



RFEXPOSURE EVALUATIONREPORT

APPLICANT : Hangzhou Konke Information Technology Co.,Ltd.
PRODUCT NAME : Wi-Fi module
MODEL NAME : KK-3000
BRAND NAME : konke
FCC ID : 2AJZ4-KK3000
STANDARD(S) : 47CFR 2.1091
KDB 447498
ISSUE DATE : 2018-11-21

Reviewed By: Gan Yueming
Gan yueming (Reviewer)

Approved By: Peng Huarui
Peng Huarui(Supervisor)

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DIRECTORY

- 1. Technical Information..... 3
- 1.1 Applicant and Manufacturer Information..... 3
- 1.2 Equipment Under Test (EUT) Description..... 3
- 1.3 Photographs of the EUT..... 4
- 1.4 Identification of all used EUT..... 5
- 1.5 Applied Reference Documents..... 5
- 2. Device Category and RF Exposure Limit..... 6
- 3. Measurement of RF Output Power..... 7
- 4. RF Exposure Evaluation..... 7
- Annex A General Information..... 8

| Version No. | Date | Description |
|-------------|------------|-------------|
| 1.0 | 2018-11-21 | Original |
| | | |
| | | |
| | | |

| Tested By | |
|----------------|-----------|
| Test engineer: | Su Jinhai |



1. Technical Information

Note: Provide by manufacturer.

1.1 Applicant and Manufacturer Information

| | |
|------------------------------|---|
| Applicant: | Hangzhou Konke Information Technology Co.,Ltd. |
| Applicant Address: | Room 2201,Huafeng international mansion,Jianggan District, Hangzhou |
| Manufacturer: | Hangzhou Konke Information Technology Co.,Ltd. |
| Manufacturer Address: | Room 2201,Huafeng international mansion,Jianggan District, Hangzhou |

1.2 Equipment Under Test (EUT) Description

| | |
|--------------------------|---|
| EUT Type: | Wi-Fi module |
| Hardware Version: | hub_rc_sv1.1.0 |
| Software Version: | hub_rc_hv1.1.0 |
| Frequency Bands: | WLAN2.4GHz: 2412 MHz ~2462 MHz |
| Modulation Mode: | WLAN2.4GHz 802.11b:DSSS ; 802.11g/n HT20:OFDM |
| Antenna Type: | PCB Antenna |
| Antenna Gain: | 3.0dBi |

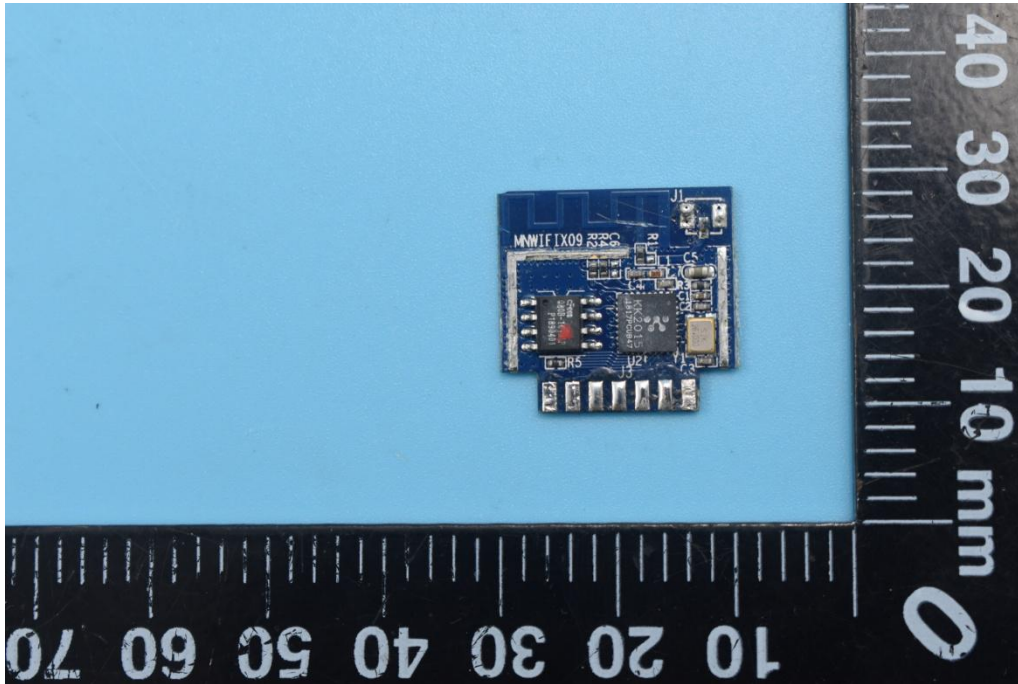
Note 1: The EUT is operating at 2.4GHz ISM; it supports 802.11b, 802.11g, 802.11n and they are all tested in this report.

For 802.11b/g/n(HT20) (2.4GHz band), the frequencies allocated is $F \text{ (MHz)} = 2412 + 5 * (n - 1)$ ($1 \leq n \leq 11$). The lowest, middle, highest channel numbers of the EUT used and tested in this report are separately 1 (2412MHz), 6 (2437MHz) and 11 (2462MHz).

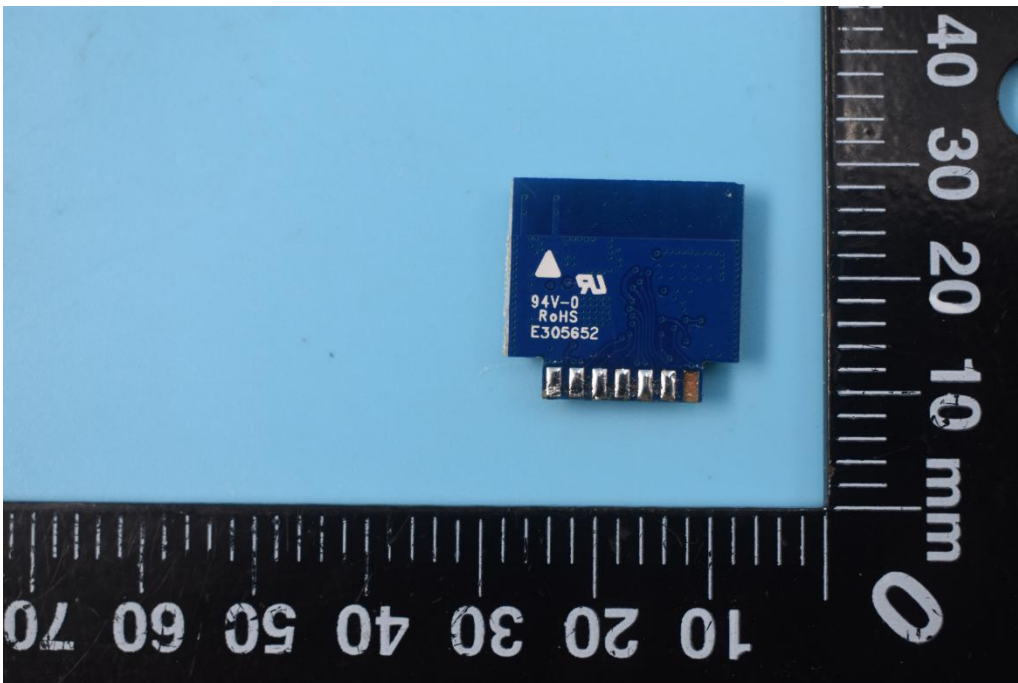
Note 2: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.3 Photographs of the EUT

1. EUT Front View



2. EUT Back View





1.4 Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

| EUT Identity | Hardware Version | Software Version |
|--------------|------------------|------------------|
| 1# | hub_rc_sv1.1.0 | hub_rc_hv1.1.0 |

1.5 Applied Reference Documents

Leading reference documents for testing:

| No. | Identity | Document Title |
|-----|-------------------|---|
| 1 | 47 CFR§2.1091 | Radio Frequency Radiation Exposure Evaluation: mobile devices |
| 2 | KDB 447498 D01v06 | General RF Exposure Guidance |



2. Device Category and RF Exposure Limit

Per user manual, Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | - | - | f/1500 | 30 |
| 1500-100,000 | - | - | 1.0 | 30 |

f = frequency in MHz* = Plane-wave equivalent power density

3. Measurement of RF Output Power

< 2.4GHz WLAN Conducted Power>

| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit |
|-------------|----------------------|---------|-----------------|---------------------|---------------|
| 2.4GHz WLAN | 802.11b 1Mbps | CH 1 | 2412 | 12.28 | 12.50 |
| | | CH 6 | 2437 | 12.83 | 13.00 |
| | | CH 11 | 2462 | 12.71 | 13.00 |
| | 802.11g 6Mbps | CH 1 | 2412 | 10.95 | 11.00 |
| | | CH 6 | 2437 | 11.37 | 11.50 |
| | | CH 11 | 2462 | 10.78 | 11.00 |
| | 802.11n-HT20 MCS0 | CH 1 | 2412 | 10.86 | 11.00 |
| | | CH 6 | 2437 | 11.27 | 11.50 |
| | | CH 11 | 2462 | 10.65 | 11.00 |

4. RF Exposure Evaluation

Standalone transmission MPE evaluation

| Bands | Frequency (MHz) | Maximum Tune-upLimit (dBm) | Antenna Gain (dBi) | EIRP (mW) | Power Density (mW/cm ²) | Limit for MPE (mW/cm ²) |
|-------------|-----------------|----------------------------|--------------------|-----------|-------------------------------------|-------------------------------------|
| 2.4GHz WLAN | 2437 | 13.0 | 3.0 | 39.81 | 0.008 | 1.0 |

Note:

1. MPE calculation method

$$\text{Power Density} = \text{EIRP}/4\pi R^2$$

Where: EIRP = P+G

P = Output Power (dBm)

G = Antenna Gain (dBi)

R = Separation Distance (20cm)



Annex A General Information

1. Identification of the Responsible Testing Laboratory

| | |
|-------------------------------|--|
| Company Name: | Shenzhen Morlab Communications Technology Co., Ltd. |
| Department: | Morlab Laboratory |
| Address: | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |
| Responsible Test Lab Manager: | Mr. Su Feng |
| Telephone: | +86 755 36698555 |
| Facsimile: | +86 755 36698525 |

2. Identification of the Responsible Testing Location

| | |
|----------|--|
| Name: | Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory |
| Address: | FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China |

————— END OF REPORT —————