

To: Whom it may concern

From: Jonathan Bruss

Date: January 29, 2013

Subject: **Theory of Operation of Acute Human Monitor (AHM) Model Number 19061**

Theory of Operation:

Telemetry B uses low-frequency, near-field magnetic telemetry using a wire wound coil placed near the implanted device for ranges up to 5 cm.

The Telemetry B transmitter consists of tri-state buffers driving a tuned LC circuit. The antenna is tuned via separate capacitors for 150 kHz and 200 kHz. These capacitors are switched at the appropriate time based on the frequency of transmission.

The Telemetry B receiver amplifies and filters the received differential 175 kHz PSK signal from the antenna. The receiver consists of a low noise front end differential amplifier followed by three gain stages. Following these gain stages, a comparator is used to bit-slice the analogue signal in order to send a digital signal to the DSP. Filtering and demodulation is provided by the DSP. The final receiver gain values will be determined by the minimum H-field detection requirements.

The antenna is wound in a dual-opposing coil fashion, which rejects far-field magnetic noise due to cancellation of the signal. Near field signals produce a usable signal from the antenna due to the fact that they don't completely couple to all windings on both coils, meaning there is some but not total cancellation of the signal.

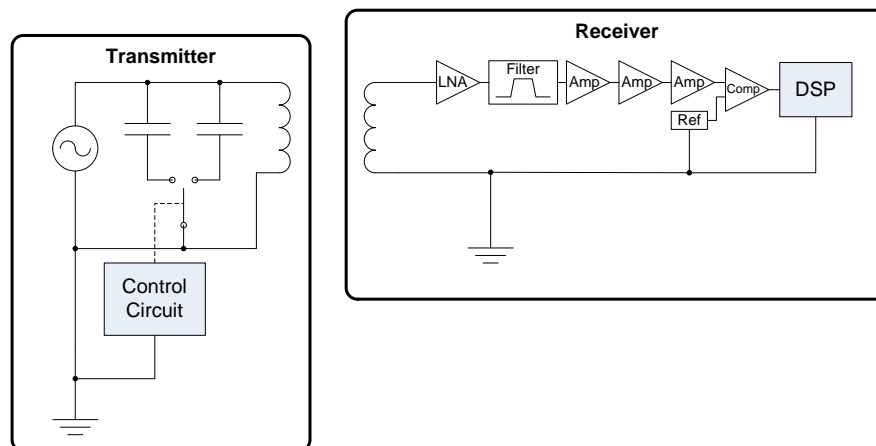


Figure 1: Block Diagram

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