# RADIO TEST REPORT

Report No: STS2106135H01

Issued for

Orbit Irrigation Product Inc.

845 Overland Road, North Salt Lake, Utah 84058 USA

| | |
|---|---|
| **Product Name:** | B-HYVE Smart WiFi Indoor Sprinkler Timer |
| **Brand Name:** | Orbit/B-Hyve |
| **Model Name:** | WT24 |
| **Series Model:** | N/A |
| **FCC ID:** | ML6WT24E |
| **Test Standard:** | FCC 47CFR §2.1091 |



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# Test Report Certification

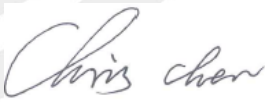
| | |
|---|---|
| **Applicant's Name**..... : | Orbit Irrigation Product Inc. |
| Address ..... : | 845 Overland Road, North Salt Lake, Utah 84058 USA |
| **Manufacturer's Name** ..... : | Orbit Irrigation Product Inc. |
| Address ..... : | 845 Overland Road, North Salt Lake, Utah 84058 USA |

**Product Description**

| | |
|---|---|
| Product Name..... : | B-HYVE Smart WiFi Indoor Sprinkler Timer |
| Brand Name ..... : | Orbit/B-Hyve |
| Model Name ..... : | WT24 |
| Series Model..... : | N/A |
| **Standards**..... : | FCC 47CFR §2.1091 |



| | |
|---|---|
| **Date of Test**..... : | |
| Date of receipt of test item ..... : | 23 June 2021 |
| Date (s) of performance of tests..... : | 23 June 2021 ~ 05 July 2021 |
| Date of Issue..... : | 05 July 2021 |
| Test Result..... : | **Pass** |

Testing Engineer : 

(Chris Chen)

Technical Manager : 

(Sean she)

Authorized Signatory : 

(Vita Li)

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## Revision History

| Rev. | Issue Date | Report No. | Effect Page | Contents |
|---|---|---|---|---|
| 00 | 05 July 2021 | STS2106135H01 | ALL | Initial Issue |
| | | | | |

# 1. GENERAL INFORMATION

## 1.1 GENERAL DESCRIPTION OF THE EUT

| | |
|---|---|
| Product Name | B-HYVE Smart WiFi Indoor Sprinkler Timer |
| Brand Name | Orbit/B-Hyve |
| Model Name | WT24 |
| Series Model | N/A |
| Model Difference | N/A |
| Product Description | The EUT is B-HYVE Smart WiFi Indoor Sprinkler Timer<br>Operation Frequency: BLE: 2402~2480 MHz<br>2.4G WIFI:<br>802.11b/g/n 20: 2412~2462 MHz<br>802.11n(40MHz):2422~2452MHz<br>Modulation Type: BLE: GFSK<br>2.4G WIFI:<br>802.11b(DSSS):CCK,DQPSK,DBPSK<br>802.11g(OFDM):<br>BPSK,QPSK,16-QAM,64-QAM<br>802.11n(OFDM):<br>BPSK,QPSK,16-QAM,64-QAM<br>Antenna gain: 1.5 dBi<br>Antenna Designation: PCB Antenna |
| Rating | Input: 120V AC 60Hz 23W<br>Output: 24V 750 mA 60Hz |
| Battery | Rated Voltage: 1.5V |
| Hardware version number | 2.5 |
| Software versionnumber | 42 |

## 1.2 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

## 2. FCC 47CFR §2.1091 REQUIREMENT

2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.
Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density ($mW/cm^2$) |
|---|---|---|---|
| Limits for Occupational / controlled Exposures | | | |
| 300 - 1500 | -- | -- | F/300 |
| 1500 – 100000 | -- | -- | 5.0 |
| Limits for General population / Uncontrolled Exposure | | | |
| 300 - 1500 | -- | -- | F/1500 |
| 1500 – 100000 | -- | -- | 1.0 |

F= Frequency in MHz

Friss Formula

Friss Transmission Formula: $Pd = (Pout * G) / (4*pi*r^2)$

Where

Pd = power density in $mW/cm^2$

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

2.3 EUT OPERATION CONDITION

EUT was enabled to transmit and receive at lowest, middle and highest channels.

2.4 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.

2.5 TEST RESULT

Turn up

| Mode | Detector | Turn up power(dBm) |
|---|---|---|
| 802.11b | AV | 16±1dBm |
| 802.11g | AV | 14±1dBm |
| 802.11n(HT20) | AV | 14±1dBm |
| 802.11n(HT40) | AV | 14±1dBm |
| DSSS | AV | 6±1dBm |

ANT Gain (G)

2402-2483.5MHz: 1.5dBi (gain of antenna in linear scale=1.413)

| **Protocol** | **Max Turn up power (dBm)** | **Max Turn up power (mW)** | **ANT Gain( gain of antenna in linear scale)** | **Power Density (mW/cm²)** | **Limit (mW/cm²)** | **Result** |
|---|---|---|---|---|---|---|
| 802.11b | 17 | 45.29 | 1.413 | 0.01273 | 1 | Pass |
| 802.11g | 15 | 34.43 | 1.413 | 0.00968 | 1 | Pass |
| 802.11n(HT20) | 15 | 33.57 | 1.413 | 0.00943 | 1 | Pass |
| 802.11n(HT40) | 15 | 33.04 | 1.413 | 0.00928 | 1 | Pass |
| BLE | 7 | 4.72 | 1.413 | 0.00133 | 1 | Pass |

**Multiple Evaluation:**

BLE+WIFI=0.01273+0.00133=0.01406 mW/cm²＜1 **mW/cm²**

※※※※※END OF THE REPORT※※※※※