Radio Frequency Exposure Report

On Behalf of

Shenzhen TOMTOP Technology Co., Ltd

G-4 Zone 5/F, No.1 Exchange Square, Huanan City, Pinghu Town, Longgang Dist, Shenzhen, Guangdong, China

Product Name:	**Koogeek Smart Socket**
Model/Type No.:	**P1**
Prepared By:	**Shenzhen Hongcai Testing Technology Co., Ltd.** 1st-3rd Floor, Building C, Shuanghuan Xin Yi Dai Hi-Tech Industrial Park, No.8 Baoqing Road, Baolong Industrial Zone, Longgang District, Shenzhen, Guangdong, China Tel: +86-755-86337020 Fax:+86-755-86337028
Report Number:	HCT16AR003E-1
Tested Date:	March 2 ～ March 22, 2016
Issued Date:	March 22, 2016
Tested By:	Haiqing.Zhao/

Reviewed By: Approved By:

Owen.Yang	Tony Wu
EMC Technical Supervisor	EMC Technical Manager

TABLE OF CONTENTS

1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant:	**Shenzhen TOMTOP Technology Co., Ltd**
Address of Applicant:	G-4 Zone 5/F, No.1 Exchange Square, Huanan City, Pinghu Town, Longgang Dist, Shenzhen, Guangdong, China
Manufacturer 1:	**CHINA DRAGON TECHNOLOGY LIMITED**
Address of manufacturer:	B4 Bldg Haosan No.1 Industry Park, Nanpu Road, Shajing Street, Baoan Dist., Shenzhen, China

General Description of E.U.T

Items	**Description**
EUT Description:	koogeek Smart Socket
Model No.:	P1
Supplementary Model:	N/A
Frequency Band:	IEEE 802.11b : 2412MHz～2462MHz; IEEE 802.11g : 2412MHz～2462MHz; IEEE 802 11n(HT20) : 2412MHz～2462MHz; IEEE 802 11n(HT40) : 2412MHz～2462MHz;
Number of Channels:	IEEE 802.11b :11 Channels; IEEE 802.11g :11 Channels; IEEE 802 11n(HT20) : 11 Channels; IEEE 802 11n(HT40) : 11 Channels;
Type of Modulation:	IEEE 802.11b：CCK IEEE 802.11g：OFDM IEEE 802 11n(HT20)：MCS7 IEEE 802 11n(HT40)：MCS7
Antenna Gain:	2dBi
Antenna Type:	Integral Antenna
Power Rating:	120VAC 15A 60Hz

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

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 ☒ WLAN: 2.400GHz ~ 2.483GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5825GHz ☐Others: _____
Device category	☐Portable (<20cm separation) ☒Mobile (>20cm separation) ☐Others _____
Exposure classification	☐Occupational/Controlled exposure (S = 5mW/cm2) ☒General Population/Uncontrolled exposure (S=1mW/cm^2) ☐Others: _____
Antenna diversity	☒Single antenna ☐Multiple antennas: ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Max. output power	17.52dBm (0.0565W)
Antenna gain (Max)	2dBi (Numeric gain:1.58)
Evaluation applied	☒MPE Evaluation ☐SAR Evaluation
Note: *1. The maximum output power is 17.52dBm (0.0565W) at 2462MHz (with 1.58 numeric antenna gain.)* *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

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ ***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 $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$	Where G: numerical gain of transmitting antenna; TP: Transmitted power in watt; d: distance from the transmitting antenna in meter
Max average output power in Watt (TP)	17.52dBm (0.0565W)
Antenna gain (G)	2 dBi (Numeric gain: 1.58
Exposure classification	S=1mW/cm^2
Minimum distance in meter (d) (from transmitting structure to the human body)	20cm (0.2m)

Yields

$$S = \frac{30xPxG}{3770d^2}, \quad \text{P=0.0565W, G=1.58, d=0.2}$$

S=0.0177mW/cm^2

Or

$$d = \sqrt{\frac{30xPxG}{3770S}}, \quad \text{S=0.0177, P=0.0565W, G=1.58}$$

d=0.0401m

Conclusion:

S=0.0177mW/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 2.25cm then will reach the General Population Exposure Power Density Limit

(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.)