

# niu C22J Bluetooth Module User Guide

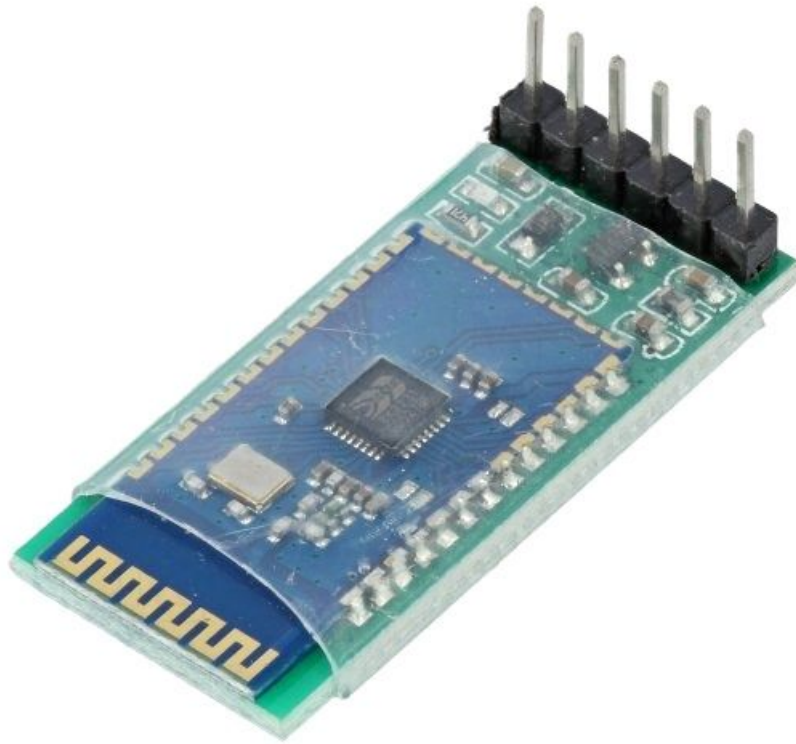
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**niu C22J Bluetooth Module**

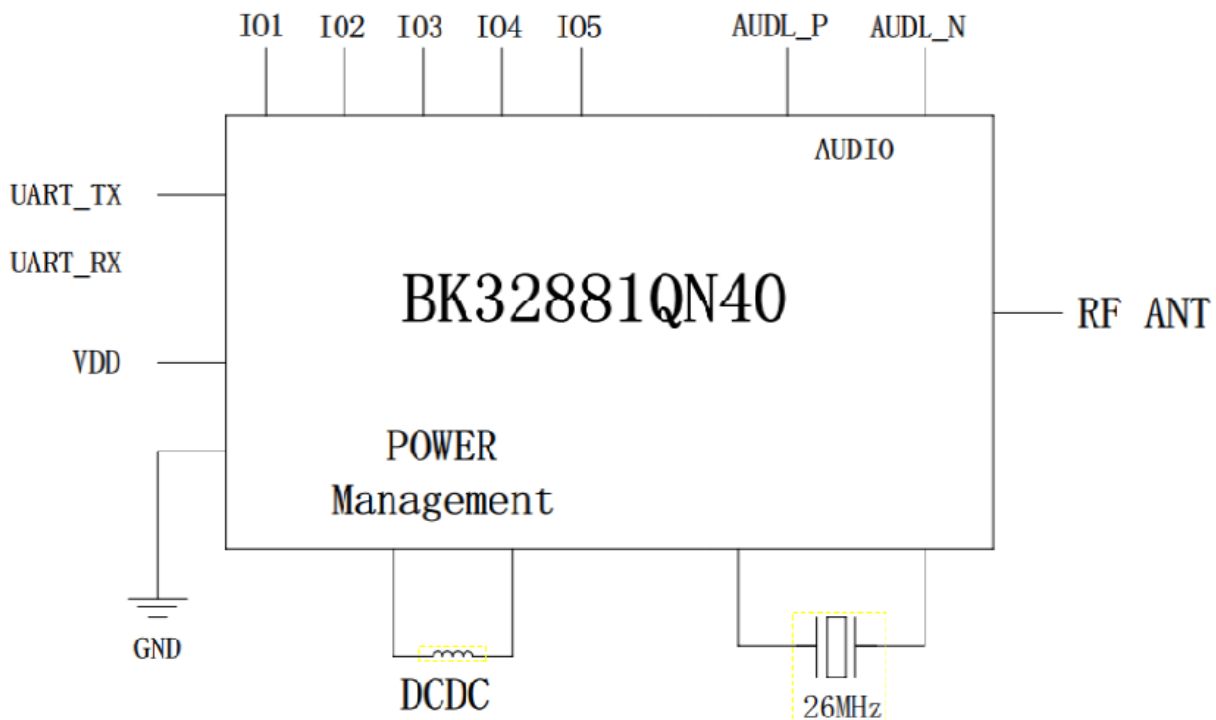


### WARNING

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.

### Product features

The C22J module is designed to offer high integration, ultra-low power application capabilities. The system's block diagram is as follows.



It embeds Flash, LDO and DCDC, crystal, RF match network and etc. With the high integration level of the module, few external components are needed to satisfy customers' ultra-low cost requirements. Its typical applications include, but are not limited to the following:

- Smartphone and tablet accessories
- RF Remote Control
- Sports and fitness tracking
- Wireless toys
- Smart Lighting, Smart Home devices

### Key features

#### General features

- Up to 7 GPIOs
- 2xUARTs, Download and Communication, clock rate can be from 3.2 kHz to 6.5 MHz
- 24 bits audio quality
- Operating temperature range:-20C+85C
- Supports Bluetooth 5.0 classic and low energy

#### Flash features

c22J module embeds Flash with features below:

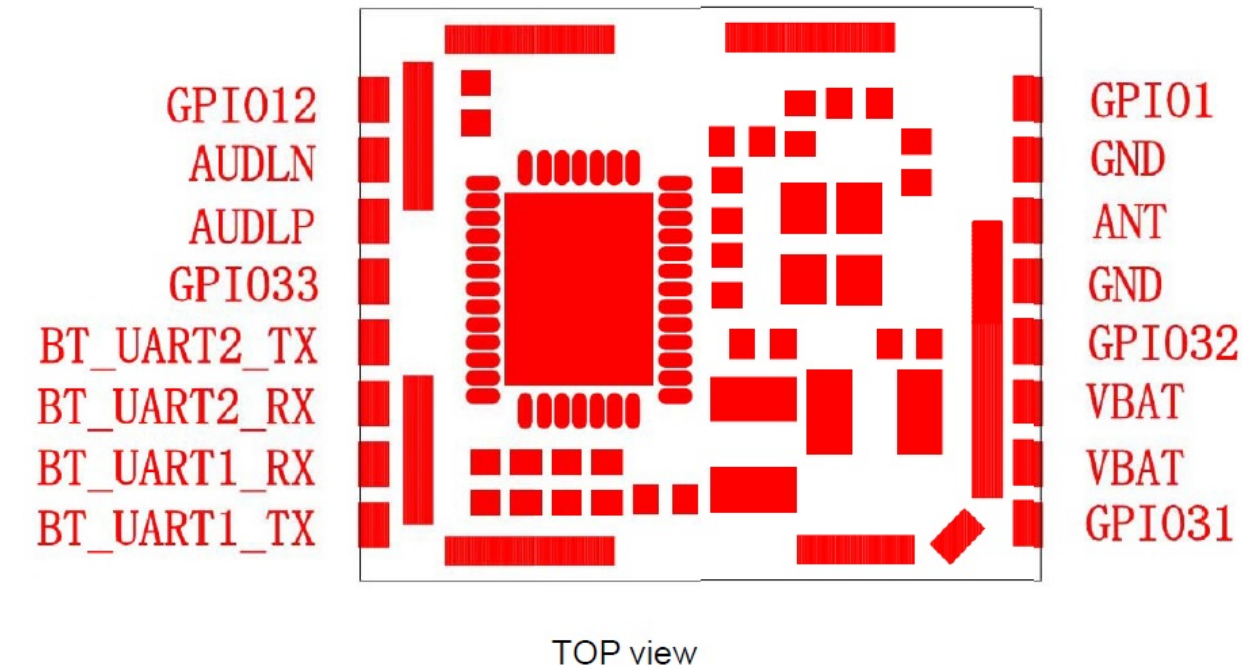
1. Total 2Mbit.
2. RAM 768KB.

#### RF features

Parameter	Condition	MIN	TYP	MAX	Unit
Operating frequency		2402		2480	MHz
RXSENS-BDR 1Mbps	BER = 0.001		-93		dBm
RXSENS-EDR 2Mbps	BER = 0.0001		-94		dBm
RXSENS-EDR 3Mbps	BER = 0.0001		-86		dBm
RXSENS-BLE 1Mbps	PER = 30.8%		-97		dBm
Maximum received signal	BER = 0.001	0			dBm
Maximum RF transmit			10		dBm

power					
RF Power Control Range		30			dB
Carrier Drift	BLE	50	5	50	kHz
Drift Rate	BLE	-20	2.5	20	kHz/ 50us
$\Delta f_{1avg}$	BLE	225	255	275	kHz
$\Delta f_{2\ 99.9\%}$	BLE	185	250		kHz
$\Delta f_{2avg}/\Delta f_{1avg}$	BLE	0.8	1.1		

Pin layout



Pin functions

No	PinName	Type	Description
1	GPIO1	Digital I/O	General input/output
2	GND	GND	GND
3	ANT	Analog	RFsingal
4	GND	GND	GND
5	GPIO32	Digital I/O	General input/output
6	VBAT	PWR	Power, 3.6V max power
7	VBAT	PWR	Power, 3.6V max power
8	GPIO31	Digital I/O	General input/output
9	BT_UART1_TX	Digital O	DL_UART1 TX
10	BT_UART1_RX	Digital I	DL_UART1 RX
11	BT_UART2_RX	Digital I	UART2 RX
12	BT_UART2_TX	Digital O	UART2 TX
13	GPIO33	Digital I/O	General input/output
14	AUDLP	Analog O	Audio left channel positive output
15	AUDLN	Analog O	Audio right channel positive output
16	GPIO12	Digital I/O	General input/output

## Size

- 13.4 (mm) \*11.4 (mm) \*2.8 (mm)

## Absolute maximum ratings

### Absolute Maximum Ratings

Parameter	Description	MIN	MAX	Unit
VCC4BAT	Battery regulator supply voltage	-0.3	4.35	V
VCC5USB	USB power supply voltage	-0.3	5.5	V
P <sub>RX</sub>	RX input power	-	10	dBm
T <sub>STR</sub>	Storage temperature range	-40	150	°C

## Auxiliary equipment

- **PCBA Antenna:** PCBA\_BT\_ATA\_1.0(type)

## Antenna performances

Please ensure the peak gain of the Bluetooth antenna meets the following requirements if the module is used in your designs.

	Type	Peak Gain
1.	PCB Antenna	-3.04dBi
2.	Wire Antenna	-3.04dBi

## FCC Statement

**FCC standards:** FCC CFR Title 47 Part 15 Subpart C Section 15.247 PCB Antenna with antenna gain -3.04dBi  
We will retain control over the final installation of the module such that compliance of the end product is assured. In such cases, an operating condition on the limit module approval for the module must be only approved for use when installed in devices produced by a specific manufacturer. If any hardware modify or RF control software modify will be made by host manufacturer, C2PC or new certificate should be apply to get approval, if those change and modification made by host manufacturer not expressly approved by the party responsible for compliance, then it is illegal.

## FCC Radiation Exposure Statement

The module can be installed or integrated in mobile or fix devices only. This module cannot be installed in any portable device. 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.

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: 2AZ6G-C22J Or Contains FCC ID: 2AZ6G-C22J"

## OEM INTEGRATION INSTRUCTIONS:

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

The module must be installed in the host equipment, and the transmitter module may not be co-located with any other transmitter or antenna. The module shall be only used with the internal on-board antenna that has been originally tested and certified with this module. External antennas are not supported. As long as these 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 (for example, digital device emissions, PC peripheral requirements, etc.). The end-product may need Verification testing,

Declaration of Conformity testing, a Permissive Class II Change or new Certification. Please involve a FCC certification specialist in order to determine what will be exactly applicable for the end-product.

## Validity of using the module certification:

In the event that these conditions cannot be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization for this module in combination with the host equipment is no longer considered valid and the FCC ID of the module 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. In such cases, please involve a FCC certification specialist in order to determine if a Permissive Class II Change or new Certification isrequired.

## **Upgrade Firmware:**

The software provided for firmware upgrade will not be capable to affect any RF parameters certified for the FCC for this module, in order to prevent compliance issues.

## **End product labeling:**

The final end product must be labeled in a visible area with the following: "Contains 2AZ6G-C22J".

## **Information that must be placed in the end user manual:**

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 shown in this manual.

When the module is installed inside another device, the user manual of the host must contain below warning statements

## **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.

Any 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 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product. Any company of the host device which installs this modular with limit modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC CFR Part 15C: 15.247 and 15.209 15.209, 15B class B requirement, Only if the test result complies with FCC CFR Part 15C: 15.247 and 15.209 15.209, 15B class B requirement then the host can be sold legally.

## **Documents / Resources**

