INTRODUCTION

The Swan Model 600-R receiver is designed to be used in CW, AM, SSB, FSK, and SSTV modes over all portions of the 80, 40, 20, 15, and 10 meter amateur radio bands. Expanded frequency coverage is possible with the use of the optional accessory 510X Crystal Controlled Oscillator or Model 330 General Coverage VFO. Basic circuitry of the single conversion design has been proven in many thousands of the popular Swan Transceivers. Mechanical, electrical, and thermal stability is exceptionally high. All oscillators are temperature compensated and voltage regulated. Operation may be fixed or portable. Receiver sensitivity is 1/4 microvolt at 50 ohms for 10 db signal plus-noise to noise ratio. Options include 0.6 KC CW filter, 6 KC AM filter, and SS-16B Super Selective Crystal Lattice Filter. Power is supplied by the built-in 117 volt power supply.

SWAN MODEL 600-R CUSTOM RECEIVER:

The Swan Model 600-R Custom Receiver comes to you with all the above provisions, and in addition, includes the NB-600 I.F. Noise Blanker, and the Integrated Circuit Audio Filter (I.C.A.F.) adjustable audio NOTCHER-PEAKER.

CIRCUIT THEORY

Refer to Figure 1, and the schematic diagram for the following discussion.

The antenna and grid circuit of the R.F. Amplifier V1, are tuned by L101 through L105. These coils are normally tuned to the center of their respective phone bands. Peak frequency tuning is accomplished with the variable capacitor C104A. This capacitor is the front panel PRESELECTOR control. The gain of the R.F. Amplifier is controlled by the manual R.F. GAIN control R107, which varies the bias on the amplifier. C107 couples the incoming RF signal to the grid of the R.F. Amplifier. The plate circuit of the R.F. Amplifier, and the grid circuit of the Mixer V2, are tuned by L201 through L205. These coils are also normally tuned to the center of their phone bands. Peak frequency tuning is accomplished with the second section of the ganged PRESELECTOR capacitor C104B.

The tuned signal is coupled through C207 to the grid of the Mixer, where it is heterodyned with the VFO injection frequency. The VFO frequency is initiated in the transistorized VFO/BUFFER amplifier circuit Q5, Q6. Q5, the VFO oscillator operates in the common base configuration. The Buffer amplifier Q6, is also used for isolation. The stability of the VFO is also enhanced by the use of the Zener diode regulator D1206 across the bias supply voltage. Band switching is accomplished by changing the VFO coils L1101 through L1105. Further isolation is provided by the transistorized Isolation Amplifier Q7. The transistorized Isolation Amplifier Q8, provides additional isolation for the transmitter VFO, when the 600-T transmitter is interconnected.

The injection frequency generated by the VFO is routed to the cathode of the Mixer through C208, where it is subtractively heterodyned with the incoming RF signal. The resultant output of the heterodyning process is the receiver intermediate frequency, nominally 5500 KC. The I.F. signal is coupled from the secondary winding of T201 through the Crystal Lattice Filter to the grid of the First I.F. Amplifier V3. The signal is amplified and coupled through T301 to the grid of the Second I.F. Amplifier V4, and then coupled through T401 to the grid of the Product Detector V5A.

In the Swan Model 600-R Custom, the I.F. signal is coupled from the secondary winding of T201 to the control switch of the I.F. Noise Blanker, Model NB-600. When the control switch is in the OFF position, the signal is passed through the control switch to the Crystal Lattice Filter, and then to the grid of the First I.F. Amplifier. With the control switch in either "MED" or "MAX", the signal is coupled through T1401 to the grid of V8. The signal and noise is amplified and coupled through T1402 to the grid of V9. The signal and noise is further amplified and fed into the clipping network consisting of D1401, D1402, C1406, C1407, C1408, C1409, and R1406, where the noise peaks are clipped off. The I.F. signal is then coupled through T1403; through the attenuation network, where the I.F. signal level is returned to the approximate input level, and then fed into the Crystal Lattice Filter and processed the same as the standard 600-R. In "MAX" position, the NB-600 is operating at full gain, producing maximum clipping of noise pulses. With many strong signals on the band it is possible for V9 to overload. In "MED" position, the NB-600 operates at reduced gain, with considerably less tendency to overload, but still providing good clipping action. The attenuator network is switched to equalize NB-600 output.