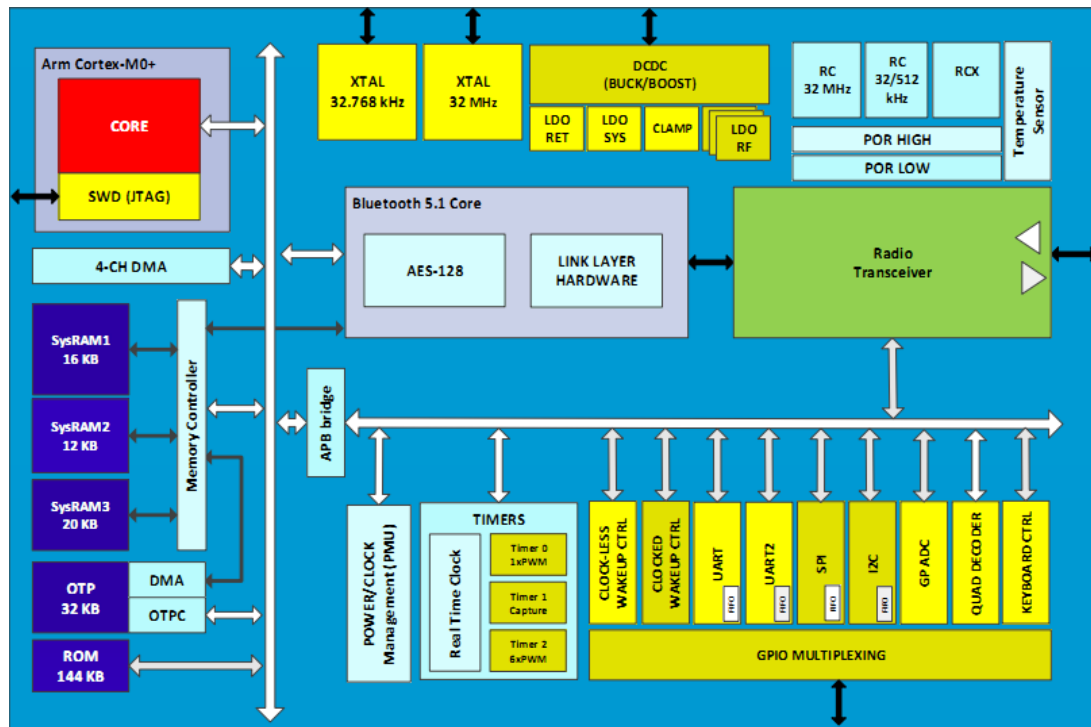
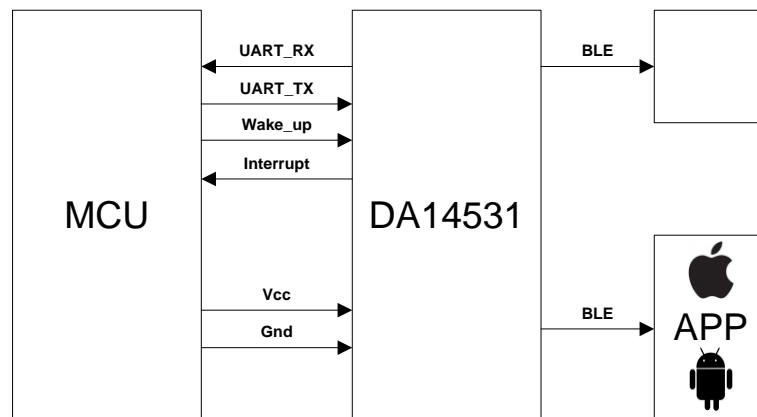


4、Functional Block Diagram



5、Working mode schematic



General Description

The EW-MOD02 Module, is Bluetooth® Low Energy module based on world's lowest power DA14531 SoC.

The module offers a unique combination of the lowest power and the integration of all external components including antenna at a very affordable price.

The module is designed to enable the use of Bluetooth® Low Energy in applications where Bluetooth® Low Energy could not be used until now because of cost or complexity. The bigger picture is to drive Bluetooth® Low Energy technology into every application, turning every product into a connected IoT node to drive the next 1 billion IoT devices in the market.

The EW-MOD02 Module is supported by software that is easy to work with. This lowers the threshold to use Bluetooth® Low Energy technology and significantly speeds up the design time.

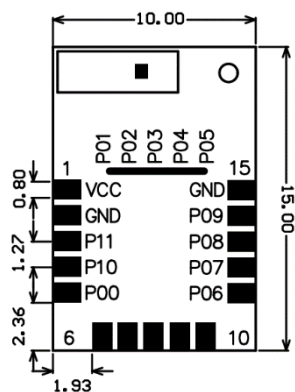
Key Features

- Bluetooth
 - Compatible with Bluetooth® v5.1
- Processing and memories
 - ☐ 16 MHz 32-bit Arm® Cortex® M0+ with SWD interface
 - ☐ 512 Kbytes internal FLASH
 - ☐ 48 Kbytes RAM
 - ☐ 144 Kbytes ROM
 - ☐ 32 Kbytes OTP
- Current Consumption
 - ☐ 2 mA RX at VBAT=3V
 - ☐ 4 mA TX at VBAT=3V and 0 dBm
 - ☐ 1.8 uA at sleep with all RAM retained
- Radio
 - ☐ Programmable RF transmit power from -19.5 to +2.5 dBm
 - ☐ -94 dBm receiver sensitivity
- Interfaces
 - ☐ Quadrature decoder with 3 channels
 - ☐ 4 channel 11-bit ENOB ADC
 - ☐ 2 general purpose timers with PWM
 - ☐ 9 GPIOs
 - ☐ SPI
 - ☐ 2x UART, 1wire UART support
 - ☐ I2C
- Power Management
 - ☐ Operating range (1.8 V - 3.3 V)
 - ☐ Inrush current control
- Other
 - ☐ Real Time Clock
 - ☐ Trimmed 32 MHz Crystal
- Packaging
 - ☐ 10.0 mm x 15.0 mm x 3.0 mm package
- Module Software Development Kit
 - ☐ Configurable DSPS
 - ☐ Codeless v2.0
 - ☐ SDK6 support
 - ☐ TX Power:3.0dBm(Max.)

Application

- Beacons
- Tags
- Toys
- Data acquisition
- IoT
- Robotics
- Gaming

1 Pinout and Footprint



Pinout Diagram Top View

Table1: Pin Description

Pin No	Name	Type	Function Description
1	VCC	PWR	POWER
2	GND	GND	Ground
3	P0_11	DIO	INPUT/OUTPU
4	P0_10	DIO	INPUT/OUTPU
	SWDIO		
5	P0_0	DIO	INPUT/OUTPU
	RST		
6	P0_1	DIO	INPUT/OUTPU
7	P0_2	DIO	INPUT/OUTPU
	SWCLK		
8	P0_3	DIO	INPUT/OUTPU
9	P0_4	DIO	INPUT/OUTPU
10	P0_5	DIO	INPUT/OUTPU
11	P0_6	DIO	INPUT/OUTPU
12	P0_7	DIO	INPUT/OUTPU
13	P0_8	DIO	INPUT/OUTPU
14	P0_9	DIO	INPUT/OUTPU
15	GND	GND	Ground

Note 1 This pin is also used for the communication to the internal SPI FLASH

- **DIO** is Digital Input-Output
- **PWR** is Digital Input-Output
- **GND** is Digital Input-Output

2 Characteristic

All MIN/MAX specification limits are guaranteed by design, production testing and/or statistical characterization. Typical values are based on characterization results at default measurement conditions and are informative only.

Default measurement conditions (unless otherwise specified): VBAT= 3.0 V, TA = 25 oC. All radio measurements are done with standard RF measurement equipment.

3 Absolute Maximum Ratings

Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, so functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specification are not implied.

Exposure to Absolute Maximum Rating conditions for extended periods may affect device reliability.

Table 2: Absolute Maximum Ratings

Parameter	Description	Conditions	Min	Max	Unit
V _{BAT_LIM}	limiting battery supply voltage		-0.1	3.6	V

4 Recommended Operating Conditions

Table 3: Recommended Operating Conditions

Parameter	Description	Conditions	Min	Typ	Max	Unit
V _{BAT}	battery supply voltage enabling FLASH programming		1.65		3.3	V
V _{PIN}	voltage on a pin		-0.1		3.3	V
T _A	ambient operating temperature		-40	27	85	°C

FCC Statement

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.

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 important announcement.

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 and 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,

As long as the two conditions above are met, further transmitter testing 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 cannot 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 cannot 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.

End Product Labeling

The final end product must be labeled in a visible area with the following"

Contains FCC ID: **2AZUS-EW-MOD02** "

Manual Information to the End User

The OEM integrator 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 show in this manual.

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

2.2 List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C has been investigated. It is applicable to the modular transmitter

2.3 Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

2.4 Limited module procedures

Not applicable

2.5 Trace antenna designs

Not applicable

2.6 RF exposure considerations

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.

2.7 Antennas

This radio transmitter **2AZUS-EW-MOD02** has been approved by Federal Communications Commission to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Model	Type	Connector	Peak gain (dBi)				
			2400-2483.5 MHz	5150-5250 MHz	5250-5350 MHz	5470-5725 MHz	5725-5850 MHz
2400-2483.5 MHz	Ceramics	/	0dBi	/	/	/	/

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following" Contains FCC ID:2AZUS-EW-MOD02".

2.9 Information on test modes and additional testing requirements

Host manufacturer which install this modular with limit modular approval should perform the test of radiated emission and spurious emission according to FCC part 15C:15.247 and 15.209 requirement, only if the test result comply with FCC part 15.247 and 15.209 requirement, then the host can be sold legally.

2.10 Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.