



## RF Exposure Evaluation Declaration

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**FCC ID:** 2AN2O-RSW01  
**APPLICANT:** Beijing Roborock Technology Co., Ltd.  
**Application Type:** Certification  
**Product:** WIFI Module  
**Model No.:** F89ETSM13-W2  
**FCC Classification:** Digital Transmission System (DTS)  
**Test Procedure(s):** KDB 447498 D01v06  
**Test Date:** January 13, 2020

Reviewed By:

*Kevin Guo*

( Kevin Guo )

Approved By:

*Robin Wu*

( Robin Wu )



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

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### Revision History

| Report No.    | Version | Description    | Issue Date | Note  |
|---------------|---------|----------------|------------|-------|
| 1909WSU020-U2 | Rev. 01 | Initial report | 01-13-2020 | Valid |
|               |         |                |            |       |

## 1. PRODUCT INFORMATION

### 1.1. Equipment Description

|                     |              |
|---------------------|--------------|
| Product Name:       | WIFI Module  |
| Model No.:          | F89ETSM13-W2 |
| Wi-Fi Specification | 802.11b/g/n  |
| Power Type:         | DC 3.3V      |

### 1.2. Product Specification Subjective to this Report

|                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| Frequency Range:    | 802.11b/g/n-HT20: 2412 ~ 2462 MHz                                                       |
| Channel Number:     | 802.11b/g/n-HT20: 11                                                                    |
| Type of Modulation: | 802.11b: DSSS<br>802.11g/n: OFDM                                                        |
| Data Rate:          | 802.11b: 1/2/5.5/11Mbps<br>802.11g: 6/9/12/18/24/36/48/54Mbps<br>802.11n: up to 150Mbps |
| Antenna Type:       | Internal PCB antenna                                                                    |
| Antenna Gain:       | 3.87dBi                                                                                 |

## 2. RF Exposure Evaluation

### 2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of 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 <sup>2</sup> ) | Average Time (Minutes) |
|-----------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|------------------------|
| (A) Limits for Occupational/ Control Exposures            |                               |                               |                                     |                        |
| 300-1500                                                  | --                            | --                            | f/300                               | 6                      |
| 1500-100,000                                              | --                            | --                            | 5                                   | 6                      |
| (B) Limits for General Population/ Uncontrolled Exposures |                               |                               |                                     |                        |
| 300-1500                                                  | --                            | --                            | f/1500                              | 6                      |
| 1500-100,000                                              | --                            | --                            | 1                                   | 30                     |

f= Frequency in MHz

Calculation Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

r = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## 2.2. Test Result of RF Exposure Evaluation

|           |                        |
|-----------|------------------------|
| Product   | WIFI Module            |
| Test Item | RF Exposure Evaluation |

| Test Mode   | Frequency Band<br>(MHz) | Maximum EIRP<br>(dBm) | Power Density at<br>R = 20 cm<br>(mW/cm <sup>2</sup> ) | Limit<br>(mW/cm <sup>2</sup> ) |
|-------------|-------------------------|-----------------------|--------------------------------------------------------|--------------------------------|
| 802.11b/g/n | 2412 ~ 2462             | 21.89                 | 0.0307                                                 | 1                              |

### CONCULISON:

The max Power Density at R (20 cm) =  $0.0307\text{mW/cm}^2 < 1\text{ mW/cm}^2$  for 2.4G WLAN.

Therefore, the Min Safety Distance is 20cm.

\_\_\_\_\_ The End \_\_\_\_\_

## **Appendix A – EUT Photograph**

Refer to “1909WSU020-UE” file.