

# **Theory of Operation - Radio System Qualifier X-Ray Hand Held Device (HHD)**

RF energy is produced at U4 (MC33493) a self-contained ASK Transmitter IC.

Output frequency is controlled by a crystal at Y1 (13.56MHz), which serves as the reference for an internal PLL circuit to the MC33493, and programming of internal PLL registers. Transmitter output is prohibited if the PLL is out of lock. The internal PLL registers are programmed by the microcontroller at U5.

Maximum RF output level is determined by the resistor value at R8 (12K).

The microcontroller at U5 (MC68HC908QY2) controls the transmitter's frequency, mode of operation (On Off Keying - OOK), and produces the data stream sent by the transmitter.

The antenna is contained within the unit's outer, plastic housing and consists of a copper trace on the printed circuit board. The antenna is approximately 1-7/8" in length.

The MC33493 data sheet is included in this documentation package.