

BT-EFR32-RSA2

IoT Module With BT 5.0

Features :

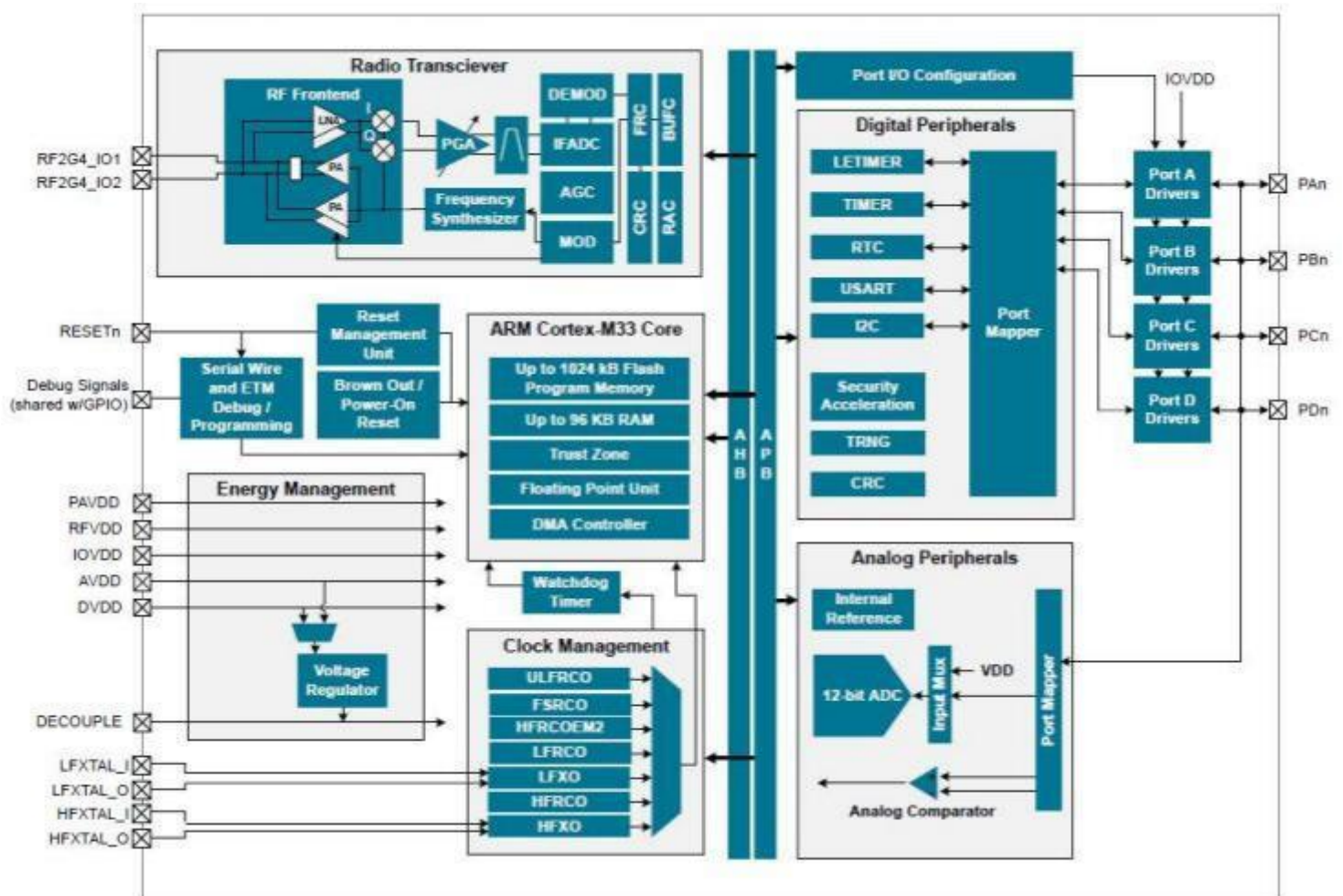
- ③ **Supported Wireless Systems**
Bluetooth 5.0
- ③ **Chip Solution**
EFR32BG21A010F768IM32-B
- ③ **Single Band**
2400-2483.5MHz
- ③ **Size**
13.1mmx 23.5mmx 2.5mm



1. Brief description

1.1 IoT MODULE BT-EFR32-RSA2 is based on Silicon Labs EFR32BG21A010F768IM32-B complied with BT 5.0 standard from 2.4GHz ISM band. Supported for 2Mbps speed wireless network connection, and uses GFSK modulation method; The working frequency band is 2.4G ISM, supporting DC 3.3V power supply.

1.2 Block Diagram

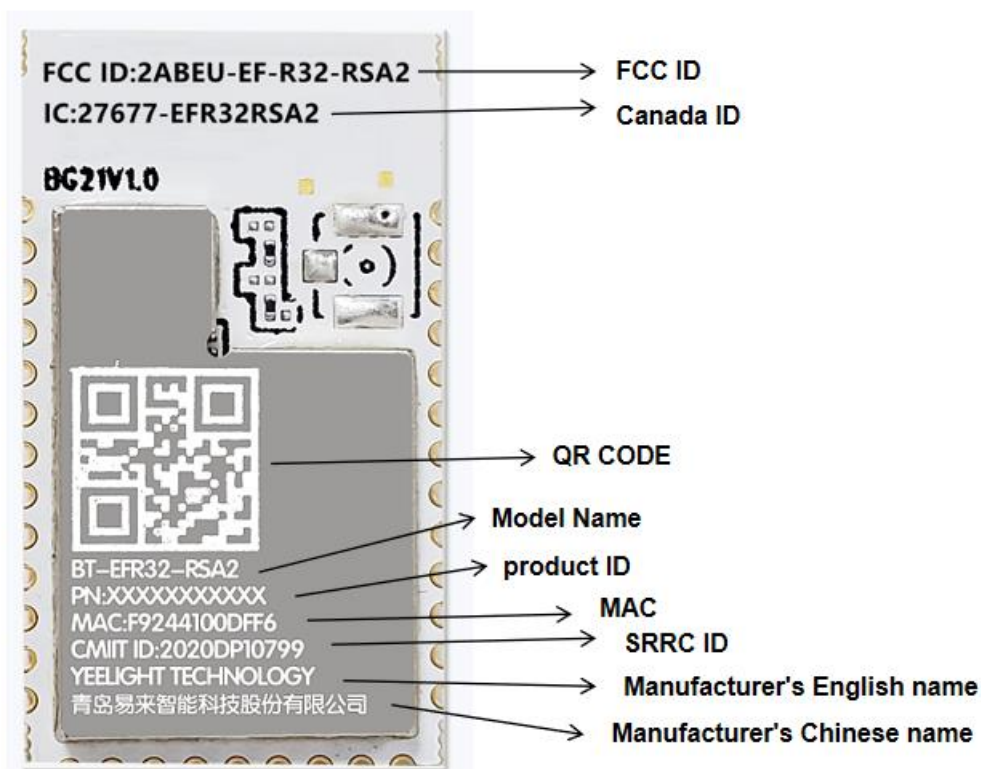


1.3 Specification Reference

This specification is based on additional references listed below.
BT5.0

1.4 RF Shield Marking

The RF shield will receive a laser marking with DMC code, the RB HW part number and revision of the MirX hardware, production week and year, as well as the re-cieved certification ID and approval numbers of FCC and IC.

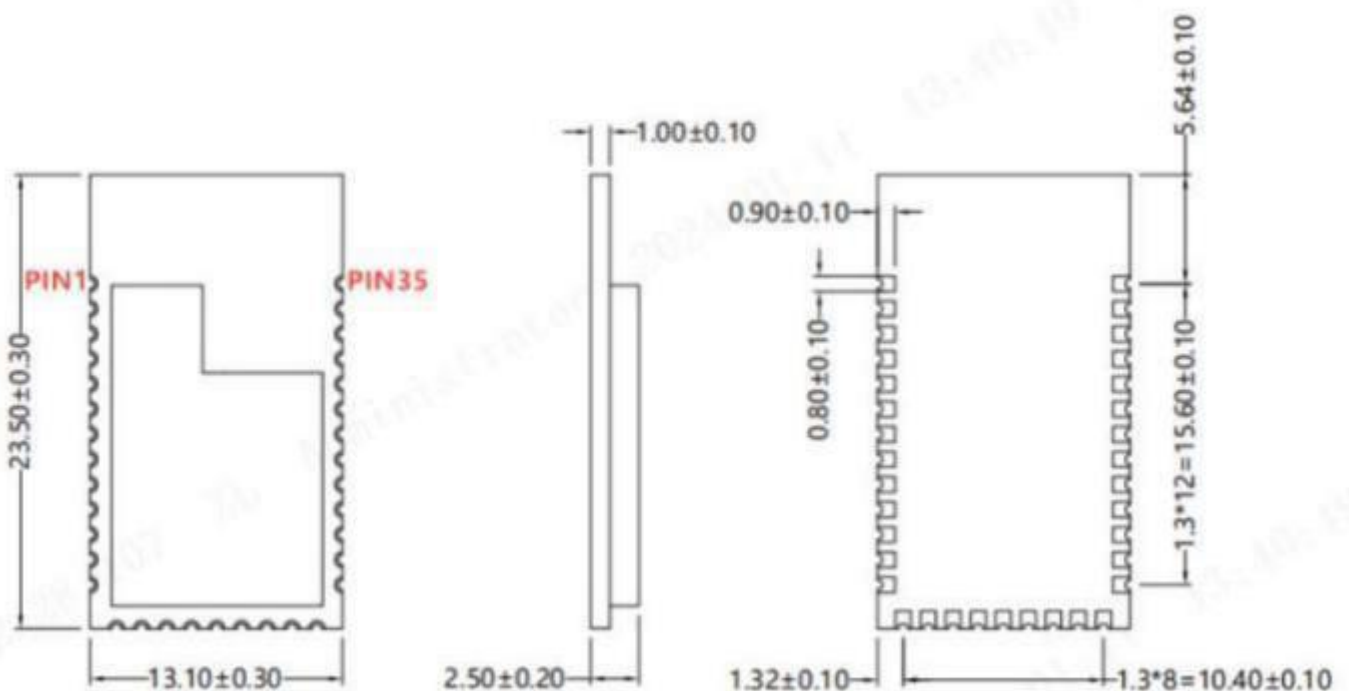


1.5 System Feature

No.	Feature	Description
1	Main Chip	EFR32BG21A010F768IM32-B
2	Flash	768KB
3	RAM	64KB
4	Operating Frequency	2.4G ISM
5	Modulation	GFSK
6	Data rates	1Mbps,2Mbps
7	Form factor	Half stamp hole(35 pins)
8	Host Interface	UART
9	PCB Stack	4 -layers design
10	Antenna Type	Integral PCB trace antenna
11	Antenna Gain	0dBi
12	Operation Voltage	DC 3.3V+/-0.3
13	Radio Current Consumption	9.4mA@RX active,2Mbps at 3.0V 34mA@TX 10dBm output power at 3.0V
14	Operation Temperature	-20°C to +85°C
15	Storage Temperature	-40°C to +125°C

Package Outline and Mounting (units:mm)

2.



TOP VIEW

SIDE VIEW

BOT VIEW

Pin	Symbol	Description	Pin	Symbol	Description
1, 10, 12, 27, 35	GND	Connected to ground	18	PD03	GPIO, PWM-W
2	RESET	Reset input,active low,normally need to connect 10k resistor to pull up.	20	PA06	GPIO
3	PB01	GPIO	21	PC00	GPIO
4	PB00	GPIO	22	VDD	+3.3V DC power supply input
5	PA01	GPIO,SWCLK	26	PD02	GPIO,Switch between DTM and user mode. Connect 10K resistor to ground,enter user mode.
6	PA02	GPIO,SWDIO	29	PA00	GPIO
7	PA03	GPIO	30	PC02	GPIO
8	PA04	GPIO	31	PC01	GPIO
9, 13, 14, 15, 19, 23,24,25,28	NC	GPIO	32	PC03	GPIO
11	VDD	+3.3V DC power supply input	33	PC04	GPIO
16	PA05	GPIO	34	PC05	GPIO
17	PD04	GPIO, PWM-C			

Pin Definition

3.Regulatory and Certification Information

3.1 Federal Communications Commission (FCC) Statement

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

- List of applicable FCC rules

This device complies with FCC Part 15.247

- Limited module procedures

Not applicable.

- Summarize the specific operational use conditions

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter. And the module should be installed at a minimum distance of 20 cm away from person nearby. The host product manufacturer should state this information to the host instruction manual.

- Trace antenna designs

Not applicable.

- RF exposure considerations

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

- Antennas

Antenna Type: PCB Antenna

Antenna Gain: 0 dBi @ 2400-2480 MHz

- Label and compliance information

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.

Caution: The user is cautioned that 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.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: **“Contains Transmitter Module FCC ID: 2ABEU-EF-R32-RSA2 or Contains FCC ID: 2ABEU-EF-R32-RSA2”**.

- Information on test modes and additional testing requirements

Any final host product with the modular transmitter installed should be under test according to guidance given in KDB 996369 D04. To enter test mode for module, SmartRF Studio 7.exe production kit software and command is necessary.

When something wrong happens in configuring test modes for host product with module, host product manufacturer should coordinate with module manufacturer for technical support. It is recommended that some investigative measurements should be taken to confirm that host product with module installed does not exceed the spurious emissions limits or band edge limits.

- Additional testing, Part 15 Subpart B disclaimer

The modular transmitter is only FCC authorized for the specific rule parts (FCC Part 15.247) list 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 when contains digital circuitry.

- Note EMI Considerations

A host manufacture is recommended to use KDB996369 D04 Module Integration Guide recommending as "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties.

- How to make changes

Only Grantees are permitted to make permissive changes. It need module manufactures provide contact information and some guidance to host providers in the integration instructions if they expect their module will be used differently than granted.

3. 2 Canada Statement

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:

This device may not cause interference.

This device must accept any interference, including interference that may cause undesired operation of the device

This equipment should be installed and operated with minimum distance 7.9 inches (20 cm) between the radiator & your body. L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes ;

L'appareil ne doit pas produire de brouillage;

L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Cet équipement doit être installé et utilisé avec une distance minimale de 20 cm (7,9 pouces) entre le radiateur et votre corps.

The end product must carry a label stating “ **Contains IC: 27677-EFR32RSA2**” or shall use e-labeling.

Un produit hôte doit utiliser une étiquette physique indiquant “**Contains IC: 27677-EFR32RSA2**” ou doit utiliser un étiquetage électronique.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Le dispositif rencontre l'exemption des limites courantes d'évaluation dans la section 2.5 de RSS 102 et la conformité à l'exposition de RSS-102 rf, utilisateurs peut obtenir l'information canadienne sur l'exposition et la conformité de rf.