

# Theory of Operation

## Receiver transmitter, TR-865A

Emission type: 8K00A3E

FCC Identifier: GB8TR865A

The TR 865 Com Transceiver is capable of transmission and reception in the 118.00mhz to 136.975mhz range and can accommodate either 25khz or 8.33khz channel spacing. The nominal transmitter RF output is 20 watts into a 50 ohm load. The channel spacing gives the transceiver 759 discrete channels in the 25khz spacing and 2277 channels in the 8.33khz spacing with a frequency stability of  $\pm 0.00005\%$ . The receiver bandwidth is also selected for either wide or narrow depending on whether there is a 25khz channel or an 8.33khz channel.

The Com Transceiver is capable of two way voice communications, utilizing amplitude modulation on all channels and is tuned by either a Radio Communications Bus or by a Flight management (FMS) system. The transceiver is used in pairs to provide redundancy in aircraft and is intended to be used in all phases of flight for communication with Air Traffic Control.

The VHF Com Transmitter receives its frequency generation inputs from the receiver VHF synthesizer.

The modulated RF signal is sent to 2 stages of transmitter preamplifiers and a stage of final amplification where it is then routed to the VHF antenna. The microphone output is monitored and subject to voice compression circuitry to maintain a stable modulation level.

The transmitter pre-driver, driver and final stages all have current sense circuitry to monitor their respective current draw. These signals are used to control the biasing of each stage to keep them in class A operation. The forward and reverse power detectors are used to monitor the integrity of the transmitted signal and to also reduce the power, ultimately to cut-off if a "Stuck mike" condition is observed.