Maximum Permissible Exposure Evaluation

FCC ID: 2BOO8-HABAS21

Report No.	:	TBR-C-202503-0415-5
Applicant	:	Shenzhen Tucworm Network Technology Co. Ltd
Equipment Under Test (EUT)		
EUT Name	:	Pet Double Bowl Feeder (WIFI Version)
Model No.	:	habas21
Series Model No.	:	Please Refer To Page 4
Brand Name	:	habas
Sample ID	:	HC-C-202503-0415-02-01 # & HC-C-202412-0086-01-02#
Receipt Date	:	2025-04-10
Test Date	:	2025-04-10 to 2025-04-23
Issue Date	:	2025-04-23
Standards	:	FCC Part 2.1091
Test Method	:	KDB 447498 D01 General RF Exposure Guidance v06
Conclusions	:	**PASS**
		In the configuration tested, the EUT complied with the standards specified above.
Test By	:	Lily Zhang
Reviewed By	:	Camille Li
Approved By	:	Ivan Su

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

1/F.,Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Tel: +86 75526509301 Fax: +86 75526509195

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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202503-0415-5	Rev.01	Initial issue of report	2025-04-23

1. General Information about EUT

1.1 Client Information

Applicant	:	Shenzhen Tucworm Network Technology Co. Ltd
Address	:	6218 Room 6218, Yikang Business Building, 33 Huarong Road, Dalang Street, Longhua District, Shenzhen, Guangdong Province, China
Manufacturer	:	Shenzhen Tucworm Network Technology Co. Ltd
Address	:	6218 Room 6218, Yikang Business Building, 33 Huarong Road, Dalang Street, Longhua District, Shenzhen, Guangdong Province, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	Pet Double Bowl Feeder (WIFI Version)	
Models No.	:	habas21, habas21-1, habas07, habas07-1	
Model Different	:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is model name.	
Product Description	:	Operation Frequency:	802.11b/g/n(HT20):2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Power Rating	:	Input: 5V⎓2A or 4.5V⎓2A (powered by 3pcs batteries)	
Software Version	:	WBR1-IPEX	
Hardware Version	:	105	
Remark: The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.			

1.3 Antenna Gain

Band	Antenna Type	Antenna Gain(dBi)
2.4G Wi-Fi	PCB	0

2. Measurement Uncertainty

The reported uncertainty of measurement y±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 %.

Test Item	Parameters	Expanded Uncertainty (ULab)
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	±3.50 dB ±3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	±4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	±4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	±4.20 dB
Temperature	/	±0.6℃
Humidity	/	±4%
Supply voltages	/	±2%
Time	/	±4%

3. Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025：2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.

4. Method of Measurement for FCC

4.1 EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.2 Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density
P: power input to the antenna
G: power gain of the antenna in the direction of interest relative to an isotropic radiator.
R: distance to the center of radiation of the antenna

4.3 Simultaneous transmission MPE Considerations

According to KDB447498 D01 v06: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0.
This means that:

∑ of MPE ratios ≤ 1.0

5. Test Result

2.4G Wi-Fi MPE Result									
Mode	N_{TX}	Freq. (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm^2) [S]	limit (mW/cm2)
802.11b	1	2412	16.27	16±1	17	0	20	0.0100	1
		2437	15.38	15±1	16	0	20	0.0079	1
		2462	15.97	16±1	17	0	20	0.0100	1
802.11g	1	2412	15.21	15±1	16	0	20	0.0079	1
		2437	15.35	15±1	16	0	20	0.0079	1
		2462	15.44	15±1	16	0	20	0.0079	1
802.11n20	1	2412	15.45	15±1	16	0	20	0.0079	1
		2437	15.97	16±1	17	0	20	0.0100	1
		2462	15.31	15±1	16	0	20	0.0079	1
802.11n40	1	2422	15.04	15±1	16	0	20	0.0079	1
	1	2437	15.18	15±1	16	0	20	0.0079	1
	1	2452	15.89	16±1	17	0	20	0.0100	1
Note: N_{TX}= Number of Transmit Antennas RF Output power specifies that Maximum Conducted Peak Output Power.									

Conclusion:
As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm^2)
300-1,500	F/1500
1,500-100,000	1.0

MPE limit S: 1mW/ cm^2
The MPE is calculated as **0.0100** ***mW / cm² < limit 1mW / cm²***.

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

-----END OF THE REPORT------