



(2004)量认(国)字(H2402)号

No.L1659

FCC Part 15B TEST REPORT

of

GSM900/1800/1900 GPRS Mobile Phone

FCC ID: S5D-KMP6J1CT1

Model No.: NEC N5106

Serial No.: 1411610050003684

Report No.: FCC06-8090

Date: November 20, 2006

Prepared for

Wuhan NEC Mobile Communication Co., Ltd.

Building No.3, Optics Valley Construction & Industrial Park, East Lake New
Technology Development Zone, Wuhan, Hubei 430223, China

Prepared by

ShenZhen Electronic Product Quality Testing Center

Electronic Testing Building, Shahe Road, Xili, Nanshan District, ShenZhen, 518055, P.R.China
Tel: 86 755 26627338 Fax: 86 755 26627238



This test report consists of 26 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by SET. The test results in the report only apply to the tested sample. The test report shall be invalid without all the signatures of testing engineers, reviewer and approver.

Table of Contents

1	Test Report Certification	3
2	General Information	4
2.1	Description of EUT	4
2.2	Objective	5
2.3	Test Standards and Results	5
2.4	List of Equipments Used	5
2.5	Test Facility	6
2.6	Environmental conditions	6
3	Conducted Emission Test	7
3.1	Limits of Conducted Emission	7
3.2	Test Procedure	7
3.3	Test Setup	8
3.4	EUT Setup and Operating Conditions	8
3.5	Test Results	9
4	Radiated Emission Test	13
4.1	Limits of Radiated Emission	13
4.2	Test Procedure	13
4.3	Test Setup	14
4.4	EUT Setup and Operating Conditions	14
4.5	Test Results	14
	Appendix I : Photographs of the EUT	18
	Appendix II : Photographs of the Test Configuration	25

1 Test Report Certification

Product: GSM900/1800/1900 GPRS Mobile Phone

FCC ID: S5D-KMP6J1CT1

Model No.: NEC N5106

Applicant: Wuhan NEC Mobile Communication Co., Ltd.

Applicant Address: Building No.3, Optics Valley Construction & Industrial Park, East Lake New Technology Development Zone, Wuhan, Hubei 430223, China

Manufacturer: Wuhan NEC Mobile Communication Co., Ltd.

Manufacturer Address: Building No.3, Optics Valley Construction & Industrial Park, East Lake New Technology Development Zone, Wuhan, Hubei 430223, China

Test Standards: 47 CFR Part 15, Subpart B, Class B

Test Result: PASS

We, Shenzhen Electronic Product Quality Testing Center, hereby certify that the submitted samples of the above item, as detailed in chapter 2.1 of this report, has been tested in our facility. The test record, data evaluation and test configuration represented herein are true and accurate accounts of measurements of the sample's EMC characteristics under the conditions herein specified.

Tested by: Lin Xingsun, Date: Nov. 26. 2006

Lin Xingsun



Checked by: Smart Li, Date: Nov. 29. 2006

Smart Li

Approved by: Wu Li An, Date: Nov. 30. 2006

Wu Li An

2 General Information

2.1 Description of EUT

EUT1	
Description:	GSM900/1800/1900 GPRS Mobile Phone
Model No.:	NEC N5106
Serial No.:	1411610050003684
Hardware Version:	P2
Software Version:	NEC-N5106-VER-01.14-WAP-2.0.9-MMS-2.0.3-JAVA-1.6.0
EUT2	
Description:	Lithium-ion Battery
Model No.:	140-399BN243
Serial No.:	B6IAZ0710A
Manufacturer:	SANYO Energy (Hong Kong) Co., Ltd. Beijing Rep. Office
Capacitance:	830mAh
Rated Voltage:	3.7V
Extreme Voltage:	High, 4.2V; Low, 3.6V
EUT3	
Description:	AC/DC Adapter (Charger)
Model No.:	140-3S6BN234
Serial No.:	S6JAP1110F
Manufacturer:	Tianjin Mitsumi Electric Co., Ltd.
Rated Input:	a.c. 100-240V, 50/60Hz
Rated Output:	d.c. 5.5Vdc, 500mA
Length of DC cable:	155cm

NOTE:

1. The EUT consists of Hand Telephone Set and normal options: Lithium Battery and Charger, as listed above.
2. The EUT can serve as a computer external storage device, providing a USB port (shared with the Charger port) to connect to a computer.
3. The EUT provides Bluetooth wireless interface operating at 2.4GHz ISM band.
4. Please refer to Appendix I for the photographs of the EUT. For a more detailed features description about the EUT, please refer to User's Manual.

2.2 Objective

Perform EMC test according to FCC Part 15 Subpart B (Class B digital device).

2.3 Test Standards and Results

The EUT has been tested according to 47 CFR Part 15, Radio Frequency Devices (10-1-05 Edition).

Test items and the results are as bellow:

No	FCC Rules	Test Type	Result	Test Date
1	§15.107	Conducted Emission (Mobile mode)	PASS	2006.11.13
2		Conducted Emission (USB mode)	PASS	2006.11.13
3	§15.109	Radiated Emission (Mobile mode)	PASS	2006.11.18
4		Radiated Emission (USB mode)	PASS	2006.11.18

2.4 List of Equipments Used

Description	Manufacturer	Model No.	Cal. Due Date	Serial No.
Test Receiver	Schwarzbeck	FCKL1528	2007.06.05	A0304230
Test Receiver	Rohde & Schwarz	ESIB26	2007.06.05	A0304218
LISN	Schwarzbeck	NSLK8127	2007.06.05	A0304233
Ultra Broadband Ant.	Rohde & Schwarz	HL562	2007.06.05	A0304224
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	2007.06.05	A0304212
Mobile Phone Tester	Willtek	4403	2007.02.10	0811211
3G Communication Antenna	European Antennas	PSA 75301R/170	2007.05.10	A0304213
Shield Room	Nanbo Tech	Site 3	2007.03.18	A9901141
Anechoic Chamber	Albatross	EMC12.8×6.8×6.4(m)	2007.04.10	A0304210

2.5 Test Facility

Shenzhen Electronic Product Quality Testing Center (SET) is a third party testing organization accredited by China National Accreditation Board for Laboratories (CNAL) according to ISO/IEC 17025. The accreditation certificate number is **L1659**.

The EMC chamber site No.1 (EMC12.8×6.8×6.4(m)), and the radiated and conducted Emission test equipments of SET are constructed and calibrated to meet the FCC requirements ANSI C63.4:2001 and CISPR 22/EN 55022. The FCC Registration Number is **261302**.

The EMC chamber site No.1 (EMC12.8×6.8×6.4(m)) also complies with Canada standard RSS 212, and acceptable to Industry Canada for the performance of radiated measurements. The Industry Canada Registration Number is **IC 5915**.

2.6 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

- Temperature: 15-35°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3 Conducted Emission Test

3.1 Limits of Conducted Emission

According to FCC §15.107, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V), Class B digital device	
	Quasi-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

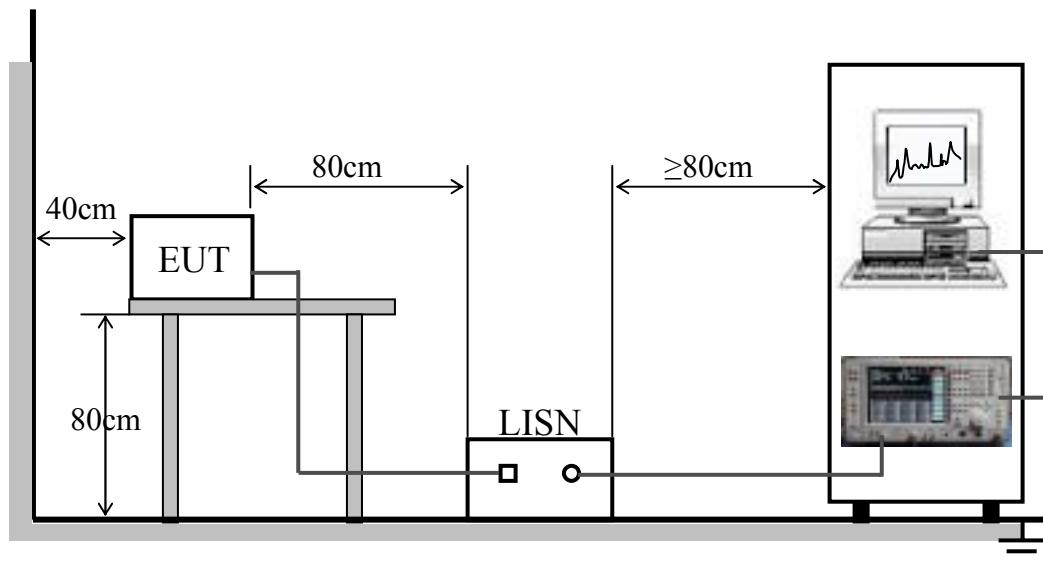
NOTE:

1. The lower limit shall apply at the band edges.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.2 Test Procedure

- a. The EUT was placed on a 0.8m high insulating table and kept 0.4 meters from the conducting wall of shielded room.
- b. The EUT was connected to the power mains through a line impedance stabilization network (LISN). The LISN provide 50 Ω /50 μ H of coupling impedance for the measuring instrument.
- c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- d. The frequency range from 150 kHz to 30 MHz was searched using CISPR Quasi-Peak and Average detector.

3.3 Test Setup



For the actual test configuration, please refer to the related item - Photographs of the Test Configuration.

3.4 EUT Setup and Operating Conditions

The EUT was tested both at Mobile mode and USB mode.

Mobile mode: At this mode the EUT served as a mobile phone.

The EUT configuration of the emission tests was MS + Battery + Charger + Bluetooth Headset. During the measurement, the EUT was charging empty battery. The charger was powered by 120V 60Hz AC mains supply.

A communication link was also established between the MS and a System Simulator (SS). The MS operated at PCS 1900MHz mid ARFCN (661) and maximum output power (level 0).

The Bluetooth function was active and an audio link was established between the EUT and a Bluetooth headset.

USB mode: At this mode the EUT served as a computer peripheral.

The EUT was connected to a USB port of a personal computer (Manufacturer: Lenovo; Model: M6400). During the measurement, the EUT was transmitting and receiving files continuously.

The charger of the notebook computer was powered by 120V 60Hz AC mains supply.

3.5 Test Results

I. Mobile mode

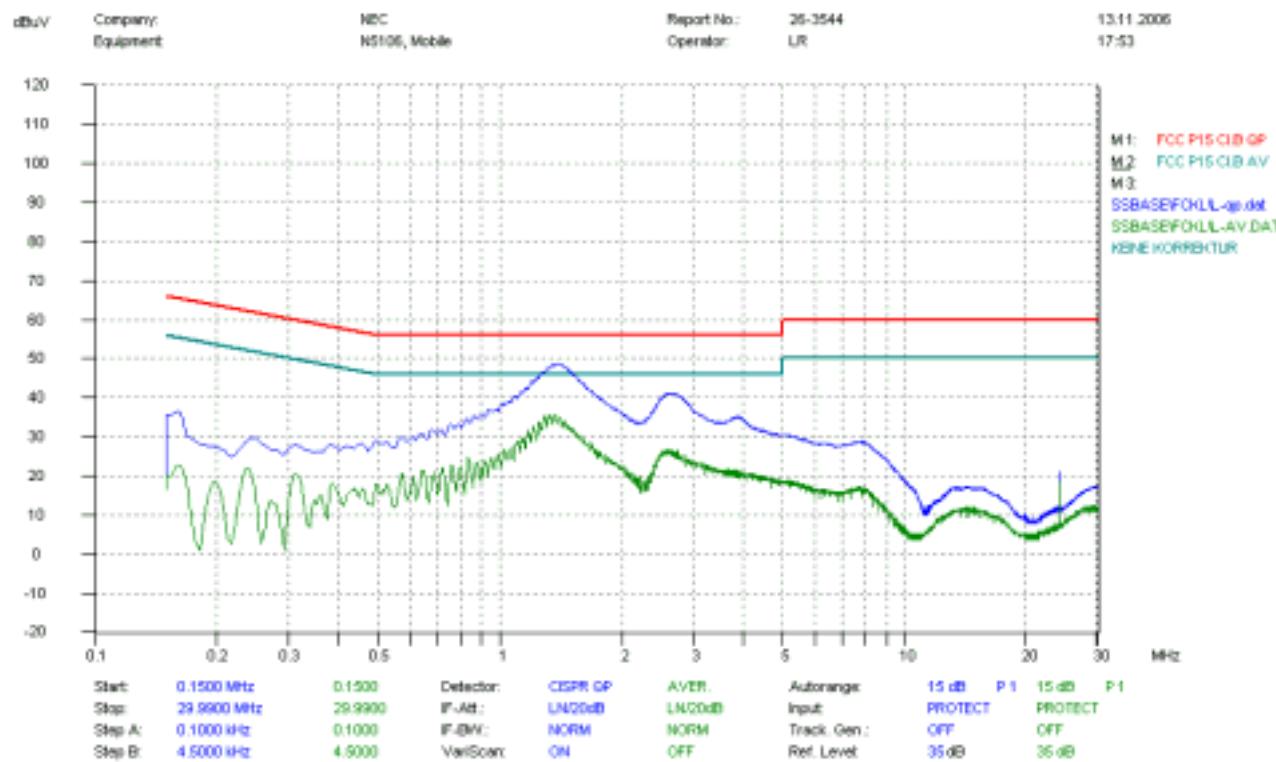
No.	Freq. (MHz)	Limit Value (dB μ V)		Emission Level (dB μ V)	
		QP	AV	QP	AV
1	0.1590	65.5	55.5	36.7	22.8
2	0.2440	62.0	52.0	29.8	21.9
3	1.3705	56.0	46.0	48.6	35.7
4	2.6235	56.0	46.0	41.3	26.9
5	3.8305	56.0	46.0	35.2	22.0
6	7.7950	60.0	50.0	28.8	17.3

NOTE:

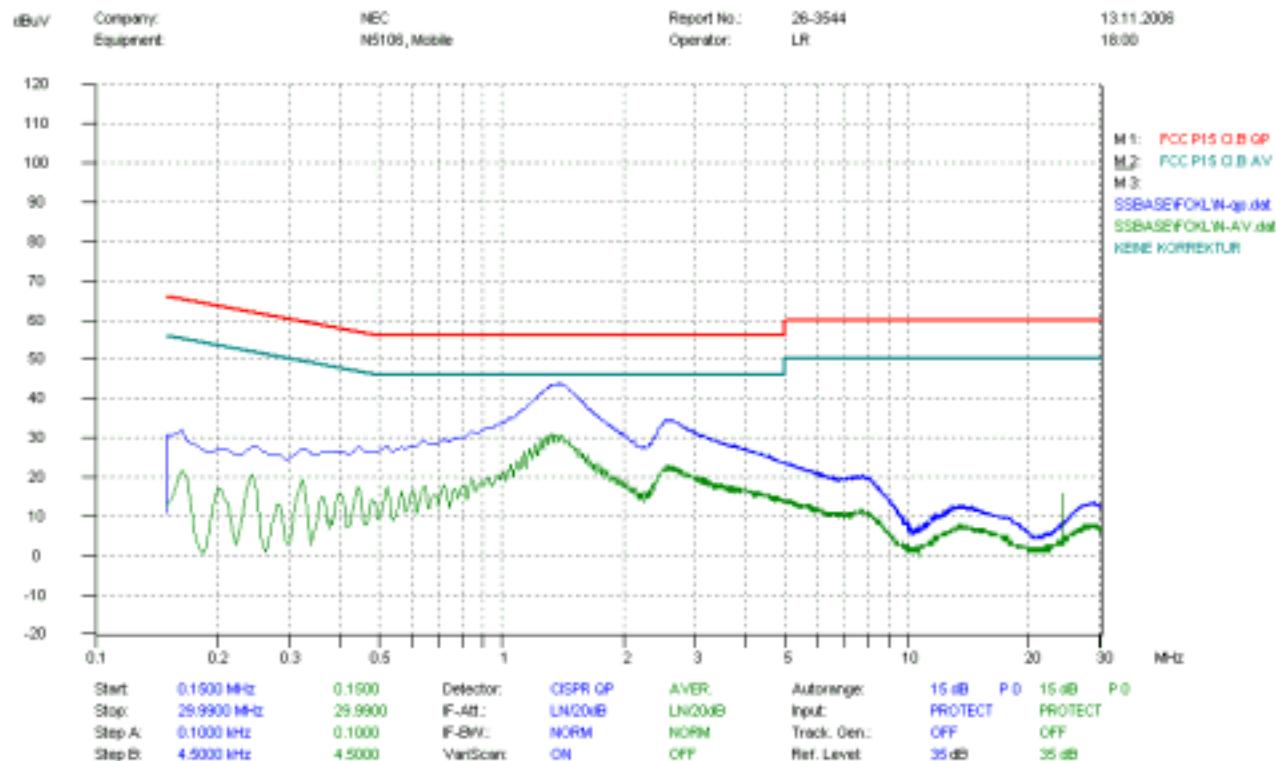
1. QP and AV are abbreviations of the quasi-peak and average individually.
2. If the emission levels measured with QP detector are lower than AV limits, there is unnecessary to measure with AV detector.
3. The emission levels recorded above is the larger ones of both L phase and N phase.

Test Plots

1. Mains terminal disturbance voltage, L phase



2. Mains terminal disturbance voltage, N phase

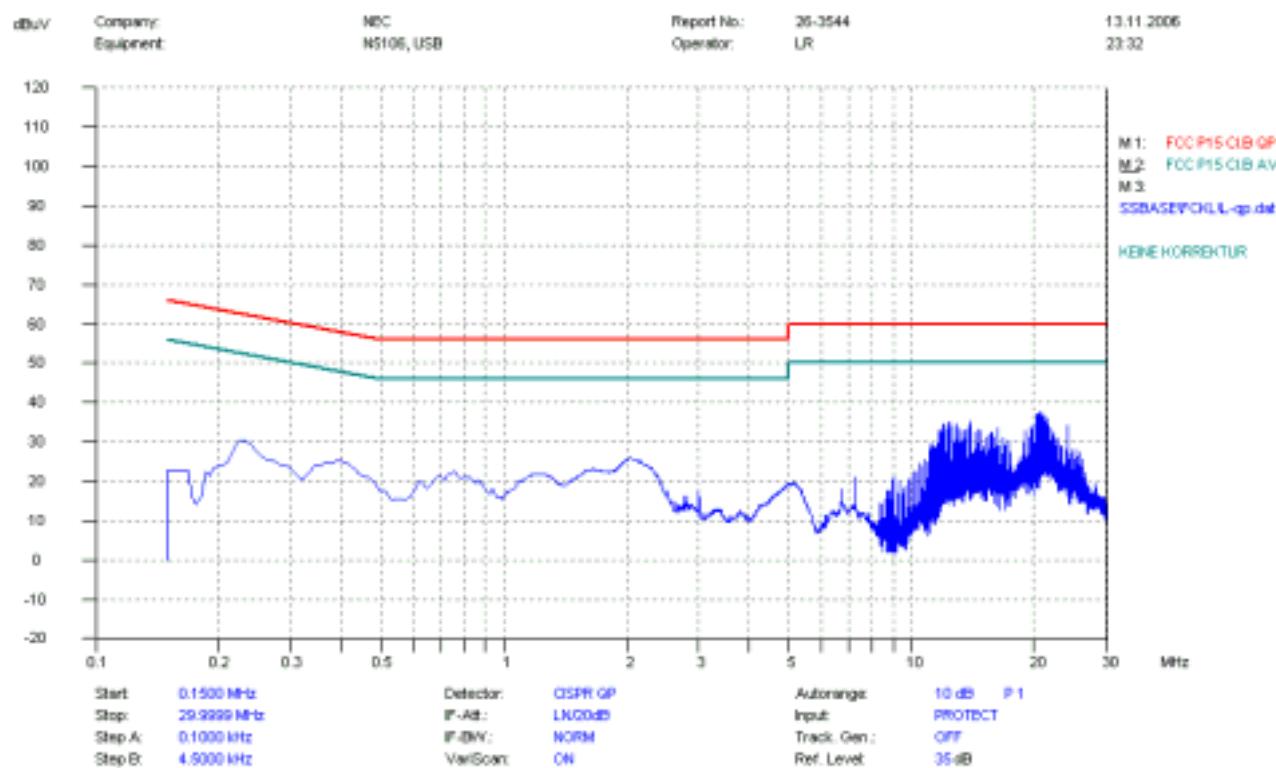
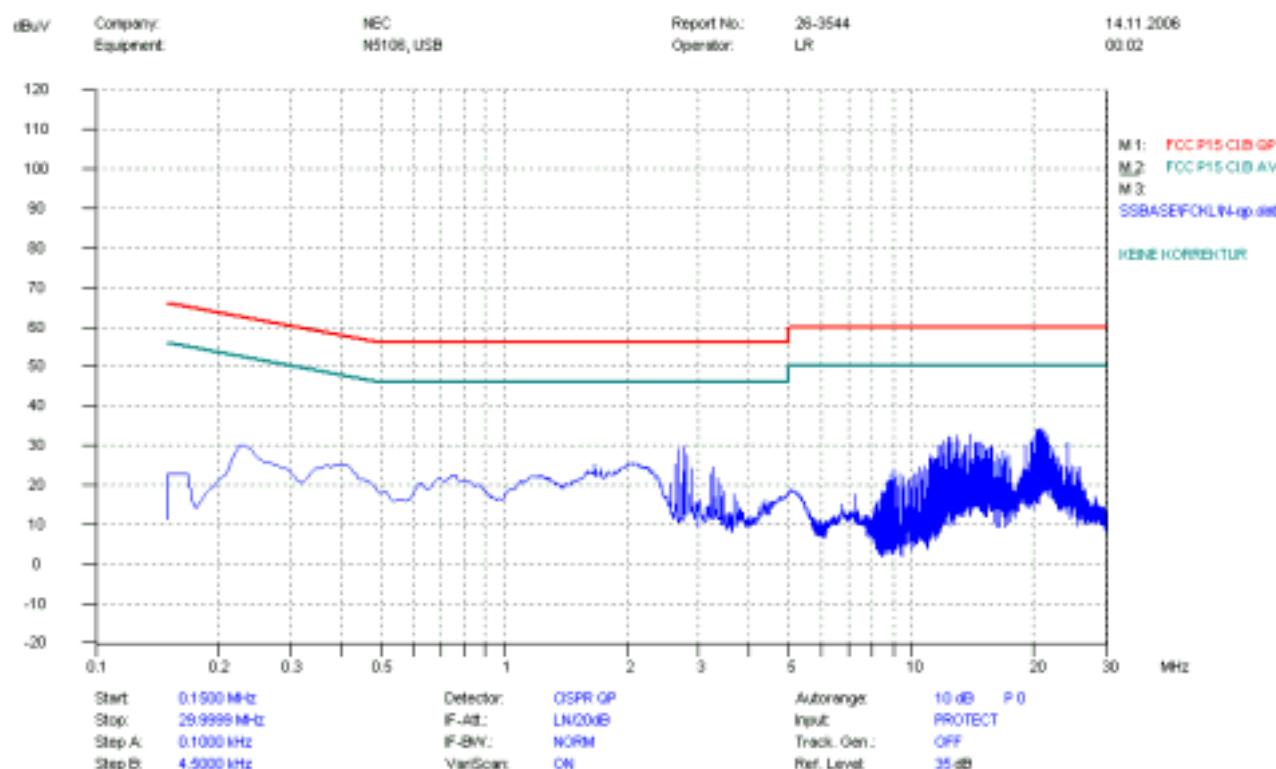


II. USB mode

No.	Freq. (MHz)	Limit Value (dB μ V)		Emission Level (dB μ V)	
		QP	AV	QP	AV
1	0.2265	62.6	52.6	30.3	--
2	0.3930	58.0	48.0	25.2	--
3	2.0400	56.0	46.0	26.0	--
4	13.8855	60.0	50.0	35.0	--
5	20.6700	60.0	50.0	37.6	--

NOTE:

1. QP and AV are abbreviations of the quasi-peak and average individually.
2. If the emission levels measured with QP detector are lower than AV limits, there is unnecessary to measure with AV detector.
3. The emission levels recorded above is the larger ones of both L phase and N phase.

Test Plots**1. Mains terminal disturbance voltage, L phase****2. Mains terminal disturbance voltage, N phase**

4 Radiated Emission Test

4.1 Limits of Radiated Emission

According to FCC §15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of Emission (MHz)	Field Strength (μ V/m)	Field Strength (dB μ V/m)
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

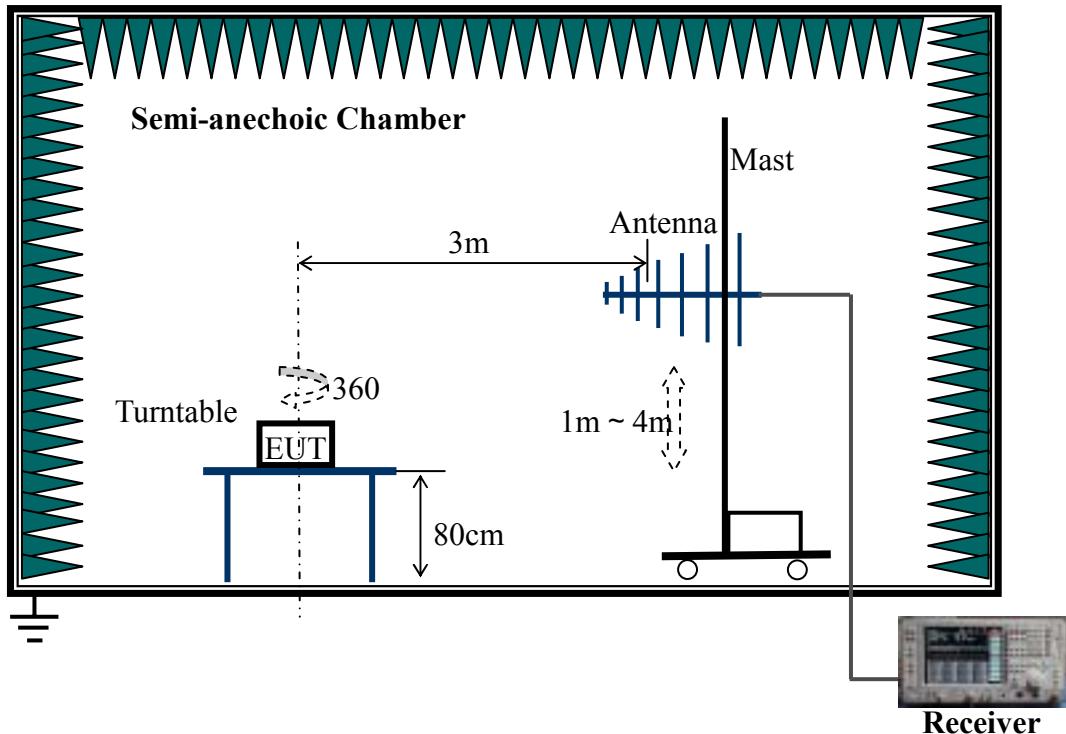
NOTE:

1. Field Strength (dB μ V/m) = $20 \log_{10}$ Field Strength (μ V/m).
2. In the emission tables above, the tighter limit applies at the band edges.

4.2 Test Procedure

- a. The EUT was placed on the top of a ratable 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detector Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emission that did not have 10 dB margins would be retested one by one using the quasi-peak method.

4.3 Test Setup



For the actual test configuration, please refer to the related item-Photographs of the Test Configuration.

4.4 EUT Setup and Operating Conditions

Same as 3.4

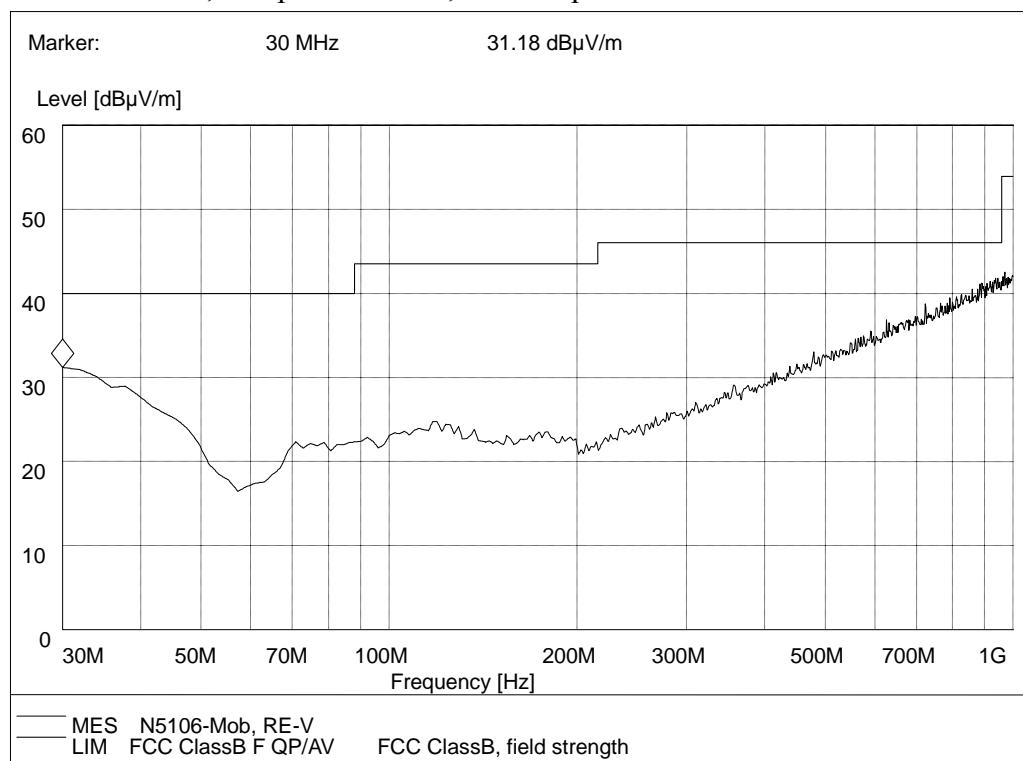
4.5 Test Results

I. Mobile mode

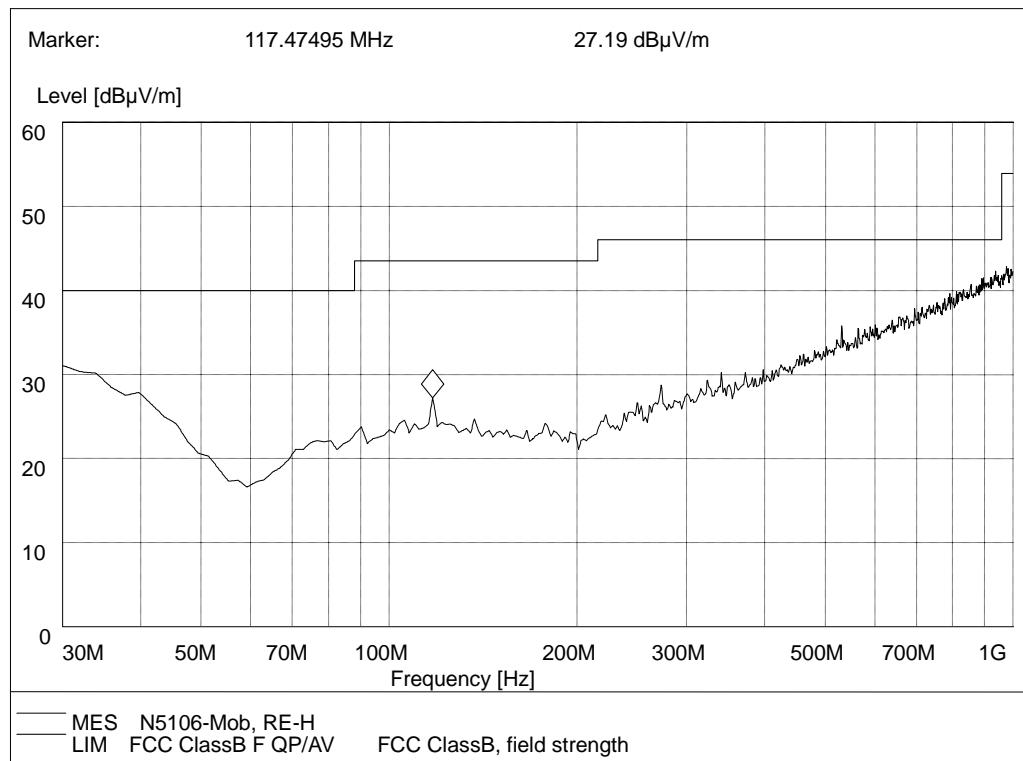
No.	Frequency (MHz)	Antenna Polarization	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	34.56	Vertical	40	23.96
2	40.28	Vertical	40	23.79
3	250.76	Vertical	46	21.52
4	30.12	Horizontal	40	20.89
5	117.48	Horizontal	43.5	25.19
6	223.52	Horizontal	46	22.30

Test Plots

1. Radiation disturbances, maxpeak detector, antenna polarization: Vertical



2. Radiation disturbances, maxpeak detector, antenna polarization: Horizontal

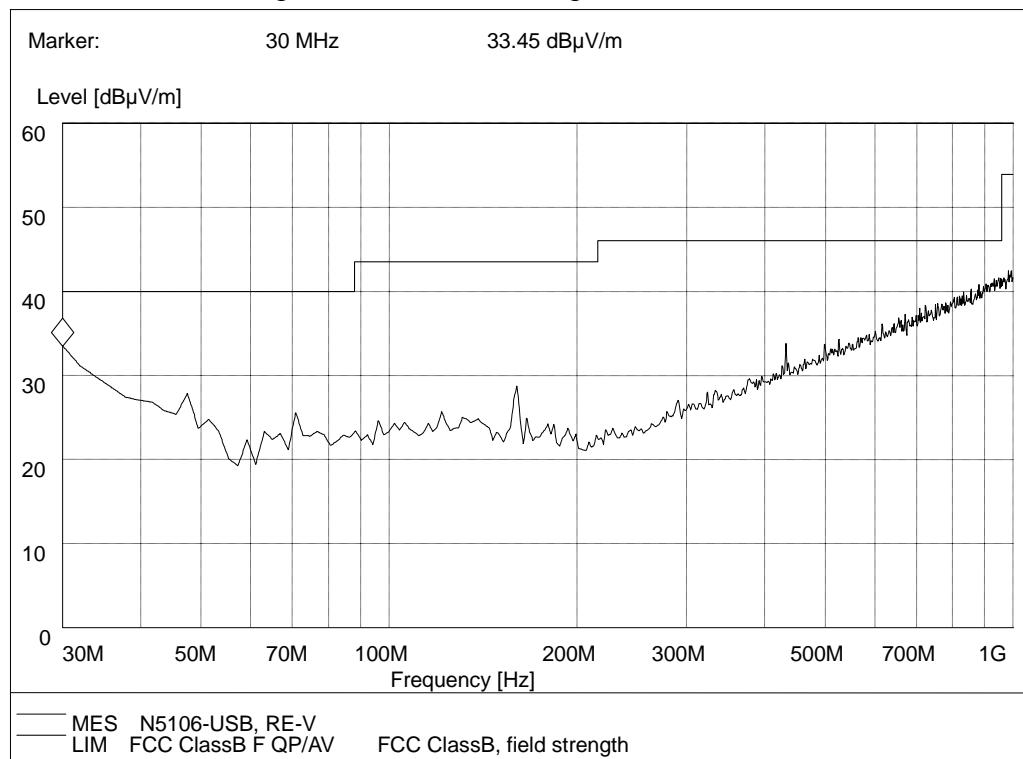


II. USB mode

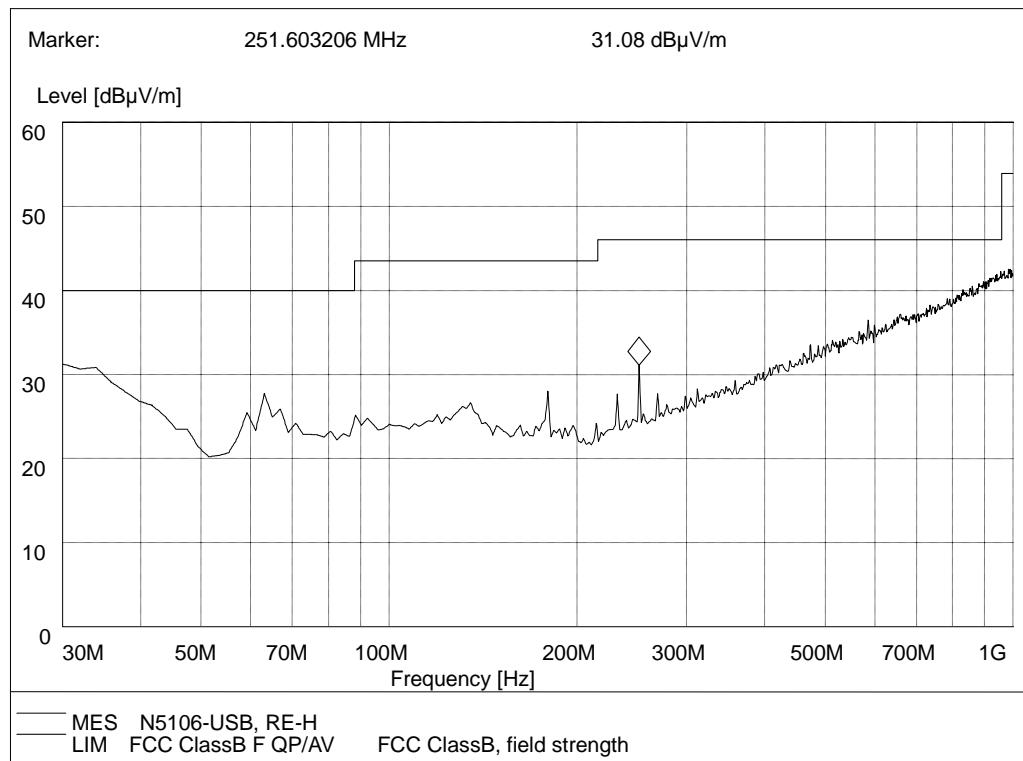
No.	Frequency (MHz)	Antenna Polarization	QP Limits (dB μ V/m)	Emission Level (dB μ V/m)
1	30.24	Vertical	40	31.60
2	48.00	Vertical	40	26.64
3	72.00	Vertical	40	25.95
4	432.00	Vertical	46	28.75
5	64.52	Horizontal	40	27.23
6	135.28	Horizontal	43.5	24.50
7	251.44	Horizontal	46	30.61

Test Plots

1. Radiation disturbances, maxpeak detector, antenna polarization: Vertical



2. Radiation disturbances, maxpeak detector, antenna polarization: Horizontal



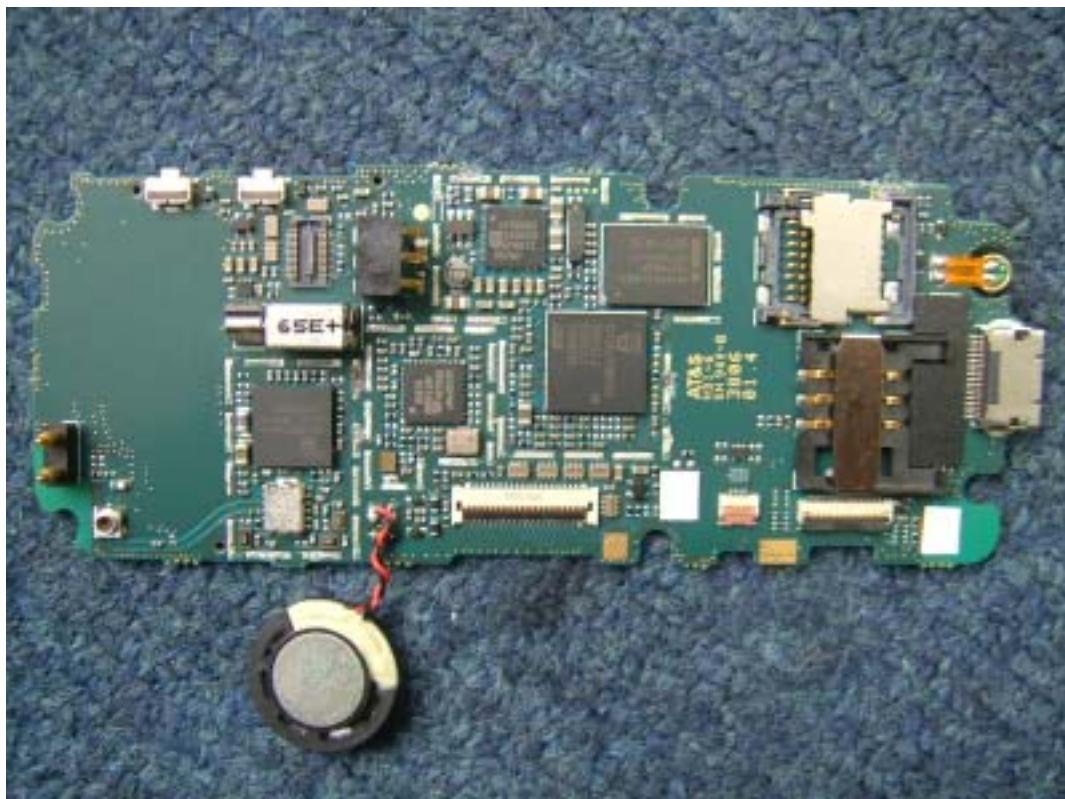
Appendix I : Photographs of the EUT

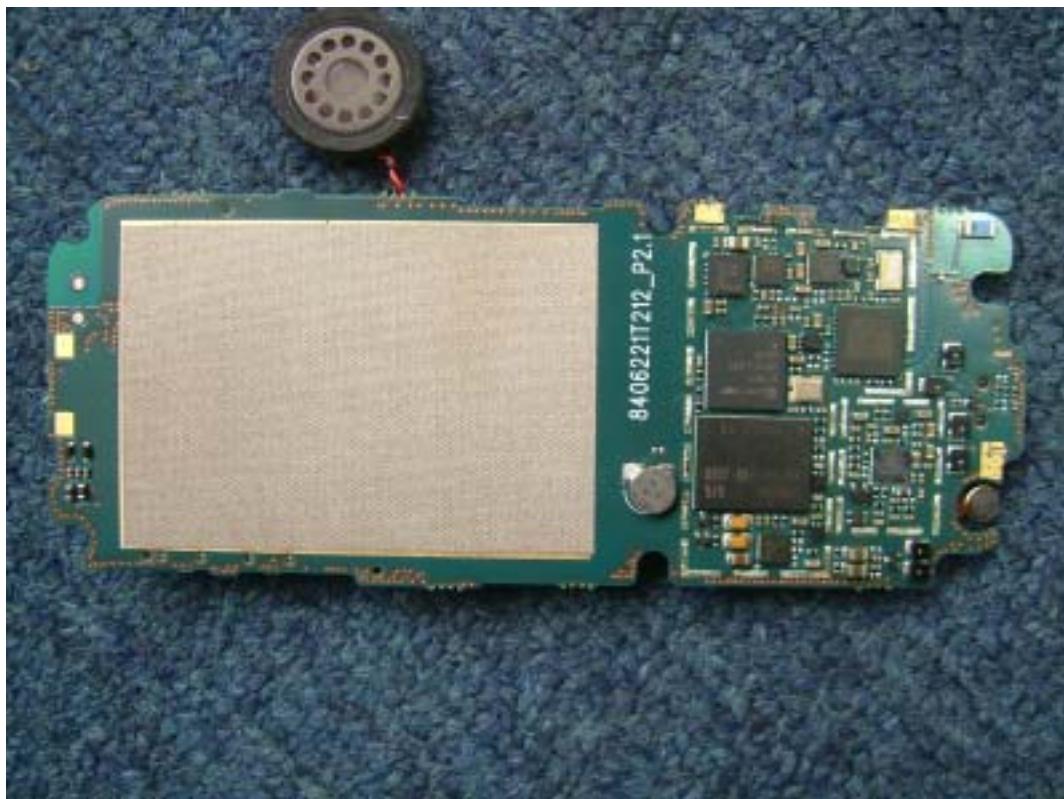
1. Appearance of the MS

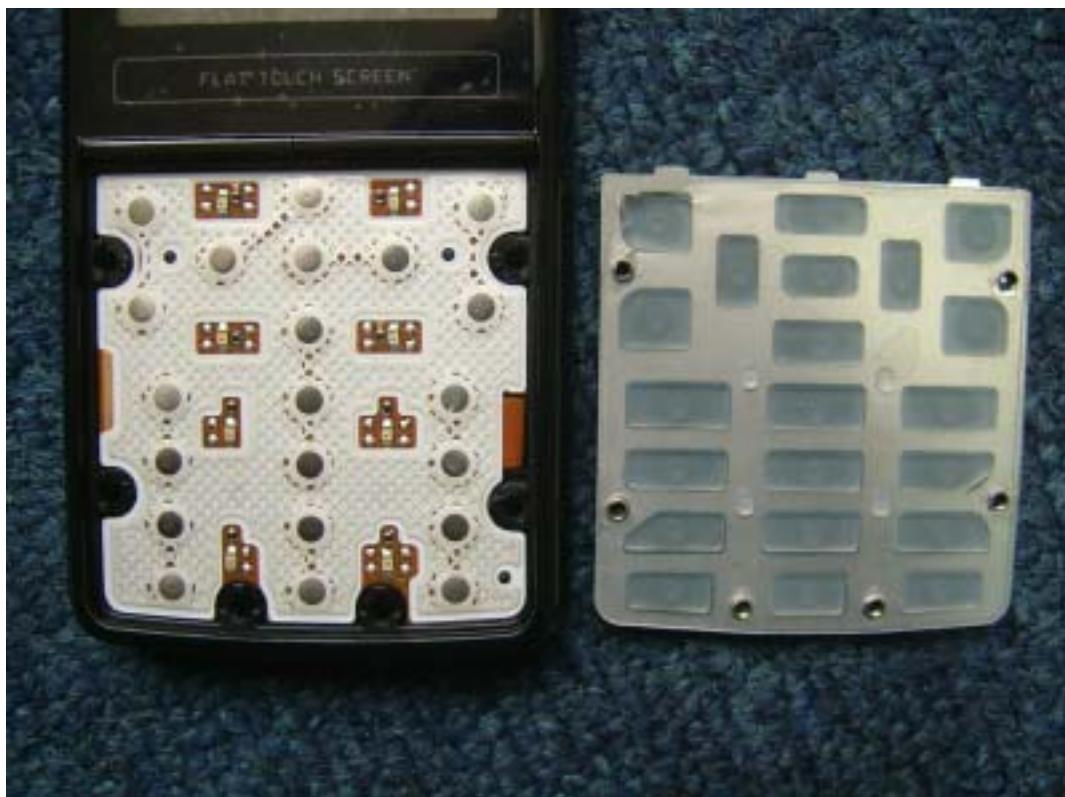


2. Inside of the MS







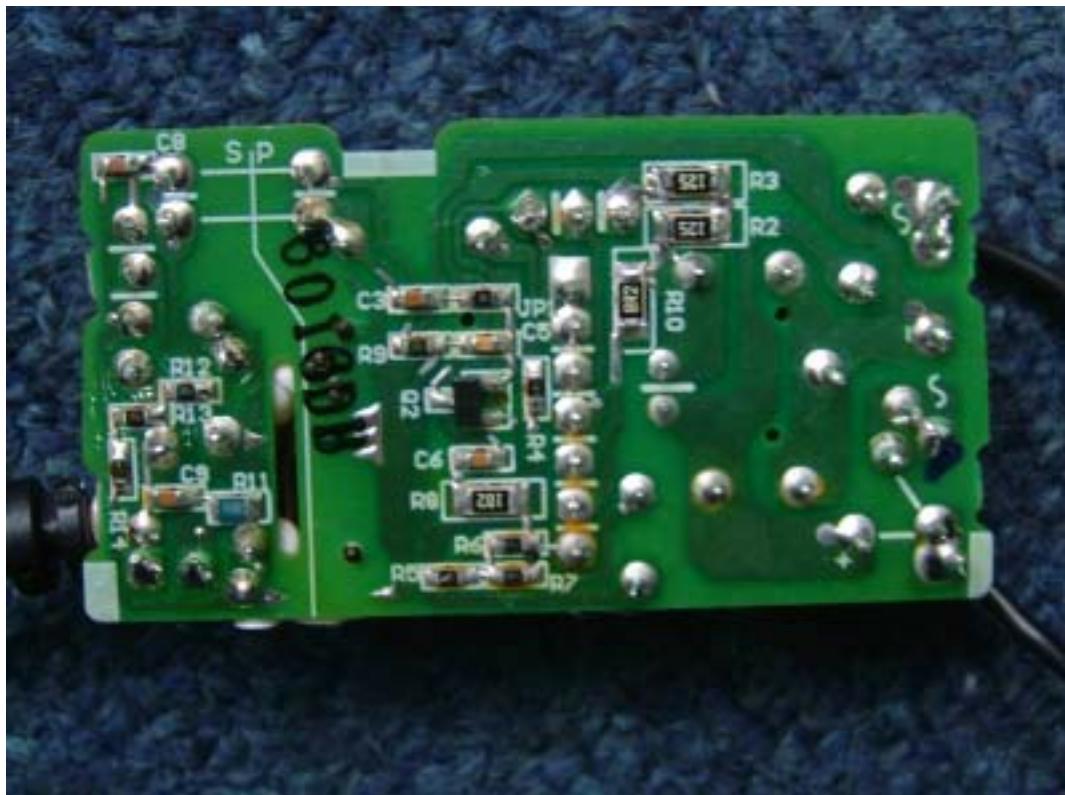


3. Appearance the Charger



4. Inside of the Charger





Appendix II : Photographs of the Test Configuration

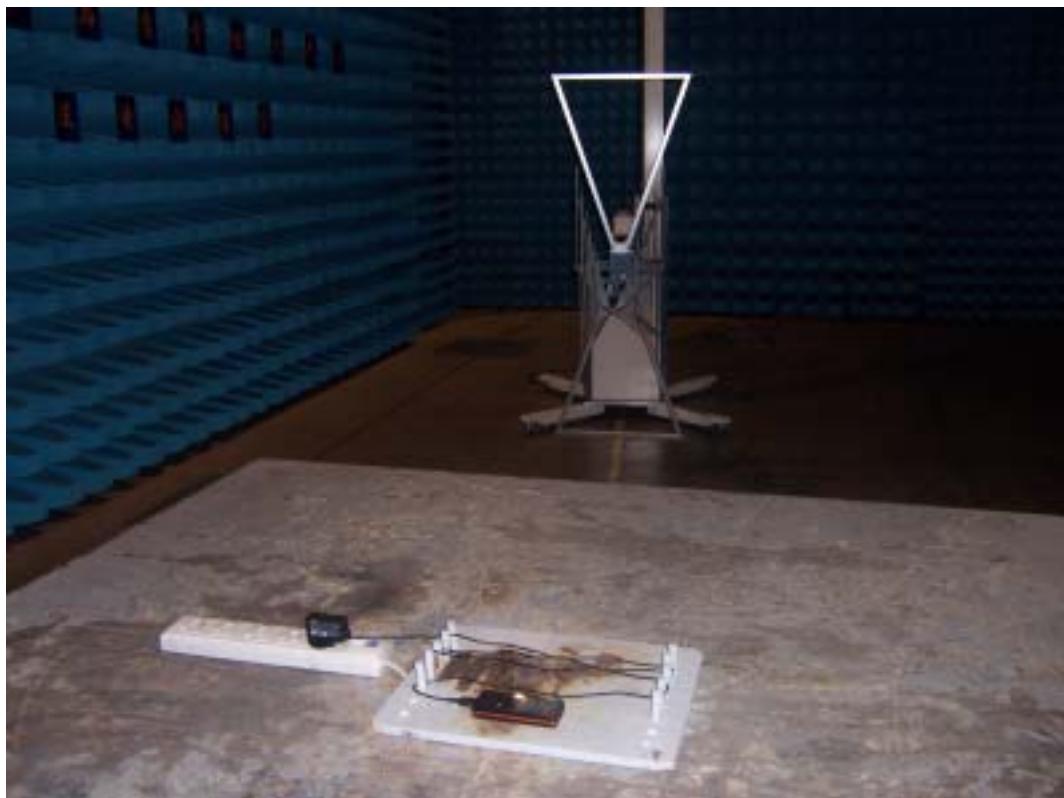
1. Conducted Emission Test, Mobile Mode



2. Conducted Emission Test, USB Mode



3. Radiated Emission Test, Mobile Mode



4. Radiated Emission Test, USB Mode

