EMI TEST REPORT

Test Report No. : 10006709H-A-R1

Applicant	:	**NEC Corporation of America**
Type of Equipment	:	**Digital Portable Cellular Telephone**
Model No.	:	**KMP7R4K1-2A**
FCC ID	:	**A98-HDN2538**
Test standard	:	**FCC Part 15 Subpart B: 2012 Class B**
Test Result	:	**Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 10006709H-A. 10006709H-A is replaced with this report.

Date of test: March 26, 2013

Representative test engineer:
Tsubasa Takayama
Engineer of WiSE Japan,
UL Verification Service

Approved by:
Takahiro Hatakeda
Leader of WiSE Japan,
UL Verification Service

NVLAP LAB CODE: 200572-0

This laboratory is accredited by the NVLAP LAB CODE 200572-0, U.S.A. The tests reported herein have been performed in accordance with its terms of accreditation.
*As for the range of Accreditation in NVLAP, you may refer to the WEB address, http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

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REVISION HISTORY

Original Test Report No.: 10006709H-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10006709H-A	April 2, 2013	-	-
1	10006709H-A-R1	April 22, 2013	P. 8, 9	Addition of Item F (SD Card)

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SECTION 1: Customer information

Company Name	:	NEC Corporation of America
Address	:	Radio Communications Systems Division 6535N. State Highway 161, Irving, TX 75039-2402 USA
Telephone Number	:	+1 214 262 4241
Facsimile Number	:	+1 214 262 4225
Contact Person	:	Sanjay Wadhwa

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment	:	Digital Portable Cellular Telephone
Model No.	:	KMP7R4K1-2A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.8V (DC 3.4 - 4.34V)
Receipt Date of Sample	:	March 26, 2013
Country of Mass-production	:	China
Condition of EUT	:	Engineering prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT	:	No Modification by the test lab

2.2 Product description

Model No: KMP7R4K1-2A (referred to as the EUT in this report) is the Digital Portable Cellular Telephone.

Feature of EUT:
Maximum frequency generated or used by the EUT: 243.5MHz

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 15 Subpart B: 2012, final revised on December 27, 2012 and effective January 28, 2013

Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	**FCC:** ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Class B	N/A	**[QP]** 13.9dB 0.15000MHz, L **[AV]** 21.5dB 4.94057MHz, N	Complied
Radiated emission	**FCC:** ANSI C63.4: 2003 8. Radiated emission measurements	Class B	N/A	5.6dB 480.010MHz, Horizontal	Complied
*Note: UL Japan, Inc's EMI Work Procedure 13-EM-W0420.					

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Test room (semi-anechoic chamber)	**Conducted emission (±dB)**
	150kHz-30MHz
No.1	3.5dB
No.2	3.6dB
No.3	3.6dB
No.4	3.6dB

Test room (semi-anechoic chamber)	**Radiated emission**						
	(3m*)(±dB)				**(1m*)(±dB)**		**(0.5m*)(±dB)**
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.3dB	5.0dB	5.1dB	4.9dB	5.8dB	4.4dB	4.3dB
No.2	4.3dB	5.2dB	5.1dB	5.0dB	5.7dB	4.3dB	4.2dB
No.3	4.6dB	5.0dB	5.1dB	5.0dB	5.7dB	4.5dB	4.2dB
No.4	4.8dB	5.2dB	5.0dB	5.0dB	5.7dB	5.2dB	4.2dB

*3m/1m/0.5m = Measurement distance

Conducted Emission test
The data listed in this test report has enough margin, more than the site margin.

Radiated emission test (3m)
The data listed in this test report has enough margin, more than the site margin.

3.5 Test Location

UL Japan, Inc. Head Office EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Data of EMI, Test instruments, and Test set up

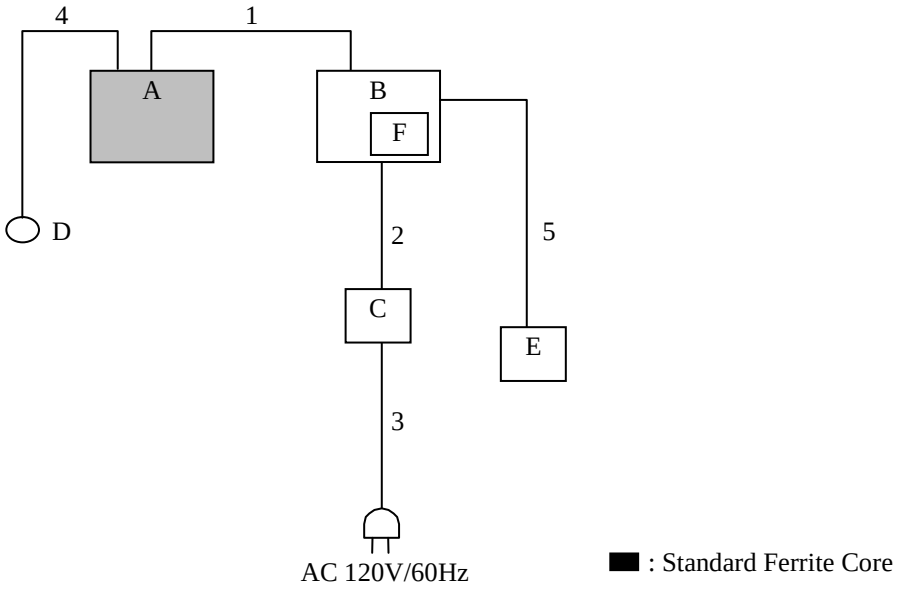
Refer to APPENDIX.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating modes

Mode	Remarks
USB Communication mode	*EUT copied the data that was into the Micro SD memory onto laptop PC through the USB cable.

4.2 Configuration and peripherals



*Cabling and setup were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Digital Portable Cellular Telephone	KMP7R4K1-2A	004401201150238	NEC Corporation of America	EUT
B	Laptop PC	2537C96	R86AFVG	lenovo	DoC
C	AC Adaptor	42T4418	11S42T4418Z1ZGWG 08V4S0	lenovo	-
D	Headphone	ACC-E-014	-	NEC Corporation of America	-
E	Mouse	M-UB48	830318-0000	Logitech	DoC
F	SD Card	RP-SD256B	BJ8CA308935	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	USB Cable	0.4	Shielded	Shielded	-
2	DC Cable	1.8	Unshielded	Unshielded	-
3	AC Cable	1.0	Unshielded	Unshielded	-
4	Headphone Cable	0.8	Unshielded	Unshielded	-
5	USB Cable	0.8	Shielded	Shielded	-

SECTION 5: Conducted Emission

5.1 Operating environment

Test place : No.2 semi anechoic chamber.
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT and its peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from the LISN/AMN and excess AC cable was bundled in center. I/O cables that were connected to the other peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN/AMN to the input power source. All unused 50 ohm connectors of the LISN/AMN were resistivity terminated in 50 ohm when not connected to the measuring equipment.
Photographs of the set up are shown in Appendix 3.

Frequency range : 0.15 MHz-30MHz
EUT position : Table top
EUT operation mode : See Clause 4.1

5.3 Test procedure

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT within a semi anechoic chamber. The EUT was connected to a Line Impedance Stabilization Network (LISN)/ Artificial Mains network (AMN). An overview sweep with peak detection has been performed. The measurements have been performed with a quasi-peak detector and if required, with an average detector.
The conducted emission measurements were made with the following detector function of the test receiver.

Detector Type : Quasi-Peak and CISPR Average
IF Bandwidth : 9 kHz

5.4 Test result

Summary of the test results: Pass

Date: March 26, 2013 Test engineer: Tsubasa Takayama

SECTION 6: Radiated Emission

6.1 Operating environment

Test place : No.2 semi anechoic chamber
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. The EUT was set on the center of the tabletop.
Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.
Photographs of the set up are shown in Appendix 3.

6.3 Test conditions

Frequency range : 30MHz-300MHz (Biconical antenna) / 300MHz-1000MHz (Logperiodic antenna)
1000MHz -2000MHz (Horn antenna)
Test distance : 3m
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

The height of the measuring antenna varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.
The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The radiated emission measurements were made with the following detector function of the test receiver and the Spectrum analyzer.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
IF Bandwidth	QP: BW 120kHz	PK: RBW:1MHz/VBW: 3MHz AV *1): RBW:1MHz/VBW:10Hz

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

- The noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

6.5 Test result

Summary of the test results: Pass

Date: March 26, 2013 Test engineer: Tsubasa Takayama

APPENDIX 1: Data of EMI test

Conducted Emission

DATA OF CONDUCTED EMISSION TEST

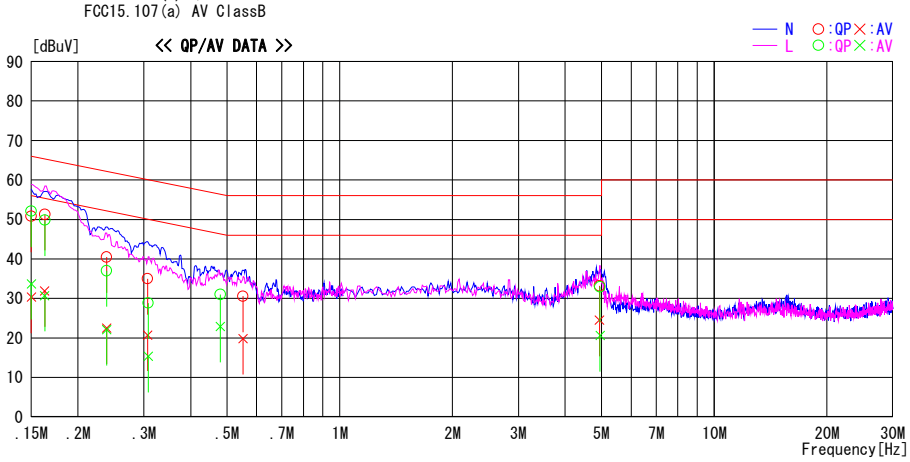
UL Japan Inc. Head Office EMC Lab. No.2Semi Anechoic Chamber
Date : 2013/03/26

Report No. : 10006709H

Temp./Humi. : 25deg. C / 30% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : USB communication mode

LIMIT : FCC15.107(a) QP ClassB
FCC15.107(a) AV ClassB



Frequency	Reading Level		Corr.	Results		Limit		Margin		Phase
	QP	AV	Factor	QP	AV	QP	AV	QP	AV	
[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dB]	[dB]	
0.15000	37.6	17.1	13.2	50.8	30.3	66.0	56.0	15.2	25.7	N
0.16305	38.1	18.7	13.2	51.3	31.9	65.3	55.3	14.0	23.4	N
0.23845	27.3	9.3	13.2	40.5	22.5	62.2	52.2	21.7	29.7	N
0.30660	21.8	7.5	13.2	35.0	20.7	60.1	50.1	25.1	29.4	N
0.55165	17.4	6.6	13.2	30.6	19.8	56.0	46.0	25.4	26.2	N
4.94057	19.2	10.5	14.0	33.2	24.5	56.0	46.0	22.8	21.5	N
0.15000	38.9	20.5	13.2	52.1	33.7	66.0	56.0	13.9	22.3	L
0.16305	36.6	17.5	13.2	49.8	30.7	65.3	55.3	15.5	24.6	L
0.23845	23.8	8.9	13.2	37.0	22.1	62.2	52.2	25.2	30.1	L
0.30805	15.6	2.1	13.2	28.8	15.3	60.0	50.0	31.2	34.7	L
0.47950	17.8	9.7	13.2	31.0	22.9	56.3	46.3	25.3	23.4	L
4.95569	18.9	6.6	14.0	32.9	20.6	56.0	46.0	23.1	25.4	L

CHART:WITH FACTOR,Peak hold data. CALCULATION:RESULT=READING+C.F(LISN LOSS + ATTEN LOSS + CABLE LOSS)
Except for the above table : adequate margin data below the limits.

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

DATA OF RADIATED EMISSION TEST

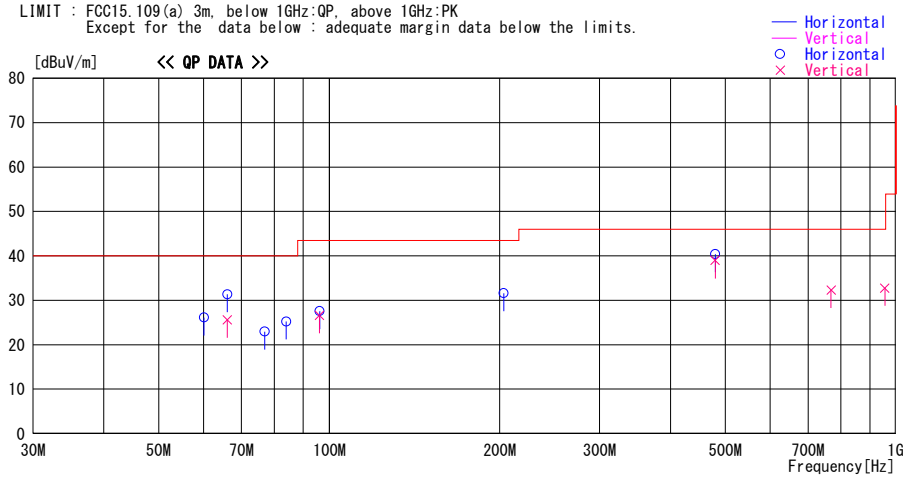
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2013/3/26

Report No. : 10006709H

Temp./Humi. : 22deg. C / 36% RH
Engineer : Tsubasa Takayama

Mode / Remarks : USB Communication mode Y-axis

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
60.082	39.7	QP	7.9	-21.5	26.1	172	386	Hori.	40.0	13.9
66.088	45.7	QP	7.1	-21.4	31.4	10	392	Hori.	40.0	8.6
66.092	39.9	QP	7.1	-21.4	25.6	249	100	Vert.	40.0	14.4
76.909	37.7	QP	6.5	-21.2	23.0	140	357	Hori.	40.0	17.0
84.000	39.3	QP	7.1	-21.2	25.2	74	327	Hori.	40.0	14.8
96.133	39.2	QP	9.3	-20.9	27.6	93	261	Hori.	43.5	15.9
96.130	38.2	QP	9.3	-20.9	26.6	99	100	Vert.	43.5	16.9
203.217	34.5	QP	16.7	-19.6	31.6	24	197	Hori.	43.5	11.9
480.010	41.6	QP	17.9	-19.1	40.4	262	182	Hori.	46.0	5.6
479.999	40.2	QP	17.9	-19.1	39.0	302	100	Vert.	46.0	7.0
769.025	28.2	QP	21.4	-17.3	32.3	322	100	Vert.	46.0	13.7
956.839	26.1	QP	22.8	-16.1	32.8	126	182	Vert.	46.0	13.2

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission

DATA OF RADIATED EMISSION TEST

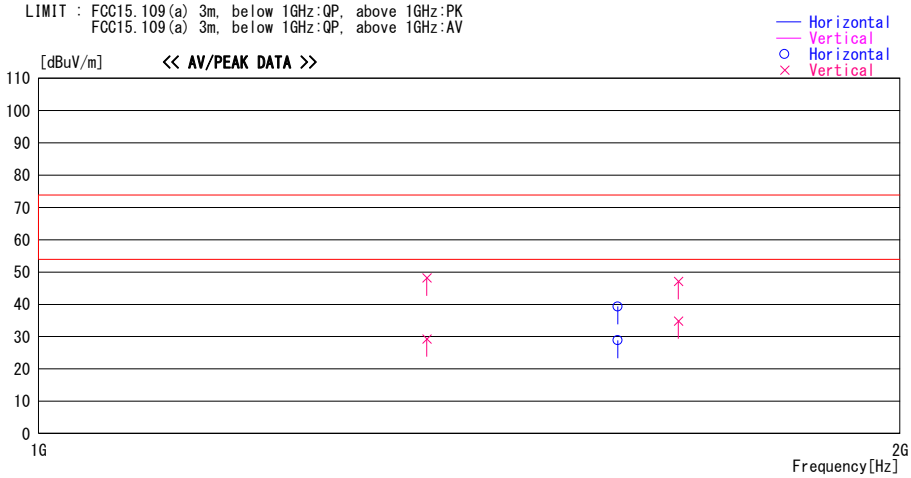
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Data : 2013/3/26

Report No. : 10006709H

Temp./Humi. : 22deg. C / 36% RH
Engineer : Tsubasa Takayama

Mode / Remarks : USB Communication mode Y-axis

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
1366.665	38.9	AV	24.9	-34.5	29.3	141	100	Vert.	53.9	24.6
1366.665	57.8	PK	24.9	-34.5	48.2	141	100	Vert.	73.9	25.7
1593.330	37.7	AV	25.4	-34.2	28.9	155	100	Hori.	53.9	25.0
1593.330	48.1	PK	25.4	-34.2	39.3	155	100	Hori.	73.9	34.6
1673.329	43.2	AV	25.7	-34.0	34.9	34	112	Vert.	53.9	19.0
1673.329	55.4	PK	25.7	-34.0	47.1	34	112	Vert.	73.9	26.8

CHART:WITH FACTOR ANT TYPE: -30MHz:LOOP, 30-300MHz:BICONICAL, 300MHz-1000MHz:LOGPERIODIC, 1000MHz-:HORN
CALCULATION:RESULT = READING + ANT FACTOR + LOSS(CABLE+ATTEN.) - GAIN(AMP)

*The limit is rounded down to one decimal place.
*The test result is rounded off to one or two decimal places, so some differences might be observed.

APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date	Expiration date of the calibration
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE,CE	2012/06/29	2013/06/30
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE,CE	2013/02/26	2014/02/28
MJM-14	Measure	KOMELON	KMC-36	-	RE,CE	-	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE,CE	-	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE,CE	2012/06/19	2013/06/30
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE,CE	2012/04/03	2013/04/30
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	8127363	CE(EUT)	2013/01/07	2014/01/31
MTA-31	Terminator	TME	CT-01	-	CE	2013/01/21	2014/01/31
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/ 5D-2W(5m)/ 5D-2W(0.8m)/ 5D-2W(1m)	-	CE	2013/02/06	2014/02/28
MAT-65	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	CE	2013/01/09	2014/01/31
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2012/10/08	2013/10/31
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2012/10/08	2013/10/31
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2013/02/06	2014/02/28
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2012/11/06	2013/11/30
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2012/09/11	2013/09/30
MHA-06	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	RE	2013/02/15	2014/02/28
MPA-10	Pre Amplifier	Agilent	8449B	3008A02142	RE	2013/01/10	2014/01/31
MCC-132	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336161/4(1m) / 340639(5m)	RE	2012/09/05	2013/09/30

The expiration date of the calibration is the end of the expired month.
All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:
CE: Conducted emission
RE: Radiated emission