TEST REPORT

For

Mobile Phone

In conformity with

FCC Part22 (Oct 01,2007)

Model: CDMA MA001

FCC ID: WV2108001A

Test Item: Mobile Phone

Report No: RY0812P10R1

Issue Date: Dec. 10, 2008

Prepared for

Panasonic Mobile Communications Co., Ltd.
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Prepared by

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History

Report No.	Issue Date	Revisions
RY0811P28R1	Nov.28.2008	Initial Issue
RY0812P10R1	Dec.10.2008	Add EUT control condition (1.6.2) Retest “Carrier output power” by power meter (2.1.1)

1 General information

1.1 *Product description*

Test item	: Mobile phone
Manufacturer	: Panasonic Mobile Communications Co., Ltd.
Address	: 600 Saedo-cho, Tsuzuki-ku, Yokohama City 224-8539, Japan
Model	: CDMA MA001
FCC ID	: WV2108001A
Operating frequency range	: TX 824.70 - 848.31 MHz (CDMA850)
	: RX 869.70 - 893.31 MHz (CDMA850)
Type of Modulation	: QPSK
Receipt date of EUT	: Nov.14, 2008
Nominal power voltages	: 3.7VDC (Lithium-ion battery)
Antenna Type	: integral antenna
Serial numbers	: SMAAX000321 (for Radiated test)
	SMAAX000322 (for Conducted test)

1.2 *Test(s) performed/ Summary of test result*

Applicable Standard(s)	: FCC Part22(Oct 01,2007)
Test(s) started	: Nov.20, 2008
Test(s) completed	: Dec.09, 2008
Purpose of test(s)	: Grant for 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
T. Kato (EMC Testing Department)

Reviewer : T. Ikegami
T.Ikegami (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 October 01, 2007.
The description of the test facilities has been filed under registration number 879401 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.

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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;

RF frequency : ± 1 x 10^{-7}
RF conducted level : ± 1.0 dB
AC Power line emission : ± 1.9 dB
Radiated emission (30MHz - 1000MHz) : ± 5.7 dB
Radiated emission (above 1000MHz) : ± 5.8 dB
Temperature : ± 1 degree
Humidity : ± 5 %

1.5 *Description of essencial requirements and test results*

An overview of radio requirements, as laid out in FCC Part22 are given below.

1.5.1 Transmitter requirements

Test Description	Section in this report	Applicable	Result
Carrier Output Power (Conducted)	2.1.1	Yes	Passed
Carrier Output Power (Radiated)	2.1.2	Yes	Passed
Frequency Stability (Temperature Variation)	2.1.3	Yes	Passed
Frequency Stability (Voltage Variation)	2.1.4	Yes	Passed
Occupied Bandwidth	2.1.5	Yes	Passed
Out of Band Emissions (Conducted)	2.1.6	Yes	Passed
Out of Band Emissions (Radiated)	2.1.7	Yes	Passed
Band Edge Emissions	2.1.8	Yes	Passed

1.5.2 Receiver requirements

Test Description	Section in this report	Applicable	Result
Radiated Spurious Emissions	2.2.1	Yes	Passed

1.5.3 AC Power Line Parameters

Test Description	Section in this report	Applicable	Result
AC power line Spurious Emissions (Idle mode)	2.3.1	Yes	Passed
AC power line Spurious Emissions (Traffic mode)	2.3.2	Yes	Passed

1.5.4 Normal test conditions

Temperature(*) : +15 degC to +35 degC
Relative humidity(*) : 20 % to 75 %
Supply voltage : 3.7 VDC (Nominal)
Measurement Frequency : 824.70 MHz(1013ch), 836.49 MHz(383ch), 848.31 MHz(777ch)

* 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.

1.5.5 Extreme test conditions

Temperature : -30 °C (min) to +50 °C (max)
Supply voltage : 3.3 VDC (min) to 4.2 VDC (max)
The equipment has a function that it is automatically turned off when min. battery voltage (3.3 V) is detected.

1.6 *Setup of equipment under test (EUT)*

1.6.1 Test configuration of EUT

Equipment(s) under test:

	Item	Manufacturer	Model No.	Serial No.	FCC ID No.
A	Mobile phone	Panasonic Mobile Communications., Ltd.	CDMA MA001	SMAAX000321	WV2108001A
B	Mobile phone	Panasonic Mobile Communications., Ltd.	CDMA MA001 (RF cable is attached instead of integral antenna)	SMAAX000322	WV2108001A
C	Battery pack	SANYO GS Soft Energy Co., Ltd.	BT82006ACA	None	N/A
D	AC Adaptor	Hosiden Corp.	0203PQA	None	N/A
E	Earphone Mic	SMK Corp.	0201QLA	None	N/A

Connected cable(s):

No.	Item	Identification (Manu.e.t.c)	Shielded YES / NO	Ferrite Core YES / NO	Connector Type Shielded YES / NO	Length (m)
1	DC power cable	-	No	No	No	1.5
2	EarphoneMic cable	-	No	No	No	1.2

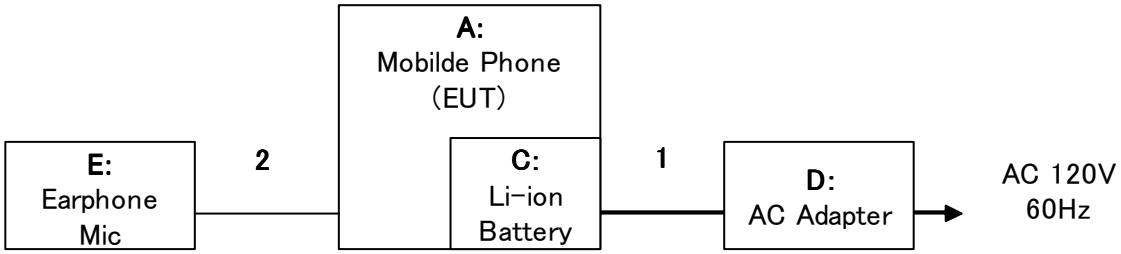
1.6.2 Operating condition:

Traffic mode : EUT is connected with RF tester in Max power level.
RC3/SO55 with Power Control Bit “ALL UP” was worst condition in all test items.
These conditions were set for all transmitter tests in this report.

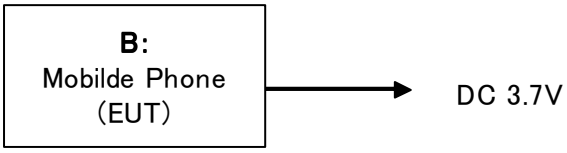
Idle mode : EUT is under idle mode, no output power is transmitted.

1.6.3 Setup diagram of tested system:

[Configuration Ⅰ]



[Configuration Ⅱ]



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 *Transmitter requirements*

2.1.1 Carrier Output Power (Conducted)

Reference Standard
FCC : Part22.913, 2.0146

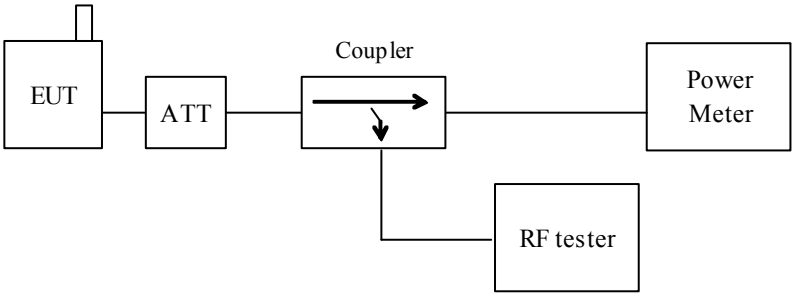
Test Conditions

Date:	2008/12/09
Ambient Temperature:	21 degC
Relative humidity:	54 %
Test Voltage:	3.7 V

Test Sample
Configuration Ⅱ

Test Method
a) EUT is connected to RF tester with pseudo random data modulation and set to maximum output power level.
b) The output power is measured with Power Meter.

Test Setup



Test Results

Channel	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Result
Bottom (1013ch)	824.70	23.5	38.4	Pass
Middle (383ch)	836.49	23.4	38.4	Pass
Top (777ch)	848.31	23.4	38.4	Pass

Test Equipment Used

Equipment name	RFT ID No.
Power Meter	PM03
Power Sensor	PU03
RF tester	RC02

Final Result

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

2.1.2 Carrier Output Power (Radiated)

Reference Standard
FCC : Part22.913, 2.0146

Test Conditions

Date:	2008/11/20
Ambient Temperature:	21 degC
Relative humidity:	33 %
Test Voltage:	3.7 V

Test Sample
Configuration I

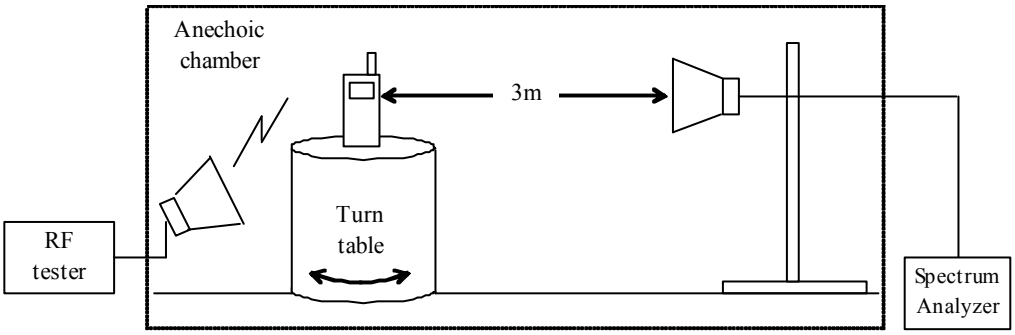
Test Method
Substitution method is used for this test.
a) EUT is set on non-conducting turntable and the output power is set to the maximum level.
b) As a receive antenna, Horn antenna is used for high frequency range (above 1GHz), and Bilogical antenna is used for low frequency range (30MHz to 1GHz).
c) Maximum power is measured by a spectrum analyzer(SA) in below conditions.
Turntable is rotated 360 degrees.
The height of receive antenna is changed from 1m to 4m.
Receive antenna polarization is set to vertical and horizontal.
This maximum power is recorded.
During this measurement, receive antenna is adjusted the direction to keep the EUT within the beamwidth of receive antenna.
d) Reference antenna is replaced with EUT, and connected with signal generator(SG). SG output power is adjusted to get same level as the recorded maximum radiated EUT power by SA.

e) Radiated output power (Pout) is calculated with adjusted SG output (Psg) [dBm], reference antenna gain (Gref) [dBd] and cable loss between SG and reference antenna (Lcab) [dB].

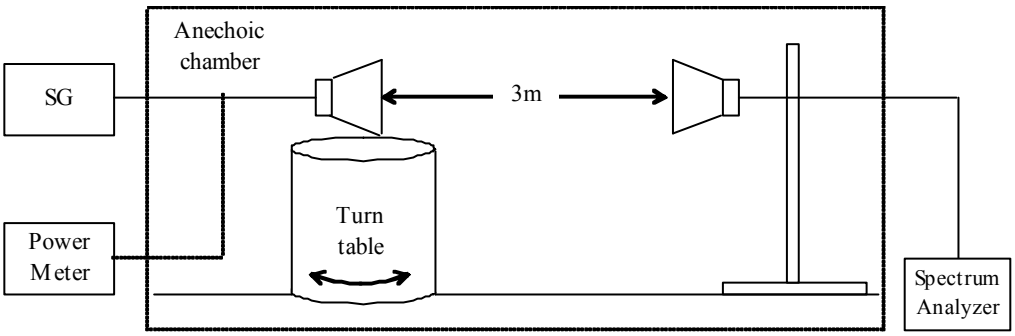
Pout [dBm e.r.p] = Psg + Gref + Lcab

Test Setup

[Measurement]



[Substitution]



Test Results

Channel	Frequency (MHz)	Output Power (dBm e.r.p)	Limit (dBm e.r.p)	Result
Bottom (1013ch)	824.70	22.5	38.4	Pass
Middle (383ch)	836.49	23.9	38.4	Pass
Top (777ch)	848.31	24.3	38.4	Pass

Test Equipment Used

Equipment name	RFT ID No.
Spectrum Analyzer	TR06
Receive Antenna	DH02
Reference Antenna	LA02
Signal Generator	SG05
Power Meter	PM03
RF tester	RC02

Final Result

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

2.1.3 Frequency Stability (Temperature)

Reference Standard
FCC : Part22.355, 2.1055

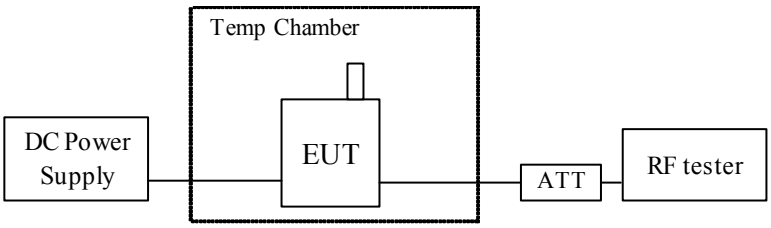
Test Conditions

Date:	2008/11/26
Ambient Temperature:	21 degC
Relative humidity:	39 %
Test Voltage:	3.7 V

Test Sample
Configuration Ⅱ

Test Method
To measure the carrier frequency, "Frequency error measurement" function of RF tester is used.
a) EUT is hold about 30 minutes under measurement temperature condition.
b) EUT is powered on with nominal voltage.
c) EUT is connected to RF tester with Max transmit power level.
d) Frequency error is measured by RF tester.
Process b) to d) must be finished within 2 minutes to prevent EUT warming.
e) Process a) to d) is repeated at 10deg increments from -30 to +50degC.

Test Setup



Test Results

Middle Channel (383ch, Nominal Freq.:836.49MHz)

Temperature (deg C)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
-30	-13	-0.02	± 2.5	Passed
-20	17	0.02	± 2.5	Passed
-10	-7	-0.01	± 2.5	Passed
0	9	0.01	± 2.5	Passed
10	-8	-0.01	± 2.5	Passed
20	8	0.01	± 2.5	Passed
30	-8	-0.01	± 2.5	Passed
40	-5	-0.01	± 2.5	Passed
50	19	0.02	± 2.5	Passed

Test Equipment Used

Equipment name	RFT ID No.
RF tester	RC02
Temp Chamber	TC01

Final Result

The EUT met the requirements of the standard for this test

2.1.4 Frequency Stability (Voltage)

Reference Standard
FCC : Part22.355, 2.1055

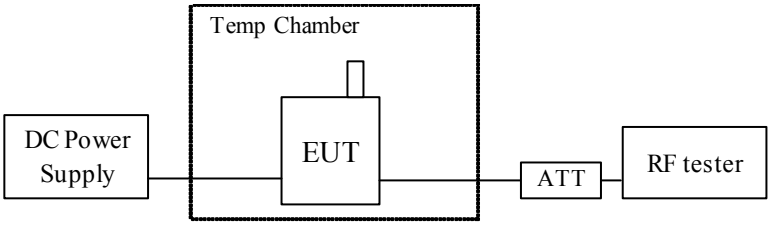
Test Conditions

Date:	2008/11/26
Ambient Temperature:	21 degC
Relative humidity:	39 %
Test Voltage:	3.3 V to 4.2 V

Test Sample
Configuration Ⅱ

Test Method
To measure the carrier frequency, “Frequency error measurement” function of RF tester is used.
a) EUT is powered on with nominal voltage. Temperature is 20degC.
b) EUT is connected to RF tester with Max transmitter power level.
c) Frequency error is measured by RF tester.
d) Process a) to c) is repeated at minimum and maximum voltage condition.

Test Setup



Test Results

Middle Channel (383ch, Nominal Freq.:836.49MHz)

Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)	Result
3.40	-6	-0.01	± 2.5	Passed
3.70	8	0.01	± 2.5	Passed
4.20	-7	-0.01	± 2.5	Passed

Test Equipment Used

Equipment name	RFT ID No.
RF tester	RC02
Temp chamber	TC01

Final Result

The EUT met the requirements of the standard for this test

2.1.5 Occupied Bandwidth

Reference Standard
FCC : Part2.1049

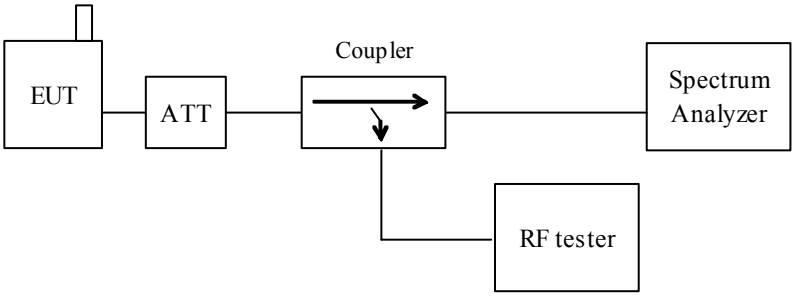
Test Conditions

Date:	2008/11/25
Ambient Temperature:	19 degC
Relative humidity:	48 %
Test Voltage:	3.7 V

Test Sample
Configuration Ⅱ

Test Method
a) EUT is connected to RF tester with Max transmitter power level.
b) 26dB bandwidth is measured by Spectrum Analyzer.
c) 99% occupied bandwidth of transmitter spectrum is measured by Spectrum Analyzer.

Test Setup



Test Results

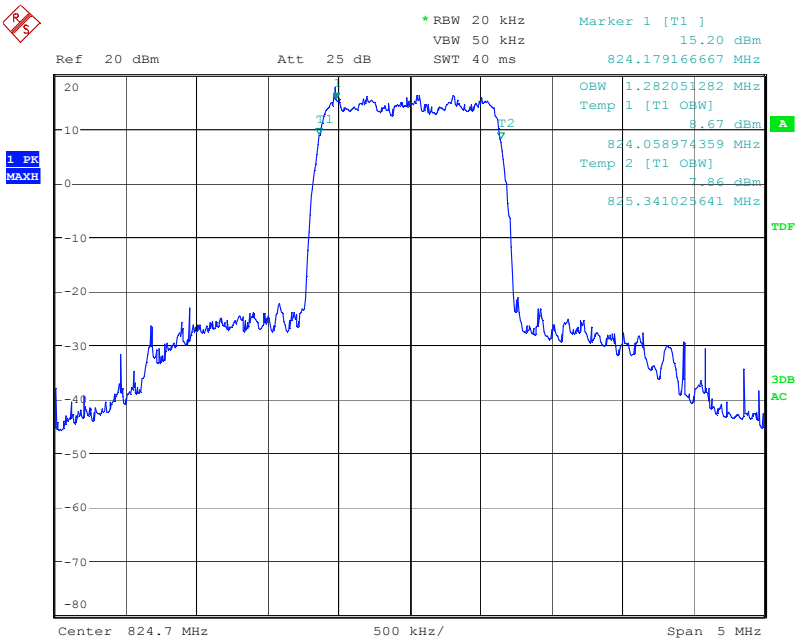
Occupied Bandwidth (99%)

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	Occupied Bandwidth (MHz)
Bottom (1013ch)	824.70	20kHz	50kHz	1.282
Middle (383ch)	836.49	20kHz	50kHz	1.282
Top (777ch)	848.31	20kHz	50kHz	1.274

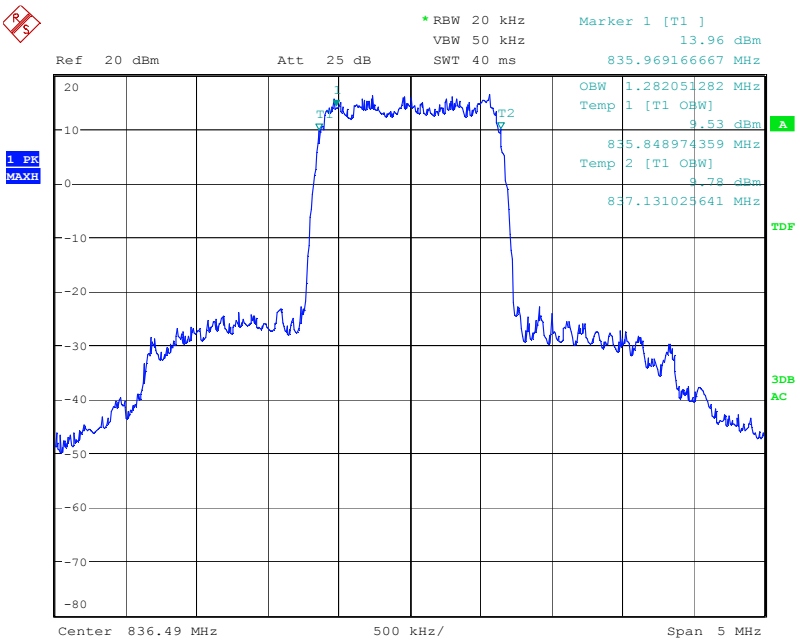
26dB Bandwidth

Channel	Frequency (MHz)	RBW (kHz)	VBW (kHz)	26dB Bandwidth (MHz)
Bottom (1013ch)	824.70	10kHz	30kHz	1.426
Middle (383ch)	836.49	10kHz	30kHz	1.426
Top (777ch)	848.31	10kHz	30kHz	1.426

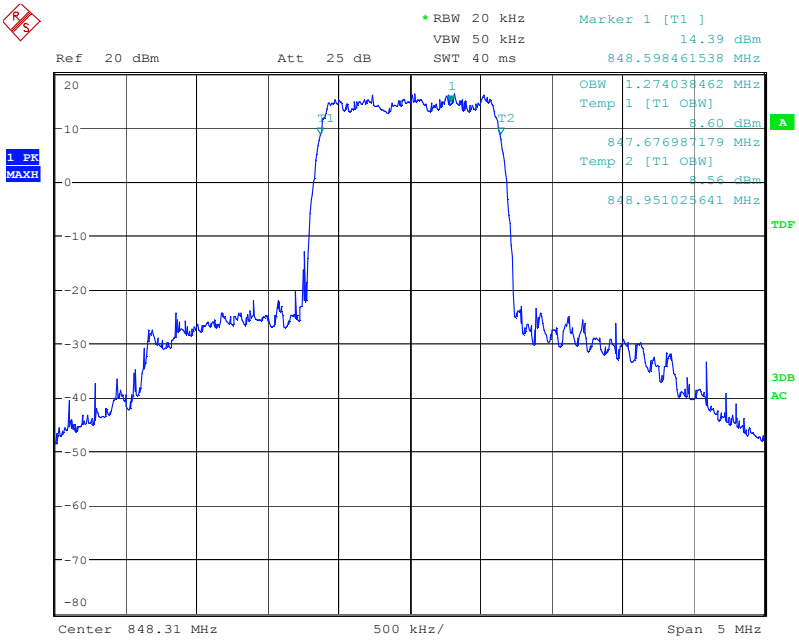
Graphical Data



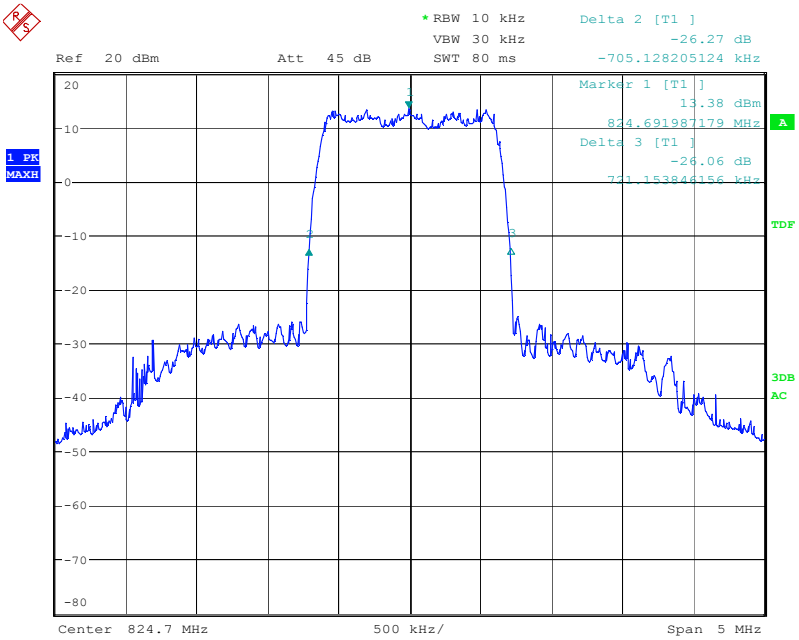
1013ch Occupied Bandwidth



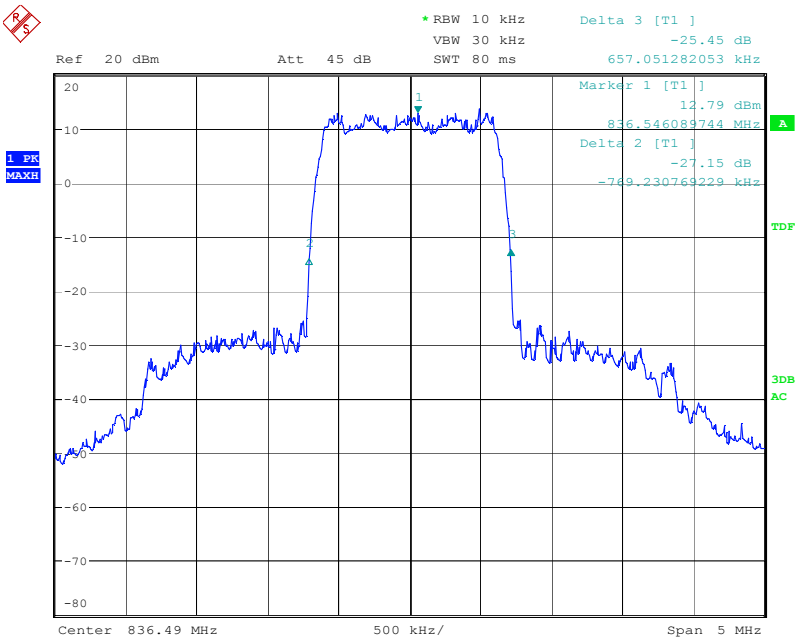
383ch Occupied Bandwidth



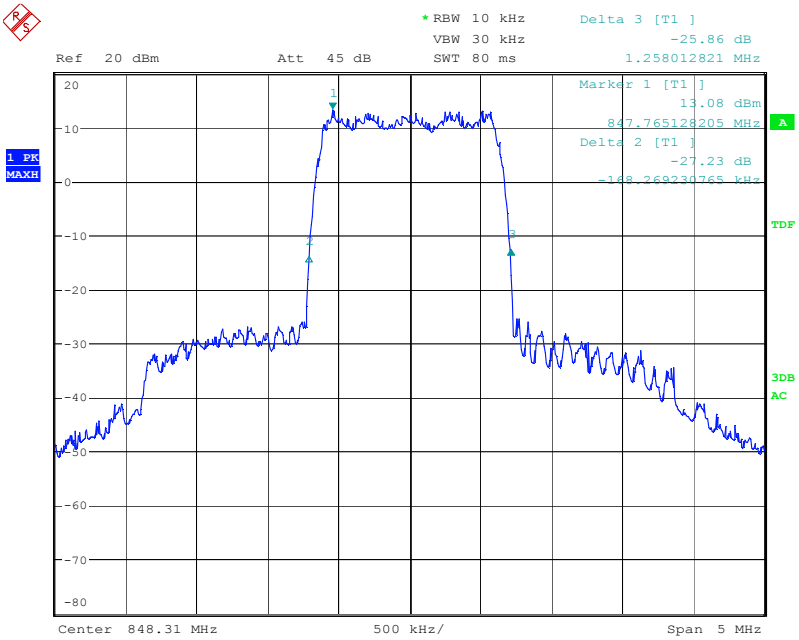
777ch Occupied Bandwidth



1013ch 26dB Bandwidth



383ch 26dB Bandwidth



777ch 26dB Bandwidth

Test Equipment Used

Equipment name	RFT ID No.
Spectrum Analyzer	TR06
RF tester	RC02

2.1.6 Transmitter Out of Band Spurious Emissions (Conducted)

Reference Standard
FCC : Part22.917

Test Conditions

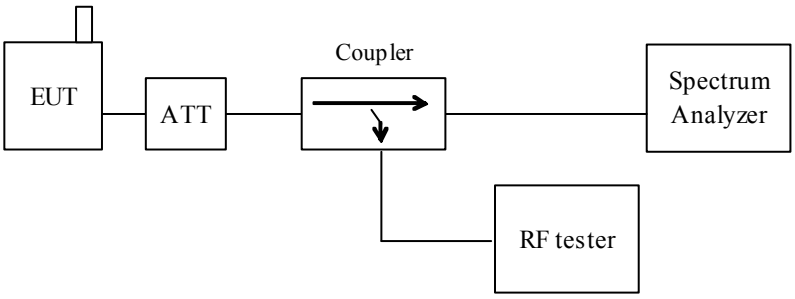
Date:	2008/11/25
Ambient Temperature:	19 degC
Relative humidity:	48 %
Test Voltage:	3.7 V

Test Sample
Configuration Ⅱ

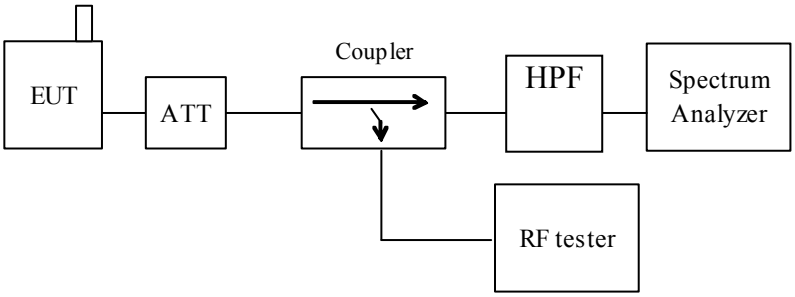
Test Method
a) EUT is connected to RF tester with Max transmitter power level.
b) Out of band Spurious is measured by Spectrum Analyzer.
c) Resolution band width of spectrum analyzer is set to 1MHz (above 1GHz) or 100kHz (below1GHz).

Test Setup

30MHz to 1500MHz



above 1500MHz



Test Results

Bottom Channel (1013ch, Nominal Freq.:824.70MHz)

Measurement Frequency (MHz)	Measurement Bandwidth (MHz)	Emission Level (dBm)	Limit (dBm)	Result Pass/Fail
1649.40	1	-43.1	-13.0	Pass
2474.10	1	-46.9	-13.0	Pass
3298.80	1	< -60.0	-13.0	Pass
4123.50	1	< -60.0	-13.0	Pass
4948.20	1	< -60.0	-13.0	Pass
5772.90	1	< -60.0	-13.0	Pass
6597.60	1	< -60.0	-13.0	Pass
7422.30	1	< -60.0	-13.0	Pass
8247.00	1	< -60.0	-13.0	Pass
others		none	-13.0	Pass

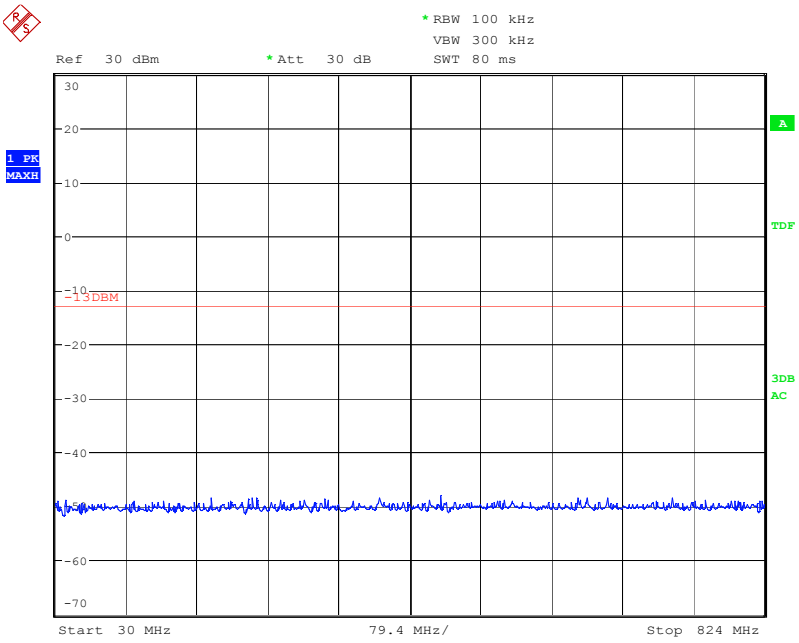
Middle Channel (383ch, Nominal Freq.:836.49MHz)

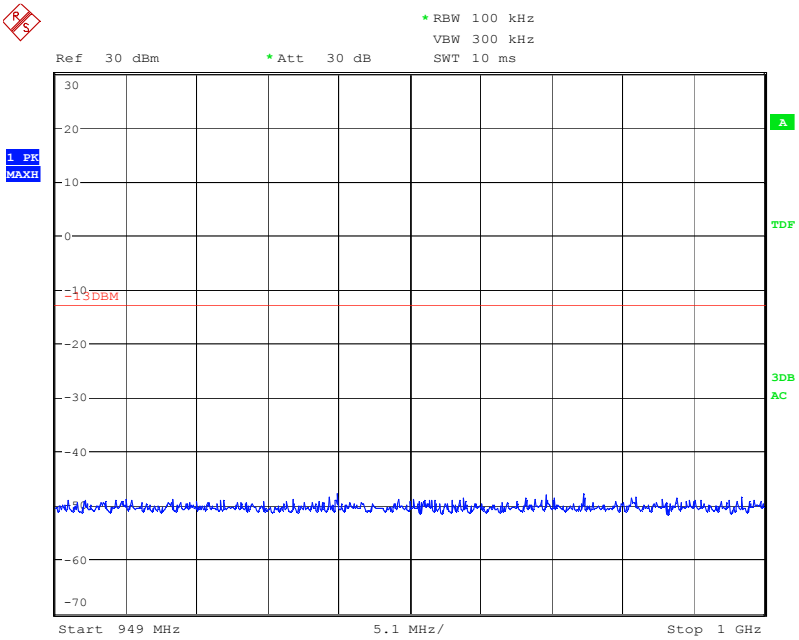
Measurement Frequency (MHz)	Measurement Bandwidth (MHz)	Emission Level (dBm)	Limit (dBm)	Result Pass/Fail
1672.98	1	-48.1	-13.0	Pass
2509.47	1	-46.7	-13.0	Pass
3345.96	1	< -60.0	-13.0	Pass
4182.45	1	< -60.0	-13.0	Pass
5018.94	1	< -60.0	-13.0	Pass
5855.43	1	< -60.0	-13.0	Pass
6691.92	1	< -60.0	-13.0	Pass
7528.41	1	-59.8	-13.0	Pass
8364.90	1	< -60.0	-13.0	Pass
others		none	-13.0	Pass

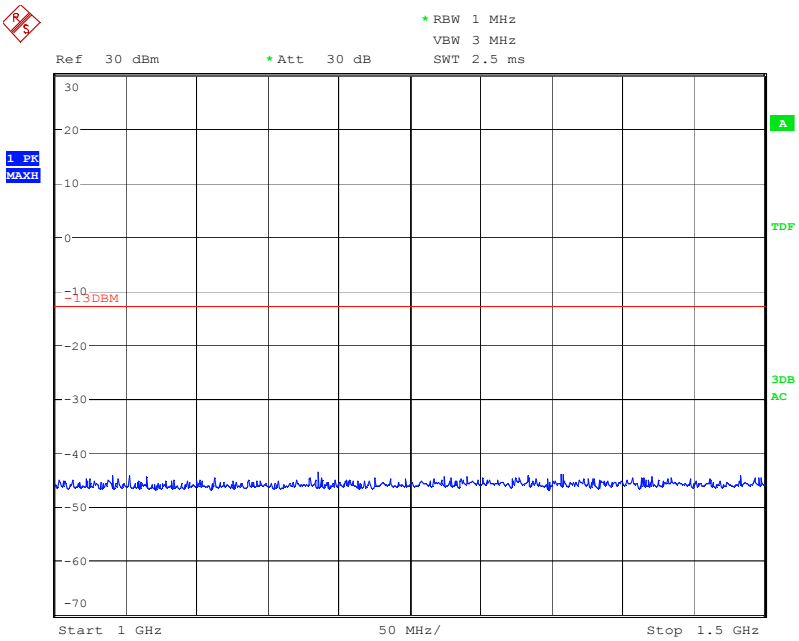
Top Channel (777ch, Nominal Freq.:848.31MHz)

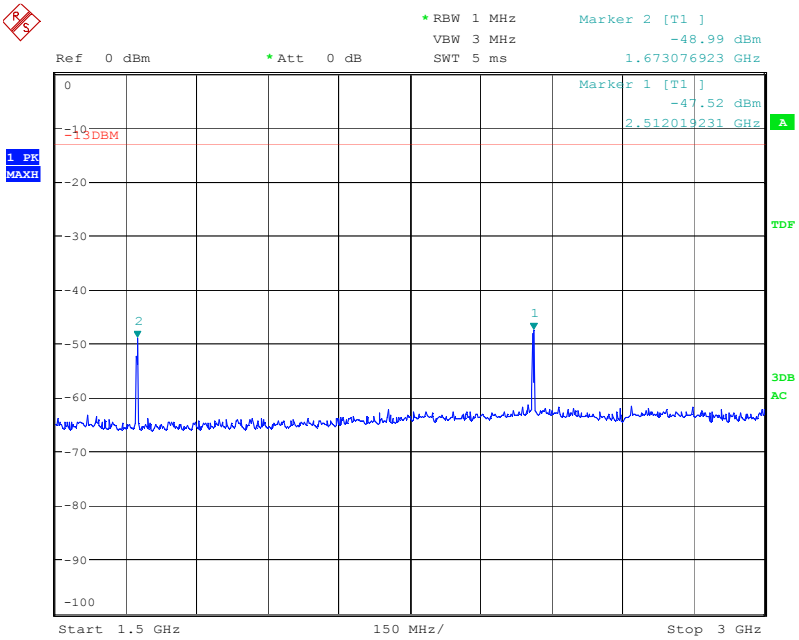
Measurement Frequency (MHz)	Measurement Bandwidth (MHz)	Emission Level (dBm)	Limit (dBm)	Result Pass/Fail
1696.62	1	-44.6	-13.0	Pass
2544.93	1	-46.6	-13.0	Pass
3393.24	1	< -60.0	-13.0	Pass
4241.55	1	< -60.0	-13.0	Pass
5089.86	1	< -60.0	-13.0	Pass
5938.17	1	< -60.0	-13.0	Pass
6786.48	1	-59.7	-13.0	Pass
7634.79	1	-59.6	-13.0	Pass
8483.10	1	< -60.0	-13.0	Pass
others		none	-13.0	Pass

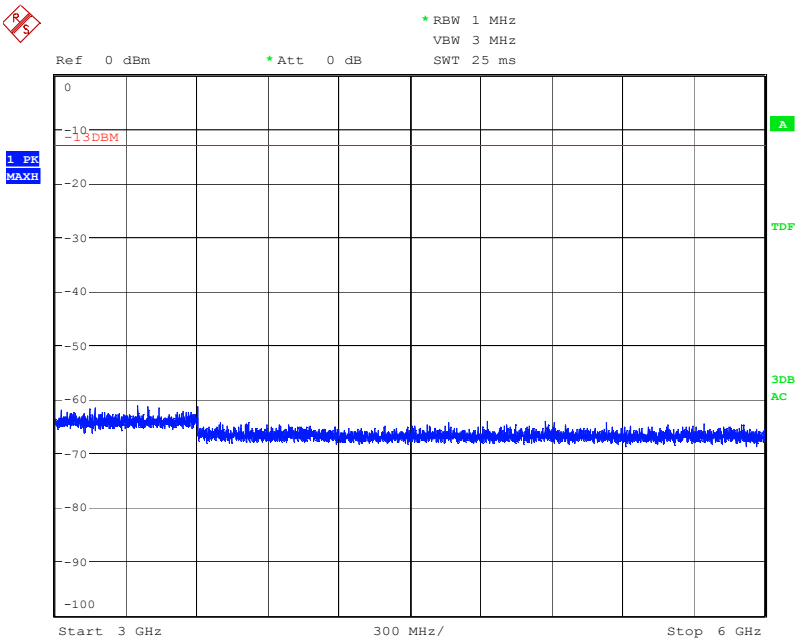
Graphical Data (383ch)

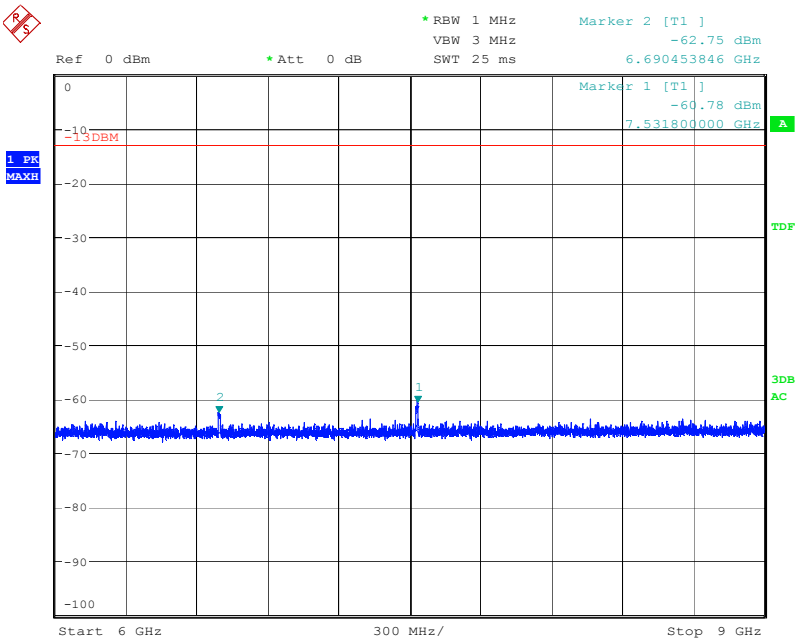



RBW 100 kHz
VBW 300 kHz
Ref 30 dBm
Att 30 dB
SWT 10 ms
1 PK
MAXH
A
TDF
3DB
AC
-13DBM
Start 949 MHz
5.1 MHz/
Stop 1 GHz


RBW 1 MHz
VBW 3 MHz
Ref 30 dBm
Att 30 dB
SWT 2.5 ms
1 PK
MAXH
A
TDF
3DB
AC
-13DBM
Start 1 GHz
50 MHz/
Stop 1.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 5 ms
Ref 0 dBm
Att 0 dB
Marker 2 [T1]
-48.99 dBm
1.673076923 GHz
Marker 1 [T1]
-47.52 dBm
2.512019231 GHz
-13DBM
1 PK
MAXH
A
TDF
3DB
AC
Start 1.5 GHz
150 MHz/
Stop 3 GHz


RBW 1 MHz
VBW 3 MHz
SWT 25 ms
Ref 0 dBm
Att 0 dB
-13DBM
1 PK
MAXH
A
TDF
3DB
AC
Start 3 GHz
300 MHz/
Stop 6 GHz



Test Equipment Used

Equipment name	RFT ID No.
Spectrum Analyzer	TR06
RF tester	RC02

Final Result

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

2.1.7 Transmitter Out of Band Spurious Emissions (Radiated)

Reference Standard
FCC : Part22.917

Test Conditions

Date:	2008/11/20
Ambient Temperature:	21 degC
Relative humidity:	33 %
Test Voltage:	3.7 V

Test Sample
Configuration I

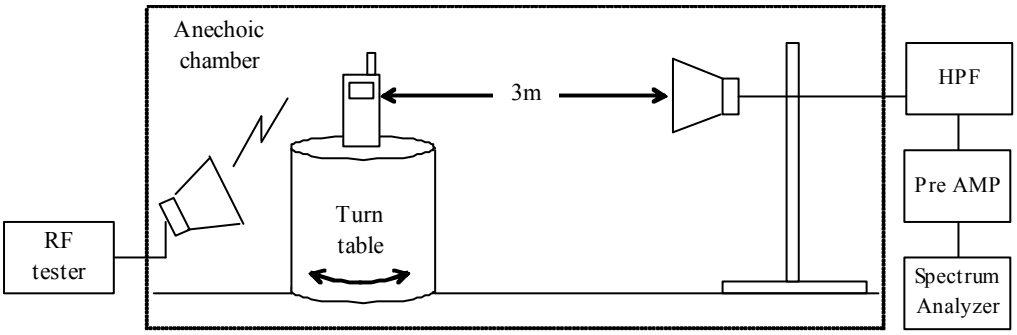
Test Method
Substitution method is used for this test.
a) EUT is set on non-conducting turntable and the output power is set to the maximum level.
b) As a receive antenna, Horn antenna is used for high frequency range (above 1GHz), and Bilogical antenna is used for low frequency range (30MHz to 1GHz).
c) The maximum level of each spurious emission is measured by a spectrum analyzer(SA) in below conditions.
Turntable is rotated 360 degrees.
The height of receive antenna is changed from 1m to 4m.
Receive antenna polarization is set to vertical and horizontal.
EUT was placed at three different orientations (X, Y and Z axis) in order to find the worst orientation.
This emission level is recorded.
During this measurement, receive antenna is adjusted the direction to keep the EUT within the beamwidth of receive antenna.
d) Reference antenna is replaced with EUT, and connected with signal generator(SG). SG output power is adjusted to get same level as the recorded maximum radiated EUT power by SA.

e) Radiated output power (Pout) is calculated with adjusted SG output (Psg) [dBm], reference antenna gain (Gref) [dBd] and cable loss between SG and reference antenna (Lcab) [dB].

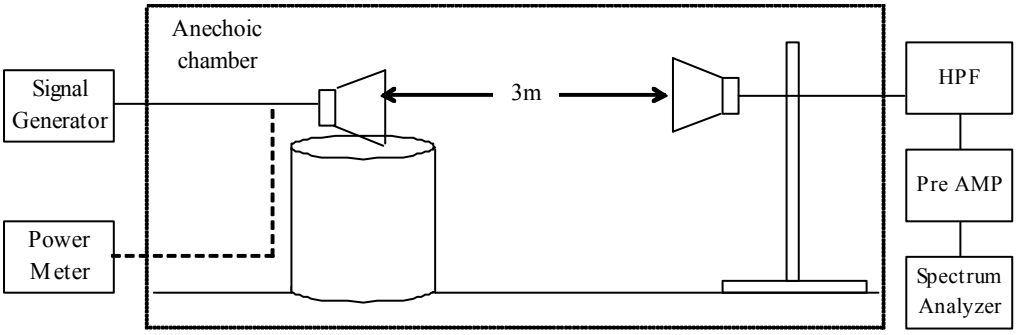
Pout [dBm e.r.p] = Psg + Gref + Lcab

Test Setup

[Measurement]



[Substitution]



Test Results

Bottom Channel (1013ch, Nominal Freq.:824.70MHz)

Measurement Frequency (MHz)	Measurement Bandwidth (MHz)	Emission Level(dBm)		Limit (dBm)	Result Pass/Fail
		Vertical	Horizontal		
1649.40	1	-41.8	-40.3	-13.0	Pass
2474.10	1	-45.9	-42.5	-13.0	Pass
3298.80	1	-33.3	-34.2	-13.0	Pass
4123.50	1	-39.3	-40.7	-13.0	Pass
4948.20	1	-46.2	-46.4	-13.0	Pass
5772.90	1	-41.5	-41.6	-13.0	Pass
6597.60	1	-38.3	-37.9	-13.0	Pass
7422.30	1	-37.8	-38.6	-13.0	Pass
8247.00	1	-40.8	-40.6	-13.0	Pass
others		none	none	-13.0	Pass

Middle Channel (383ch, Nominal Freq.:836.49MHz)

Measurement Frequency (MHz)	Measurement Bandwidth (MHz)	Emission Level(dBm)		Limit (dBm)	Result Pass/Fail
		Vertical	Horizontal		
1672.98	1	-41.9	-40.2	-13.0	Pass
2509.47	1	-41.0	-43.5	-13.0	Pass
3345.96	1	-31.2	-32.9	-13.0	Pass
4182.45	1	-36.0	-37.5	-13.0	Pass
5018.94	1	-44.5	-43.9	-13.0	Pass
5855.43	1	-39.3	-41.2	-13.0	Pass
6691.92	1	-35.1	-37.7	-13.0	Pass
7528.41	1	-32.9	-32.6	-13.0	Pass
8364.90	1	-41.6	-42.2	-13.0	Pass
others		none	none	-13.0	Pass

Top Channel (777ch, Nominal Freq.:848.31MHz)

Measurement Frequency (MHz)	Measurement Bandwidth (MHz)	Emission Level(dBm)		Limit (dBm)	Result Pass/Fail
		Vertical	Horizontal		
1696.62	1	-41.7	-39.2	-13.0	Pass
2544.93	1	-42.9	-43.8	-13.0	Pass
3393.24	1	-32.5	-33.0	-13.0	Pass
4241.55	1	-36.9	-35.9	-13.0	Pass
5089.86	1	-44.4	-44.2	-13.0	Pass
5938.17	1	-38.0	-39.5	-13.0	Pass
6786.48	1	-34.1	-36.4	-13.0	Pass
7634.79	1	-33.1	-33.3	-13.0	Pass
8483.10	1	-40.1	-39.1	-13.0	Pass
others		none	none	-13.0	Pass

Test Equipment Used

Equipment name	RFT ID No.
Spectrum Analyzer	TR06
Receive Antenna	DH02
Reference Antenna	DH01
Signal Generator	SG05
Power Meter	PM03
RF tester	RC02

Final Result

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

2.1.8 Band Edge Emissions

Reference Standard
FCC : Part22.917

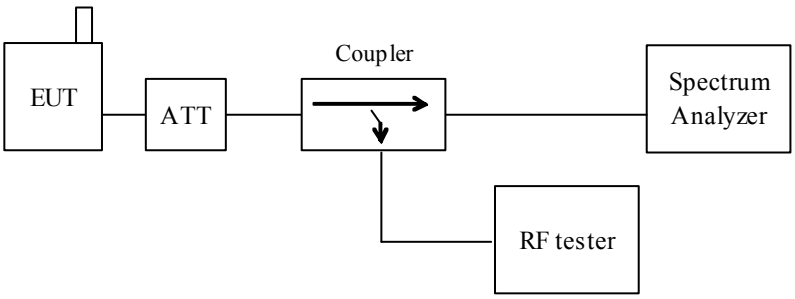
Test Conditions

Date:	2008/11/25
Ambient Temperature:	19 degC
Relative humidity:	48 %
Test Voltage:	3.7 V

Test Sample
Configuration Ⅱ

Test Method
a) EUT is connected to RF tester with Max transmitter power level.
b) Lower band edge level is measured in bottom channel transmission.
c) Higher band edge level is measured in top channel transmission.
d) 1% of band width is used for resolution band width for spectrum analyzer.

Test Setup



Test Results

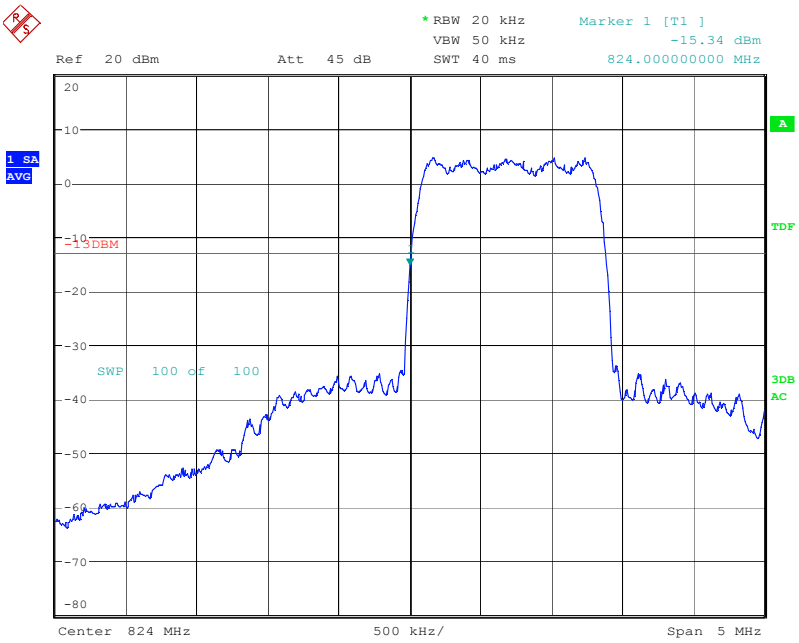
Bottom Band Edge

Measured Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Result
824.0	-15.3	-13	Passed

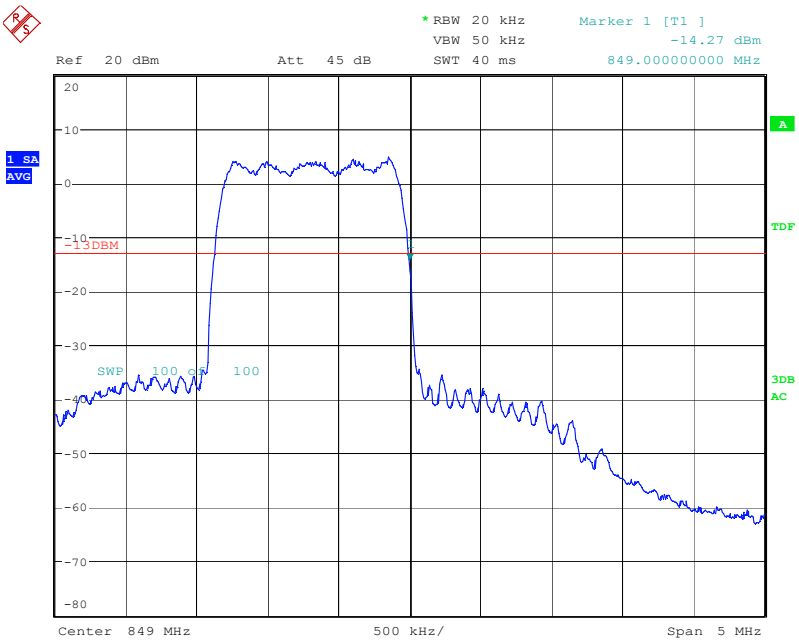
Top Band Edge

Measured Frequency (MHz)	Peak Level	Limit	Result
849.0	-14.2	-13	Passed

Graphical Data



Bottom band edge



Top band edge

Test Equipment Used

Equipment name	RFT ID No.
Spectrum Analyzer	TR06
RF tester	RC02

Final Result

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

2.1.9 Transmitter AC Power Line Emission requirement

Reference Standard
FCC : Part15.207

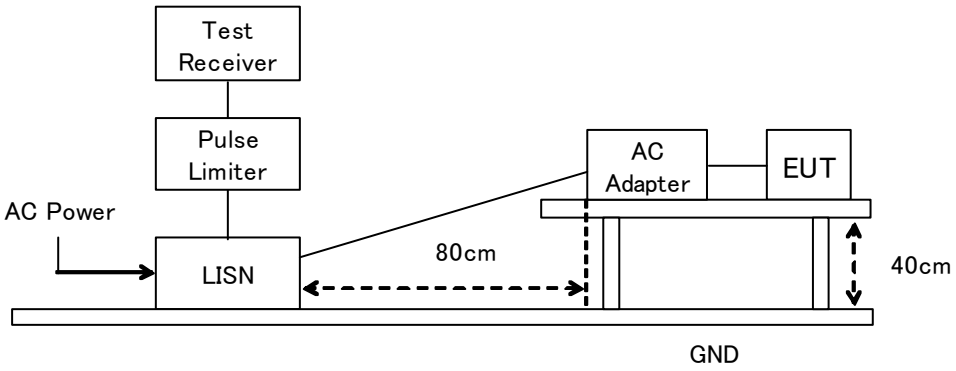
Test Conditions

Date:	2008/11/25
Ambient Temperature:	19 degC
Relative humidity:	48 %
Test Voltage:	3.7 V

Test Sample
Configuration I

Test Method
a) EUT is connected to RF tester with Max transmitter power level.
b) AC power is supplied to AC charger through LISN.
c) AC charger is connected to EUT.
d) AC Power Line emission is measured by EMI receiver.
Both Live/Neutral is measured emission level.

Test Setup



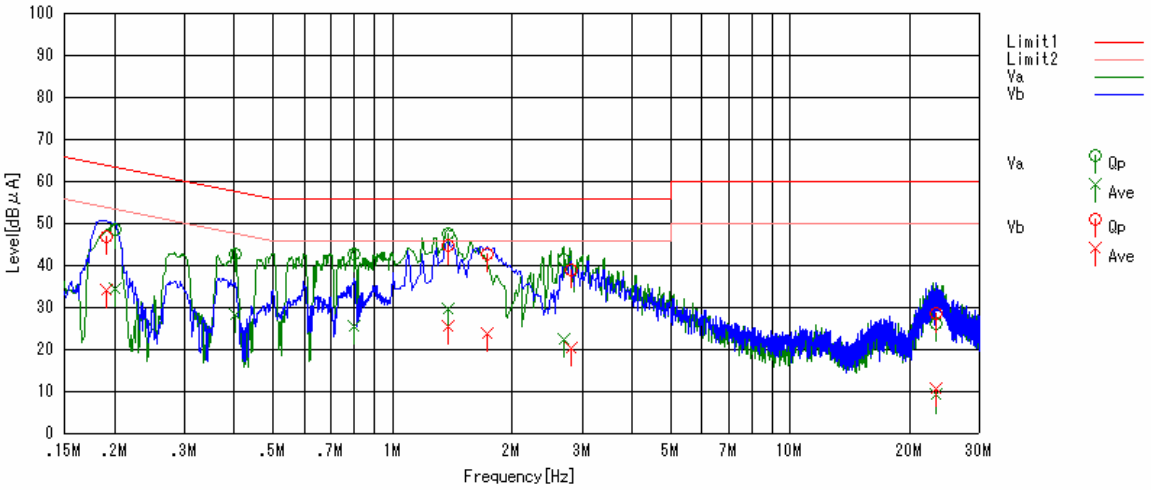
Limit

Frequency (MHz)	Limit QP (dBuV)	Limit AV (dBuV)
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

Test Results

Frequency (MHz)	Line (Live/Neutral)	QP Level (dBuV)	AVE Level (dBuV)	QP Limit (dBuV)	AVE Limit (dBuV)	Result
0.200	Live	48.5	34.6	63.6	53.6	Passed
0.401	Live	42.8	28.2	57.8	47.8	Passed
0.801	Live	42.7	25.6	56.0	46.0	Passed
1.379	Live	47.6	29.6	56.0	46.0	Passed
2.703	Live	41.5	22.4	56.0	46.0	Passed
23.286	Live	26.2	9.1	60.0	50.0	Passed
0.191	Neutral	47.0	34.2	64.0	54.0	Passed
1.378	Neutral	44.7	25.6	56.0	46.0	Passed
1.737	Neutral	42.7	23.9	56.0	46.0	Passed
2.806	Neutral	39.0	20.3	56.0	46.0	Passed
23.273	Neutral	28.5	10.6	60.0	50.0	Passed

Graphical Data



Test Equipment Used

Equipment name	RFT ID No.
EMI Receiver	TR06
LISN	LN05
RF tester	RC02

Final Result

The EUT met the requirements of the standard for this test

2.2 *Receiver requirement*

2.2.1 Receiver Spurious Emissions (Radiated)

Reference Standard
FCC : Part15.109

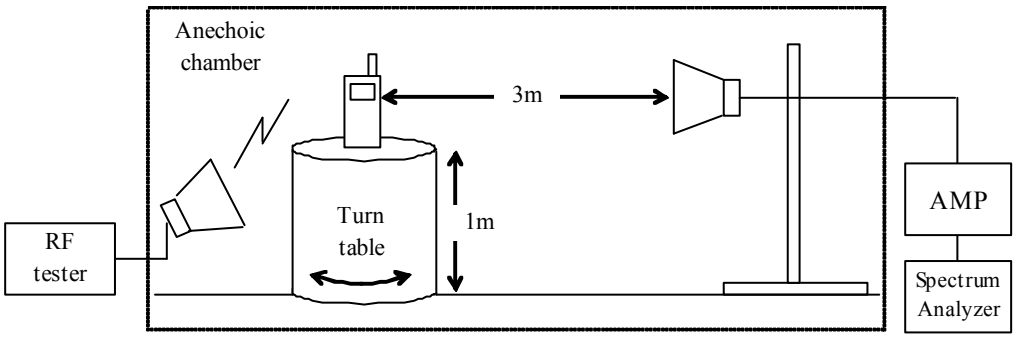
Test Conditions

Date:	2008/11/20
Ambient Temperature:	21 degC
Relative humidity:	33 %
Test Voltage:	3.7 V

Test Sample
Configuration I

Test Method
a) EUT is connected to RF tester with idle mode.
b) Radiated receiver spurious emission is received by receive antenna.
c) Turn table is rotated 360deg.
d) Maximum level of each spurious is measured by spectrum analyzer.
e) RBW of spectrum analyzer is set to 100kHz for 30 - 1000MHz, 1MHz for above 1GHz.
f) Level is measured with QP detect for 30 - 1000MHz, Average detect for above 1GHz.
g) EUT was placed at three different orientations (X, Y and Z axis) in order to find the worst orientation.

Test Setup



Limit

Frequency (MHz)	Distance (m)	Field strength (uV/m)	Field strength (dBuV/m)
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 - 960	3	200	46.0
above 960	3	500	54.0

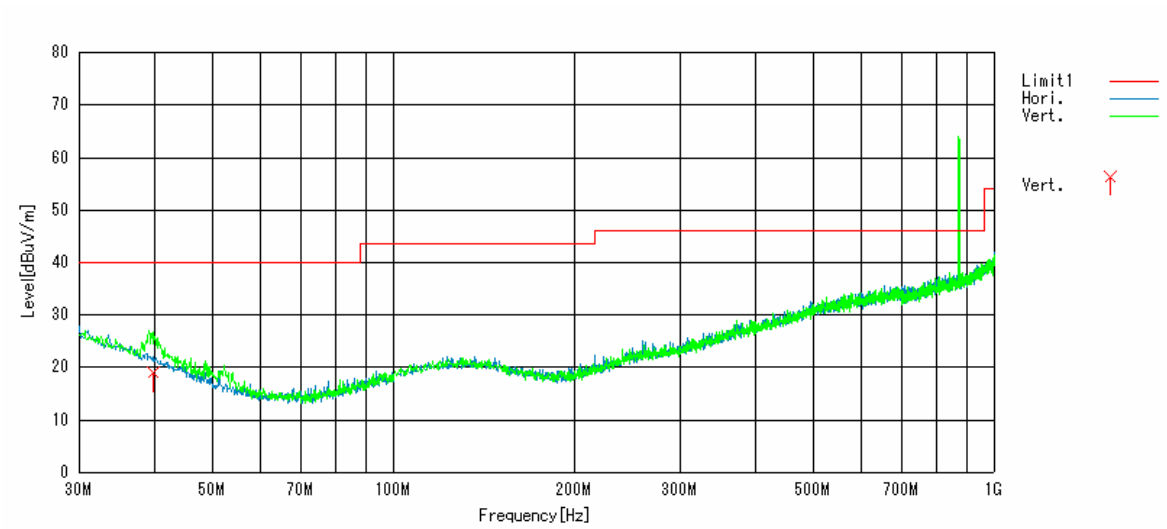
Test Results

Frequency (MHz)	Antenna	Field strength (dBuV/m)	Limit (dBuV/m)	Result
39.84	Vert	18.9	40.0	Passed

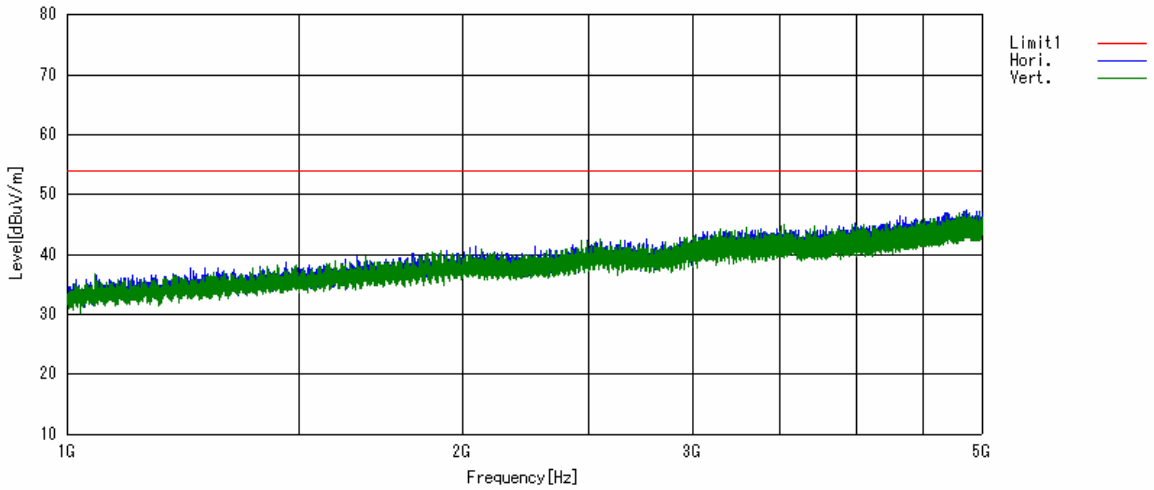
There is no other spurious.

The EUT could not achieved continuous receiving mode, therefore the measurement was carried out under idle mode. The EUT is registered to the RF tester.

Graphical Data



Note : A spectrum @881MHz is downlink signal from RF tester. This is used to set EUT in idle mode. This is not a spurious emission from EUT.



Test Equipment Used

Equipment name	RFT ID No.
Spectrum Analyzer	TR04, TR06
Receive Antenna	DH01, BA03
Pre-AMP	PR04, PR03
RF tester	RC02

Final Result

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

2.2.2 Receiver AC Power Line Emission requirement

Reference Standard
FCC : Part15.107

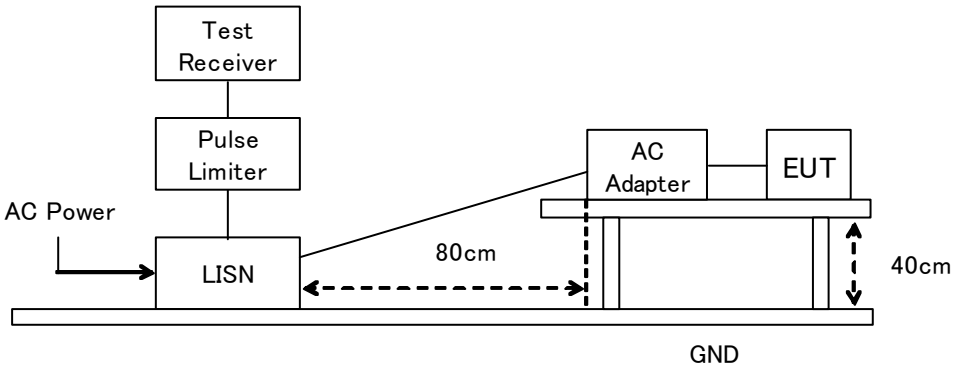
Test Conditions

Date:	2008/11/25
Ambient Temperature:	19 degC
Relative humidity:	48 %
Test Voltage:	3.7 V

Test Sample
Configuration I

Test Method
a) EUT is connected to RF tester with idle mode.
b) AC power is supplied to AC charger through LISN.
c) AC charger is connected to EUT.
d) AC Power Line emission is measured by EMI receiver.
Both Live/Neutral is measured emission level.

Test Setup



Limit

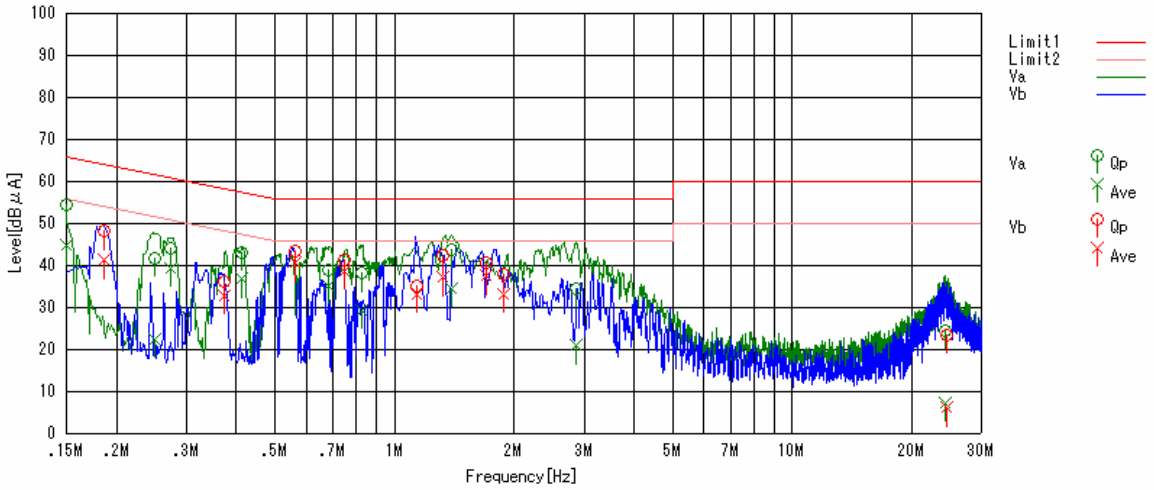
Frequency (MHz)	Limit QP (dBuV)	Limit AV (dBuV)
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5	56	46
5 - 30	60	50

Test Results

The EUT could not achieved continuous receiving mode, therefore the measurement was carried out under receiving ready condition of the EUT. The EUT is registered to the RF tester.

Frequency (MHz)	Line (Live/Neutral)	QP Level (dBuV)	AVE Level (dBuV)	QP Limit (dBuV)	AVE Limit (dBuV)	Result
0.150	Live	54.4	44.7	66.0	56.0	Passed
0.249	Live	41.8	22.3	61.8	51.8	Passed
0.274	Live	44.2	39.4	61.0	51.0	Passed
0.412	Live	43.2	36.7	57.6	47.6	Passed
0.682	Live	39.0	35.1	56.0	46.0	Passed
0.830	Live	38.1	29.4	56.0	46.0	Passed
1.386	Live	43.8	34.4	56.0	46.0	Passed
2.864	Live	34.5	20.8	56.0	46.0	Passed
24.288	Live	24.4	7.2	60.0	50.0	Passed
0.186	Neutral	48.2	41.2	64.2	54.2	Passed
0.373	Neutral	36.3	32.8	58.4	48.4	Passed
0.561	Neutral	43.3	40.5	56.0	46.0	Passed
0.751	Neutral	41.3	38.7	56.0	46.0	Passed
1.142	Neutral	35.0	33.1	56.0	46.0	Passed
1.319	Neutral	42.3	37.1	56.0	46.0	Passed
1.703	Neutral	40.8	37.4	56.0	46.0	Passed
1.889	Neutral	37.9	33.2	56.0	46.0	Passed
24.480	Neutral	23.5	6.0	60.0	50.0	Passed

Graphical Data



Test Equipment Used

Equipment name	RFT ID No.
EMI Receiver	TR06
LISN	LN05
RF tester	RC02

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	Anechoic Chamber (1st test room)	JSE	203397C	-	2008/7/4	2009/7/3
AC03	Anechoic Chamber (3rd test room)	JSE	-	-	2008/4/8	2009/4/7
BA03	Bilogical Antenna	CHASE	CBL6111	1309	2008/5/7	2009/5/6
BA04	Bilogical Antenna	SCHAFFNER	CA2855	2903	2008/1/4	2009/1/2
BI01	Biconical Antenna	SCHWARZBECK	VHA9103	2359	2008/7/1	2009/6/30
BI02	Biconical Antenna	SCHWARZBECK	VHA9103	2387	2008/7/1	2009/6/30
BRF1	Band Reject Filter (WCDMA2000)	M-City	BRF2000-06	VT0001	2008/4/1	2009/3/31
BRF2	Band Reject Filter (Bluetooth)	MICRO TRONICS	BRM50701	024	2008/4/1	2009/3/31
BRF3	Band Reject Filter (GSM900)	M-City	BRF0897-03	RF0005	2008/4/1	2009/3/31
BRF4	Band Reject Filter (WCDMA850)	M-City	BRF0835-01	RF0004	2008/4/1	2009/3/31
BRF5	Band Reject Filter (GSM1800)	M-City	BRF1750-01	RF0006-01	2008/9/8	2009/9/7
BRF6	Band Reject Filter (GSM1900)	M-City	BRF1880-02	RF0006-02	2008/9/8	2009/9/7
CL11	Antenna Cable for RE	RFT	-	-	2008/6/11	2009/6/10
CL21	RF Cable 0.5m	SUCOFLEX	SF104PE	48772/4PE	2008/6/10	2009/6/9
CL22	RF Cable 2.0m	SUCOFLEX	SF104	274755/4	2008/6/10	2009/6/9
CL23	RF Cable 0.5m	SUCOFLEX	SF104PE	48773/4PE	2008/6/10	2009/6/9
CL24	RF Cable 5.0m	SUCOFLEX	SF104PE	48775/4PE	2008/6/10	2009/6/9
CL25	RF Cable 10m	SUCOFLEX	SF104E	20752/4E	2008/5/9	2009/5/8
DC01	Directional Coupler	KRYTAR	1850	77202	2008/5/9	2009/5/8
HC01	Harmonic Current Analysis system	NF	ES4153	9075640	2008/5/20	2009/5/19
HPF1	High Pass Filter (3500MHz)	TOKIMEC	TF323DCA	603	2008/6/9	2009/6/8
HPF2	High Pass Filter (900MHz)	M-City	HPF0900-01	RF0003-01	2008/6/9	2009/6/8
HPF3	High Pass Filter (2500MHz)	M-City	HPF2500-01	RF0006-03	2008/9/8	2009/9/7
LA01	Logperiodic Antenna	SCHWARZBECK	USLP 9143	338	2008/7/1	2009/6/30
LA02	Logperiodic Antenna	SCHWARZBECK	USLP 9143	339	2008/7/1	2009/6/30
LN02	LISN (3ph 32A)	SCHWARZBECK	NSLK8128	8128-212	2008/1/29	2009/1/27
LN05	LISN	Kyoritsu	KNW-407	8-1773-2	2008/5/21	2009/5/20
LN06	LISN	Kyoritsu	KNW-407	8-1773-3	2008/5/12	2009/5/11
LN11	LISN (for communication line)	FCC	FCC-TLISN-T4-02	20330	2008/1/10	2009/1/8

RFT ID No.	Kind of Equipment and Precision	Manufacturer	Model No.	Serial Number	Calibration Date	Calibrated until
LN13	LISN	Kyoritsu	KNW-407F	8-2003-3	2008/7/14	2009/7/13
LP01	Loop Antenna	EMCO	6502	3436	2008/6/10	2009/6/9
PL06	Pulse Limiter	PMM	PL-01	0000J10109	2008/1/17	2009/1/15
PM03	Power Meter	Anritsu	ML2438A	99070001	2008/7/24	2009/7/23
PR03	Pre. Amplifier	Anritsu	MH648A	M41984	2008/5/12	2009/5/11
PR04	Pre. Amplifier (1-26G)	RFT	LNP126	060208-01	2008/6/10	2009/6/9
PR08	Pre. Amplifier	Sonoma Instrument	315	263504	2008/1/10	2009/1/9
PU03	Power Sensor	Anritsu	MA2472A	990103	2008/7/24	2009/7/23
SA06	Spectrum Analyzer (F/W: 3.60 SP1)	Rohde & Schwarz	FSP40	100071	2008/10/31	2009/10/30
SH01	Standard Horn Antenna (18-26G)	A.H. Systems	SAS-572	208	2008/7/23	2011/7/22
SH02	Standard Horn Antenna (18-26G)	A.H. Systems	SAS-572	209	2008/7/23	2011/7/22
TR04	Test Receiver (F/W : 3.82 SP1)	Rohde & Schwarz	ESCI	100447	2008/9/16	2009/9/15
TR06	Test Receiver (F/W : 3.93 SP2)	Rohde & Schwarz	ESU26	100002	2008/9/2	2009/9/1
DH01	DRG Horn Antenna	A.H. Systems	SAS-571	785	2008/1/31	2010/1/29
DH02	DRG Horn Antenna	A.H. Systems	SAS-200/571	239	2007/4/20	2009/4/18
DH04	DRB Horn Antenna	Schwarzbeck	BBHA9120B	2C-005	2008/2/13	2010/2/11
RC02	Radio communication tester (F/W : V5.00)	Rohde & Schwarz	CMU200	105097	2008/9/17	2009/9/16
RC03	Radio communication tester (F/W : 10.20 #005)	Anritsu	MT8820B	6200636657	2008/6/3	2009/6/2
SG04	Signal Generator	Rohde & Schwarz	SMG	51400285	2008/3/26	2009/3/25
SG05	Signal Generator	Rohde & Schwarz	SMR20	100905	2008/6/10	2009/6/9
SG07	Signal Generator	Agilent Technologies	N5181A	MY47070251	2008/5/12	2009/5/11
TC01	Temperature Chamber	ESPEC	SH-641	92000964	2008/11/17	2009/11/16
TH01	Temp/Humi meter	SATO	HIGHEST II	77127	2008/8/27	2009/8/26
TH02	Temp/Humi meter	SATO	HIGHEST II	77391	2008/8/27	2009/8/26
TH03	Temp/Humi meter	ESPEC	EX-2727	2053A	2008/8/27	2009/8/26
TH04	Temp/Humi meter	TESTO	608-H2	30033792	2008/10/20	2009/10/19

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.