Zacta

TEST REPORT

Report number : Z101C-15146
Issue date : January 4, 2016

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	:	KA73
FCC ID	:	JOYKA73

Date of test : November 17, 19, December 16, 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 : Taiki Watanabe
Taiki Watanabe

Tested by : Hikaru Shibata
Hikaru Shibata

Authorized by : Hi Suzuki
Hiroaki Suzuki
Manager of EMC Technical Department

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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 C63.10-2009

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	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

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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	:	KA73
Serial number	:	N/A
EUT condition	:	Pre-production
Power ratings	:	Battery: DC 3.8V
Size	:	(W) 51.3 × (D) 113.8 × (H) 18.2 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

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3. Configuration of equipment

3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Mobile Phone	KYOCERA	KA73	N/A	JOYKA73	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

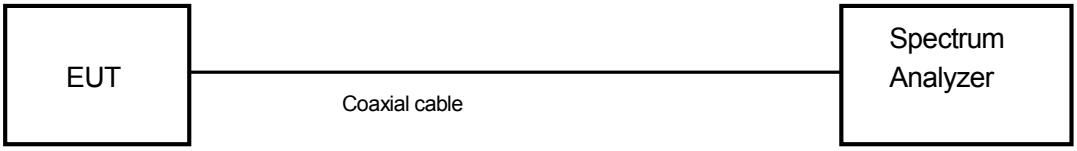
Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in “3.1 Equipment(s) used” and “3.2 Cable(s) used”.

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.

- Test configuration



4.2 Limit

None

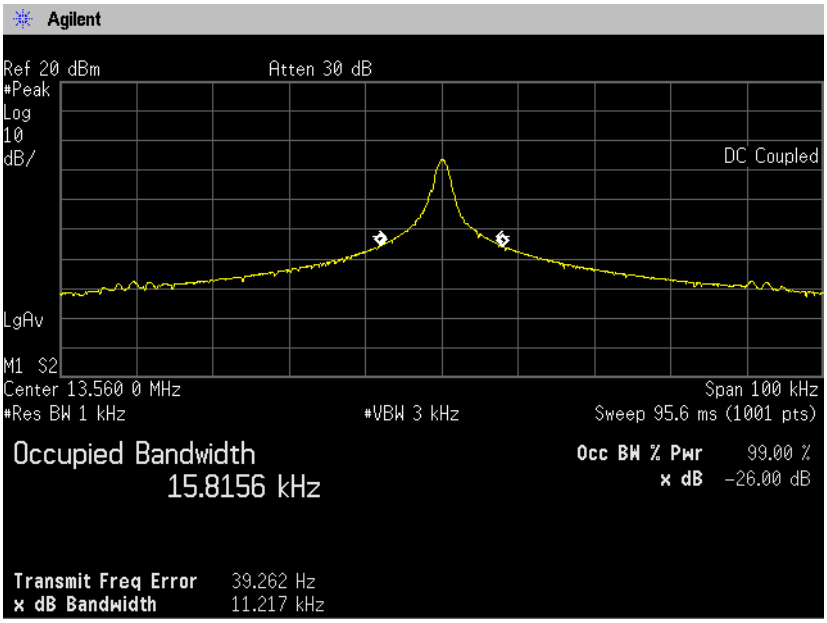
4.3 Measurement result

Date : November 17, 2015
Temperature : 24.6 [˚C]
Humidity : 45.6 [%]
Test place : Shielded room No.4

Test engineer : Hikaru Shibata

Frequency (MHz)	Occupied Bandwidth (kHz)
13.56	15.8156

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

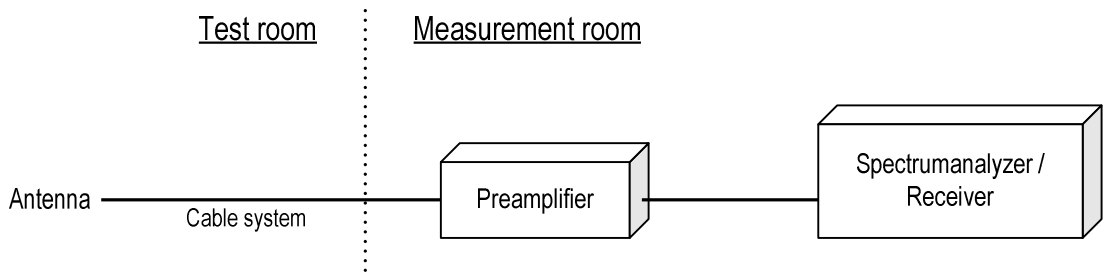
Test receiver setting

- Detector	:	Quasi-peak
- Bandwidth	:	9kHz

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 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

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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 : December 16, 2015
Temperature : 24.8 [˚C]
Humidity : 23.9 [%] Test engineer :
Test place : 3m Semi-anechoic chamber Taiki Watanabe

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	56.6	16.6	84.0	67.4	PASS
13.41-13.553	13.553	43.7	3.7	50.5	46.8	PASS
13.567-13.71	13.568	38.5	-1.5	50.5	52.0	PASS
13.11-13.41	13.349	21.9	-18.1	40.5	58.6	PASS
13.71-14.01	13.770	22.0	-18.0	40.5	58.5	PASS
12.66-13.11	12.919	13.4	-26.6	29.5	56.1	PASS
14.01-14.46	14.197	13.5	-26.5	29.5	56.0	PASS

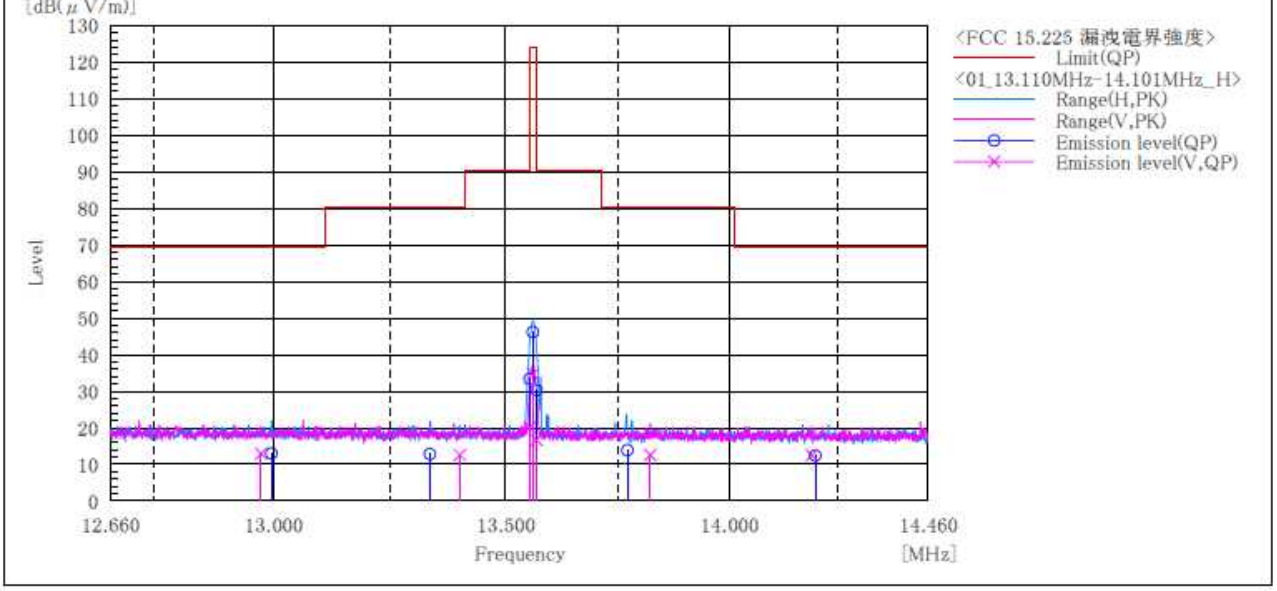
5.5 Trace data

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

TUV SUD Zacta Ltd. <<DATA Sheet No.01>> 16 December,2015 14:35

Company name : KYOCERA Corporation
EUT : Mobile Phone
Model No. : KA73
Serial No. : KA73_RF2
Test mode : NFC Tx mode

Standard : FCC 15.225
Operator : T.Watanabe
Temp,Hum : 24.8[℃] 23.9[%]
Note1 : Horizontal
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 [°]	Remark
1	13.560	H	59.5	-13.3	46.2	124.0	77.8	100.0	0.0	
2	13.553	H	46.7	-13.3	33.4	90.5	57.1	100.0	0.0	
3	13.568	H	43.6	-13.3	30.3	90.5	60.2	100.0	0.0	
4	13.335	H	26.1	-13.3	12.8	80.5	67.7	100.0	33.0	
5	13.770	H	27.3	-13.4	13.9	80.5	66.6	100.0	23.0	
6	12.996	H	26.3	-13.3	13.0	69.5	56.5	100.0	31.0	
7	14.197	H	25.8	-13.4	12.4	69.5	57.1	100.0	31.0	
8	13.560	V	48.0	-13.3	34.7	124.0	89.3	100.0	94.0	
9	13.553	V	33.4	-13.3	20.1	90.5	70.4	100.0	72.0	
10	13.568	V	30.0	-13.3	16.7	90.5	73.8	100.0	94.0	
11	13.400	V	25.9	-13.3	12.6	80.5	67.9	100.0	69.0	
12	13.821	V	26.0	-13.4	12.6	80.5	67.9	100.0	54.0	
13	12.974	V	26.3	-13.3	13.0	69.5	56.5	100.0	34.0	
14	14.189	V	25.9	-13.4	12.5	69.5	57.0	100.0	29.0	

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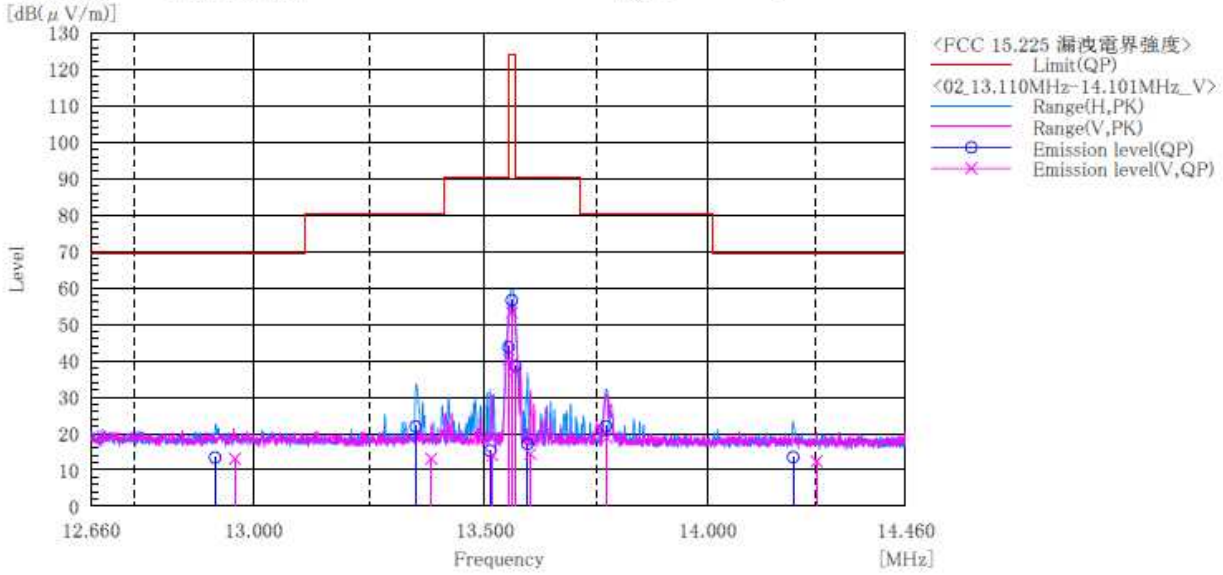
******* RADIATED EMISSION *******
[3m Semi-anechoic chamber]

TUV SUD Zacta Ltd. <<DATA Sheet No.02>> 16 December,2015 14:35

Company name	: KYOCERA Corporation	Standard	: FCC 15.225
EUT	: Mobile Phone	Operator	: T.Watanabe
Model No.	: KA73	Temp,Hum	: 24.8[℃] 23.9[%]
Serial No.	: KA73_RF2	Note1	: Vertical
Test mode	: NFC Tx mode	Note2	:



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dBμV)]	c.f [dB(1/m)]	Result QP [dBμV/m)]	Limit QP [dBμV/m)]	Margin QP [dB]	Height [cm]	Angle [°]	Remark
1	13.560	H	69.9	-13.3	56.6	124.0	67.4	100.0	0.0	
2	13.553	H	57.0	-13.3	43.7	90.5	46.8	100.0	0.0	
3	13.512	H	28.6	-13.3	15.3	90.5	75.2	100.0	166.0	
4	13.568	H	51.8	-13.3	38.5	90.5	52.0	100.0	0.0	
5	13.595	H	30.4	-13.3	17.1	90.5	73.4	100.0	341.0	
6	13.349	H	35.2	-13.3	21.9	80.5	58.6	100.0	0.0	
7	13.770	H	35.4	-13.4	22.0	80.5	58.5	100.0	347.0	
8	12.919	H	26.7	-13.3	13.4	69.5	56.1	100.0	169.0	
9	14.197	H	26.9	-13.4	13.5	69.5	56.0	100.0	4.0	
10	13.560	V	66.5	-13.3	53.2	124.0	70.8	100.0	279.0	
11	13.553	V	53.6	-13.3	40.3	90.5	50.2	100.0	279.0	
12	13.517	V	27.4	-13.3	14.1	90.5	76.4	100.0	253.0	
13	13.568	V	50.5	-13.3	37.2	90.5	53.3	100.0	279.0	
14	13.601	V	27.7	-13.3	14.4	90.5	76.1	100.0	280.0	
15	13.383	V	26.4	-13.3	13.1	80.5	67.4	100.0	269.0	
16	13.772	V	32.3	-13.4	18.9	80.5	61.6	100.0	275.0	
17	12.961	V	26.4	-13.3	13.1	69.5	56.4	100.0	255.0	
18	14.251	V	25.8	-13.4	12.4	69.5	57.1	100.0	238.0	

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

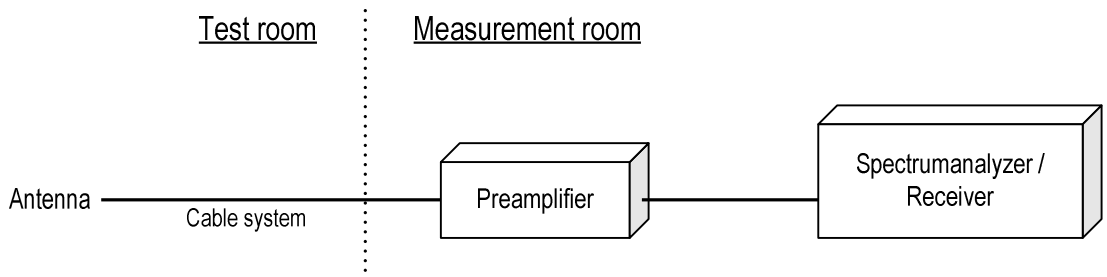
Test receiver setting

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

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.

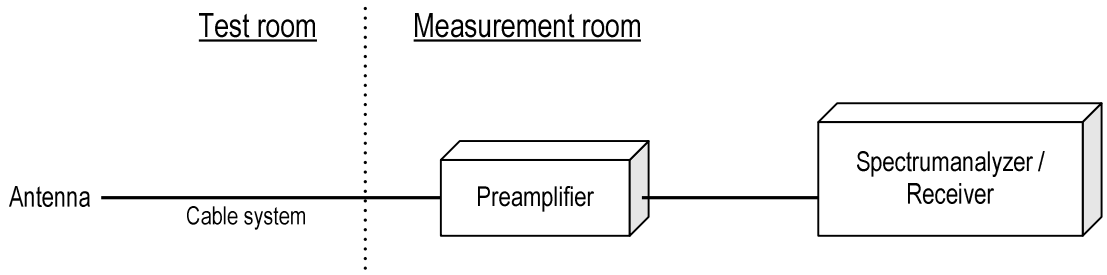
Test method	:	ANSI C63.10
Frequency range	:	30MHz to 1000MHz
Test place	:	3m Semi-anechoic chamber
EUT was placed on	:	FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Antenna distance	:	3m

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

Example:
Limit @ 40.7MHz : 40.0dBuV/m (QP Limit)
S.A Reading = 39.0dBuV Cable system loss = -8.1dB
Result = 39.0 + (-8.1) = 30.9dBuV/m
Margin = 40.0 – 30.9 = 9.1dB

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

* FCC 15.31 (f)(2) (9 kHz-30 MHz)

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 40log (3/300) = -80.0dB
4. Measurements were corrected to 30m using 40log (3/30) = -40.0dB

6.4 Test data

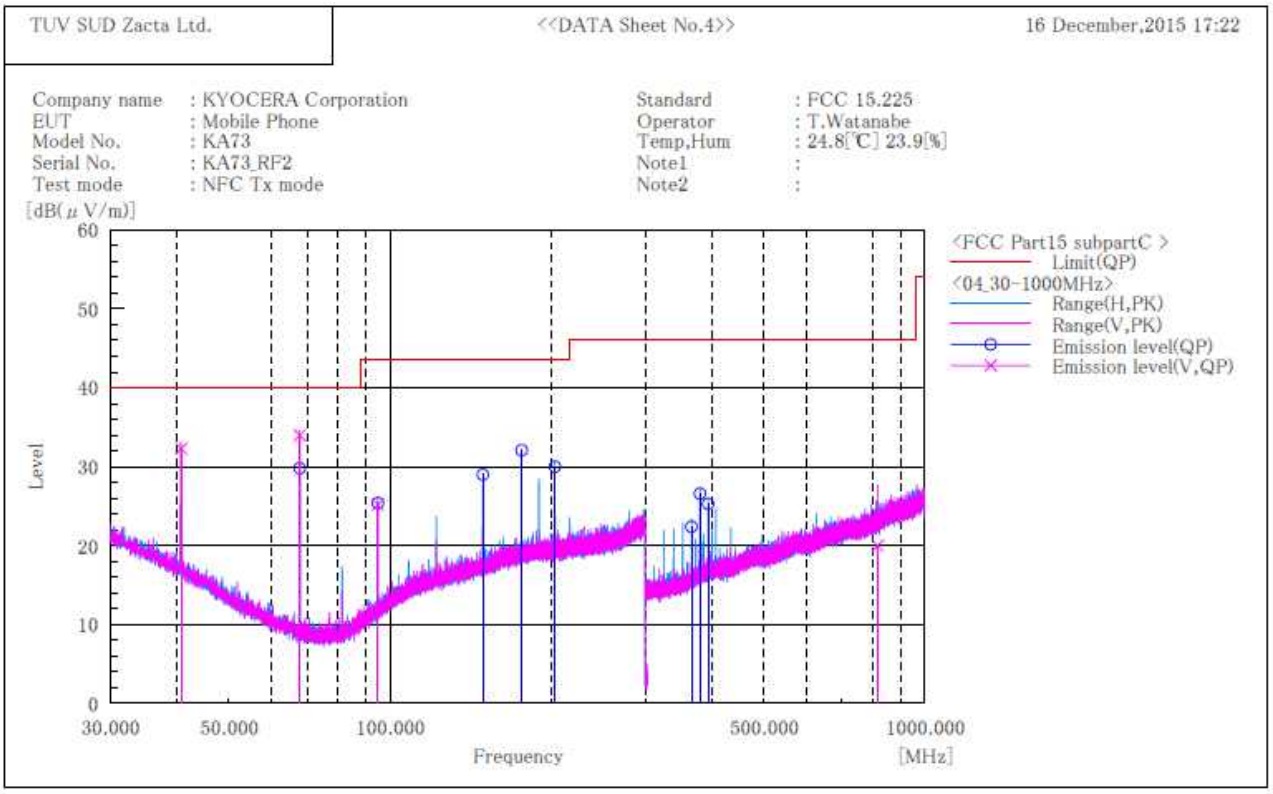
Date : December 16, 2015
Temperature : 24.8 [°C]
Humidity : 23.9 [%] Test engineer :
Test place : 3m Semi-anechoic chamber Taiki Watanabe

[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	25.9	-15.2	10.7	-29.3	29.5	58.8	PASS

[30MHz to 1000MHz]

******* 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	40.700	V	40.4	-8.1	32.3	40.0	7.7	100.0	83.0	
2	67.800	H	45.6	-15.8	29.8	40.0	10.2	287.0	119.0	
3	67.800	V	49.8	-15.8	34.0	40.0	6.0	100.0	95.0	
4	94.920	H	38.5	-13.1	25.4	43.5	18.1	221.0	136.0	
5	94.920	V	38.3	-13.1	25.2	43.5	18.3	100.0	271.0	
6	149.160	H	36.3	-7.3	29.0	43.5	14.5	115.0	275.0	
7	176.280	H	37.7	-5.6	32.1	43.5	11.4	181.0	148.0	
8	203.400	H	35.1	-5.1	30.0	43.5	13.5	102.0	181.0	
9	379.680	H	35.4	-8.8	26.6	46.0	19.4	100.0	4.0	
10	366.120	H	31.7	-9.3	22.4	46.0	23.6	100.0	199.0	
11	393.240	H	33.5	-8.2	25.3	46.0	20.7	100.0	178.0	
12	815.580	V	21.8	-1.8	20.0	46.0	26.0	199.0	141.0	

7. Frequency Tolerance

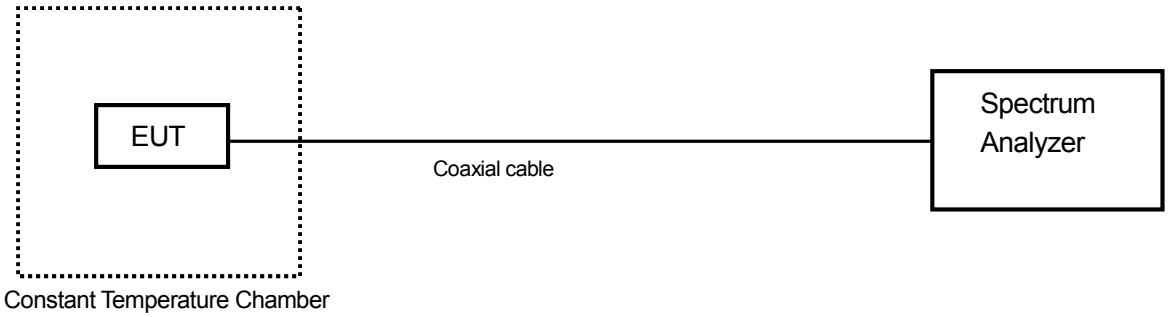
7.1 Measurement procedure [FCC 15.205 (e)]

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.

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7.3 Test data

Date : Novemver 17, 2015
Temperature : 24.6 [˚C]
Humidity : 45.6 [%] Test engineer :
Test place : Shielded room No.4 Hikaru Shibata

Reference Frequency: EUT Channel 13.56MHz at 20ºC Limit: ±0.01%= ±100ppm = 0.135603MHz					
Power Supply [V]	Temperature [℃]	Measurements Frequency [MHz]	Frequency Tolerance [ppm]	Limit [ppm]	Result
3.8	50	13.560191	10.47193856	±100	PASS
	40	13.560122	5.383461372	±100	PASS
	30	13.560051	0.147492092	±100	PASS
	20	**13.560049**	-	±100	PASS
	10	13.560094	3.318572079	±100	PASS
	0	13.560103	3.982286495	±100	PASS
	-10	13.559837	-15.63416179	±100	PASS
	-20	13.559890	-11.72562135	±100	PASS
	-30	13.559696	-26.03235431	±100	PASS
3.23	20	13.559936	-8.33330322	±100	PASS
4.37	20	13.560082	2.433619525	±100	PASS

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

8. AC Power Line Conducted Emissions

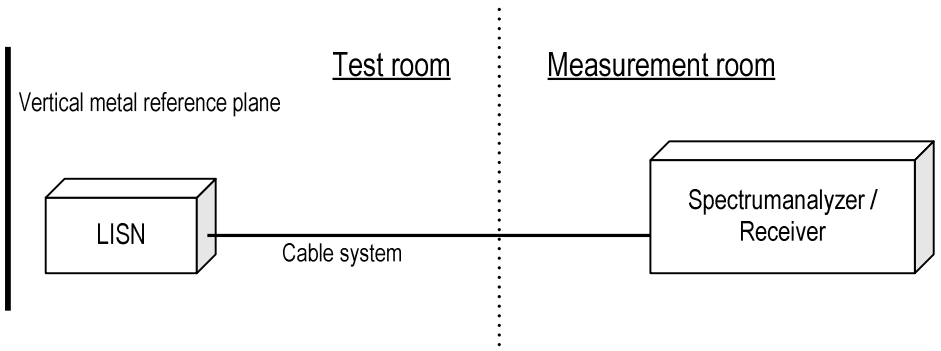
8.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

Test method	:	ANSI C63.10
Frequency range	:	0.15MHz to 30MHz
Test place	:	10m 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

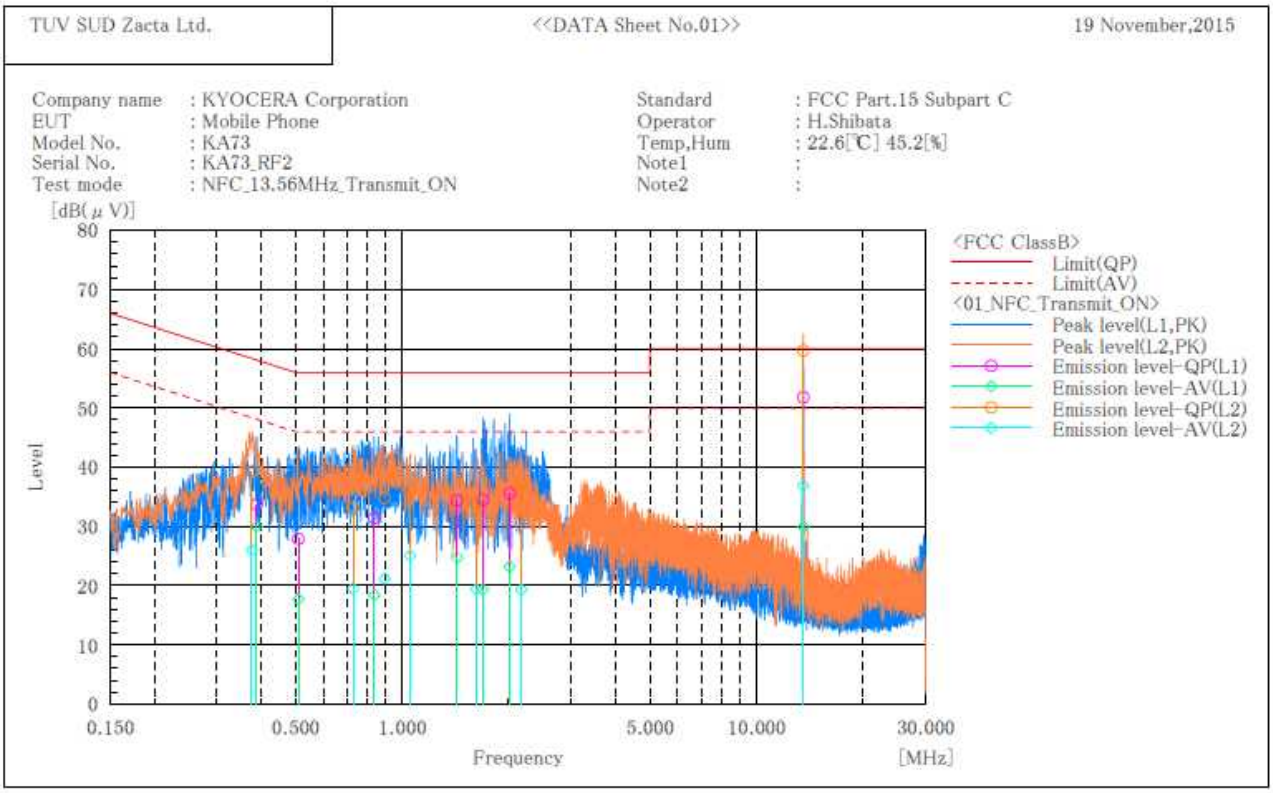
8.3 Limit

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 *****
[10m semi-anechoic chamber #1]



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	0.389	23.1	19.4	10.6	33.7	30.0	58.1	48.1	24.4	18.1
2	0.510	17.3	7.1	10.6	27.9	17.7	56.0	46.0	28.1	28.3
3	0.835	20.8	7.8	10.6	31.4	18.4	56.0	46.0	24.6	27.6
4	1.429	23.7	14.0	10.7	34.4	24.7	56.0	46.0	21.6	21.3
5	1.692	23.8	8.6	10.7	34.5	19.3	56.0	46.0	21.5	26.7
6	2.013	24.9	12.5	10.7	35.6	23.2	56.0	46.0	20.4	22.8
7	13.560	40.4	18.5	11.4	51.8	29.9	60.0	50.0	8.2	20.1

--- L2 Phase ---

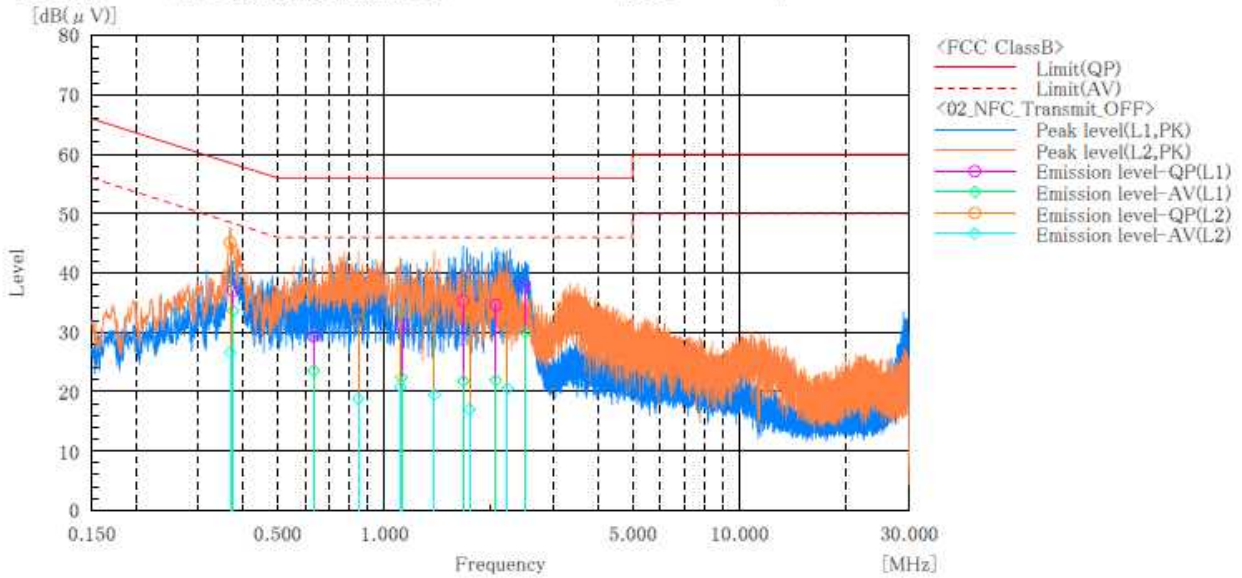
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.377	28.5	15.3	10.7	39.2	26.0	58.3	48.3	19.1	22.3
2	0.728	22.4	8.8	10.7	33.1	19.5	56.0	46.0	22.9	26.5
3	0.892	24.1	10.5	10.7	34.8	21.2	56.0	46.0	21.2	24.8
4	1.055	25.6	14.3	10.7	36.3	25.0	56.0	46.0	19.7	21.0
5	1.618	23.1	8.6	10.8	33.9	19.4	56.0	46.0	22.1	26.6
6	2.173	26.3	8.5	10.8	37.1	19.3	56.0	46.0	18.9	26.7
7	13.560	48.2	25.4	11.5	59.7	36.9	60.0	50.0	0.3	13.1

[Transmit OFF]

***** CONDUCTED EMISSION at MAINS PORT *****
[10m semi-anechoic chamber #1]

TUV SUD Zacta Ltd. <<DATA Sheet No.02>> 19 November,2015

Company name	: KYOCERA Corporation	Standard	: FCC Part.15 Subpart C
EUT	: Mobile Phone	Operator	: H.Shibata
Model No.	: KA73	Temp,Hum	: 22.6[℃] 45.2[%]
Serial No.	: KA73_RF2	Note1	:
Test mode	: NFC_13.56MHz_Transmit_OFF	Note2	:



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dBμV]	Reading AV [dBμV]	c.f [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.376	26.4	23.0	10.6	37.0	33.6	58.4	48.4	21.4	14.8
2	0.635	18.7	12.9	10.6	29.3	23.5	56.0	46.0	26.7	22.5
3	1.119	20.6	11.8	10.6	31.2	22.4	56.0	46.0	24.8	23.6
4	1.669	24.6	11.1	10.7	35.3	21.8	56.0	46.0	20.7	24.2
5	2.064	23.9	11.2	10.7	34.6	21.9	56.0	46.0	21.4	24.1
6	2.493	27.1	19.2	10.8	37.9	30.0	56.0	46.0	18.1	16.0

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dBμV]	Reading AV [dBμV]	c.f [dB]	Result QP [dBμV]	Result AV [dBμV]	Limit QP [dBμV]	Limit AV [dBμV]	Margin QP [dB]	Margin AV [dB]
1	0.369	34.4	15.9	10.7	45.1	26.6	58.5	48.5	13.4	21.9
2	0.846	21.2	8.1	10.7	31.9	18.8	56.0	46.0	24.1	27.2
3	1.112	23.0	10.1	10.7	33.7	20.8	56.0	46.0	22.3	25.2
4	1.385	21.7	8.7	10.8	32.5	19.5	56.0	46.0	23.5	26.5
5	1.741	24.0	6.2	10.8	34.8	17.0	56.0	46.0	21.2	29.0
6	2.224	25.6	9.7	10.8	36.4	20.5	56.0	46.0	19.6	25.5

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	±3.0dB
Radiated emission (9kHz – 30MHz)	±4.4dB
Radiated emission (30MHz – 1000MHz)	±4.5dB
Radiated emission (1000MHz – 26GHz)	±3.9dB

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			-	Jul. 3, 2017
10m Semi-anechoic chamber No.1				VLAC-013	
10m Semi-anechoic chamber No.2					
Shielded room No.1	-	VLAC-013		-	

3) FCC filing:

Site name	Registration Number	Expiry Date
Site 3	91065	Oct. 1, 2017
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, 2017
3m Semi-anechoic chamber	A-0166			Jul. 3, 2017
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	Jun. 30, 2016	Jun. 11, 2015
Microwave cable	HUBER SUNER	Sucoflex 102	31648/2 2m	Mar. 31, 2016	Mar. 10, 2015
EMI probe	Anritsu	MA2601C	N/A	Sep.30, 2016	Sep. 9, 2015
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	100764	Aug. 31, 2016	Aug. 21, 2015
Preamplifier	ANRITSU	MH648A	M96057	Jun. 30, 2016	Jun. 30, 2015
Active Loop antenna	ETS LINDGREN	Model 6502	00081199	Apr. 30, 2016	Apr. 16, 2015
Attenuator	TDC	TAT-43B-06	N/A (S209)	Apr. 30, 2016	Apr. 16, 2015
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2155	Jun. 30, 2016	Jun. 4, 2015
Log periodic antenna	Schwarzbeck	UHALP9108A	0560	Jun. 30, 2016	Jun. 4, 2015
Attenuator	TME	CFA-01NPJ-6	N/A (S275)	Jun. 30, 2016	Jun. 23, 2015
Attenuator	TME	CFA-01NPJ-3	N/A (S272)	Jun. 30, 2016	Jun. 23, 2015
Microwave cable	SUHNER	SUCOFLEX104/9m	346316/4	Oct. 31, 2016	Oct. 22, 2015
		SUCOFLEX104/1m	322084/4	Oct. 31, 2016	Oct. 22, 2015
		SUCOFLEX104/1.5m	317226/4	Oct. 31, 2016	Oct. 22, 2015
		SUCOFLEX104/7m	41625/6	Oct. 31, 2016	Oct. 22, 2015
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)	Apr. 30, 2016	Apr. 27, 2015

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Sep. 30, 2016	Sep. 2, 2015
Attenuator	TYC	BA-PJ-10	N/A (S344)	Apr. 30, 2016	Apr. 6, 2015
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407F	8-2003-1	Mar. 31, 2016	Mar. 5, 2015
Coaxial cable	FUJIKURA	5D-2W/4m	N/A (S349)	Feb. 29, 2016	Feb. 27, 2015
Coaxial cable	SUHNER	SUCOFLEX104/2m	317672/4	May 31, 2016	May 29, 2015
Coaxial cable	SUHNER	RG214/U/25m	N/A (S191)	Feb. 29, 2016	Feb. 27, 2015
PC	HP	Dc7800small	JPA7450FPJ	N/A	N/A
Software	TOYO Corporation	EP5/CE-AJ	0611193/V5.6.000	N/A	N/A

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