

MENTOR RADIO COMPANY
Willoughby, Ohio

Technical Description - Model MB
(Transmitter Section)

Model Designation: MB

Service and applicable FCC rules: Aviation, Part 87

Description:

1. Type of emission: 6A3
2. Frequency Range:
118.00 to 135.975 MHz; up to six discrete channels can be selected by a channel switch on the front panel. There is no restriction on the frequency spread of the channels, as the transmitter is designed for constant power output ± 1 db over the entire range.
3. Power rating: unmodulated radio frequency carrier power 10.0 watts.
4. Voltage to final r.f. amplifier for rated power: 12.5 volts.
5. Collector current, final r.f. amplifier at rated power: 1.9A (varies slightly across band).
6. Transistor complement and functions:
First: crystal oscillator at 1/3 final frequency
Second: frequency tripler
Third: class A tuned amplifier
Fourth: class a tuned amplifier
Fifth: class C tuned amplifier with collector modulation
Sixth: class C tuned power amplifier with collector modulation
Seventh: class C tuned power amplifier with collector modulation
7. Circuit diagrams:
10 watt power amplifier (last four stages): 4101207; oscillator-tripler-amplifier (first three stages): 4101163
8. Instruction book: not yet available
9. Tune-up procedure (select frequency nearest center of range):
9.1 First method:
 - (a) connect the Model MB antenna thru a 50 ohm coax and a 20 db attenuator (of at least 10 w. power rating) to a detector circuit. Connect the detector output to a dc oscilloscope, so that the superimposed detected carrier (dc) and modulation (ac) can be observed.
 - (b) energize the transmitter and apply 1 KHz modulation sufficient to cause maximum modulation. At the microphone input, 100 mv rms audio signal will easily do this.
 - (c) make certain that C124, C129 and C131 (schematic 4101163) have been adjusted to maximize rf drive at midband to the power amplifier--at least 1.2v rms.
 - (d) adjust C206, C210 and C217 in the power amplifier section to produce best "up" modulation and demodulated audio sinusoidal waveshape, as observed on oscilloscope.
 - (e) check that current to the final transistor, with no modulation, is less than 2 amperes. This current can easily be determined by measuring the voltage across RF choke L217, which has a dc resistance of .088 ohms.