RF TEST REPORT

Product Name: SmartphoneKey Reader

Model Name: SPK_AC_LTE_US_V1.0

FCC ID: 2BNRNSPKRDRLV1

Issued For : SMARTPHONEKEY SYSTEMS INC.

100 King Street West, 1 First Canadian Place, Suite 6200, Toronto, Ontario, M5X 1B8, Canada

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number:	LGT25A078HA02
Sample Received Date:	Jan. 17, 2025
Date of Test:	Jan. 17, 2025 – Mar. 14, 2025
Date of Issue:	Mar. 14, 2025

TEST REPORT CERTIFICATION

Applicant:	SMARTPHONEKEY SYSTEMS INC.
Address:	100 King Street West, 1 First Canadian Place, Suite 6200, Toronto, Ontario, M5X 1B8, Canada
Manufacture:	OMFOCUS (SHENZHEN)TECH., LTD.
Address:	No.102, Floor 1, Building 31, No.78, Shahe Road Henggang Street, Longgang District, Shenzhen, Guangdong, China
Product Name:	SmartphoneKey Reader
Trademark:	SmartphoneKey
Model Name:	SPK_AC_LTE_US_V1.0
Sample Status:	Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR §2.1091 KDB 447498 D01 General RF Exposure Guidance v06	PASS

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Revision History

Rev.	Issue Date	Revisions
00	Mar. 14, 2025	Initial Issue

1. GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	SmartphoneKey Reader	
Trademark:	SmartphoneKey	
Model Name:	SPK_AC_LTE_US_V1.0	
Series Model:	N/A	
Model Difference:	N/A	
Frequency Bands:	GSM	850: 824 MHz ~ 849MHz 1900: 1850 MHz ~ 1910MHz
	WCDMA	Band V: 824 MHz ~ 849 MHz Band II: 1850 MHz ~ 1910 MHz Band IV: 1710 MHz ~ 1755 MHz
	LTE	LTE Band 2:1850~1910MHz LTE Band 4:1710~1755MHz LTE Band 5: 824~849MHz LTE Band 7:2500~2570MHz LTE Band 40: 2305-2315MHz/2350-2360MHz LTE Band 66: 1710-1780MHz
	NFC	13.56MHz
Rating:	Input: DC 12V~24V	
Hardware Version:	LTE_US_V1.0	
Software Version:	0.1	

1.2 TEST LABORATORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China
Accreditation Certificate:	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.
Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

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

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)
Limits for Occupational / controlled Exposures			
0.3-3.0	614	1.63	*(100)
3.0-30	1842/f	4.89/f	*($900/f^2$)
30-300	61.4	0.163	1.0
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
0.3-1.34	614	1.63	*(100)
1.34-30	824/f	2.19/f	*($180/f^2$)
30-300	27.5	0.073	0.2
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

* = Plane-wave equivalent power density.

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

2.3 EUT OPERATION CONDITION

EUT was enabled to transmit and receive at lowest, middle and highest channels.

2.4 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

2.5 TEST RESULT

Turn up Result

Mode	Turn up Power
GSM 850	26.5±1dBm
GSM 1900	27.5±1dBm
WCDMA B2	21.5±1dBm
WCDMA B4	19.5.5±1dBm
WCDMA B5	16.5±1dBm
LTE B2	22.5±1dBm
LTE B4	19±1dBm
LTE B5	17.5±1dBm
LTE B7	20.5±1dBm
LTE B40	11.5±1dBm
LTE B66	19.5±1dBm
NFC	-51±1dBm

dBm=dBuV/m@3m-95.2

The MPE result of worst mode:

RF Function	Frequency (MHz)	Max Turn up Power (dBm)	Duty cycle factor	Max Power (dBm)	Max Power (mW)	ANT Gain (dBi)	ANT Gain (gain of antenna in linear scale)	Power Density (mW/cm²)	Limit (mW/cm²)	Ratio	Result
GSM1800 (1Slot)	1880	28.5	-9.03	19.47	88.51	3.11	2.05	0.036	1	0.036	Pass
GSM850 (1Slot)	848.8	27.5	-9.03	18.47	70.31	0.5	1.12	0.016	0.566	0.028	Pass
WCDMA B2	1907.6	22.5	0	22.5	177.83	3.11	2.05	0.072	1	0.072	Pass
WCDMA B5	826.4	17.5	0	17.5	56.23	0.5	1.12	0.013	0.551	0.023	Pass
LTE B2	1880	23.5	0	23.5	223.87	3.11	2.05	0.091	1	0.091	Pass
LTE B5	824.7	18.5	0	18.5	70.79	0.5	1.12	0.016	0.550	0.029	Pass

RF Function	Frequency (MHz)	Max Turn up Power (dBm)	Max Turn up Power (mW)	Power Density (mW/cm²)	Limit (mW/cm²)	Ratio	Result
NFC	13.56	-50.00	0.0000100	0.0000000020	0.979	0.0000000020	Pass

Multiple transmission:

0.000000002+0.091≈0.091

Note:

1. The Maximum Power Density is less than the limit, complies with the exemption requirements.

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