MPE REPORT

FCC ID: 2AXIE-SO09WP

Date of issue: Oct. 28, 2020

Report number:	MTi20082708-3E2
Sample description:	SMART MINI PLUG
Model(s):	HKWL-SO09WP
Applicant:	HANK SMART TECH CO., LTD
Address:	Unit 1419, floor 14th, Block5, Cloud Park Phase 2, Bantian street, Longgang District, Shenzhen China
Date of test:	Oct. 19, 2020 to Oct. 28, 2020

Shenzhen Microtest Co., Ltd.

http://www.mtitest.com

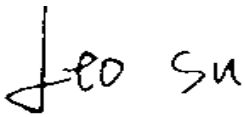
Tel:(86-755)88850135 Fax: (86-755) 88850136 Web: http://www.mtitest.com E-mail: mti@51mti.com
Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao' an District, Shenzhen, Guangdong, China.

TEST RESULT CERTIFICATION	
Applicant's name:	HANK SMART TECH CO., LTD
Address:	Unit 1419, floor 14th, Block5, Cloud Park Phase 2, Bantian street, Longgang District, Shenzhen China
Manufacture's name:	HANK SMART TECH CO., LTD
Address:	Unit 1419, floor 14th, Block5, Cloud Park Phase 2, Bantian street, Longgang District, Shenzhen China
Product name:	SMART MINI PLUG
Trademark:	N/A
Model and/or type reference:	HKWL-SO09WP
Serial model:	CS-MINI-PLUG
RF exposure procedures:	KDB 447498 D01 v06

This device described above has been tested by Shenzhen Microtest Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by: 

Demi Mu Oct. 28, 2020

Reviewed by: 

Leo Su Oct. 28, 2020

Approved by: 

Tom Xue Oct. 28, 2020

RF EXPOSURE EVALUATION

According to FCC 1.1310: 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)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	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	$*900/f^2$	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			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	$*180/f^2$	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $Pd= (Pout*G)\ (4*pi*R^2)$

Where

Pd= Power density in mW/cm2

Pout=output power to antenna in mW

G= Numeric gain of the antenna relative to isotropic antenna

Pi=3.1415926

R= distance between observation point and center of the radiator in cm(20cm)

Pd the limit of MPE, 1mW/cm2. If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

Measurement Result

WIFI:

Operation Frequency: WIFI 802.11b/g/n HT20: 2412-2462MHz,

802.11n HT40: 2422-2452MHz,

Power density limited: 1mW/ cm^2

Antenna Type: Wifi Antenna: PCB Mounted Embedded Antenna;
WIFI antenna gain: 0dBi

R=20cm

mW=10^(dBm/10)

antenna gain Numeric=10^(dBi/10)= 10^(0/10)=1

Channel Freq. (MHz)	modulation	conducted power	Tune-up power	Max		Antenna	Evaluation result at 20cm	Power density Limits
		(dBm)	(dBm)	tune-up power		Gain	Power density(mW/cm2)	(mW/cm2)
				(dBm)	(mW)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	17.16	17±1	18	63.095734	1	0.01255	1
2437		16.76	17±1	18	63.095734	1	0.01255	1
2462		16.92	17±1	18	63.095734	1	0.01255	1
2412	802.11g	15.92	15±1	16	39.810717	1	0.00792	1
2437		15.88	15±1	16	39.810717	1	0.00792	1
2462		15.77	15±1	16	39.810717	1	0.00792	1
2412	802.11n H20	15.86	15±1	16	39.810717	1	0.00792	1
2437		15.78	15±1	16	39.810717	1	0.00792	1
2462		15.71	15±1	16	39.810717	1	0.00792	1
2422	802.11n H40	16.25	16±1	17	50.118723	1	0.00997	1
2437		16.02	16±1	17	50.118723	1	0.00997	1
2452		16.02	16±1	17	50.118723	1	0.00997	1

Conclusion:

For the max result: 0.01255≤ 1.0 for 1g SAR, No SAR is required.

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