



# FCC TEST REPORT

## FCC ID:2ATSQ-ZK902A

Product	:	Vacuum Cleaner
Model Name	:	ZK902A
Additional model	:	ZK902B,ZK902C,ZK902D,ZK902E,ZK902F,ZK902G,ZK902H,ZK902J, ZK902K,ZK902L,ZK902M,ZK902N,ZK902P,ZK902Q,ZK902R,ZK902T, ZK902U,ZK902V,ZK902W
Brand	:	小旋风, Smart Cyclone
Report No.	:	PTC21011300402E-FC04
<b>Prepared for</b>		
Dongguan Zhike Intelligent Science and Technology Co., Ltd		
#1 , Juxin 1st Road , Dalang Town ; Dongguan City , Guangdong Province,China		
<b>Prepared by</b>		
Precise Testing & Certification Co., Ltd.		
Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China.		



## TEST RESULT CERTIFICATION

Applicant's name : Dongguan Zhike Intelligent Science and Technology Co., Ltd  
Address : #1 , Juxin 1st Road , Dalang Town ; Dongguan City , Guangdong Province,China  
Manufacture's name : Dongguan Zhike Intelligent Science and Technology Co., Ltd  
Address : #1 , Juxin 1st Road , Dalang Town ; Dongguan City , Guangdong Province,China  
Product name : Vacuum Cleaner  
Model name : ZK902A  
Additional model : ZK902B,ZK902C,ZK902D,ZK902E,ZK902F,ZK902G,ZK902H,ZK902J, ZK902K,ZK902L,ZK902M,ZK902N,ZK902P,ZK902Q,ZK902R,ZK902T, ZK902U,ZK902V,ZK902W  
Test procedure : KDB 447498 D01 General RF Exposure Guidance v06  
Test Date : Jan. 18, 2021 to Mar. 01, 2021  
Date of Issue : Mar. 01, 2021  
Test Result : Pass

This device described above has been tested by PTC, 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.

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Test Engineer:

A handwritten signature in black ink that reads "Leo Yang".

Leo Yang / Engineer

Technical Manager:

A handwritten signature in black ink that reads "Chris Du".

Chris Du / Manager



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## 2 Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS
Remark:		
N/A: Not Applicable		



### 3 General Information

#### 3.1 General Description of E.U.T.

Product Name	:	Vacuum Cleaner
Model Name	:	ZK902A
Additional model	:	ZK902B,ZK902C,ZK902D,ZK902E,ZK902F,ZK902G,ZK902H,ZK902J, ZK902K,ZK902L,ZK902M,ZK902N,ZK902P,ZK902Q,ZK902R,ZK902T, ZK902U,ZK902V,ZK902W Note:The appearance of the product is different in color , and the PCB board is the same. So choose ZK902A as the main test model
Operation Frequency	:	WiFi 2.4G:802.11b/g/n HT20: 2412-2462MHz Wifi 5.1G:802.1a20/n20/n40/ac20/ac40/ac80:5180MHz~5240MHz Wifi 5.8G:802.1a20/n20/n40/ac20/ac40/ac80:5745MHz~5825MHz
Type of Modulation	:	WIFI 2.4G:DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n; WIFI 5.1G:OFDM with BPSK/QPSK/16QAM/64QAM/256QAM WIFI 5.8G:OFDM with BPSK/QPSK/16QAM/64QAM/256QAM
Antenna installation	:	PIFA Antenna
Antenna Gain	:	5G:3.0dBi 2.4G:3.9
The directional gain	:	5G:6.01dBi 2.4G:6.91
Power supply	:	Input:AC100-240V,50/60Hz, 0.8A Output : DC 24V-1A
Hardware Version	:	VER 1.2
Software Version	:	N/A



## 4 RF Exposure

Test Requirement : FCC Part 1.1307(b)(1)

Evaluation Method : FCC Part 2.1091

### 4.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

### 4.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

Frequency Range	Electric Field	Magnetic Field	Power Density (S)	Averaging Time
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range	Electric Field	Magnetic Field	Power Density (S)	Averaging Time
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
1500-100,000			1.0	30

Note: f = frequency in MHz ; \*Plane-wave equivalent power density



### 4.3 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

### 4.4 Test Result

Item	Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Peak Output Power (mw)	Power Density (mW/cm2)	Limit of Power Density (mW/cm2)	Result
WIFI A 5.1	2	16.42	43.85	0.0174	1	Pass
WIFI B 5.1	2	16.39	43.55	0.0173	1	Pass
ANT A+ANT B	3.99	19.00	79.43	0.0631	1	Pass
WIFI A 5.8	2	17	50.12	0.0199	1	Pass
WIFI B 5.8	2	14.09	25.64	0.0102	1	Pass
ANT A+ANT B	3.99	18.45	69.98	0.0556	1	Pass
WIFI A 2.4	2.45	15.86	38.55	0.0188	1	Pass
WIFI B 2.4	2.45	15.82	38.19	0.0187	1	Pass
ANT A+ANT B	4.91	18.83	76.38	0.0746	1	Pass

\*\*\*\*\*THE END REPORT\*\*\*\*\*