



RF EXPOSURE EVALUATION REPORT

APPLICANT : Hangzhou Konke Information Technology Co.,Ltd.
PRODUCT NAME : Smart Gateway Hub
MODEL NAME : Kit Pro-Hub
BRAND NAME : konke
FCC ID : 2AJZ4-KPHUB
STANDARD(S) : 47CFR 2.1091
KDB 447498
RECEIPT DATE : 2019-01-11
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REPORT No. : SZ18120323S01

| Change history | | |
|----------------|------------|-------------------|
| Version | Date | Reason of changed |
| 1.0 | 2019-04-05 | First edition |
| | | |
| | | |
| | | |
| | | |



1. Technical Information

Note: Provide by manufacturer.

1.1 Applicant and Manufacturer Information

| | |
|------------------------------|---|
| Applicant: | Hangzhou Konke Information Technology Co.,Ltd. |
| Applicant Address: | 28F Huafeng international mansion,No.200 Xinye Road Jianggan District, Hangzhou China |
| Manufacturer: | Hangzhou Konke Information Technology Co.,Ltd. |
| Manufacturer Address: | 28F Huafeng international mansion,No.200 Xinye Road Jianggan District, Hangzhou China |

1.2 Equipment under Test (EUT) Description

| | |
|--------------------------|---|
| EUT Type: | Smart Gateway Hub |
| Hardware Version: | kphub_hv_1.0.0 |
| Software Version: | kphub_rv_1.0.0 |
| Frequency Bands: | WLAN: 802.11b/g/n-HT20:2412MHz- 2462MHz Zigbee: 2405MHz- 2480MHz |
| Modulation Mode: | 802.11b: DSSS 802.11g/n-HT20: OFDM Zigbee: GFSK |
| Antenna Type: | PCB Antenna |
| Antenna Gain: | 3.0dBi |



1.3 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# | kphub_hv_1.0.0 | kphub_rv_1.0.0 |

1.4 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. RF Output Power

<WLAN output power>

| | Mode | Channel | Frequency (MHz) | Average power (dBm) | Tune-Up Limit |
|-------------|-------------------|---------|-----------------|---------------------|---------------|
| 2.4GHz WLAN | 802.11b 1Mbps | CH 1 | 2412 | 13.52 | 14.00 |
| | | CH 6 | 2437 | 13.27 | 13.50 |
| | | CH 11 | 2462 | 13.04 | 13.50 |
| | 802.11g 6Mbps | CH 1 | 2412 | 11.72 | 12.00 |
| | | CH 6 | 2437 | 11.32 | 11.50 |
| | | CH 11 | 2462 | 11.14 | 11.50 |
| | 802.11n-HT20 MCS0 | CH 1 | 2412 | 11.45 | 11.50 |
| | | CH 6 | 2437 | 11.18 | 11.50 |
| | | CH 11 | 2462 | 11.06 | 11.50 |

<Zigbee output power>

| Mode | Channel | Frequency (MHz) | Average power (dBm) |
|---------------|---------|-----------------|---------------------|
| | | | GFSK |
| Zigbee | CH 11 | 2405 | 7.01 |
| | CH 18 | 2440 | 7.09 |
| | CH 26 | 2480 | 7.09 |
| Tune-up Limit | | | 7.50 |

Note: According to KDB 447498 Section 4.3, SAR test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.

4. RF Exposure Evaluation

Standalone transmission evaluation:

| Bands | Frequency (MHz) | Maximum Tune-up Limit (dBm) | Antenna Gain (dBi) | EIRP (mW) | Power density (mW/cm ²) | Limit for MPE (mW/cm ²) |
|-------------|-----------------|-----------------------------|--------------------|-----------|-------------------------------------|-------------------------------------|
| 2.4GHz WLAN | 2412 | 14.0 | 3.0 | 50.12 | 0.010 | 1.0 |
| Zigbee | 2480 | 7.50 | 3.0 | 11.22 | 0.002 | 1.0 |

Note:

1. According to KDB 447498, SAR test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.
2. 2.4GHz WLAN and Zigbee cannot transmit simultaneously.
3. 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)



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Annex A General Information

1. Identification of the Responsible Testing Laboratory

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

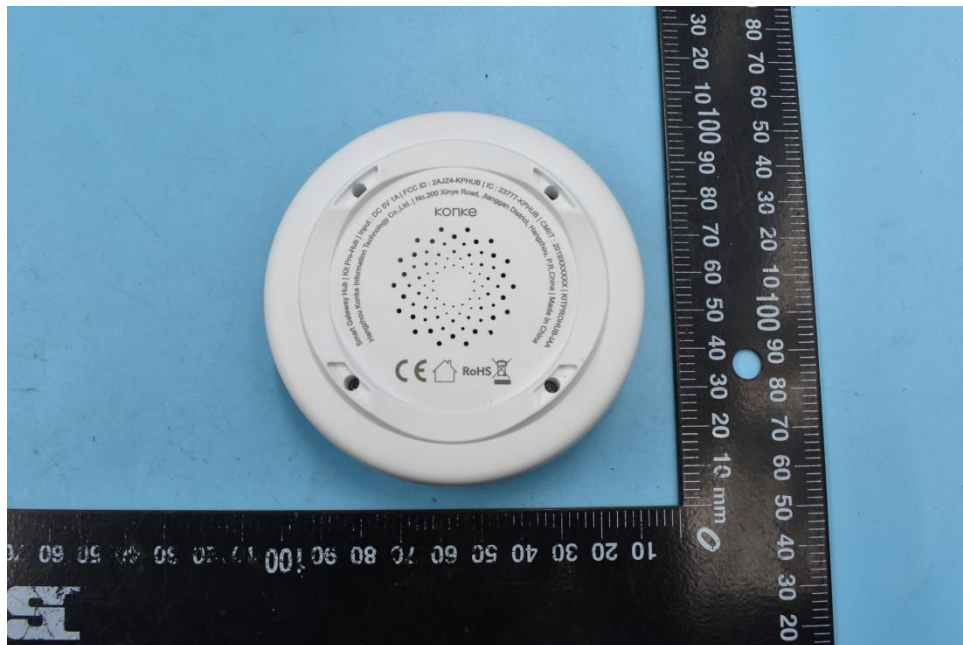
2. Identification of the Responsible Testing Location

| | |
|-----------------|--|
| 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 |

Annex B Photographs of the EUT



EUT Front View



EUT Back View