# Radio Frequency Exposure Report

On Behalf of

# TENVIS Technology Co., Ltd.

| | |
|---|---|
| **FCC ID:** | **N6QIPROBOT3** |
| **Product Description:** | **IP Camera** |
| **Model No.:** | **IPROBOT 3** |
| **Supplementary Model:** | **IPROBOT 4,IPROBOT 5,IPROBOT 6,IP391W-HD,IP392W-HD, IP393W-HD,MINI319W-HD, MINI329W-HD,MINI339W-HD** |
| **Prepared for:** | **TENVIS Technology Co., Ltd.**<br>301,Building 6,No.3,Puxiaxia'an Street, Liuyue, Henggang Town, Longgang District ,Shenzhen |
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**Tested by:** Lion Cai

**Reviewed by:** Kendy Wang

**Approved by:** Tony Wu

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# 1 - GENERAL INFORMATION

## 1.1 Product Description for Equipment Under Test (EUT)

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|---|---|
| Applicant: | **TENVIS Technology Co., Ltd.** |
| Address of Applicant: | 301,Building 6,No.3,Puxiaxia'an Street, Liuyue, Henggang Town, Longgang District ,Shenzhen |
| Manufacturer: | **TENVIS Technology Co., Ltd.** |
| Address of Manufacturer: | 301,Building 6,No.3,Puxiaxia'an Street, Liuyue, Henggang Town, Longgang District ,Shenzhen |

**General Description of E.U.T**

| **Items** | **Description** |
|---|---|
| EUT Description: | **IP Camera** |
| Trade Name: | TENVIS |
| Model No.: | **IPROBOT 3** |
| Supplementary Model: | IPROBOT 4,IPROBOT 5,IPROBOT 6,IP391W-HD,IP392W-HD, IP393W-HD,MINI319W-HD, MINI329W-HD,MINI339W-HD |
| Frequency Band: | IEEE 802.11b/g,<br>IEEE 802.11n HT20 (ISM Band) : 2412MHz～2462MHz,<br>IEEE 802.11n HT40 (ISM Band) : 2422MHz～2452MHz |
| Channel Spacing: | IEEE 802.11b/g, 802.11n HT20/HT40: 5MHz |
| Number of Channels: | IEEE 802.11b/g, 802.11n HT20:11 Channels<br>IEEE 802.11n HT40 :7 Channels |
| Transmit Data Rate: | maximum of 150Mbps |
| Type of Modulation: | IEEE 802.11b：DSSS (CCK, DQPSK, DBPSK)<br>IEEE 802.11g：OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11n HT20/40：OFDM (64QAM, 16QAM, QPSK, BPSK) |
| Antenna Type: | External antenna |
| Antenna Gain: | 2dBi |
| Power Supply: | Input: DC 5V 1500mA |
| Adapter Information: | Model: RHD10W050150<br>Input:100-240V 50/60Hz 1.5A<br>Output: 5VDC 1.5A |

Remark: ** The test data gathered are from the production sample provided by the manufacturer.*

** Supplementary models appearance , internal circuit and electrical principles are the same, just named and color differently*

## 1.2 Objective

The objective of the following report is used to demonstrate that EUT operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the relative provisions of FCC 47CFR Part 1.1307

## 1.3 General Description of Test

| Items | Description |
|---|---|
| EUT Frequency band | ☐ FHSS: 2.400GHz ~ 2.483GHz<br>☒ WLAN: 2.400GHz ~ 2.483GHz<br>☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz<br>☐ WLAN: 5.745GHz ~ 5825GHz<br>☐Others: _____ |
| Device category | ☐Portable (<20cm separation)<br>☒Mobile (>20cm separation)<br>☐Others _____ |
| Exposure classification | ☐Occupational/Controlled exposure (S = 5mW/cm2)<br>☒General Population/Uncontrolled exposure (S=1mW/cm$^2$)<br>☐Others: _____ |
| Antenna diversity | ☒Single antenna<br>☐Multiple antennas:<br>☐Tx diversity<br>☐Rx diversity<br>☐Tx/Rx diversity |
| Max. output power | 15.86dBm (0.0385W) |
| Antenna gain (Max) | 2 dBi (Numeric gain:1.58) |
| Evaluation applied | ☒MPE Evaluation<br>☐SAR Evaluation |
| ***Note:***<br>*1. The maximum output power is 15.86dBm (0.0923W) at 2412MHz B Mode(with 10 numeric antenna gain.)*<br>*2. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.* | |

## 1.4 Human Exposure Assessment Results

**Calculation**

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$

*Where* $E$ = *Field Strength in Volts / meter*
$P$ = *Power in Watts*
$G$ = *Numeric antenna gain*
$d$ = *Distance in meters*
$S$ = *Power Density in milliwatts / square centimeter*

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

*P (mW) = P (W) / 1000 and*
*d (cm) =100 * d (m)*

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \qquad \textit{Equation 1}$$

*Where* $d$ = *distance in cm*
$P$ = *Power in mW*
$G$ = *Numeric antenna gain*
$S$ = *Power Density in* $mW/cm^2$

| ***EUT parameter (data from the separate report)*** | |
|---|---|
| Given<br>$E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$ | Where<br>G: numerical gain of transmitting antenna;<br>TP: Transmitted power in watt;<br>d: distance from the transmitting antenna in meter |
| Max average output power in Watt (TP) | 15.86dBm (0.0385W) |
| Antenna gain (G) | 2 dBi (Numeric gain: 1.58) |
| Exposure classification | S=1mW/cm$^2$ |
| Minimum distance in meter (d)<br>(from transmitting structure to the human body) | 20cm (0.2m) |
| Yields<br>$S = \frac{30xPxG}{3770d^2}$, P=0.0385W, G=1.58, d=0.2<br>S=0.0121mW/cm$^2$<br>Or<br>$d = \sqrt{\frac{30xPxG}{3770S}}$, S=1, P=0.0385W, G=1.58<br>d=0.00048m | |
| Conclusion:<br>S=0.1581mW/cm$^2$ is significant lower than the General Population Exposure Power Density Limit 1mW/cm$^2$ or except the distance when human body proximity to the antenna is less than 0.48 cm then will reach the General Population Exposure Power Density Limit<br>(For mobile or fixed location transmitters, the maximum power density is 1.0 mW / cm$^2$ even if the calculation indicates that the power density would be larger.) | |