



# TEST REPORT

**REPORT NUMBER: I22W00025-MPE-Rev1**

**ON**

**Type of Equipment:** LTE /HSPA/GSM/GNSS MODULE  
**Type of Designation:** SIM7600SA-H/SIM7600SA-H mini PCIE  
**Manufacturer:** SIMCom Wireless Solutions Limited  
**Brand Name:** SIMCom  
**FCC ID:** 2AJYU-8PYA002

## ACCORDING TO

**FCC CFR 47 Part 2.1091 《Radiofrequency radiation exposure evaluation: mobile devices》**

**FCC CFR 47 Part1.1310 《Radiofrequency radiation exposure limits》**

**Chongqing Academy of Information and Communication Technology**

*Month date, year*

APr,29,2022

*Signature*

**Xiang Luoyong**

*Director*

### Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.



**Revision Version**

Report Number	Revision	Date	Memo
I22W00025-MPE	00	2022-3-31	Initial creation of test report
I22W00025-Rev1	01	2022-04-29	First change of test report

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name:	Chongqing Academy of Information and Communications Technology
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

### 1.2. Testing Environment

Normal Temperature:	22.3°C
Relative Humidity:	64.8%

### 1.3. Project Data

Testing Start Date:	2022-3-31
Testing End Date:	2022-4-29

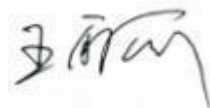
### 1.4. Signature



2022-4-29

**Fu Bohao**  
(Prepared this test report)

Date



2022-4-29

**Wang Lili**  
(Reviewed this test report)

Date



2022-4-29

**Xiang Luoyong**  
Director of the laboratory  
(Approved this test report)

Date

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## 2. Client Information

### 2.1. Applicant Information

Company Name:	SIMCom Wireless Solutions Limited
Address /Post:	Building 3, No. 289, Linhong Road, Changning District, Shanghai, P.R.China
Country:	CHINA
Telephone:	15902149520
Fax:	--
Email:	yue.hai@simcom.com
Contact Person:	Haiyue

### 2.2. Manufacturer Information

Company Name:	SIMCom Wireless Solutions Limited
Address /Post:	Building 3, No. 289, Linhong Road, Changning District, Shanghai, P.R.China
Country:	CHINA
Telephone:	15902149520
Fax:	--
Email:	yue.hai@simcom.com
Contact Person:	Haiyue

### 3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

#### 3.1. About EUT

EUT Description:	LTE /HSPA/GSM/GNSS MODULE
Model name:	SIM7600SA-H/SIM7600SA-H mini PCIE
GSM Frequency Band:	GSM 850/DSC 1900
WCDMA Frequency Band:	Band 2/5
LTE Frequency Band:	Band 2/4/5/28/66
Note: Photographs of EUT are shown in ANNEX A of this test report.	

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S5	863427042010178	V1.01	SIM7600M11_A_V2.0.1	2022-3-28

\*EUT ID: is used to identify the test sample in the lab internally.

#### 3.3. Internal Identification of AE used during the test

EUT ID*	SN	Description
NA	NA	NA

\*AE ID: is used to identify the test sample in the lab internally.

## 4. Reference Documents

### 4.1. Applicable Standards

The MPE report was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1091.

**FCC CFR 47 Part 2.1091:** Radiofrequency radiation exposure evaluation: mobile devices

### 4.2. Test Limits

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

MPE for the upper tier (people in controlled environments)

Frequency Range [MHz]	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100000	--	--	1.0	30

Note: f=frequency in MHz; \*Plane-wave equivalent power density

For the DUT, the limits for the general public when an RF safety program is unavailable.



## 5. Test Results

### 5.1. RF Power Output

Frequency Band	Highest Averaged Power Output(dBm)	Highest Frame-Averaged Output Power (dBm)	Antenna Gain(dBi)
GSM 850	35.00	25.97	0.91
GSM 1900	32.00	22.97	1.87
GPRS 850 4TS	35.00	31.99	0.91
GPRS 1900 4TS	32.00	28.99	1.87
WCDMA Band2	25.00	25.00	1.87
WCDMA Band5	25.00	25.00	0.91
LTE Band2	25.70	25.70	1.87
LTE Band4	25.70	25.70	3.12
LTE Band5	25.70	25.70	0.91
LTE Band28	25.70	25.70	0.95
LTE Band66	25.70	25.70	3.12

#### Notes:

##### 1) Division Factors

To average the power, the division factor is as follows:

1TX-slot = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.03dB

2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.02dB

3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB

4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.01dB

2) According to the conducted power as above, the measurements are performed with 1Txslots for 850MHz and 1900MHz.

3) Disclaimers: The Highest Power Output and antenna gain in the above table are provided by the customer

## 5.2. Calculation Information

For conservative evaluation consideration, only maximum power of each frequency band based on the tighter limits respectively are used to calculate the boundary power density.

Based on the FCC KDB 447498 D01 and 47 CFR §2.1091, the DUT is evaluated as a mobile device.

$$S = \frac{PG}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

### 5.3. Results

Frequency range	Limit(mW/cm <sup>2</sup> )	Results(mW/cm <sup>2</sup> )	Verdict
GSM 850	0.55	0.10	PASS
GSM 1900	1.00	0.06	PASS
GPRS 850 4TS	0.55	0.39	PASS
GPRS 1900 4TS	1.00	0.24	PASS
WCDMA Band2	1.00	0.1	PASS
WCDMA Band5	0.55	0.08	PASS
LTE Band2	1.00	0.11	PASS
LTE Band4	1.00	0.15	PASS
LTE Band5	0.55	0.09	PASS
LTE Band28	0.47	0.09	PASS
LTE Band66	1.00	0.15	PASS

#### 5.4. Result of GSM 850

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz~848.80 MHz;  
The maximum conducted is 25.97 dBm. The maximum gain is 0.91 dBi. Therefore,  
maximum limit for general public RF exposure:  $824.20/1500=0.55 \text{ mW/cm}^2$ .

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (395.37 mW)

G = antenna gain (1.23 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(395.37*1.23)/(4\pi*20^2)=0.10 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the  $0.55 \text{ mW/cm}^2$  limit for uncontrolled exposure.

#### 5.5. Result of GSM 1900

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz~1909.80MHz;  
The maximum conducted is 22.97 dBm. The maximum gain is 1.87 dBi. Therefore,  
maximum limit for general public RF exposure:  $1.00 \text{ mW/cm}^2$ .

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (198.15 mW)

G = antenna gain (1.54 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(198.15*1.54)/(4\pi*20^2)=0.06 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the  $1.00 \text{ mW/cm}^2$  limit for uncontrolled exposure.

#### 5.6. Result of GPRS 850 4TS

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.20 MHz~848.80 MHz;  
The maximum conducted is 31.99 dBm. The maximum gain is 0.91 dBi. Therefore,  
maximum limit for general public RF exposure:  $824.20/1500=0.55 \text{ mW/cm}^2$ .

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (1581.20 mW)

G = antenna gain (1.23 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(1581.20*1.23)/(4\pi*20^2)=0.39 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the  $0.55 \text{ mW/cm}^2$  limit for uncontrolled exposure.

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### 5.7. Result of GPRS 1900 4TS

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850.20 MHz~1909.80MHz;  
The maximum conducted is 28.99 dBm. The maximum gain is 1.87 dBi. Therefore,  
maximum limit for general public RF exposure: 1.00mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (792.50 mW)

G = antenna gain (1.54 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(792.50*1.54)/(4\pi*20^2)=0.24 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1.0 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.8. Result of WCDMA Band 2

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1852.40 MHz~1907.60 MHz;  
The maximum conducted is 25.00 dBm. The maximum gain is 1.87 dBi. Therefore,  
maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (316.23 mW)

G = antenna gain (1.54 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(316.23*1.54)/(4\pi*20^2)=0.10 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.9. Result of WCDMA Band 5

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 826.40 MHz~846.60 MHz;  
The maximum conducted is 25.00 dBm. The maximum gain is 0.91 dBi. Therefore,  
maximum limit for general public RF exposure: 826.40/1500=0.55 mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (316.23 mW)

G = antenna gain (1.23 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(316.23*1.23)/(4\pi*20^2)=0.08 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 0.55 mW/cm<sup>2</sup> limit for uncontrolled exposure.

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### 5.10. Result of LTE Band 2

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1850.00 MHz~1909.90MHz;  
The maximum conducted is 25.70 dBm. The maximum gain is 1.87 dBi. Therefore,  
maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (371.54 mW)

G = antenna gain (1.54 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(371.54*1.54)/(4\pi*20^2)=0.11 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.11. Result of LTE Band 4

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710.00 MHz~1754.90 MHz;  
The maximum conducted is 25.70 dBm. The maximum gain is 3.12 dBi. Therefore,  
maximum limit for general public RF exposure: 1.00mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (371.54 mW)

G = antenna gain (2.05 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(371.54*2.05)/(4\pi*20^2)=0.15 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1.00 mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.12. Result of LTE Band 5

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 824.00 MHz~848.90 MHz;  
The maximum conducted is 25.70 dBm. The maximum gain is 0.91 dBi. Therefore,  
maximum limit for general public RF exposure: 824.00/1500=0.55 mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (371.54 mW)

G = antenna gain (1.23 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(371.54*1.23)/(4\pi*20^2)=0.09 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 0.55mW/cm<sup>2</sup> limit for uncontrolled exposure.

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### 5.13. Result of LTE Band 28

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 703.00 MHz~747.90 MHz;  
The maximum conducted is 25.70 dBm. The maximum gain is 0.95 dBi. Therefore,  
maximum limit for general public RF exposure: 703.00/1500=0.47 mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (371.54 mW)

G = antenna gain (1.24 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(371.54*1.24)/(4\pi*20^2)=0.09 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 0.47mW/cm<sup>2</sup> limit for uncontrolled exposure.

### 5.14. Result of LTE Band 66

**Test Results:** MPE Limit Calculation: the EUT'S operating frequencies @ 1710.00 MHz~1779.90 MHz;  
The maximum conducted is 25.70 dBm. The maximum gain is 3.12 dBi. Therefore,  
maximum limit for general public RF exposure: 1.00 mW/cm<sup>2</sup>.

$$S = \frac{PG}{4\pi d^2}$$

P= input power of the antenna (371.54 mW)

G = antenna gain (2.05 numeric)

r = distance to the center of radiation of antenna (in meter)=20 cm

$$S=(371.54*2.05)/(4\pi*20^2)=0.15 \text{ mW/cm}^2$$

Therefore, at 20 cm the spectral power density is less than the 1.00mW/cm<sup>2</sup> limit for uncontrolled exposure.



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**ANNEX A: EUT photograph**

See the document "LTE /HSPA/GSM/GNSS MODULE Photos".

**\*\*\*END OF REPORT\*\*\***

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