



## MPE TEST REPORT

**Report Reference No.** ..... : **TRE1801017702** R/C.....: 58088  
**FCC ID**..... : **2ANWO-HOTSHOT**  
**Applicant's name** ..... : **HOT SHOT SYSTEMS INC.**  
**Address**..... : 1005 E. 17TH, HAYS, Kansas, United States  
**Manufacturer**..... : HOT SHOT SYSTEMS INC.  
**Address**..... : 1005 E. 17TH, HAYS, Kansas, United States  
**Test item description** ..... : **TR-1000**  
**Trade Mark** ..... : Hot Shot TR-1000  
**Model/Type reference**..... : TR-1000  
**Listed Model(s)** ..... : -  
**Standard** ..... : **FCC Per 47 CFR 2.1091(b); KDB447498 v05r02**  
**Date of receipt of test sample**..... : Jan. 25, 2018  
**Date of testing**..... : Jan. 25, 2018 –Feb. 06, 2018  
**Date of issue**..... : Feb. 06, 2018  
**Result**..... : **PASS**

Compiled by  
( position+printed name+signature)..  
File administrators Shayne Zhu

Shayne Zhu

Supervised by  
( position+printed name+signature)..  
Project Engineer Cary Luo

Cary Luo

Approved by  
( position+printed name+signature)..  
RF Manager Hans Hu

Hans Hu

**Testing Laboratory Name** ..... : **Shenzhen Huatongwei International Inspection Co., Ltd**  
**Address**..... : 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road,  
Tianliao, Gongming, Shenzhen, China

**Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.**

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

## Contents

|                  |                                          |                 |
|------------------|------------------------------------------|-----------------|
| <b><u>1.</u></b> | <b><u>SUMMARY</u></b>                    | <b><u>3</u></b> |
| 1.1.             | Client Information                       | 3               |
| 1.2.             | Report version information               | 3               |
| 1.3.             | Product Description                      | 4               |
| 1.4.             | Test frequency list                      | 5               |
| 1.5.             | EUT operation mode                       | 5               |
| 1.6.             | EUT configuration                        | 5               |
| 1.7.             | Modifications                            | 5               |
| <b><u>2.</u></b> | <b><u>TEST ENVIRONMENT</u></b>           | <b><u>6</u></b> |
| 2.1.             | Address of the test laboratory           | 6               |
| 2.2.             | Environmental conditions                 | 6               |
| 2.3.             | Statement of the measurement uncertainty | 6               |
| <b><u>3.</u></b> | <b><u>METHOD OF MEASUREMENT</u></b>      | <b><u>7</u></b> |
| 3.1.             | Applicable Standard                      | 7               |
| 3.2.             | Limit                                    | 7               |
| 3.3.             | MPE Calculation Method                   | 7               |
| <b><u>4.</u></b> | <b><u>CONCLUSION</u></b>                 | <b><u>8</u></b> |

## 1. SUMMARY

### 1.1. Client Information

|               |                                           |
|---------------|-------------------------------------------|
| Applicant:    | HOT SHOT SYSTEMS INC                      |
| Address:      | 1005 E. 17TH, HAYS, Kansas, United States |
| Manufacturer: | HOT SHOT SYSTEMS INC                      |
| Address:      | 1005 E. 17TH, HAYS, Kansas, United States |

### 1.2. Report version information

| Revision No. | Date of issue | Description |
|--------------|---------------|-------------|
| N/A          | 2018-02-06    | Original    |
|              |               |             |
|              |               |             |
|              |               |             |
|              |               |             |

**1.3. Product Description**

|                            |                                                                                                                                                  |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Name of EUT:               | TR-1000                                                                                                                                          |
| Trade mark:                | Hot Shot TR-1000                                                                                                                                 |
| Model/Type reference:      | TR-1000                                                                                                                                          |
| Listed model(s):           | -                                                                                                                                                |
| Power supply:              | -                                                                                                                                                |
| Battery information:       | -                                                                                                                                                |
| Charger information:       | -                                                                                                                                                |
| Adapter information:       | -                                                                                                                                                |
|                            |                                                                                                                                                  |
| Operation Frequency Range: | 151.82 MHz, 151.88 MHz, 151.94 MHz, 154.57 MHz, 154.60MHz                                                                                        |
| Rated Output Power:        | 2W (33dBm)                                                                                                                                       |
| Modulation Type:           | FM                                                                                                                                               |
| Channel Separation:        | <input checked="" type="checkbox"/> 12.5kHz <input checked="" type="checkbox"/> 25kHz                                                            |
| Emission Designator:       | <input checked="" type="checkbox"/> 12.5kHz Channel Separation: 10K1F3E<br><input checked="" type="checkbox"/> 25kHz Channel Separation: 10K4F3E |
| Antenna Type:              | External                                                                                                                                         |
| Maximum Transmitter Power: | 1.45W for 12.5kHz Channel Separation<br>1.89W for 25kHz Channel Separation                                                                       |

#### 1.4. Test frequency list

| Mode   | Modulation | Channel Separation(kHz) | Test Frequency (MHz) |        |
|--------|------------|-------------------------|----------------------|--------|
| Analog | FM         | 12.5                    | CH <sub>L</sub>      | 151.82 |
|        |            |                         | CH <sub>M1</sub>     | 151.88 |
|        |            |                         | CH <sub>M2</sub>     | 151.94 |
|        |            | 25                      | CH <sub>M2</sub>     | 154.57 |
|        |            |                         | CH <sub>H</sub>      | 154.60 |

#### 1.5. EUT operation mode

| Test mode | Transmitting | Analog  |       |
|-----------|--------------|---------|-------|
|           |              | 12.5kHz | 25kHz |
| TX1       | √            | √       |       |
| TX2       | √            |         | √     |

√: is operation mode.

#### 1.6. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

|   |             |                |              |
|---|-------------|----------------|--------------|
| ○ | Power Cable | Length (m) :   | /            |
|   |             | Shield :       | Unshielded   |
|   |             | Detachable :   | Undetachable |
| ○ | Multimeter  | Manufacturer : | /            |
|   |             | Model No. :    | /            |

#### 1.7. Modifications

No modifications were implemented to meet testing criteria.

## **2. TEST ENVIRONMENT**

### **2.1. Address of the test laboratory**

1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China  
Phone: 86-755-26748019 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

### **2.2. Environmental conditions**

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

|                       |                     |
|-----------------------|---------------------|
| Temperature:          | <u>15-35 ° C</u>    |
| Humidity:             | <u>30-60 %</u>      |
| Atmospheric pressure: | <u>950-1050mbar</u> |

### **2.3. Statement of the measurement uncertainty**

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

| <b>Test Items</b>           | <b>Measurement Uncertainty</b> | <b>Notes</b> |
|-----------------------------|--------------------------------|--------------|
| Transmitter power conducted | 0.57 dB                        | (1)          |

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

### 3. Method of measurement

#### 3.1. Applicable Standard

According to FCC Part 1.1307(b)(1), 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 level in excess of the Commission's guidelines.

According to FCC Part 1.1310 and FCC Part 2.1091 RF exposure is calculated.

IEEE Std C95.1: 2005: "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz".

FCC OET Bulletin 65, Edition 97-01: "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields".

FCC Supplement C to OET Bulletin 65, Edition 01-01: "Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emission".

IEEE Std C95.3: 2002: "IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields with Respect to Human Exposure to Such Fields, 100 kHz – 300 GHz",

#### 3.2. Limit

FCC Part 1.1310(e):

| Frequency range (MHz)                                          | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| <b>(A) Limits for Occupational/Controlled Exposure</b>         |                               |                               |                                     |                          |
| 0.3-3.0                                                        | 614                           | 1.63                          | *100                                | 6                        |
| 3.0-30                                                         | 1842/f                        | 4.89/f                        | *900/f <sup>2</sup>                 | 6                        |
| 30-300                                                         | 61.4                          | 0.163                         | 1.0                                 | 6                        |
| 300-1,500                                                      |                               |                               | f/300                               | 6                        |
| 1,500-100,000                                                  |                               |                               | 5                                   | 6                        |
| <b>(B) Limits for General Population/Uncontrolled Exposure</b> |                               |                               |                                     |                          |
| 0.3-1.34                                                       | 614                           | 1.63                          | *100                                | 30                       |
| 1.34-30                                                        | 824/f                         | 2.19/f                        | *180/f <sup>2</sup>                 | 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

#### 3.3. MPE Calculation Method

Predication of MPE limit at a given distance

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 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

| TX1                  |                                  |                          |                |                        |                       |                        |                                             |                             |              |
|----------------------|----------------------------------|--------------------------|----------------|------------------------|-----------------------|------------------------|---------------------------------------------|-----------------------------|--------------|
| Test Frequency (MHz) | Minimum Separation Distance (cm) | Rated Output Power (dBm) | Tolerance (dB) | Max Output Power (dBm) | Max Output Power (mW) | Antenna Gain (Numeric) | Power Density At 50cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Test Results |
| 151.82               | 50                               | 33.0                     | 1.00           | 34.0                   | 2512                  | 1.9953                 | 0.1596                                      | 0.2000                      | PASS         |
| 151.88               | 50                               | 33.0                     | 1.00           | 34.0                   | 2512                  | 1.9953                 | 0.1596                                      | 0.2000                      |              |
| 151.94               | 50                               | 33.0                     | 1.00           | 34.0                   | 2512                  | 1.9953                 | 0.1596                                      | 0.2000                      |              |

| TX2                  |                                  |                          |                |                        |                       |                        |                                             |                             |              |
|----------------------|----------------------------------|--------------------------|----------------|------------------------|-----------------------|------------------------|---------------------------------------------|-----------------------------|--------------|
| Test Frequency (MHz) | Minimum Separation Distance (cm) | Rated Output Power (dBm) | Tolerance (dB) | Max Output Power (dBm) | Max Output Power (mW) | Antenna Gain (Numeric) | Power Density At 50cm (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) | Test Results |
| 154.57               | 50                               | 33.0                     | 1.00           | 34.0                   | 2512                  | 1.9953                 | 0.1596                                      | 0.2000                      | PASS         |
| 154.6                | 50                               | 33.0                     | 1.00           | 34.0                   | 2512                  | 1.9953                 | 0.1596                                      | 0.2000                      |              |

Note:

Max Output Power(dBm)= Rated Output Power(dBm)+Tolerance(dB)

Antenna Gain (Numeric)= $10^{[ \text{Antenna Gain (dBi)}/10 ]}$

EUT Antenna Gain=3.0dBi

## 4. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 1.1310(e) for general population/ Uncontrolled exposure.

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