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TITLE: MXMT OPERATIONAL/ TECHNICAL DESCRIPTION

INTRODUCTION

Qual-Tron, Inc. of Tulsa Oklahoma manufactures a full range of unattended ground sensors and monitoring systems used to detect intrusion activity. The mechanical and electrical sensors include Breakwire, Magnetic, Seismic, IR Break Beam, Passive IR Sensors and Hydrophones. These sensors are used in combination with the MIDS single channel system, MIDS-II (modified) single channel system and EMIDS Multi-channel system. These systems utilize transmitters, relays and receivers to provide digitally encoded messages of alarm activity. Qual-Tron also manufactures base station equipment, power supplies and auxiliary equipment to provide a complete functional system.

PURPOSE

The purpose of this document is to provide a brief description of the circuit functions of the MXMT MIDS Single Channel Transmitter along with a statement describing how the MXMT operates. A description of the ground system and antenna is also discussed.

MXMT OPERATIONS

The MXMT is a MIDS single channel, fixed frequency transmitter. It is capable of transmitting 32 separate ID codes. During normal operation, the transmitter is triggered by an external sensor. The transmitter has built-in features to allow alignment of the PIR – Passive Infrared Sensor and MBB – IR Break Beam Sensor. Once batteries are installed, built-in switches determine alignment and operational mode. When triggered by a sensor, the MXMT transmits a 20-bit digitally encoded packet. The packet includes a two digit ID code, along with a 4-bit message type. A fault message is automatically transmitted for any sensor disconnect. The MXMT is compatible with all Qual-Tron sensors.

CIRCUIT FUNCTIONS

BLOCK 1: The transmitter is triggered by a momentary positive pulse, typically 5 Volts from a sensor. This trigger sets a monostable counter which enables the transmitter and the encoder circuitry for approximately 50 milliseconds (19 Hz). The encoder uses a 19.2 KHz oscillator to

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generate a 1200 baud Manchester code that includes 8 bits of preamble, a start bit, a message type, a selectable ID code and an odd parity bit. This encoded message is used to modulate an FSK transmitter.

BLOCK 2: The modulation input into the FSK modulator is used for deviation of the crystal Y1 +/- 333 Hz. The crystal range of Y1 for the low band is set per customer order in the range 15.333 MHz to 17.00 MHz. This modulated signal is then multiplied using two tripler circuits. This dual tripling multiplies the frequency by 9 to provide a 138 MHz – 154 MHz output with a deviation of +/- 3 KHz. The signal is then fed into the Power Amp, which is set for 1 watt output. The antenna is a simple wire whip stub antenna screwed into the enclosure.

MODULATION SYSTEM DESCRIPTION

The modulation of this system employs Frequency Shift Keying at 1200 Baud. The transmission of data is typically event driven in short-bursts of 25 ms or less. The modulation uses a 20-bit Manchester code that includes 8-bits of preamble, a start bit, 4-bit message type, 6-bits of ID and a parity bit.

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