

RF EXPOSURE Test Report

Product: Smart Bird Feeder

Trade Mark: Vakiav

Model Number: VK-G1

FCC ID: 2BCHA-VKG1

Prepared for

VANIMAGE. CO., LTD

92 CORPORATE PARK STE C 204 IRVINE, CA 92606, United States

Prepared by

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TEST RESULT CERTIFICATION

Applicant's Name..... : VANIMAGE. CO., LTD
Address : 92 CORPORATE PARK STE C 204 IRVINE, CA 92606, United States
Manufacturer's Name : Shenzhen Fanyingzhilian Technology Co., Ltd
Address : Room 1301, Block B2, Building 9, District 2, Shenzhen Bay Science and Technology Ecological Park, No. 3609. Baishi Road, Yuehai Street, Nanshan District, Shenzhen, China

Product description

Product name : Smart Bird Feeder
Model Number : VK-G1

Standards..... : FCC CFR 47 PART 1, 1.1310

Test procedure..... : KDB 447498 D01 v06

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

Date of Test..... :

Date (s) of performance of tests..... : August 22, 2023~October 16, 2023

Test Result..... : **Pass**

Testing Engineer :

Zoe Su
(Z o e S u)

Technical Manager :

Gary
(Gary)

Authorized Signatory :

Leo Su
(L e o S u)



[illegible]

1 General Description

1.1 Description of EUT

Product name:	Smart Bird Feeder
Model name:	VK-G1
Series Model:	VK-GX
Different of series model:	The color of appearance and model name of series models listed are different from the main model, but the circuit and the electronic construction are the same, declared by the manufacturer.
Operation frequency:	802.11b/g/n20:2412~2462 MHz
Modulation type:	IEEE 802.11b : DSSS (DBPSK, DQPSK, CCK) IEEE 802.11g/n (HT20) : OFDM (64QAM, 16QAM, QPSK, BPSK)
Bit Rate of transmitter:	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz) use 800 ns GI: 65.0/58.5/52.0/39.0/26.0/19.5/13.0/6.5 Mbps (MCS0~MCS7)
Antenna type:	PIFA Antenna
Antenna gain:	1.73dBi
Max. output power:	14.4dBm
Hardware version:	Hawk_MB_V02_230618
Software version:	tina_v851s-bird_v0.2.4_0725
Battery:	DC 3.7V, 19.24Wh
Power supply:	DC 3.7V by Battery, USB 5V Charging
Adapter information:	N/A

1.2 Test Mode

Pretest Test Mode	Description of Mode
1	TX
2	/
3	/

1.3 Ancillary Equipment

Equipment	Model	S/N	Manufacturer

2 Test Facilities and Accreditations

2.1 Test Laboratory

Test Site	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
FCC Registration No.:	CN1341
A2LA Certificate No.:	6765.01

2.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15°C~35°C
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

2.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Measurement Frequency Range	U, (dB)	Note
RF frequency	2×10^{-5}	
RF power, conducted	± 0.57 dB	
Conducted emission(150kHz~30MHz)	± 2.5 dB	
Radiated emission(30MHz~1GHz)	± 4.2 dB	
Radiated emission (above 1GHz)	± 4.7 dB	
Temperature	± 1 degree	
Humidity	± 5 %	

2.4 Test Software

Software name	Manufacturer	Model	Version
Conducted test system	MWRF-test	MTS 8310	V2.0.0

3 List of Test Equipment

RF							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E041	MXG Anaio Signal Generator	Agilent	N5181A	MY47070421	2023-05-11	2024-05-10
2	HB-E042	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	132108	2023-05-11	2024-05-10
3	HB-E043	MXG Anaio Signal Generator	Agilent	N5182A	US46240335	2023-05-11	2024-05-10
4	HB-E044	Signal & spectrum Analyzer	R&S	FSV3044	101264	2023-05-11	2024-05-10
5	HB-E045	RF Control Box	Noyetec	NY100-R FCB	N/A	/	/
6	HB-E058	Thermometer Clock Humidity Monitor	N/A	HTC-1	N/A	/	/
7	HB-E077	PXA Signal Analyzer	Agilent	N9030A	N/A	2023-05-11	2024-05-10

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4 RF Exposure

4.1 Standalone SAR test exclusion considerations

1.1.1. Limit

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).

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: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

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

P_d 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.

1.1.2. Test Result

2.4GWiFi:

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

Power density limited: 1mW/ cm²

Antenna Type: PIFA Antenna;

Antenna gain: 1.73dBi

R=20cm

$mW = 10^{(dBm/10)}$

antenna gain Numeric = $10^{(dBi/10)} = 10^{(1.73/10)} = 1.49$

2.4GWiFi:

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/cm ²)	(mW/cm ²)
				(dBm)	(mW)	Numeric		
		Ant A	Ant A	Ant A	Ant A	Ant A	Ant A	
2412	802.11b	13.82	14±1	15	31.62	1.49	0.0063	1
2437		14.4	14±1	15	31.62	1.49	0.0063	1
2462		13.71	14±1	15	31.62	1.49	0.0063	1
2412	802.11g	12.4	12±1	13	19.95	1.49	0.0040	1
2437		11.49	12±1	13	19.95	1.49	0.0040	1
2462		10.91	12±1	13	19.95	1.49	0.0040	1
2412	802.11n H20	11.22	11±1	12	15.85	1.49	0.0032	1
2437		11.37	11±1	12	15.85	1.49	0.0032	1
2462		10.79	11±1	12	15.85	1.49	0.0032	1

Conclusion:

For the max result: 0.0063≤1g SAR, No SAR is required.

***** END OF REPORT *****