

TYPE OF EXHIBIT: OPERATIONAL DESCRIPTION

FCC PART: 2.1033(C)(4), (5), (7), (8), (10)

MANUFACTURER: RITRON, Inc.

MODEL: PT-150M

TYPE OF UNIT: VHF MURS Transceiver

FCC ID: AIERIT29-150M

DATE: July 3, 2012

DESCRIPTION:

The PT-150M is a handheld radio designed to operate in the VHF MURS Band. It is constructed with a microprocessor controlled, temperature controlled Phase-Locked-Loop(PLL) frequency synthesizer. The radio features a double conversion receiver and a direct FM transmitter modulator. A special integrated circuit provides support to sub-audible signaling(CTCSS & DCS) and most of the receiving parts are switched off periodically in the power save mode to reduce battery current drain during standby.

TYPES OF EMISSIONS:

11K0F3E, 16K0F3E

FREQUENCY RANGE:

151.820MHz, 151.880MHz, 151.940MHz, 154.570MHz, and 154.600MHz.

OPERATING POWER:

2.0 watts

TRANSMITTER:

1. Mic Amp Circuit:

Voice signal from the microphone is applied to the microphone amplifier U303. U303 contains a low-pass filter that has a 6dB/octave response between 300Hz and 3kHz. The pre-emphasized audio signal is applied to VR303 to adjust maximum frequency deviation.

2. VCO Circuit:

The transmitter frequency is directly generated by the Colpitts Oscillation Circuit Q401.

3. Power Amp:

Signals from Q202, Q206 are supplied through the antenna switch Q203, Q204 to a low-pass filter, and then applied to the Antenna Jack.

RECEIVER:

1. Low-Pass Filter/Antenna Switch:

Signals from the antenna connector are fed to the antenna switching circuit through the low-pass filter consisting of L212-214. In receive mode, D204, D202 are turned off, isolating the antenna from the transmitter circuit and matching circuit, so that the incoming signals are fed to the RF amplifier through L211.

2. RF Amp Circuit:

The signals from the switching circuit are fed to the RF amplifier Q101 through a band-pass filter made up of a molded coil, VVC diode, and capacitor.

3. Mixer Circuit:

The amplified signals are fed to Gate1 of the 1st mixer Q102. The 1st local-oscillator signal is supplied to Gate2 of Q102 from the PLL Circuit to convert the RF signals into 21.4MHz, the 1st IF frequency.

4. IF Circuit:

The signals from Q102 are fed to the matched crystal filter pair, FL101, then IF signals are amplified in Q103. These signals are fed to U101 which is composed of the 2nd local-oscillator, second mixer, limiter amplifier, quadrature detector, and active filter circuit. The 2nd local-oscillator of 20.945MHz with X101 is fed to the 2nd mixer with the 1st IF signals to convert into 455kHz 2nd IF signals.

5. Audio and Squelch Circuit:

The detected audio signals are put through a dB/octave de-emphasis circuit made up of U602. The signal is then applied to the audio power amplifier U608 to obtain enough power to drive the speaker. Part of the recovered noise signal is fed to the integrated operational amplifier inside U101 which makes up a low-pass filter. The sensitivity of the squelch is adjusted by VR101.

VCO CIRCUIT:

The transmit/receive frequency is directly generated by the Colpitts Oscillator circuit Q405.