Guangzhou Vensi Intelligent Technology Co., Ltd.
Professional Supplier

Guangzhou Vensi Intelligent Technology Co., Ltd.

# Technical Specification for Standard ZigBee 3.0 Intelligent Equipment

version：LM-DEVELOPMENT-R1-20190515

Release time：2019-06-11

Usage Specification: Only internal technology management and external technology docking specifications. External publication needs to be audited to confirm whether it can be issued. If there is any objection to the content of the document, you can make amendments.

# 1 Technical overview

## 1.1 Refered code

### 1.1.1 Home Automation Public Application Profile

- **Zigbee Profile: 0x0104**
- **Revision 29**
- **Version 1.2**

### **1.1.2** ZigBee Cluster Library Specification

- **Revision 6**
- **Draft Version 1.0**

## 1.2 Basic description

This technical specification is developed according to standard ZHA and maintains compatibility and interoperability with other ZIGBEE. The technical scheme described in this paper adopts EFR32 chip of Silicon labs. The chip supports internal PA and has abundant peripheral hardware resources.

# 2 Technology list

## 2.1 Hardware technical parameters

| main parameter | describe | Function list | Other instructions |
|---|---|---|---|
| IC | EFR32MG21A020F768IM32-B | Zigbee module | signal intensity : 20db |
| PC11 | GPIO input | Access button | |

| | | | |
|---|---|---|---|
| PB13 | GPIO input | Switch 1 key | |
| PD15 | GPIO output | Access Indicator | |
| PF3 | GPIO output | Switch indicator | |

2.2 Technical parameters of software

- DEVICE TYPE ( DEVICE ID ): Alliance-supported device types
- Endpoint : 0x10

3 Man-machine interaction description

3.1 NCP Interactive Mode Communication Sends NCP Control Command to Module by Mobile App Sending Network Command Channel Gateway Gateway Gateway

Access mode： Use mobile app to join the gateway first, allowing devices to be networked in the gateway

off-network mode： Select Gateway with Mobile App and Delete the Device

3.2 Switch control operation mode

Press panel switch button ,PB13 Keyboard input produces a drop edge ,PF3 The output indicator light is on, indicating that the corresponding control circuit switch

has been turned on. If the PF3 output indicator lights up and the indicator lights out, the corresponding control circuit switch is off.

3.3 Status Indicator

Whether the gateway has voice prompt to enter the network successfully or not

FCC STATEMENT

4. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

5. 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.

This module is tested and approved as Limited modular approval with standalone configuration, any OEM incorporated this radio module into any system may require additional testing and evaluation

The MG21-768module is designed to comply with the FCC statement. FCC ID is 2AR6I-ZE3221X The host system using MG21-768, should have label indicated it contain modular’ s FCC ID 2AR6I-ZE3221X
This radio module must not installed to co-locate and operating simultaneously with other radios in host system , additional testing and equipment authorization may be required to operating simultaneously with other radio.
This device complies with Part 15, Subpart C, Section 15.249 of the FCC Rules
This module is tested and approved as Limited modular approval with standalone configuration, any OEM incorporated this radio module into any system may require additional testing and evaluation

MG21-768integrates a high-performance PCB antenna1.
MG21-768uses a u.FL connector2 and requires an external 2.4Ghz antenna. using 2.4GHz 0dBi Terminal Mount Dipole Antenna3.
This module is an embedded ZigBee wireless communication module, which supports Zigbee3.0.Using Silicon Labs’ EFR32 chip, it is able to build powerful network nodes at a very low total material cost, with leading RF performance.
This module is small in size, simple in application, and can be more conveniently embedded into the system. It can help customers shorten the product development cycle, reduce the cost of intelligent equipment renovation, and help customers seize the market more quickly.
The DEBUG serial print interface is located below the module and consists of Pin13 Pin18 PIN9.
The master IC EFR32Mg21A020F768IM32-B debug interface uses serial port 0 pin Pin13 pin, PA06 (18th pin on the module) and PA05 (19th pin on the module) as data and clock in debug mode respectively
Power supply filter circuit, and data line matching resistor as close to the module as possible.
The modules should be placed as far as possible away from interference sources, such as WIFI antenna, GSM antenna, DDR CLK, LCD wiring, etc.
The area below the module antenna is left empty. Do not lay copper or run wires.
5V constant voltage power supply shall be used as far as possible for module power supply, and a LDO suitable for rf application shall be used for module power supply.
Try to use a double panel design.The empty IO port can simply be suspended.
The lead wire width of LED driver is selected according to the actual current.
Output IO mouth default state for the high level, it is recommended that the user design and 1.2 K Ω pulldown resistor.RESET time > 200ms