Radio Frequency Exposure Report

On Behalf of

ShenZhen Weistek Co., Ltd

RooM2301, 29 Nan Huan Gao Xin Road, Shenzhen Overseas Chinese High-Tech Venture Park, Shenzhen, P. R. China

Product Name:	**3D Printer**
Model/Type No.:	**WT800M, MiniToy**
Trade Name:	**WEISTEK**
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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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Applicant:	**ShenZhen Weistek Co., Ltd**
Address of Applicant:	RooM2301, 29 Nan Huan Gao Xin Road, Shenzhen Overseas Chinese High-Tech Venture Park, Shenzhen, P. R. China
Manufacturer 1:	**ShenZhen Weistek Co., Ltd**
Address of manufacturer:	RooM2301, 29 Nan Huan Gao Xin Road, Shenzhen Overseas Chinese High-Tech Venture Park, Shenzhen, P. R. China

General Description of E.U.T

Items	Description
EUT Description:	3D Printer
Model No.:	WT800M
Supplementary Model:	MiniToy
Trade Name:	WEISTEK
Frequency Band:	IEEE 802.11b : 2412MHz～2462MHz; IEEE 802.11g : 2412MHz～2462MHz;
Number of Channels:	IEEE 802.11b :11 Channels; IEEE 802.11g :11 Channels;
Type of Modulation:	IEEE 802.11b：CCK IEEE 802.11g：OFDM
Antenna Gain:	2dBi(Numeric gain:1.58)
Antenna Type:	Internal antenna
Power Rating:	DC 24V from adapter
Adapter :	Model:FSP120-AAAN2 Input: AC100-240V, 1.8A, 50-60Hz Output:DC 24V, 5A

Remark: ** The test data gathered are from the production sample provided by the manufacturer.*
** Supplementary models have the same circuit, but with different name,WT800M is Production of naming, MiniToy is Sales of naming.*

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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	18.62dBm (0.0727W)
Antenna gain (Max)	2dBi (Numeric gain:1.58)
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation
Note: *1. The maximum output power is 18.62dBm (0.0727W) 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.*	

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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)	18.62dBm (0.0727W)
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)

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Yields

$$S = \frac{30xPxG}{3770d^2}, \quad P=0.0727W, G=1.58, d=0.2$$

$S=0.0229mW/cm^2$

Or

$$d=\sqrt{\frac{30xPxG}{3770S}}, \quad S=1, P=0.0727W, G=1.58$$

d=0.0302m

Conclusion:

$S=0.0229mW/cm^2$ 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.)

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