

LRM001 Datasheet

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Chapter 1: Overview

The LRM001 is with Microchip's RN2483 / RN2903 which is an Low-Power Long Range LoRa Technology Transceiver module. It provides an easy to use, low-power solution for long range wireless data transmission. The advanced command interface offers rapid time to market. The RN2483 module complies with the LoRaWAN Class A protocol specifications. It integrates RF, a baseband controller, command application programming interface (API) processor, making it a complete long range Solution. The RN2483 module is suitable for simple long range sensor applications with external host MCU.

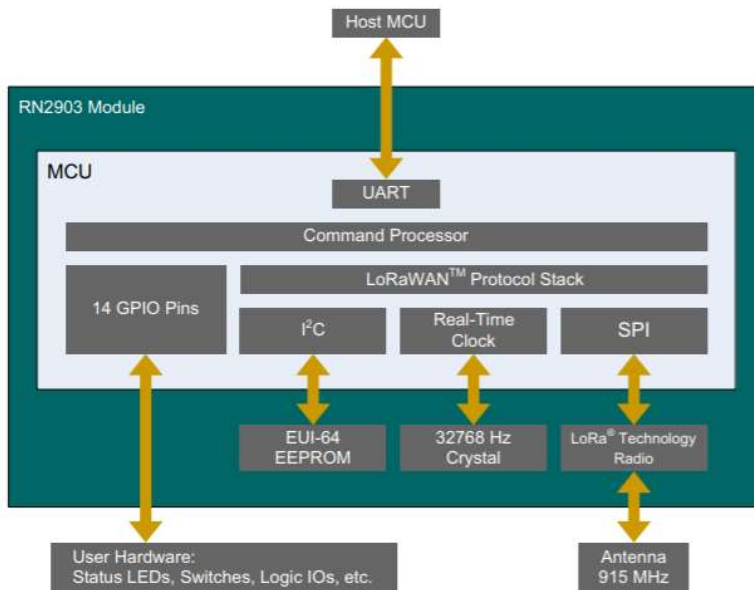


Figure : RN2903 Block Diagram , source : Semtech® RN2903

Mini PCIe
LRM001



Python
LRM001 915.py

LCM001



Packet forwarder



Internet

Chapter 2: Features

- . Microchip® RN2483 / RN2903
 - . Compliant with LoRaWan®
 - . USB interface
 - . UART interface (TX & RX)
 - . Mini PCI Express form factor
 - . 2 u.FL antennas to support 433 or 868 or 915MHz
 - . Range 7KM
 - . Data rate 1k bps
 - . Network type: Star
 - . Standby current: 0.1mA
 - . Rx current: 12ma
 - . RF Output power (maximum) 20dbm
 - . Receiver sensitivity: -130 dbm
 - . Support Window 10
 - . Support Linux : Ubuntu 12.04
 - . Operating temperature -30° C~ 70°C
 - . Dimension: 50 x 29 x 9 mm
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Chapter 3: Connection

The LRM001 is 100% compliant with the mini PCIe requirement. It use partial of the 52 pins.

47	Reserved	48	+1.5V
45	Reserved	46	LED_WPAN#
43	GND	44	LED_WLAN#
41	+3.3Vaux	42	LED_WWAN#
39	+3.3Vaux	40	GND
37	GND	38	USB_D+

35	GND	36	USB_D-
33	PETp0	34	GND
31	PETn0	32	SMB_DATA
29	GND	30	SMB_CLK
27	GND	28	+1.5V
25	PERp0	26	GND
23	PERn0	24	+3.3Vaux
21	GND	22	PERST#
19	Reserved* (UIM_C4)	20	W_DISABLE#
17	Reserved* (UIM_C8)	18	GND
Mechanical Key			
15	GND	16	UIM_VPP
13	REFCLK+	14	UIM_RESET
11	REFCLK-	12	UIM_CLK
9	GND	10	UIM_DATA
7	CLKREQ#	8	UIM_PWR
5	COEX2	6	1.5V
3	COEX1	4	GND
1	WAKE#	2	3.3Vaux

Figure : Mini PCIe pin out

Chapter 4: Mechanical

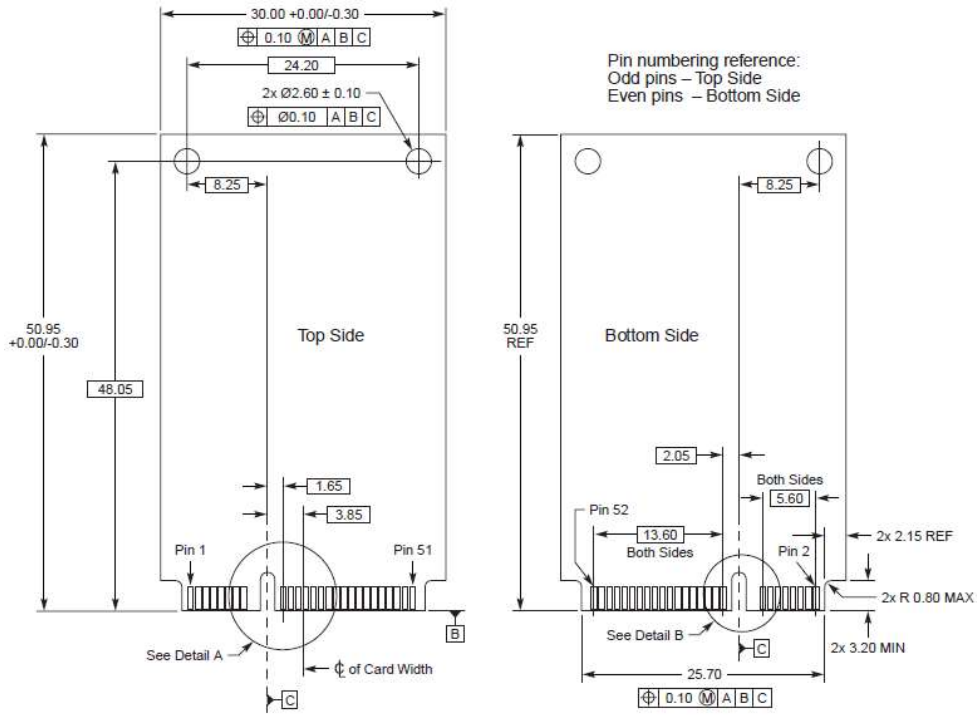


Figure : Mechanic Guidance – top view

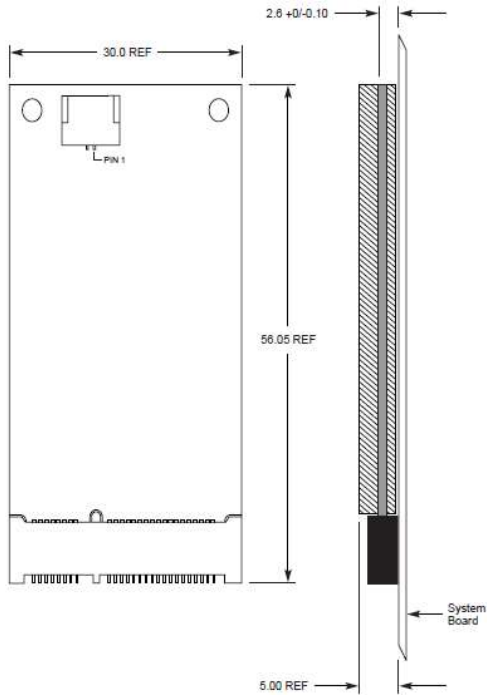


Figure: Mechanic Guidance – Side View

Chapter 5: Reference models

In addition to the LCM001-915. Liyatech also provide 433MHz and 868MHz LoRaWan gateway module which is listed below.

Model Name	Mini PCIe	USB	FCC compliant
LRM001-915	Yes	Yes	Yes
LRM001-868	Yes	Yes	No
LCM001-915	Yes	Yes	Yes

Thanks for your patience in using our products. If you had any question, please contact the distributor or info@liyatech.com.

Appendix : FCC Statement

Federal Communication Commission Interference Statement

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IMPORTANT NOTE:

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Country Code selection feature to be disabled for products marketed to the US/CANADA

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.