

CC2430 Based Radio Design for INNCOM Products: FCC Operational Description

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Summary

This document contains the operational description for the TI CC2430 based radio designs implemented by INNCOM International Inc. This guide specifically references the design for the 02-9994 radio module.

Operational Description

The INNCOM CC2430 based radio is provided with a transceiver to send and receive data. The received RF signal is amplified by the low noise amplifier and down converted in quadrature (I and Q) to the intermediate frequency (IF). At IF (2Mhz), the complex I/Q signal is filtered and amplified, and then digitized by the RF receiver ADCs. Automatic gain control, final channel filtering, de-spreading, symbol correlation and byte synchronization are performed digitally. The transmitter is based on direct up-conversion. The data is buffered in a 128 byte transmit FIFO. The preamble and start of frame delimiter are generated in hardware. Each symbol (4 bits) is spread using the IEEE 802.15.4 spreading sequence to 32 chips and output to the digital to analog converters (DAC). An analog low pass filter passes the signal to the quadrature up-conversion mixers. The RF signal is amplified in the power amplifier and fed to the antenna.

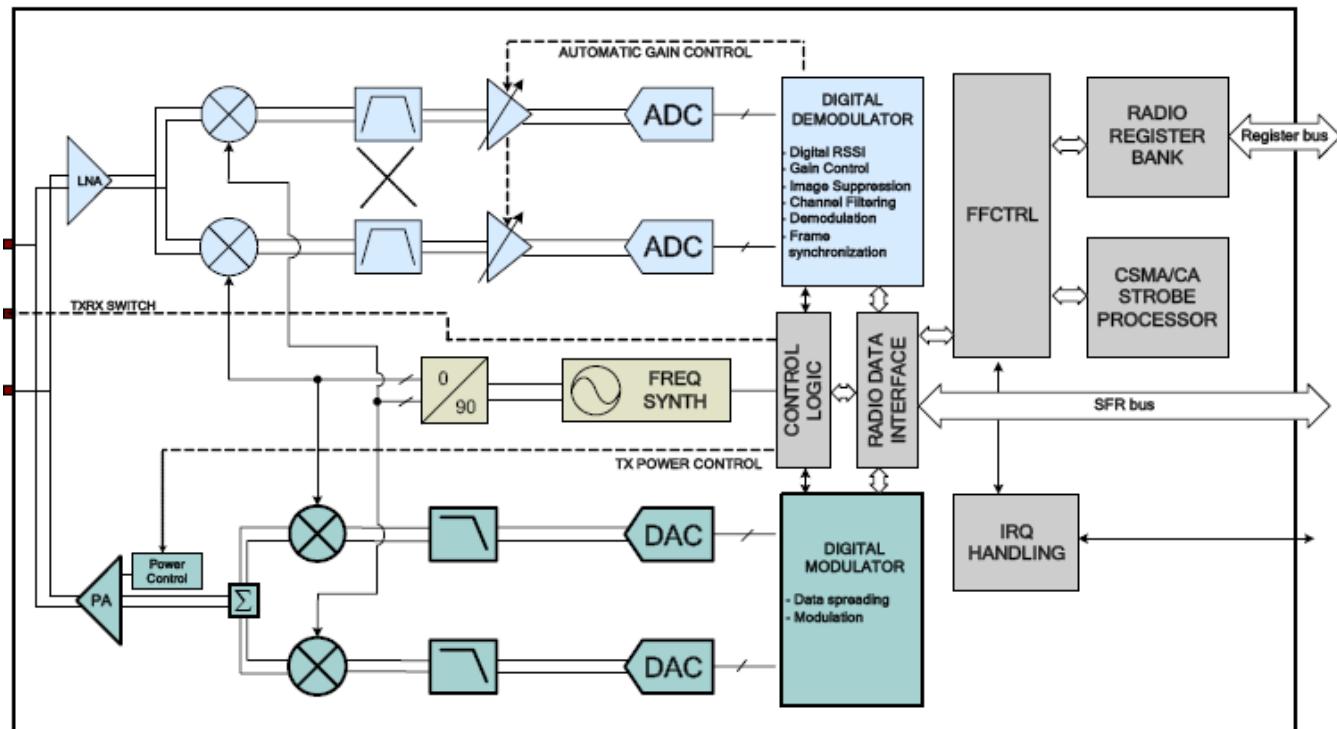


Figure 1 CC2430 based radio Module Block Diagram

The radio module interacts with the motherboard via a UART that is connected to the host micro in the host product (such as an INNCOM thermostat, or INNCOM S217 light dimmer). For purely radio transmit and receive, there are no other peripheral devices or components required in the

system. RF range 2405Mhz – 2460Mhz. This radio is intended to operate using the 802.15.4 IEEE standard for wireless communications.

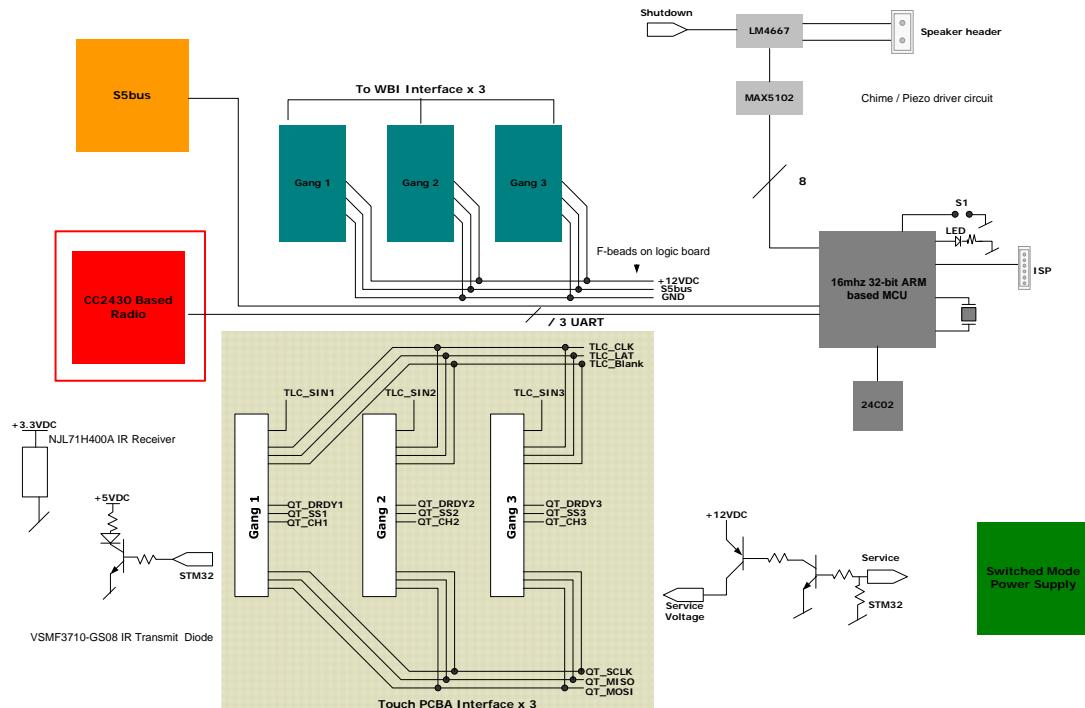


Figure 2. Example System block diagram for INNCOM products containing CC2430 Based Radios

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