47 CFR PART 15 SUBPART B

TEST REPORT

of

GSM/GPRS 850/900/1800/1900 Module

Model Name: SIM548Z, SIM508Z
Trade Name: SIMCOM
Report No.: SH07010011E03
FCC ID: UDV-0606020070210 (SIM548Z)
UDV-0606020070305 (SIM508Z)

prepared for

Shanghai Simcom Ltd.
SIM Technology Building, 700 Yishan Rd., Shanghai, 200233

prepared by

Shenzhen Morlab Communications Technology Co., Ltd.
3/F, Electronic Testing Building, Shahe Road, Xili,
Nanshan District, Shenzhen, 518055 P. R. China
Tel: +86 755 86130398
Fax: +86 755 86130218

TABLE OF CONTENTS

1. Test Result Certification

Equipment under Test:	GSM/GPRS 850/900/1800/1900 Module
Trade Name:	SIMCOM
Model Name:	SIM548Z, SIM508Z
FCC ID:	UDV-0606020070210 (SIM548Z) UDV-0606020070305 (SIM508Z)
Applicant:	Shanghai Simcom Ltd. SIM Technology Building, 700 Yishan Rd., Shanghai,200233
Manufacturer:	Shanghai Simcom Ltd. SIM Technology Building, 700 Yishan Rd., Shanghai,200233
Test Standards:	47 CFR Part 15 Subpart B
Test Result:	PASS

*** We hereby certify that:**

The equipment under test was tested by Shenzhen Morlab Communications Technology Co., Ltd. The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the requirement of related FCC rules.

The test results of this report only apply for the tested sample equipment identified above. The test report shall be invalid without all the signatures of the test engineer, the reviewer and the approver.

Tested by: ..... Dated: 2007.4.2
Zhang Weimin

Reviewed by: ..... Dated: 2007.4.2
Wu Xuewen

Approved by: ..... Dated: 2007.4.2
Shu Luan

2. General Information

2.1 Equipment under Test (EUT) Description

EUT_1 / MS:

Description	:	GSM/GPRS 850/900/1800/1900 Module
Model Name	:	SIM548Z, SIM508Z
Serial No.	:	P10606450000127 (SIM548Z)
IMEI	:	352134010032978 (SIM548Z)
Hardware Version	:	V2.03
Software Version	:	TTPCom 10.0

EUT_2 / Charger:

Description	:	Switching Adapter
Model Name	:	DSA-0131F-06EU12
Trade Name	:	DVE
Serial No.	:	N/A
Manufacturer	:	DEEVAN ELECTRONICS(JIAXING) CO,.LTD
Rated Input	:	~ 100-240V, 50/60Hz, 0.3A
Rated Output	:	⎓ 6.0V, 2000mA
Length of DC Cable	:	160cm

NOTE:

1. The SIM548Z and SIM508Z are series of GMS modules having the same electric circuit structure and critical components, thus they are considered to have the same EMC and RF performance. The only difference is that the SIM548Z supports four bands (850MHz / 900MHz / 1800MHz / 1900MHz) while the SIM508Z supports three bands (900MHz / 1800MHz / 1900MHz). According to the requirements of the applicant, the tests in this report were performed for SIM548Z; the test results in this report should also be applicable for that of SIM508Z.
2. The EUT consists of EUT_1/MS and normal options EUT_2/Charger.
3. For the detailed function of the EUT and test mode used, please refer to section 3.1.1.
4. For detailed features about the EUT, please see user manual supplied by applicant.

2.2 Test Standards and Results

The objective of the report is to perform EMC tests according to 47 CFR Part 15 Subpart B, and the EUT is classified as a Class B digital device:

No.	Identity	Document Title
1	47 CFR Part 15 (10-1-05 Edition)	Radio Frequency Devices

Test detailed items and the results are as below:

No.	Rules	Test Type	Result	Date of Test
1	§15.107	Conducted Emission	PASS	2007-3-1
2	§15.109	Radiated Emission	PASS	2007-3-1

2.3 Facilities and Accreditations

2.3.1 Facilities

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

All measurement facilities used to collect the measurement data are located at Electronic Testing Building, Shahe Road, Xili, Nanshan District, Shenzhen, P. R. China. The site was constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22, the FCC registration number is 741109.

2.3.2 Test Equipments

No.	Description	Specification
1	System Simulator	Manufacturer: Rohde&Schwarz Model No.: CMU200 Serial No.: 100448
2	System Simulator	Manufacturer: Agilent Model No.: E5515C Serial No.: GB43130131
3	Receiver	Manufacturer: Agilent Model No.: E7405A Serial No.: US44210471
4	LISN	Manufacturer: Schwarzbeck Model No.: NSLK8127 Serial No.: 8127449
5	Telecommunication Antenna	Manufacturer: European Antennas Model No.: PSA-45010R/356 Serial No.: 403688-001
6	Trilogy Antenna	Manufacturer: Schwarzbeck Model No.: VULB 9163 Serial No.: 9163-274
7	Anechoic Chamber	Manufacturer: Albatross Projects GmbH
8	Shield Room	Manufacturer: Albatross Projects GmbH

NOTE:

1. Equipments listed above have been calibrated and are in the period of validation.

2.3.3 Test Environment Conditions

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

Temperature:	20 - 25°C
Relative Humidity:	40 - 50%
Atmospheric Pressure:	86 - 106kPa

3. 47 CFR Part 15B Requirements

3.1 General Information

3.1.1 EUT Function and Test Mode

Mode 1: Call Mode:

The EUT configuration of the emission tests was MS + Adapter.

A communication link was established between the MS and a System Simulator (SS). The MS operated at mid ARFCN and maximum output power (level 5 for GSM 850 MHz and level 0 for PCS 1900 MHz).

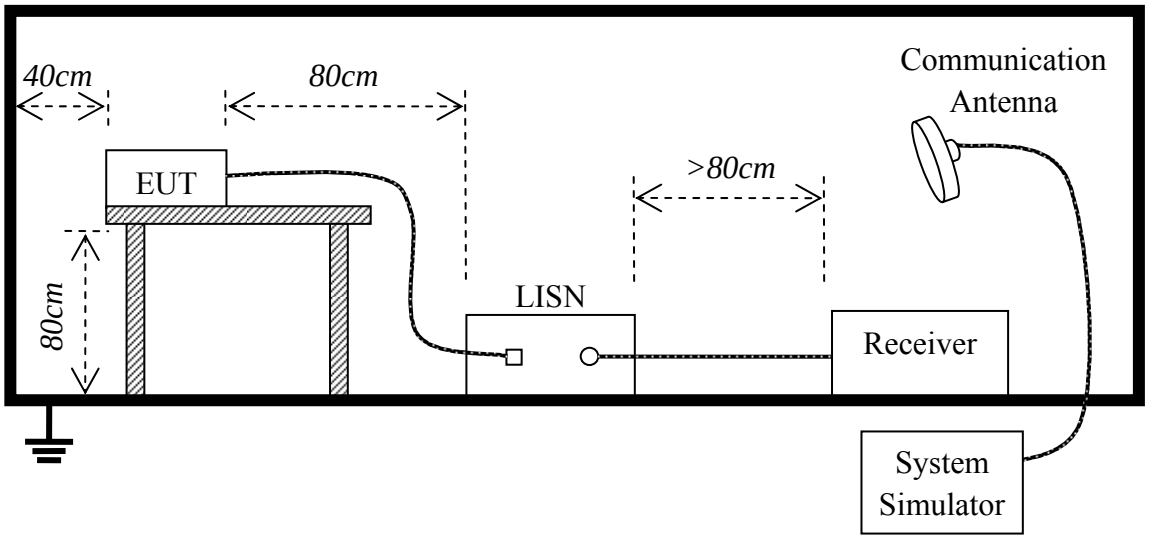
Mode 2: Idle Mode:

The EUT configuration of the emission tests was MS + Adapter.

The EUT was synchronized to the BCCH, listening to the CCCH and able to respond to paging message. Periodic location updating was disabled.

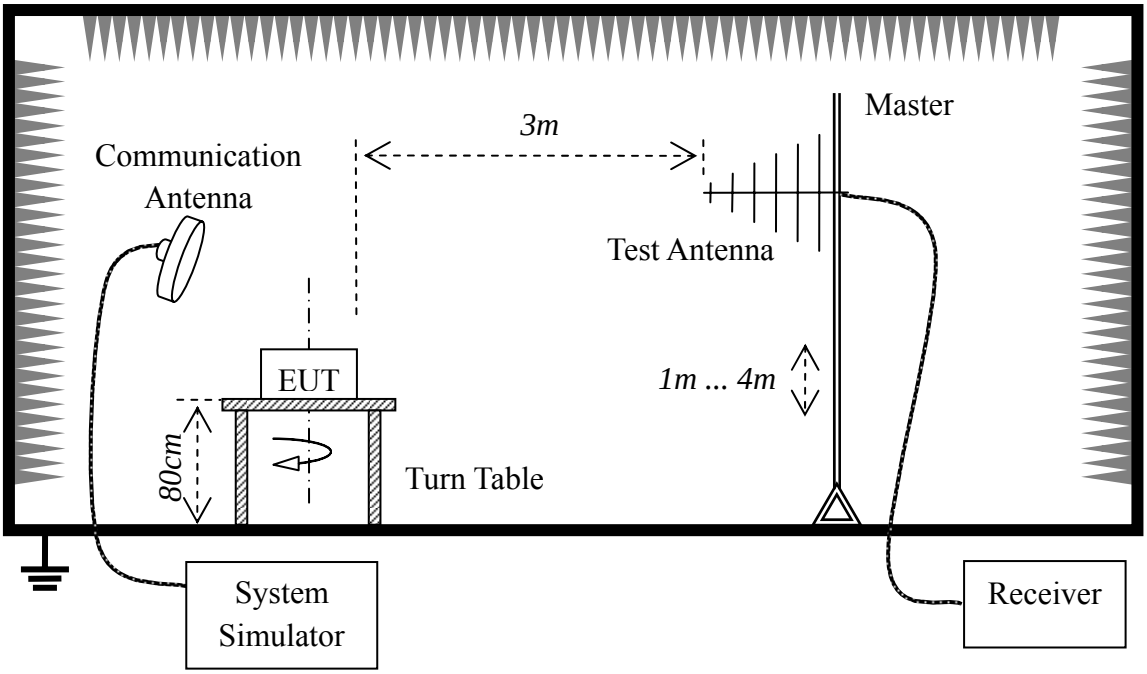
3.1.2 Test Setup

3.1.2.1 Conducted Emission Test



1. The test is performed in a Shield Room; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 0.4 meters away from the conducting wall of the Shield Room.
3. The EUT is connected to the power mains through a Line Impedance Stabilization Network (LISN). The LISN provides 50Ω/50μH of coupling impedance for the measuring instrument.

3.1.2.2 Radiated Emission Test



1. The test is performed in a Semi-anechoic Chamber; the factors of the test system are calibrated to correct the reading.
2. The EUT is placed on a 0.8 meters high insulating table and keeps 3 meters away from the trilogy Test Antenna, which is mounted on the top of a variable-height antenna Master tower.

3.2 Conducted Emission

3.2.1 Requirement

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

Frequency range (MHz)	Conducted Limit (dBμV)	
	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 limit subjects to the Class B digital device.
2. The lower limit shall apply at the band edges.
3. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

3.2.2 Test Procedure

1. Perform test setup as described in section 3.1.2.1.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the frequency range from 150 kHz to 30MHz is searched using the CISPR Quasi-Peak and/or the Average detector of the Receiver. If the emission levels measured with Quasi-Peak detector are lower than the Average Limit, it's not necessary to measure with Average detector.
3. The emission levels at both L phase and N phase should be tested.
4. Record the test result plot and distinct points.
5. In the test report show the worst test data.

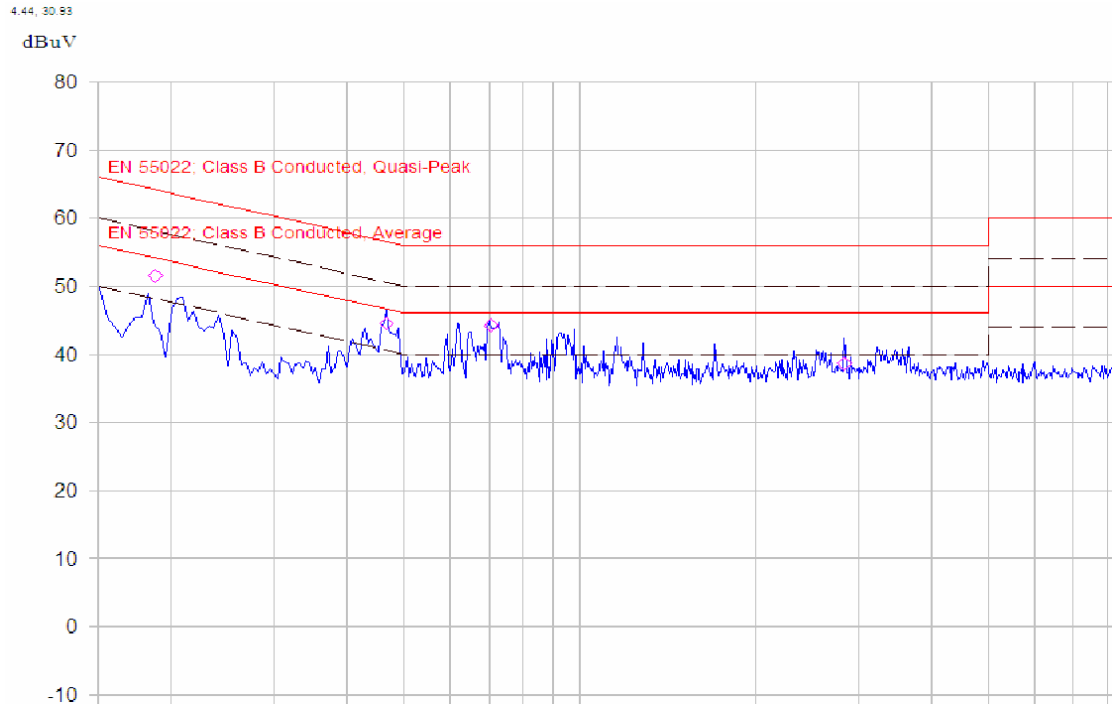
3.2.3 Test Result

Test Mode: 1, 2

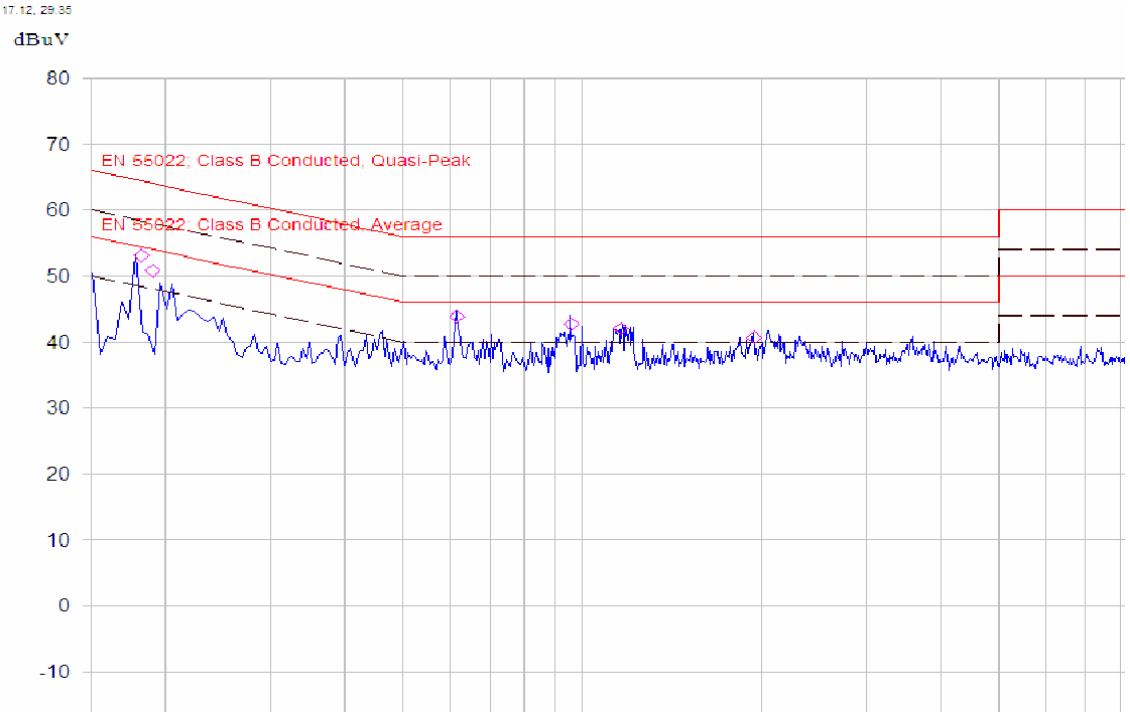
According the test data, the worst test configuration of the EUT was Mode 1, and its test data was showed as the follow:

No.	Freq. (MHz)	Limit Value (dBμV)		Emission Level (dBμV)	
		QP	AV	QP	AV
1	0.1820	64.4	54.4	47.6	26.2
2	0.1900	64.0	54.0	43.1	25.5
3	0.6170	56.0	46.0	39.3	31.3
4	0.9600	56.0	46.0	37.5	25.6
5	1.1620	56.0	46.0	38.0	25.8
6	1.9450	56.0	46.0	32.8	23.5

1. Plot for L Phase:



2. Plot for N Phase:



3.3 Radiated Emission

3.3.1 Requirement

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 range (MHz)	Field Strength	
	μV/m	dBμV/m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

NOTE:

1. Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.

3.3.2 Test Procedure

1. Perform test setup as described in section 3.1.2.2.
2. Each test mode in section 3.1.1 should be applied. At each test mode, the Turn Table turns from 0 degrees to 360 degrees to find the maximum reading; for the suspected points, the Test Antenna varies from 1 meter to 4 meters to determine the maximum value of the field strength.
3. The Receiver is set to Peak Detector function and specified bandwidth with maximum hold mode. If the emission level of the EUT in peak mode is 6dB lower than the limit specified, then testing could be stopped and the peak values would be reported; otherwise the emission less than 6dB margins would be retested one by one using the quasi-peak method.
4. The emission levels at both horizontal and vertical polarizations should be tested.
5. Record the test result plot and distinct points.
6. In the test report show the worst test data.

3.3.3 Test Result

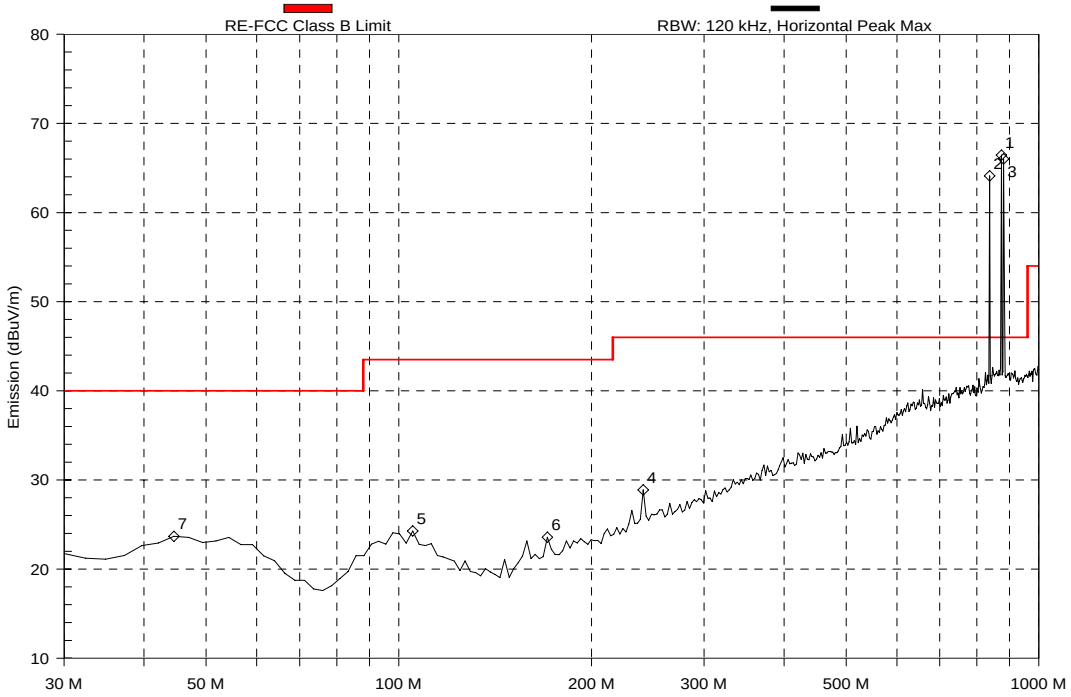
Test Mode: 1, 2

According the test data, the worst test configuration of the EUT was Mode 1, and its test data was showed as the follow:

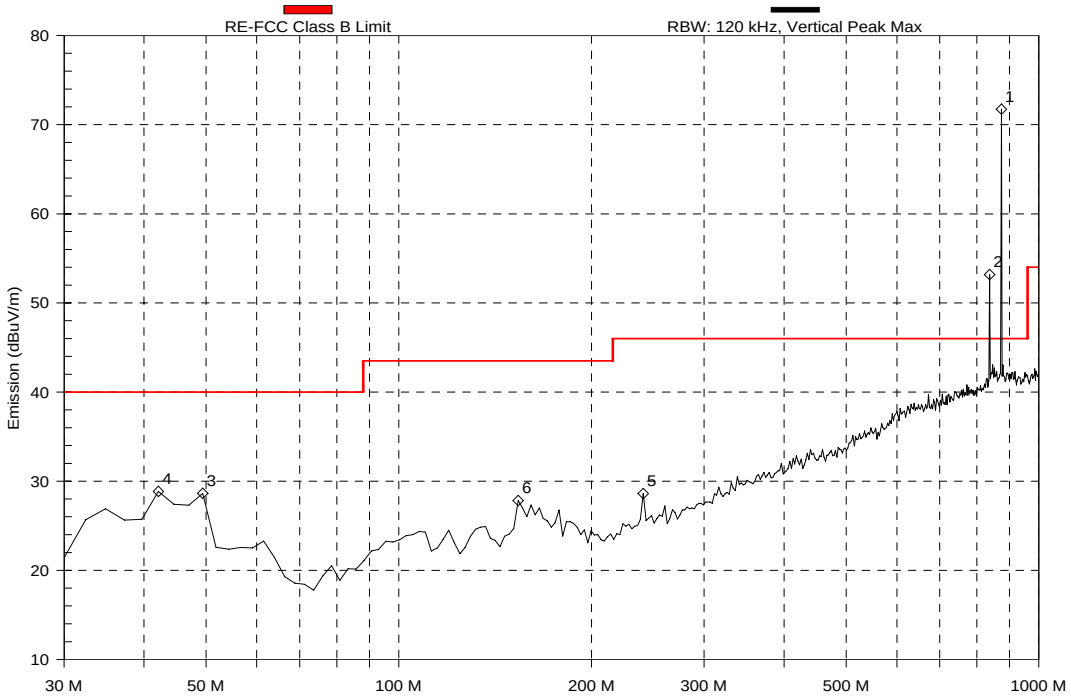
No.	Frequency (MHz)	Emission Level (dBμV/m)			Quasi-Peak Limit (dBμV/m)	Result
		Peak	Quasi-Peak	Antenna Polarization		
1	42.13	28.85	---	Vertical	< 40	PASS
2	153.67	27.82	---	Vertical	< 43.5	PASS
3	240.98	28.61	---	Vertical	< 46	PASS
4	105.17	24.28	---	Horizontal	< 43.5	PASS
5	170.65	23.57	---	Horizontal	< 43.5	PASS
6	240.97	28.89	---	Horizontal	< 46	PASS

Following is the plots for emission measurement; please note that marked spikes with circle should be ignored because they are MS and SS carrier frequency.

1. Plot when Test Antenna at Horizontal Polarization:

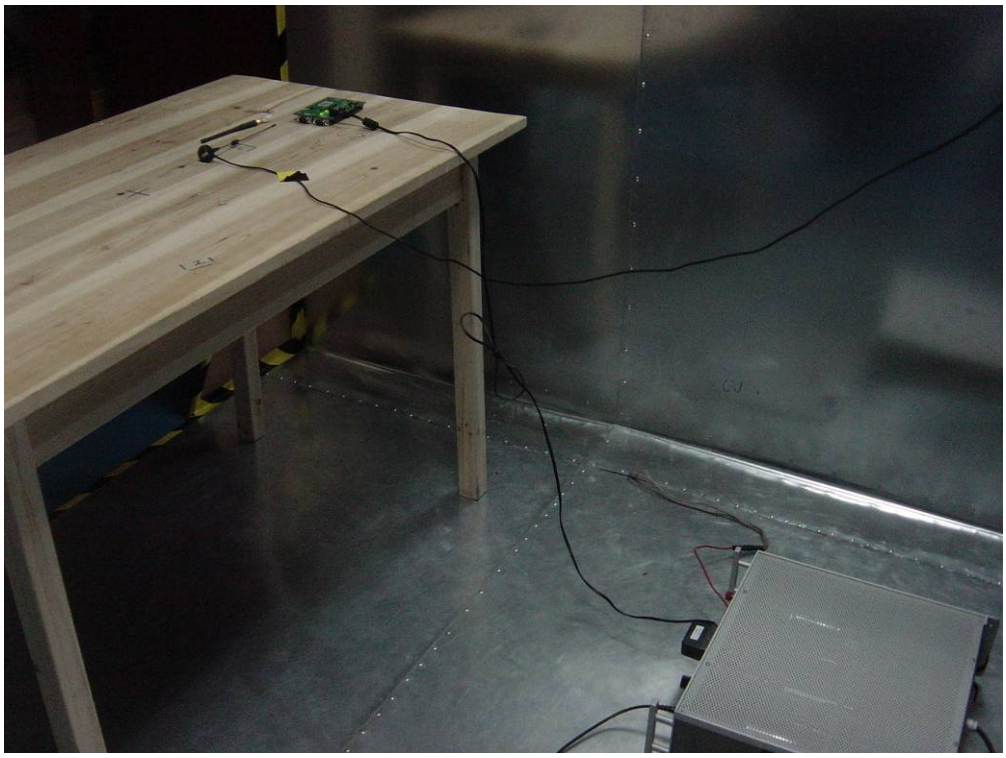


2. Plot when Test Antenna at Vertical Polarization:

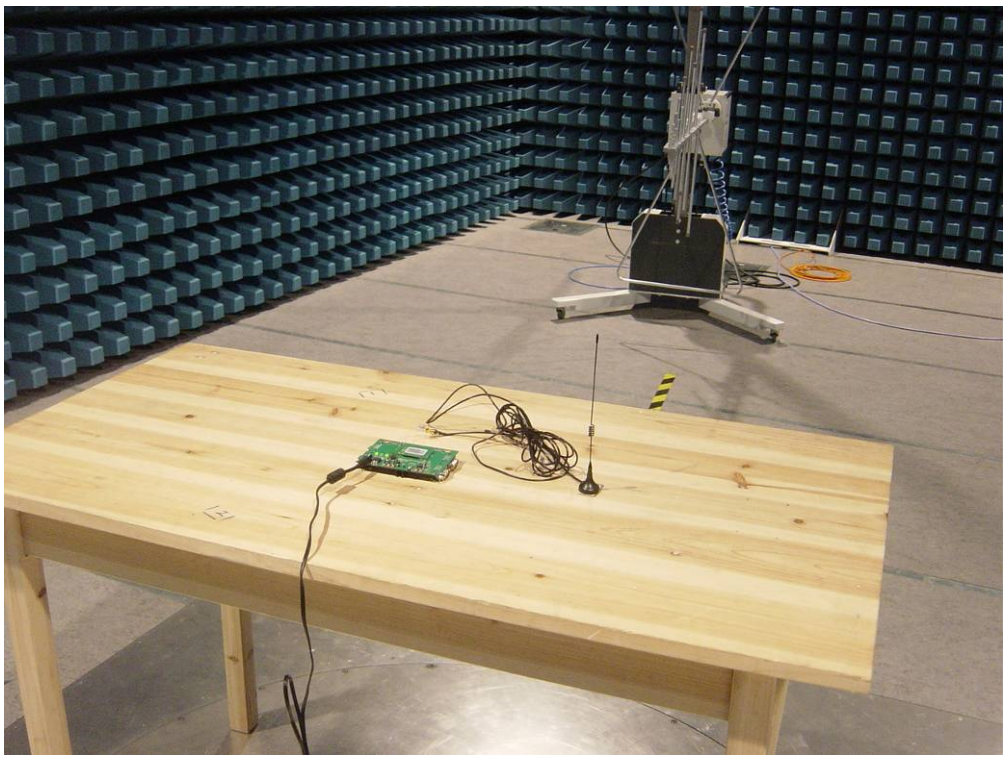


Ⅰ Photograph of the test setup

1. Mains Terminal Disturbance Voltage Measurement



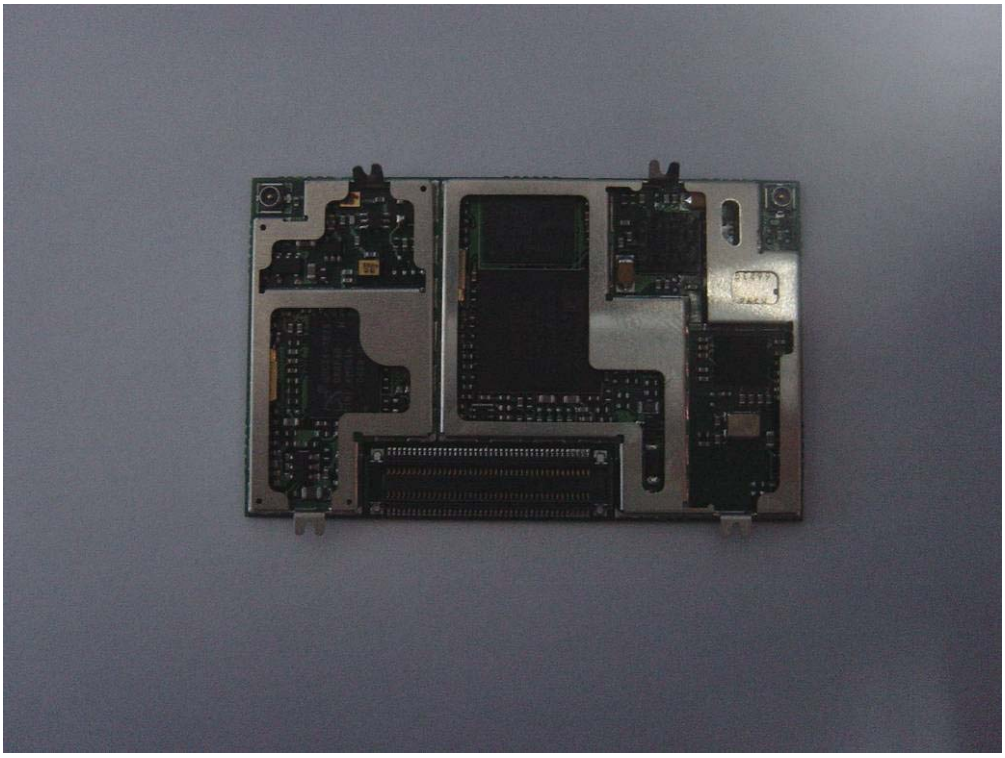
2. Radiated Field Strength Measurement



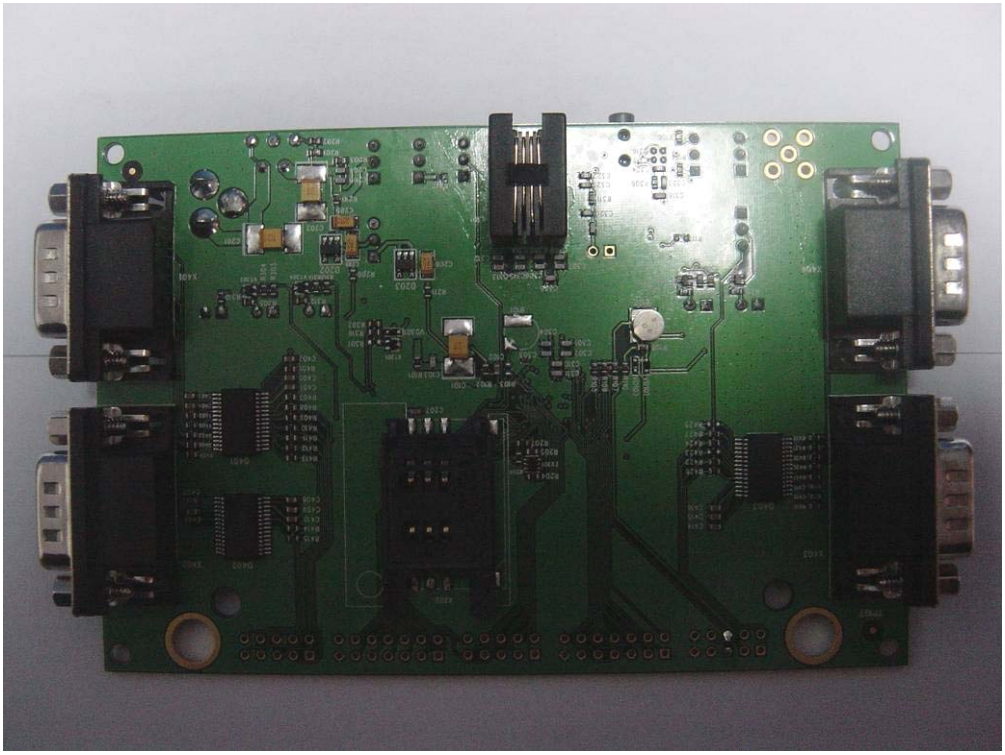
Ⅱ Photograph of the EUT

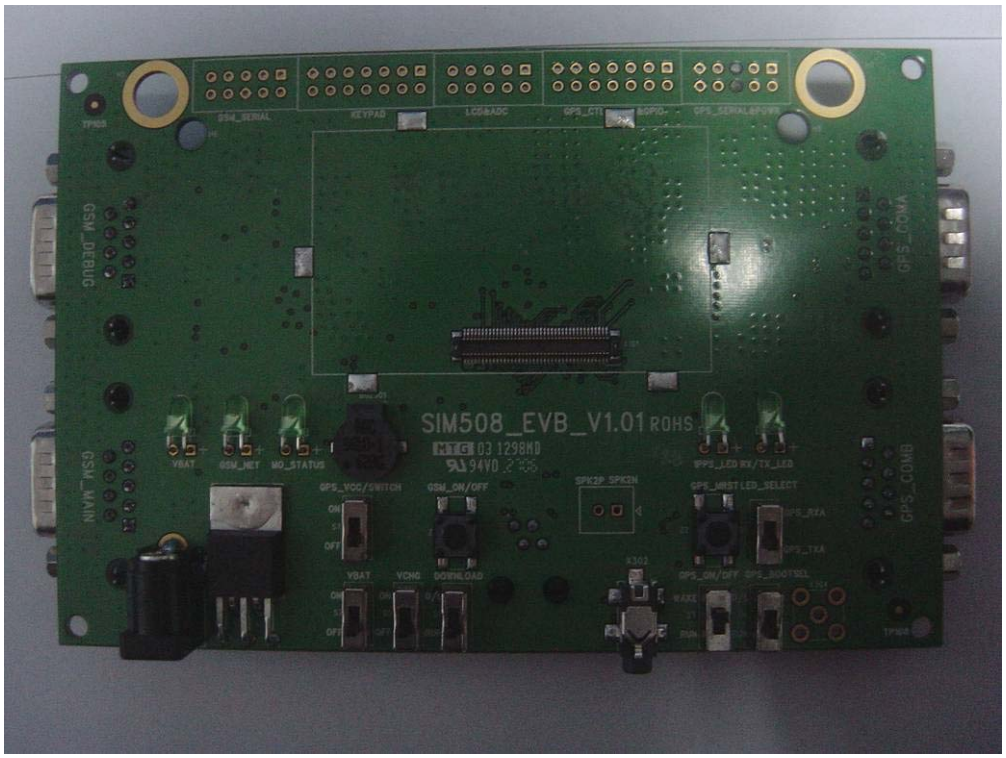
1. Appearance of the MS module

2. Inside of the MS module



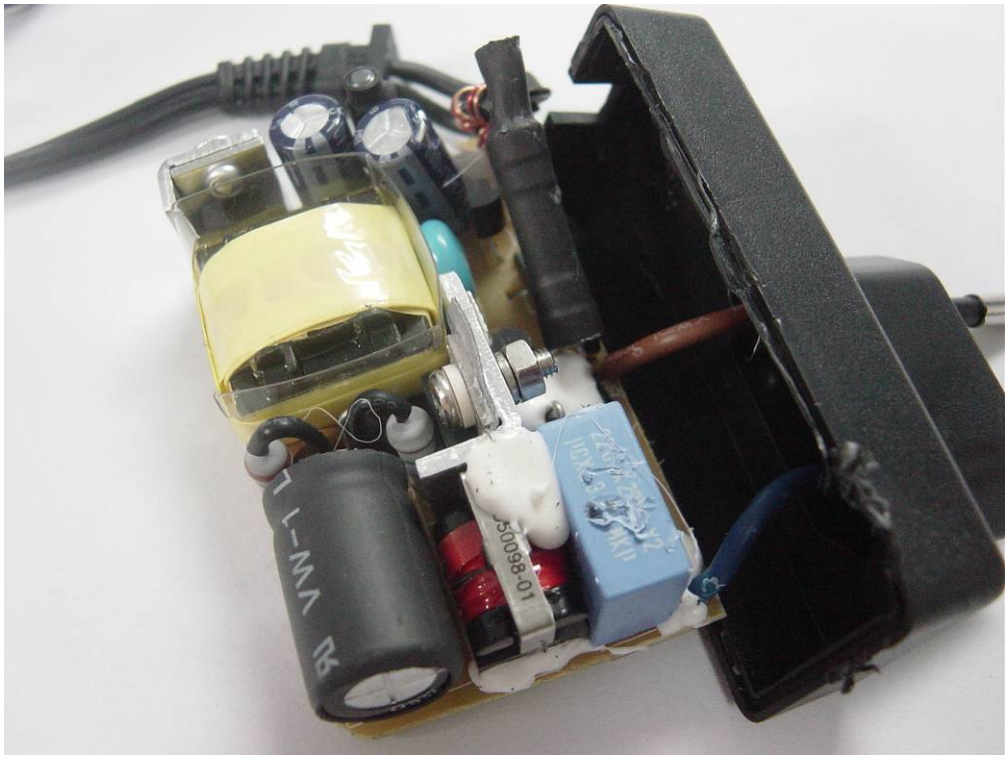
3. Appearance of MS base

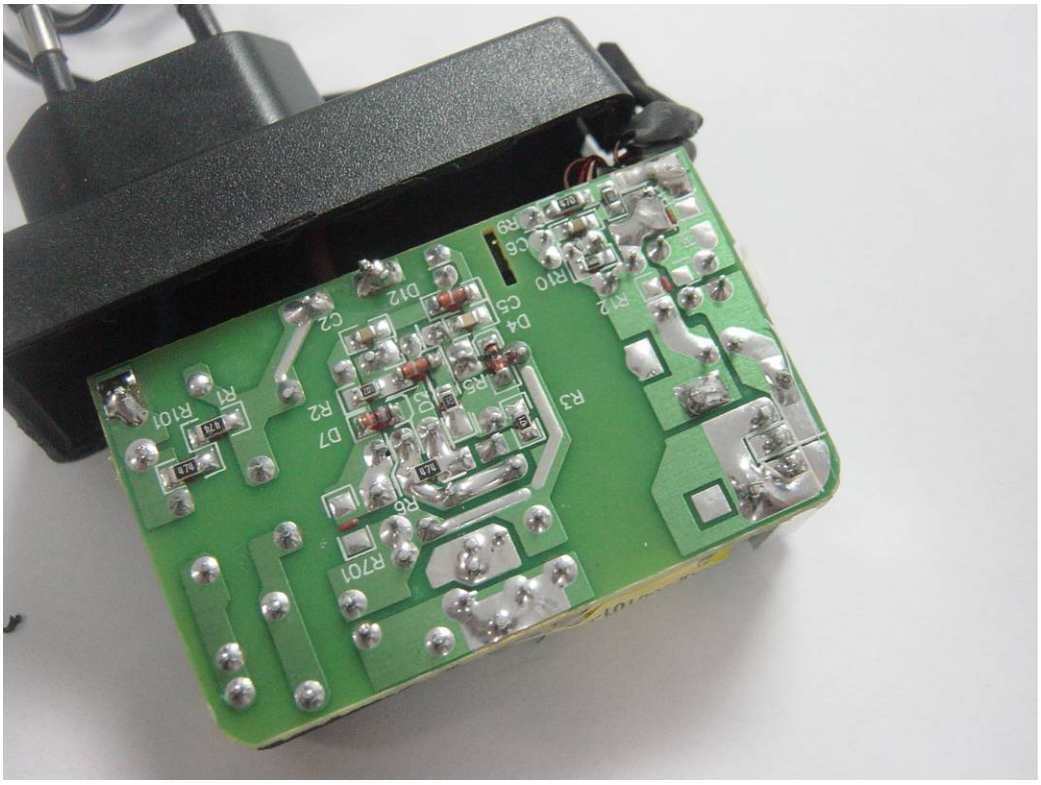




4. Appearance of the Charge

5. Inside of the Charge





6. Cable