Sengled ZM002 Zigbee Module User Guide

Sengled Zigbee Module
Model: ZM002
User Guide

Contents

Introduction

Model ZM002 is a zigbee module. The wireless communication part of the product is based on ZigBee Compliant Platform, CustomNodes EFR32MG13P732F512IM32-C technology, which are fully integrated System-on-Chips that integrate a 2.4 GHz, IEEE 802.15.4-2003-compliant transceiver, 32-bit ARM® CortexTM-M4 microprocessor, flash and RAM memory, and peripherals of use to designers of ZigBee-based systems.

Product Name:	Sengled Zigbee Module		
Hardware Version:	V3		
Software Version:	V18		
Device Operating Configurations:			
Operating Mode(s):	2.4 GHz IEEE 802.15.4		
Supporting Mode(s):	IEEE 802.15.4		
Test Modulation:	O—QPSK		
Frequency Range:	Mode	Tx (MHz)	Rx (MHz)
	2.4 GHz IEEE 802.15.4	2400 — 2483.5	2400 — 2483.5

B.HF crystal OSC

A high-frequency crystal oscillator (HFXO) with integrated load capacitors, tunable in small steps, provides a precise timing reference for the MCU. Crystal frequencies in the range from 38 to 40 MHz are supported. An external clock source such as a TCXO can also be applied to the HFXO input for improved accuracy over temperature. C.Power supply circuit The AC 100-130V power is converted to DC 3.3V and feeds to the whole Zigbee module. The 2.1-3.6 V with internal 1.8 V regulators DC is used by the EFR32MG13 as the input power.

D.Antenna
The EFR32MG13 family includes devices that support both single-band and dual-band RF communication over separate physical RF interfaces. The 2.4 GHz antenna interface consists of two pins (2G4RF_IOP and 2G4RF_ION) that interface directly to the on-chip BALUN. The 2G4RF_ION pin should be grounded externally. The sub-GHz antenna interface consists of a differential transmit interface (pins SUBGRF_OP and SUBGRF_ON) and a differential receive interface (pinsSUBGRF_IP and SUBGRF_IN). The external components and power supply connections for the antenna interface typical applications are shown in the RF MatchingNetworks section.

Installation and Operating instructions:

This Zigbee Module is used for lighting devices, plug it in the power board, then add the LED bulb to a Zigbee hub or other third-party hubs, you also can connect Sengled Smart hubs according to their instructions in apps to control the LED bulb on/off, lumens level of colors.

FCC/ ISED Regulatory notices:

Modification statement
Sengled Co., Ltd. has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user’s authority to operate the equipment. Sengled Co.

Interference statement

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). 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.

RF exposure

This equipment complies with FCC and ISED radiation exposure limits set forth for an uncontrolled environment. The antenna should be installed and operated with a minimum distance of 20 cm between the radiator and your body. Antenna gain must be below:

Antenna Gain

Frequency Band	FCC ID: 2AGN8-ZM002 Model: ZM002
ZigBee	1dBi

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The host end product must include a user manual that clearly defines operating requirements and conditions that must be observed to ensure compliance with current FCC RF exposure guidelines.

For portable devices, in addition to the above, separate approval is required to satisfy the SAR requirements of FCC Part 2.1093.

If the device is used for other equipment that separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.

FCC Class B digital device notice

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.

Labeling Requirements for the Host device

The host device shall be properly labeled to identify the modules within the host device. The certification label of the module shall be clearly visible at all times when installed in the host device, otherwise, the host device must be labeled to display the FCC ID and ISED of the module, preceded by the words “Contains transmitter module”, or the word “Contains”, or similar wording expressing the same meaning, as follows:

CAN ICES- 3 (B) / NMB- 3 (B)

This Class B digital apparatus complies with Canadian ICES-003.

Installation Guidance

The final host/module combination may also need to be evaluated against the FCC Part 15B criteria for unintentional radiators in order to be properly authorized for operation as a Part 15 digital device.

The user’s manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. For example, if a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter-certified module and a module is added, the host manufacturer is responsible for ensuring that the after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements.

Documents / Resources

	Sengled ZM002 Zigbee Module [pdf] User Guide ZM002, 2AGN8-ZM002, Zigbee Module