

Product and Operational Description

TR-7400

Long Range Systems, LLC

1. General Description

The Long Range Systems, LLC (LRS), TR-7400 is a POCSAG transceiver. It will only receive LRS encoded POCSAG transmissions decode and re-broadcast the same transmission. It is a mobile station transmitter requiring 12Vdc input power. It does not have a user interface. It is designed to be placed on the outer edges of the LRS radio range where signals have been attenuated by interior walls or floors, receive and then retransmit the same signal in order to recover the range of the originating transmitter. It uses 2 separate antennas for operation. The transmitting antenna is a 3" off-the-shelf 400MHz rubber duck model antenna connected externally to the unit via a BNC connector. The receiver antenna is a PCB trace antenna etched on a modular receiver board.

2. Electronic Description

The two major components of the TR-7400 are a transmitter section and a receiver section. The main transmitter board consists of a DC-DC power converter, micro-controller, frequency synthesizer, and power amplifier. Input power is supplied by a 120VAC to 12Vdc 4 amp power supply. A DC-DC converter steps down the voltage from 12Vdc to 3.3Vdc which is used by all circuit components including the output power amplifier. The receiver module is a plugin daughter board. It consists of a PCB antenna, filter, down converter, demodulator, and a decoder. When an LRS message is received, it is decoded and sent to the micro-controller via a SPI bus, where it is CRC checked and validated according to LRS messaging protocol, then manchester encoded, modulated, upconverted to the transmit frequency, and amplified out an external antenna at no more than 120mW.

3. Wireless Description

Receives and re-transmits an LRS over-the-air message at a licensed frequency of 467.75 MHz, one channel, FSK modulation. Bit rate is 1200 Baud. Only LRS formatted data is received and retransmitted. There are no user input or configuration parameters.