TRANSMITTER AUDIO SYSTEM

It will be noted that Class A single-ended beam tetrodes are used in preference to a Class B modulator. The reason for this is that when "square wave" audio is involved, as when heavy speech clipping is employed at high modulation percentages, the former type modulator compares very favorably with the latter, with the advantages of more constant plate current drain and elimination of a driver stage and its transformer. It also facilitates designing the modulator for integral speech clipping, making the incorporation of a separate speech clipper unnecessary (as well as adjustment thereof).

The speech system of the COMMUNICATOR is designed so that to obtain maximum practical speech clipping one need only talk closer to or louder into the microphone, up to the point where the maximum tolerable distortion is obtained.

With voice waveforms and sufficient audio input to produce heavy speech clipping, the percentage modulation is held to approximately 90 per cent, and under no condition is it possible to exceed this modulation percentage. This means that "splatter" from negative peak clipping is avoided, and no cricital adjustments are involved.

The audio characteristics of the transmitter, from microphone input through the modulator, having been engineered to provide maximum utilization of the carrier power from the standpoint of intelligibility under favorably receiving conditions.

CIRCUIT DESCRIPTION

BLOCK DIAGRAM

The arrangement of stages and the major transmit-receive switching is shown functionally in the accompanying block diagram. The switches are shown in TRANSMIT (T) position. The operating frequency in the 6 meter band (between 50.00 and 54.00 mc.) is designated "F" on the diagram.

When transmitting, the VFO or crystal oscillator, V1, generates a carrier at F/6 or one-sixth of the output frequency. The third harmonic of this frequency, F-2, is selected by the plate circuit of V1 and forms the excitation for the frequency doubler stage, V2.

The output of V2, at the final operating frequency F, drives power amplifier stage V3. This final stage operates "straight through" on 6 meters. The RF output from the power amplifier stage is fed to the antenna through the low-pass filter.

Microphone amplifier stage V4A drives the second audio amplifier stage V4B. The output of V4B drives parallel modulator stage V5-V6. The high-impedance audio output line from this stage modulates the RF amplifier stage V3. The low impedance audio output from this stage is rectified and the resulting DC