



# EMF TEST REPORT

Product Name: NFC Power-free Padlock

Model Name: NFL-01, NFL-0x

FCC ID: 2BRUD-NFL01

Issued For : Mbowel Intelligent Technology Co., Ltd.  
3rd Floor Jing Gang Xing, 23 GuangHui Road, Shiyan Sub-district, Baoan District, Shenzhen, China

Issued By : Shenzhen LGT Test Service Co., Ltd.  
Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number: LGT25H091HA01

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## TEST REPORT CERTIFICATION

**Applicant:** Mbowel Intelligent Technology Co., Ltd.

**Address:** 3rd Floor Jing Gang Xing, 23 GuangHui Road, Shiyan Sub-district, Baoan District, Shenzhen, China

**Manufacturer:** Mbowel Intelligent Technology Co., Ltd.

**Address:** 3rd Floor Jing Gang Xing, 23 GuangHui Road, Shiyan Sub-district, Baoan District, Shenzhen, China

**Product Name:** NFC Power-free Padlock

**Trademark:** Mbowel

**Model Name:** NFL-01

**Series Model:** NFL-0x

**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	Contents
00	Aug. 27, 2025	Initial Issue



## 1. GENERAL INFORMATION

### 1.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	NFC Power-free Padlock	
Trademark:	Mbowel	
Test Model Name:	NFL-01	
Series Model:	NFL-0x	
Model Difference:	The shell mold is different, but the electronic part remains the same.	
Frequency Bands:	NFC	13.56MHz
Rating:	Input: DC 3.3V 200mA	
Hardware Version:	V1.0.0	
Software Version:	V1.0.0	

### 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:	FCC Registration No.: 746540
	A2LA Certificate No.: 6727.01



## 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> )
<b>Limits for Occupational / controlled Exposures</b>			
0.3-3.0	614	1.63	*(100)
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )
30-300	61.4	0.163	1.0
300 - 1500	--	--	F/300
1500 – 100000	--	--	5.0
<b>Limits for General population / Uncontrolled Exposure</b>			
0.3-1.34	614	1.63	*(100)
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )
30-300	27.5	0.073	0.2
300 - 1500	--	--	F/1500
1500 – 100000	--	--	1.0

F= Frequency in MHz

\* = Plane-wave equivalent power density.

Friis Formula

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

Where

P<sub>d</sub> = power density in mW/cm<sup>2</sup>

P<sub>out</sub> = 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
NFC	-38.5±1dBm

Note: dBm=dBuv/m@3m+95.2

### The MPE result of worst mode:

RF Function	Frequency (MHz)	Max Turn up Power (dBm)	Max Turn up Power (mW)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Ratio	Result
NFC	13.56	-37.5	0.0001778	0.0000000354	0.979	0.0000000361	Pass

### Note:

1. The Maximum Power Density is less than the limit, complies with the exemption requirements.

※※※※END OF THE REPORT※※※※