

brief introduction

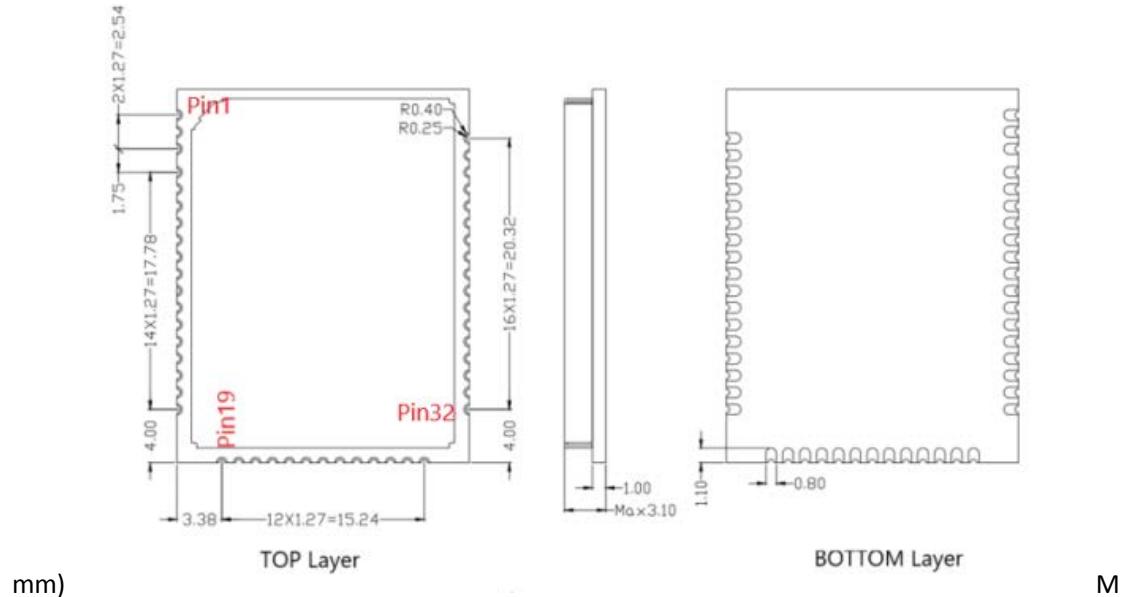
NRZT-RN-P915 is an antenna external surface mounted with Wi-SUN module equipped with core VCT300, a maximum emission power of 21.089dBm, effectively solving the problem of insufficient distance due to emission power. The series of modules meet the Wi-SUN protocol standards, Sub-GHz frequency band, applicable to the global frequency band, with interchangeable, reliable, economic characteristics, advanced wireless network (Mesh) communication technology, can be widely used in wireless intelligent public networks and related applications,

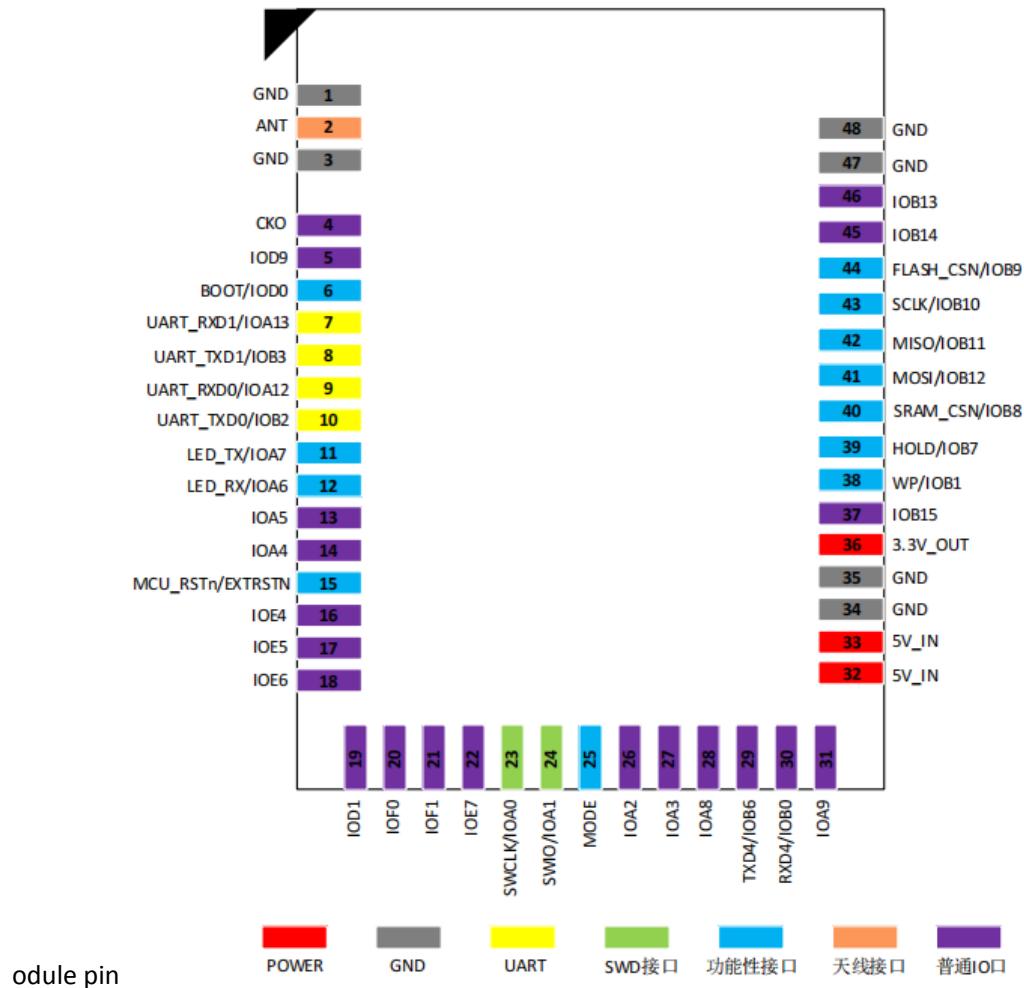


the Wi-SUN alliance.

Size

(unit:





odule pin

Specifications parameters

modulation mode

GFSK

Working frequency band (MHZ)

902-928

working temperature

-40-85 °C

working voltage

5V

transmitting power

21.089dBm, (max)

emission current

700mA

receiving sensitivity

-110dBm@PER10%/50kbps/h=1/GFSK

receive current

38mA

Communication rate

300kbps

communication interface

UART

size dimension

28*22*3.1mm

attended mode

SMD

standard

IEEE802.15.4G/E, Wi-SUN, Wireless M-Bus, 6LoWPAN

functional characteristics

The SMD packaging mode, with the maximum emission power of 30dBm and the reception sensitivity of -110dBm, can self-repair the network in a large-scale Mesh network in a crowded environment, providing a long-distance, anti-interference-resistant intelligent network for smart meters, smart street lamps and other industries.

application scenarios

Smart meters, Smart street lamps, Smart building, Smart home, Home Energy management systems, Industrial applications, Sensor Network

Advantages and characteristics

High speed: the FSK rate is up to 300Kbps;

Distance: point-to-point physical layer communication 3.2km@50kbps;

Thousand Point Mesh networking: support up to 24-level topology;

Safety: IEEE 802.1x enterprise-level security level;

Standard: comply with the standard protocols of IEEE Wi-SUN, Wireless M-Bus and 6LoWPAN

frequently asked questions

The module does not communicate in close proximity

Verify that both sending and receiving are configured consistently and that different configurations cannot communicate normally.

abnormal voltage, low voltage can cause abnormal transmission.

The battery power is low, and the low power battery voltage will be lowered when sent, resulting in abnormal sending.

Antenna welding The abnormal RF signal did not reach the antenna or the circuit welding error.

Module power consumption is abnormal

Electrostatic electricity and other reasons lead to module damage leading to abnormal power consumption.

When doing low power reception, incorrect timing configuration leads to module power consumption failed to achieve the expected effect.

The working environment is bad, and the power consumption of extreme environmental modules such as high temperature, high humidity and low temperature will fluctuate.

The module communication distance is insufficient

The antenna impedance match is not done well, resulting in very little emitted power.

There are objects such as metal or modules around the antenna in the metal resulting in serious signal attenuation.

The test environment has other interference signals leading to the close proximity of the module communication.

Insufficient power supply leads to abnormal module emission power.

The test environment is bad, and the signal attenuation is great.

The module passes through the wall and the other end of the communication, the wall and other signal attenuation, most of the signal is bypassing the wall signal attenuation.

The module too close to the ground is absorbed and reflected, causing a changing communication effect

FCC WARNING

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

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.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

15.105 Information to the user.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

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.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20

cm between the radiator and your body.

Radiation Exposure Statement:

This equipment complies with FCC 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.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination.

The firmware setting is not accessible by the end user.

The final end product must be labelled in a visible area with the following:

“Contains Transmitter Module “2A3TD-NRZT”

Requirement per KDB996369 D03

2.2 List of applicable FCC rules

List the FCC rules that are applicable to the modular transmitter. These are the rules that specifically establish the bands of operation, the power, spurious emissions, and operating fundamental frequencies. DO NOT list compliance to unintentional-radiator rules (Part 15 Subpart B) since that is not a condition of a module grant that is extended to a host manufacturer. See also Section 2.10 below concerning the need to notify host manufacturers that further testing is required.³

Explanation: This module meets the requirements of FCC part 15C (15.247). It Specifically identified AC Power Line Conducted Emission, Radiated Spurious emissions, Band edge and RF Conducted Spurious Emissions, Conducted Peak Output Power, Bandwidth, Power Spectral Density, Antenna Requirement.

Summarize the specific operational use conditions

Describe use conditions that are applicable to the modular transmitter, including for example any limits on antennas, etc. For example, if point-to-point antennas are used that require reduction in power or compensation for cable loss, then this information must be in the instructions. If the use condition limitations extend to professional users, then instructions must state that this information also extends to the host manufacturer's instruction manual. In addition, certain information may also be needed, such as peak gain per frequency band and minimum gain, specifically for master devices in 5 GHz DFS bands.

Explanation: The EUT has one Chip antenna, the antenna can be replaced by other authorized antennas, and the gain of each replacement antenna is no more than 1.0dBi

2.3 Limited module procedures

If a modular transmitter is approved as a "limited module," then the module manufacturer is responsible for approving the host environment that the limited module is used with. The manufacturer of a limited module must describe, both in the filing and in the installation instructions, the alternative means that the limited module manufacturer uses to verify that the host meets the necessary requirements to satisfy the module limiting conditions.

A limited module manufacturer has the flexibility to define its alternative method to address the conditions that limit the initial approval, such as: shielding, minimum signaling amplitude, buffered modulation/data inputs, or power supply regulation. The alternative method could include that the limited

module manufacturer reviews detailed test data or host designs prior to giving the host manufacturer approval.

This limited module procedure is also applicable for RF exposure evaluation when it is necessary to demonstrate compliance in a specific host. The module manufacturer must state how control of the product into which the modular transmitter will be installed will be maintained such that full compliance of the product is always ensured. For additional hosts other than the specific host originally granted with a limited module, a Class II permissive change is required on the module grant to register the additional host as a specific host also approved with the module.

Explanation: The module is a single module.

2.6 RF exposure considerations

It is essential for module grantees to clearly and explicitly state the RF exposure conditions that permit a host product manufacturer to use the module. Two types of instructions are required for RF exposure information: (1) to the host product manufacturer, to define the application conditions (mobile, portable – xx cm from a person's body); and (2) additional text needed for the host product manufacturer to provide to end users in their end-product manuals. If RF exposure statements and use conditions are not provided, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

Explanation: This module complies with FCC RF radiation exposure limits set forth for an uncontrolled environment, This equipment should be installed and operated with a minimum distance of Minimum 20cm between the radiator and your body." This module is designed to comply with the FCC statement, FCC ID is: 2A3TD-NRZT.

2.7 Antennas

A list of antennas included in the application for certification must be provided in the instructions. For modular transmitters approved as limited modules, all applicable professional installer instructions must be included as part of the information to the host product manufacturer. The antenna list shall also identify the antenna types (monopole, PIFA, dipole, etc. (note that for example an "omni-directional antenna" is not considered to be a specific "antenna type")).

For situations where the host product manufacturer is responsible for an external connector, for example with an RF pin and antenna trace design, the integration instructions shall inform the installer that unique antenna connector must be used on the Part 15 authorized transmitters used in the host product.

The module manufacturers shall provide a list of acceptable unique connectors.

Explanation: The EUT has one Chip antenna, the antenna can be replaced by other authorized antennas, and the gain of each replacement antenna is no more than 1.0dBi

2.8 Label and compliance information

Grantees are responsible for the continued compliance of their modules to the FCC rules. This

includes advising host product manufacturers that they need to provide a physical or e-label stating "Contains FCC ID" with their finished product. See Guidelines for Labeling and User Information for RF Devices – KDB Publication 784748.

Explanation: The host system using this module, should have label in a visible area indicated the following texts: "Contains FCC ID: 2A3TD-NRZT.

2.9 Information on test modes and additional testing requirements⁵

Additional guidance for testing host products is given in KDB Publication 996369 D04 Module Integration Guide. Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

The grantee should provide information on how to configure test modes for host product evaluation for different operational conditions for a stand-alone modular transmitter in a host, versus with multiple, simultaneously transmitting modules or other transmitters in a host.

Grantees can increase the utility of their modular transmitters by providing special means, modes, or instructions that simulates or characterizes a connection by enabling a transmitter. This can greatly simplify a host manufacturer's determination that a module as installed in a host complies with FCC requirements.

Explanation: Anhui NARI Zenith Electricity & Electronic Co.,Ltd. can increase the utility of our modular transmitters by providing instructions that simulates or characterizes a connection by enabling a transmitter.

2.10 Additional testing, Part 15 Subpart B disclaimer

The grantee should include a statement that the modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed 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. If the grantee markets their product

as being Part 15

Subpart B compliant (when it also contains unintentional-radiator digital circuitry), then the grantee shall provide a notice stating that the final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Explanation: The module without unintentional-radiator digital circuitry, so the module does not require an evaluation by FCC Part 15 Subpart B. The host should be evaluated by the FCC Subpart B.