

Health Sensor 100 Theory of Operation

Don James November 3, 2000

This product is powered by two AAA batteries and is designed to detect an actual "*fall down*" event that might be encountered by older persons that might be inclined to fall. The usage environment could include established health care facilities and institutions as well as in-home use. The included transmitter will communicate with a nearby receiver to notify a caregiver that a "*fall*" event has occurred.

The main oscillator is a crystal controlled 5th overtone operating at 106.5MHz. The 3rd harmonic is selected in a matching network and is buffered by a one transistor stage buffer amplifier prevent antenna loading effects that otherwise might effect the RF frequency or amplitude.

The RF transmission occurs in response to a burst of pulses from a microprocessor. Each burst consists of one wide pulse followed by an ID code (see the oscilloscope printouts for detailed timing). Each pulse packet is used to AM (on/off) modulate the output amplifier stage operating at 319.5MHz. A tuned circuit in the output stage maximizes the 319.5MHz RF output frequency and attenuates the harmonics. A pi network in series with the antenna provides additional matching and increased attenuation at the higher harmonics. The antenna is a short length of wire on top of the PC board mounted components.

The transmission of data packets is automatically terminated in less than 5 seconds.