



# Maximum Permissible Exposure Evaluation

**FCC ID: 2BDNO-FX02**

## 1. Client Information

<b>Applicant</b>	:	AZ Outstanding Co.Ltd
<b>Address</b>	:	213 w ramona blvd, San Gabriel, CA9177
<b>Manufacturer</b>	:	Guangdong Olang Security Technology Co.Ltd
<b>Address</b>	:	No.1 Plant,Guangfeng Industrial Zone, Liexiyi Community, Xiaolan, Zhongshan, Guangdong, China

## 2. General Description of EUT

<b>EUT Name</b>	:	Smart Lock	
<b>Models No.</b>	:	FX02	
<b>Model Different</b>	:	NA	
<b>Brand Name</b>	:	Hhuintell,Klwenas Maec	
<b>Sample ID</b>	:	HC-C-202403-0376-2-01	
<b>Product Description</b>	:	Operation Frequency:	BLE: 2402MHz~2480MHz NFC:13.56MHz
<b>Power Rating</b>	:	USB Inpot DC 5V	
<b>Battery</b>	:	6V Battery	
<b>Software Version</b>	:	1.0.2	
<b>Hardware Version</b>	:	2	

## Method of Measurement for FCC

### 1. Max. Antenna Gain:

Mode	Antenna Type	Antenna Gain(dBi)
BLE	PCB	1.2
NFC	PCB	2

### 2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

### 3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

**S:** power density

**P:** power input to the antenna

**G:** power gain of the antenna in the direction of interest relative to an isotropic radiator.

**R:** distance to the center of radiation of the antenna

### Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is  $\leq 1.0$ .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$



**4. Test Result:**

Worst MPE Result							
Test Mode	Frequency (MHz)	Conducted Power(max) (dBm)	Turn-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm <sup>2</sup> ) [S]
BLE	2402	2.585	2±1	3	1.2	20	0.00052
	2440	2.633	2±1	3	1.2	20	0.00052
	2480	1.885	2±1	3	1.2	20	0.00052

Note: The antenna gain used max. antenna gain

**5. Conclusion:**

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

**Limits for General Population/ Uncontrolled Exposure**

Frequency Range (MHz)	Power density (mW/ cm <sup>2</sup> )
300-1,500	F/1500
1,500-100,000	1.0

For: 2402~2480MHz

MPE limit S: 1mW/ cm<sup>2</sup>

The MPE is calculated as 0.00052mW / cm<sup>2</sup> < limit 1mW / cm<sup>2</sup>.

So, RF exposure limit warning or SAR test are not required.

The EUT will only be used with a separation of 20cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b). The RF Exposure Information page from the manual is included here for reference.

13.56MHz: 41.08dBuV/m@ 3m

@20cm=@3m+40\*log(3/0.2)=88.124dBuV/m

For 13.56MHz: 88.124dBuV/m=0.025V/m< 60.77 V/m.

13.56MHz and BLE modules can simultaneous transmitting, so the maximum rate of MPE is 0.025/60.77+3/1.0 =0.578<=1.0. according to the KDB447498 section 7 .2 determine the device is exclusion from SAR test.

-----END OF REPORT-----

