

Sec-Eng Systems LoRa Module Datasheet

**MP P/N: Mx 001 W4814
Rev 1
1 May 2019**

The contents of this manual may not be transmitted or reproduced in any form or by any means without the written consent of Sec-Eng Systems Pty Ltd.

Table of Contents

1. Product Information.....	3
2. Ordering Part Number.....	3
3. Key Features.....	3
4. Specifications.....	4
5. Mechanical Drawings.....	5
6. Pin Signals.....	6
7. Regulatory Statement.....	7

1. Product Information

The Sec-Eng System Mx 001 W4814 is a low power 916-928MHz RF module based on the LoRa SX1272 chipset and Microchip PIC microprocessor.

It has been designed for the intended use in the Sec-Eng Systems wireless product range which includes long distance, low data rate, transceiver M2M applications.

The Mx 001 W4814 module can be operated as a standalone device as it only requires power and serial communication to interface with the on-board microcontroller and LoRa chipset.

The serial communication interface is coded for Sec-Eng Systems propriety use only

This module is not intended for non Sec-Eng Systems product applications

2. Ordering Part Number

P/N: Mx 001 W4814

3. Key Features

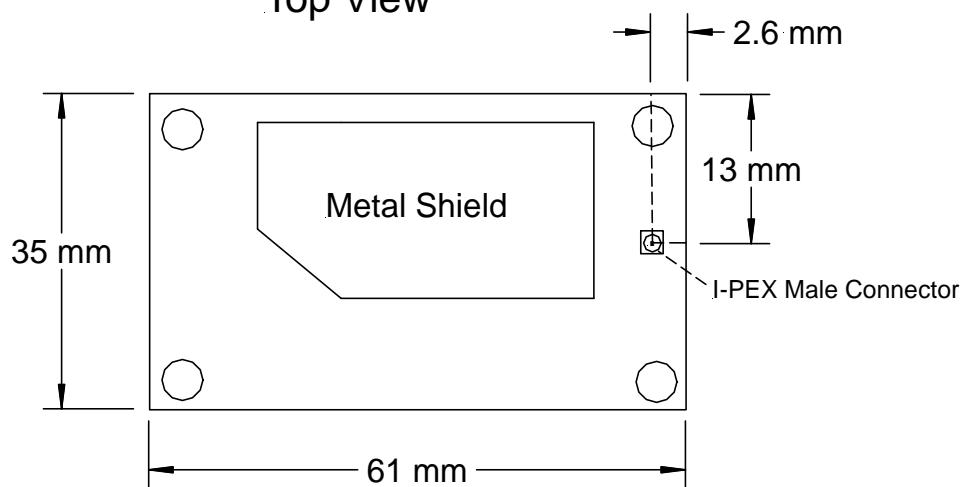
Interface:	UART
Main ICs:	PIC32MX150F128B, SX1272
Reference Clock:	XTAL 32MHz
Supported Frequencies:	916MHz – 928MHz
Power output:	100mW
Module Size:	61 x 35 x 14.2mm
Package:	Metal Shield can
RoHS:	Compliant

4. Specifications

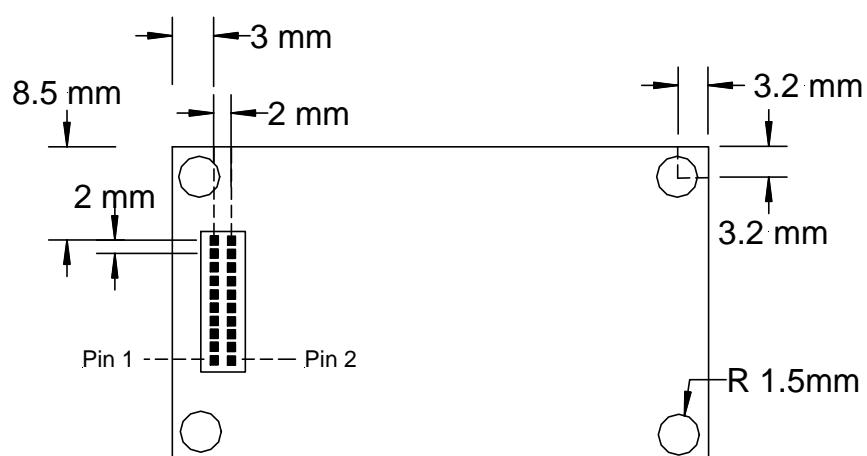
Parameters	
Performance	
Transmit Power Output	100mW
Outdoor RF Range (line-of-sight)	1800m
Indoor / Urban RF Range	500m
Serial Data Rate	115200 bps
Radio Properties	
Frequency	916 - 928MHz
Spread spectrum	Lora Modulation (500KHz bandwidth)
RF Specifications	157 dB maximum link budget
	20 dBm at 100mW constant RF output vs. V supply
	+14 dBm high efficiency PA
Power Requirements	
Voltage	5 VDC
Current	80mA
Physical Properties	
RF module board size	61 x 35 x 14.2mm
Weight	11 grams
Connector	20 pin
Operating Temperature	-40 to 85 °C
Antenna	
Connector	I-PEX
Impedance	50 ohms unbalanced

5. Mechanical Drawings

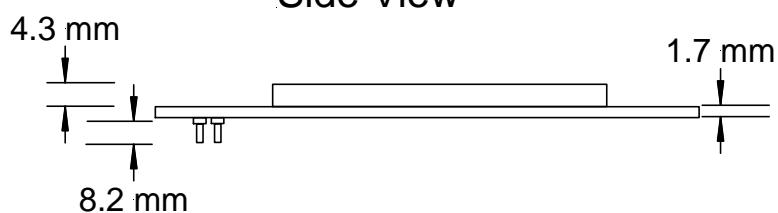
Top View



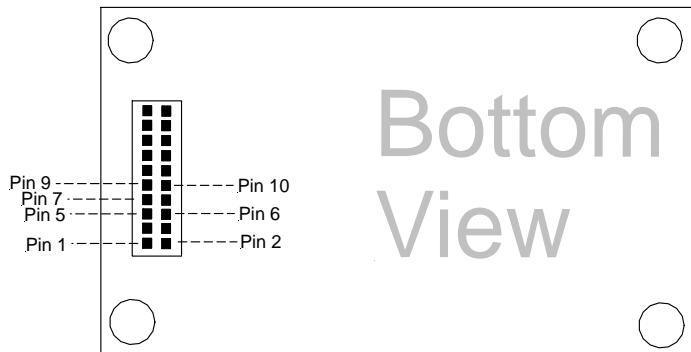
Bottom View



Side View



6. PIN Signals



Pin number	Terminal Name	Type	Description
1	GND	Ground	Ground
2	VCC	Power	Power In, 5VDC
3	RESERVED/ NC		
4	RESERVED/ NC		
5	RX	I/O	Data In, Serial data entering from the UART host
6	TX	I/O	Data Out, Serial data exiting to the UART host
7	SHDN	I/O	Shutdown signal, high during operation and low during shutdown.
8	RESERVED/ NC		
9	CTS	I/O	Clear To Send, when pin is low UART host is permitted to send.
10	RTS	I/O	Request To Send, when pin is low TX data will be permitted to send out
11	RESERVED/ NC		
12	RESERVED/ NC		
13	RESERVED/ NC		
14	RESERVED/ NC		
15	RESERVED/ NC		
16	RESERVED/ NC		
17	RESERVED/ NC		
18	RESERVED/ NC		
19	RESERVED/ NC		
20	RESERVED/ NC		

7. Regulatory 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 product 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 product 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 product 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.

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance.

FCC Modular Usage Statement

Note 1: This module certified that complies with RF exposure requirement under mobile or fixed condition, this module is to be installed only in mobile or fixed applications.

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

A fixed device is defined as a device is physically secured at one location and is not able to be easily moved to another location.

Note 2: Any modifications made to the module will void the Grant of Certification, this module is limited to OEM installation only and must not be sold to end-users, end-user has no manual instructions to remove or install the device, only software or operating procedure shall be placed in the end-user operating manual of final products.

Note 3: Additional testing and certification may be necessary when multiple modules are used.

Note 4: The module may be operated only with the antenna with which it is authorized. Any antenna that is of the same type and of equal or less directional gain as an antenna that is authorized with the intentional radiator may be marketed with, and used with, that intentional radiator.

Note 5: 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 Supplier's 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. Since this may depend on the details of how the module is integrated with the host, Sec-Eng Systems Pty Ltd. shall provide guidance to the host manufacturer for compliance with the Part 15B requirements.

Note 6: The FCC ID label on the final system must be labeled with "Contains FCC ID: 2ASK9-MX001W4814" or "Contains transmitter module FCC ID: 2ASK9-MX001W4814".