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Theory of Operation of RFT2000W Wireless Water Detector

Qtronic Manufacture Inc. has over 8 years in design and manufacture wire water detection and shutoff devices for residential and commercial application. Once the water detector senses the water presence, it will send a signal to a main control unit through a 4 wires cable. The main control unit then sounds an alarm and shuts off the main water valve.

The new RFT2000W wireless water detector is based on the same principle but use a RF link to replace the cable.

RFT2000W wireless water detector contains three main functional blocks:

- 1) Water detection circuit:
- 2) Logic unit (micro-controller):
- 3) Transmitter module:

The transmitter module contains single chip transmitter IC (MICRF102), some surrounding components and a PCB trace loop antenna. This on off keyed UHF transmitter module works at frequency 433.92Mhz. A SAW resonator is used for generating the frequency.

This transmitter module is in standby while normal operation. After the water detection circuit senses water, the micro-controller will wake up the transmitter and send a preprogrammed 64 bits data string to the transmitter module. After the data is sent, the micro-controller puts the transmitter in standby again. The transmission ceases in 3 seconds.

The data string contains a preamble, a header, and 64 bits ID numbers.

The receiver receives the signal and performs the task accordingly.