Industrial Internet Innovation Center (Shanghai) Co.,Ltd.

SAR TEST REPORT

PRODUCT	4G Wireless Smart Module
BRAND	SIMCom
MODEL	SIM8905A-R2
APPLICANT	SIMCom Wireless Solutions Limited
FCC ID	2AJYU-8PSA303
ISSUE DATE	September 7, 2022
STANDARD(S)	FCC 47 CFR Part 2 §2.1091

Prepared by: Chen Jintao	**Reviewed by: Yan Hang**	**Approved by: Liu Long**

CONTENTS

1 Summary of Test Report

1.1 Test Standard (s)

No.	Test Standard(s)	Title	Version
1	FCC 47 CFR Part 2 §2.1091	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS. Section 2.1091 Radiofrequency radiation exposure evaluation: mobile devices	N/A

1.2 Reference Documents

No.	Reference Document(s)	Title	Version
1	KDB447498	General RF Exposure Guidance	D01 v06

1.3 Data Provided by Applicant

No.	Item(s)	Data
1	Maximum output power	LTE Band 2 QPSK:25.7 dBm LTE Band 2 16QAM:25.7 dBm LTE Band 4 QPSK:25.7 dBm LTE Band 4 16QAM:25.7 dBm LTE Band 5 QPSK:25.7 dBm LTE Band 5 16QAM:25.7 dBm LTE Band 7 QPSK:25.7 dBm LTE Band 7 16QAM:25.7 dBm LTE Band 8 QPSK:25.7 dBm LTE Band 8 16QAM:25.7 dBm LTE Band 12 QPSK:25.7 dBm LTE Band 12 16QAM:25.7 dBm LTE Band 13 QPSK:25.7 dBm LTE Band 13 16QAM:25.7 dBm LTE Band 17 QPSK:25.7 dBm LTE Band 17 16QAM:25.7 dBm LTE Band 25 QPSK:25.7 dBm LTE Band 25 16QAM:25.7 dBm LTE Band 26 QPSK:25.7 dBm LTE Band 26 16QAM:25.7 dBm LTE Band 41 QPSK:25.7 dBm LTE Band 41 16QAM:25.7 dBm Wi-Fi 2.4G 11b 1Mbps:19.7 dBm Wi-Fi 2.4G 11b 11Mbps:19.7 dBm Wi-Fi 2.4G 11g 6Mbps:17.7 dBm Wi-Fi 2.4G 11g 54Mbps:15.7 dBm Wi-Fi 2.4G 11n 20M MCS0:16.7 dBm Wi-Fi 2.4G 11n 20M MCS7:13.7 dBm BT DH5:12.7 dBm BT 2DH5:9.7 dBm BT 3DH5:9.7 dBm BLE:0 dBm

2	Maximum antenna gain	LTE Band 2:11.0 dBi LTE Band 4:6.0 dBi LTE Band 5:7.5 dBi LTE Band 7:11.0 dBi LTE Band 8:7.5 dBi LTE Band 12: 7.5 dBi LTE Band 13: 7.5 dBi LTE Band 17: 7.5 dBi LTE Band 25:6.0 dBi LTE Band 26: 7.5 dBi LTE Band 41: 11.0 dBi Wi-Fi 2.4G:5.0 dBi BT/BLE:5.0 dBi
NOTE: The data of Maximum output power and Maximum antenna gain are provided by the customer may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.		

2 General Information of The Laboratory

2.1 Testing Laboratory

Lab Name	Industrial Internet Innovation Center (Shanghai) Co.,Ltd.
Address	Building 4，No. 766，Jingang Road，Pudong，Shanghai，China
Telephone	021-68866880
FCC Registration No.	958356
FCC Designation No.	CN1177

2.2 Laboratory Environmental Requirements

Temperature	18℃~25℃
Relative Humidity	25%RH~75%RH

2.3 Project Information

Project Manager	Xu Yuting
Test Date	N/A

3 General Information of The Customer

3.1 Applicant

Company	SIMCom Wireless Solutions Limited
Address	8F, Bldg3 No.289 Linhong Rd, ChangNing District Shanghai, PRC China
Telephone	02131575100/15102196457

3.2 Manufacturer

Company	SIMCom Wireless Solutions Limited
Address	8F, Bldg3 No.289 Linhong Rd, ChangNing District Shanghai, PRC China

4 General Information of The Product

4.1 Product Description for Equipment under Test (EUT)

Product	4G Wireless Smart Module
Model	SIM8905A-R2
Date of Receipt	N/A
EUT ID*	N/A
SN/IMEI	N/A
Supported Radio Technology and Bands	LTE Band2/4/5/7/8/12/13/17/25/26/41 WLAN 802.11b/g/n BT/BLE
Hardware Version	V1.03
Software Version	R2148.02
NOTE: EUT ID is the internal identification code of the laboratory.	

4.2 Description for Auxiliary Equipment (AE)

AE ID*	Description	Model	SN/Remark
N/A	N/A	N/A	N/A
NOTE: AE ID is the internal identification code of the laboratory.			

5 General Description

5.1 Evaluation Distance

Evaluation distance 20cm as a distance between the equipment and the operator or user when it is used normally. The distance used for the assessment had be specified by the manufacturer and be onsistent with the intended usage of the equipment.

5.2 Evaluation Method

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 KDB447498 D01 and FCC 47 CFR Part 2 § 2.1091, the DUT is evaluated as a mobile device.

$$S = \frac{P \times G}{4\pi d^2}$$

Where

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power density in milliwatts / square centimeter

6 Assessment Results

6.1 Standalone Evaluation

6.1.1 Limit/Criterion

Table 6.1.1-1 Limits for Occupational / Controlled Exposure

Limits for Occupational / Controlled Exposure				
Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minitues)
0.3 – 3.0	614	1.63	(100)*	6
3.0 – 30	1824/f	4.89/f	(900/f)*	6
30 – 300	61.4	0.163	1	6
300 – 1500	--	--	F/300	6
1500 - 100000	--	--	5	6
Limits for General Population / Uncontrolled Exposure				
Frequency (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minitues)
0.3 – 1.34	614	1.63	(100)*	30
1.34 – 30	824/f	2.19/f	(180/f)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	--	--	F/1500	30
1500 - 100000	--	--	1	30
NOTE: f = frequency in MHz; * Plane-wave equivalent power density. For the DUT, the limits for General Population / Uncontrolled Exposure are applicable.				

6.1.2 Standalone Evaluation

Table 6.1.2-1: Standalone Evaluation

Band	Frequency (MHz)	Tune Up (dBm)	Highest Output Power (dBm)	Highest Output Power (mW)	Antenna Gain(dBi)	Numeric antenna gain	Power density at 20cm(mW/cm^2)	Limit (mW/cm^2)	Power density /Limit
LTE Band 2	1850	25.70	25.70	371.54	11.00	12.589	0.931	1.000	0.931
LTE Band 4	1710	25.70	25.70	371.54	6.00	3.981	0.294	1.000	0.294
LTE Band 5	824	25.70	25.70	371.54	7.50	5.623	0.416	0.549	0.758
LTE Band 7	2500	25.70	25.70	371.54	11.00	12.589	0.931	1.000	0.931
LTE Band 12	699	25.70	25.70	371.54	7.50	5.623	0.416	0.466	0.893
LTE Band 13	777	25.70	25.70	371.54	7.50	5.623	0.416	0.518	0.803
LTE Band 17	704	25.70	25.70	371.54	7.50	5.623	0.416	0.469	0.887
LTE Band 25	1850	25.70	25.70	371.54	6.00	3.981	0.294	1.000	0.294
LTE Band 26	814	25.70	25.70	371.54	7.50	5.623	0.416	0.543	0.766
LTE Band 41	2496	25.70	25.70	371.54	11.00	12.589	0.931	1.000	0.931
Wi-Fi 2.4G 11b 1M	2412	19.70	19.70	93.33	5.00	3.162	0.059	1.000	0.059
Wi-Fi 2.4G 11b 11M	2412	19.70	19.70	93.33	5.00	3.162	0.059	1.000	0.059
Wi-Fi 2.4G 11g 6M	2412	17.70	17.70	58.88	5.00	3.162	0.037	1.000	0.037
Wi-Fi 2.4G 11g 54M	2412	15.70	15.70	37.15	5.00	3.162	0.023	1.000	0.023
Wi-Fi 2.4G 11n 20M MCS0	2412	16.70	16.70	46.77	5.00	3.162	0.029	1.000	0.029
Wi-Fi 2.4G 11n 20M MCS7	2412	13.70	13.70	23.44	5.00	3.162	0.015	1.000	0.015
BT	2402	12.70	12.70	18.62	5.00	3.162	0.012	1.000	0.012
BLE	2402	0.00	0.00	1.00	5.00	3.162	0.001	1.000	0.001

6.2 Simultaneous transmission Evaluation

Table 6.2-1 Simultaneous transmission Evaluation

Power density /Limit		∑ (Power density /Limit) of
1	2	
WWAN	WLAN	1+2
0.931	0.059	0.990
WWAN	BT	1+2
0.931	0.012	0.943

NOTE 1: ∑ (Power density /Limit) : This is a summation of [(Power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN+WLAN and WWAN+BT.

NOTE 2:Considering the WWAN collocation with the WLAN/BT transmitter of the Highest output power performance listed in the table above, the aggregated (Power density /Limit) is smaller than1, and MPE collocated transmitters is compliant.

Annex A: Revised History

Version	Revised Content
V00	Initial

END OF REPORT