

RF EXPOSURE Test Report

Report No. : MTi241230010-01E3
Date of Issue : 2025-03-04
Applicant : Dongguan Lingdu Electronic Technology Co.,Ltd
Product : Smart lock
Model(s) : ST380, ST300,D299,CA-02,D180,D200,T225,T226,
S398,S390,CA-03
FCC ID : 2BEAP-ST380

Shenzhen Microtest Co., Ltd.

TEST REPORT

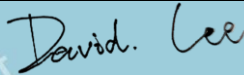
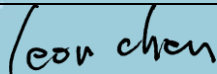
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Test Result Certification		
Applicant	Dongguan Lingdu Electronic Technology Co.,Ltd	
Applicant Address	No.1, Longcheng Street, Qingxi Town, Dongguan City, Guangdong Province, China	
Manufacturer	Dongguan Lingdu Electronic Technology Co.,Ltd	
Manufacturer Address	No.1, Longcheng Street, Qingxi Town, Dongguan City, Guangdong Province, China	
Product description		
Product name	Smart lock	
Trademark	N/A	
Model name	ST380	
Series Model(s)	ST300,D299,CA-02,D180,D200,T225,T226,S398,S390,CA-03	
Standards	47 CFR Part 2.1091	
Test method	KDB 447498 D01 v06	
Testing Information		
Date of test	2025-02-21 to 2025-02-25	
Test Result	Pass	
Prepared by	Yanice.Xie	
Reviewed by	David Lee	
Approved by	Leon Chen	

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1 RF EXPOSURE EVALUATION

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of 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 ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

MPE Calculation Method

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1415926

R = distance between observation point and center of the radiator in cm(20cm)

P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

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2 Measurement Result

BLE:

Operation Frequency: 2402-2480MHz,

2.4G WiFi:

Operation Frequency: 2412-2462MHz,

Power density limited: 1mW/ cm²

Antenna Type: PCB Antenna

Antenna gain: 1.01dBi

R=20cm

mW=10^{^(dBm/10)}

Antenna gain Numeric=10^{^(dBi/10)}= 10^{^(1.01/10)}=1.26

BLE:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain		(mW/cm ²)	(mW/cm ²)
				(dBm)	(mW)	(dBi)	Numeric		
2402	BLE_1M	6.53	6±1	7	5.012	1.01	1.26	0.0013	1
2440		4.69	4±1	5	3.162	1.01	1.26	0.0008	1
2480		5.19	5±1	6	3.981	1.01	1.26	0.0010	1
2402	BLE_2M	6.16	6±1	7	5.012	1.01	1.26	0.0013	1
2440		4.72	4±1	5	3.162	1.01	1.26	0.0008	1
2480		5.38	5±1	6	3.981	1.01	1.26	0.0010	1

2.4G WiFi:

Channel Freq. (MHz)	modulation	conducted power	Tune-up power (dBm)	Max		Antenna		Evaluation result	Power density Limits
		(dBm)		tune-up power		Gain			
				(dBm)	(dBm)	(mW)	(dBi)	Numerical	(mW/cm ²)
2412	11B	14.60	14±1	15	31.623	1.01	1.26	0.00794	1
2437		13.73	14±1	15	31.623	1.01	1.26	0.00794	1
2462		14.17	14±1	15	31.623	1.01	1.26	0.00794	1
2412	11G	16.84	17±1	18	63.096	1.01	1.26	0.01584	1
2437		16.80	17±1	18	63.096	1.01	1.26	0.01584	1
2462		17.11	17±1	18	63.096	1.01	1.26	0.01584	1
2412	11N20SISO	17.50	17±1	18	63.096	1.01	1.26	0.01584	1
2437		16.83	17±1	18	63.096	1.01	1.26	0.01584	1
2462		16.95	17±1	18	63.096	1.01	1.26	0.01584	1

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Evaluation result(mW/cm ²)	Power density Limits(mW/cm ²)	Max rate(%)
0.0013	1	0.0013
0.01584	1	0.01584

Conclusion:

Simultaneous:

BLE+ 2.4G WiFi: $0.0013+0.01584=0.01714$

For the max result: $0.01714 \leq 1.0$ test exclusion threshold, No SAR is required.

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Statement

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6. Any objection to this report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

***** END OF REPORT *****