



# SPECIFICATIONS FOR APPROVAL

Antenna Name: WiFi Antenna

Product Name: MM305 WiFi Antenna

Test Date: 2024-08-15

Issued Date: 2024-09-03

Tester by: Edward.Lyu

## 1.Product Specification

| Electrical Characteristics |  |
|----------------------------|--|
| <b>Test Laboratory</b>     | Shenzhen Morlab Communications Technology Co., Ltd.  |
| <b>Address</b>             | FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China |
| <b>Manufacturer</b>        | EcoFlow Technology Inc   |
| <b>Address</b>             | Building B1, Chuangzhi Yuncheng, NanShan District, ShenZhen , GuangDong Province, P. R. China                                      |
| <b>Model</b>               | PCB On-board Antenna   |
| <b>Antenna Type</b>        | PCB Antenna  |
| <b>Frequency</b>           | 2400MHz ~2483 MHz<br>5100MHz ~5850 MHz   |
| <b>VSWR</b>                | <2   |
| <b>Efficiency</b>          | >35%   |
| <b>Impedance</b>           | 50Ohm  |
| <b>Polarization</b>        | Linear   |
| <b>Gain(2.4GHz)</b>        | 3.49dBi  |
| <b>Gain(5GHz)</b>          | 3.5dBi   |

## 2.Test procedures

| Standards              | Description of Test Item                              | Result    |
|------------------------|---|-----------|
| ANSI/ IEEE<br>149-2021 | IEEE Recommended Practice for Antenna<br>Measurements | Compliant |

### 3. Test Equipment & Conditions

#### 3.1 Test Items and Equipment

|   | Test items                             | Test equipment  |
|---|--|---|
| S Parameter                             | 1.Return Loss 2.VSWR                   | Network analyzer (Agilent E5071B)   |
| The whole machine of Passive parameters | 1.Frequency 2.Gain 3.Radiation Pattern | 1.3D microwave darkroom (6m*6m*6m)<br>2.Network analyzer (Agilent E5071B) |

#### 3.2 Test Equipment

| Equipement Name  | Serial No. | Type   | Manufacture | Cal.Date   | Cal.Due Date |
|------------------|------------|--------|-------------|------------|--------------|
| Network Analyzer | MY46110140 | E5071C | Agilent     | 2024.05.30 | 2025.05.29   |

|                            |              |  |     |            |            |
|----------------------------|--------------|--|-----|------------|------------|
| OTA Chamber                | TJ2235-Q1793 | AMS-8923-150                               | ETS | 2022-11-30 | 2025-11-29 |
| Antenna Measurement System | 1685         | EMQuest<br>EMQ-100<br>V1.13 Build<br>21267 | ETS | N/A        | N/A        |

### 3.3 Name of commercial test software

| Software Name              | Serial No. | Version                                 | Manufacturer |
|----------------------------|------------|---|--------------|
| Antenna Measurement System | 1685       | "EMQuest EMQ-100<br>V 1.13 Build 21267" | ETS          |

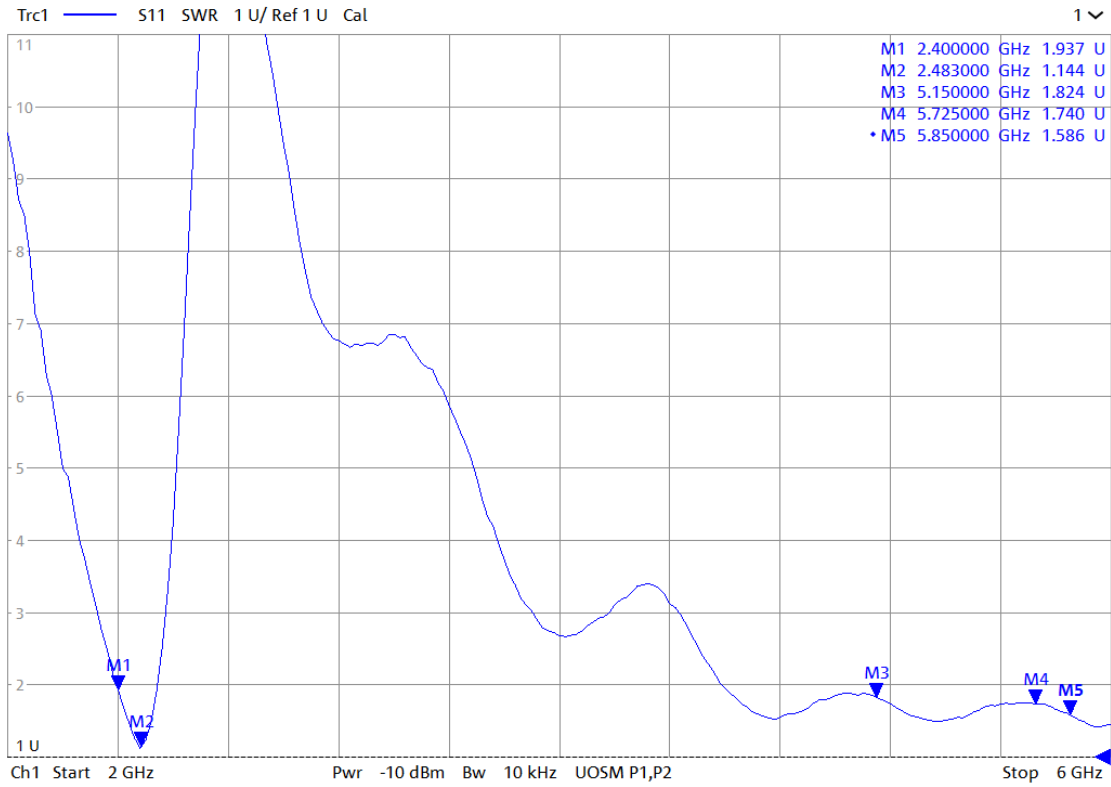
## 4. Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO. When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% Confidence intervals.

## 5. Test Report

### 5.1 Voltage Standing Wave Ratio(VSWR).

7/12/2024 7:08:30 AM  
1328.5170K92-102481-MK



### 5.2 Efficient and gain.

passive

| 2# (MM305)      |                |            |
|-----------------|----------------|------------|
| Frequency (MHz) | Efficiency (%) | Gain (dBi) |
| 2400            | 50.15          | 3.49       |
| 2420            | 46.71          | 2.94       |
| 2440            | 43.98          | 2.72       |
| 2460            | 42.35          | 2.47       |
| 2480            | 38.05          | 1.79       |
| 2500            | 34.06          | 1.07       |
| 5150            | 39.43          | 2.77       |
| 5175            | 40.55          | 2.92       |
| 5200            | 39.49          | 2.63       |
| 5225            | 38.79          | 2.60       |
| 5250            | 45.78          | 3.50       |
| 5400            | 50.24          | 3.34       |
| 5425            | 48.56          | 2.94       |
| 5450            | 48.86          | 2.76       |

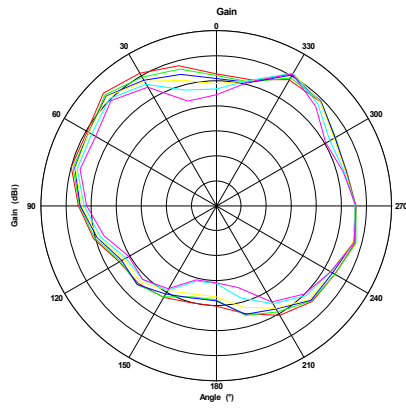
|      |       |      |
|------|-------|------|
| 5475 | 50.93 | 3.03 |
| 5500 | 51.82 | 3.30 |
| 5525 | 47.71 | 2.85 |
| 5550 | 47.33 | 3.08 |
| 5575 | 48.18 | 3.25 |
| 5600 | 48.38 | 3.25 |
| 5625 | 45.31 | 2.92 |
| 5650 | 46.04 | 3.04 |
| 5675 | 48.26 | 3.10 |
| 5700 | 49.83 | 3.19 |
| 5725 | 46.33 | 2.96 |
| 5750 | 47.98 | 3.19 |
| 5775 | 49.17 | 3.19 |
| 5800 | 44.97 | 2.74 |
| 5825 | 43.16 | 2.67 |
| 5850 | 42.20 | 2.75 |

**active**

| MM305        |         |      |           |       |
|--------------|---------|------|-----------|-------|
| 2.4G<br>WIFI | 802.11b | Band | Rate      | TRP   |
|              |         | 1    | 11M       | 17.58 |
| 6            | 17.75   |      |           |       |
| 11           | 17.43   |      |           |       |
| 5.8G<br>WIFI | 802.11n | 36   | HT20_MCS0 | 15.09 |
|              |         | 149  |           | 14.57 |
|              |         | 165  |           | 14.04 |

# 5.3 RADIATION PATTERN

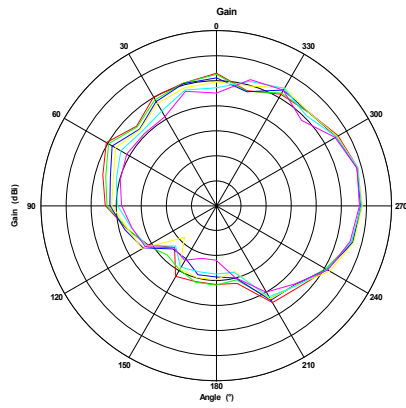
## 2.4G



Max: 5  
Min: -30  
Scale: 5/div



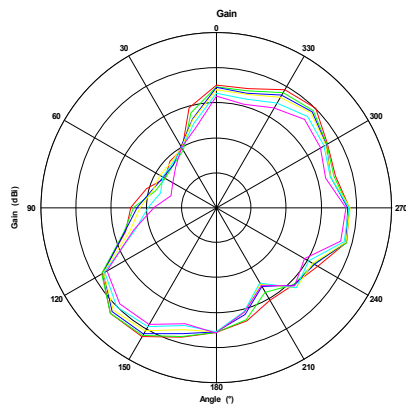
### Phi=0deg



Max: 5  
Min: -30  
Scale: 5/div



### Phi=90deg



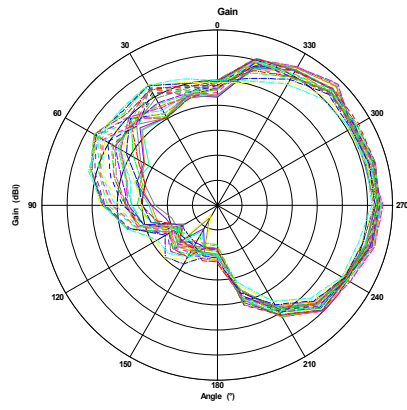
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Min: -30  
Scale: 5/div



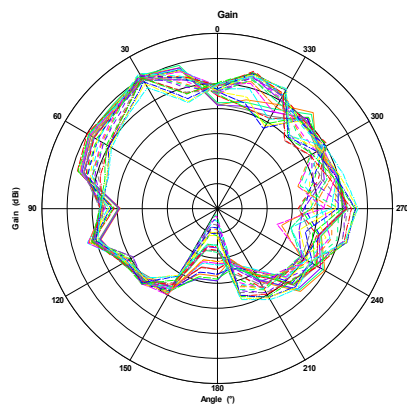
### Theta=90deg

## 5G

# Phi=0deg



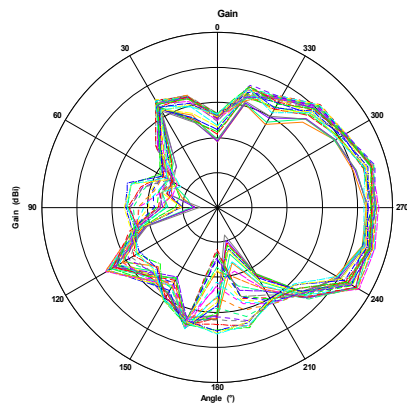
Max: 5  
Min: -20  
Scale: 5/div



Max: 5  
Min: -20  
Scale: 5/div



# Phi=90deg



Max: 5  
Min: -20  
Scale: 5/div



# Theta=90deg





## 6. Product Drawing & Structures

Please refer to antenna photo .

## **7. DUT Setup Photo**

**Please refer to antenna photo**