



# RF TEST REPORT

Product Name: Desktop Laser Engraver

Model Name: iCube Pro Max, iCube Pro, iCube

FCC ID: 2BF27-ICUBE

Issued For : Shenzhen Sculpfun Technology Co., Ltd.

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Issued By : Shenzhen LGT Test Service Co., Ltd.

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Report Number: LGT24D128HA02

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## TEST REPORT CERTIFICATION

**Applicant:** Shenzhen Sculpfun Technology Co., Ltd.  
**Address:** Room 201, Building B, Jinzhicai Factory, No. 1, Guihua Industrial Zone, Guanlan Street, Longhua District, Shenzhen City, Guangdong China

**Manufacture:** Shenzhen Sculpfun Technology Co., Ltd.  
**Address:** Room 201, Building B, Jinzhicai Factory, No. 1, Guihua Industrial Zone, Guanlan Street, Longhua District, Shenzhen City, Guangdong China

**Product Name:** Desktop Laser Engraver

**Trademark:** SCULPFUN

**Model Name:** iCube Pro Max, iCube Pro, iCube

**Sample Status:** Normal

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47 CFR §2.1091 KDB 447498 D01 General RF Exposure Guidance v06	PASS

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**Revision History**

Rev.	Issue Date	Revisions
00	May 11, 2024	Initial Issue



## 1. GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	Desktop Laser Engraver	
Trademark:	SCULPFUN	
Model Name:	iCube Pro Max	
Series Model:	iCube Pro, iCube	
Model Difference:	Laser head power is different.	
Frequency Bands:	Bluetooth	2402-2480MHz
	2.4G WLAN	802.11b/g/n(20MHz): 2412~2472MHz 802.11n(40MHz):2422~2462MHz
Adapter:	Input: AC 100-240V, 50/60Hz, 2.0A Output: DC 12.0V-2.0A, 12.0V-3.0A, 12.0V-5.0A	
Hardware Version:	N/A	
Software Version:	N/A	

### 1.2 TEST LABORATORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136



## 2. FCC 47CFR §2.1091 REQUIREMENT

### 2.1 TEST STANDARDS

The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The gain of the antennas used in the product is extracted from the Antenna data sheets provided and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis Transmission formula is far field assumption, the calculated result of that is an over-prediction for near field power density. It is taken as worst case to specify the safety range.

### 2.2 LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of the human exposure to radio-frequency (RF) radiation as specified in 1.1307 (b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )
Limits for Occupational / controlled Exposures			
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
Limits for General population / Uncontrolled Exposure			
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

Friss Formula

Friss Transmission Formula:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

R = Distance between observation point and the center of radiator in cm

If we know the maximum gain of the antenna and the total output power to the antenna, through calculation, we will know MPE value at distance 20cm.

### 2.3 EUT OPERATION CONDITION

EUT was enabled to transmit and receive at lowest, middle and highest channels.

### 2.4 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance from the antenna should be included in the User manual. So, this device is classified as Mobile device.



## 2.5 TEST RESULT

### Turn up Result

Mode	Turn up Power
BT-GFSK	4±1dBm
BT-π/4-DQPSK	7±1dBm
BT-8DPSK	5.5±1dBm
2.4G WIFI-802.11b	14.5±1dBm
2.4G WIFI-802.11g	14±1dBm
2.4G WIFI-802.11n(HT20)	12.5±1dBm
2.4G WIFI-802.11n(HT40)	12±1dBm



**The MPE result of worst mode:**

RF Function	Frequency (MHz)	Max Turn up Power (dBm)	Max Turn up Power (mW)	ANT Gain (dBi)	ANT Gain (gain of antenna in linear scale)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Ratio	Result
BT	2480	8.00	6.31	3.75	2.37	0.003	1	0.003	Pass
2.4G WIFI	2412	15.50	35.48	3.75	2.37	0.017	1	0.017	Pass

**Note:**

1. The Bluetooth and WLAN can't simultaneous transmission at the same time.
2. The Maximum Power Density is less than the limit, complies with the exemption requirements.

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