

OM841 Module User Manual

1. Product Introduction

1.1 Product Description

OM841 is a RF chip independently developed by ManThink, which is embedded in Huada high-performance MCU and Semtech SX1262/1268. It works in the ultra-long distance of ISM (industrial, scientific and medical) frequency band, high-performance wireless communication module. OMx41U is a module that supports MT instruction sets. It can be flexibly configured to handle various applications.

1.2 Application fields

OM841 module is mainly applicable to applications with long distance and ultra-low power consumption, such as wireless meter reading, sensor network and other Internet of Things applications.

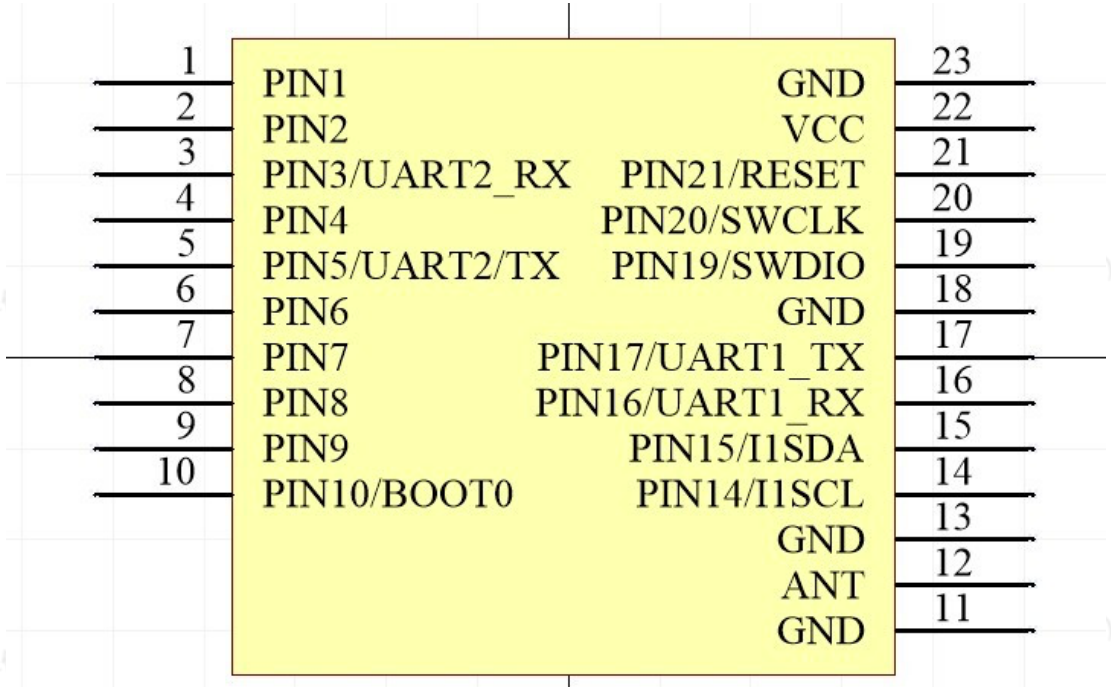
1.3 Main features



- Ultra Small size: 17.8x13x2.6mm
- Ultra-low power consumption: sleep current 3μA, received current 7mA
- Ultra-High Performance: maximum emission current 90mA(20dBm), maximum sensitivity-139dBm
- LCC encapsulation: suitable for SMT
- Package compatibility design: pin2pin compatibility for modules with different frequency bands
- Compatible with standard LoRaWAN: supports versions 1.0.2 and 1.0.3.
- Global ISM band support: EU868/KR920/AS923

2. Product parameters

2.1 Definition of pin



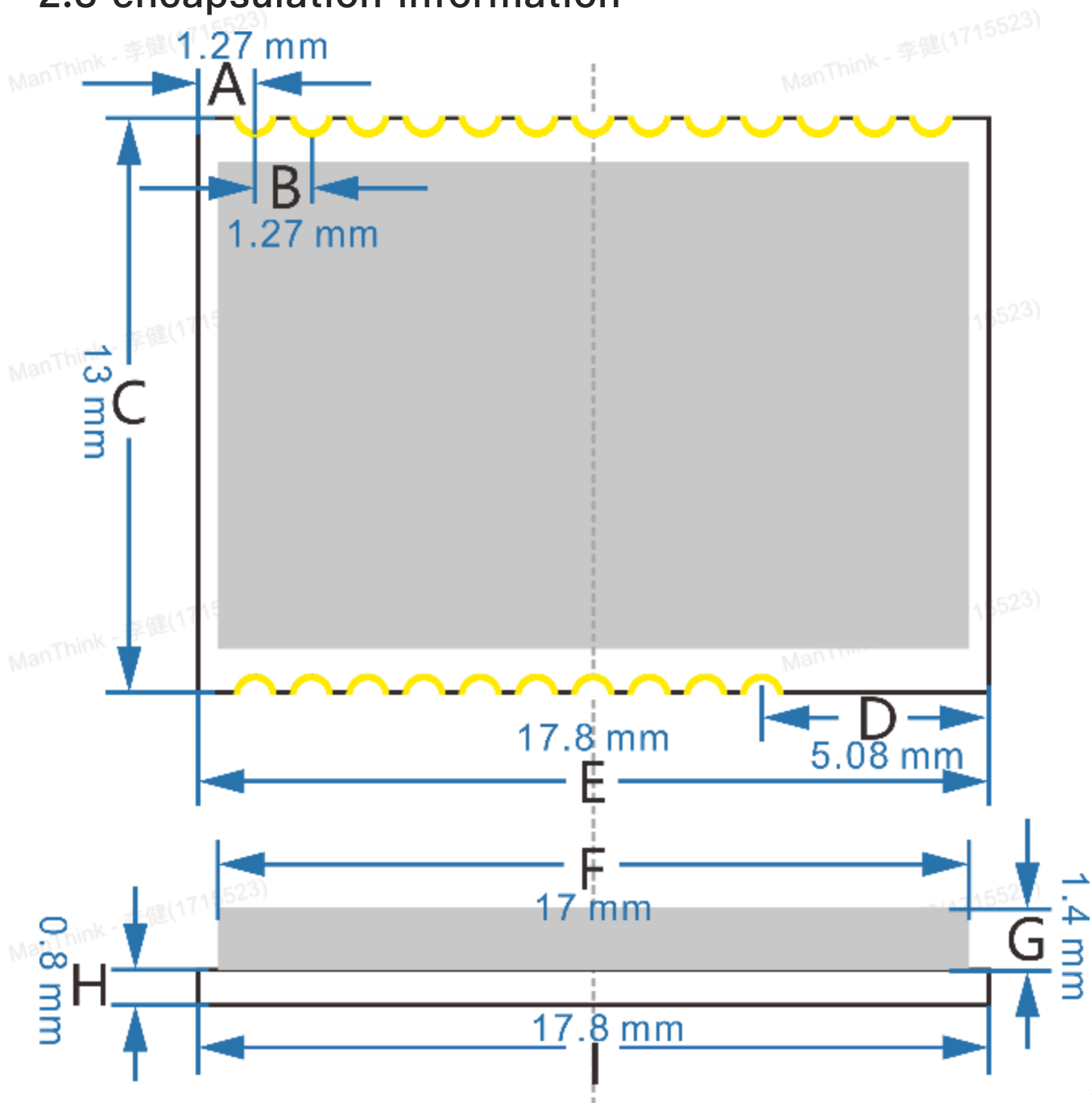
PIN	Name	I/O	deifinition
1	PIN1	I/O	NC,Keep open
2	PIN2	I/O	NC,Keep open
3	PIN3/UART2_RX	I/O	NC,Keep open
4	PIN4	I/O	NC,Keep open
5	PIN5/UART2_TX	I/O	NC,Keep open
6	PIN6	I/O	NC,Keep open
7	PIN7	I/O	NC,Keep open
8	PIN8	I/O	NC,Keep open
9	PIN9	I/O	NC,Keep open
10	PIN10/BOOT0	-	NC,Keep open
11	GND	-	GND
12	ANT	-	antenna
13	GND	-	GND

14	PIN14/IICSCL	I/O	NC,Keep open
15	PIN15/IICSDA	I/O	NC,Keep open
16	PIN16/UART1_RX	I	RX of module
17	PIN17/UART1-TX	O	TX of module
18	GND	–	GND
19	SWDIO	–	NC,Keep open
20	SWCLK	–	NC,Keep open
21	RESET	I	to reset the module
22	VCC	–	power supply 2.6V–3.6V
23	GND	–	GND

2.2 Electrical characteristics

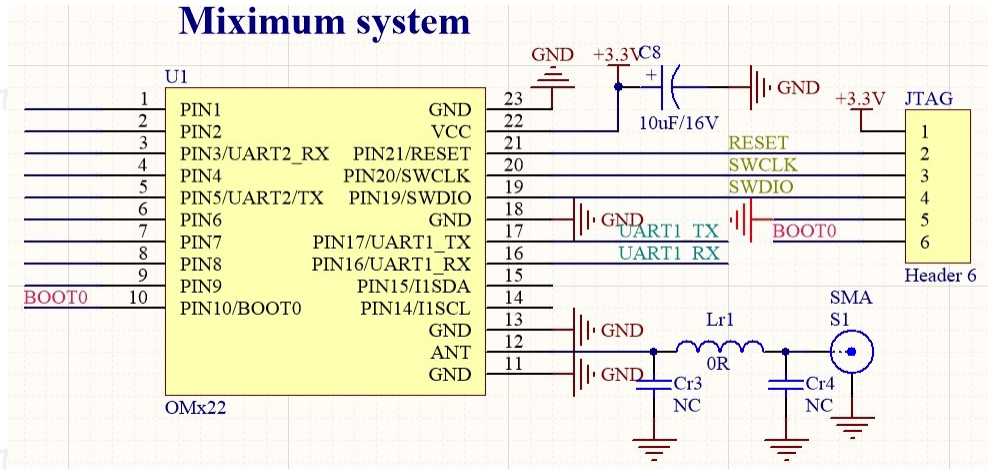
Operating frequency	915.2-916.6MHz
Step frequency	1kHz
Transmit power	5-22dBm
Receiving sensitivity	–139dBm @292bps
Air transmission rate	292bps~15.6kbps
Working humidity	0%~90%RH (no condensation)
Operating temperature	–45℃ ~ 85℃
Supply voltage	2.6~ 3.6V
ESD(Human Body Model)	2000V
Emission current (typical)	90mA @20dBm
Harmonic suppression	≤1GHz:<–36dBm, >1GHz:< –30dBm
CAD/received Current (typical)	7mA
Sleep current (typical)	3μA
Size	17.8mm x 13.0mm x 2.0mm

2.3 encapsulation information



2.4 Reference Design

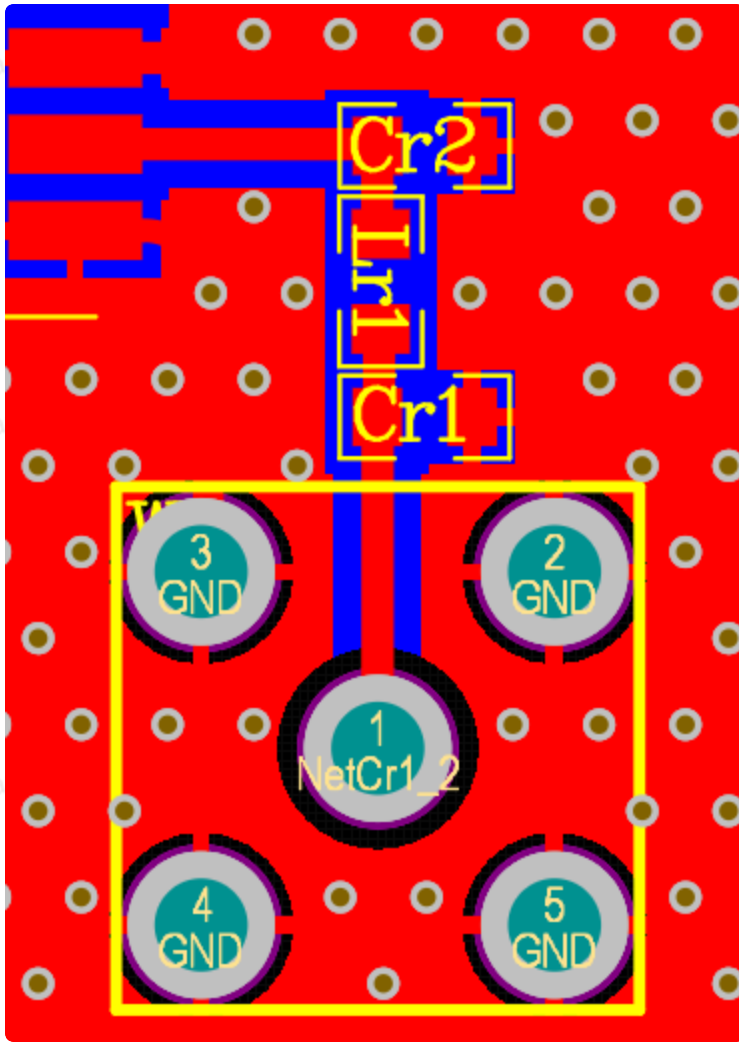
Maximum system



Typical application design

As shown in the preceding figure, PIN17 and PIN16 are UART interfaces and need to be connected to the customer's MCU. The user can reset the module through the RESET. PIN9 is the AUX pin, which is used to output the state of the module, the customer can choose to connect the LED to show whether the current module is busy. If you need the library files of schematic diagram and PCB diagram, please contact the technical support of ManThink.

2.5 Antenna wiring



As shown in the preceding figure, the antenna design can refer to the preceding figure.

The detailed rules are as follows:

1. Cr2, Lr1 and Cr1 form a π -type impedance matching network, which can select vertical and horizontal topologies. Its purpose is to reserve parameter values for fine tuning capacitance and inductance, by default, Lr1 is welded with a resistance of 0Ω , while Cr1 and Cr2 are not welded.
2. Two-layer PCB, FR4 material, 1 ounce copper thickness, suggested theoretical line width is 20mil
3. In addition, it should be noted that the impedance matching of the interface is 50Ω .

3. Usage

3.1 UART default parameters

Baud Rate	9600
Data Bits	8
Stop Bits	1
Parity	None

3.2 Instruction set

Please refer to MT instruction set [MT instruction set]([PTL_D02 MT Instruction Set](#))

4. Ordering information

Please read carefully The 《[Purchase instructions](#)》.

OM841UAS923-N	AS923 standard
OM841UAU915-N	AU915 standard
OM841UEU868-N	EU868 standard
OM841UKR920-N	KR920 standard
OM841UAS923-L	AS923 standard

5. Default frequency point

For more information, see the documentation: 《[Default Frequency of ManThink's products](#)》

6. Contact Us

Website: www.manthink.cn

E-Mail: support@manthink.cn

Tel: 010-56229170

FCC STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
This device may not cause harmful interference, and
This device must accept any interference received, including interference that may cause undesired operation.

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

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.

FCC 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 20mm between the radiator & your body.

Integration instructions for host product manufacturers according to KDB 996369 D03 OEM Manual v01

2.2 List of applicable FCC rules

FCC Part 15 Subpart C 15.247 & 15.207 & 15.209

2.3 Specific operational use conditions

Operation Frequency:902~928MHz

Number of Channel:8 Channels

Modulation Type:LoRa

Antenna Type:Cylindrical antenna

Antenna Gain(Peak):2.18 dBi (Provided by customer)

The module can be used for mobile applications with a maximum 2.18dBi antenna.

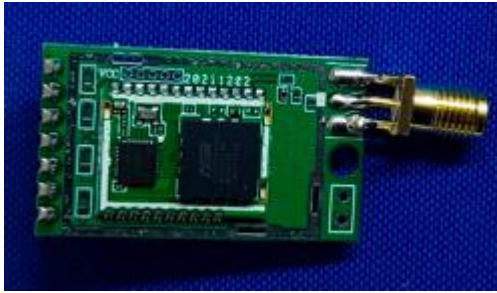
The host manufacturer installing this module into their product must ensure that the final composite product complies with the FCC requirements by a technical assessment or evaluation to the FCC rules, including the transmitter operation. The host manufacturer has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module. The end user manual shall include all required regulatory information/warning as shown in this manual.

2.4 Limited module procedures

Not applicable. The module is a Single module and complies with the requirement of FCC Part 15.212.

2.5 Trace antenna designs

Not applicable. The module has its own antenna, and doesn't need a host's printed board microstrip trace antenna etc.



2.6 RF exposure considerations

The module must be installed in the host equipment such that at least 20mm is maintained between the antenna and users' body; and if RF exposure statement or module layout is changed, then the host product manufacturer required to take responsibility of the module through a change in FCC ID or new application. The FCC ID of the module cannot be used on the final product. In these circumstances, the host manufacturer will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

2.7 Antennas

Antenna Specification are as follows:

Antenna Type: Cylindrical antenna

Antenna Gain(Peak): 2.18 dBi (Provided by customer)

This device is intended only for host manufacturers under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna;

The module shall be only used with the External antenna(s) that has been originally tested and certified with this module. The antenna must be either permanently attached or employ a 'unique' antenna coupler.

As long as the conditions above are met, further transmitter test will not be required. However, the host manufacturer is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

2.8 Label and compliance information

Host product manufacturers need to provide a physical or e-label stating "Contains FCC ID 2ATLHOM841 With their finished product.

2.9 Information on test modes and additional testing requirements

Operation Frequency:902~928MHz

Number of Channel:8 Channels

Modulation Type:LoRa

Antenna Type:Cylindrical antenna

Antenna Gain(Peak):2.18 dBi (Provided by customer)

Host manufacturer must perform test of radiated & conducted emission and spurious emission, etc according to the actual test modes for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

Only when all the test results of test modes comply with FCC requirements, then the end product can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is **only** FCC authorized for FCC Part 15 Subpart C 15.247 & 15.207 & 15.209 and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. If the grantee markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.