User manual of WSZGM510A00

1. Introduction

WSZGM510A00 is a ZigBee module compliant with IEEE802.15.4 MAC/baseband/radio optimized for low-power applications.

The ZigBee chipset is from Silicon Labs, part number EM3587-RTR

2. Hardware Architecture:

2.1 Main Chipset Information

Item	Vendor	Part Number
IEEE802.15.4	Silicon Labs	EM3587-RTR

3. Operational Description

WSZGM510A00 is the 802.15.4 ZigBee Module that acts as a communication controller for users of a wireless device.

- Features

> ZigBee 2.4GHz IEEE 802.15.4
> AES128 encryption accelerator
> Low power consumption, advanced management
>On-chip power amplifiers and low –noise amplifiers for both bands

- Time base of the RF frequency

For ZigBee IF and RF frequency, a crystal(24MHz) is a clock reference.

- ZigBee Transmission

The ZigBee Tx path produces an O-QPSK-modulated signal using the analog front end and digital baseband. The area- and power-efficient Tx architecture uses a two-point modulation scheme to modulate the RF signal generated by the synthesizer. The modulated RF signal is fed to the integrated PA and then out of the EM357.

- ZigBee Receiver

The ZigBee Rx path uses a low-IF, super-heterodyne receiver that rejects the image frequency using complex mixing and polyphase filtering. In the analog domain, the input RF signal from the antenna is first amplified and mixed down to a 4 MHz IF frequency. The mixers' output is filtered, combined, and amplified before being sampled by a 12 MSPS ADC. The digitized signal is then demodulated in the digital baseband. The filtering within the Rx path improves the EM35x's co-existence with other 2.4 GHz transceivers such as Zigbee/ 802.15.4-2003, IEEE 802.11-2007, and Bluetooth radios. The digital baseband also provides gain control of the Rx path, both to enable the reception of small and large wanted signals and to tolerate large interferers.

- Product Details

> Data Modulation

ZigBee : O-QPSK for 802.15.4

> Frequency :

ZigBee

Channel 0x0B(11ch)	2405 MHz
Channel 0x0C(12ch)	2410 MHz
Channel 0x0D(13ch)	2415 MHz
Channel 0x0E(14ch)	2420 MHz
Channel 0x0F(15ch)	2425 MHz
Channel 0x10(16ch)	2430 MHz
Channel 0x11(17ch)	2435 MHz
Channel 0x12(18ch)	2440 MHz
Channel 0x13(19ch)	2445 MHz
Channel 0x14(20ch)	2450 MHz
Channel 0x15(21ch)	2455 MHz
Channel 0x16(22ch)	2460 MHz
Channel 0x17(23ch)	2465 MHz
Channel 0x18(24ch)	2470 MHz
Channel 0x19(25ch)	2475 MHz
Channel 0x1A(26ch)	2480 MHz

- Product pwr Spec.

Symbol	Parameter	Min	Typ.	Max	Unit
VDD	Power supply	3.0	3.3	3.6	V

- Product Spec.

> ZigBee

Parameter	Min	Typ.	Max	Unit
RF Characteristics				
RF Frequency Range	2.405	-	2.4835	GHz
Output power	+16	+19		dBm
TX Frequency Tolerance	-74.4	-	74.4	KHz
TX Spurious Emission 30.0MHz to 2.395GHz 2.495GHz to 12.75GHz	-	-	-30	dBm
TX Harmonics 2nd Harmonics 3rd Harmonics	-	-	-30	dBm
Error Vector Magnitude(EVM)	-	-	35	%
RX sensitivity PER at -85dBm	-	-	1	%
RX Spurious Emission 30.0MHz to 12.5GHz	-	-	-54	dBm

Instruction to OEM

This device complies with Industry Canada's license-exempt RSSs. 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.

This application and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

Host labeling requirement: "Contains transmitter module

FCC ID: A3LWSZGM510A00
IC ID: 649E-WSZGM510A00"

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.

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.