Rainbow Dynamics Inc
8314 Sherwick Ct, Jessup, MD 20794, United States

QCG18F30 User Manual

General

QCG18F30 is a highly integrated, cost-effective, high-power 16-channel full-duplex data transmission module. It features a built-in high-speed micro-controller, high-performance RF transceiver chip, and RF power amplifier. The module provides a standard serial port for communication, enabling easy and quick parameter settings and control of the transmit/receive functions. Users can achieve data transmission simply by connecting the module to the serial port. Its ultra-compact size allows for easy and fast integration into various handheld devices, enhancing the overall performance of terminal products, making this module widely applicable.

QCG18F30 is a 16-way full-duplex wireless data communication module that can achieve up to 16 transmitters transmitting simultaneously without interfering with each other. It is designed for scenarios where multiple transmitters operate concurrently in complex environments, minimizing the likelihood of re-transmissions and significantly reducing interference and the chances of being interfered with. The combination of LoRa modulation with 1W output power, along with its low-power design for receiving and sleep modes, makes it ideal for long-distance wireless IoT applications.

Parameters List

Power supply: 3.3V DC

Frequency band: 902.125-917.125MHz

Channel Number: 16

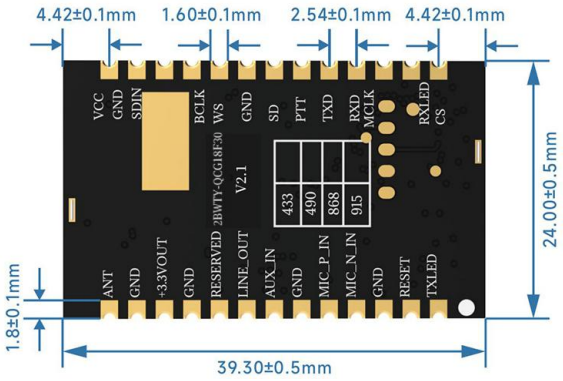
Channel Separation: 1MHz

Modulation: LoRa

Max. peak power: 27.902dBm@902.125MHz

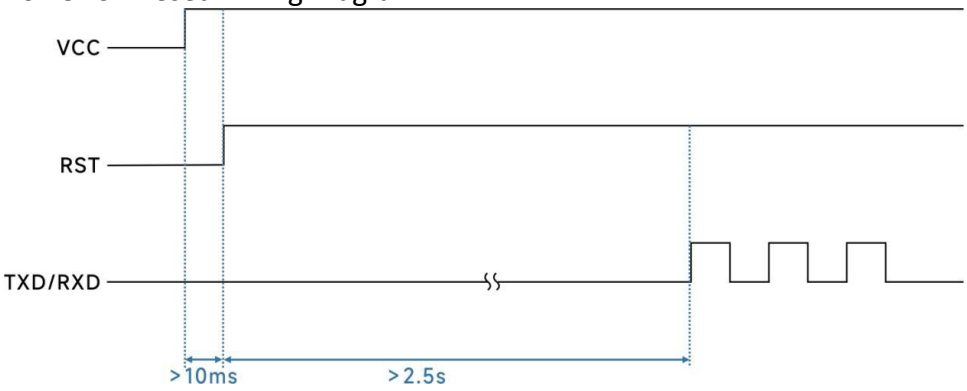
Antenna: Permanently attached folding rod antenna, 2.15dBi

Module Dimensions:

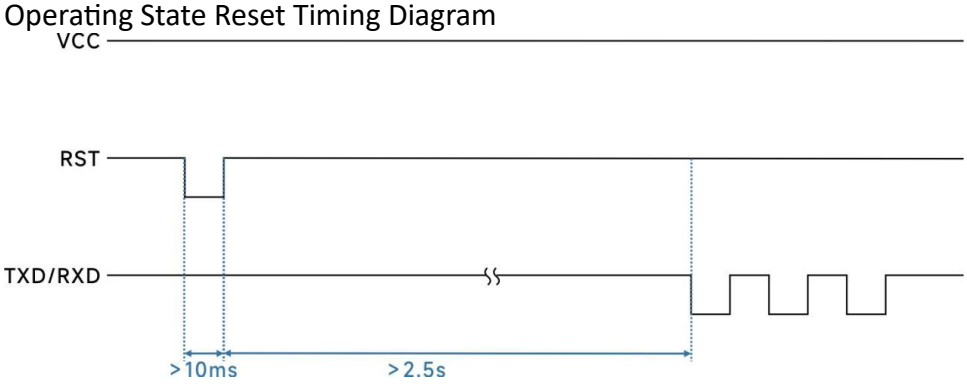


Reset Timing Diagram

Power-on Reset Timing Diagram



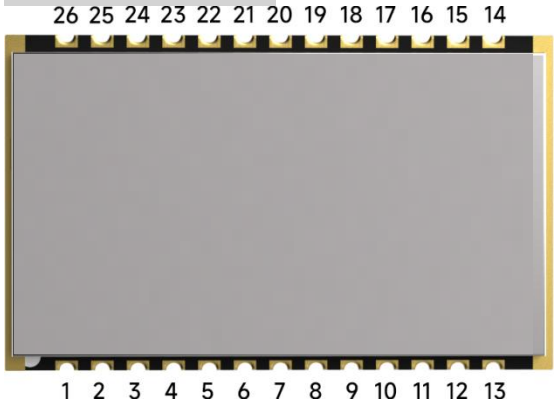
Operating State Reset Timing Diagram



Communication protocol

The module provides a user-friendly interface (standard serial port), allowing users to send commands via the serial port to control the module and read its parameters.

Pin Definition



Pin NO.	Pin name	I/O	Description
1	TXLED	O	Transmitting indicator, connected with external led, turn on by low level output when data is transmitting , (suggest 1K ohm resistor for current limitation)
2	RESET	I	Module reset pin: Pulling it low for more than 5 ms will reset the module
3,6,10,12,15,19	GND		Connect to the power supply ground
4，5，7，8	NC		
9	RESERVED		Module test pin: Leave unconnected (floating) for users
11	+3.3V OUT		3.3V output, capable of driving an external load of up to 50mA
13	ANT		RF signal output, connect to a 50-ohm antenna
14	VCC		Connect to the positive power supply
16,17,18,20,21	NC		
22	TXD	O	Module serial port transmit pin
23	RXD	I	Module serial port receive pin
24	NC		
25	RXLED	O	External receive indicator light: Lights up on low level, normal high level output (requires an external current-limiting resistor of approximately 1K ohms)
26	CS	I	Module sleep pin: High level for operation, low level for sleep.Internally pulled up, defaults to high level。

FCC regulatory compliance 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.

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

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

Labelling Instruction for Host Product Integrator

Please notice that 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 FCC ID: 2BWYT-QCG18F30” any similar wording that expresses the same meaning may be used.

Installation Notice to Host Product Manufacturer

The OEM integrator is responsible for ensuring that the end-user has no manual instruction to remove or install module.

The module is limited to installation in mobile application, a separate approval is required for all other operating configurations, including portable configurations with respect to §2.1093 and difference antenna configurations.

Antenna Change Notice to Host manufacturer

If you desire to increase antenna gain and either change antenna type or use same antenna type certified, a Class II permissive change application is required to be filed by us, or you (host manufacturer) can take responsibility through the change in FCC ID (new application) procedure followed by a Class II permissive change application.

FCC other Parts, Part 15B Compliance Requirements for Host product manufacturer

This modular transmitter is only FCC authorized for the specific rule parts listed on our grant, 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.

Host manufacturer in any case shall ensure host product which is installed and operating with the module is in compliant with Part 15B requirements.

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.

The compliance of KDB 996369 D02 Module Q&A v02 Question 11:
Not Applicable – This module does not employ a trace antenna design.

The requirement for KDB 996369 D03:

1. List of. Applicable FCC Rules

This modular transmitter complies with the FCC rules: 47 CFR Part 15.247.

2. Summarize the Specific Operational Use Conditions

EUT use folding rod antenna.

3. Limited Module Procedures

Not Applicable – The module is a single module.

4. Trace Antenna Designs

Not Applicable – This module does not employ a trace antenna design.

5. RF Exposure Considerations

The module is installed to always maintain a minimum separation distance of at least 20 cm between the antenna and any person's body.

6. Antennas

The following antennas have been approved for use with this module:
Permanently attached folding rod antenna, Maximum Gain: 2.15 dBi

7. Label and Compliance Information

If this certified module is installed inside the host device, then the outside of the host must be labeled with "Contains FCC ID: 2BWYT-QCG18F30

8. Information on Test Modes and Additional Testing Requirements

The host manufacturer can use software to make the transmission continuously.

9. Additional Testing, Part 15 Subpart B Disclaimer

The module complies with the FCC Part 15.247. If the module is installed in the host device, the host manufacturer is responsible for the compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. For example, if the host manufacturer markets their product as being Part 15 Subpart B compliant (when it also contains unintentional-radiator digital circuity), then the host manufacturer shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

DECLARATION OF COMPLIANCE

Since only the Grantee (module manufacturer) is permitted to file permissive changes with the FCC, any changes to the module's use conditions require coordination with the Grantee. If you intend to use this module differently than granted, please contact:

Company	Rainbow Dynamics Inc
Contact Person	Nan Zhang
Email	Susan.zhang@rainbow-dynamics.ai

The OEM integrator acknowledges that they have read and understood these integration instructions and agrees to:

1. Follow all integration instructions provided herein;
2. Perform the mandatory test plan per Section 2.11 for each specific host;
3. Ensure the final host product complies with all applicable FCC rules;
4. Affix the required label ("Contains FCC ID: 2BWYT-QCG18F30") on the final product;
5. Not distribute these integration instructions to end users;
6. Not integrate the module into any host device without prior Grantee approval and, if required, a Class II Permissive Change.

*****End of User Manual*****