BLE WiFi Gateway

Model: G1

Version: V1.3.2

## Contents

1. Overview

G1 is a Bluetooth 5.0 low energy (BLE) to Wi-Fi connectivity gateway without the uses of smartphones or apps. The G1 gateway collects the data from iBeacon, Eddystone, BLE sensor and other BLE devices, and then sends to the local server or remote cloud server by HTTPs / MQTT/mbed (ARM) protocol with SSL and TLS certification over Wi-Fi / Ethernet / Cellular. The subsequent version G1 Gateway will also implement the connection with BLE devices. This product is a science fiction with a color lamp ring on the top. It can be fixed by sticker or screw thread.

Outside View
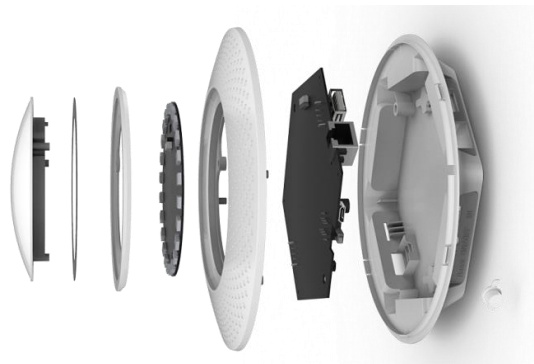
Internal Structure

2. Features

General:

- 1A @ DC 5.0V input, micro-USB
- 10/100 Ethernet, POE (802.3af)
- Firmware upgrade OTA
- Multiple data transportation protocols
    Local server: TCP / UDP
    Remote serer / Cloud: HTTP/MQTT/mbed(ARM) with SSL and TLS certification
- Operating temperature: -15℃ to 55℃

WIFI:

- Wifi module based on the Mediatek MT7628 580MHz 32-bit Application Processor
- 2T2R 2.4 GHz with 300 Mbps PHY data rate,802.11b/g/n WiFi
- Two USB 2.0 Host Connectors and one TF Card slot
- 128M bytes 16-bit DDR2 RAM
- 16M bytes SPI NOR Flash
- RGB LED strip as the status indicator
- OpenWrt 15.05, Linux distribution for embedded devices.

BLE:

- BLE module based on the Nordic's nRF52832 with ARM® Cortex®-M4 64MHz 32-bit processor
- At least Bluetooth 4.0(Only Bluethooth Low Energy)

3. Typical Application

- iBeacon / Eddystone / other BLE tag receiver
- BLE sensor reader / receiver
- Asset tracking
- Access control management
- Advertisement promotion
- Indoor location and position
- Industrial automation
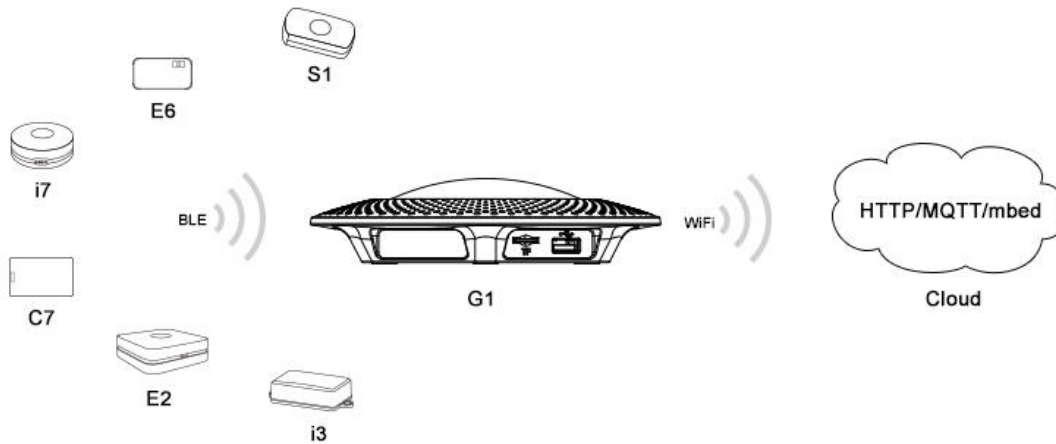
S1: Bluetooth temperature & humidity sensor　　E2: 300 to 500 meters MaxBeacon

E6: Bluetooth ambient light sensor　　i3: Waterproof iBeacon & Eddystone

i7 : Bluetooth accelerometer sensor　　C7: Credit card beacon with RFID/NFC

G1: Bluetooth & WiFi gateway

4. Appearance

G1-C

Sign & Slots	Feature Description
ON/OFF	Power On / Off device
Reset	Factory reset or close/open AP
RJ-45	10/100Mbps Ethernet, 802.3af PoE
USB	2pcs external USB2.0 slot
IN	Micro-USB, power input (5.0V DC, 1A)
TF	TF card slot (reverse)

The meaning of the top LED Strip Lights status is as follows:

Static LED Strip Lights	Indicates that the gateway is staring
Dynamic white light rotation	Indicates that the gateway has been started
Dynamic LED Strip Lights rotation	Indicates that the gateway is not connected to the server
Dynamic breathing lights	Indicates that the gateway is already connected to the server (Note: The gateway is in the dynamic breathing lights by default, it can step into the energy-saving mode on minute after extinction of lights, you also can set up bright mode in the configuration page if rich enough)
LED Strip Lights go out	Indicates that the gateway is not power or in energy-saving mode

5. Electronic Parameters

General Information	
Color	White
Size	150x150x36mm
Net Weight	180g
Accessory	1x USB cable, mental fixing and screws

Absolute Maximum Rating	
Power supply (Vcc)	Max. 5.5 Volts, DC
Storage temperature	-40℃ to 85℃
Voltage ripple	+/- 2%

Operation Condition (Recommendable)	
Operating temperature	-15℃ to 55℃
Humidity	Max 95%, Non condensing, relative humidity
Power supply (Vcc)	DC 5.0 (+/- 5%)

Current Consumption	
Powered by Micro-USB	330mA (LED strip and Wi-Fi works in the same time)
	290mA (Wi-Fi only)
Powered by PoE	340mA (LED strip and Wi-Fi works in the same time)
	300mA (Wi-Fi only

Wi-Fi RF Performance	
Wireless	IEEE 802.11b/g/n (single stream)
Network modes	Router, Repeater, Cellular (coming soon, Q4/2017)
Data rate	IEEE 802.11b, 1-11Mbps IEEE 802.11g, 6-54Mbps IEEE 802.11n(2.4GHz), 150Mbps
Frequency band	$2.412 - 2.462$ GHz
Number of selectable Sub channels	11 channels
Channel Bandwidth	20 / 40 MHz
Modulation	OFDM, DSSS, DBPSK,DQPSK, CCK , 16 / 64QAM
Maximum receive input level	- 10dBm (with PER < 8%@11 Mbps) - 20dBm (with PER < 10%@54 Mbps) - 20dBm (with PER < 10%@MCS7)
Minimum receive input level	- 87dBm (typ. with PER < 8%@11 Mbps) - 70dBm (typ. with PER < 10%@54 Mbps) - 70dBm (typ. with PER < 10%@MCS7)
Transmit Power	18.13dBm (typical)@ 802.11b 17.36dBm (typical)@ 802.11g 18.8dBm (typical)@ 802.11n
Carrier Frequency Accuracy	+/- 20ppm (crystal: 16MHz +/-10ppm in 25℃)
Antenna	FPC antenna
Range	up to 100 meters(in open space)
Security	WPA / WPA2

BLE RF Performance	
Operation Mode	LAN mode
Transmission Power	Ranges from -30 to +4dBm
RF Power Accuracy	+/- 4 dB
Receiver Sensibility	-108 dBm @250kbps, 0.1% BER -93 dBm @1Mbps, 0.1 %BER
Maximum Received Signal Strength at <0.1% PER	0dBm
Frequency Deviation	+/-250 kHz @BLE
Antenna	Flexible FPC antenna
Scanning & concurrently process	200 BLE devices per second
Range	300 meters in open space (max.)

FCC WARNING

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different
    from that to which the receiver is connected.

-- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.