



MPE TEST REPORT

Applicant MOBIKE (HONG KONG) LIMITED
FCC ID 2AK4SLBC-CATM01
Product Mobike Lock
Brand mobike
Model LC_CATM01, LB_CATM01
Report No. RXA1707-0235MPE01R1
Issue Date September 27, 2017

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 15.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Table of Contents

1	Test Laboratory.....	3
1.1	Notes of the Test Report	3
1.2	Test facility	3
1.3	Testing Location.....	4
1.4	Laboratory Environment.....	4
2	Description of Equipment under Test.....	5
3	Maximum conducted output power (measured) and antenna Gain	6



1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above. This report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	

2 Description of Equipment under Test

Client Information

Applicant	MOBIKE (HONG KONG) LIMITED
Applicant address	10/F HONGKONG OFFSHORE CENTRE NO.28 AUSTIN AVENUE TSIM SHA TSUI KL
Manufacturer	MOBIKE (HONG KONG) LIMITED
Manufacturer address	10/F HONGKONG OFFSHORE CENTRE NO.28 AUSTIN AVENUE TSIM SHA TSUI KL

General Technologies

Model	LC_CATM01, LB_CATM01
SN	/
Hardware Version	LC_CATM01
Software Version	501
Date of Testing:	July 30, 2017 ~ September 5, 2017

Discrepancy declaration of LC_CATM01 and LB_CATM01:

HARDWARE MODIFICATION	LC_CATM01	LB_CATM01
Mechanical shell	Black, gray	Black
PCB	The same	The same
radio frequency module	The same	The same
Other	The same	The same
Note: 1. LC_CATM01/ LB_CATM01 version has the same hard ware specification, the only difference lies in the shape of the outside shell. 2. During the test, the preliminary test was performed with LC_CATM01 and LB_CATM01, LC_CATM01 was selected as the worst Model and recorded data in this report.		

3 Maximum conducted output power (measured) and antenna Gain

the numeric gain (G) of the antenna with a gain specified in dB is determined by

Numeric gain (G) = $10^{(\text{antenna gain}/10)}$

Band	Maximum Conducted Output Power (dBm)	Antenna Gain (dBi)	Numeric gain (dB)
LTE Band 2	25.00	-2.80	0.525
LTE Band 4	25.00	-2.44	0.570
LTE Band 12	24.00	-2.50	0.562
LTE Band 13	24.00	-2.33	0.585
Bluetooth (Low Energy)	-3.00	-2.87	0.516

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following

TABLE 1 – LIMITS FOR MAXIMUN 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 Exposures				
0.3-3.0	614	1.63	*(100)	6
3-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			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
300-1500			f/1500	30
1500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.



The maximum permissible exposure for 300~1500MHz is f/1500, and 1500~100,000MHz is 1.0. So

Band	The maximum permissible exposure
LTE Band 2	1.0mW/cm ²
LTE Band 4	1.0mW/cm ²
LTE Band 12	0.466mW/cm ²
LTE Band 13	0.518mW/cm ²
Bluetooth (Low Energy)	1.0mW/cm ²

Distance to the center of radiation of the antenna Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

$$R = (PG / 4\pi S)^{1/2}$$

Where: $\pi = 3.1416$

S = The maximum permissible exposure (in appropriate units, e.g. mW/cm²)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = the numeric gain of the antenna

R = distance to the center of radiation of the antenna

Band	PG (dBm)	PG (mW)	The operate distance (cm)	Limit R (cm)
LTE Band 2	25.525	356.862	8	>5.33
LTE Band 4	25.570	360.579	8	>5.36
LTE Band 12	24.562	285.891	8	>6.99
LTE Band 13	24.585	287.409	8	>6.65
Bluetooth (Low Energy)	-5.87	0.259	8	>0.14
Note: This equipment should be installed and operated with a minimum distance of 8cm between the device and the user or bystanders.				