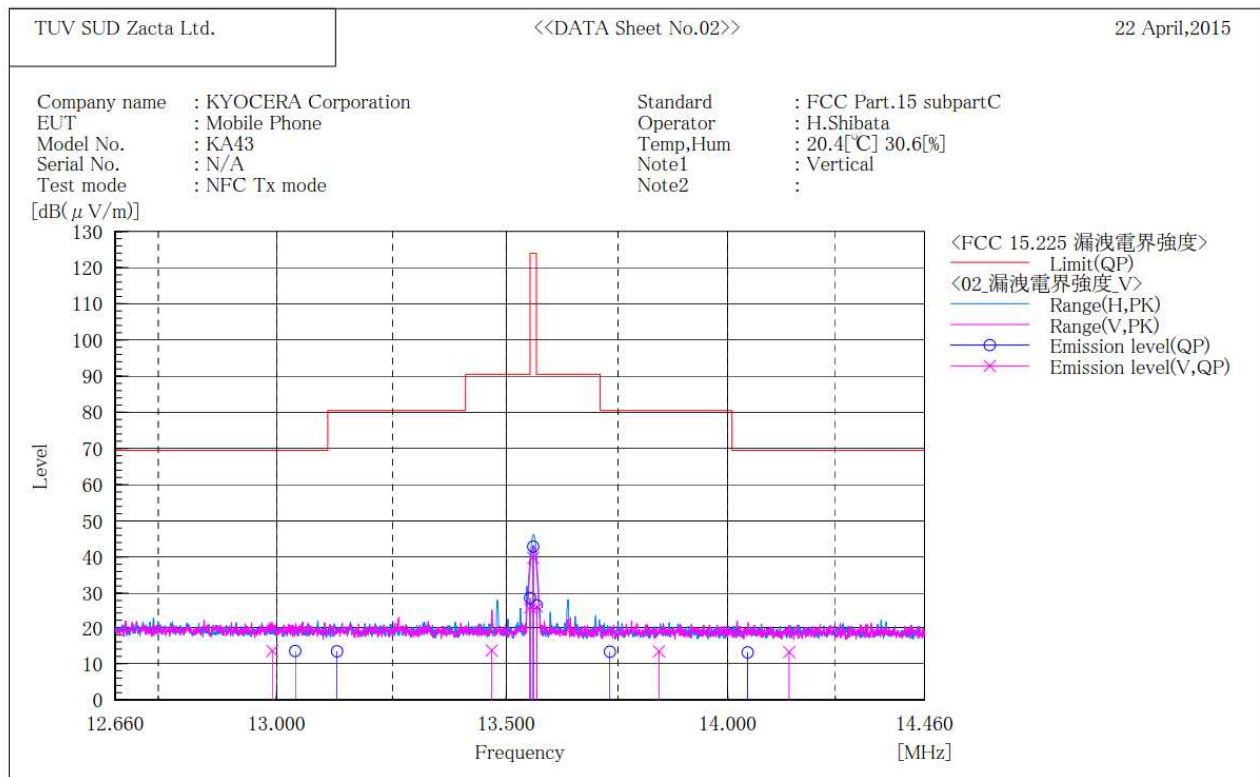
***** RADIATED EMISSION *****
 << 3m Semi-anechoic chamber >>



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 [°]	Remark
1	13.560	H	37.6	-3.5	34.1	124.0	89.9	100.0	321.0	
2	13.553	H	23.5	-3.5	20.0	90.5	70.5	100.0	321.0	
3	13.568	H	20.2	-3.5	16.7	90.5	73.8	100.0	321.0	
4	13.845	H	16.7	-3.5	13.2	80.5	67.3	100.0	76.0	
5	13.095	H	17.1	-3.6	13.5	69.5	56.0	100.0	184.0	
6	13.476	H	16.9	-3.5	13.4	90.5	77.1	100.0	240.0	
7	14.152	H	16.5	-3.4	13.1	69.5	56.4	100.0	138.0	
8	13.560	V	29.8	-3.5	26.3	124.0	97.7	100.0	264.0	
9	13.553	V	17.6	-3.5	14.1	90.5	76.4	100.0	264.0	
10	13.568	V	17.0	-3.5	13.5	90.5	77.0	100.0	264.0	
11	13.861	V	16.8	-3.5	13.3	80.5	67.2	100.0	282.0	
12	13.023	V	17.0	-3.6	13.4	69.5	56.1	100.0	263.0	
13	13.201	V	17.1	-3.6	13.5	80.5	67.0	100.0	276.0	
14	14.209	V	16.6	-3.4	13.2	69.5	56.3	100.0	192.0	

***** RADIATED EMISSION *****
 << 3m Semi-anechoic chamber >>



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 [°]	Remark
1	13.560	H	46.4	-3.5	42.9	124.0	81.1	100.0	0.0	
2	13.553	H	32.2	-3.5	28.7	90.5	61.8	100.0	0.0	
3	13.568	H	30.1	-3.5	26.6	90.5	63.9	100.0	0.0	
4	13.130	H	17.0	-3.6	13.4	80.5	67.1	100.0	101.0	
5	13.732	H	16.8	-3.5	13.3	80.5	67.2	100.0	248.0	
6	13.040	H	17.1	-3.6	13.5	69.5	56.0	100.0	47.0	
7	14.046	H	16.5	-3.4	13.1	69.5	56.4	100.0	113.0	
8	13.560	V	43.3	-3.5	39.8	124.0	84.2	100.0	264.0	
9	13.553	V	29.1	-3.5	25.6	90.5	64.9	100.0	264.0	
10	13.568	V	29.3	-3.5	25.8	90.5	64.7	100.0	264.0	
11	13.468	V	17.1	-3.5	13.6	90.5	76.9	100.0	263.0	
12	13.843	V	16.9	-3.5	13.4	80.5	67.1	100.0	263.0	
13	12.991	V	17.1	-3.6	13.5	69.5	56.0	100.0	245.0	
14	14.142	V	16.6	-3.4	13.2	69.5	56.3	100.0	291.0	

6. Radiated Emissions

6.1 Measurement procedure [FCC 15.209, 15.225 (d)]

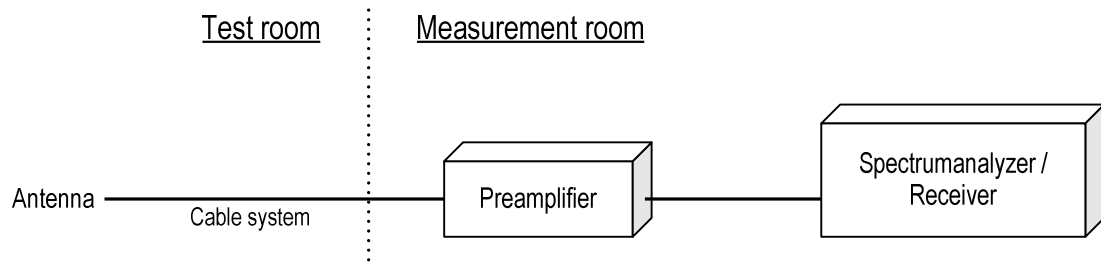
Test was applied by following conditions.

Test method	: ANSI C63.10
Frequency range	: 9kHz to 30MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Antenna distance	: 3m

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



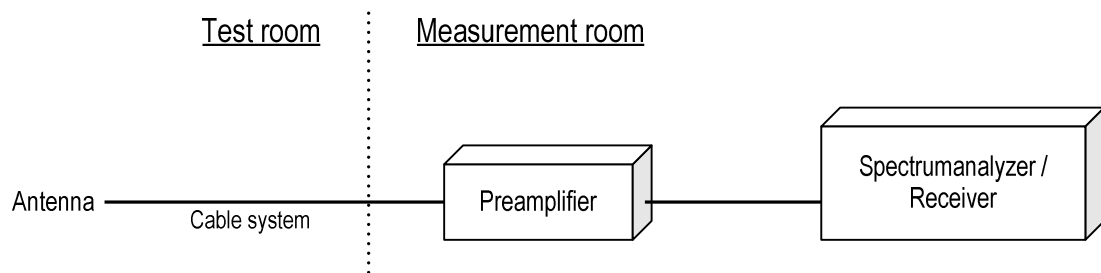
Test was applied by following conditions.

Test method : ANSI C63.10
 Frequency range : 30MHz to 1000MHz
 Test place : 3m Semi-anechoic chamber
 EUT was placed on : FRP table / (W)2.0m × (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]	$20\log E$ [uV/m]	300
0.490-1.705	$24000 / F$ [kHz]	$20\log E$ [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] = $20\log$ Emission [uV/m]
3. Measurements were corrected to 30m using $40\log (3/30) = -40.0\text{dB}$

6.4 Test data

Date : April 22, 2015
 Temperature : 20.4 [°C]
 Humidity : 30.6 [%]
 Test place : 3m Semi-anechoic chamber

Test engineer : Hikaru Shibata

[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	12.7	-1.8	10.9	-29.1	29.5	58.6	PASS

[30MHz to 1000MHz]

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	H	30.5	-7.9	22.6	40.0	17.4	182.0	171.0
2	40.680	V	42.1	-7.9	34.2	40.0	5.8	100.0	251.0
3	67.800	H	45.4	-15.3	30.1	40.0	9.9	100.0	304.0
4	67.800	V	51.4	-15.3	36.1	40.0	3.9	100.0	96.0
5	81.360	H	32.4	-15.5	16.9	40.0	23.1	176.0	221.0
6	81.360	V	34.2	-15.5	18.7	40.0	21.3	140.0	223.0
7	94.920	H	33.0	-12.7	20.3	43.5	23.2	231.0	147.0
8	94.920	V	42.9	-12.7	30.2	43.5	13.3	100.0	52.0
9	122.040	V	31.8	-8.2	23.6	43.5	19.9	100.0	264.0
10	176.280	H	30.5	-5.0	25.5	43.5	18.0	159.0	283.0
11	176.280	V	31.9	-5.0	26.9	43.5	16.6	100.0	128.0
12	189.846	H	27.9	-4.5	23.4	43.5	20.1	145.0	270.0
13	189.840	V	27.6	-4.5	23.1	43.5	20.4	100.0	6.0
14	203.400	H	29.2	-4.2	25.0	43.5	18.5	164.0	224.0
15	203.400	V	27.1	-4.2	22.9	43.5	20.6	100.0	271.0

Note: Expect for above emissions, no emissions were observed during Radiated testing.

7. Frequency Tolerance

7.1 Measurement procedure [FCC 15.205 (e)]

The EUT was placed inside of a constant temperature chamber as the temperature in the chamber was varied between -30°C and +60°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 channel's center frequency was recorded.

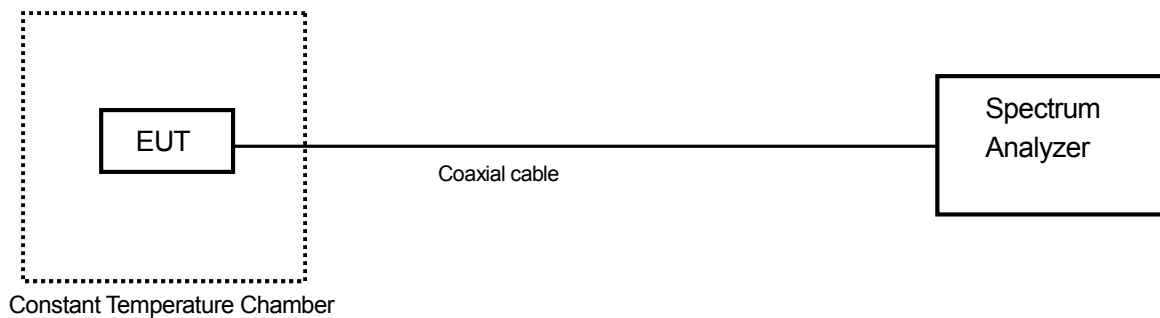
The EUT was set to operate with the following conditions.

- 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 $\pm 0.01\%$ 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.

7.3 Test data

Date : April 23, 2015
 Temperature : 22.3 [°C]
 Humidity : 41.9 [%]
 Test place : Shielded room No.4

Test engineer : Hikaru Shibata

Reference Frequency: EUT Channel 13.56MHz at 20°C					
Limit: $\pm 0.01\% = \pm 100\text{ppm} = 0.135603\text{MHz}$					
Power Supply	Temperature	Measurements Frequency	Frequency Tolerance	Limit	Result
[V]	[°C]	[MHz]	[ppm]	[ppm]	
3.8	50	13.560000	-5.162215239	± 100	PASS
	40	13.560035	-2.58110762	± 100	PASS
	30	13.560090	1.47491864	± 100	PASS
	20	13.560070	-	± 100	PASS
	10	13.560130	4.424755919	± 100	PASS
	0	13.560150	5.899674559	± 100	PASS
	-10	13.560145	5.530944899	± 100	PASS
	-20	13.560160	6.637133879	± 100	PASS
	-30	13.560080	0.73745932	± 100	PASS
3.23	20	13.560050	-1.47491864	± 100	PASS
4.37	20	13.560100	2.21237796	± 100	PASS

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

8. AC Power Line Conducted Emissions

8.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

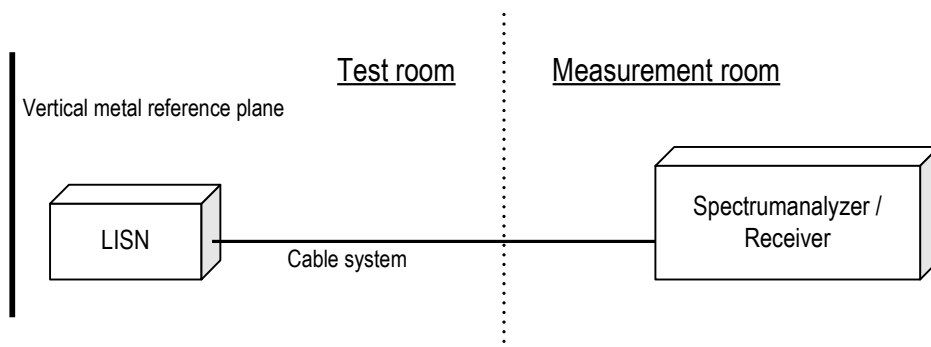
Test method	: ANSI C63.10
Frequency range	: 0.15MHz to 30MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Vertical Metal Reference Plane	: (W)2.0m × (H)2.0m 0.4m away from EUT
Test receiver setting	
- Detector	: Quasi-peak, Average
- Bandwidth	: 9kHz

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

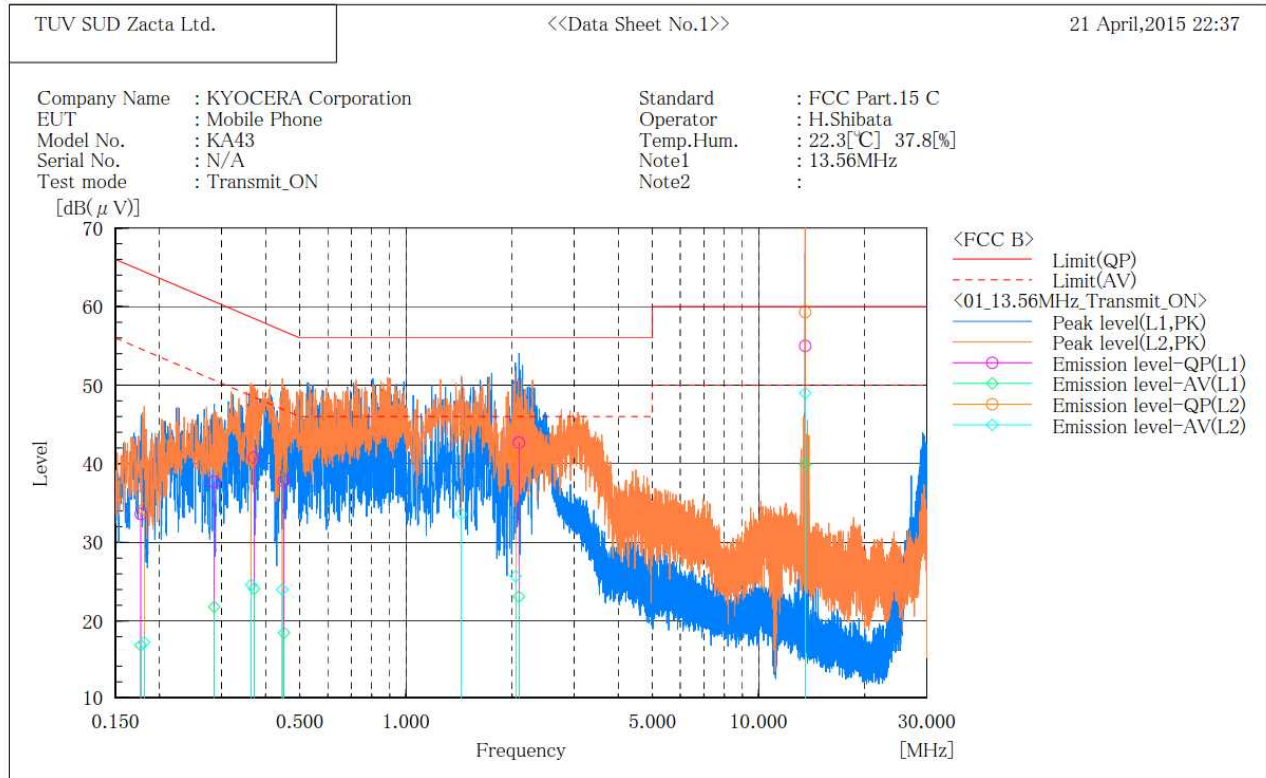
8.3 Limit

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 >>



Final Result

--- L1 Phase ---

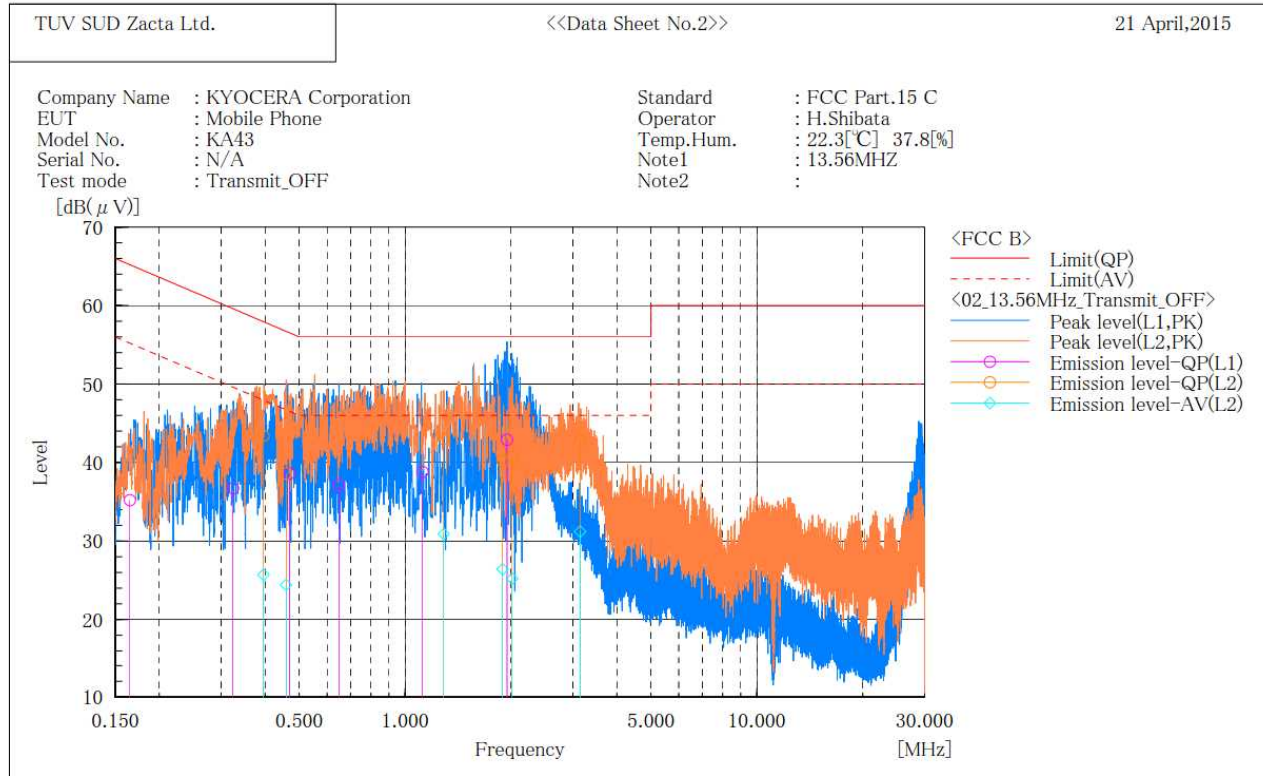
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.177	23.2	6.5	10.4	33.6	16.9	64.6	54.6	31.0	37.7
2	0.286	27.4	11.5	10.3	37.7	21.8	60.6	50.6	22.9	28.8
3	0.371	30.5	13.8	10.3	40.8	24.1	58.5	48.5	17.7	24.4
4	0.451	27.5	8.2	10.3	37.8	18.5	56.9	46.9	19.1	28.4
5	2.092	32.4	12.8	10.3	42.7	23.1	56.0	46.0	13.3	22.9
6	13.560	44.2	29.1	10.8	55.0	39.9	60.0	50.0	5.0	10.1

--- 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	0.181	23.8	6.9	10.4	34.2	17.3	64.4	54.4	30.2	37.1
2	0.364	30.2	14.3	10.3	40.5	24.6	58.6	48.6	18.1	24.0
3	0.446	29.0	13.7	10.3	39.3	24.0	56.9	46.9	17.6	22.9
4	1.435	34.0	23.2	10.4	44.4	33.6	56.0	46.0	11.6	12.4
5	2.048	31.1	15.3	10.4	41.5	25.7	56.0	46.0	14.5	20.3
6	13.560	48.5	38.2	10.8	59.3	49.0	60.0	50.0	0.7	1.0

[Transmit OFF]

***** CONDUCTED EMISSION at MAINS PORT *****
 << 3m Semi-anechoic chamber >>

**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	0.165	24.8	10.2	10.4	35.2	20.6	65.2	55.2	30.0	34.6
2	0.324	26.4	15.6	10.3	36.7	25.9	59.6	49.6	22.9	23.7
3	0.469	28.3	6.1	10.3	38.6	16.4	56.5	46.5	17.9	30.1
4	0.648	26.8	10.2	10.3	37.1	20.5	56.0	46.0	18.9	25.5
5	1.121	28.5	13.2	10.3	38.8	23.5	56.0	46.0	17.2	22.5
6	1.949	32.6	11.9	10.3	42.9	22.2	56.0	46.0	13.1	23.8

--- 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	0.396	33.1	15.4	10.3	43.4	25.7	57.9	47.9	14.5	22.2
2	0.459	28.3	14.1	10.3	38.6	24.4	56.7	46.7	18.1	22.3
3	1.288	32.6	20.5	10.4	43.0	30.9	56.0	46.0	13.0	15.1
4	1.893	29.8	16.0	10.4	40.2	26.4	56.0	46.0	15.8	19.6
5	2.017	30.4	14.8	10.4	40.8	25.2	56.0	46.0	15.2	20.8
6	3.144	32.2	20.7	10.5	42.7	31.2	56.0	46.0	13.3	14.8

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 at mains port	$\pm 3.0\text{dB}$
Radiated emission (9kHz – 30MHz)	$\pm 4.4\text{dB}$
Radiated emission (30MHz – 1000MHz)	$\pm 4.5\text{dB}$
Radiated emission (1000MHz – 26GHz)	$\pm 3.9\text{dB}$

10. Laboratory description

1. Location:

TÜV SÜD Zacta Ltd. Yonezawa Testing Center
4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 Fax: +81-238-28-2888

2. Facility filing information:

1) NVLAP accreditation: NVLAP Lab. code: 200306-0

2) VLAC accreditation: Lab. code: VLAC-013

Site name	Radiated emission	Conducted emission for mains port	Conducted emission for telecom port	Radiated emission (CMAD)	Expiry Date
3m Semi-anechoic chamber	VLAC-013	VLAC-013	VLAC-013	-	Jul. 3, 2015
10m Semi-anechoic chamber No.1				VLAC-013	
10m Semi-anechoic chamber No.2				VLAC-013	
Shielded room No.1	-	VLAC-013	-	-	

3) FCC filing:

Site name	Registration Number	Expiry Date
Site 3	91065	Oct.31, 2014
3m Semi-anechoic chamber	540072	Feb. 20, 2017
10m Semi-anechoic chamber No.1		
10m Semi-anechoic chamber No.2		
Shielded room No.1		

4) Industry Canada Oats site filing:

Site name	Sites on file: Oats 3m/10m	Expiry Date
Site 3	4224A-3	Dec. 3, 2017
3m Semi-anechoic chamber	4224A-4	
10m Semi-anechoic chamber No.1	4224A-5	
10m Semi-anechoic chamber No.2	4224A-6	Jan. 15, 2017

5) VCCI site filing:

Site name	Radiated emission	Conducted emission for mains port	Conducted emission for telecom port	Expiry Date
Site 3	R-138	C-134	T-1222	Nov. 16, 2014 Nov. 28, 2014* (*:Telecom port)
3m Semi-anechoic chamber	A-0166	A-0166	A-0166	Jul. 3, 2015
10m Semi-anechoic chamber No.1				
10m Semi-anechoic chamber No.2				
Shielded room No.1	-	A-0166		

6) TÜV SÜD PS authorization:

Authorized as an EMC test laboratory

7) TÜV Rheinland authorization:

Authorized as an EMC test laboratory

Appendix A. Test equipment

Antenna port conducted test

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	May 31, 2015	May 30, 2014
Microwave cable	RS	YH_13S5	N/A (S403)	May 31, 2015	May 10, 2014
EMI probe	Anritsu	MA2601C	N/A	Sep.30, 2015	Sep. 9, 2014
Operation type temperature controlled bath	Espec	PL1KP	14007261	Jan. 31, 2016	Jan. 9, 2015

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. Due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Aug. 31, 2015	Aug. 9, 2014
Preamplifier	ANRITSU	MH648A	M96057	Jun. 30, 2015	Jun. 12, 2014
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	891847/17	Oct. 31, 2015	Oct. 15, 2014
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2125	May 31, 2015	May 7, 2014
Log periodic antenna	Schwarzbeck	UHALP9108A	0560	May 31, 2015	May 7, 2014
Attenuator	TME	CFA-01NPJ-6	N/A (S275)	Jun. 30, 2015	Jun. 9, 2014
Attenuator	TME	CFA-01NPJ-3	N/A (S272)	Jun. 30, 2015	Jun. 9, 2014
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	May 31, 2015	May 30, 2014
Microwave cable	SUHNER	SUCOFLEX104/9m	346316/4	Oct. 31, 2015	Oct. 31, 2014
		SUCOFLEX104/1m	322084/4	Oct. 31, 2015	Oct. 31, 2014
		SUCOFLEX104/1.5m	317226/4	Oct. 31, 2015	Oct. 31, 2014
		SUCOFLEX104/7m	41625/6	Oct. 31, 2015	Oct. 31, 2014
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.3.61	N/A	N/A
3m Semi-anechoic chamber	TOKIN	N/A	N/A (9002-NSA)	May 31, 2015	May 6, 2014
3m Semi-anechoic chamber	TOKIN	N/A	N/A (9002-SVSWR)	May 31, 2015	May 6, 2014

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Aug. 31, 2015	Aug. 9, 2014
Attenuator	HUBER+SUHNER	6810.01.A	N/A (S411)	Feb. 29, 2016	Feb. 5, 2015
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407	8-663-4	Mar. 31, 2016	Mar. 5, 2015
Coaxial cable	FUJIKURA	5D-2W/4m	N/A (S350)	Feb. 29, 2016	Feb. 5, 2015
Coaxial cable	FUJIKURA	5D-2W/1m	N/A (S193)	Feb. 29, 2016	Feb. 5, 2015
Coaxial cable	SUHNER	RG214/U/10m	N/A (S194)	Feb. 29, 2016	Feb. 5, 2015
PC	DELL	DIMENSION	75465BX	N/A	N/A

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