RADIO TEST REPORT

Test Report No. : 32GE0273-HO-01-D

Applicant	:	**NEC Corporation of America**
Type of Equipment	:	**Digital Portable Cellular Telephone**
Model No.	:	**KMP7R4E1-2A**
Test regulation	:	**FCC Part 15 Subpart C: 2012**
FCC ID	:	**A98-ROV0164**
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 above regulation.
4. The test results in this 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.

Date of test: April 1 and 3, 2012

Representative test engineer: T. Nakagawa
Tomohisa Nakagawa
Engineer of WiSE Japan,
UL Verification Service

Approved by: T. Hatakeda
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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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.	:	KMP7R4E1-2A
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.8V
Receipt Date of Sample	:	March 27, 2012
Country of Mass-production	:	Japan
Condition of EUT	:	Production prototype
Modification of EUT	:	No Modification by the test lab

2.2 Product description

Model No: KMP7R4E1-2A, (referred to as the EUT in this report), is the Digital Portable Cellular Telephone.

Radio Specification [1/2]

Bluetooth (Ver.2.1 + EDR)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	48MHz
Type of Modulation	FHSS
Bandwidth & Channel spacing	1MHz & 1MHz
Antenna Connector Type	Integrated antenna

Low Energy (Ver.4.0)

Equipment Type	Transceiver
Frequency of Operation	2402-2480MHz
Other Clock Frequency	48MHz
Bandwidth & Channel spacing	1MHz & 2MHz
Antenna Connector Type	Integrated antenna

WLAN (IEEE802.11b/g/n (SISO/HT20))

Equipment Type	Transceiver
Frequency of Operation	2412-2462MHz
Other Clock Frequency	48MHz
Type of Modulation	DSSS, OFDM
Antenna Connector Type	Integrated antenna

GSM

Equipment Type	Transceiver
Frequency of Operation	[Up Link] GSM850: 824 – 849MHz PCS: 1850 – 1910MHz [Down Link] GSM850: 869 – 894MHz PCS: 1930 – 1990MHz
Other Clock Frequency	19.2MHz
Type of Modulation	GMSK
Channel spacing	200kHz
Antenna Connector Type	Integrated antenna

Radio Specification [2/2]

WCDMA

Equipment Type	Transceiver
Frequency of Operation	[Up Link] Band V: 824 – 849MHz [Down Link] Band V: 869 – 894MHz
Other Clock Frequency	19.2MHz
Type of Modulation	HPSK
Channel spacing	5MHz
Antenna Connector Type	Integrated antenna

GPS

Equipment Type	Receiver
Receiver Type	Direct Downconversion
Frequency of Operation	1575.42MHz
Other Clock Frequency	57.6MHz
Antenna Connector Type	Integrated antenna

RFID

Equipment Type	Transceiver
Frequency of Operation	13.56MHz
Type of Modulation	ASK
Antenna Connector Type	Integrated antenna

*This test report applies for RFID.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification	:	FCC Part 15 Subpart C: 2012, final revised on February 1, 2012
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators Section 15.207 : Conducted limits Section 15.225 : Operation within the band 13.110-14.010MHz

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted emission	ANSI C63.4:2003 7. AC powerline conducted emission measurements	Section 15.207	N/A	N/A *1)	-
	<IC>RSS-Gen 7.2.2	<IC>RSS-Gen 7.2.2			
Electric Field Strength of Fundamental Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.225(a)	89.2dB, 13.56000MHz, QP, 0deg. (Chassis's color: Pink)	Complied	Radiated
	<IC> RSS-Gen 4.8, 4.11	<IC>RSS-210 A2.6	90.2dB 13.56000MHz, QP, 0deg.		
Spectrum Mask	ANSI C63.4:2003 13. Measurement of intentional radiators	Section 15.225(b)(c)	46.6dB, 13.11000MHz, QP, 0deg. (Chassis's color: Pink)	Complied	Radiated
	<IC>RSS-Gen 4.9, 4.11	<IC> RSS-210 A2.6	46.5dB 13.10000MHz, QP, 0deg.		
20dB Bandwidth	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.215(c)	See data	Complied	Radiated
	<IC> -	<IC> -			
Electric Field Strength of Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.209, Section 15.225 (d)	9.9dB 189.840MHz, Horizontal, QP (Chassis's color: Pink)	Complied	Radiated
	<IC>RSS-Gen 4.9, 4.11	<IC>RSS-210 A2.6	13.4dB 189.840MHz, Vertical, QP		
Frequency Tolerance	ANSI C63.4:2003 13. Measurement of intentional radiators	Section15.225(e)	See data	Complied	Radiated
	<IC>RSS-Gen 4.7	<IC> RSS-210 A2.6			

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422
*1) The test is not applicable since the EUT is designed to stop transmission when the AC adaptor is connected.

FCC 15.31 (e)
This EUT provides stable voltage (DC3.2V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement
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.

3.3 Addition to standard

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-Gen 4.6.1	RSS-Gen 4.6.1	Radiated	N/A	N/A	N/A

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

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

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	4.2dB	5.0dB	5.1dB	4.7dB	5.7dB	4.4dB	4.3dB
No.2	4.1dB	5.2dB	5.1dB	4.8dB	5.6dB	4.3dB	4.2dB
No.3	4.5dB	5.0dB	5.2dB	4.8dB	5.6dB	4.5dB	4.2dB
No.4	4.7dB	5.2dB	5.2dB	4.8dB	5.6dB	5.1dB	4.2dB

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

Frequency counter (±)	
Normal condition	Extreme condition
7×10^{-6}	9×10^{-6}

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 8116 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 Test set up, Data of EMI, and Test instruments

Refer to APPENDIX.

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

4.1 Operating Modes

The mode is used :

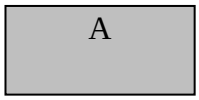
Mode	Remarks*
Transmitting (13.56MHz)	Continuous transmitting 13.56MHz (Modulated)

Justification: The system was configured in typical fashion (as a customer would normally use it) for testing.

Frequency Tolerance:

Temperature : -30deg.C to +50deg. C Step 10deg. C
Voltage : Normal Voltage DC 3.8V (New Battery)

4.2 Configuration and peripherals



* Setup was taken into consideration and test data was taken under worse case conditions.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Digital Portable Cellular Telephone	KMP7R4E1-2A	004401200900054 004401200900062 *1)	NEC Corporation of America	EUT

*1) Chassis's color: Pink

SECTION 5: Radiated emission (Fundamental , Spurious Emission and Spectrum Mask)

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane.
The Radiated Electric Field Strength has been measured in a Semi Anechoic Chamber with a ground plane.
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 strength.
The measurements were performed for both vertical (angle of loop antenna: 0deg., 45deg., 90deg., and 135 deg.) and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.
The measurements were made with the following detector function of the test receiver and the Spectrum analyzer (in linear mode).
The test was made with the detector (RBW/VBW) in the following table.
When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

Test Antennas are used as below;

Frequency	Below 30MHz	30MHz to 300MHz	300MHz to 1GHz
Antenna Type	Loop	Biconical	Logperiodic

Frequency	From 9kHz to 90kHz and From 110kHz to 150kHz	From 90kHz to 110kHz	From 150kHz to 490kHz	From 490kHz to 30MHz	From 30MHz to 1GHz
Instrument used	Test Receiver				
Detector	PK/AV	QP	PK/AV	QP	QP
IF Bandwidth	200Hz	200Hz	9kHz	9kHz	120kHz

- The carrier level and 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.

* FCC Part 15 Section 15.31 (f)(2) / IC RSS-Gen 4.11 (9kHz-30MHz)

$$9\text{kHz} - 490\text{kHz}\,[\text{Limit at 3m}] = [\text{Limit at 300m}] - 40\log\left(\frac{3}{300}\right)$$

$$490\text{kHz} - 30\text{MHz}[\text{Limit at 3m}] = [\text{Limit at 30m}] - 40\log\left(\frac{3}{30}\right)$$

Measurement range : **0.009M-1GHz**
Test data : **APPENDIX**
Test result : **Pass**

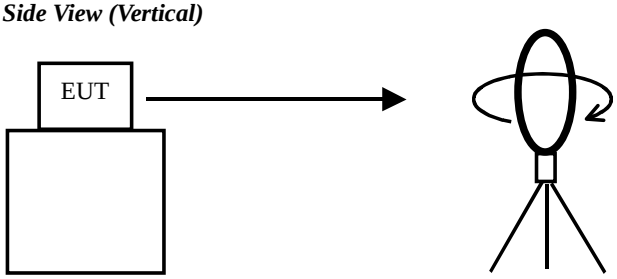
SECTION 6: Other test

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20dB Bandwidth	100kHz	3kHz	10kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	1 to 3% of Span	Three times of RBW	Auto	Peak	Max Hold *1)	Spectrum Analyzer
Frequency Tolerance	-	-	-	-	-	-	Frequency counter
*1) The measurement was performed with Peak detector, Max Hold since the duty cycle was not 100%.							

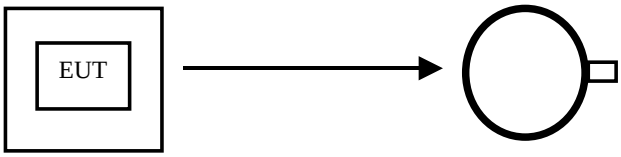
Test data : APPENDIX
Test result : Pass

Figure 1: Direction of the Loop Antenna

Side View (Vertical)

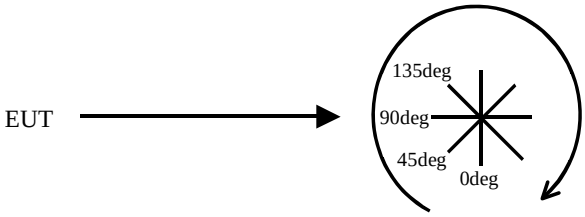


Top View (Horizontal)



Antenna was not rotated.

Top View (Vertical)



Front side: 0 deg.
Forward direction: clockwise

APPENDIX 1: Data of EMI test

Fundamental emission and Spectrum Mask

DATA OF RADIATED EMISSION TEST

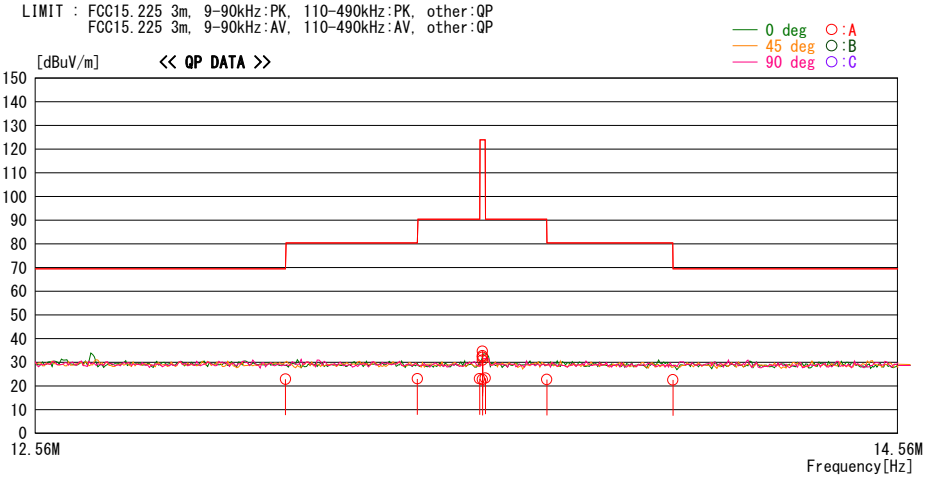
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/03

Report No. : 32GE0273-HO-01

Temp./ Humi. : 21deg. C / 32% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : Transmitting 13.56MHz

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna		Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[deg]		[deg]	
13.11000	29.1	QP	19.1	6.9	32.2	22.9	69.5	46.6	0	A	205	
13.41000	29.3	QP	19.0	6.9	32.2	23.0	80.5	57.5	0	A	205	
13.55300	29.3	QP	18.9	7.0	32.2	23.0	90.4	67.4	0	A	205	
13.56000	39.1	QP	18.9	7.0	32.2	32.8	123.9	91.1	45	A	196	
13.56000	37.2	QP	18.9	7.0	32.2	30.9	123.9	93.0	90	A	109	
13.56000	38.4	QP	18.9	7.0	32.2	32.1	123.9	91.8	135	A	225	
13.56000	29.0	QP	18.9	7.0	32.2	22.7	123.9	101.2	0	A	0	Hori
13.56000	41.0	QP	18.9	7.0	32.2	34.7	123.9	89.2	0	A	205	
13.56700	29.6	QP	18.9	7.0	32.2	23.3	90.4	67.1	0	A	205	
13.71000	29.1	QP	18.9	7.0	32.2	22.8	80.5	57.7	0	A	205	
14.01000	29.0	QP	18.8	7.0	32.2	22.6	69.5	46.9	0	A	205	

CHART: WITH FACTOR , ANT TYPE: LOOP Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT = READING + ANT FACTOR + LOSS(CABLE + ATTEN.) - GAIN(AMP.)

Fundamental emission and Spectrum Mask

(Chassis's color: Pink)

DATA OF RADIATED EMISSION TEST

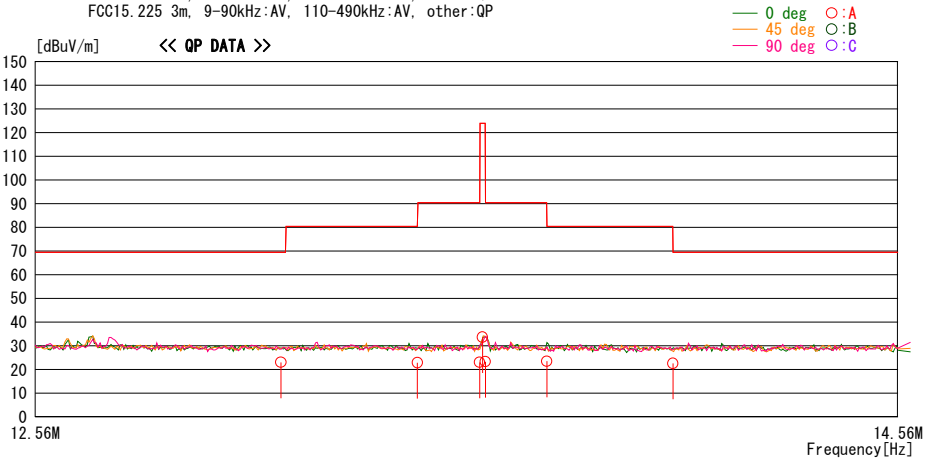
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/03

Report No. : 32GE0273-HO-01

Temp./ Humi. : 21deg. C / 32% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : Transmitting 13.56MHz

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna		Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[deg]		[deg]	
13.10000	29.2	QP	19.1	6.9	32.2	23.0	69.5	46.5	0	A	365	
13.41000	29.2	QP	19.0	6.9	32.2	22.9	80.5	57.6	0	A	365	
13.55300	29.4	QP	18.9	7.0	32.2	23.1	90.4	67.3	0	A	365	
13.56000	40.0	QP	18.9	7.0	32.2	33.7	123.9	90.2	0	A	365	
13.56700	29.7	QP	18.9	7.0	32.2	23.4	90.4	67.0	0	A	365	
13.71000	29.8	QP	18.9	7.0	32.2	23.5	80.5	57.0	0	A	365	
14.01000	29.0	QP	18.8	7.0	32.2	22.6	69.5	46.9	0	A	365	

CHART: WITH FACTOR , ANT TYPE: LOOP Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT = READING + ANT FACTOR + LOSS(CABLE + ATTEN.) - GAIN(AMP.)

Spurious emission

DATA OF RADIATED EMISSION TEST

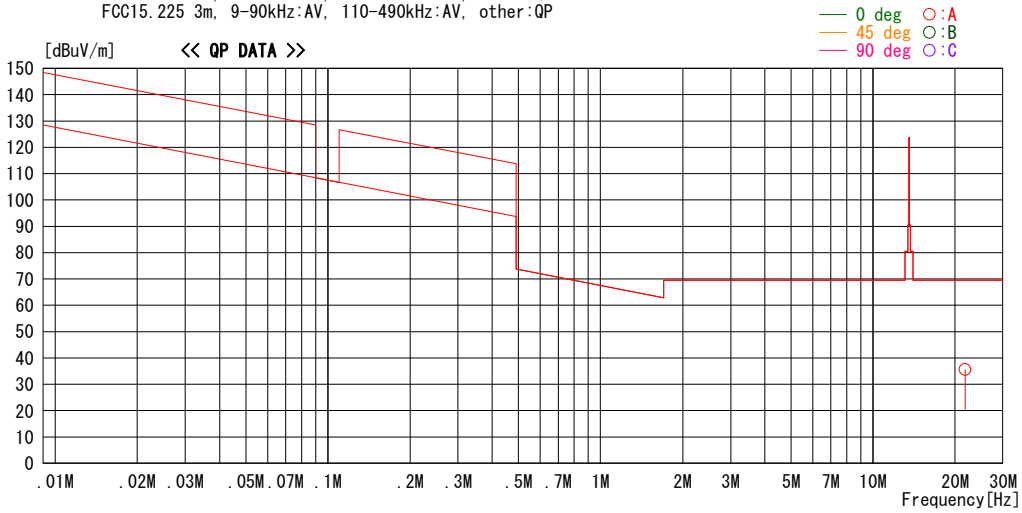
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/03

Report No. : 32GE0273-HO-01

Temp. / Humi. : 21deg. C / 32% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : Transmitting 13.56MHz

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna		Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[deg]		[deg]	
21.72000	41.0	QP	19.6	7.3	32.2	35.7	69.5	33.8	0	A	205	Y

CHART: WITH FACTOR , ANT TYPE: LOOP Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT = READING + ANT FACTOR + LOSS(CABLE + ATTEN.) - GAIN(AMP.)

Spurious emission
(Chassis's color: Pink)

DATA OF RADIATED EMISSION TEST

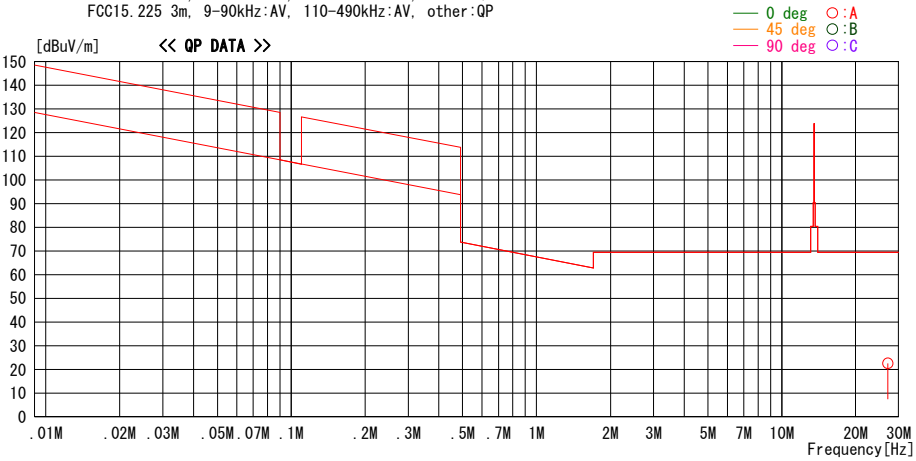
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/03

Report No. : 32GE0273-HO-01

Temp./ Humi. : 21deg. C / 32% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : Transmitting 13.56MHz

LIMIT : FCC15.225 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
FCC15.225 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna		Table	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[deg]		[deg]	
27.12000	28.5	QP	18.9	7.4	32.2	22.6	69.5	46.9	0	A	365	

CHART: WITH FACTOR , ANT TYPE: LOOP Except for the data below : adequate margin data below the limits.
CALCULATION : RESULT = READING + ANT FACTOR + LOSS(CABLE + ATTEN.) - GAIN(AMP.)

Spurious emission

DATA OF RADIATED EMISSION TEST

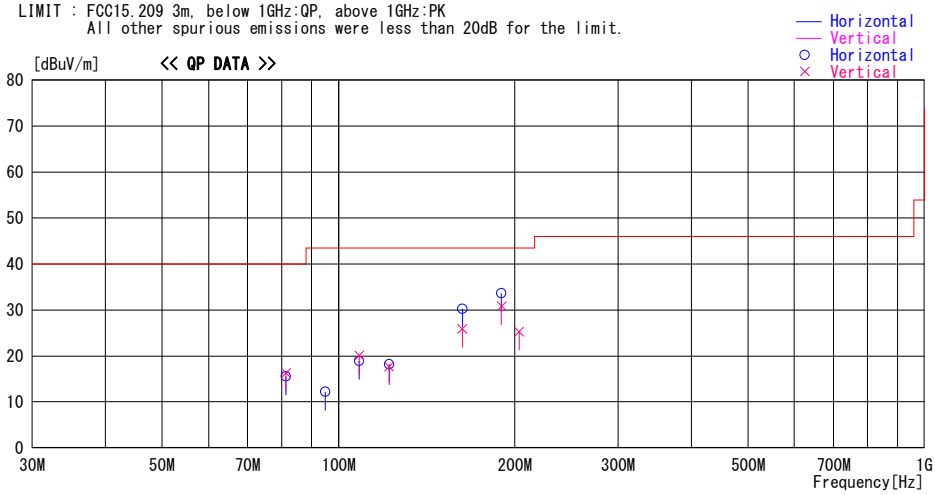
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/01

Report No. : 32GE0273-HO-01

Temp./Humi. : 23deg. C / 32% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : Transmitting 13.56MHz Axis Hori Z Vert X

LIMIT : FCC15.209 3m, below 1GHz:QP, above 1GHz:PK
All other spurious emissions were less than 20dB for the limit.



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
81.360	30.3	QP	6.4	-21.2	15.5	268	215	Hori.	40.0	24.5	
81.360	30.7	QP	6.4	-21.2	15.9	227	100	Vert.	40.0	24.1	
94.920	24.6	QP	8.6	-21.0	12.2	83	175	Hori.	43.5	31.3	
108.480	28.6	QP	11.0	-20.7	18.9	257	266	Hori.	43.5	24.6	
108.480	29.9	QP	11.0	-20.7	20.2	220	100	Vert.	43.5	23.3	
122.040	26.0	QP	12.8	-20.6	18.2	261	168	Hori.	43.5	25.3	
122.040	25.7	QP	12.8	-20.6	17.9	140	100	Vert.	43.5	25.6	
162.720	34.9	QP	15.5	-20.2	30.2	265	187	Hori.	43.5	13.3	
162.720	30.5	QP	15.5	-20.2	25.8	234	100	Vert.	43.5	17.7	
189.840	37.3	QP	16.2	-19.9	33.6	282	165	Hori.	43.5	9.9	
189.840	34.6	QP	16.2	-19.9	30.9	184	100	Vert.	43.5	12.6	
203.400	28.7	QP	16.4	-19.8	25.3	196	100	Vert.	43.5	18.2	

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)

Spurious emission
(Chassis's color: Pink)

DATA OF RADIATED EMISSION TEST

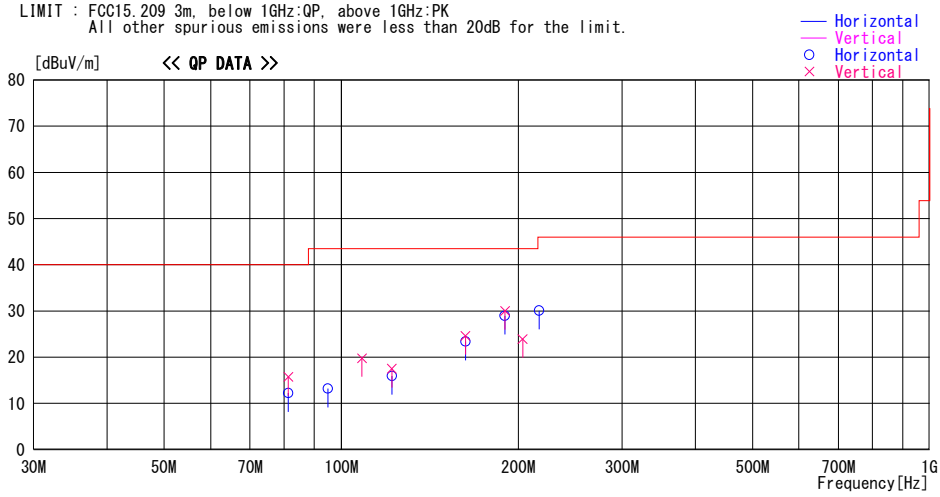
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2012/04/01

Report No. : 32GE0273-HO-01

Temp./Humi. : 23deg. C / 32% RH
Engineer : Tomohisa Nakagawa

Mode / Remarks : Pink Transmitting 13.56MHz Axis Hori Z Vert X

LIMIT : FCC15.209 3m, below 1GHz:QP, above 1GHz:PK
All other spurious emissions were less than 20dB for the limit.



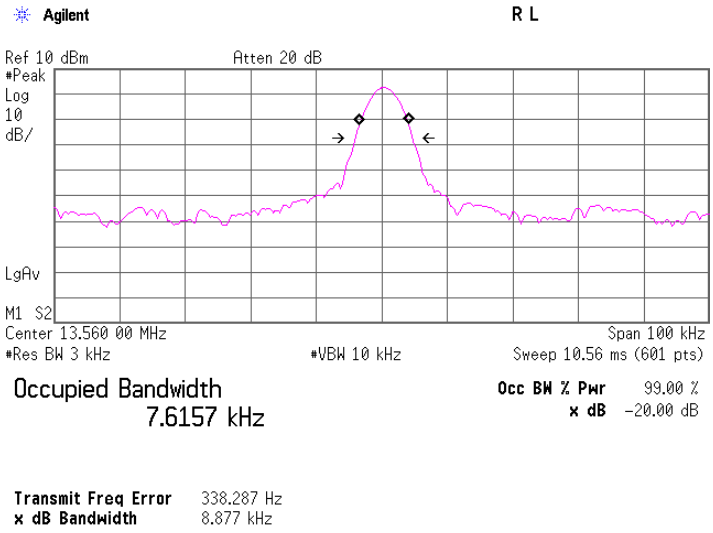
Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin	Comment
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]	
81.360	27.0	QP	6.4	-21.2	12.2	285	226	Hori.	40.0	27.8	
81.360	30.1	QP	6.4	-21.2	15.3	219	100	Vert.	40.0	24.7	
94.920	25.6	QP	8.6	-21.0	13.2	85	173	Hori.	43.5	30.3	
108.480	29.6	QP	11.0	-20.7	19.9	231	100	Vert.	43.5	23.6	
122.040	23.7	QP	12.8	-20.6	15.9	195	168	Hori.	43.5	27.6	
122.040	25.5	QP	12.8	-20.6	17.7	254	100	Vert.	43.5	25.8	
162.720	28.1	QP	15.5	-20.2	23.4	283	188	Hori.	43.5	20.1	
162.720	29.2	QP	15.5	-20.2	24.5	209	100	Vert.	43.5	19.0	
189.840	32.6	QP	16.2	-19.9	28.9	275	165	Hori.	43.5	14.6	
189.840	33.8	QP	16.2	-19.9	30.1	241	100	Vert.	43.5	13.4	
203.400	27.3	QP	16.4	-19.8	23.9	180	100	Vert.	43.5	19.6	
216.960	33.0	QP	16.7	-19.6	30.1	289	166	Hori.	46.0	15.9	

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)

20dB Bandwidth and 99% Occupied Bandwidth

Test place	Head Office EMC Lab. No.6 measurement room
Report No.	32GE0273-HO-01
Date	04/03/2012
Temperature/ Humidity	20deg. C / 55% RH
Engineer	Yutaka Yoshida
Mode	Transmitting (13.56MHz)

FREQ [MHz]	20dB Bandwidth [kHz]	99% Occupied Bandwidth [kHz]
13.56	8.88	7.62



Frequency Tolerance

Test place	Head Office EMC Lab. No.6 measurement room
Report No.	32GE0273-HO-01
Date	04/03/2012
Temperature/ Humidity	20deg. C / 55% RH
Engineer	Yutaka Yoshida
Mode	Transmitting (13.56MHz)

Test Condition deg.C	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit (+/- 0.01%) [+/- ppm]	Margin [ppm]
50deg.C.	Power on	13.56029032	0.00029032	21.41	100.00	78.59
	on 2min.	13.56029635	0.00029635	21.85	100.00	78.15
	on 5min.	13.56029947	0.00029947	22.08	100.00	77.92
	on 10min.	13.56030034	0.00030034	22.15	100.00	77.85
40deg.C.	Power on	13.56028628	0.00028628	21.11	100.00	78.89
	on 2min.	13.56028608	0.00028608	21.10	100.00	78.90
	on 5min.	13.56028609	0.00028609	21.10	100.00	78.90
	on 10min.	13.56028596	0.00028596	21.09	100.00	78.91
30deg.C.	Power on	13.56030238	0.00030238	22.30	100.00	77.70
	on 2min.	13.56029486	0.00029486	21.74	100.00	78.26
	on 5min.	13.56029445	0.00029445	21.71	100.00	78.29
	on 10min.	13.56029434	0.00029434	21.71	100.00	78.29
20deg.C.	Power on	13.56029759	0.00029759	21.95	100.00	78.05
	on 2min.	13.56029983	0.00029983	22.11	100.00	77.89
	on 5min.	13.56030384	0.00030384	22.41	100.00	77.59
	on 10min.	13.56030867	0.00030867	22.76	100.00	77.24
10deg.C.	Power on	13.56033643	0.00033643	24.81	100.00	75.19
	on 2min.	13.56033091	0.00033091	24.40	100.00	75.60
	on 5min.	13.56033090	0.00033090	24.40	100.00	75.60
	on 10min.	13.56033195	0.00033195	24.48	100.00	75.52
0deg.C.	Power on	13.56034465	0.00034465	25.42	100.00	74.58
	on 2min.	13.56034367	0.00034367	25.34	100.00	74.66
	on 5min.	13.56034494	0.00034494	25.44	100.00	74.56
	on 10min.	13.56034626	0.00034626	25.54	100.00	74.46
-10deg.C.	Power on	13.56033555	0.00033555	24.75	100.00	75.25
	on 2min.	13.56034551	0.00034551	25.48	100.00	74.52
	on 5min.	13.56034699	0.00034699	25.59	100.00	74.41
	on 10min.	13.56034693	0.00034693	25.58	100.00	74.42
-20deg.C	Power on	13.56032102	0.00032102	23.67	100.00	76.33
	on 2min.	13.56033125	0.00033125	24.43	100.00	75.57
	on 5min.	13.56032696	0.00032696	24.11	100.00	75.89
	on 10min.	13.56032414	0.00032414	23.90	100.00	76.10
-30deg.C	Power on	13.56031590	0.00031590	23.30	100.00	76.70
	on 2min.	13.56032022	0.00032022	23.62	100.00	76.38
	on 5min.	13.56030048	0.00030048	22.16	100.00	77.84
	on 10min.	13.56028187	0.00028187	20.79	100.00	79.21

Limit : 13.56 MHz +/-0.01 % (+/- 100ppm) = +/- 0.001356 MHz

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	2011/06/21	2012/06/30
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2012/02/06	2013/02/28
MJM-14	Measure	KOMELON	KMC-36	-	RE	-	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-	-
MRENT-95	Spectrum Analyzer	Agilent	E4440A	MY46185823	RE	2011/06/30	2012/06/30
MTR-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2011/04/15	2012/04/30
MLPA-01	Loop Antenna	Rohde & Schwarz	HFH2-Z2	100017	RE	2011/10/19	2012/10/31
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	RE	2012/02/16	2013/02/28
MCC-31	Coaxial cable	UL Japan	-	-	RE	2011/07/28	2012/07/31
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2012/03/16	2013/03/31
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2011/11/02	2012/11/30
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2011/10/23	2012/10/31
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2011/10/23	2012/10/31
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2012/02/16	2013/02/28
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2011/09/26	2012/09/30
MSA-10	Spectrum Analyzer	Agilent	E4448A	MY46180655	RE	2012/02/03	2013/02/28
MCC-67	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28635/2	RE	2011/04/22	2012/04/30
EST-09	Universal Counter	Agilent	53131A	KR01204716	RE	2011/05/11	2012/05/31
MMM-12	DIGITAL HiTESTER	Hioki	3805	060500120	RE	2012/03/23	2013/03/31
MCH-04	Temperature and Humidity Chamber	Tabai Espec	PL-2KP	14015723	RE	2011/08/22	2012/08/31
MOS-14	Thermo-Hygrometer	Custom	CTH-201	-	RE	2012/02/06	2013/02/28

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: RE: Radiated Emission, 20dB Bandwidth, 99% Occupied Bandwidth, Frequency Tolerance