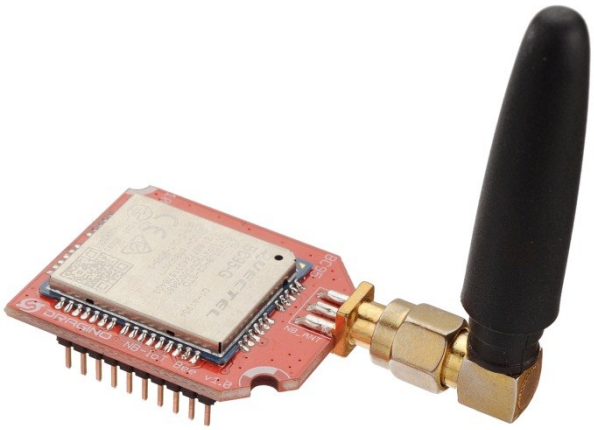


NB-IoT Bee 95G User Manual

Document Version: 1.0

Version	Description	Date
1.0	Release	2019-Jul-8

1. Introduction

1.1 What is NB-IoT Bee

NarrowBand-Internet of Things (NB-IoT) is a standards-based low power wide area (LPWA) technology developed to enable a wide range of new IoT devices and services. NB-IoT significantly improves the power consumption of user devices, system capacity and spectrum efficiency, especially in deep coverage. Battery life of more than 10 years can be supported for a wide range of use cases.

New physical layer signals and channels are designed to meet the demanding requirement of extended coverage – rural and deep indoors – and ultra-low device complexity. Initial cost of the NB-IoT modules is expected to be comparable to GSM/GPRS. The underlying technology is however much simpler than today's GSM/GPRS and its cost is expected to decrease rapidly as demand increases.

Arduino is an open-source electronics platform based on easy-to-use hardware and software, it is an easy tool for fast prototyping, aimed at students without a background in electronics and programming. As soon as it reached a wider community, the Arduino board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IoT applications, wearable, 3D printing, and embedded environments. All Arduino boards are completely open-source, empowering users to build them independently and eventually adapt them to their particular needs. The software, too, is open-source, and it is growing through the contributions of users worldwide.

NB-IoT Bee is the core module for NB-IoT Shield, With NB-IoT Shield and Arduino, user can study/evaluate and do POC for NB-IoT solution rapidly. The NB-IoT Bee is in a small form factor. It can be used to build final product directly as well.

The NB-IoT Bee is loaded with offshore NB-IoT module. Include:

- **NB-IoT Bee QB05, QB08, QB20**, they use Quectel BC95-B5 /B8 and B20 module. The module is designed for only use in NB-IoT network. and difference suffix reference to different NB-IoT Band. (These modules are **discontinue**. recommend to use NB-IoT Bee 95G as replacement)
- **NB-IoT Bee 95G**, it uses Quectel BC95-G module. This module is a global regions module can work on different operators.
- **NB-IoT Bee QG96**, it uses Quectel BG96 module. This module supports mutli-bands. Except NB-IoT, It also support LTE Cat M1 & EGPRS.

This document is the user manual for NB-IoT Bee 95G

1.2 Specifications

Frequency Bands:

- B1 @H-FDD: 2100MHz
- B3 @H-FDD: 1800MHz
- B8 @H-FDD: 900MHz
- B5 @H-FDD: 850MHz
- B20 @H-FDD: 800MHz
- B28 @H-FDD: 700MHz

LTE CatNB1 Connectivity:

- 250mA @Radio Transmission, 23dBm (B1/B28)
- 230mA @Radio Transmission, 23dBm (B3/B8/B5/B20)
- 80mA @Radio Transmission, 12dBm (B1/B3/B8/B5/B20/B28)
- 65mA @Radio Transmission, 0dBm (B1/B3/B8/B5/B20/B28)
- 50mA @Radio Reception

Data Transmission:

- Single Tone: DL:25.2kbps UL:15.625kbps
- Multi Tone:DL: 25.2kbps UL:54kbps
- Extended TBS/2 HARQ: DL: 125kbps UL: 150kbps

Protocol Stacks:

- IPv4
- IPv6
- UDP
- CoAP
- LwM2M
- Non-IP
- DTLS
- TCP
- MQTT

Download Method:

- UART
- DFOTA

Enhanced Features:

- DFOTA: Delta Firmware Upgrade Over-The-Air
- RAI: Release Assistance Indication
- ECID: Enhanced Cell ID
- OTDOA: Observed Time Difference of Arrival

1.3 Features

- ✓ Support Bands: B1/B3/B8/B5/B20/B28 @H-FDD
- ✓ Global Regions
- ✓ Ultra-low power consumption
- ✓ Super high sensitivity
- ✓ Embedded with abundant Internet service protocols
- ✓ Small size: 2.7 x 3.3 cm
- ✓ AT command to control
- ✓ Micro SIM Interface

1.4 Applications

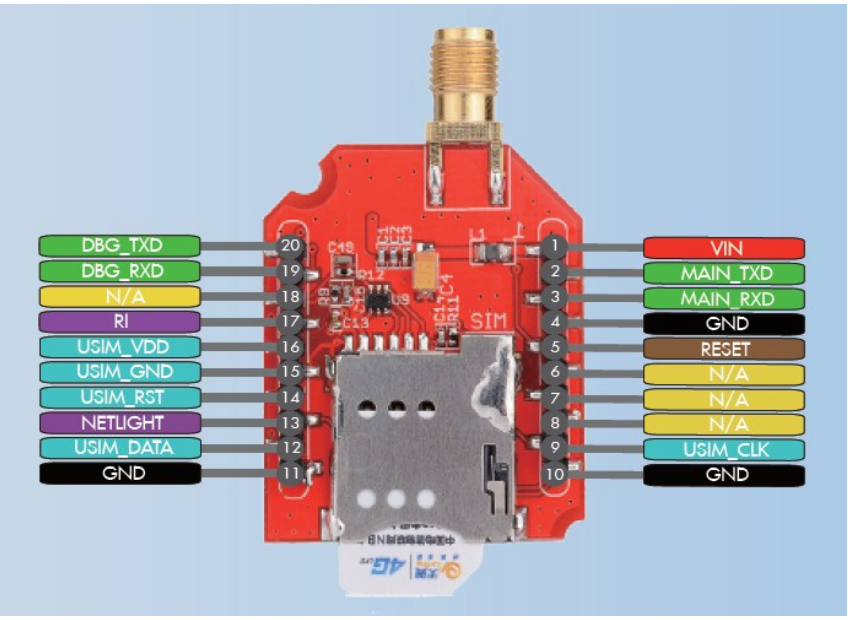
- ✓ Smart Buildings & Home Automation
- ✓ Logistics and Supply Chain Management
- ✓ Smart Metering
- ✓ Smart Agriculture
- ✓ Smart Cities
- ✓ Smart Factory

1.5 Electric

Supply Voltage Range:- 3.1V~4.2V, 3.6V Typ.

Temperature Range: - -40°C ~ +85°C

1.6 Pin Mapping



2. Examples.

2.1 Quick Start of AT Commands.

Default Baud Rate: 9600
See document: BC95-G AT Command Manual v1.4 for how to use AT Commands. In the end of this AT Command manual there is example for how to attached the module to network.

2.2 Application Note:

- MQTT Application Note
- CoAP Application Note
- Application_Design_Guide
- Low_Power_Design_Guide
- OneNET_Application_Note_V1.0
- CMDMP_Application_Note_V1.0

3. Order Info

NB-IoT Bee 95G:

4. Packing Info

Package Includes:

- ✓ NB-IoT 95G x 1
- ✓ Nb-IoT Antenna x 1

5. Reference

- ✧ Product Page / DataSheet
- ✧ AT Command Manual
- ✧ BC95-G Datasheet

6. Support

- Support is provided Monday to Friday, from 09:00 to 18:00 GMT+8. Due to different timezones we cannot offer live support. However, your questions will be answered as soon as possible in the before-mentioned schedule.
- Provide as much information as possible regarding your enquiry (product models, accurately describe your problem and steps to replicate it etc) and send a mail to

support@dragino.com