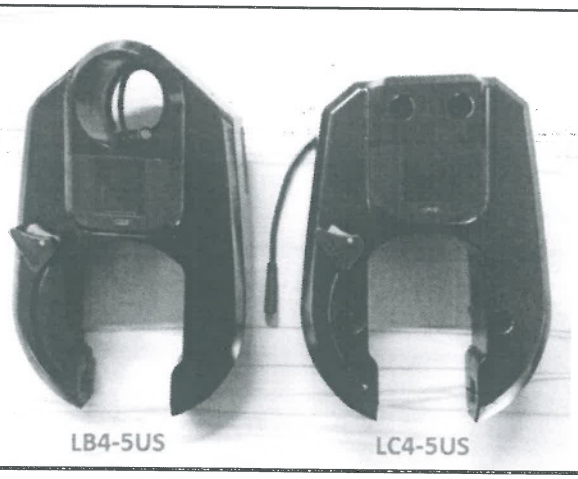
Prüfbericht-Nr.: *Test Report No.:*	**50072000 001**	**Auftrags-Nr.:** *Order No.:*	**154220594**	**Seite 1 von 12** *Page 1 of 12*
Kunden-Referenz-Nr.: *Client Reference No.:*	**654233**	**Auftragsdatum:** *Order date:*	**01.03.2017**	

Auftraggeber: *Client:*	**MOBIKE (HONGKONG) LIMITED** 2/F HONGKONG OFFSHORE CTR 28, AUSTIN AVENUE TST KLN, HONGKONG
Prüfgegenstand: *Test item:*	**Mobike Lock**
Bezeichnung / Typ-Nr.: *Identification / Type No.:*	**LB4-5US; LC4-5US** **FCC ID: 2AK4SLBC4-5US**
Auftrags-Inhalt: *Order content:*	**Complete test**
Prüfgrundlage: *Test specification:*	**FCC CFR47 Part 2, Subpart J Section 2.1091** **FCC KDB # 447498 D01 V06**
Wareneingangsdatum: *Date of receipt:*	**12.09.2016**
Prüfmuster-Nr.: *Test sample No.:*	**A000475161-001**
Prüfzeitraum: *Testing period:*	**01.19.2017 to 02.06.2017**
Ort der Prüfung: *Place of testing:*	**MRT Technology(Suzhou) Co., Ltd.**
Prüflaboratorium: *Testing laboratory:*	**TÜV Rheinland (Shanghai) Co., Ltd.**
Prüfergebnis*: *Test result*:*	**Pass**



geprüft von / *tested by*:

02.07.2017	Elliot Zhang / Senior Project Engineer	Zenit Zhang
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

kontrolliert von / *reviewed by*:

02.07.2017	Shi Li / Section Manager	SL
Datum *Date*	**Name / Stellung** *Name / Position*	**Unterschrift** *Signature*

Sonstiges / *Other*

Zustand des Prüfgegenstandes bei Anlieferung: Prüfmuster vollständig und unbeschädigt
Condition of the test item at delivery: *Test item complete and undamaged*

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
Legend:	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

TEST SUMMARY

2.3.1 EVALUATION FOR GSM
RESULT: Pass

2.3.2 EVALUATION FOR WCDMA
RESULT: Pass

2.3.3 EVALUATION FOR BLUETOOTH LOW ENERGY
RESULT: Pass

2.3.4 EVALUATION FOR THE SIMULTANEOUSLY TRANSMIT SUITATION
RESULT: Pass

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1. General Product Information

1.1 Product Function and Intended Use

The EUTs (Equipments Under Test) are smart locks which use the technic of GSM / WCDMA / GPS / Bluetooth 4.0 Low Engry Only. There are two models: LB4-5US and LC4-5US, all of the two models are the same except the corresponding structure due to different installation method. For details please refer to the user manual and EUT Photos.

The aim of this report is to evalute the RF Exposure of the EUT.

For details refer to the User Manual and Circuit Diagram.

1.2 Ratings and System Details

Table 1: Technical Specification of EUT

General Description of EUT	
Product Name:	Mobike Lock
Brand Name:	mobike
Model No.:	LB4-5US; LC4-5US
Rated Voltage:	DC 3.7V
Type of Product:	Mobile Device
GSM	
Support Networks:	GPRS, EDGE
Supprot Bands:	Dual band GSM 850/1900MHz
Frequency Range:	GSM850: Tx: 824-849MHz, Rx: 869-894MHz PCS1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz
Modulation Type:	GMSK, 8PSK
Multislot Class:	GPRS: Class 12 EDGE: Class 12
Mobile Station Class:	GPRS: Class B EDGE: Class B
Antenna Type:	PIFA
Antenna Gain:	1.23 dBi
WCDMA	
Support Networks:	WCDMA,HSDPA, HSUPA
Support Bands:	Dual band UMTS 850/1900
Frequency Range:	CLR850: Tx: 824-849MHz, Rx: 869-894MHz PCS1900: Tx: 1850-1910MHz, Rx: 1930-1990MHz

Modulation Type:	BPSK, QPSK, 16QAM
Category:	WCDMA: up to 384kbps DL/UL HSDPA: Cat.8 HSUPA: Cat.6
Antenna Type:	PIFA
Antenna Gain:	1.23 dBi
BLE	
Frequency Range:	2402 – 2480MHz
Modulation Type:	GFSK
Antenna Type:	Monopole
Antenna Gain:	4.83 dBi

2. RF Exposure

2.1 FCC Requirement

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).

Table 2: Limit formaximum permissible exposure (MPE)

Frequency Range [MHz]	Electri field strength [V/m]	Magnetic field strength [A/m]	Power density [mW/cm^2]	Average 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 – 1500			f/300	6
1500 – 100000			5	6
(B) Limits for Generall 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 – 100000			1.0	30

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

2.2 Formula for calculating the power density:

$S = (P_{out} \cdot G) / (4\pi \cdot D^2)$,
where
S = power density in mW/cm^2
P_{out} = antenna conducted output power in mW
G = antenna gain in linear scale (here: g=10log(G))
D = distance between observation point and radiating structure in cm

Note:
According to the normal installation and using method declared by the Manufactory, the minimum distance from the EUT to the human is around 8cm.

2.3 Evaluation Results

2.3.1 Evaluation for GSM

RESULT: **Pass**

Table 3: Evaluation results for GSM

Network	Band	Conducted Output Power P_{out} [dBm]	Duty Cycle Factor [dB]	Maximum Antenna Gain (g) [dBi]	Power Density at 8cm [mW/cm^2]	Limit [mW/cm^2]
GPRS	GSM 850	34	-6	1.23	1.041382228	0.549
	GSM 1900	31	-6	1.23	0.521927478	1

Note:

1. The Conducted Output Power P_{out} listed in the table above were the max value quoted from the tune-up procedure.
2. The EUT report the data to the server every one hour via the 2G/3G network, so according to the clause 6.3 'Low transmission duty factor devices' of KDB 447498 D01 V06, although the power density of GPRS 850 at 8cm is larger than the limit, it still meet the requirement.

Conclusion

The device complies with the FCC exposure requirements since the maximum transmitter power density is below the FCC limit.

2.3.2 Evaluation for WCDMA

RESULT: **Pass**

Table 4: Evaluation results for WCDMA

Network	Band	Conducted Output Power P_{out} [dBm]	Maximum Antenna Gain (g) [dBi]	Power Density at 8 cm [mW/cm^2]	Limit [mW/cm^2]
WCDMA	UMTS 850	25.5	1.23	0.585612262	0.549
	UMTS 1900	25.5	1.23	0.585612262	1

Note:

1. The Conducted Output Power P_{out} listed in the table above were the max value quoted from the tune-up procedure.
2. The EUT report the data to the server every one hour via the 2G/3G network, so according to the clause 6.3 'Low transmission duty factor devices' of KDB 447498 D01 V06, although the power density of WCDMA 850 at 8cm is larger than the limit, it still meet the requirement.

Conclusion

The device complies with the FCC exposure requirements since the maximum transmitter power density is below the FCC limit.

2.3.3 Evaluation for Bluetooth Low Energy

RESULT: **Pass**

Table 5: Evaluation results for Bluetooth Low Energy

Network	Band	Conducted Output Power P_{out} [dBm]	Maximum Antenna Gain(g) [dBi]	Power Density at 8 cm [mW/cm^2]	Limit [mW/cm^2]
Bluetooth Low Energy	2.4GHz ISM	0.48	4.83	0.004222894	1

Note:
1. The Conducted Output Power P_{out} was quoted from the report 50070787 001 issued by TÜV Rheinland (Shanghai) Co., Ltd.

Conclusion
The device complies with the FCC exposure requirements since the maximum transmitter power density is below the FCC limit.

2.3.4 Evaluation for the simultaneously transmit suitation

RESULT: **Pass**

Table 6: Evaluation for the simultaneously transmit suitation

Network 1	Power Density at 8 cm in Network 1 [mW/cm^2]	Network 2	Power Density at 8 cm in Network 2 [mW/cm^2]	Power Density at 8 cm in simultaneously transmit suitation [mW/cm^2]	Limit [mW/cm^2]
Bluetooth Low Energy	0.004222894	GPRS 850	1.04138223	1.045605122	0.549
		GPRS 1900	0.52192748	0.526150372	1
		WCDMA 850	0.58561226	0.589835156	0.549
		WCDMA 1900	0.58561226	0.589835156	1

Note:
1. The Bluetooth Low Energy can transmit simultaneously with GPRS or WCDMA.
2. The EUT report the data to the server every one hour via the 2G/3G network, so according to the clause 6.3 'Low transmission duty factor devices' of KDB 447498 D01 V06, although the power density of GPRS 850 and WCDMA 850 transmit simultaneously with the Bluetooth Low Energy at 8cm is larger than the limit, it still meet the requirement.

Conclusion
The device complies with the FCC exposure requirements since the maximum transmitter power density is below the FCC limit.

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