RF MPE REPORT

Report No.:	SET2022-14276
Product Name:	CPE
Model No.:	RT2
FCC ID:	2AZYA-RT2
Applicant:	Senwa Global International, S.A. de C.V.
Address:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico
Dates of Testing:	10/11/2022 - 10/31/2022
Issued by:	CCIC Southern Testing Co., Ltd.
Lab Location:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China. **Tel**：86 755 26627338 **Fax**：86 755 26627238

Test Report

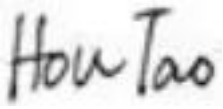
Product.....:	CPE
Trade Name .....:	SENWA
Applicant.....:	Senwa Global International, S.A. de C.V.
Applicant Address.....:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico
Manufacturer.....:	Senwa Global International, S.A. de C.V.
Manufacturer Address.....:	Carretera Mexico-Toluca No. 5324 PB, Colonia El Yaqui Del. Cuajimalpa de Morelos, C.P. 05320 Ciudad de Mexico, Mexico
Test Standards.....:	47 CFR Part 2.1091
Test Result.....:	Pass

Tested by .....:  2022.10.31

Sun, Test Engineer

Reviewed by.....:  2022.10.31

Chris You, Senior Engineer

Approved by.....:  2022.10.31

Tao Hou, Manager

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Change History		
Issue	Date	Reason for change
1.0	2022.10.31	First edition

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	CPE	
Model No.	RT2	
Hardware Version	RT2_TELCEL_Ver 1.0	
Software Version	RT2_TELCEL_Ver 1.0	
EUT supports Radios application	WCDMA 850/1900 LTE Band 4/5/7/66 2.4G WIFI	
Frequency Range(Tx)	WCDMA 850: 824MHz~849MHz WCDMA 1900: 1850MHz~1910MHz	
	LTE Band 4: 1710MHz~1755MHz LTE Band 5: 824MHz~849MHz LTE Band 7: 2500MHz~2570MHz LTE Band 66: 1710MHz~1780MHz	
	2.4G WIFI: 2.412GHz - 2.462GHz	
Bandwidth	WCDMA 850:	5MHz
	WCDMA 1900:	5MHz
	LTE Band 4:	1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	LTE Band 5:	1.4MHz/3MHz/5MHz/10MHz
	LTE Band 7:	5MHz/10MHz/15MHz/20MHz
	LTE Band 66:	1.4MHz/3MHz/5MHz/10MHz/15MHz/20MHz
	2.4G WIFI:	802.11b/g/n-HT20: 20MHz 802.11n-HT40: 40MHz
Modulation Type	WCDMA	WCDMA: QPSK(Uplink) HSDPA: QPSK(Uplink) HSUPA: QPSK(Uplink)
	LTE	QPSK/16QAM
	2.4G WIFI	DSSS (802.11b), OFDM (802.11g/n)
	5G WIFI	OFDM (802.11a/n/ac)
Antenna gain	WCDMA 850: 1.53 dBi	WCDMA 1900: 3.36 dBi,
	LTE Band 4: 3.52 dBi	LTE Band 5: 1.53 dBi
	LTE Band 7: 3.61 dBi,	LTE Band 66: 3.55 dBi
	2.4G WIFI: Antenna 0/1: 3.29dBi	
Antenna Type	External Antenna	

1.2. EUT Description

EUT has been tested according to the following standards.

No.	Identity	Document Title
1	47 CFR Part 1	Practice and Procedure
2	47 CFR Part 2	Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
3	KDB 447498 D01 General RF Exposure Guidance v06	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
4	OET Bulletin 65 Edition 97-01	Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

1.3. Laboratory Facilities

FCC-Registration No.: 406086

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until April 19th, 2023.

ISED Registration: 11185A-1

CCIC Southern Testing Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on Aug. 04, 2016, valid time is until Jun. 30th, 2023.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.4. Laboratory Location

Company Name:	CCIC Southern Testing Co., Ltd.
Address:	Electronic Testing Building, No. 43 Shahe Road, Xili Street, Nanshan District, Shenzhen, Guangdong, China

2. Technical Requirements Specification in CFR Title 47 Part 2.1091

2.1. Exposure Limits

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).

Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm2)	Averaging Time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*(100)	< 6
3.0-30	1824/f	4.89/f	*(900/f^2)	< 6
30-300	61.4	0.163	1.0	< 6
300-1500	/	/	f/300	< 6
1500-100,000	/	/	5	< 6
(ii) 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^2)	< 30
30-300	27.5	0.073	0.2	< 30
300-1500	/	/	f/1500	< 30
1500-100,000	/	/	1.0	< 30
Note: f = frequency in MHz. * = Plane-wave equivalent power density.				

2.2. Predication of MPE limit at a given distance

Refer to formulas on page 19 of OET Bulletin 65, Edition 97-01.

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

Where:

S = power density (in appropriate units, e.g. mW/cm^2)

P = power input to the antenna (in appropriate units, e.g., mW)

G = numeric gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the centre of radiation of the antenna (appropriate units, e.g., cm)

2.3. Evaluation Results

Worst-Case mode Conducted Output Power Results for WLAN

Band	Mode	Frequency (MHz)	Maximum Output power (dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
2.4G WIFI	802.11b	2462	18.86	18±1	79.43

Worst-Case mode Conducted Output Power Results for WWAN

Band	Frequency (MHz)	Maximum Output power(dBm)	Max Tune up power (dBm)	Max Tune up power (mW)
WCDMA 850	836.6	22.85	22±1	199.53
WCDMA 1900	1907.6	23.60	23±1	251.19
LTE Band 4	1720.0	23.07	23±1	251.19
LTE Band 5	836.5	23.52	23±1	251.19
LTE Band 7	2505.0	22.37	22±1	199.53
LTE Band 66	1747.0	22.88	22±1	199.53

Calculation results: Worst-Case mode

Band	Antenna Gain (dBi)	Antenna Gain (numeric)	Distance (cm)	Result (mW/cm2)	Power Density (mW/cm2)	Ratio
2.4G WIFI	3.29	2.13	20	0.034	1.00	**0.034**
WCDMA 850	1.53	1.42	20	0.056	0.56	0.100
WCDMA 1900	3.36	2.17	20	0.108	1.00	0.108
LTE Band 4	3.52	2.25	20	0.112	1.00	0.112
LTE Band 5	1.53	1.42	20	0.071	0.56	**0.126**
LTE Band 7	3.61	2.30	20	0.091	1.00	0.091
LTE Band 66	3.55	2.26	20	0.090	1.00	0.090

Simultaneous Transmission Calculation (Worst-case mode)

No.	Transmitter Combinations	Scenario Supported or not
1	WWAN + 2.4G WLAN	Yes

Max Simultaneous Transmission Calculation (Worst-case mode)

No.	Worst Mode	MPE Ratio	Limit	Results
1	LTE Band 5 + 2.4G WIFI	0.16	≤ 1.0	Pass

Note: MPE Ratio = 0.0.34 + 0.126 = 0.16.

2.4. Conclusion

According to the KDB 447498 D01 General RF Exposure Guidance v06 section 7.2 determine the device is exclusion from SAR test.

** END OF REPORT **