

Product Specification

Product Name: Indoor LoRaWAN Light Hotspot

Model Name: DSGW-090B

Revision History

Specification		Sect.	Update Description	By
Rev	Date			
1.0	2022-03-03		New version release	
2.0	2022-03-26		Add SD card slot	

Approvals

Organization	Name	Title	Date

Model List

Hardware List

Model \ Feature	Hardware			Software				
	· LoRaWAN · BLE · WIFI · GPS			NS cloud				
	DDR	Flash	eMMC (option)	Helium	Chripstack	AWS IoT core	LORIOT	ThingStack
DSGW-090B-L	128 MB	32MB	8GB		●	●	●	●
DSGW-090B-H	128 MB	32MB	8GB	●				

Region List

Type	Region	Frequency (MHZ)
-CN	China	CN470
-EU	Europe	EU868
-US	North America	US915
-AS	Asia	AS923
-AU	Australia	AU915
-KR	Korea	KR920
-IN	India	IN865
-RU	Russia	RU864

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1 Introduction

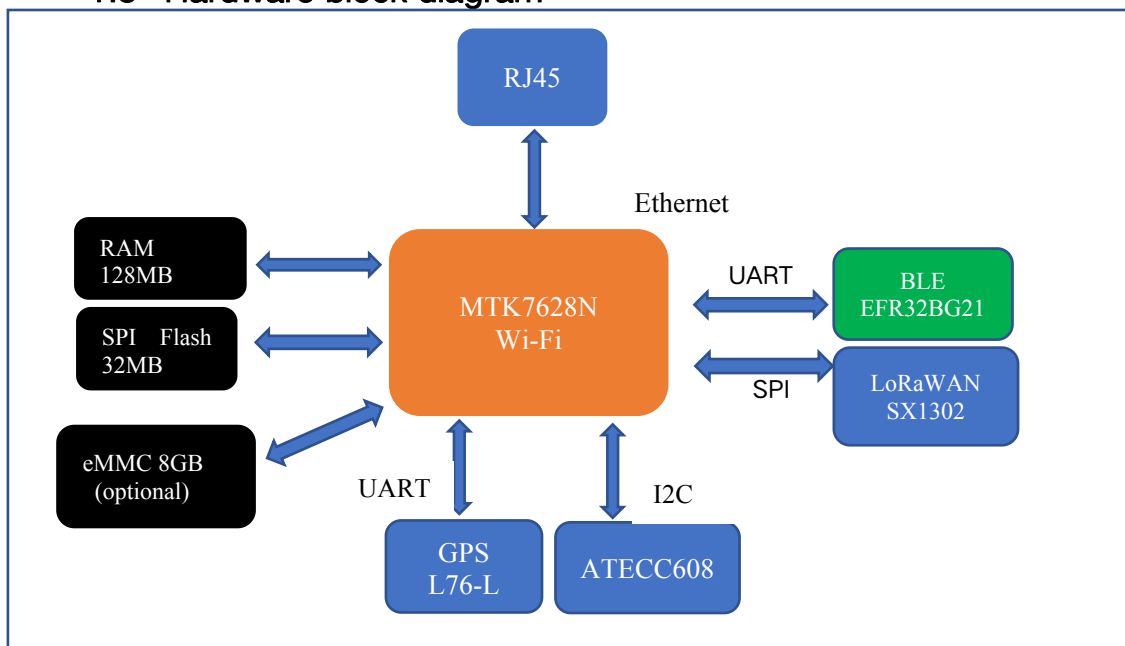
1.1 Purpose& Description

DSGW-090B is a robust 8-channel indoor LoraWAN® light hotspot, which is compatible with Helium LongFi technology. Adopting SX1302 LoRa chip and secure crypto chip, DSGW-090B provide high-efficiency and reliable connection.DSGW-090B has line of sight up to 15 km can cover about 2 km in urbanized environment, which can cover larger areas and provide connectivity to more than 2000 nodes.

1.2 Product Feature Summary

- 5V/2A Type-C Power supply
- Support IEEE802.11n,IEEE802.11g,IEEE 802.11b Protocol
- Base on the LoRa Concentrator Engine: Semtech SX1302
- TX power up to 27dBm, RX sensitivity down to -125dBm @SF7, RX sensitivity down to -139dBm @SF12, BW125kHz
- Build-in ECC608 crypto chip for high security authentication and reliable Helium network connectivity
- LoRa Frequency band support: CN470, RU864, IN865, EU868, US915, AU915, KR920, AS923
- Support BLE5.0
- Set up Helium network with easy steps
- One WAN/LAN variable network port

1.3 Hardware block diagram



2 Mechanical Requirement

2.1 Drawings



3 Specifications

3.1 Technical Specification

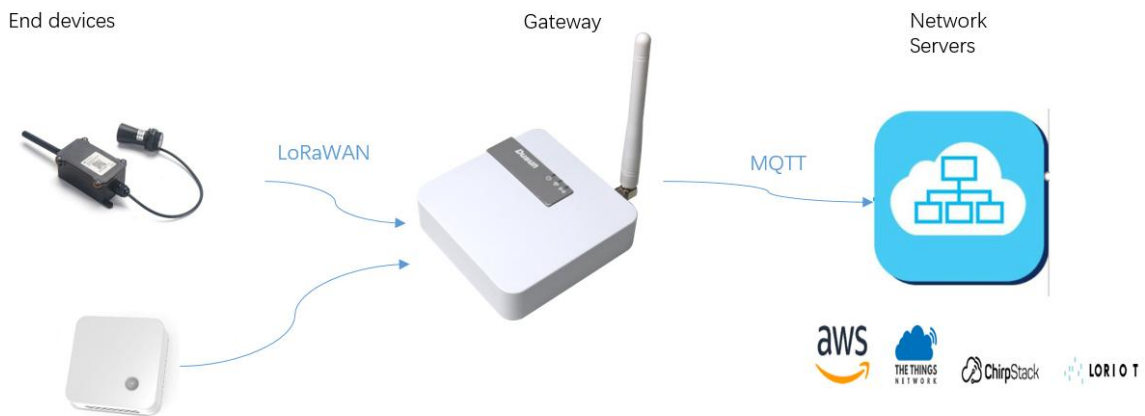
CPU	MT7628AN, MIPS24KEc, 580MHZ
RAM	128MB
Storage	32MB SPI Flash 8GB eMMC(optional)
Encryption chip	ECC608A/B
Power Adapter	Input:100V~240V AC/50~60HZ Output:5V/2A, USB type-C
Ethernet	RJ45
Indicator LEDs	Power LED normally on when powered on LoRaWAN LED is flash when the signal come Internet LED normally on after connecting to cloud
Reset Button	The reset button is hole button, After pressing the reset button for more than 5 seconds, the Gateway will be restored to the factory settings.
SD card slot	1
Antenna	1*external antenna (Lora), 3* internal Antenna (Wi-Fi,BLE,GPS)
Operating Temperature	-10°C~60°C

3.2 Performance Requirement

<p>Wi-Fi Performance</p>	<ul style="list-style-type: none"> ● IEEE wireless LAN standard: ● IEEE802.11n; IEEE802.11g; IEEE 802.11b ● Data Rate: 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 ● Sensitivity: HT40 MCS7 : -70dBm@10% PER(MCS7) /2.4GHz band HT20 MCS7 : -71dBm@10% PER(MCS7) /2.4GHz band ● Transmit Power: IEEE 802.11n: 16dBm @HT20/40 MCS7 /2.4GHz band IEEE 802.11g: 16dBm @54MHz IEEE 802.11b: 18dBm @11MHz ● Wireless Security: WPA/WPA2, WEP, TKIP, and AES ● Working mode : Bridge、 Gateway、 AP Client ● Range: 50 meters minimum, open field ● Transmit Power:17dBm ● Highest Transmission Rate: 300Mbps ● Frequency offset: +/- 50KHZ ● Frequency Range (MHz): 2412.0~2483.5 ● Low Frequency (MHz):2400 ● High Frequency (MHz):2483.5 ● E.i.r.p (Equivalent Isotopically Radiated power) (mW)<100mW ● Bandwidth (MHz):20MHz/40MHz ● Modulation: BPSK/QPSK, FHSSCCK/DSSS, 64QAM/OFDM
<p>LoRaWAN performance</p>	<ul style="list-style-type: none"> ● 8 channels ● -140dBm Sensitivity @292bps ● Output power: up to 27dBm
	<ul style="list-style-type: none"> ● TX Power: 6 dBm ● Range: 50 meters minimum, open filed

BLE Performance	<ul style="list-style-type: none"> ● Receiving Sensibility: -80dBm@0.1%BER ● Frequency offset: +/-20KHZ ● Frequency Range (MHz):2401.0~2483.5 ● Low Frequency (MHz):2400 ● High Frequency (MHz):2483.5 ● E.i.r.p (Equivalent Isotopically Radiated power) (mW)<10mW ● Bandwidth (MHz):2MHz ● Modulation: GFSK
GPS Performance	<ul style="list-style-type: none"> ● -167dBm@Tracking, -149dBm@Acquisition, -161dBm@Re-acquisition
Ethernet	<ul style="list-style-type: none"> ● 10/100Mbps

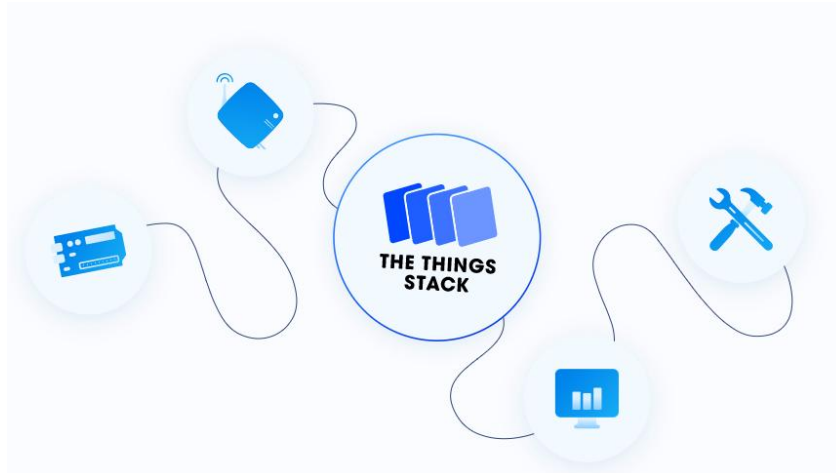
4 Solution



5 Thrid-Part Platform

5.1 The Things Stack (DSGW-090-L)

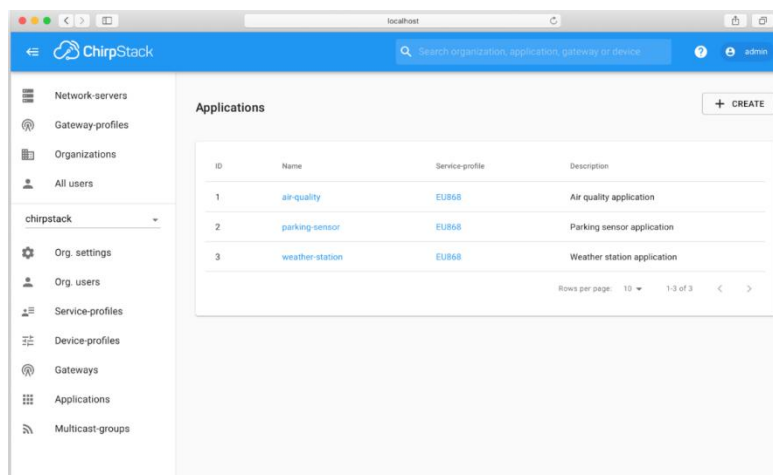
The Things Stack is an enterprise grade LoRaWAN network server, built on an open source core. The Things Stack allows you to build and manage LoRaWAN networks on your own hardware or in the cloud.



The link for the things stack: <https://www.thethingsindustries.com/docs/>

5.2 Chripstack (DSGW-090-L)

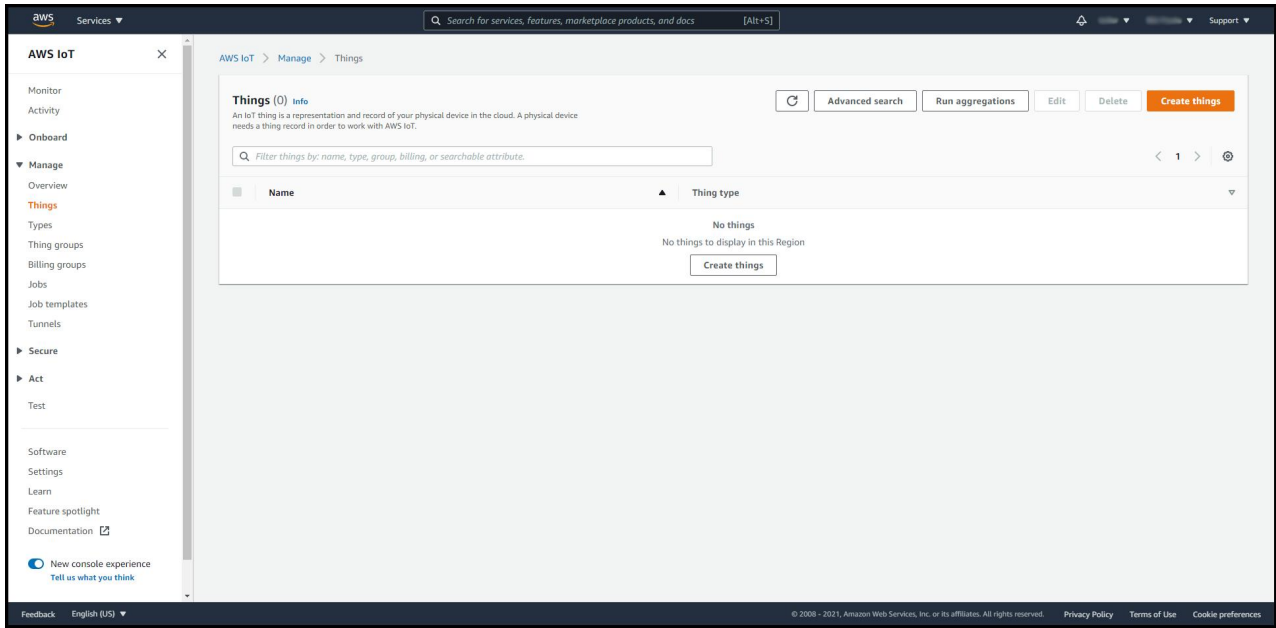
The ChirpStack open-source LoRaWAN Network Server stack provides open-source components for LoRaWAN networks. Together they form a ready-to-use solution including an user-friendly web-interface for device management and APIs for integration. The modular architecture makes it possible to integrate within existing infrastructures. All components are licensed under the MIT license and can be used for commercial purposes.



The link for Chripstack: <https://www.chirpstack.io/>

5.3 AWS IoT Core for LoRaWAN(DSGW-090-L)

AWS IoT Core Integration is a software service that enables your LoRaWAN gateway to work with AWS IoT Core. This document will show you how to set up a LoRaWAN end-node and view its data on the AWS IoT Console. In addition, it'll show you how to send a message from AWS IoT Console to the end-node as well.



6 QA Requirements

6.1 Quality & Testing Information

Information Description	Standard (Yes) custom(No)
ESD Testing	YES
RF Antenna Analysis	YES
Environmental Testing	YES
Reliability Testing	YES
Certification	FCC,CE ,IC, Z-wave plus, RoHs

7 Reference document

[Light Hotspots | Helium Documentation](#)