iGS01 Specification

**BLE (Bluetooth Smart) to WiFi Gateway**

iGS01 is a BLE to WiFi gateway and bridge. The gateway reads iBeacon and Eddystone like beacon or customized Tag (w/ sensor) format and sends to local TCP server or internet HTTP/MQTT server. User can configure the transmit period and server information through a simple web UI.

**Features**

**BLE**
- Size: 54mmx41mmx18mm (not including antenna)
- Input: 5V, 500mA, micro-USB
- Operating temperature: -20°C to 60°C
- Low power consumption, 80mA typical working current
- Over-The-Air software upgrade
- Reads multiple BLE devices in the same time
- Support TCP/HTTP/MQTT server

**WiFi**
- WiFi is based on INGICS iWM021
- Support 802.11b/g/n (single stream)
- 2.4GHz frequency band
- Transmit power:
  - +17dBm @ 802.11b
  - +13dBm @ 802.11g
  - +11dBm @ 802.11n
- WiFi data rate up to 72.2Mbps
- WiFi with 2dBi dipole Antenna
- Web based UI for configuration
- Connect to Cloud server or local server
- 100M range in open space

**Applications**
- iBeacon/Eddystone/tag receiver for location tracking
- BLE sensor reader for sensor network
- Building automation
- Health and wellness monitoring
- Cycling, biking

**Block Diagram**
Typical Applications

1. Collecting BLE sensor data and sending to cloud server

2. Location Tracking with different kinds of server in the internet or cloud

Specification

Absolute Maximum Rating

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Power</td>
<td>Max. +5.5 Volt</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-40º to 85º Celsius</td>
</tr>
<tr>
<td>Voltage Ripple</td>
<td>+-2%</td>
</tr>
</tbody>
</table>

Recommendable Operation Condition

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-20º to 60º Celsius</td>
</tr>
<tr>
<td>Humidity</td>
<td>Max 95%, Non condensing, relative humidity</td>
</tr>
<tr>
<td>VDD</td>
<td>+5 Volt +- 5%</td>
</tr>
</tbody>
</table>

Current Consumption
### Working mode (reading BLE and send to server)
- Max.: 436 mA
- Average: 83 mA

### WiFi RF Specification

<table>
<thead>
<tr>
<th>Wireless</th>
<th>IEEE 802.11b/g/n(single stream)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network modes</td>
<td>infrastructure, Ad-Hoc</td>
</tr>
</tbody>
</table>
| Data rate | IEEE 802.11b, 1-11Mbps  
IEEE 802.11g, 6-54Mbps  
IEEE 802.11n(2.4GHz), 7.2-72.2 Mbps |
| Frequency band | 2.400 – 2.484 GHz |
| Number of selectable Sub channels | 14 channels |
| Channel Bandwidth | 20MHz |
| Modulation | OFDM, DSSS (Direct Sequence Spread Spectrum), DBPSK, DQPSK, CCK , 16QAM, 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 (including antenna gain) | 17dBm (typical), 18dBm(max.)@ 802.11b  
14dBm (typical), 15dBm(max.)@ 802.11g  
13dBm (typical), 14dBm(max.)@ 802.11n |
| Carrier Frequency Accuracy | +/- 20ppm (crystal: 26MHz +/-10ppm in 25°C) |
| Antenna | 2dBi dipole antenna |
| Range | up to 100M meters( in open area) |
| Security | WPA/WPA2 |

### BLE RF Specification

| Transmit Power | Max.: 4dBm |
| RF Power Accuracy | +/- 4 dB |
| Receiver Sensibility | -96 dBm @250kbps, 0.1% BER  
-90 dBm @1Mbps, 0.1 %BER |
| Maximum Received Signal Strength at <0.1% PER | 0dBm |
| Frequency Deviation | +/-250 kHz @BLE |
| Antenna | on board PCB antenna |
Range | 30M in open space
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**Dimension**

| Dimensions L x W x H (mm) | 54 x 41 x 18 (not including dipole antenna) |
---|---|

**Packing**

Each iGS01 has its accessory including a dipole antenna and micro-USB cable.

Two packing boxes (size: 11cmX5.5cmx6.5cm) contains 5 units of iGS01 and accessories.

**Revision History**

<table>
<thead>
<tr>
<th>DATE</th>
<th>REVISION</th>
<th>CHANGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feb 3, 2016</td>
<td>1</td>
<td>Initial release</td>
</tr>
<tr>
<td>May 1, 2016</td>
<td>1a</td>
<td>Operation temperature upgrades from 45°C to 60°C in Recommendable Operation Condition</td>
</tr>
<tr>
<td>May 20, 2016</td>
<td>1b</td>
<td>Add statement of FCC, IC, and NCC on page 5</td>
</tr>
<tr>
<td>May 25, 2017</td>
<td>1c</td>
<td>Modify transmit power and add maximum value on page 3 Add DoC for RED Directive 2014/53/EU in last page</td>
</tr>
</tbody>
</table>
Statement

Federal Communication Commission Interference Statement

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 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.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The antennas used for this transmitter must be installed 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.

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.

Industry Canada Statement

This device complies with Industry Canada licence-exempt RSS standard. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d’Industrie Canada applicables aux appareils radio exempts de licence. L’exploitation est autorisée aux deux conditions suivantes : (1) l’appareil ne doit pas produire de brouillage, et (2) l’utilisateur de l’appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d’en compromettre le fonctionnement.

IC Radiation Exposure Statement

This equipment complies with IC RSS-102 radiation exposure limit set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Cet équipement est conforme aux CNR-102 d’Industrie Canada. Cet équipement doit êtreinstallé et utilisé avec une distance minimale de 20 centimètres entre le radiateur et votre corps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec autreantenne ou émetteur. Les antennes utilisées pour cet émetteur doivent être installés etfournir une distance de séparation d’au moins 20 centimètre de toute personne et doit pas être co-située ni fonctionner en conjonction avec une autre antenne ou émetteur.

NCC 警語

第十二條
經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條
低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾

電磁波曝露量MPE標準值1mW/cm2，送測產品實測值0.0103mW/cm2。
DECLARATION OF CONFORMITY
EU EU RED - DIRECTIVE 2014/53/EU -

This Declaration that the following designated product

BLE-WiFi Gateway
Model No.: iGS01
Brand Name: INGICS

(Product identification)

Assessment of compliance of the product with the requirements relating to radio spectrum matters was based on Annex IV of the Directive 2014/53/EU and the following standard:

EMC
EN 301 489-1: V 2.2.0 (2017)
EN 301 489 -17: V 3.2.0 (2017)

Radio Spectrum
EN 300 328 (V 2.1.1, 2016-11)

(Safety)

(Identification of regulations / standards)

This declaration is issued for

INGICS TECHNOLOGY.
2F., No.15-2, Changshou St.,
Shulin Dist., New Taipei City 238,, Taiwan, R.O.C.

(Name / Address)

Furthermore we declare that our product will be produce in correspondence with all requirements according to the Directive 2014/53/EU.

Name: J.K Fan
Title: President

Signature

Date: May 25, 2017