

产品规格书

产品名称: 智能网关L系列

产品型号: DSGW-040

Revision History

Specification		Sect.	Update Description	By
Rev.	Date			
1.0	2020-01-30		New version release	Tiny
2.0	2020-05-29		Added Cat1 version, updated Bluetooth to version 5.2	Tiny
3.0	2020-06-02		Added Li battery	Tiny
4.0	2020-06-20		Added application select table	Tiny
5.0	2020-07-09		Included different Z-WAVE frequencies for different countries	Tiny
6.0	2020-07-13		Changed the Z-wave default frequency to 916M	Tiny
7.0	2020-09-09		Added a new type DSGW-040-9	Tiny
8.0	2020-09-16		Corrected some errors	Tiny
9.0	2020-09-21		Added a new type DSGW-040-11	Tiny
10	2020-10-19		Added free space	Tiny
11	2020-11-19		Added a new type DSGW-040-13	Tiny
12	2020-12-03		Added BQB Certification	Tiny
13	2021-01-22		Added a new Type DSGW-14	Tiny
14	2021.04.16		Added a new Type DSGW-15	Tiny
15	2021-11-09		Added Healthcare Application	Tiny
16	2022-5-27		Added a description of the self-destruction function of products with lithium battery	Tiny
17	2022-8-25		Adjusted temperature parameter and LTE Modem for China	Tiny
18	2022-11-25		Added a new type	Tiny
19	2023-07-12		Major Update to Version and CN Version Release	Hubert

Approvals

Organization	Name	Title	Date

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Model List

A 类产品 (现货, 交付时间: 1~2 周)

Model \ Feature	Wi-Fi 2.4G	Bluetooth 5.2	Zigbee3.0	LTE Cat M1
DSGW-040-1	•	•		
DSGW-040-2	•	•		•

B 类产品 (接单生产, 交付周期大于 3~4 周)

Model \ Feature	Wi-Fi 2.4G	Bluetooth 5.2	Zigbee3.0	LTE Cat M1
DSGW-040-3	•		•	

C 类产品 (接单生产, 交付周期大于 8 周, 最小起订量: 500)

Model \ Feature	Wi-Fi 2.4G	Bluetooth 5.2	Zigbee3.0	Z-Wave	LTE Cat M1	LTE Cat1	Li Battery
DSGW-040-4	•		•		•		
DSGW-040-5	•			•			
DSGW-040-6	•			•	•		
DSGW-040-7	•	•	•	•	•		
DSGW-040-8	•	•				•	
DSGW-040-9	•	•	•		•		
DSGW-040-10	•	•	•		•		
DSGW-040-11	•	•	•	•	•		•
DSGW-040-12	•	•			•		•
DSGW-040-13	•	•		•	•		•
DSGW-040-14	•	•	•	•			
DSGW-040-15	•		•			•	
DSGW-040-16	•		•			•	•
DSGW-040-17	•	•	•		•		•

1. 产品简介

1.1. 描述

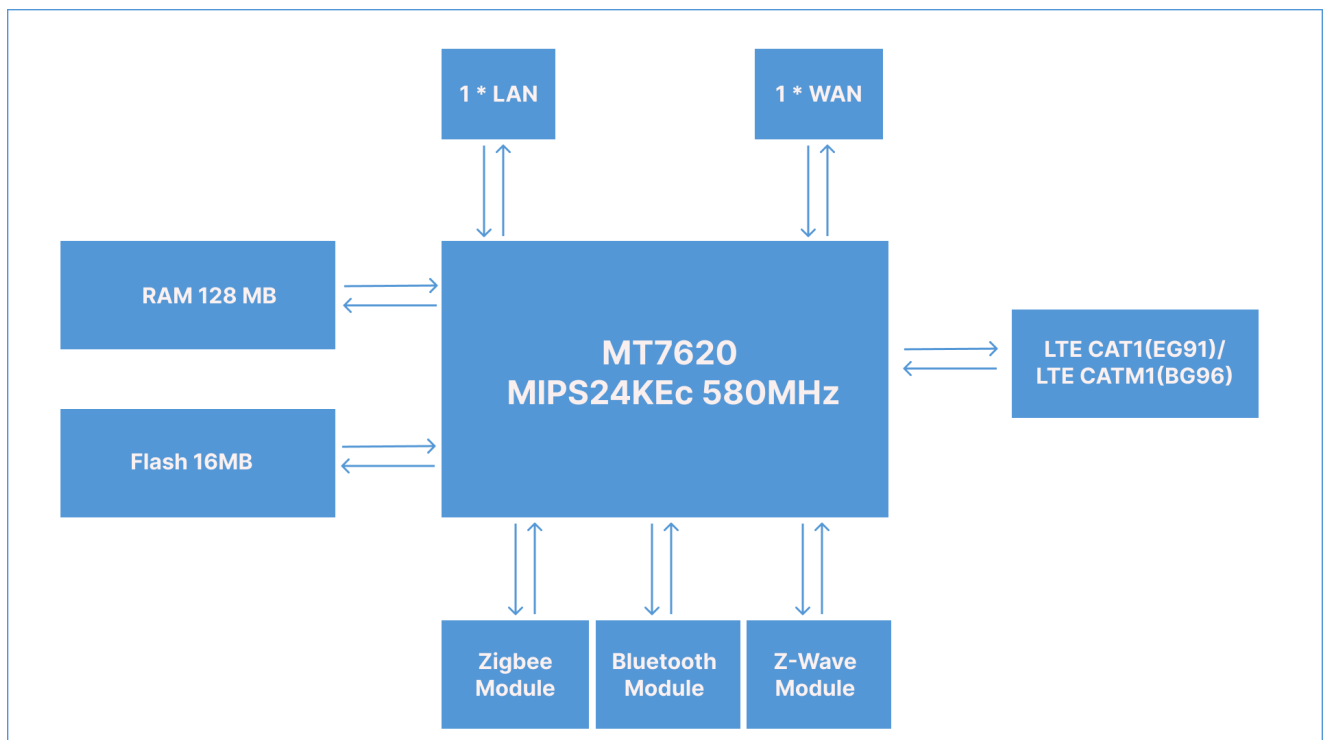
DSGW-040 是一款专为物联网网关开发人员设计的智能设备，广泛适用于智能家居、智能安防、养老服务等多个行业。DSGW-040 支持包括 Zigbee 3.0, Bluetooth 5.2, Wi-Fi 2.4G 在内的多种无线协议。此设备能够从 Zigbee 3.0 和 BLE 端设备收集数据，并通过 Wi-Fi 2.4G 及以太网将数据发送至云端。

另外，开发人员可以下载预先集成和经过全面验证的开发资源，用于从硬件层面开发自定义固件。

1.2. 产品特性

- 操作系统: OpenWrt
- 处理器: MT7620 580MHz MIPS® 24KEc™
- RAM: 128MB 可用空间: 80MB (用户的开发空间)
- 闪存: 16MB 可用空间: 8MB (用户的开发空间)
- 支持 IEEE802.11n, IEEE802.11g, IEEE 802.11b 协议
- 支持蓝牙 5.2, Zigbee 3.0 和 LTE CAT M1
- 一个 10/100 Mbps WAN 口, 一个 10/100 Mbps LAN 口

1.3. 硬件框图

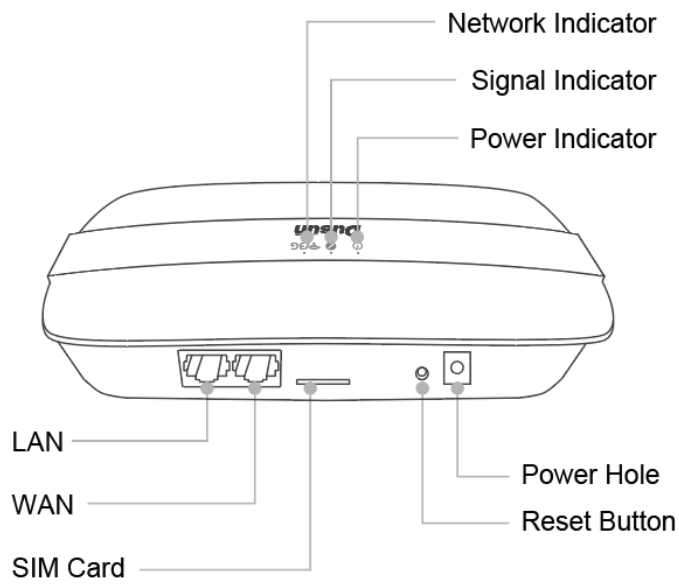


2. 机械需求

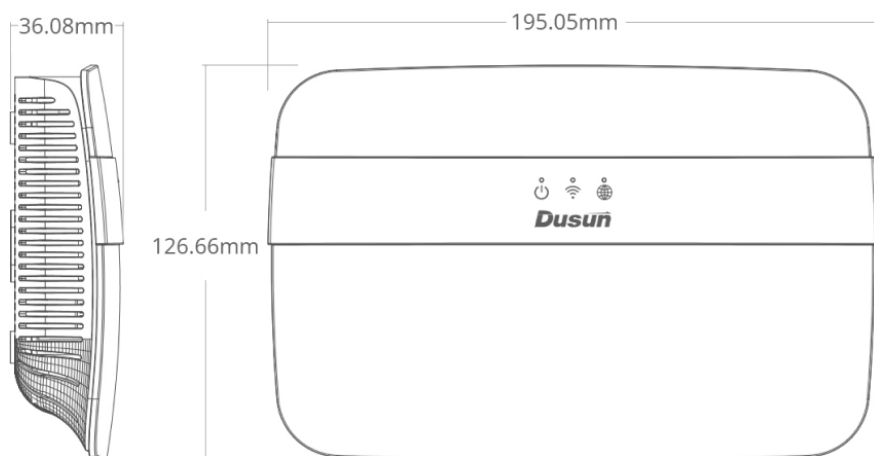
2.1. 产品图片



2.2. 接口说明



2.3. 产品尺寸



3. 规格参数

3.1. 硬件参数

类别	参数
CPU	MT7620
System	OpenWrt
RAM	128 MB
Flash	16MB
电源	输入电压: 范围为4.5V至5V, 电源座孔径为3.5毫米 直径为1.35mm, 为正极 电源适配器: 100-240v 50/60hz。输出为5V/2A
锂电池	4100mAh
复位键	恢复出厂按钮。长按它超10秒钟, 网关将恢复出厂设置
网口	1 * 10/100 WAN口, 1 * 10/100 LAN口
指示灯	黄灯闪烁: Zigbee/Bluetooth 信号进来 红灯常亮: 未正常连接服务器 绿灯常亮: 正常连接服务器
工作温度	-10°C~55°C
存储温度	-40°C~65°C
工作湿度	10%~90% non-condensing
存储湿度	5%~90% non-condensing
工作电流	2A@5V
安装方式	居顶安装, 平装

3.2. 性能参数

<p>Wi-Fi</p>	<p>IEEE Wireless LAN standard: IEEE802.11n, IEEE802.11g, IEEE802.11b</p> <ul style="list-style-type: none"> ● 传输速率: IEEE 802.11b Standard Mode:1,2,5.5,11Mbps IEEE 802.11g Standard Mode:6,9,12,18,24,36,48,54 Mbps IEEE 802.11n: MCS0~MCS7 @ HT20/ 2.4GHz band MCS0~MCS7 @ HT40/ 2.4GHz band MCS0~MCS9 @ HT40/ 5GHz band ● 接收灵敏度: VHT80 MCS9: -60dBm@10% PER(MCS9) /5GHz band HT40 MCS9: -63dBm@10% PER(MCS9) /5GHz band HT40 MCS7: -70dBm@10% PER(MCS7) /2.4GHz band HT20 MCS7: -71dBm@10% PER(MCS7) /2.4GHz band ● 发射功率: IEEE 802.11n: 14dBm @HT20/40 MCS7 /5GHz band IEEE 802.11n: 16dBm @HT20/40 MCS0 /5GHz band IEEE 802.11n: 16dBm @HT20/40 MCS7 /2.4GHz band IEEE 802.11g: 16dBm @54MHz IEEE 802.11b: 18dBm @11MHz ● 无线安全: WPA/WPA2, WEP, TKIP, and AES ● 工作模式: Bridge, AP Client ● 覆盖范围: 最大50M 空旷范围 ● 最大传输速率: 300Mbps ● 频率偏差: +/- 50KHZ ● 频率范围 (MHz): 2412.0~2483.5 ● 低频(MHz):2400 ● 高频(MHz):2483.5 ● E.i.r.p (Equivalent Isotopically Radiated power) (mW)<100mW ● 带宽(MHz):20MHz/40MHz ● 调制方式: BPSK/QPSK, FHSSCCK/DSSS, 64QAM/OFDM
<p>Bluetooth 5.2</p>	<ul style="list-style-type: none"> ● 发射功率: 19.5dBm ● 覆盖范围: 最大150M 空旷范围 ● 接收灵敏度: -92dBm@0.1%BER, 1Mbps ● 频率偏差: +/-20KHZ ● 频率范围 (MHz):2401.0~2483.5 ● 低频 (MHz):2400 ● 高频 (MHz):2483.5 ● E.i.r.p (Equivalent Isotopically Radiated power) (mW)<10mW ● 带宽 (MHz):2MHz ● 调制方式: GFSK

Zigbee 3.0	<ul style="list-style-type: none"> ● 覆盖范围: 最大100M 空旷范围 ● 发射功率:17.5dBm ● 最大传输速率: 250Kbps ● 频率偏差: +/- 20KHZ ● 接收灵敏度:-94dBm ● 频率范围 (MHz):2401.0~2483.5 ● 低频 (MHz):2400 ● 高频 (MHz):2483.5 ● E.i.r.p (Equivalent Isotopically Radiated power) (mW)<100mW ● 带宽 (MHz):5MHz ● 调制方式: OQPSK
LTE CAT M1	<ul style="list-style-type: none"> ● Operating Frequency Band: 850/900/1800/1900MHZ ● Global: LTE: FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 ● North America: LTE TDD: B2/B4/B12/B13 ● LTE TDD: B39 (for Cat.M1 only)
LTE CAT1 EG915-U CN	<ul style="list-style-type: none"> ● LTE-FDD: B1/B3/B5/B8 ● LTE-TDD: B34/B38/B39/B40/B41, GSM: B3/B8 ● LTE-FDD: B1/B3/B5/B7/B8/B20/B28, GSM: B2/B3/B5/B8 ● LTE-FDD: B2/B3/B4/B5/B7/B8/B28/B66, GSM: B2/B3/B5/B8
WAN/LAN	10/100 Mbps

4. 质量保证需求

Information Description	Standard(Yes) Custom(No)
跌落测试	Yes
射频天线分析	Yes
环境测试	Yes
可靠性测试	Yes
认证	FCC, CE, Zigbee Certification, BQB, RoHS

5. 软件需求

DSGW-040 基于 MTK 平台开发, 支持 OpenWrt, Wi-Fi 2.4G, Zigbee 3.0, OTA 和 MQTT 等协议和功能。

5.1.1. 开机启动

设备上电后, 绿色和黄色的 LED 灯都会亮起。一旦黄色 LED 灯熄灭, 绿色 LED 灯开始闪烁, 然后保持长亮, 代表网关成功启动。

5.1.2. 重置

长按 Reset 按钮 10 秒钟, 执行恢复出厂设置。将擦除所有信息, 设备完成恢复出厂设置

5.1.3. LED 指示器

绿色 LED: 设备正常工作

黄色 LED: Zigbee 或 Bluetooth 信号指示灯。当网关与传感器进行通信时, 该 LED 灯会闪烁。网关进入配对模式, 该 LED 灯也会闪烁。

红色 LED: 代表设备的联网状态。如果网关入网成功, 红色 LED 灯将关闭。如果连接失败, 红灯长亮

5.1.4. Wi-Fi 配置

支持 AP 和客户端两种模式, 可以根据需要进行切换。AP 的名称: xxxxxxxx。密码: xxxxxxxx。

5.1.5. Zigbee 配置

支持 Zigbee3.0, ZHA、GreenPower、ZLL 等。它与大多数 Zigbee 设备兼容, 如门传感器、泄漏传感器、运动传感器、温度和湿度传感器、智能插头、智能灯、烟雾传感器、窗帘等等。

5.1.6. Z-WAVE 配置

该网关支持 Silicon Labs 的 Z/IP 网关堆栈。用户可以下载 Z-ware 7 应用程序来控制网关和 Z-wave 设备。

5.1.7. BLE 配置

该网关支持 iBeacon、Eddystone 和 BLE 传感器, 以及 SIG Mesh。

5.1.8. OTA

支持通过 OTA 升级网关固件。

5.1.9. MQTT

该网关支持 MQTT 协议, 用于与第三方平台对接。

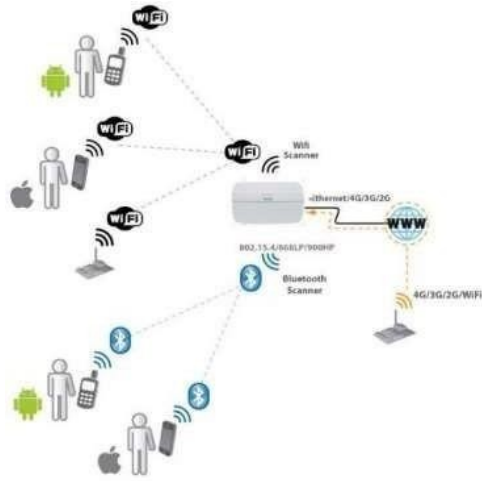
6. 应用

6.1. AP-01 购物活动追踪

DSGW-040 可以在不建立连接的情况下，监测到周围的 iPhone 和 Android 设备，包括智能手机、笔记本电脑、免提设备。通常情况下，在该智能网关的覆盖范围内，任何配备有 Wi-Fi 或蓝牙接口的设备，都会被监测到。



Working Scenario



Schematic Diagram

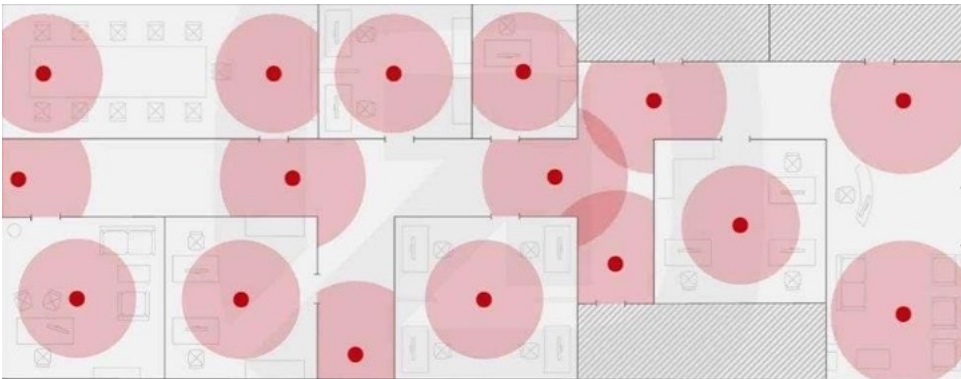
DB ID	Timestamp	MAC	AP	RSSI	Vendor
53483	2012-04-24 07:56:25	C4:2C:03:96:0E:4A		69	Apple
53482	2012-04-24 09:11:26	D8:2A:7E:10:1E:63	libelium_wsn1	60	Nokia Corporation

Example of Information Monitored by the Wi-Fi Scanner

DB ID	Timestamp	MAC	ID	RSSI	CoD	Vendor
45400	2012-05-16 16:18:12	D0:26:7E:5F:3C:18	myCar	-72	Handsfree	PARROT SA
78005	2012-04-20 12:59:27	D8:2A:7E:0E:C3:10	Tropic	-85	Smartphone	Nokia Corporation

Example of Information Monitored by the Bluetooth Scanner

6.2. AP-02 用于室内定位和资产定位



通过在重要资产上安装 BLE Beacon, DSGW-030 就可以接收到来自这些需要追踪的重要资产的 BLE 信号, 在对接收到的数据完成处理, 并通过 Wi-Fi 或以太网将其发送到服务器。最后, 资产的位置会显示在地图上, 并且可以检索运动轨迹。

6.3. AP-03 智能家居



智能网关作为智能家居的大脑, 与各种智能设备进行无线连接, 使它们能够无缝地协同工作。

智能网关的主要功能包括:

- - 从任何地方控制灯光、电子产品和小家电, 提供方便的远程访问。
- - 安排设备在一天中的不同时间打开和关闭, 使常规程序自动化并提高能源效率。
- - 当家里有意外的活动时, 会收到警报, 确保你随时了解并意识到任何潜在的安全问题。
- - 设置连接的灯光, 根据人们的存在打开和关闭, 创造一个反应更快、更直观的照明体验。
- - 监测湿度和温度水平, 使您能够实时监测家中的环境状况。

6.4. AP-04 智慧医疗



健康和医疗设备可以通过网关连接到云平台，实现健康和医疗数据的远程传输。这使得医生可以远程为慢性病患者提供用药指导。此外，该网关还配备了蓝牙漫游功能。在大范围内，设备可以通过蓝牙漫游将其连接从网关 A 无缝切换到网关 B。

7. 认证

Zigbee



FCC

TCB

GRANT OF EQUIPMENT AUTHORIZATION
 Certification
 Issued Under the Authority of the
 Federal Communications Commission
 By:

TCB

Bay Area Compliance Laboratory Corp.
 1274 Anviiwood Avenue
 Sunnyvale, CA 94089

Date of Grant: 06/03/2020
 Application Dated: 06/03/2020

Hangzhou Roombanker Technology Co., Ltd.
 A#801 Wantong center,
 Hangzhou,
 China

Attention: Lin Su

NOT TRANSFERABLE

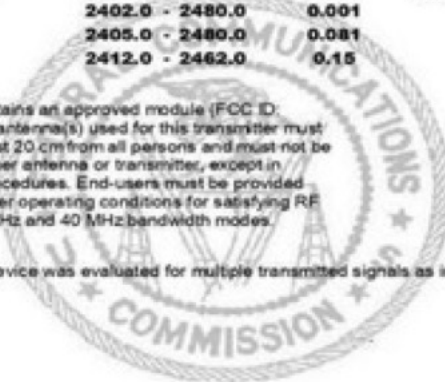
EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: 2AUXBDSGW-040
 Name of Grantee: Hangzhou Roombanker Technology Co., Ltd
 Equipment Class: Digital Transmission System
 Notes: L-Serial Smart Gateway

Grant Notes	FCC Rule Parts	Frequency Range (MHz)	Output Watts	Frequency Tolerance	Emission Designator
Ble	15C	2402.0 - 2480.0	0.001		
Zigbee	15C	2405.0 - 2480.0	0.081		
MO	15C	2412.0 - 2462.0	0.15		

Output power listed is conducted. The device contains an approved module (FCC ID: XMR201707BG96) documented in this filing. The antenna(s) used for this transmitter must be used to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC multi-transmitter product procedures. End-users must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance. This product supports 20 MHz and 40 MHz bandwidth modes.

MO: This Multiple Input Multiple Output (MIMO) device was evaluated for multiple transmitted signals as indicated in the filing.



FCC

TCB

GRANT OF EQUIPMENT AUTHORIZATION

TCB

Certification Issued Under the Authority of the Federal Communications Commission By:

Bay Area Compliance Laboratory Corp. 1274 Anvilwood Avenue Sunnyvale, CA 94089

Date of Grant: 06/03/2020 Application Dated: 06/03/2020

Hangzhou Roombanker Technology Co., Ltd. A8801 Wantong center, Hangzhou, China

Attention: Lin Su

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: 2AUXBDSGW-040 Name of Grantee: Hangzhou Roombanker Technology Co., Ltd Equipment Class: Part 15 Low Power Communication Device Transmitter Notes: L-Serial Smart Gateway

Table with 5 columns: Grant Notes, FCC Rule Parts, Frequency Range (MHz), Output Watts, Frequency Tolerance, Emission Designator. Row 1: 15C, 908.4 - 908.4, Z-Wave Frequency

The device contains an approved module (FCC ID: XMR201707BG96) documented in this filing.



ROHS



ATTESTATION OF CONFORMITY

Attestation Number : AOC SH4200527-06329E -13
Date of Issue: June 11, 2020
Product: L-Serial Smart Gateway
Model: DSGW-040
Brand: /
Applicant Name & Address: Hangzhou Roombanker Technology Co., Ltd.
 AK801 Wantong center, Hangzhou, Zhejiang, China

Bay Area Compliance Laboratories Corp. (Dongguan) hereby declares that the submitted sample(s) of the above equipment has been tested for CE-marking and in accordance with the following European Directives and Standards:

**Restriction of the use of certain hazardous substances (RoHS)
 Directive 2011/65/EU**

Substances	Test methods	Test Report Number
Lead, Cadmium, Mercury, Hexavalent Chromium, PBBs, PBDEs, DBP, BBP, DEHP & DIBP	IEC62321	SH4200527-06329E

CE

Mark is permitted only after all applicable requirements are met in accordance with the European Union Rules, including the manufacturer's issuance of a "Declaration of Conformity. The Declaration of Conformity is issued under sole responsibility of manufacturer. This attestation is specific to the standard(s) stated above and compliance with additional standards and/or European directives are applicable.

Attestation by: Bensen Huang
 Lab Manager



Signature



Bay Area Compliance Laboratories Corp. (Dongguan)
 No. 88, Puzhongnan, Puzhongnan Industry Area, Tangxia, Dongguan, Guangdong, China
 Phone: +86-769-86009888 Fax: +86-769-86009889
 www.baclabs.com.cn
 013-80171215



PTCRB



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Certified Device Detail

Below are all of the certified HW/SW versions of this device.

Manufacturer: Hangzhou Roombanker Technology Co.,Ltd
Model Name/Number: DSGW-040
Marketing Names (s): Szy-08, 2020- L-Serial Smart Gateway
Antenna Type: Internal
External Antenna less than 20 cm away: No
Is this an IoT device? Yes

In its intended application, does the IoT DUT transmit more than 100 kbytes in a transaction? Yes
On average, is the IoT DUT expected to send more than 24 transactions per day? Yes
Is the IoT DUT and its antenna intended for installation in a fixed orientation relative to the horizon? Yes

Market Segment: Advertising, Agricultural, Asset Management, Automotive, Construction, Education, Healthcare, Supply Chain, Insurance, Manufacturing, Security, Smart Cities

Device Category: Gateway
Supported Technologies and Frequency Bands: E-UTRA FDD Band 2 Band 4 Band 12 Band 13 Band 25
Additional/Other Bands: None

Regulatory Approval IDs:
Type ID Issuing Country
FCC XMR201707BG96 United States Remove
ISED 10224A-201709BG96 Canada Remove

IMEI/TAC:

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BQB



Report No.: IBA202005022B-01

Bluetooth® Qualification RF Test Report

For

L-Serial Smart Gateway

Of

Hangzhou Roombanker Technology Co., Ltd.

Report Number: IBA202005022B-01
 Design Name: L-Serial Smart Gateway
 Design Model Number: DSGW-040
 Brand Name: N/A
 Final Verdict: Pass
 Testing Period: 01-Jun-2020 and 03-Jun-2020
 Issue Date: 06-Jul-2020
 Revision: V1.0

Tested and Report prepared by:

(Will Wu / Testing Engineer) Date: 06-Jul-2020

Tests and Report reviewed by:

(Plum Peng / Project Engineer) Date: 06-Jul-2020

Test Report approved by:

(Brian Wu / Authorized Officer) Date: 06-Jul-2020

Issued by

Shenzhen iBlue Area Technical Services Co., Ltd.

Room 1006, Block 3A, Tianan Cloud Valley, Bantian, Longgang District, Shenzhen, Guangdong, China

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