

FCC ID: BULPA25

Mentor Radio Company
Willoughby, OH 44094

Introduction

The purpose of this report is to provide information and test and measurement data to show that the Mentor Radio Company Model PA25 Linear RF Power Amplifier meets the requirements for type acceptance under FCC Rules, Parts 2 and 87. This amplifier is intended to boost the amplitude modulated transmitter output of an authorized Part 87 transmitter to 25 watts carrier. It will be manufactured for Mentor Radio Co. by T&C Power Conversion, 146 Halstead St., Rochester, NY 14610 in production quantities. The FCC ID will be BULPA25.

Technical Description, Part 2.983(d) (some of this data is also on form 731)

frequency range: 118-137 Mhz
nominal input signal amplitude: 5 watts (+37 dBm) "carrier"
input signal modulation: a.m. (6K00AE3)
input impedance: 50 ohms
input vswr: 1.2 maximum
nominal output signal amplitude: 25 watts (+44 dBm) "carrier"
up to 75 watts (+49 dBm) peak
load impedance: 50 ohms
nominal amplifier gain: 7 dB

There is no provision in the PA25 for varying the output power or the amplifier gain; a normal unit-to-unit gain variation is considered to be ± 0.5 dB. The output power is dependent on the power of the input signal. Part 87 permits transmitter carrier power levels up to 50 watts for airport control towers and up to 200 watts for enroute communication stations.

Refer to drawings 1101657 (block diagram) and 2101658 (schematic), both attached (exhibits D and E). Note first that two power supply voltages are used—13.5 vdc for the bias circuits and 46 vdc for the collector voltage of the MOSFET power amplifier. Note also that the PA25 contains input and output relays, which provide for insertion between a transceiver and an antenna, such that when the transceiver is in the transmit mode the amplified carrier-plus-modulation signal is delivered to the antenna, and when the transceiver is in the receive mode a signal received by the antenna can pass from the antenna directly back to the transceiver. These relays are controlled by grounding a push-to-talk (PTT) bus in the transmit mode.

The amplifier blocks and their functions are as follows:

1. 50 ohm -7.5 dB attenuator: provides an input vswr to the PA25 no greater than 1.2 across the entire frequency range of 118.000 to 136.9875 Mhz.
2. input matching network: matches the MOSFET transistor input impedance to approximately 50 ohms