ATM2202
Extreme Low Power Bluetooth 5.0 SoC

ATM2-MOD-A

Overview

The ATM2202 Module is part of the family of extreme low-power Bluetooth® 5 system-on-a-chip (SoC) solutions. It contains embedded flash memory. This Bluetooth Low Energy SoC integrates a Bluetooth 5.0 compliant radio with ARM® Cortex® M0 application processor, 128 KB Random Access Memory (RAM), 256 KB Read Only Memory (ROM), 4 KB One-Time-Programmable (OTP) memory, 4Mb flash, and state-of-the-art power management.

The extremely low power ATM2 series SoC with 1 mA active Rx and 2.5 mA active Tx is designed to extend battery life for the Internet-of-Things (IoT). Support for low duty cycle operation allows systems to run for significantly longer time periods without battery replacement. Innovative wake-up mechanisms are supported in order to provide options for further power consumption reduction.

Features

- Compliant with Bluetooth 5.0 standard
- Supports 1 Mbps, 2 Mbps, 500 kbps, 125 kbps
- SoC typical power consumption @ 3 V
    - **Active Rx @ -94 dBm: 1.0 mA**
    - **Active Tx @ 0 dBm: 2.5 mA**
    - **Retention @ 32 KB: 2 µA**
    - **Hibernate: 0.8 µA**
- CPU: 16 MHz ARM Cortex M0 processor, programmable interrupt router
- Memory: 4Mbit Flash, 256 KB ROM, 128 KB RAM, and 4 KB OTP
- Retention RAM configuration: 16 KB to 128 KB in 16 KB step sizes
- RF Wakeup Receiver
- Interfaces: I2C, SPI, UART, GPIO
- 32.768 kHz/16 MHz crystal oscillator
- SWD for code download and interactive debugging
- AES 128 hardware
- 1.1 V to 3.3 V battery input voltage with integrated Power Management Unit (PMU)
- Module Dimensions
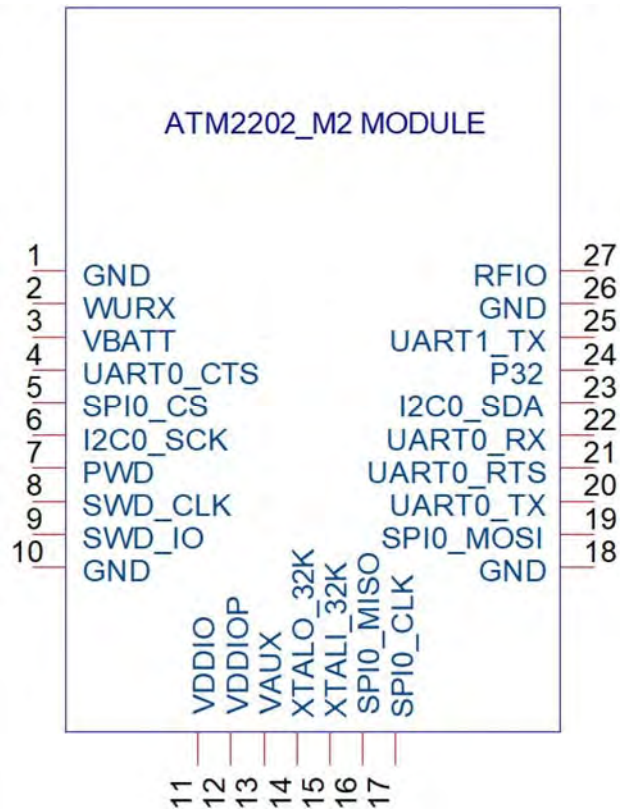   - 10.5mm x 20.2mm x 2.4mm (Width x Length x Height)

Pin Definition

Figure 1-Module Pin Definition

No	Pin Name	No	Pin Name
1	GND	15	XTALI_32K
2	WURX	16	SPIO_MISO
3	VBATT	17	SPIO_CLK
4	UART0_CTS	18	GND
5	SPI0_CS	19	SPIO_MOSI
6	I2C0_SCK	20	UART0_TX
7	PWD	21	UART0_RTS
8	SWD_CLK	22	UART0_RX

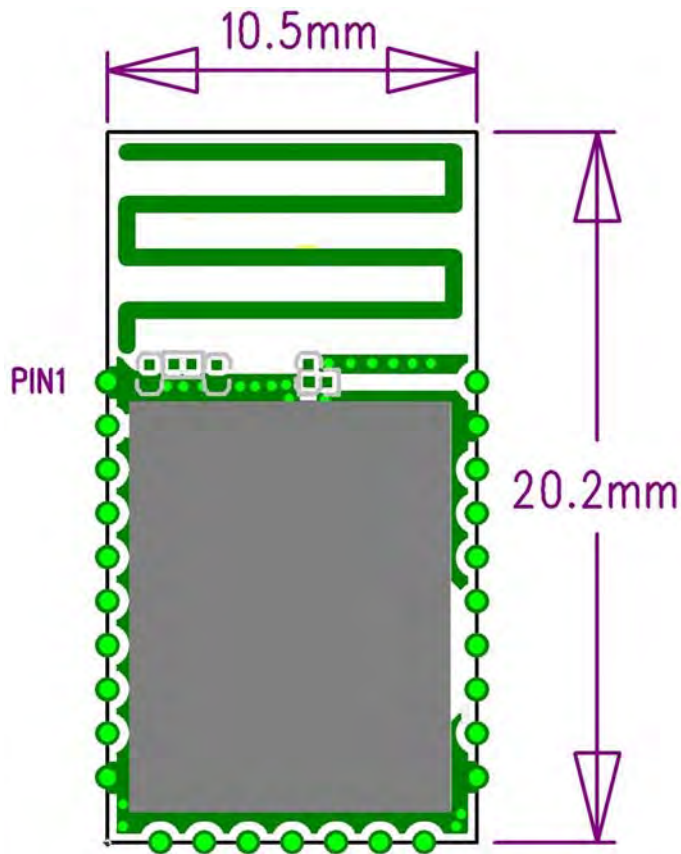| 9	SWD_IO	23	I2C0_SDA
10	GND	24	P32
11	VDDIO	25	UART1_TX
12	XTALO_32K	26	GND
13	XTALI_32K	27	NC(RFIO)
14	XTALO_32K		

Module Dimension

Figure 2-Module with antenna dimension
WxLxH = 10.5mm x 20.2mm x 2.4mm
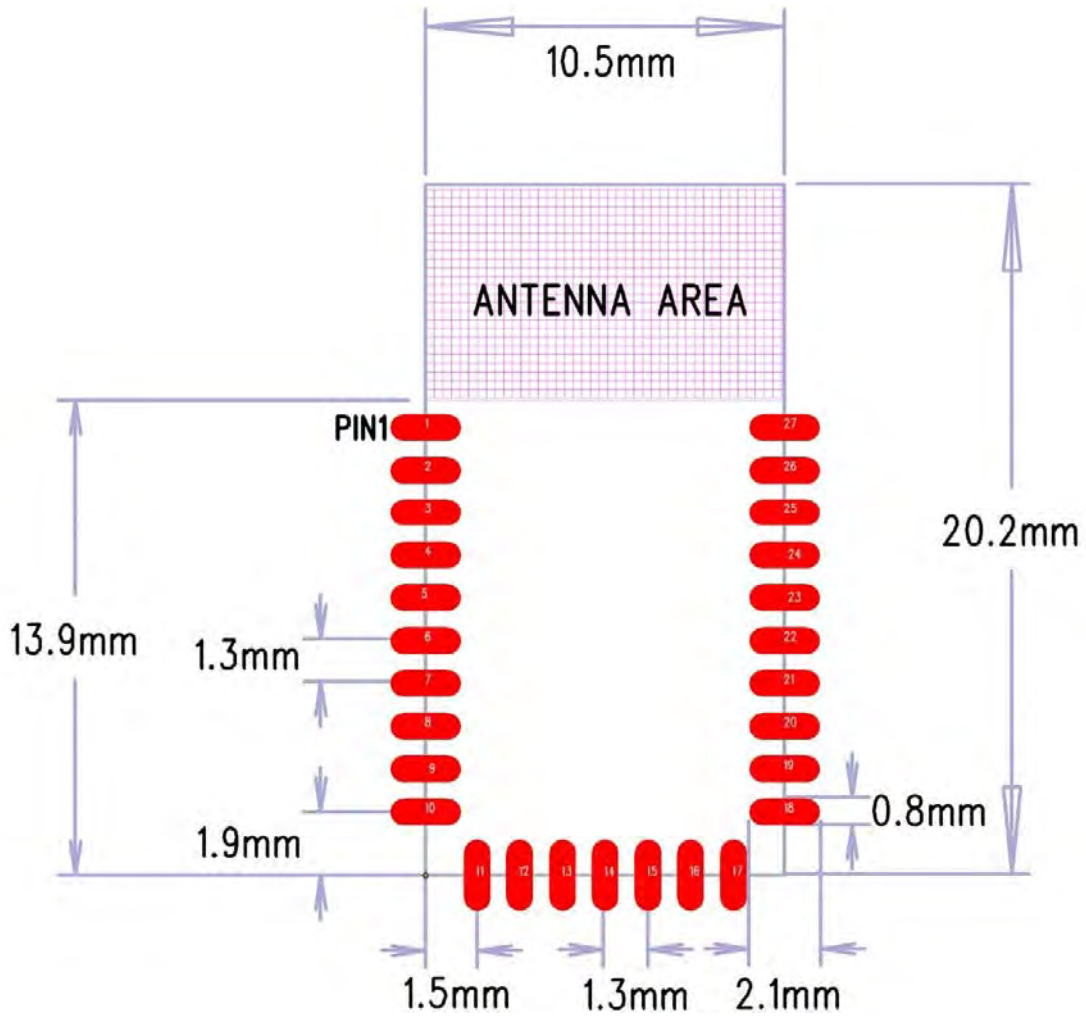
Recommend PCB Footprint

Figure 3-Recommended PCB Footprint

- The PCB board below the antenna area needs to be hollowed out to avoid affecting the antenna impedance.

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.

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:
This module is intended for OEM integrator. This module is only FCC authorized for the specific rule parts listed on the grant, 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. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.
Additional testing and certification may be necessary when multiple modules are used.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:
In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

This device complies with Part 15 of 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.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following " Contains TX FCC ID: 2AXI2-ATM2-MOD-A-00 ".

This device complies with Part 15 of 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.

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	Atmosic	BT 001	Printed	4.42

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:
(1) This device may not cause interference.
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes au (x) RSS (s) exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'opération est soumise aux deux conditions suivantes:
(1) Cet appareil ne doit pas provoquer d'interférences.
(2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

IMPORTANT NOTE:
This module is intended for OEM integrator. The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated.
Additional testing and certification may be necessary when multiple modules are used.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:
In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. Operation is subject to

the following two conditions: (1) this device may not cause harmful interference (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains IC: 26472-ATM2MODA000 ".

The Host Model Number (HMN) must be indicated at any location on the exterior of the end product or product packaging or product literature which shall be available with the end product or online.

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)
1	Atmosic	BT 001	Printed	4.42

Shielding Case Dimension