SI4463S9S-V1-C2A Wireless Module Hardware Specifications V01

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directory

1. Overview

Si4463SXS series wireless module, based on Silicon Labs Si4463 C version of high-performance wireless transceiver chip design, is a small size, low power consumption, long-distance two-way wireless transceiver module. SI4463 is one of the ISM band wireless transceiver chips launched by Silicon Labs, with industry-advanced RF performance. The module integrates all RF related functions and devices. Users can easily develop stable and reliable wireless solutions and wireless Internet of Things devices using this module without in-depth understanding of RF circuit design.

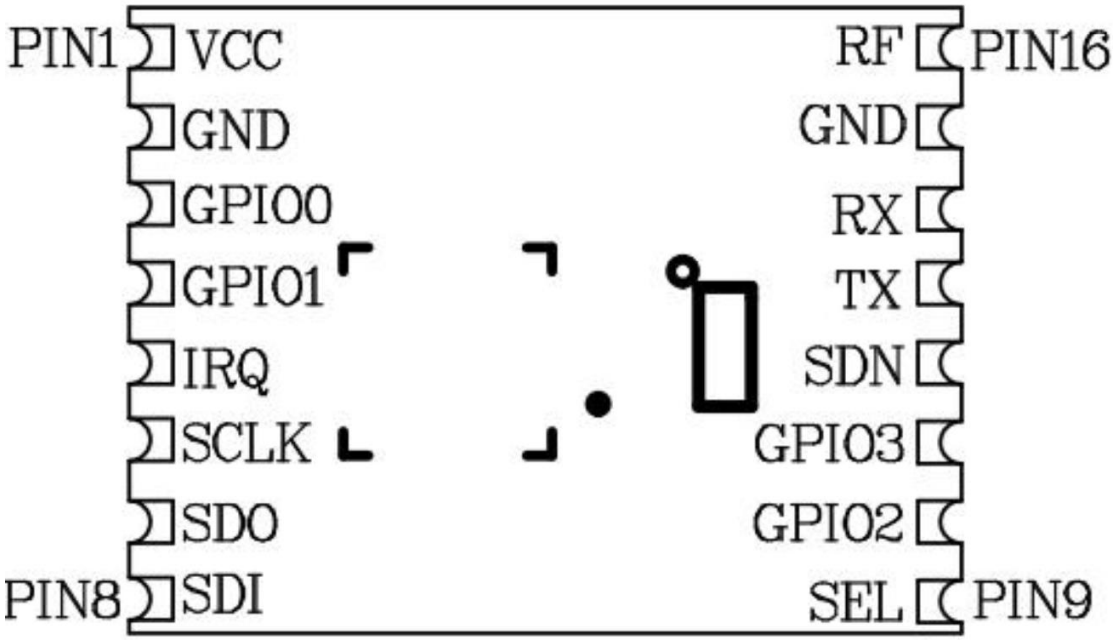
Applications:

1) Logistics tracking, warehouse inspection, intelligent home appliances, electronic tags, etc
2) Replace 232, 485 for wireless data communication
3) Wireless data acquisition and control for industrial instruments and meters
4) AMR (water, electricity and gas) meter reading
5) Building and residential (smart home) controls
6) Wireless remote control for consumer electronics
7) Wireless alarm and security system
8) Wireless sensor network

2. Technical parameters

Characteristics	Parameter	Note
Chip	Si4463-C2A-GMR	
Supply Voltage Range	1.8 V to 3.8 V	Generally 3.3 V
Operation Frequency Range	915 MHZ to 916 MHZ	Programmable
Modulation Type	2FSK	
RX Sensitivity 915Mhz	-110dBm	@10Kbps /2FSK
Output Power	10dBm(10mW) Maximum	
RX Mode Current	14mA	
TX Mode Current	<100mA	
Sleep Mode Current	<1uA	
Data Rate	10Kbps	
Deviation	20KHz	
Channel Number	5	
Channel Separation	250KHz	
Antenna Impedance	50 ohm	
Driver interface	Serial Peripheral Interface	
Operating Temperature Range	- 40 ℃ ~ 85 ℃	
Storage Temperature Range	-55 ℃ ~ 150 ℃	
Packing Type	Blister tray or reel	
Module Size	16.0 mm x 12.0 mm x 1.8 mm	Width tolerance: +/-0.5mm

3. Pin Assignments



4. Pin Description

Pin	Pin Name	I/O	Description
1	VCC	-	+1.8 to +3.8V Supply Voltage Input to Module The recommended VCC supply voltage is +3.3V
2	GND	-	The ground of the power supply
3	IO0	I/O	Direct connection chip GPIO0 digital I/O pin, software Settings
4	IO1	I/O	Direct connection chip GPIO1 digital I/O pin, software Settings
5	IRQ	O	NIRQ interrupts the output pin and outputs low level when an interrupt is generated
6	SCK	I	SPI interface SCLK clock input
7	SDO	O	SPI interface MISO data output
8	SDI	I	SPI interface MOSI data input
9	SEL	I	SPI interface NSEL select input
10	IO2	I/O	Direct connection chip GPIO2 digital I/O pin, software Settings
11	IO3	I/O	Direct connection chip GPIO3 digital I/O pin, software Settings
12	SDN	I	Shutdown Input Pin ,SDN=0 for all modes except shutdown mode,When SDN=1 the module will be completely shut down and the contents of the internal registers Will be lost
13	TX	I	RF swtich TX path control port When In TX mode Tx =1;RX=0
14	RX	I	RF switch RX path control port When In RX Mode Tx =0; RX=1
15	GND	-	The ground of the power supply
16	RF	I/O	The RF signal input/output Port ,50 Ω

5. Recommended Connection of Hardware

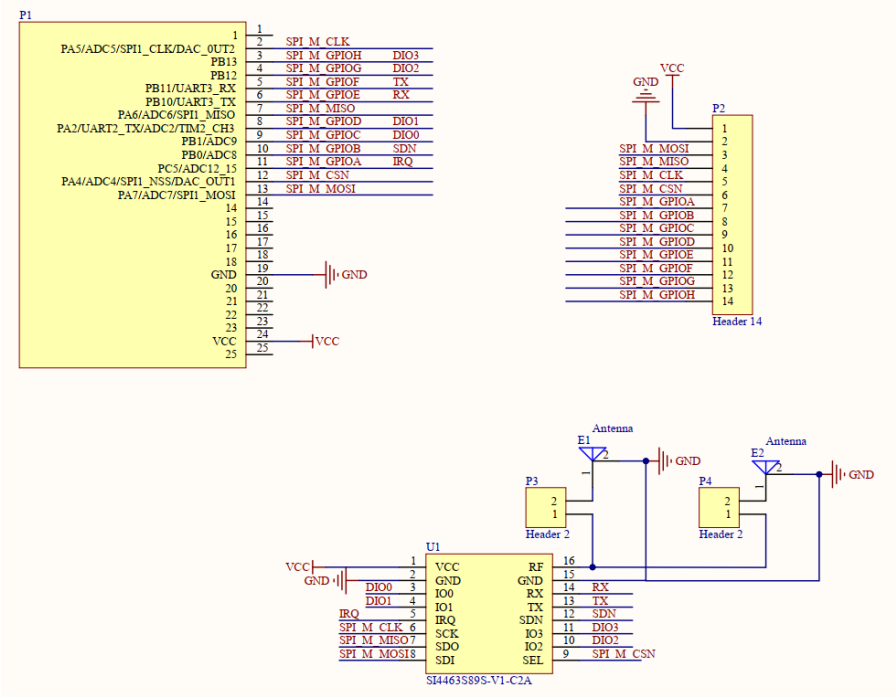


Figure 5-1 Hardware Connection

Antenna Path design:

The following figure gives an overview of a design with Ipex connector for antenna and soldering for Integral Antenna.

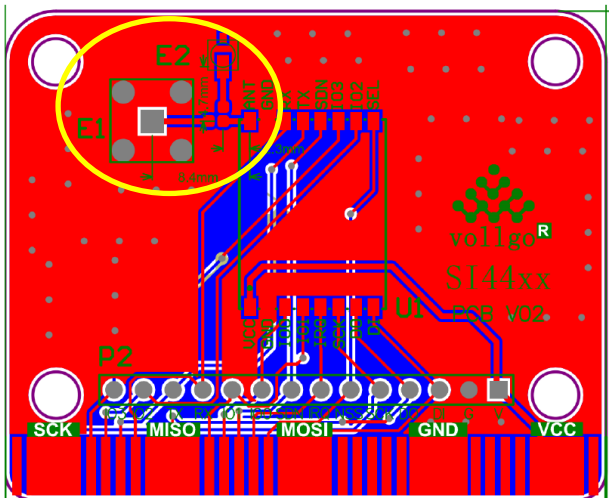


Figure 5-2: RF module Test Board

The antenna path must be designed with a 50 OHMS line inserted into The ground plane for better performance. Antenna must be kept away from any metal part like batteries, etc... for better performance.

6. Revision History

Revision	Comment	Ddate	Author
V01	First release	October 4, 2019	

7. Document Statement

1. Due to product version upgrade or other reasons, this document will be updated from time to time. Unless otherwise agreed, this document is intended as a guide to use only, and all statements, information and recommendations contained in this document do not constitute any warranty, express or implied.
2. The Company reserves the right of final interpretation and modification of all the materials provided, and is subject to change without prior notice.

8. FCC and IC Statements

FCC Statements

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.

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.

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

LABELING AND USER INFORMATION REQUIREMENTS OF THE END PRODUCT:

The final end product must be labelled in a visible area with the following "Contains TX FCC ID: 2AYT2-VG63S9SC2A" or "Contains Transmitter Module FCC ID: 2AYT2-VG63S9SC2A". If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users' manual: 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.

A user's manual for the finished product should include one of the following statements:- For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

- For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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.

The User's Manual for The finished product should include The following statements:

Any changes or modifications to this equipment not expressly approved by the OEM/Integrator may cause harmful interference and void the user's authority to operate this equipment.

IC Statement

This device complies with 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.
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.

LABELING AND USER INFORMATION REQUIREMENTS OF THE END PRODUCT:
The Industry Canada certification label of a module shall be clearly visible at all times when installed in the host device, otherwise the host device must be labeled to display the Industry Canada certification number of the module, preceded by the words “Contains transmitter module”, or the word “Contains”, or similar wording expressing the same meaning, as follows:
Contains IC: 26935-VG63S9SC2A
or
Contains transmitter module IC: 26935-VG63S9SC2A

User manuals for license-exempt radio apparatus shall contain the following or equivalent notice in a conspicuous location in the user manual or alternatively on the device or both:

This device complies with 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.
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.

General Statements

The module is limited to OEM installation only.

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

This module is restricted for use with the specific antenna(s) tested in this application for Certification and must not be co-located or operating in conjunction with any other antenna or transmitters within a host device, otherwise, a Class II Permissive Change (C2PC) must be filed with the FCC and/or IC, or a new FCC and/or IC authorization must be applied.

This module is for use with external antennas only, and the antenna is recommended as below:

Ant.	Brand	Model name	Antenna Type	Connector	Gain (dBi)
1	Shuodian	RF915-1	FPC	Soldering	1
2	Shuodian	RF915-2	FPC	Ipex-1	2

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the module.

The OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.