RF Exposure Evaluation Report

Application No.:	SUCR2503000170AT
Applicant:	Shanghai Sunmi Technology Co.,Ltd.
Address of Applicant:	Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China
Manufacturer:	Shanghai Sunmi Technology Co.,Ltd.
Address of Manufacturer:	Room 505,No.388,Song Hu Road,Yang Pu District,Shanghai,China
Equipment Under Test (EUT):	
EUT Name:	Smart Interactive Terminal
Model No.:	F961A, F9E1A
Trade Mark:	SUNMI
FCC ID:	2AH25F961A
Standard(s) :	FCC Rules 47 CFR §2.1091 KDB 447498 D04 interim General RF Exposure Guidance v01
Date of Receipt:	May 24, 2025
Date of Test:	May 9, 2025 to June 14, 2025
Date of Issue:	June 16, 2025
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Revision Record			
Version	**Description**	***Date***	***Remark***
01	Original	June 16, 2025	/

Authorized for issue by:				
Tested By		 **Hayley ZhangProject Manager**		
Approved By		 **Cloud Peng/Technical Manager**		

1 Contents

2 General Information

2.1 General Description of E.U.T.

EUT Description:	Smart Interactive Terminal
Model No.:	F961A, F9E1A
Trade Mark:	SUNMI
Hardware Version:	490Coreboard_MB_V3.0
Software Version:	4.0.24
Power Supply:	20V
Antenna Gain:	F961A: Bluetooth: 0.3dBi WIFI 2.4G: 0.3dBi(Ant1);1.7dBi(Ant2) 5150MHz to 5250MHz: -1dBi(Ant1); 0.6dBi(Ant2) 5250MHz to 5350MHz: -0.8dBi(Ant1); -0.1dBi(Ant2) 5470MHz to 5725MHz: -0.4dBi (Ant1); 0.5dBi(Ant2) 5725MHz to 5850MHz: -0.8dBi(Ant1); -0.2dBi(Ant2) UNII-5: -1.1dBi(Ant1); -1dBi(Ant2) UNII-6: -0.4dBi(Ant1); 0.4dBi(Ant2) UNII-7: 0.6dBi(Ant1); 0.4dBi(Ant2) UNII-8: 0.9dBi(Ant1); -1.7dBi(Ant2) NFC: / F9E1A: Bluetooth: 0.7dBi WIFI 2.4G: 0.7dBi(Ant1);1.8dBi(Ant2) 5150MHz to 5250MHz: -2.1dBi (Ant1); 0.3dBi(Ant2) 5250MHz to 5350MHz: -2.1dBi (Ant1); 0.3dBi(Ant2) 5470MHz to 5725MHz: -2dBi(Ant1); -0.1dBi(Ant2) 5725MHz to 5850MHz: -2dBi(Ant1); -0.1dBi(Ant2) UNII-5: -1.7dBi(Ant1); -1.3dBi(Ant2) UNII-6:-1.7 dBi(Ant1); -1.7dBi(Ant2) UNII-7: -0.2dBi(Ant1); -0.6dBi(Ant2) UNII-8:-0.8 dBi(Ant1); -1.1dBi(Ant2) NFC: /
	Note: The antenna gain are derived from the gain information report provided by the manufacturer.
Note: *Since the above data and/or information is provided by the client relevant results or conclusions of this report are only made for these data and/or information, SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion. Remark: As above information is provided and confirmed by the applicant. SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.	

2.2 Separation Distance

Separation distance between the antenna to person (R):	＞20cm
Remark: This minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander. R has been stated in user manual.	

2.3 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.
South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code: 215000
No tests were sub-contracted.
Note:
1. SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

2.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA (Certificate No. 6336.01)
SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

• Innovation, Science and Economic Development Canada
SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.
CAB identifier: CN0120.
IC#: 27594.

• FCC –Designation Number: CN1312
SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.
Designation Number: CN1312.
Test Firm Registration Number: 717327

3 RF Exposure Test Exemptions

Test exemptions apply for devices used in general population/uncontrolled exposure environments, according to the SAR-based, or MPE-based exemption thresholds.

3.1 RF Exposure Test Exemptions for single RF sources

3.1.1 Blanket 1 mW Blanket Exemption

The 1 mW Blanket Exemption of §1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

The 1-mW blanket exemption applies at separation distances less than 0.5 cm, including where there is no separation. This exemption shall not be used in conjunction with other exemption criteria other than those for multiple RF sources in paragraph §1.1307(b)(3)(ii)(A).

The 1-mW exemption is independent of service type and covers the full range of 100 kHz to 100 GHz, but it shall not be used in conjunction with other exemption criteria or in devices with higher-power transmitters operating in the same time-averaging period. Exposure from such higher-power transmitters would invalidate the underlying assumption that exposure from the lower-power transmitter is the only contributor to SAR in the relevant volume of tissue.

Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

3.1.2 MPE-based Exemption

General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table B.1 [Table 1 of §1.1307(b)(1)(i)(C)] to support an exemption from further evaluation from 300 kHz through 100 GHz. The minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, **R must be at least $\lambda/2\pi$**, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table B.1—Thresholds For Single RF Sources Subject to Routine Environmental Evaluation

RF Source Frequency			Minimum Distance			Threshold ERP
f_L MHz		f_H MHz	$\lambda_L / 2\pi$		$\lambda_H / 2\pi$	W
0.3	–	1.34	159 m	–	35.6 m	1,920 R^2
1.34	–	30	35.6 m	–	1.6 m	3,450 R^2/f^2
30	–	300	1.6 m	–	159 mm	3.83 R^2
300	–	1,500	159 mm	–	31.8 mm	0.0128 R^2f
1,500	–	100,000	31.8 mm	–	0.5 mm	19.2R^2
Subscripts L and H are low and high; λ is wavelength. R:Separation distance between the antenna to person						

The table applies to any RF source (i.e. single fixed, mobile, and portable transmitters) and specifies power and distance criteria for each of the five frequency ranges used for the MPE limits. These criteria apply at separation distances from any part of the radiating structure of at least λ/2π. The thresholds are based on the general population MPE limits with a single perfect reflection, outside of the reactive near-field, and in the main beam of the radiator.

Limit calculation				
Frequency range	Frequency(MHz)	λ/2π(m)	R(m)	Threshold ERP(W)
1500~100000MHz	2402	0.0199	0.2000	0.768
1500~100000MHz	2462	0.0194	0.2000	0.768
1500~100000MHz	5200	0.0092	0.2000	0.768
1500~100000MHz	5260	0.0091	0.2000	0.768
1500~100000MHz	5550	0.0086	0.2000	0.768
1500~100000MHz	5785	0.0083	0.2000	0.768
1500~100000MHz	6345	0.0075	0.2000	0.768
1500~100000MHz	6465	0.0074	0.2000	0.768
1500~100000MHz	6665	0.0072	0.2000	0.768
1500~100000MHz	6985	0.0068	0.2000	0.768

3.1.3 SAR-based Exemption

SAR-based thresholds are derived based on frequency, power, and separation distance of the RF source. The formula defines the thresholds in general for either available maximum time-averaged power or maximum time-averaged ERP, whichever is greater.

If the ERP of a device is not easily determined, such as for a portable device with a small form factor, the applicant may use the available maximum time-averaged power exclusively if the device antenna or radiating structure does not exceed an electrical length of λ/4.

As for devices with antennas of length greater than λ/4 where the gain is not well defined, but always less than that of a half-wave dipole (length λ/2), the available maximum time-averaged power generated by the device may be used in place of the maximum time-averaged ERP, where that value is not known.

The separation distance is the smallest distance from any part of the antenna or radiating structure for all persons, during operation at the applicable ERP. In the case of mobile or portable devices, the separation distance is from the outer housing of the device where it is closest to the antenna.

The SAR-based exemption formula of §1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from **0.5cm to 40cm** and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\text{ cm}}(d/20\text{ cm})^{x} & d \le 20\text{ cm} \\ ERP_{20\text{ cm}} & 20\text{ cm} < d \le 40\text{ cm} \end{cases} \qquad \text{(B.2)}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\text{ cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and ERP_{20cm} is per Formula (B.1).

Limit calculation				
Frequency range(GHz)	Frequency(GHz)	X	d(cm)	Pth (mW)
0.3~1.5	**0.45**	1.011	**1**	**44.373**
1.5~6	**2.462**	1.903	**20**	**3060.000**

3.2 RF Exposure Test Exemptions for Simultaneous Transmission

The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those is paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).

Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluatedk term) shall be used to determine exemption for simultaneous transmission. In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\mathrm{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\mathrm{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1$$

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for Pth, including existing exempt transmitters and those being added.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

Pi = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

Pth,i = the exemption threshold power (Pth) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source i.

ERPj = the ERP of fixed, mobile, or portable RF source j.

ERPth,j = exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least $\lambda/2\pi$ according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Evaluatedk = the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limitk = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source k, as applicable from § 1.1310 of this chapter.

4 Measurement and Calculation

4.1 Maximum transmit power

The Power Data is based on the RF Test Report SUCR2250300017001, SUCR2250300017002, SUCR2250300017003, SUCR2250300017004, SUCR2250300017005, SUCR2250300017007

4.2 RF Exposure Calculation

For single RF source :

	Evaluation method	Separation distance between the antenna to person (R)
☐	Blanket 1 mW Blanket Exemption	Regardless of separation distance
☒	MPE-based Exemption(ERP)	R≥(λ /2 π)
☐	SAR-based Exemption(P_{th})	0.5cm<R<40cm

Band	Evaluation Frequency (MHz)	Max power (dBm)	Antenna Gain (dBi)	ERP (dBm)	ERP (W)	Permissible Minimum separation distance (λ/2π) (m)	Distance R (cm)	ERP_{th} (W)
BT	2402	9.56	0.7	8.11	0.01	0.0199	20.0	0.768
WLAN 2.4GHz	2462	29.93	0.7	28.48	0.70	0.0194	20.0	0.768
WLAN 5GHz B1	5200	21.03	0.6	19.48	0.09	0.0092	20.0	0.768
WLAN 5GHz B2	5260	21.21	0.3	19.36	0.09	0.0091	20.0	0.768
WLAN 5GHz B3	5550	21.57	0.5	19.92	0.10	0.0086	20.0	0.768
WLAN 5GHz B4	5785	20.56	-0.1	18.31	0.07	0.0083	20.0	0.768
WLAN 6GHz B5	6345	19.33	-1	16.18	0.04	0.0075	20.0	0.768
WLAN 6GHz B6	6465	15.59	0.4	13.84	0.02	0.0074	20.0	0.768
WLAN 6GHz B7	6665	17.59	0.4	15.84	0.04	0.0072	20.0	0.768
WLAN 6GHz B8	6985	17.58	0.9	16.33	0.04	0.0068	20.0	0.768

For multiple RF sources:

The BT & WLAN can transmit simultaneously but the maximum rate of MPE is 0.01/0.768/+0.7/0.768=0.928≤1. So the MPE of collocated transmitter is compliant.

--End of the Report--