

TEST REPORT

For

Cellular Phone

In conformity with

FCC Part15B (01 Oct, 2009)

Model: CDMA CA006

FCC ID: TYKNX6640

Test Item: Cellular Phone

Report No: RY1008P19R2

Issue Date: 19 Aug, 2010

Prepared for

NEC CASIO Mobile Communications, Ltd.
1753, Shimonumabe, Nakahara-Ku, Kawasaki, Kanagawa
211-8666, Japan

Prepared by

RF Technologies Ltd.
472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan
Telephone: +81+(0)45- 534-0645
FAX: +81+(0)45- 534-0646

This report shall not be reproduced, except in full, without the written permission of RF Technologies Ltd. The test results in this report apply only to the sample(s) tested. RF Technologies Ltd. is managed to ISO17025 and has the necessary knowledge and test facilities for testing according to the referenced standards.

Table of Contents

1	General information	3
1.1	Product description	3
1.2	Test(s) performed/ Summary of test result	4
1.3	Test facility	5
1.4	Measurement uncertainty	5
1.5	Description of essential requirements and test results.....	6
1.5.1	Test requirements (FCC Part15B).....	6
1.5.2	Normal test conditions	6
1.6	Setup of equipment under test (EUT)	7
1.6.1	Test configuration of EUT	7
1.6.2	Operating condition:	7
1.6.3	Setup diagram of tested system:.....	8
1.7	Equipment modifications	9
1.8	Deviation from the standard.....	9
2	Test procedure and result.....	10
2.1	Radiated Emissions	10
2.2	AC power line conducted emissions.....	17
3	Test setup photographs.....	21
4	List of utilized test equipment/ calibration.....	23

History

Report No.	Issue Date	Revision Contents	Issued by
RY1008P19R2	19 Aug, 2010	Initial Issue	T.Kato

1 General information

1.1 Product description

Test item	: Cellular phone
Manufacturer 1	: FLEXTRONICS INDUSTRIAL CO., LTD.
Address 1	: Xin Qing Science & Technology Industrial Park, Jing An, Doumen, Zhuhai, Guangdong, P.R. China
Manufacturer 2	: YAMAGATA CASIO CO., LTD.
Address 2	: 5400-1, Higashine-ko, Higashine-shi, Yamagata, Japan
Manufacturer 3	: TOKAI TEC CO., LTD.
Address 3	: 1410, Inada, Hitachinaka-shi, Ibaraki, Japan
Model	: CDMA CA006
FCC ID	: TYKNX6640
Description	: CDMA2000 BC0 Cellular Phone
Operating Frequency	: 128MHz (Max)
Receipt date of EUT	: 04 Aug, 2010
Nominal power voltages	: 3.7VDC (Lithium-ion battery)
Serial numbers	: SCAEL000131

1.2 Test(s) performed/ Summary of test result

Applicable Standard(s) : Part15 Subpart B (01 Oct,2009)
Test(s) started : 09 Aug, 2010
Test(s) completed : 17 Aug, 2010
Purpose of test(s) : Certification of FCC

Summary of test result : Complied

Note: The above judgment is only based on the measurement data and it does not include the measurement uncertainty. Accordingly, the statement below is applied to the test result.
The EUT complies with the limit required in the standard in case that the margin is not less than the measurement uncertainty in the Laboratory.
Compliance of the EUT is more probable than non-compliance is case that the margin is less than the measurement uncertainty in the Laboratory.

Test engineer

: 
T. Kato (Engineer, EMC Testing Department)

Reviewer

: 
K. Ohnishi (Manager, EMC Testing Department)

1.3 Test facility

The Federal Communications Commission has reviewed the technical characteristics of the test facilities at RF Technologies Ltd., located in 472, Nippa-cho, Kohoku-ku, Yokohama, 223-0057, Japan, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948, per 01 October, 2009.

The description of the test facilities has been filed under registration number 319924 at the Office of the Federal Communications Commission. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The list of all public test facilities is available on the Internet at <http://www.fcc.gov>.

Registered by Voluntary Control Council for Interference by Information Technology Equipment (VCCI).

Each registered facility number is as follows;

Test site (Semi-anechoic chamber 3m) R-2393

Test site (Shielded room) C-2617

Registered by Industry Canada (IC). The registered facility number is as follows;

Test site No.1(Semi-anechoic chamber 3m) : 6974A-1

Accredited by **National Voluntary Laboratory Accreditation Program** (NVLAP) for the emission tests stated in the scope of the certificate under Certificate Number 200780-0

This 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.



NVLAP LAB CODE 200780-0

1.4 Measurement uncertainty

The treatment of uncertainty is based on the general matters on the definition of uncertainty in “Guide to the expression of uncertainty in measurement (GUM)” published by ISO. The Lab’s uncertainty is determined by referring UKAS Publication LAB34: 2002 “The Expression of Uncertainty in EMC Testing” and CISPR16-4-2: 2003 “Uncertainty in EMC Measurements”.

The uncertainty of the measurement result in the level of confidence of approximately 95% (k=2) is as follows;

AC Power line emission : ± 1.9 dB

Radiated emission (30MHz - 1000MHz) : ± 5.9 dB

Radiated emission (1GHz - 20GHz) : ± 5.8 dB

Temperature : ± 1 degree

Humidity : ± 5 %

1.5 Description of essential requirements and test results

An overview of test requirements, as laid out in FCC Part15B are given below.

1.5.1 Test requirements (FCC Part15B)

Test Description	Section in this report	Applicable	Result
Radiated emission (15.109)	2.1	Yes	Pass
AC power line conducted emission (15.107)	2.2	Yes	Pass

1.5.2 Normal test conditions

Temperature(*) : +15 degC to +35 degC
Relative humidity(*) : 20 % to 75 %
Supply voltage : 3.7 VDC (Nominal)

* When it is impracticable to carry out tests under these conditions, a note to this effect, stating the ambient temperature and relative humidity during the tests, must be stated separately.

1.6 Setup of equipment under test (EUT)

1.6.1 Test configuration of EUT

Equipment(s) under test:

	Item	Brand	Model No.	Serial No.	FCC ID
A	Cellular phone	NEC CASIO	CDMA CA006	SCAEL000131	TYKNX6640
B	Lithium-ion battery (3.7V)	NEC CASIO	63CAUAA	None	N/A
C	AC adaptor	MITSUMI ELECTRIC	0203PQA	None	N/A
D	Cradle	NEC CASIO	CA003PUA	None	N/A
E	Notebook PC	Panasonic	CF-W8GWDNJR	9EKSA73340	N/A
F	Mouse	TOSHIBA	G83C0001Y110	LZE30201086	N/A

Connected cable(s):

No.	Item	Brand	Shielded Yes/No	Ferrite Core Yes/No	Connector Shielded Yes/No	Length (m)
1	Charger cable (DC)	-	No	No	No	1.5
2	USB cable	HIROSE ELECTRIC	Yes	Yes	No	1.2
3	Mouse cable	-	No	No	No	0.8
4	Video out cable	NEC CASIO	No	No	No	1.4
5	HDMI cable	-	Yes	No	Yes	1.5

1.6.2 Operating condition:

[Configuration I] USB connection

Cellular phone is connected to Notebook PC with USB cable.

With this condition, emission level is tested during USB data communication.

[Configuration II] Movie play (Video cable)

Stored movie file in Micro SD card is played, and this data is also emitted from Video Out Cable.

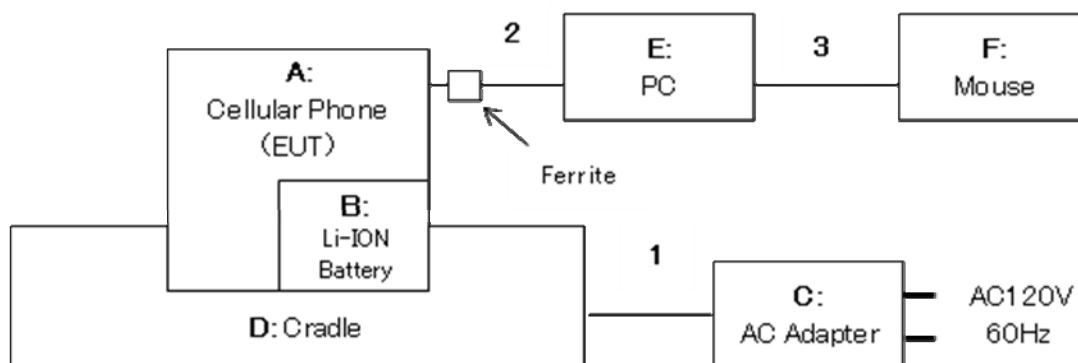
[Configuration III] Movie play (HDMI cable)

Movie data is emitted from HDMI Cable.

1.6.3 Setup diagram of tested system:

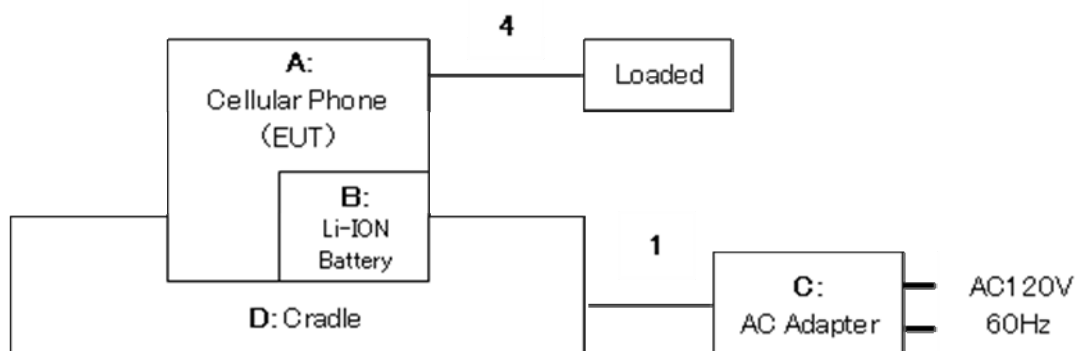
[Configuration I]

USB connection



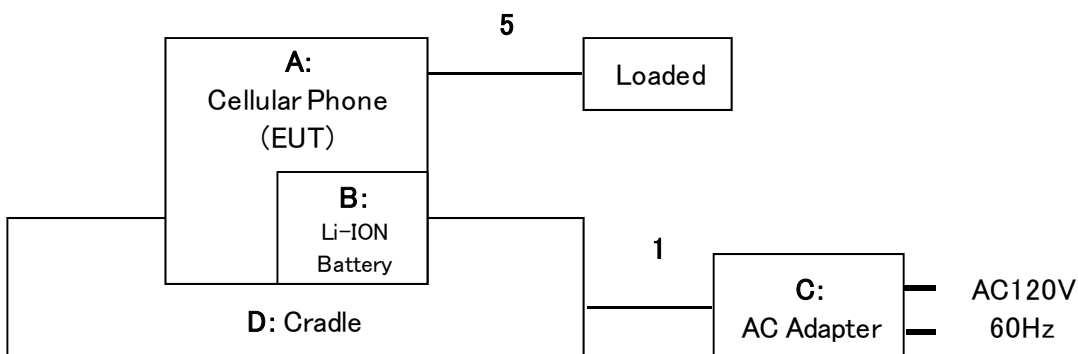
[Configuration II]

Movie play (Video cable)



[Configuration III]

Movie play (HDMI cable)



1.7 *Equipment modifications*

No modifications have been made to the equipment in order to achieve compliance with the applicable standards described in clause 1.2.

1.8 *Deviation from the standard*

No deviations from the standards described in clause 1.2.

2 Test procedure and result

2.1 Radiated Emissions

Reference Standard

Part15.109

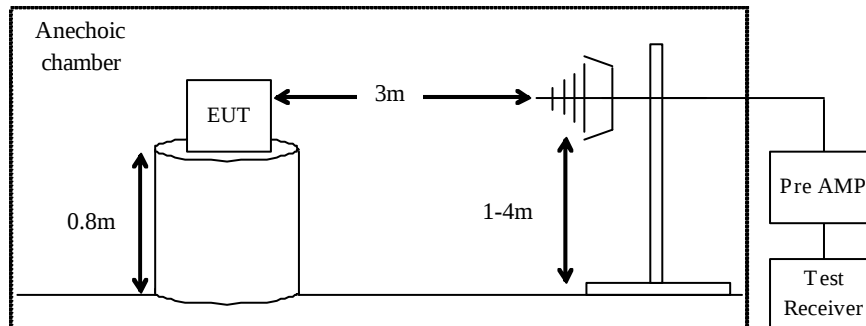
Test Conditions

Date: 09 Aug, 2010 (for Configuration I, II)
17 Aug, 2010 (for Configuration III)
Ambient Temperature: 22 degC (09 Aug), 23 degC (17 Aug)
Relative humidity: 57 % (09 Aug), 54 % (17 Aug)
Test Voltage: 3.7 V

Test Method

- Test data is transmitted from EUT to Notebook PC with USB cable.
- Radiated spurious emission is received by receive antenna.
- Turn table is rotated 360deg.
- Maximum level of each spurious is measured by Test receiver.
- RBW of spectrum analyzer is set to 100kHz for 30 - 1000MHz, or 1MHz for above 1000MHz.
- Level is measured with QP detect for 30 - 1000MHz, or AVE detector for above 1000MHz.

Test Setup



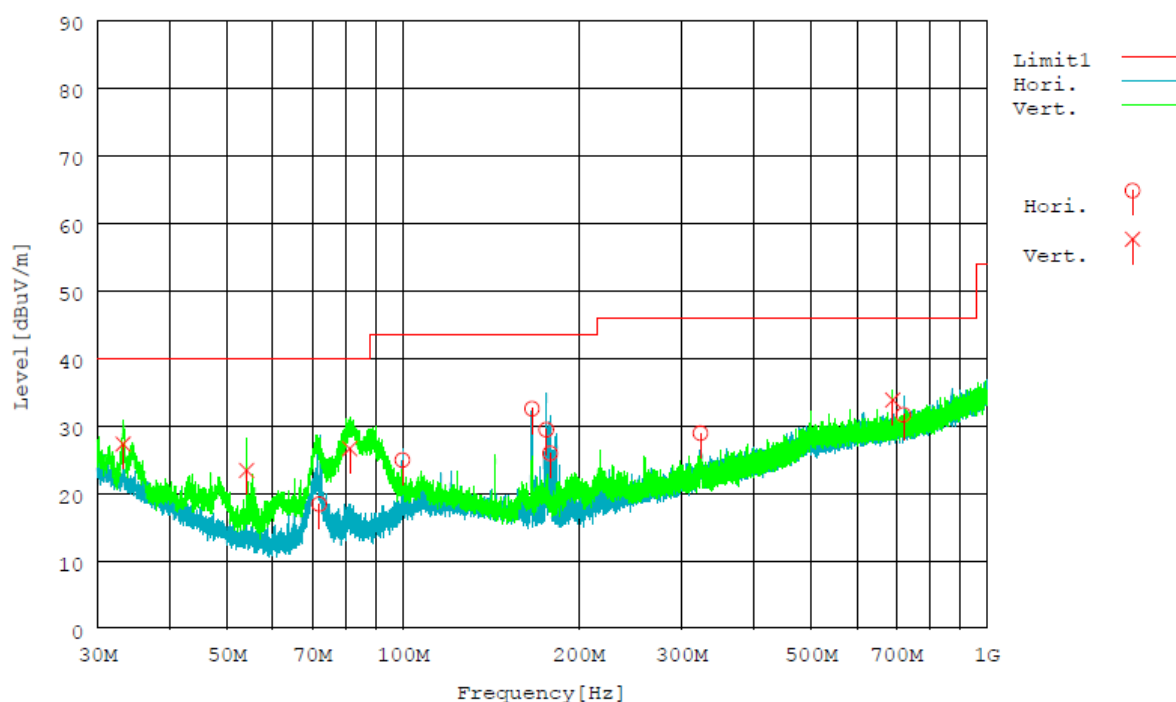
Limit

Frequency [MHz]	Distance [m]	Field strength [$\mu\text{V/m}$]	Field strength [dB $\mu\text{V/m}$]
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 - 960	3	200	46.0
above 960	3	500	53.9

Test Results

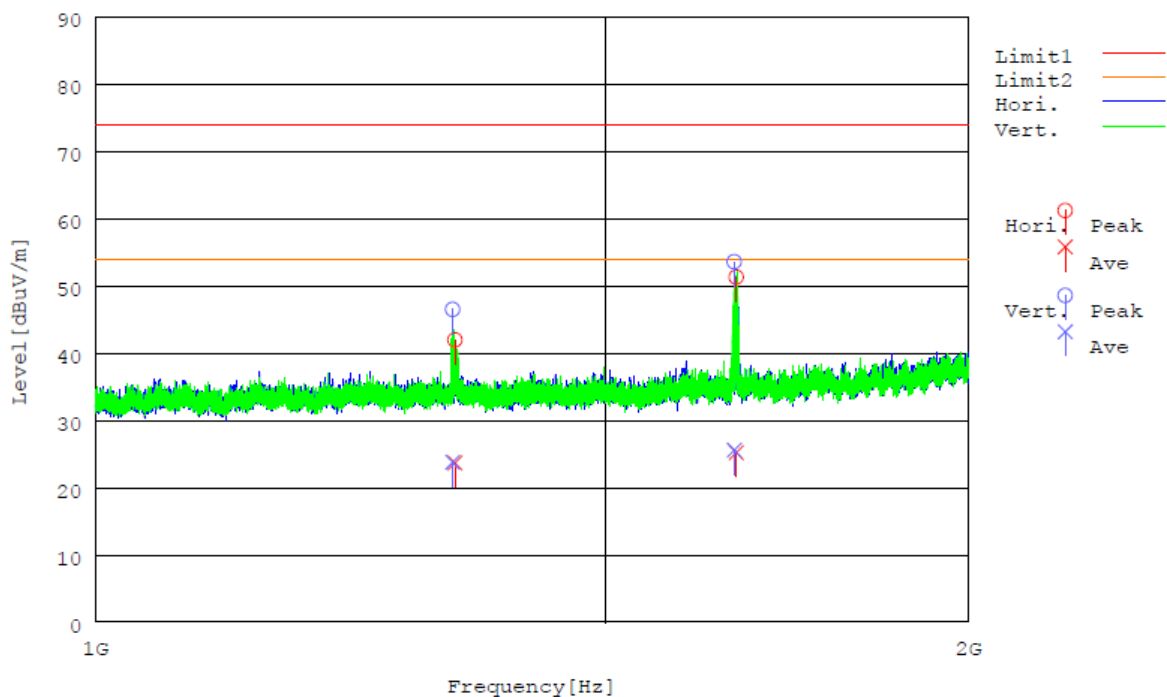
Configuration I: USB connection 30-1000 MHz

Frequency [MHz]	Antenna	Reading [dB μ V]	Factor [dB/m]	Loss [dB]	Gain [dB]	Field strength [dB μ V/m]	Limit [dB μ V/m]	Result
72.000	Hori.	34.0	6.5	7.6	29.7	18.4	40.0	Pass
99.941	Hori.	35.8	10.7	8.0	29.6	24.9	43.5	Pass
166.564	Hori.	43.8	9.6	8.7	29.6	32.5	43.5	Pass
176.241	Hori.	41.2	9.1	8.7	29.6	29.4	43.5	Pass
178.954	Hori.	37.8	8.9	8.8	29.6	25.9	43.5	Pass
323.621	Hori.	34.6	14.1	9.9	29.7	28.9	46.0	Pass
720.000	Hori.	29.6	19.5	12.2	29.7	31.6	46.0	Pass
33.233	Vert.	33.4	16.5	7.1	29.7	27.3	40.0	Pass
54.092	Vert.	38.1	7.6	7.4	29.7	23.4	40.0	Pass
81.117	Vert.	41.1	7.3	7.8	29.6	26.6	40.0	Pass
689.991	Vert.	32.0	19.4	12.1	29.7	33.8	46.0	Pass



1000-2000 MHz

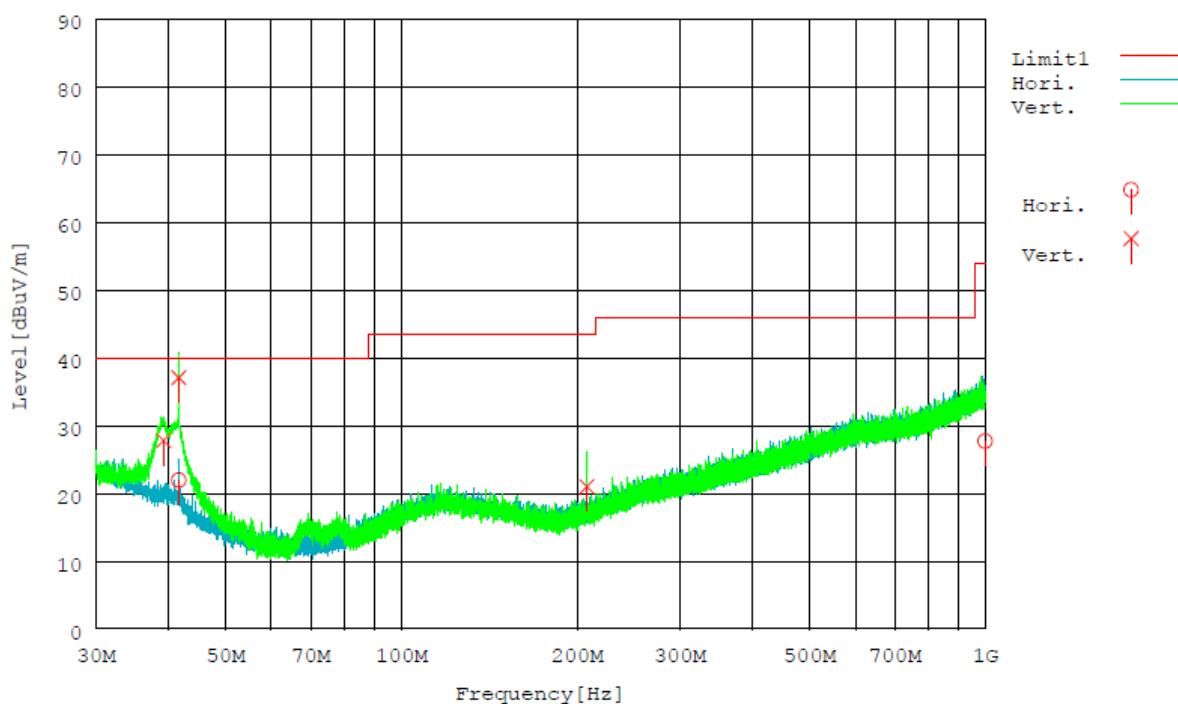
Freq. [MHz]	Ant.	Reading Peak [dB μ V]	Reading Ave [dB μ V]	C.Factor [dB]	Result Peak [dB μ V/m]	Result Ave [dB μ V/m]	Limit Peak [dB μ V/m]	Limit Ave [dB μ V/m]	Result
1330.633	Hori.	52.2	33.9	-10.2	42.0	23.7	73.9	53.9	Pass
1663.317	Hori.	60.0	33.9	-8.7	51.3	25.2	73.9	53.9	Pass
1327.984	Vert.	56.7	34.0	-10.2	46.5	23.8	73.9	53.9	Pass
1660.967	Vert.	62.4	34.4	-8.8	53.6	25.6	73.9	53.9	Pass



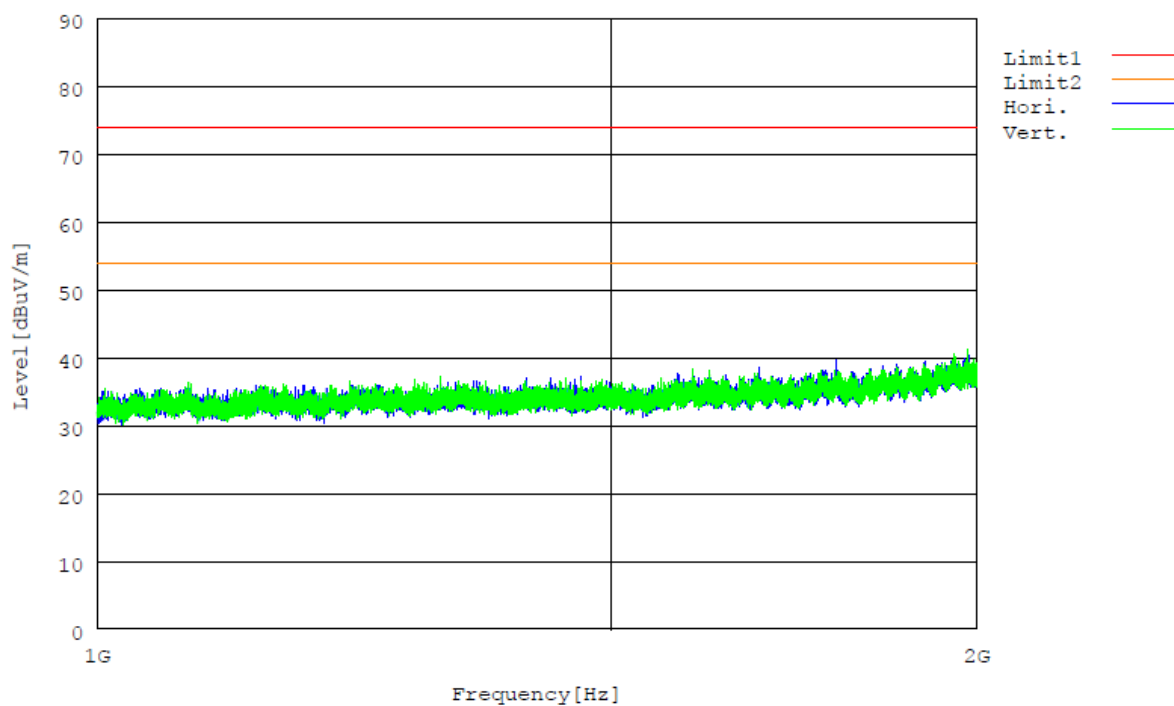
Configuration II: Movie play (Video cable)

30-1000 MHz

Frequency [MHz]	Antenna	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Field strength [dBμV/m]	Limit [dBμV/m]	Result
41.617	Hori.	32.3	12.2	7.2	29.7	22.0	40.0	Pass
1000.000	Hori.	21.1	21.3	13.7	28.4	27.7	53.9	Pass
39.196	Vert.	36.8	13.5	7.2	29.7	27.8	40.0	Pass
41.617	Vert.	47.4	12.2	7.2	29.7	37.1	40.0	Pass
208.098	Vert.	31.7	9.8	9.0	29.5	21.0	43.5	Pass



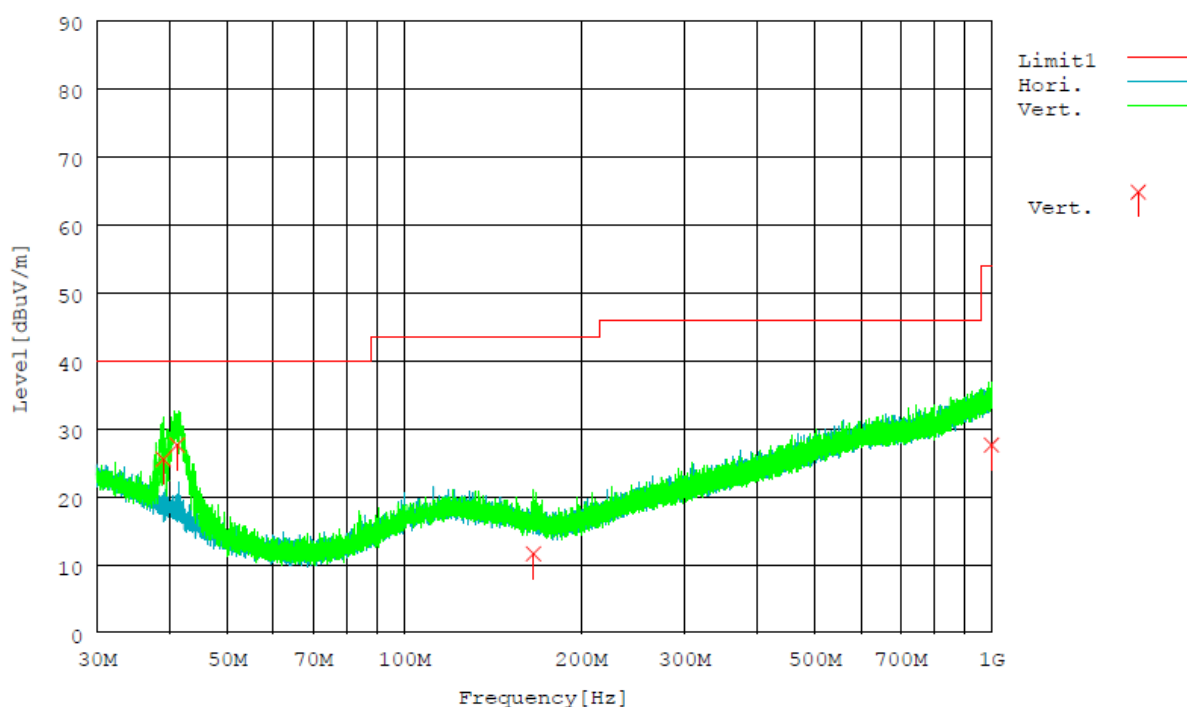
1000-2000 MHz



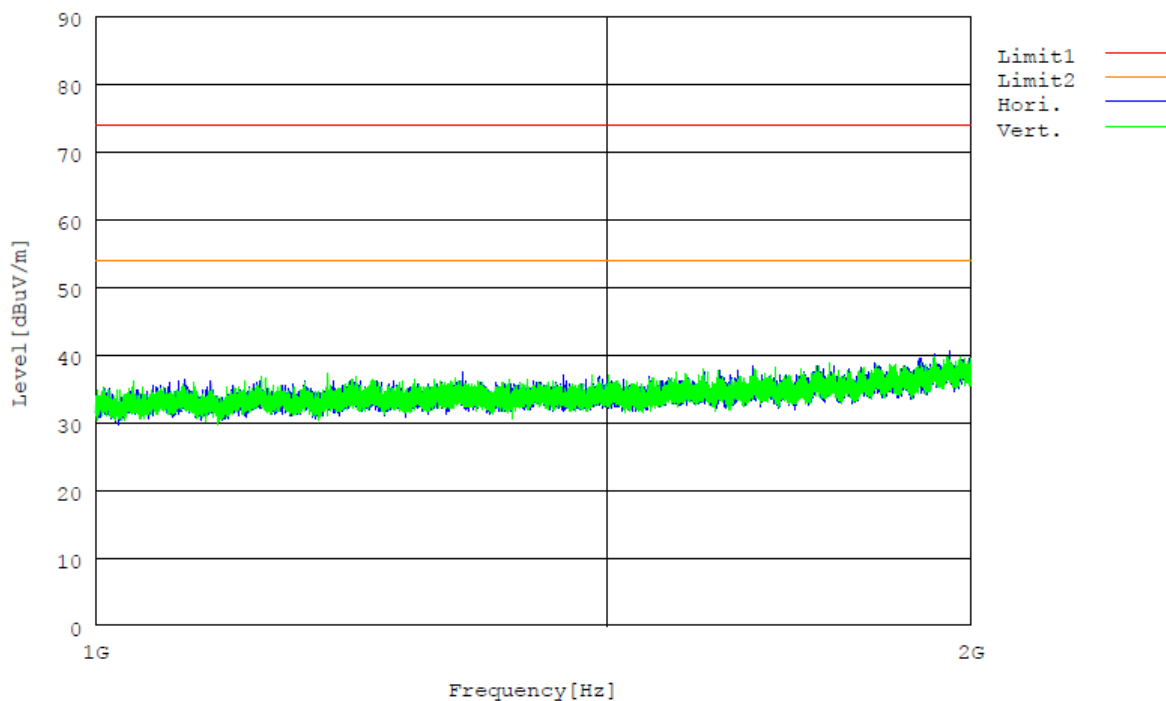
Configuration III: Movie play (HDMI cable)

30-1000 MHz

Frequency [MHz]	Antenna	Reading [dBμV]	Factor [dB/m]	Loss [dB]	Gain [dB]	Field strength [dBμV/m]	Limit [dBμV/m]	Result
38.958	Vert.	34.4	13.6	7.2	29.7	25.5	40.0	Pass
41.113	Vert.	37.6	12.5	7.2	29.7	27.6	40.0	Pass
165.946	Vert.	22.9	9.6	8.7	29.6	11.6	43.5	Pass
1000.000	Vert.	21.0	21.3	13.7	28.4	27.6	53.9	Pass



1000-2000 MHz



Test Equipment Used

Equipment name	RFT ID No.
RF cable	CL11, CL23, CL24
Receive Antenna	BA04, DH01
Pre AMP	PR03, PR12
Test Receiver	TR06

Final Result

The EUT met the requirements of the standard for this test.

2.2 AC power line conducted emissions

Reference Standard

Part15.107

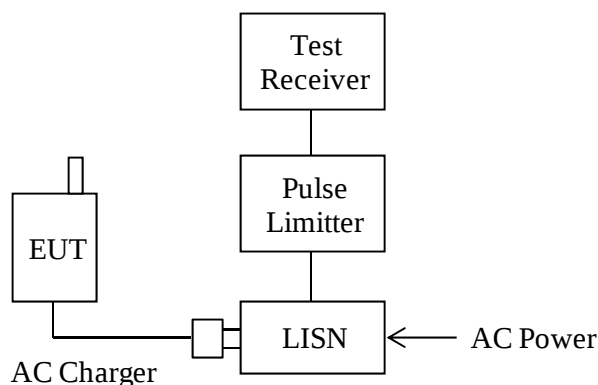
Test Conditions

Date: 10 Aug, 2010 (for Configuration I, II)
17 Aug, 2010 (for Configuration III)
Ambient Temperature: 27 degC (10 Aug), 23 degC (17 Aug)
Relative humidity: 60 % (10 Aug), 54 % (17 Aug)
Test Voltage: 3.7 V

Test Method

- Test data is transmitted from EUT to Notebook PC with USB cable.
- AC power is supplied to AC charger through LISN.
- AC charger is connected to EUT.
- AC Power Line emission is measured by EMI receiver.
Both Va/Vb line are measured emission level.

Test Setup



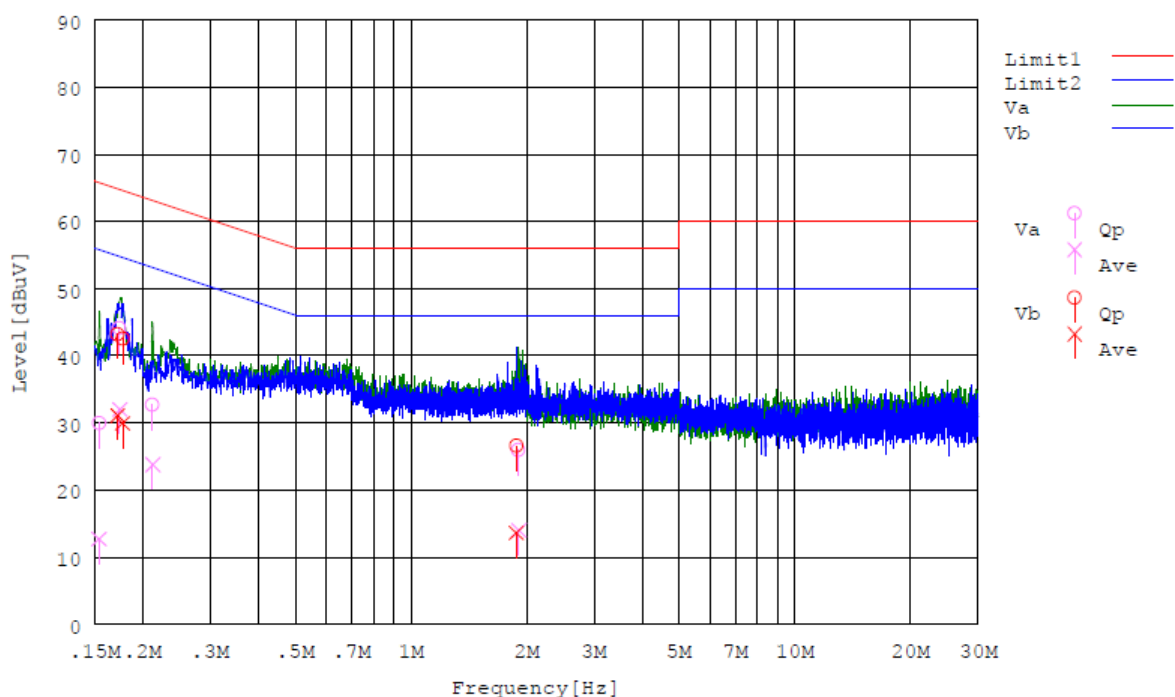
Limit

Frequency [MHz]	Limit QP [dBμV]	Limit Ave [dBμV]
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

Test Results

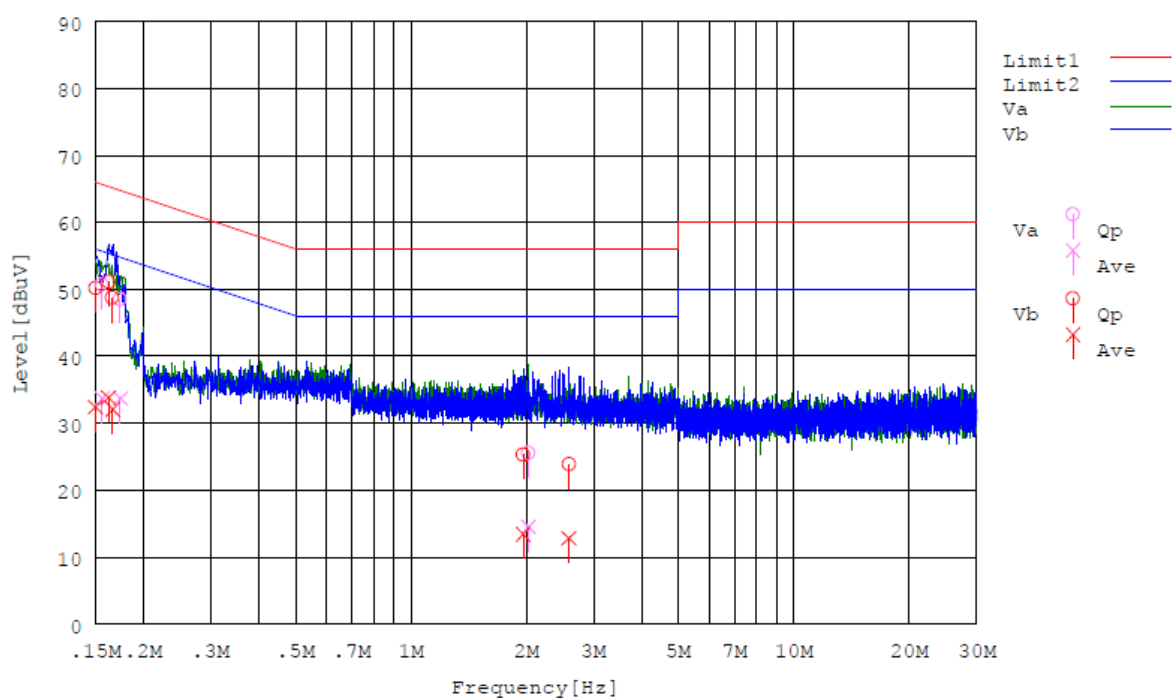
Configuration I: USB connection

Frequency [MHz]	Line [Va/Vb]	QP Reading [dBμV]	Ave Reading [dBμV]	Factor [dB]	QP Result [dBμV]	Ave Result [dBμV]	QP Limit [dBμV]	Ave Limit [dBμV]	Result
0.154	Va	19.7	2.5	10.2	29.9	12.7	65.8	55.8	Pass
0.174	Va	33.9	21.9	10.1	44.0	32.0	64.8	54.8	Pass
0.212	Va	22.5	13.7	10.1	32.6	23.8	63.1	53.1	Pass
1.906	Va	15.9	4.0	10.0	25.9	14.0	56.0	46.0	Pass
0.172	Vb	33.1	21.0	10.1	43.2	31.1	64.9	54.9	Pass
0.177	Vb	32.4	19.8	10.1	42.5	29.9	64.6	54.6	Pass
1.878	Vb	16.5	3.6	10.0	26.5	13.6	56.0	46.0	Pass



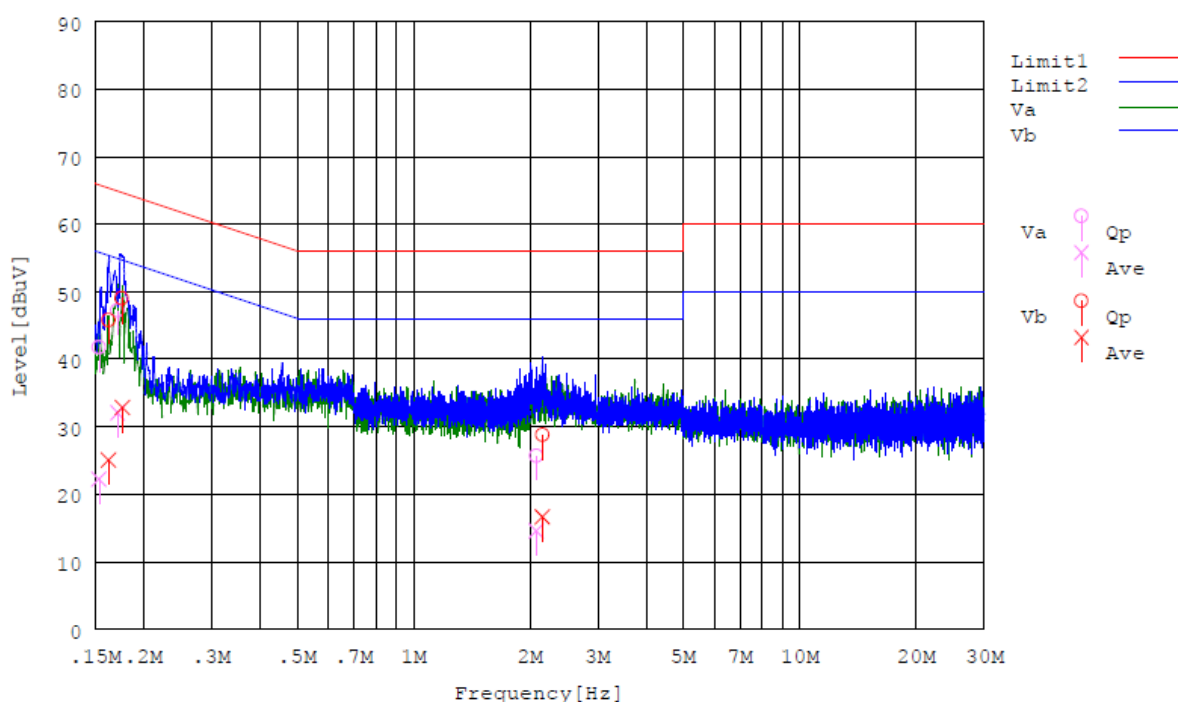
Configuration II: Movie Play (Video cable)

Frequency [MHz]	Line [Va/Vb]	QP Reading [dBμV]	Ave Reading [dBμV]	Factor [dB]	QP Result [dBμV]	Ave Result [dBμV]	QP Limit [dBμV]	Ave Limit [dBμV]	Result
0.156	Va	40.5	23.5	10.2	50.7	33.7	65.7	55.7	Pass
0.174	Va	38.4	23.6	10.1	48.5	33.7	64.8	54.8	Pass
2.026	Va	15.5	4.5	10.0	25.5	14.5	56.0	46.0	Pass
0.150	Vb	40.0	22.2	10.2	50.2	32.4	66.0	56.0	Pass
0.162	Vb	40.9	23.6	10.2	51.1	33.8	65.4	55.4	Pass
0.166	Vb	38.6	22.0	10.1	48.7	32.1	65.2	55.2	Pass
1.961	Vb	15.3	3.4	10.0	25.3	13.4	56.0	46.0	Pass
2.585	Vb	13.8	2.8	10.0	23.8	12.8	56.0	46.0	Pass



Configuration III: Movie Play (HDMI cable)

Frequency [MHz]	Line [Va/Vb]	QP Reading [dBμV]	Ave Reading [dBμV]	Factor [dB]	QP Result [dBμV]	Ave Result [dBμV]	QP Limit [dBμV]	Ave Limit [dBμV]	Result
0.153	Va	31.5	12.0	10.2	41.7	22.2	65.8	55.8	Pass
0.171	Va	37.1	22.0	10.1	47.2	32.1	64.9	54.9	Pass
2.075	Va	15.7	4.6	10.0	25.7	14.6	56.0	46.0	Pass
0.162	Vb	35.6	14.9	10.2	45.8	25.1	65.4	55.4	Pass
0.176	Vb	38.9	22.7	10.1	49.0	32.8	64.7	54.7	Pass
2.153	Vb	18.7	6.6	10.0	28.7	16.6	56.0	46.0	Pass



Test Equipment Used

Equipment name	RFT ID No.
EMI Receiver	TR06
LISN	LN05
RF cable	CL18

Final Result

The EUT met the requirements of the standard for this test

4 List of utilized test equipment/ calibration

RFT ID No.	Kind of Equipment and Precision	Manufacturer	Model No.	Serial Number	Calibration Date	Calibrated until
AC01(EM)	Anechoic Chamber (1st test room)	JSE	203397C	-	2010/4/10	2011/4/30
AC01(EG)	Anechoic Chamber (1st test room)	JSE	203397C	-	2009/11/14	2010/11/30
BA04	Biological Antenna	SCHAFFNER	CA2855	2903	2010/1/19	2011/1/31
CL11	Antenna Cable for RE	RFT	-	-	2010/5/24	2011/5/31
CL18	Antenna Cable for CE	RFT	-	-	2010/5/15	2011/5/31
CL23	RF Cable 0.5m	SUCOFLEX	SF104PE	48773/4PE	2010/6/15	2011/6/30
CL24	RF Cable 5.0m	SUCOFLEX	SF104PE	48775/4PE	2010/6/15	2011/6/30
DH01	DRG Horn Antenna	A.H. Systems	SAS-571	785	2010/1/20	2012/1/31
LN05	LISN	Kyoritsu	KNW-407F	8-1773-2	2010/5/21	2011/5/31
PR03	Pre. Amplifier	Anritsu	MH648A	M41984	2010/5/19	2011/5/31
PR12	Pre. Amplifier (1-26G)	Agilent Technologies	8449B	3008A02513	2010/1/25	2011/1/31
TR06	Test Receiver (F/W : 3.93 SP2)	Rohde & Schwarz	ESU26	100002	2009/9/16	2010/9/30

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.