

# **Wireless Beacon Transmitter**

**TAG\_A\_0.0**

**Manual**

Shanghai Transportation Investment Information Technology Co.,LTD

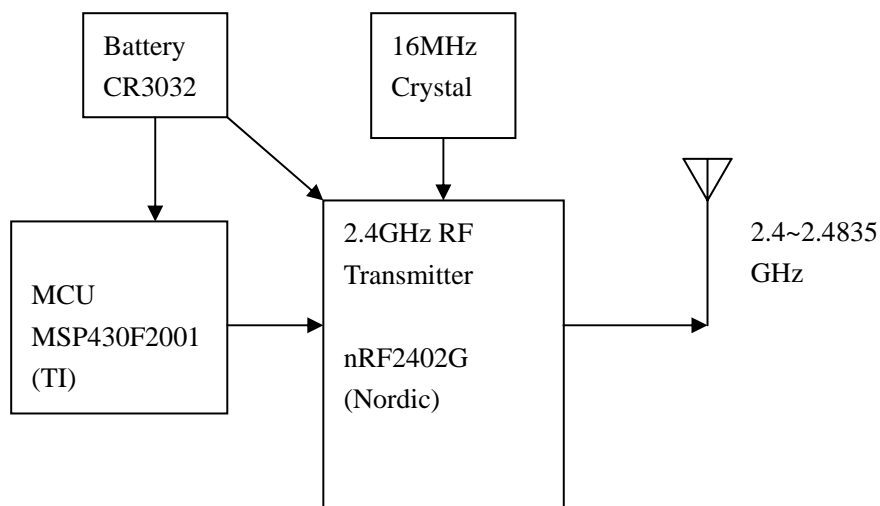
TAG\_A\_0.0 (Wireless Beacon Transmitter) is a kind of active RFID tag. The signal which TAG\_A\_0.0 transmits can be read by READER\_A\_0.0.1 from 1 meter to 100 meters away.

TAG\_A\_0.0 and READER\_A\_0.0.1 compose the Bus Identify System.

In this system, a tag (TAG\_A\_0.0) that is pasted on the windshield of the bus can transmit signal continually. The reader (READER\_A\_0.0.1) that is fixed on some building can receive the signal, analyze the ID of the tag (which is engraved on the panel of the tag) to locate the bus which the tag pastes on at that moment, report the relevant information to the server through the network. A lot of readers that are fixed on different buildings can report a lot of location information to the server. And the server can use the information to locate these buses at real time. This application helps the manager monitor the detailed track of the buses and dispatch the buses efficiently.

TAG\_A\_0.0 includes MSP430F2001 which is used as MCU, nRF2402G which is used as a transmitter, a crystal which supplies clock signal for nRF2402G, a 3V lithium battery(CR3032) which is used as power supply of TAG\_A\_0.0, a monopole antenna on the PCB and a few external passive components. MSP430F2001 sends the data which includes ID of the tag to nRF2402G and controls nRF2402G through a 3-wire interface. And the nRF2402G sends an RF signal to the antenna which acts as a radiator and propagates the signal to the air.

TAG\_A\_0.0 transmits a RF data frame every 683 milliseconds. The data frame includes the information such as the ID number of the tag and the quantity of electricity of the battery, etc.



Block diagram of TAG\_A\_0.0

## ELECTRICAL SPECIFICATIONS



- Supply Voltage: 2.3 ~ 3.6V
- Operating Temperature: -20°C ~ +60°C
- Relative Humidity: 45% ~ 90%
- Dimension (L\*W\*H) : 97mm× 67mm× 6.5mm
- Vibration: 5Hz-300Hz (maximum swing:10mm)
- Dustproof: IP5X
- Waterproof: IPX3
- Operating Frequency: 2.4 GHz ~ 2.4835 GHz(ISM band)
- Average Operating Current: 5uA
- Modulation Mode: GFSK
- Data Rate: 1Mbps
- Maximum Output Power : 0dBm
- Lifetime: 5 years

**Warning:** 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.

**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.