

Functional Description of Victek Tag, Model VCT-1000

1. Power Supply

The power supply consists of a single 3.6V AA sized lithium battery.

2. 433 MHz Transceiver

Transceiver consists of highly integrated single chip and 26Mhz oscillator for operating single chip. Receiver part receives 433.92 MHz FSK signals from reader, and convert them into digital signals to be controlled by MCU(Micro Controller Unit). Transmitter part modulates data from MCU to 433.92 MHz FSK signals, and transmits them to reader through antenna.

3. Micro-controller unit(MCU)

A Texas Instrument MSP430 series with a clock frequency 8 MHz. It controls transceiver, memory, LF receiver and sensor.

4. LF Receiver

It receives 19 kHz ~ 130 kHz signals and transmits LF information to MCU

5. Memory

1Mbit serial flash memory for user data

6. Sensor

It senses the impact hitting on tag and transmits information to MCU

7. RTC

It gives time information to MCU, so it is used for controlling tag periodically and recording tag's history.

Concepts of the 433MHz Active RFID operation

- 1) Tags will receive a wake-up signal from the reader for 2.5~3.0 seconds.
- 2) If a tag is activated by a wake-up signal, it'll stay Rx state before received "Collection command" from the reader. The maximum duration time of Rx state is 30 seconds.
- 3) After received a "Collection command" signal from the reader, the tag transmits a "Collection response" signal immediately. The transmitting time of the tag is less than 6msec.
- 4) Tag will return to "sleep state" by "Sleep command" of the reader.

