



REPORT No. : SZ16100034S01

RF EXPOSURE EVALUATION REPORT

APPLICANT : Beijing Beast Technology Co., Ltd

PRODUCT NAME : bluegogo lock

MODEL NAME : GS1

TRADE NAME : BEAST

BRAND NAME : N/A

FCC ID : 2AHU3-GS1

STANDARD(S) : 47CFR 2.1091
KDB 447498 D01 General RF Exposure
Guidance v06

ISSUE DATE : 2016-12-09



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2016-12-09	First edition



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TEST REPORT DECLARATION

Applicant	Beijing Beast Technology Co., Ltd
Applicant Address	Room 2508 Building B,Tower 2 Wangjing SOHO, Chaoyang District, Beijing, China
Manufacturer	Beijing Beast Technology Co., Ltd
Manufacturer Address	Room 2508 Building B,Tower 2 Wangjing SOHO, Chaoyang District, Beijing,China
Product Name	bluegogo lock
Model Name	GS1
Brand Name	N/A
HW Version	G1_MB_V1.0_20161010
SW Version	MAUI.11C.W13.52.SP3.V2.F31.V0.0.2.beta
Test Standards	47CFR 2.1091; KDB 447498 D01 General RF Exposure Guidance v06
Issue Date	2016-12-09

Tested by : Chen Shengkui
Chen Shengkui

Reviewed by : Liu Jun
Liu Jun

Approved by : Peng Huarui
Peng Huarui



1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1. Identification of Applicant

Company Name:	Beijing Beast Technology Co. , Ltd
Address:	Room 2508 Building B,Tower 2 Wangjing SOHO, Chaoyang District, Beijing,China

1.2. Identification of Manufacturer

Company Name:	Beijing Beast Technology Co. , Ltd
Address:	Room 2508 Building B,Tower 2 Wangjing SOHO, Chaoyang District, Beijing,China

1.3. Equipment Under Test (EUT)

Model Name:	GS1
Trade Name:	BEAST
Brand Name:	N/A
Hardware Version:	G1_MB_V1.0_20161010
Software Version:	MAUI.11C.W13.52.SP3.V2.F31.V0.0.2.beta
Frequency Bands:	GSM 850MHz/1900MHz;WIFI 802.11b/g/n20;
Modulation Mode:	GPRS:GSMK;WIFI802.11b: DSSS;WIFI802.11g: OFDM; WIFI802.11n: OFDM;
Multislot Class:	GPRS:Class 12;
Antenna type:	PIFA Antenna/Copper tube antenna
Development Stage:	Identical prototype



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1.3.1. Photographs of the EUT

1. EUT front view



2. EUT rear view





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3. The Sample



4. Worst Case distance





1.3.2. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	G1_MB_V1.0_20161010	MAUI.11C.W13.52.SP3.V2.F31.V0.0.2.beta

1.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1091	Radiofrequency Radiation Exposure Evaluation: mobile devices
2	KDB 447498 D01v06	General RF Exposure Guidance



2. DEVICE CATEGORY AND RF EXPOSURE LIMIT

Per user manual, this device Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

TABLE 1—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)
(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



3. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

1. GPRS Mode Conducted peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	32.77	31.69	29.79	28.59
	190	836.6	32.74	31.60	29.63	28.42
	251	848.8	32.72	31.56	29.56	28.47
PCS 1900	512	1850.2	29.58	28.23	26.06	24.78
	661	1880.0	29.89	28.62	26.48	25.10
	810	1909.8	30.14	28.95	26.84	25.30

2. GPRS Time-based Average Power

Band	Channel	Frequency (MHz)	Output Power(dBm)			
			Slot 1	Slot 2	Slot 3	Slot 4
GSM 850	128	824.2	23.74	25.67	25.53	25.58
	190	836.6	23.71	25.58	25.37	25.41
	251	848.8	23.69	25.54	25.30	25.46
PCS 1900	512	1850.2	20.55	22.21	21.80	21.77
	661	1880.0	20.86	22.60	22.22	22.09
	810	1909.8	21.11	22.93	22.58	22.29

Timeslot consignations:

No. Of Slots	Slot 1	Slot 2	Slot 3	Slot 4
Slot Consignation	1Up4Down	2Up3Down	3Up2Down	4Up1Down
Duty Cycle	1:8	1:4	1:2.67	1:2
Correct Factor	-9.03dB	-6.02dB	-4.26dB	-3.01dB



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3. Wifi average output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			802.11b	802.11g	802.11n20
Wifi	1	2412	9.84	9.62	9.63
	6	2437	9.39	9.21	9.23
	11	2462	8.72	8.52	8.50



5. RF EXPOSURE EVALUATION

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Antenna Gain (dBi)	Conducted Average Power (dBm)	Time-averaging EIRP (mW)	Power density (mW/cm ²)	Limit for MPE (mW/cm ²)
2.4GHz	2412	1.13	9.84	12.50	0.002	1.0
850MHz	836.6	0.12	25.67	379.31	0.075	0.6
1900MHz	1909.8	0.12	22.93	201.84	0.040	1.0

Note:

1. MPE calculation method

$$\text{Power Density} = \text{EIRP} / 4\pi R^2$$

Where: EIRP = P · G

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)

Simultaneous transmission MPE evaluation

For multiple collocated transmitters operating simultaneously in frequency bands where different limits apply

The Power Density at the specified separation distance is calculated for each transmitter.

According to KDB 447498 D01, the fraction of the exposure limit is calculated for each transmitter as (Power Density of transmitter) / (Limit applicable to that transmitter) ≤ 1

The fractions are summed. The summed value is $0.165 \leq 1$.



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ANNEX GENERAL INFORMATION

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

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