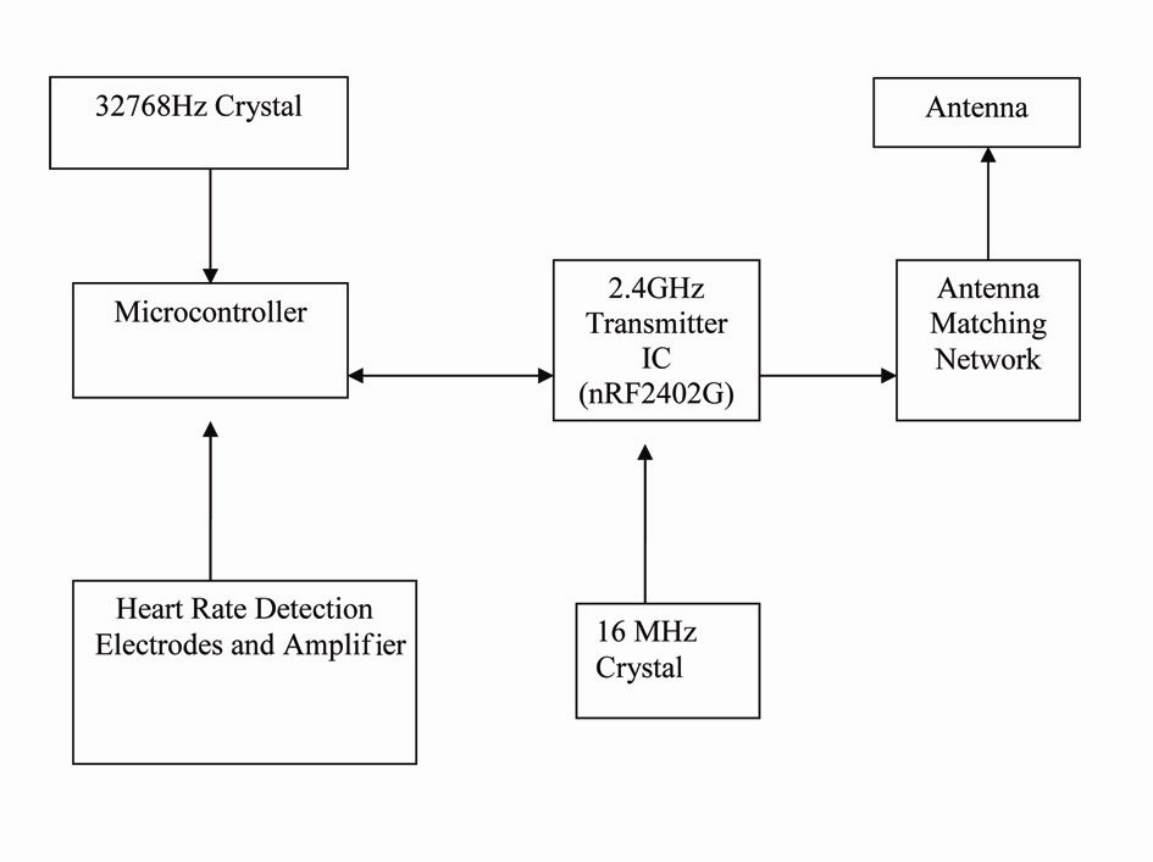
SZ912 Theory of Operation



The SZ912 chest belt is a one way wireless chest belt that operates in conjunction with SE833 or other compatible watches. It is worn on the chest and detects the user's heart rate. The microcontroller in the chest belt calculates the heart rate of the user and activate the nRF2402G 2.4GHz transmitter IC to send encoded 2.457 GHz RF signal containing the heart rate to the watch and the watch display the heart rate reading on its LCD and may store the received heart rate information in its internal memory. The RF output of the nRF2402G 2.4GHz transmitter IC is connected to the antenna via an Antenna matching network. This network is used to match the impedance of the antenna to the nRF2402G 2.4GHz transmitter IC and suppress unwanted spurious transmission.

The SZ912 chest belt contains a pair of heart rate detection electrodes and an amplifier to detect and convert the ECG signal from the chest of the user into digital signal for the microcontroller to read. The microcontroller calculates the heart rate and transmits the data to the watch via a radio link that operates at 2.457 GHz.

The data signal is transferred through matching network (L2, C28, C33, C29, L3, C36, L4, C37 and C38) fed to the antenna.

BLOCK DIAGRAM

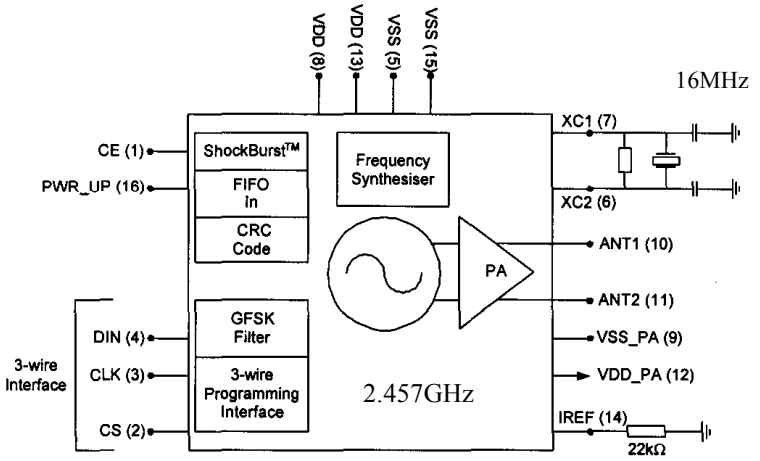


Figure 1 nRF2402/nRF2402G with external components.

nRF2402/nRF2402G is a single-chip radio transmitter for the world 2.4 – 2.5 GHz ISM band. The transmitter consists of a fully integrated frequency synthesizer, a power amplifier, a crystal oscillator and a modulator. Output power and frequency channel is easily programmable by use of 3 wire interface.