Radio Frequency Exposure Report

On Behalf of

Apex Toys(Shenzhen)Co.,Ltd.

A.Floor 4,A001 Building,Zhi Ji Industrial Park,No.92 KuiChong Street, LongGang district, ShenZhen,China

Product Name:	**Hunter quadcopter**
Model/Type No.:	**GD-90WP A803W**
FCC ID:	**2ADSOBS-90WP**
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
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HONGCAI TESTING

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Apex Toys(Shenzhen)Co.,Ltd.
Address of Applicant:	A.Floor 4,A001 Building,Zhi Ji Industrial Park,No.92 KuiChong Street,LongGang district, ShenZhen,China
Manufacturer:	Apex Toys(Shenzhen)Co.,Ltd.
Address of Manufacturer:	A.Floor 4,A001 Building,Zhi Ji Industrial Park,No.92 KuiChong Street,LongGang district, ShenZhen,China

General Description of E.U.T

Items	Description
EUT Description:	Hunter quadcopter
Model No.:	GD-90WP A803W
Supplementary Model:	N/A
Frequency Band:	IEEE 802.11b： 2412MHz～2462MHz; IEEE 802.11g： 2412MHz～2462MHz; IEEE 802 11n HT20： 2412MHz～2462MHz;
Channel Spacing:	IEEE 802.11b : 5MHz IEEE 802.11g : 5MHz IEEE 802 11n HT20 : 5MHz
Number of Channels:	IEEE 802.11b :11 Channels; IEEE 802.11g :11 Channels; IEEE 802 11n HT20 :11 Channels;
Transmit Data Rate:	maximum of 150Mbps
Type of Modulation:	IEEE 802.11b：CCK IEEE 802.11g：OFDM IEEE 802 11n HT20：OFDM
Antenna Type:	External antenna
Antenna Gain:	2dBi
Power Rating:	DC 3.7V

Remark:* *The test data gathered are from the production sample provided by the manufacturer.*
**We test all modes, and we chose the worst data for the report.*

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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	0.33dBm (0.00011W)
Antenna gain (Max)	2dBi (Numeric gain:1.58)
Evaluation applied	☒MPE Evaluation ☐SAR Evaluation
Note: *1. The maximum output power is* 0.33dBm at IEEE 802.11g mode 2412MHz *(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.*	

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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)	0.33dBm (0.00011W)
Antenna gain (G)	2dBi (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)

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Yields

$$S = \frac{30xPxG}{3770d^2}, \quad P=0.00011W, G=1.58, d=0.2$$

$S=0.00035mW/cm^2$

Or

$$d=\sqrt{\frac{30xPxG}{3770S}}, \quad S=1, P=0.00011W, G=1.58$$

$d=0.0012m$

Conclusion:

$S=0.00035mW/cm^2$ 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 0.12 cm 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.)

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