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The PMT or personal mobile transmitter, also known as the heavy duty tag (HDT) is a battery powered device which operates using two radios to generate location change events and button press and tilt events. The PMT beacons out at 2.4GHz using a CC2500 radio circuit. Since 2.4GHz signals are more readily stopped by walls and obstacles, this 2.4GHz beacon signal is used to locate the PMT under a network of fixed locators in a facility that are listening at the 2.4GHz beacon channels.

The PMT also sends out occasional 900 MHz messages using a MultiTech xDot module for button press or tilt events.

The PMT circuit has LEDs and button circuitry as well as some protection circuitry around the CR123 battery. The main microprocessor in the PMT only generates radio signals by sending serial messages to the CC2500 and the MultiTech xDot module. Because of this all of the theory of the operation of the PMT from the perspective of generating radio signals can be read in the

Per the data sheet, attached, the rated maximum output power for the 2.4GHz transceiver used on the PMT/HDT, LDN, and cricket is CC2500 is 1.25 mW or +1 dBm. Note the LDN is receive-only on 2.4GHz. The PMT sends messages as often as once every half second at 2.4 GHz and initially sets up the CC2500 chip to hop over a channel space of 16 channels. All further details are in the CC2500 data sheet pages included below.

The PMT/HDT uses an Antenova A5839 chip antenna attached to the CC2500 (1.25mW max output). The Antenova data sheet lists a peak antenna gain of 2.1 dBi and an average antenna gain of -1.2 dBi.

The PMT/HDT uses a MultiTech xDot module as a 900MHz transceiver. The rated maximum output power of the xDot per the data sheet (attached) is 26 dBm or 398 mW. The antenna connected to the xDot is a Johansson 0915AT43A0026 with a peak gain of -1 dBi and an average gain of -4dBi. The radio signals in the 900 MHz ISM band are all sent in accordance with the LoRa protocol and all details are implemented in the mDot radio module, the details of which are spelled out in the mDot data sheet below.