

# RF Exposure Evaluation Declaration

Product Name : GSM/WCDMA Module

Model No. : SIM5360A

FCC ID: UDV-SIM5360A

FCC ID: 8460A-SIM5360A

Applicant : Shanghai Simcom Ltd.

Address : Building A, SIM Technology Building, No.633, Jinzhong  
Road,Changning District, Shanghai P.R. China

Date of Receipt : 02/07/2014

Issued Date : 10/07/2014

Report No. : UL15820140702FCC/IC30-6

Report Version : V1.0

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF, CNAS or any agency of the Government.

The test report shall not be reproduced except in full without the written approval of Unilab Corporation.

# RF Exposure Evaluation Declaration

Issued Date : 10/07/2014  
Report No. : UL15820140702FCC/IC30

Product Name : GSM/WCDMA Module  
Applicant : Shanghai Simcom Ltd.  
Address : Building A, SIM Technology Building No.633, Jinzhong Road, Changning  
Disdriect, Shanghai P.R. China  
Manufacturer : Shanghai Simcom Ltd.  
Address : Building A, SIM Technology Building No.633, Jinzhong Road, Changning  
Disdriect, Shanghai P.R. China  
Model No. : SIM5360A  
EUT Voltage : Extreme Low:3.4V, Nominal:3.8V, Extreme High:4.2V  
Brand Name : SIMCom  
Applicable Standard : FCC OET Bulletin 65 Supplement C (Edition 01-01)  
Industry Canada RSS-102 ,Issue 4  
Test Result : Complied  
Performed Location : Unilab (Shanghai) Co.,Ltd.  
FCC 2.948 register number is 714465  
IC register number is 11025A-1  
No.1350, Lianxi Road, Pudong New District, Shangha, China  
TEL:+86-21-5027-5125/FAX:+86-21-5027-5126-876

Documented By :

*Andy Wei*

(Technical Engineer: Andy Wei)

Reviewed By :

*Forest Cao*

(Senior Engineer: Forest Cao)

Approved By :

*Eva Wang*

(Supervisor: Eva Wang)

## 1. EUT Description

Product Name:	GSM/WCDMA Module
Model Name:	SIM5360A
Hardware Version:	V1.03
Software Version:	SIM5360A_V3.5
RF Exposure Environment:	Uncontrolled
<b>GSM/ EDGE</b>	
Support Band:	GSM850/PCS1900
GPRS Class:	12
Tx Frequency Range:	GSM 850: 824.2MHz to 848.8MHz PCS 1900: 1850.2MHz to 1909.8MHz
Rx Frequency Range:	GSM 850: 869.2MHz to 893.8MHz PCS 1900: 1930.2MHz to 1989.8MHz
Type of modulation:	GSM/GPRS for GMSK EDGE for 8PSK
Antenna Type:	Connector
Antenna Peak Gain:	GSM 850/PCS 1900: 1dBi
<b>WCDMA</b>	
Support Band:	WCDMA Band II
Tx Frequency Range:	WCDMA Band II : 1850MHz ~1910MHz
Rx Frequency Range:	WCDMA Band II : 1930MHz ~1990MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band II : 1dBi
Support Band:	WCDMA Band V
Tx Frequency Range:	WCDMA Band V: 824MHz ~849MHz
Rx Frequency Range:	WCDMA Band V: 869MHz ~894MHz
Type of modulation:	WCDMA(UMTS): QPSK
Antenna Type:	Connector
Antenna Peak Gain:	WCDMA Band V: 1dBi

## 2. RF Exposure Evaluation

### 2.1 Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range(MHz)	Electric Filed Strength (V/m)	Magnetic Filed Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (Minutes)
<b>(A)Limits for Occupation/Control Exposures</b>				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
<b>(B)Limits for General Occupation/UnControlled Exposures</b>				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula:  $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

### 2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 22°C and 45% RH.

### 2.3.Test Result of RF Exposure Evaluation

This device is evaluated by mobile device with general population/uncontrolled exposure condition  
 For this device, the calculation is using the most conservative values, and the results are as follows:

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Average Power (dBm)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
GSM 850	1	35	26	501.2	0.10	0.55
PCS 1900	1	31	22	158.5	0.03	1.00

The averaged power calculated method are shown as below:  
 Averaged power=Maximum burst averaged power(1 Tx Slot)-9dB  
 Average EIRP Power=Average Power+Antenna Gain

Test Mode	Antenna Gain (dBi)	Maximum Output Power (dBm)	Maximum Output Power (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
WCDMA 850	1	25	316.2	0.08	0.55
WCDMA 1900	1	25	316.2	0.08	1.00

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Average EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
GSM 850	32.61	34.76	2992.3	376.7	0.07	0.55
PCS 1900	-----	29.87	970.5	122.2	0.02	1.00

The frame-averaged power calculated method are shown as below:  
 Average EIRP=Peak EIRP-9dB

Test Mode	ERP (dBm)	EIRP (dBm)	Peak EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm2)	MPE Limit (mW/cm2)
WCDMA 850	23.16	25.31	339.6	0.07	0.55
WCDMA 1900	-----	22.60	182.0	0.04	1.00

This device can pass RF exposure limit.