



Certificate # 2861.01

GRGTEST

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Test Report

Verified code: 103159

Report No.: E202411154120-3EN

Customer: Shanghai Huace Navigation Technology Ltd.

Address: 577 Songying Road, Qingpu District, 201706 Shanghai, China

Sample Name: X500 Rotor UAV

Sample Model: X500

Receive Sample Date: Dec.05,2024

Test Date: Dec.16,2024 ~ Dec.23,2024

Reference Document: 47 CFR, FCC Part 2.1091 Radio frequency radiation exposure evaluation: mobile devices

Test Result: Pass

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GRG METROLOGY & TEST GROUP CO., LTD.

Issued Date: 2025-01-13

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REPORT ISSUED HISTORY

| Report Version | Report No. | Description | Compile Date |
|----------------|-------------------|----------------|--------------|
| 1.0 | E202411154120-3EN | Original Issue | 2024-12-25 |

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1. GENERAL DESCRIPTION OF EUT

1.1 APPLICANT

Name: Shanghai Huace Navigation Technology Ltd.

Address: 577 Songying Road, Qingpu District, 201706 Shanghai, China

1.2 MANUFACTURER

Name: Shanghai Huace Navigation Technology Ltd.

Address: 577 Songying Road, Qingpu District, 201706 Shanghai, China

1.3 FACTORY

Name: Shanghai Huace Navigation Technology Ltd.

Address: 577 Songying Road, Qingpu District, 201706 Shanghai, China

1.4 BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Product Name: X500 Rotor UAV

Product Model: X500

Trade Name: /

Additional Model: /

Power Supply: DC 47.04V by batteries

Battery: Model: B10

Max charge voltage: 53.4V, rated capacity: 10000mAh, 470.4Wh, nominal voltage: 47.04V

FCC ID: SY4-A02061

Frequency Band: 2402MHz - 2480MHz for Bluetooth LE with 1M & 2M

2406.5MHz – 2476.5MHz for OFDM

BLE 1Mbps: 3.39dBm

Transmit Power: BLE 2Mbps: 3.38dBm

2.4G: 10.65dBm

Modulation type: GFSK for Bluetooth LE, OFDM for 2406.5MHz – 2476.5MHz

For BLE_1Mbps & 2Mbps Internal antenna with 2.63dBi (Max.),

Antenna Type: 2.4G OFDM: The EUT have two antennas, the antenna 1 support transmitting and receiving, the antenna 2 is receiving only.

Internal antenna 1 & antenna 2 with 2.64dBi (Max.)

Temperature Range: -20 °C ~ +50 °C

Hardware Version: v2.1.0

Software Version: v2.9.6

Sample No: E202411154120-0001, E202411154120-0003

Note: The EUT antenna gain is provided by the applicant. This report is made solely on the basis of such data and/or information. We accept no responsibility for the authenticity and completeness of the above data and information and the validity of the results and/or conclusions.

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2. LABORATORY

2.1 LABORATORY

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of GRG METROLOGY & TEST GROUP CO., LTD.

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2.2 ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to GB/T 27025(ISO/IEC 17025:2017)

USA A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada ISED (Company Number: 24897, CAB identifier:CN0069)

USA FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site,

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3. LIMITS FOR GENERAL POPULATION/UNCONTROLLED EXPOSURE

General

According to the KDB 447498 D04 Interim General RF Exposure Guidance v01, General frequency and separation-distance dependent MPE-based effective radiated power (ERP) thresholds are in Table 4.1 to support an exemption from further evaluation from 300 kHz through 100 GHz.

TABLE 4.1—THRESHOLDS FOR SINGLE RF SOURCES SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

| RF Source Frequency | | Minimum Distance | | Threshold ERP | |
|--|-----------|--------------------|--------------------|---------------|---------|
| f_L MHz | f_H MHz | $\lambda_L / 2\pi$ | $\lambda_H / 2\pi$ | | W |
| 0.3 | — | 1.34 | 159 m | — | 35.6 m |
| 1.34 | — | 30 | 35.6 m | — | 1.6 m |
| 30 | — | 300 | 1.6 m | — | 159 mm |
| 300 | — | 1,500 | 159 mm | — | 31.8 mm |
| 1,500 | — | 100,000 | 31.8 mm | — | 0.5 mm |
| Subscripts L and H are low and high; λ is wavelength. From § 1.1307(b)(3)(i)(C), modified by adding Minimum Distance columns. | | | | | |

For mobile devices that are not exempt per Table 4.1 at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz, evaluation of compliance with the exposure limits in §1.1310 is necessary if the ERP of the device is greater than $ERP_{20\text{cm}}$ in Formula (4.1).

Formula (4.1):

$$P_{th} (\text{mW}) = ERP_{20\text{ cm}} (\text{mW}) = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

4. CALCULATION METHOD

Predication of MPE limit at a given distance

EIRP(dBm)=Maximum Tune-up Output power (dBm)+Maximum antenna gain(dBi)

ERP(dBm)=EIRP(dBm)-2.15

R=minimum distance to the center of radiation of the antenna

From the EUT RF output power, the minimum mobile separation distance, d=20cm, as well as the maximum gain of the used as following information, the RF power ERP can be obtained.

Table 1 Antenna Specification

| Mode | Antenna type | Internal Identification | Maximum antenna gain |
|--------------|------------------|-------------------------|----------------------|
| Bluetooth LE | Internal antenna | Antenna 1 | 2.63dBi |
| 2.4G OFDM | Internal antenna | Antenna 1 | 2.64dBi |

Table 2 Transmit Power

| Mode | Maximum Output Power (dBm) | Maximum Tune-up Output power (dBm) |
|-----------------|----------------------------|------------------------------------|
| Bluetooth LE 1M | 3.39 | 3.00±1.00 |
| Bluetooth LE 2M | 3.38 | 3.00±1.00 |
| 2.4G OFDM | 10.65 | 10.00±1.00 |

5. ESTIMATION RESULT

5.1 MEASUREMENT RESULTS

STANDALONE MPE

| Mode | Frequency (MHz) | Maximum Tune-up Output power (dBm) | Antenna Gain (dBi) | Maximum Tune-up EIRP (dBm) | ERP (dBm) | Maximum Tune-up ERP (W) | Threshold ERP(W) |
|-----------|-----------------|------------------------------------|--------------------|----------------------------|-----------|-------------------------|------------------|
| BLE 1M | 2402 - 2480 | 4.00 | 2.63 | 6.63 | 4.48 | 0.0028 | 0.768 |
| BLE 2M | 2402 - 2480 | 4.00 | 2.63 | 6.63 | 4.48 | 0.0028 | 0.768 |
| 2.4G OFDM | 2406.5 - 2476.5 | 11.00 | 2.64 | 13.64 | 11.49 | 0.0141 | 0.768 |

Remark:

1. RF Exposure use distance is 20cm from manufacturer declaration of user manual.
2. Threshold ERP(W)= $19.2R^2(W)=19.2*0.2*0.2(W)=0.768(W)$.
3. ERP(dBm)=EIRP(dBm)-2.15

Maximum Simultaneous transmission MPE Ratio for 2.4G OFDM, BLE:

| Maximum MPE ratio 2.4G OFDM | Maximum MPE ratio BLE | \sum MPEratios | Limit | Results |
|-----------------------------|-----------------------|------------------|-------|---------|
| 0.0184 | 0.0036 | 0.0220 | 1.000 | Pass |

Remark:

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations \sum of MPE ratios ≤ 1.0

6. CONCLUSION

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

----- End of Report -----