

Mentor Radio Company
Willoughby, OH 44094

Technical Description - Model M15

Model Designation: M15 (FCC ID BULM15)
Service and FCC Rules: Aviation, Part 87

DESCRIPTION:

General:

The Model M15 (FCC ID BULM15) is a radio transceiver containing both receiver and transmitter in the same enclosure. Crystals for up to five channels in the range 118.000 to 136.975 Mhz (25 KHz spacing) may be installed. Components and circuitry, except for panel controls, are mounted on a single printed circuit board. The M15 operates directly from a nominal 13.75 volts, intended to be supplied from the battery of an aircraft or vehicle.

Refer to drawing 1101417 (block diagram) and drawing 4101424 (schematic). The receiver section is a conventional single conversion superheterodyne, with an r.f. amplifier having four tuned circuits preceding the mixer. The local oscillator injection frequency is 10.7 Mhz above the channel frequency; the crystal oscillator itself operates at one-third the injection frequency, there being a frequency tripler stage between the oscillator and mixer. The local oscillator is turned off when transmitting.

A six-pole 15 KHz bandpass crystal filter following the mixer determines receiver selectivity. The 10.7 Mhz i.f. amplifier stages are followed by a conventional a.m. diode detector and a noise limiter. The integrated circuit audio power amplifier can deliver 3.5 watts unclipped audio power to a 4 ohm speaker.

The crystal-controlled transmitter oscillator operates at one-third the channel frequency, and is followed by a frequency tripler containing varactor-tracked high-Q tuned circuits that attenuate undesired oscillator harmonics. The resulting carrier signal is then amplified by a tuned varactor-tracked class A buffer amplifier and a broadband class A amplifier stage. The class C driver and final r.f. power amplifier stages are broadband and amplitude modulated (6K00AE3), and provide 5 watts carrier output with peak modulated power of approximately 18 watts, over the frequency range 118.000 to 136.975 Mhz.

Specific transmitter details:

1. Type of emission: 6K00AE3
2. Frequency range: 118.000 to 136.975 Mhz
3. Power rating: unmodulated r.f. carrier for 13.75 v supply at power connector, 5 watts
4. Voltage to final r.f. amplifier for rated power: 6.3 v.d.c.
5. Collector current, final r.f. amp., for rated power: 1.6 a.