WS4969 Theory of operation

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The WS4969 is a low power hand held RF remote control transmitter for controlling a home security system by transmission of ASK / OOK control signals. The device operates at a single fixed frequency of 433.92 MHz, and is powered by a pair of CR2032 batteries which are connected in series for a nominal operating voltage of 6 volts DC.

For the following description, please refer to the WS4969 schematic and block diagram.

Transmission is activated by pressing one of the four buttons which will close SW1, SW2, SW3 or SW4. These switches are read by the processor, U1, which will initiate transmission. If the delay mode has been disabled, transmission will begin almost immediately when SW1, SW2 or SW3 is pressed. If the delay feature has not been disabled, SW1, SW2 or SW3 must be held for approximately 1 second before transmission will begin. The "panic button", SW4 must always be held down for approximately 3 seconds before transmission will begin. The center button, SW5, operates the ultra-bright LED flashlight feature. No RF transmission is sent when this button is pressed.

When switches are closed and read by U1, U1 will enable the Red LED, Ultra Bright LED, or the RF oscillator as required. To transmit RF at 433.92 MHz, the processor will switch the data output pin high. This will bias the RF SAW oscillator on and produce RF transmission at 433.92 MHz until the data output pin goes low, which will cause oscillation to stop. By switching this data output high and low, ASK / OOK data is transmitted at 433.92 MHz. RF is radiated from a strip antenna connected to the collector of Q1.

All tuning and testing of this device are performed at the factory. There are no adjustments accessible to the user.