TEST REPORT

Issued: March 27, 2014

Name and Address of the Applicant:	Kyoto Electronics Manufacturing Co., Ltd. 68 Ninodan-cho, Shinden, Kisshoin Minami-ku, Kyoto 601-8317 Japan
Test Item:	Burette unit
Identification:	EBU
Serial No.:	00000002
FCC ID:	2ABSVEBU01
Sample No.:	1
Sample Receipt Date:	December 20, 2013
Test Specification:	47 CFR Part 15 Subpart C
Date of Testing:	January 15, 17, 20, 21, 22, 24 and February 19, 2014
Test Result:	PASS

Report Prepared by:	Cosmos Corporation 3571-2 Oonoki, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan Phone: +81-596-63-0707 Fax: +81-596-63-0777

Representative Test Personnel: T. Nakai (EMC Dept.) (2014-03-27)

Reviewed by: H. Onishi (EMC Dept.) (2014-03-27)
iNARTE : EMC-003318-NT

Other Aspects:

Abbreviations:
PASS = passed
FAIL = failed
N/A = not applicable

Note:
1. This Test Report should not be reproduced except in full, without the written approval of Cosmos Corporation.
2. All measurement data contained in this Test Report may have uncertainty. A judgment for the limitation should be taken into the count.
3. The test result of this Test Report is based on the tests made for sample provided, and it is not applicable to individual product identical to the sample or similar product.
4. The judgment of this test report validates the test item only specified in "3. Summary of Test Results".

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1. General Information

1.1 Product Description

Manufacturer	Kyoto Electronics Manufacturing Co., Ltd.
Model (referred to as the EUT)	EBU
Transmitter Type	☐WLAN ☐Bluetooth ☐Zigbee ☒RFID ☐Other ( )
Nominal Voltage	DC 3.3 V
Type of Modulation	ASK
Mode of Operation	☐Duplex ☒Simplex ☐Other
Type of the Equipment	☐Stand-alone ☐Combined Equipment ☐Plug-In Card ☒Other (Module unit)
Type of the Antenna	☒Integral ☐External ☐Other
Type of Power Source	☐AC mains ☐Dedicated AC adapter (Vac) ☒DC Voltage ☐Battery
Type of Battery (if applicable)	None
Type of Operation	☒Continuous ☐Burst ☐Intermittent
Duty Cycle Class	Class 4
Frequency of Operation	13.56 MHz
Thermal Limitation	5℃ to 35℃

1.2 Antenna Description

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT.

Therefore, the equipment complies with the antenna requirement of Section 15.203.

No.	Model	Gain	Antenna Type	Remarks
1	RFID Board	-59.41 dBi	Loop Antenna	Integral

1.3 EUT Description

Kyoto Electronics Manufacturing Co., Ltd., Model EBU
(referred to as the EUT in this report) is Burette unit.

[Rating]

Rated Voltage	Rated Current
DC 3.3 V	150 mA

1.4 Tested System Details

Instrument	Model	Serial No.	Rating
EUT (Burette unit)	EBU	00000002	DC 3.3 V, 150 mA
Automatic Potentiometric Titrator	AT-710	No.5	DC 24 V, 1.9 A
AC Adapter	UIB345-24	No.5	AC 100-240 V, 50/60 Hz, 1.2 A
Main Control Unit	MCU-710	No.2	DC 24 V, 1.9 A
Karl Fischer Moisture Titrator (for volumetric method)	MKV-710	No.2	DC 24 V, 1.9 A
AC Adapter	UIB345-24	B07-0449588	AC 100-240 V, 50/60 Hz, 1.2 A
Karl Fischer Moisture Titrator (for coulometric method)	MKC-710	No.4	DC 24 V, 1.9 A
AC Adapter	UIB345-24	B07-0449585	AC 100-240 V, 50/60 Hz, 1.2 A
Magnetic Stirrer	MS-710A	Un-specified	Un-specified
Magnetic Stirrer	MS-710VP	Un-specified	Un-specified
Magnetic Stirrer	MS-710CP	Un-specified	Un-specified
USB Hub	U2H-EG4SWH	2X03043	DC 5 V
Electrode	M-713	Un-specified	Un-specified
Inner Burette	Un-specified	Un-specified	Un-specified

1.5 Test Methodology

All measurement subject to the present test report is carried out according to the procedures in ANSI C63.4:2003.

1.6 Test Facility

The measurement was carried out at the following facility.

Cosmos Corporation EMC Lab. Oonoki
3571-2 Oonoki, Watarai-cho, Watarai-gun, Mie-ken 516-2102, Japan
☒Semi anechoic Chamber 3 m (COAC3M-01)
☒Shielded Room (COSR-01)
☒Measurement Room
Cosmos Corporation EMC Lab. Oonoki is accredited in accordance with the International Standard ISO/IEC 17025 by the following accreditation bodies and the test facility is registered by the following bodies.

Accreditation: A2LA Accredited Laboratory. No. 2900.01

Registration: FCC Registration No. 604492
Industry Canada Registration No. 3958B
Nemko Laboratory Authorisation. No. ELA 621

1.7 Traceability

The calibration of measurement equipment used in the test subject to the present report is designed and operated to ensure that the measurement is traceable to national standards of measurement or equivalent abroad.

2. Test Condition (Manufacturer's Specification)

2.1 Mode of Operation

Mode of operation: RFID Operating

Note:
EUT makes communication emission with the maximum RF power by a special test program.

The test of Field Strength of Fundamental Emission was performed under the following condition:

Voltage: DC 3.3 V ±15%

The test of Frequency Tolerance was performed under the following condition:

Temperature: -20℃ to +50℃
Voltage: DC 3.3 V ±15%

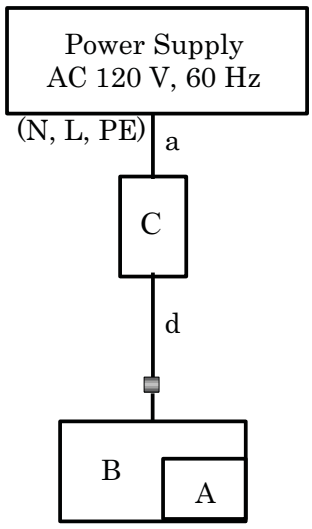
2.2 Test Configuration

	Instrument	Model		Cable	Length		Shield
A	EUT (Burette unit)	EBU	a	AC Power Cord	1.8	m	×
B	Automatic Potentiometric Titrator	AT-710	b	AC Power Cord	1.8	m	×
			c	AC Power Cord	1.8	m	×
C	AC Adapter	UIB345-24 (Serial No.: No.5)	d	DC Power Cord	1.6	m	×
			e	DC Power Cord	1.6	m	×
D	Main control unit	MCU-710	f	DC Power Cord	1.6	m	×
E	Karl Fischer Moisture Titrator (for volumetric method)	MKV-710	g	DC Power Cord	1.0	m	×
			h	USB Cable	1.5	m	○
			i	USB Cable	1.0	m	○
F	AC Adapter	UIB345-24 (Serial No.: B07-0449588)	j	USB Cable	1.0	m	○
			k	USB Cable	1.0	m	○
G	Karl Fischer Moisture Titrator (for coulometric method)	MKC-710	l	COM Cable	1.5	m	○
			m	COM Cable	1.5	m	○
			n	COM Cable	1.5	m	○
H	AC Adapter	UIB345-24 (Serial No.: B07-0449585)	o	LAN Cable *	1.0	m	○
			p	LAN Cable *	1.0	m	○
I	Magnetic Stirrer	MS-710A	q	STIRRER Cable	0.6	m	○
J	Magnetic Stirrer	MS-710VP	r	STIRRER Cable	0.4	m	○
K	Magnetic Stirrer	MS-710CP	s	STIRRER Cable	0.4	m	○
L	USB Hub	U2H-EG4SWH	t	Electrode Cable	0.4	m	×
M	Electrode	M-713	u	Electrode Cable	0.4	m	×
N	Inner Burette	Un-specified	v	RS-232C Cable *	0.1	m	○
			w	RS-232C Cable *	0.1	m	○
			x	BNC Cable *	1.0	m	○

Note:
*: These cables were not terminated.

2.2 Test Configuration (Continued)

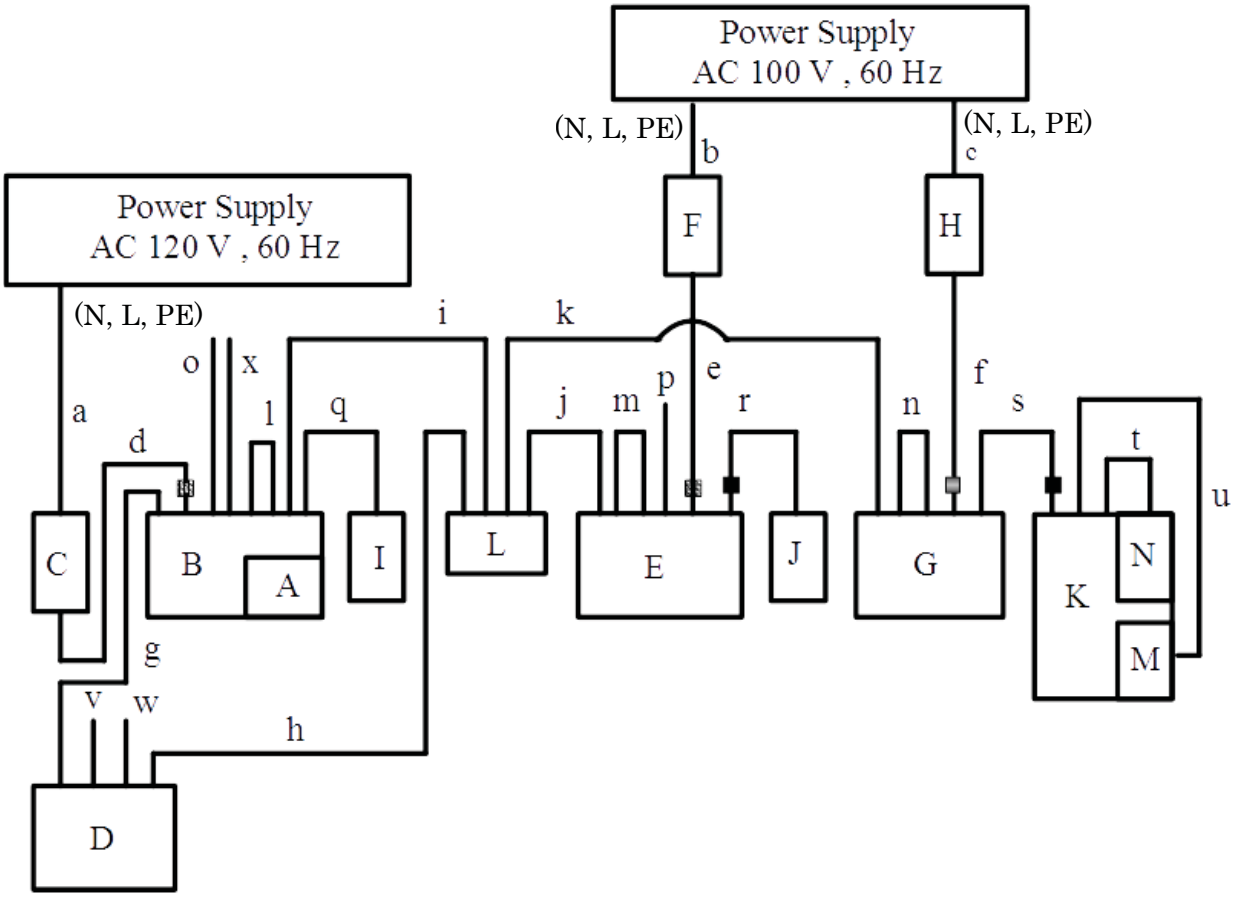
Block diagram of the tested system



- Ferrite Core: 3 turn (ZCAT2032-0930, TDK)

2.2 Test Configuration (Continued)

Block diagram of the tested system



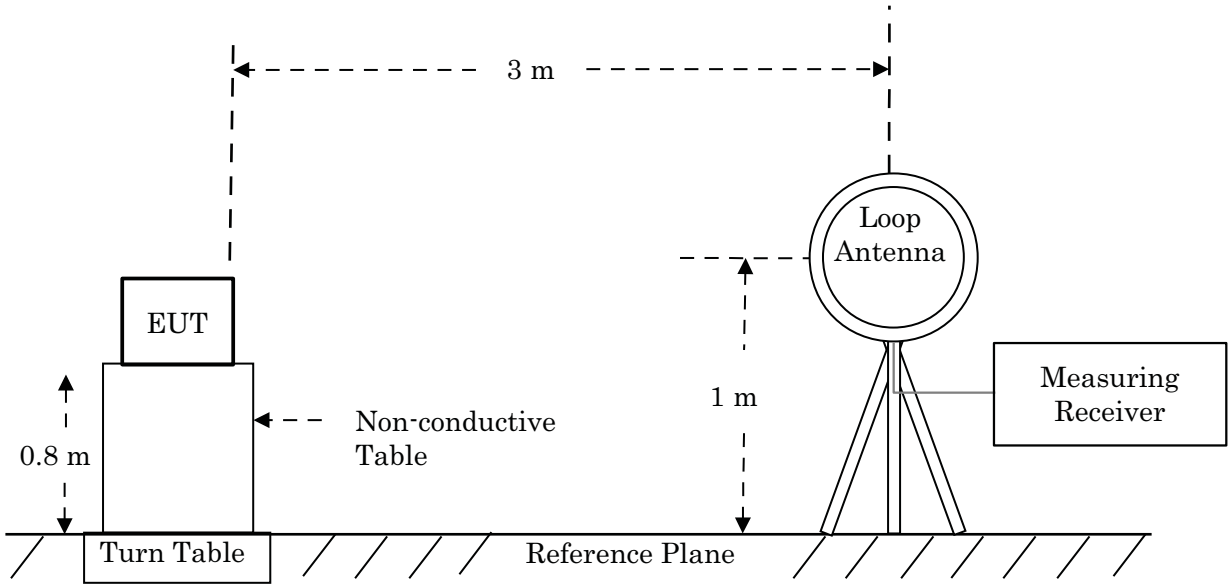
■ Integrated Ferrite Core
▩ Ferrite Core: 3 turn (ZCAT2032-0930, TDK)
▩ Ferrite Core: 3 turn (E04SR211132, SEIWA)

Excess cable arrangement

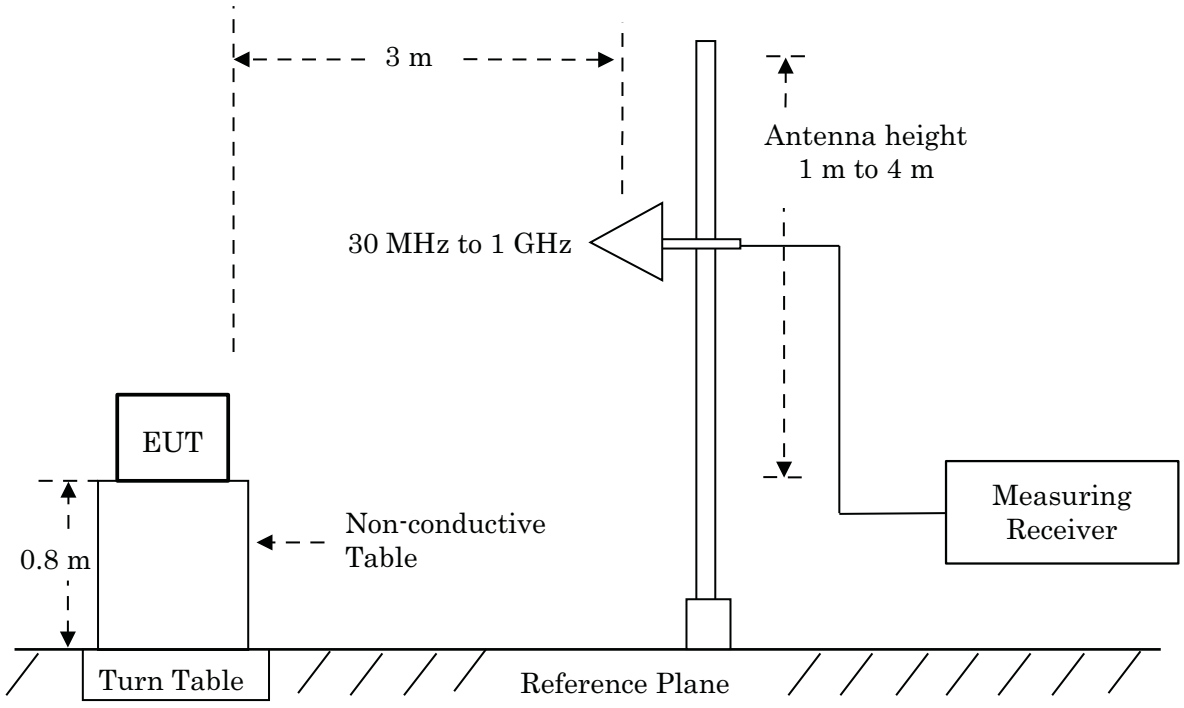
Symbol	Length	Position	Setting
a	0.4 m	Center	Bundle
d, i, j, k, l, m, n, q, r, s	0.3 m	Center	Bundle and Hung
e, f	0.3 m	Center	Bundle
o, p, x	0.3 m	End	Bundle and Hung

2.2 Test Configuration (Continued)

Field Strength of Fundamental Emission
Radiated Spurious Emission (Below 30 MHz)

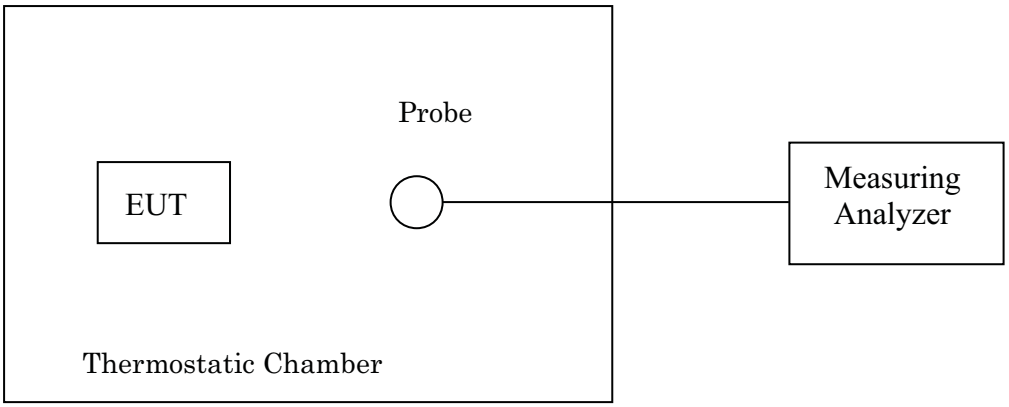


Radiated Spurious Emission (Above 30 MHz)

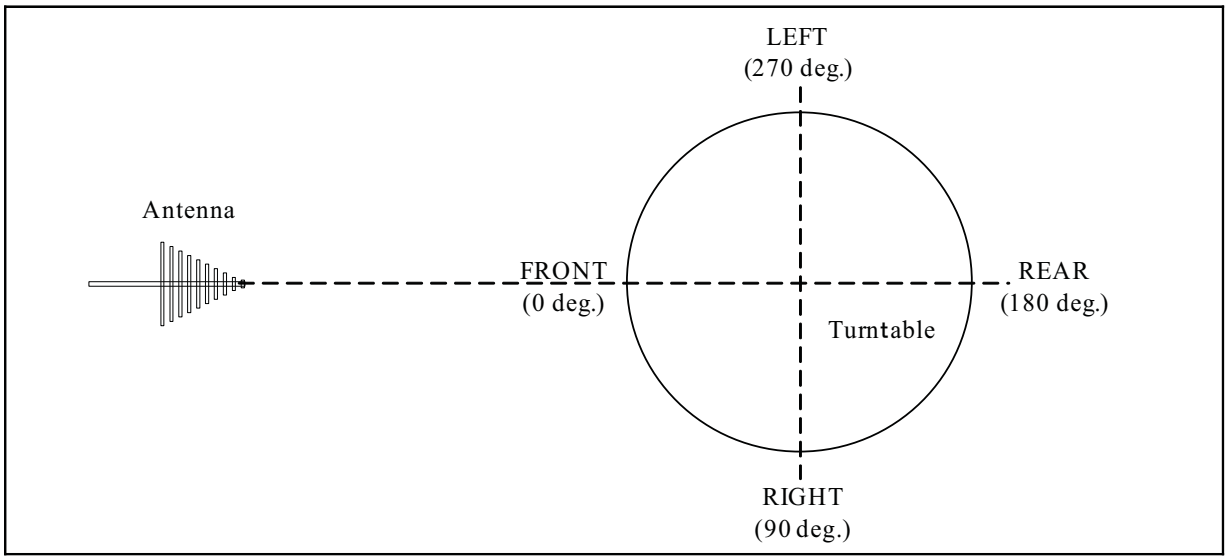


2.2 Test Configuration (Continued)

20 dB Bandwidth
Frequency Tolerance



2.3 EUT Angle



Note:
Refer to Appendix 1.

3. Summary of Test Results

These test results are the test results of the condition specified with “2. Test Condition”.

Section	Test Item	Result
15.207	AC Power Line Conducted Emission	Pass
15.209, 15.225(d)	Radiated Spurious Emission	Pass
15.215(c)	20 dB Bandwidth	Pass
15.225(a)(b)(c)(d)	Field Strength of Fundamental Emission	Pass
15.225(e)	Frequency Tolerance	Pass

4. Measurement Result

4.1 15.207 AC Power Line Conducted Emission

4.1.1 Setting Remarks

- The conducted disturbance voltage of AC power line in the frequency range from 0.15 MHz to 30 MHz was measured in accordance with ANSI C63.4:2003.
- The test setup was made in accordance with ANSI C63.4:2003 on the table installed in a shielded room.
- The non-conductive table, 0.8 m high, was placed on the reference ground plane, and the EUT was put on the non-conductive table.
- The used Line Impedance Stabilizing Network (LISN) has a rated impedance of 50 Ω/50 μH as specified in CISPR16-1-2.
- The test receiver with Quasi Peak and Average detector is in accordance with CISPR 16-1-1.
- The conducted emission level is calculated by adding Cable Attenuation Factor and Insertion Loss of LISN.
- Activate the EUT System and run the software prepared for the test.
- Refer to the figure of 2.2 Test Configuration.

Setting Condition of Test receiver

Frequency range	Detector	RBW
150 kHz to 30 MHz	Quasi-peak	9 kHz
	Average	9 kHz

4.1.2 Limit

Frequency (MHz)	Conducted Limit (dBμV)	
	QP	AV
0.15 to 0.5	66 to 56 *	56 to 46 *
0.5 to 5	56	46
5 to 30	60	50

* Decrease with the logarithm of the frequency.

4.1.3 Result

EUT complies with the requirement.

Uncertainty of measurement result	:	±2.26 dB
Date of testing	:	February 19, 2014
Temperature	:	22℃
Humidity	:	22%

4.1.4 Measured Data

Sample Calculation

Result [dB(μV)] = Reading [dB(μV)] + c.f. (Correction Factor) [dB]
= 33.2 + 11.7
= 44.9
Margin [dB] = Limit [dB(μV)] - Result [dB(μV)]
= 65 - 44.9
= 20.1

c.f. = LISN Factor + Cable Attenuation Factor

********** Cosmos Corporation **********
<<Conducted Emission>>

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121125E FCC CE Total02.dat

Limit : FCC 15.207
Model : Burette unit EBU / AT-710 / UIB-345-24
Serial : 00000002 / No.5 / No.5
Operater : T.Ezaki
Power : DC 3.3V / DC 24V / AC 120V, 60Hz
Temp., Humi. : 22deg., 22%
Mode : RFID
Remark1 :
Remark2 :
Remark3 : RBW:9kHz

Final Result

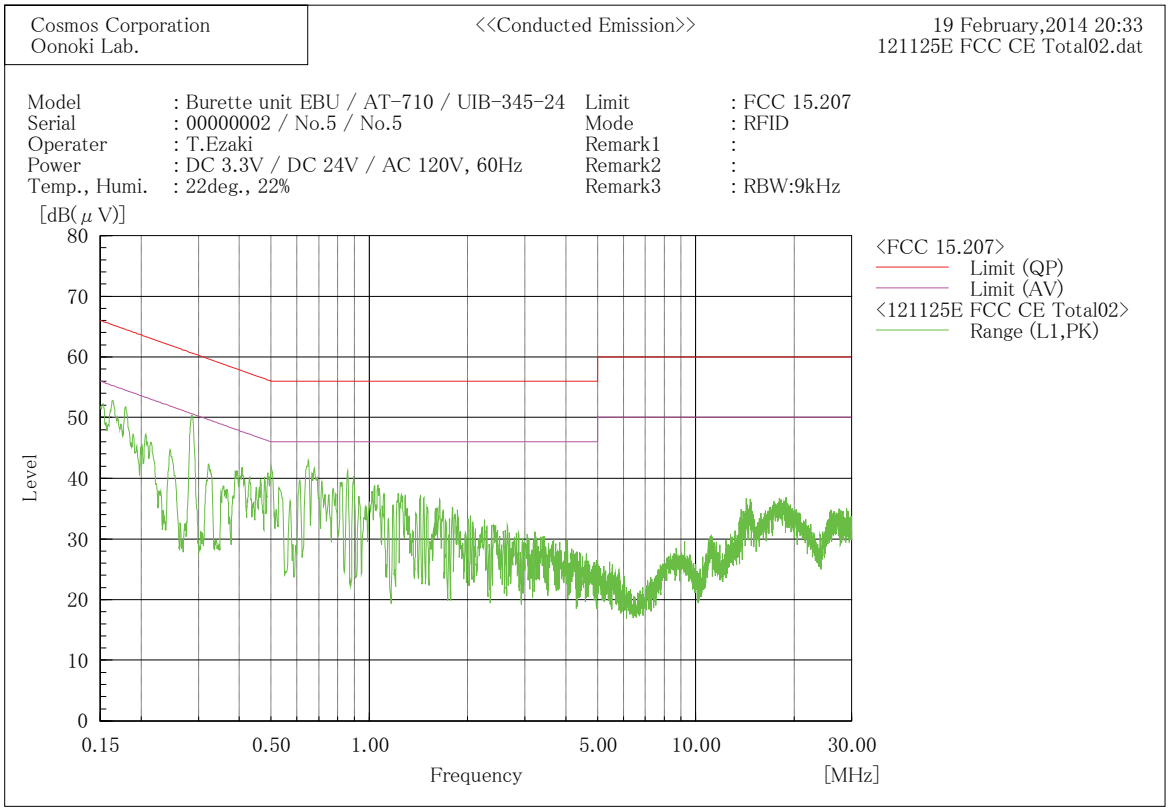
--- L1 Phase ---

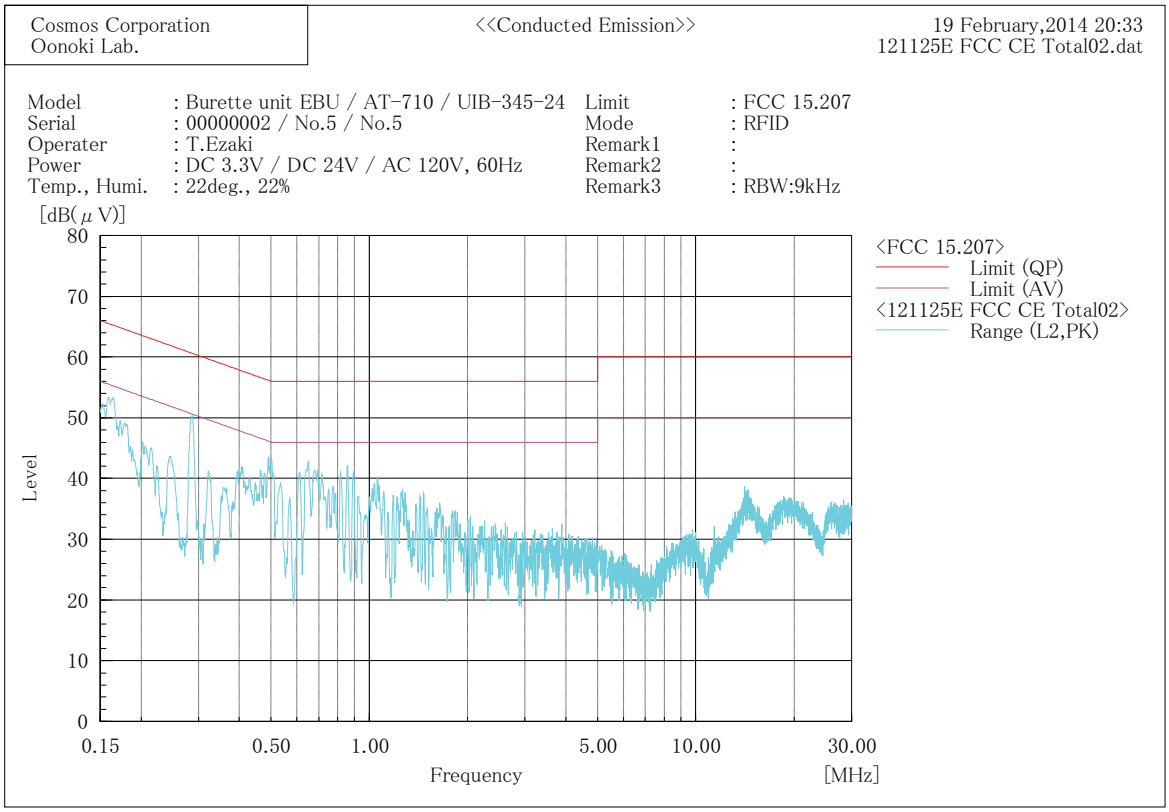
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c.f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.1697	33.2	20.6	11.7	44.9	32.3	65.0	55.0	20.1	22.7
2	0.2812	36.2	32.3	11.6	47.8	43.9	60.8	50.8	13.0	6.9
3	0.5271	24.8	15.9	11.6	36.4	27.5	56.0	46.0	19.6	18.5
4	0.6502	27.7	15.9	11.6	39.3	27.5	56.0	46.0	16.7	18.5
5	1.488	20.2	9.3	11.6	31.8	20.9	56.0	46.0	24.2	25.1
6	14.030	20.2	10.7	10.8	31.0	21.5	60.0	50.0	29.0	28.5

--- 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	0.15704	34.5	21.4	11.7	46.2	33.1	65.6	55.6	19.4	22.5
2	0.2794	30.5	26.8	11.6	42.1	38.4	60.8	50.8	18.7	12.4
3	0.508	23.8	10.3	11.6	35.4	21.9	56.0	46.0	20.6	24.1
4	0.6924	25.4	14.5	11.6	37.0	26.1	56.0	46.0	19.0	19.9
5	1.3918	19.2	15.2	11.6	30.8	26.8	56.0	46.0	25.2	19.2
6	14.2445	22.8	14.2	10.9	33.7	25.1	60.0	50.0	26.3	24.9

4.1.4 Measured Data (Continued)





4.2 15.209, 15.225 (d) Radiated Spurious Emission

4.2.1 Setting Remarks

- In the frequency range from 9 kHz to 1 GHz (over 10th harmonics), the electric field strength was measured in accordance with ANSI C63.4:2003.
- The test setup was made in accordance with ANSI C63.4:2003 on the table installed in a semi-anechoic chamber.
- The non-conductive table, 0.8 m high, was placed on the turntable, and the EUT was put on the non-conductive table.
- The EUT was measured at 1 m to 4 m height of the antenna above 30 MHz.
- The turntable was fully rotated. The highest radiation from the equipment was recorded.
- The measurement above 30 MHz was carried out with both horizontal and vertical antenna polarization.
- The test receiver with Quasi Peak detector is in accordance with CISPR 16-1-1.
- The measurement was carried out with the measuring distance of 3 m.
  Then the limit of 30 m distance below 30 MHz was converted to the limit of 3 m distance with the 40log(30 m/3 m).
- Refer to the figure of 2.2 Test Configuration.

Frequency range	Detector	RBW
9 kHz to 150 kHz	Quasi-peak	200 Hz
150 kHz to 30 MHz	Quasi-peak	9 kHz
30 MHz to 1 GHz	Quasi-peak	120 kHz

4.2.2 Limit

Frequency (MHz)	Field Strength (Distance)	
	(μV/m)	(dBμV/m)
0.009 to 0.49	2400/F(kHz) (300 m) 266.6 to 4.89	128.5 to 93.8 (3 m)
0.49 to 1.705	24000/F(kHz) (30 m) 48.9 to 14.0	73.8 to 62.9 (3 m)
1.705 to 30	30 (30 m)	69.5 (3 m)
30 to 88	100 (3 m)	40.0 (3 m)
88 to 216	150 (3 m)	43.5 (3 m)
216 to 960	200 (3 m)	46.0 (3 m)
Above 960	500 (3 m)	53.9 (3 m)

4.2.3 Result

EUT complies with the requirement.

Uncertainty of measurement result	:	±3.64 dB	
Date of testing	:	January 15, 2014	January 17, 2014
Room temperature	:	18℃	19℃
Relative humidity	:	35%	33%

4.2.4 Measured Data

Sample Calculation

Result [dB(μV/m)] = Reading [dBμV] + c.f. (Correction Factor) [dB(1/m)]
= 37.3 + (-9.2)
= 28.1

Margin [dB] = Limit [dB(μV/m)] - Result [dB(μV/m)]
= 43.5 - 28.1
= 15.4

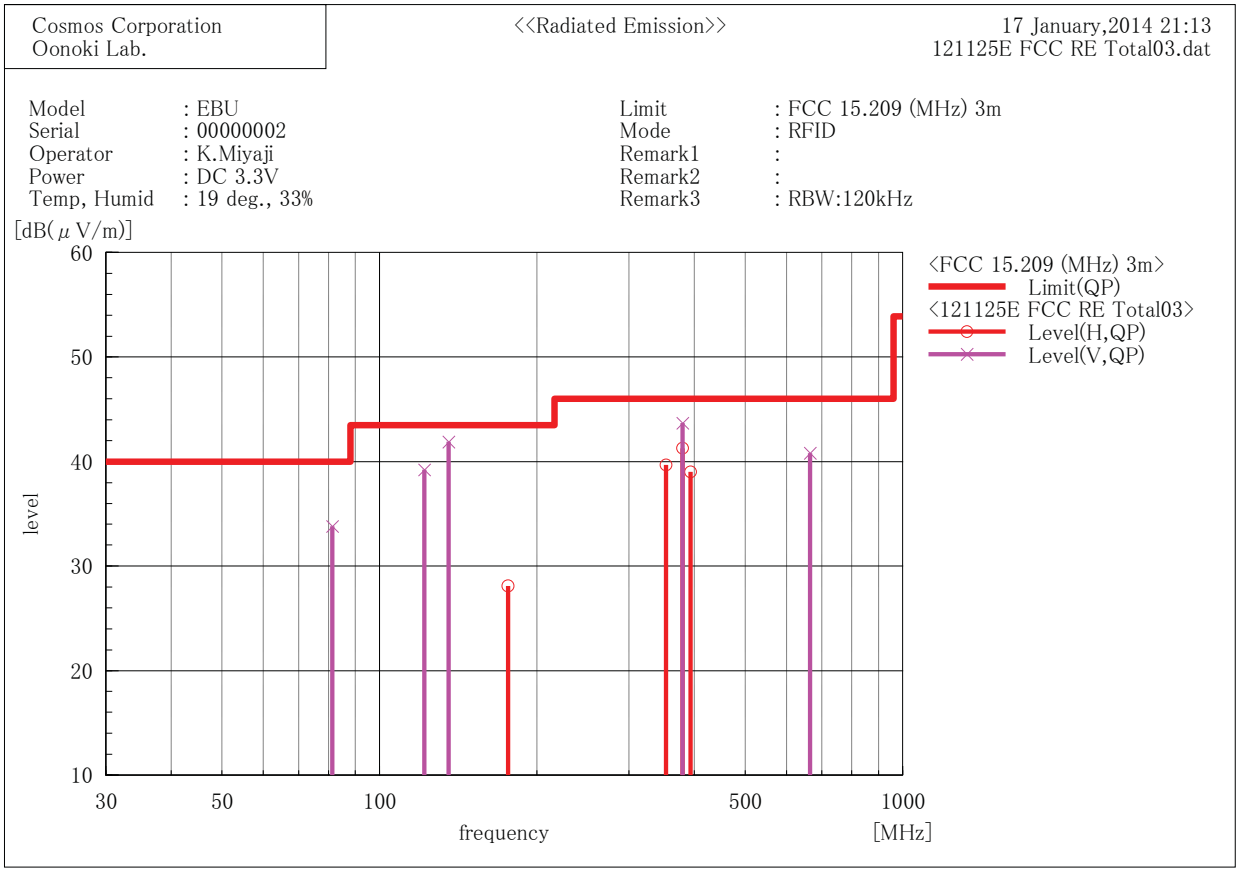
[9 kHz to 30 MHz]
c.f. = Cable Attenuation Factor + Antenna Factor

[30 MHz to 1 GHz]
c.f. = Cable Attenuation Factor + Pre-Amplifier Gain + Antenna Factor

No spurious emission for RF module was found in 9 kHz to 30 MHz

4.2.4 Measured Data (Continued)

30 MHz to 1 GHz



Final Result

--- Horizontal Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	176.288	37.3	-9.2	28.1	43.5	15.4	183.0	249.0
2	352.571	45.9	-6.2	39.7	46.0	6.3	143.0	283.0
3	379.693	46.7	-5.4	41.3	46.0	4.7	125.0	282.0
4	393.253	44.1	-5.1	39.0	46.0	7.0	118.0	271.0

--- Vertical Polarization (QP)---

No.	Frequency [MHz]	Reading [dB(μV)]	c.f [dB(1/m)]	Result [dB(μV/m)]	Limit [dB(μV/m)]	Margin [dB]	Height [cm]	Angle [°]
1	81.367	48.7	-14.9	33.8	40.0	6.2	100.0	119.0
2	122.048	51.3	-12.1	39.2	43.5	4.3	100.0	183.0
3	135.608	53.1	-11.2	41.9	43.5	1.6	100.0	218.0
4	379.693	49.1	-5.4	43.7	46.0	2.3	122.0	46.0
5	664.462	40.9	-0.1	40.8	46.0	5.2	100.0	0.0

4.3 15.215 (c) 20 dB bandwidth

4.3.1 Setting Remarks

- The both side of 20 dB down value from peak power were measured by using 20 dB bandwidth measurement function of the spectrum analyzer.
- The spectrum analyzer is set as following;

1. Frequency Span : 10 kHz
2. Resolution Bandwidth : 1 kHz
3. Video Bandwidth : 3 kHz
4. Detector Mode : Peak
5. Trace Mode : Max Hold

- Refer to the figure of 2.2 Test Configuration.

4.3.2 Limit

Intentional radiators must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under witch the equipment is operated.

4.3.3 Result

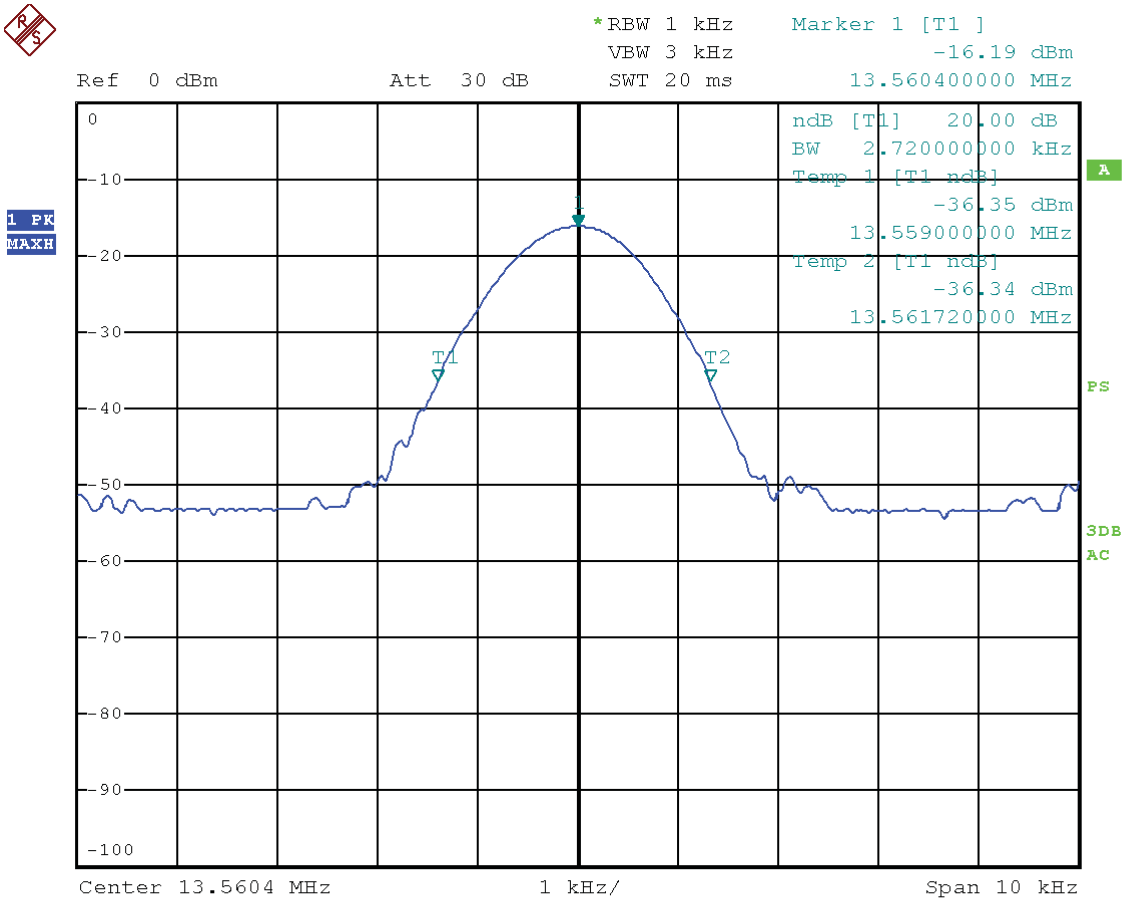
EUT complies with the requirement.

Uncertainty of measurement result	:	±0.8 dB
Date of testing	:	January 21, 2014
Room temperature	:	20℃
Relative humidity	:	33%

4.3.4 Measured Data

Measured Bandwidth (kHz)
2.720

	Edge of Bandwidth (MHz)	Limit (MHz)	Margin (kHz)
Lower	13.55900	13.01	549
Higher	13.56172	14.01	448



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4.4 15.225 (a)(b)(c)(d) Field Strength of Fundamental Emission

4.4.1 Setting Remarks

- The test setup was made in accordance with ANSI C63.4:2003 on the table installed in a semi-anechoic chamber.
- The non-conductive table, 0.8 m high, was placed on the turntable, and the EUT was put on the non-conductive table.
- The turntable was fully rotated. The highest radiation from the equipment was recorded.
- The measurement was carried out with the measuring distance of 3 m.
- The test receiver with Quasi Peak detector is in accordance with CISPR 16-1-1.
  Then the limit of 30 m distance was converted to the limit of 3 m distance with the 40log(30 m/3 m).
- Refer to the figure of 2.2 Test Configuration.

4.4.2 Limit

Frequency (MHz)	Field Strength (Distance)	
	(μV/m)	(dBμV/m)
13.553 to 13.567	15848 (30 m)	123.9 (3 m)
13.41 to 13.553 and 13.567 to 13.71	334 (30 m)	90.4 (3 m)
13.11 to 13.41 and 13.71 to 14.01	106 (30 m)	80.5 (3 m)
Outside of 13.11 to 14.01	30 (30 m)	69.5 (3 m)

4.4.3 Result

EUT complies with the requirement.

Uncertainty of measurement result	:	±3.64 dB
Date of testing	:	January 22, 2014
Temperature	:	20℃
Humidity	:	33%

4.4.4 Measured Data

Sample Calculation

Result [dBµV/m] = Reading [dBµV] + c.f. (Correction Factor) [dB/m]
= 4.26 + 20.2
≒ 24.5

Margin [dB] = Limit [dBµV/m] - Result [dBµV/m]
= 69.5 - 24.5
≒ 45.0

c.f. = Cable Attenuation Factor + Antenna Factor

Frequency Range [MHz]	Measurement Frequency [MHz]	Power Supply Voltage [V]	Antenna Pola. [deg.]	Reading [dBµV]	c.f. [dB/m]	Result [dBµV/m]	Limit [dBµV/m]	Margin [dB]
Below 13.11	13.11	2.805	90	4.26	20.2	24.5	69.5	45.0
	13.11	3.300	90	4.26	20.2	24.5	69.5	45.0
	13.11	3.795	90	4.26	20.2	24.5	69.5	45.0
13.11 - 13.41	13.41	2.805	90	4.26	20.2	24.5	80.5	56.0
	13.41	3.300	90	4.26	20.2	24.5	80.5	56.0
	13.41	3.795	90	4.26	20.2	24.5	80.5	56.0
13.41 - 13.553	13.553	2.805	90	15.95	20.3	36.3	90.4	54.1
	13.553	3.300	90	17.29	20.3	37.6	90.4	52.8
	13.553	3.795	90	17.96	20.3	38.3	90.4	52.1
13.553 - 13.567	13.5604	2.805	90	29.57	20.3	49.9	123.9	74.0
	13.5604	3.300	90	31.03	20.3	51.4	123.9	72.5
	13.5604	3.795	90	31.75	20.3	52.1	123.9	71.8
13.567 - 13.71	13.567	2.805	90	17.60	20.3	37.9	90.4	52.5
	13.567	3.300	90	19.15	20.3	39.5	90.4	50.9
	13.567	3.795	90	19.87	20.3	40.2	90.4	50.2
13.71 - 14.01	13.71	2.805	90	4.26	20.3	24.6	80.5	55.9
	13.71	3.300	90	4.26	20.3	24.6	80.5	55.9
	13.71	3.795	90	4.26	20.3	24.6	80.5	55.9
Above 14.01	14.01	2.805	90	4.26	20.3	24.6	69.5	44.9
	14.01	3.300	90	4.26	20.3	24.6	69.5	44.9
	14.01	3.795	90	4.26	20.3	24.6	69.5	44.9

4.5 15.225 (e) Frequency Tolerance

4.5.1 Setting Remarks

- The EUT was placed in an environmental test chamber, exposed in extreme temperatures until its temperature is stabilized.
- The measurement was carried out at every 10℃ from -20℃ to +50℃ in the most common nominal supply voltage and the measurement was carried out at ±15 % of rated voltage at 20℃.
- Refer to the figure of 2.2 Test Configuration.

4.5.2 Limit

The frequency tolerance of the carrier signal shall be maintained within +/-0.01% of the operating frequency.

4.5.3 Result

EUT complies with the requirement.

Uncertainty of measurement result	:	±1 Hz
Date of testing	:	January 20 and 24, 2014

4.5.4 Measured Data

Sample Calculation

Deviation [Hz] = Measured Frequency [Hz] - Center Frequency [Hz]
= 13560398.4 - 13560000
= 398.4

Deviation [ppm] = Deviation [Hz] ÷ Center Frequency [Hz] × 1000000
= 398.4 ÷ 13560000 × 1000000
≒ 29.4

Margin [ppm] = Limit [ppm] - Deviation [ppm]
= 100 - 29.4
≒ 70.6

Center Frequency : 13.56 MHz

Temp [℃]	Supply Voltage [V]	Measured Frequency [Hz]	Deviation [Hz]	Deviation [ppm]	Limit [ppm]	Margin [ppm]
50	3.3	13560398.4	398.4	29.4	100	70.6
40	3.3	13560382.7	382.7	28.2	100	71.8
30	3.3	13560381.9	381.9	28.2	100	71.8
20	3.3	13560387.2	387.2	28.6	100	71.4
10	3.3	13560391.3	391.3	28.9	100	71.1
0	3.3	13560384.8	384.8	28.4	100	71.6
-10	3.3	13560335.7	335.7	24.8	100	75.2
-20	3.3	13560282.2	282.2	20.8	100	79.2

Temp [℃]	Supply Voltage [V]	Measured Frequency [Hz]	Deviation [Hz]	Deviation [ppm]	Limit [ppm]	Margin [ppm]
20	2.805	13560363.4	363.4	26.8	100	73.2
	3.300	13560387.2	387.2	28.6	100	71.4
	3.795	13560408.5	408.5	30.1	100	69.9

5. List of Test Measurement Instruments

AC Power Line Conducted Emission

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100413	2013/11/23 2014/11/22
Artificial-Mains Network (for EUT)	Kyoritsu	KNW-341C (F)	8-1659-1	2014/01/14 2015/01/13
Artificial-Mains Network (for peripheral)	Kyoritsu	KNW-244C (F)	8-1657-1	2013/06/25 2014/06/24
Terminator	RES-NET MICROWAVE	RCX6BM	---	2013/07/11 2014/07/10
RF Cable	Fujikura	3D-2W	OC01	2013/05/10 2014/05/09
RF Cable	SUHNER	RG223/U	OC02 OC04	2013/05/10 2014/05/09
RF Selector	TSJ	RFM-E221	3148	2013/05/10 2014/05/09
Software	TOYO	EP5/CE (ver 5.3.20)	---	---

Radiated Spurious Emission (Below 30 MHz)
Field Strength of Fundamental Emission

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	2013/03/30 2014/03/29
Active Loop Antenna (0.15 MHz to 30 MHz)	ROHDE & SCHWARZ / TOYO	HFH2-Z2 / HFH2-Z2P	827945/011 / 127	2013/10/05 2014/10/04
Anechoic Chamber 3 m	JSE	COAC3M-01	---	2013/07/19 2014/07/18
RF Cable (9 kHz to 30 MHz)	Fujikura	5D-2W	OC09	2013/05/21 2014/05/20
RF Cable (9 kHz to 30 MHz)	SUHNER	RG223/U	OC10 OC11	2013/05/21 2014/05/20
RF Cable (9 kHz to 30 MHz)	SUHNER	RG213/U	OC13	2013/05/21 2014/05/20
RF Selector	TSJ	RFM-E121	03149	2013/05/21 2014/05/20
Thermostatic Chamber	ESPEC	PU-2KP	14010422	2013/08/22 2014/08/31
Software	TSJ	TEPTO-DV/ME ver 1.80.0020	---	---

5. List of Test Measurement Instruments (Continued)

Radiated Spurious Emission (Above 30 MHz)

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE& SCHWARZ	ESIB40	100211	2013/03/30 2014/03/29
Pre-Amplifier (30 MHz to 1 GHz)	HEWLETT PACKARD	8447D OPT 010	2944A 07891	2013/04/15 2014/04/14
Biconical Antenna (30 MHz to 300 MHz)	SCHWARZBECK	VHBB9124 / BBA9106	9124-311	2013/10/21 2014/10/20
Log-Periodic Antenna (300 MHz to 1 GHz)	SCHWARZBECK	UHALP9108-A	0645	2013/10/12 2014/10/11
Anechoic Chamber 3 m	JSE	COAC3M-01	---	2013/07/19 2014/07/18
RF Cable (30 MHz to 1 GHz)	SUHNER	RG223/U	OC11	2013/04/23 2014/04/22
RF Cable (30 MHz to 1 GHz)	Fujikura	8D-2W	OC14	2013/04/23 2014/04/22
RF Cable (30 MHz to 1 GHz)	SUHNER	RG214/U	OC15 OC16	2013/04/23 2014/04/22
RF Cable (30 MHz to 1 GHz)	SUHNER	RG400/U	OC17	2013/04/23 2014/04/22
RF Selector	TSJ	RFM-E121	03149	2013/04/23 2014/04/22
Software	TOYO	EP5/RE (ver 5.4.21)	---	---

20 dB Bandwidth
Frequency Tolerance

Instruments	Manufacturer	Model	Serial No.	Calibrated Date/Until
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100413	2013/11/23 2014/11/22
Thermostatic Chamber	ESPEC	PU-2KP	14010422	2013/08/22 2014/08/21

6. Appendix

Refer to separated files for the following appendixes.
Appendix 1 : EUT Angle
Appendix 2 : External Photos
Appendix 3 : Setup Photos