A Reader Looks at the

Hallicrafter's SR-160

Larry Hess W8GTT/KIENX
45 Chandler Avenue
Walpole, Mass.

The introduction of the compact SSB transceiver has created great interest in the amateur ranks and, notwithstanding, in my own station where a 1955 vintage receiver was not the ultimate for SSB operation.

My interest increased when Hallicrafters announced the SR-150 transceiver with Receiver Incremental Tuning. This eliminated the one problem in transciever operation, namely having the transmitter frequency shift whenever slight corrections were made in the receiver frequency, such as often occurs in round tables.

When the Hallicrafters SR-160 transceiver was recently introduced, at a price considerably under the SR-150 and included Receiver Incremental Tuning, the decision was made.

The SR-160 provides complete coverage of the 20, 40, and 80 meters bands with 150 watts PEP and 125 watts CW. The Receiver Incremental Tuning (RIT) (pat. pend.) provides a plus or minus 3 kc deviation from the receiver frequency without changing the transmit frequency. Full Automatic Audio Level Control (AALC) provides maximum talk power. No AM provisions are included but satisfactory exalted carrier AM detection results are easily obtained. Push-to-talk (PTT) is standard with VOX as an optional accessory. One meter is used as a combination S-meter and relative output indicator. A 100 kc calibrator circuit is included selected by the Operation switch, but a 12AU6 tube and a 100 kc crystal are not supplied. A matching ac solid state power supply/speaker combination is available as well as a mobile dc power supply.

Functionally, the receiver is a single conversion design with a 5200 kc *if*. The RF amplifier and mixer circuits are tuned by the Driver Tune control on the front panel. Selectivity is provided by a crystal lattice filter and two *if* stages. A product detector and amplified AVC are also employed.

The Receiver Incremental Tuning (RIT) is quite novel in design. A pot applies a variable voltage to a voltage controlled variable capacitance (Varicap) in the frequency determining circuit of the transmit/receive VFO, thereby shifting frequency a small amount. In transmit, this circuit is disconnected by the T/R relay so as to not change the transmitter's frequency. Dial calibration is corrected in a similar manner with a second pot continually in the circuit.

The AALC (Automatic Audio Level Control) provides approximately 15 db of compression when the flat topping point of the two 12DQ6B final amplifiers is reached. When flat topping occurs, a ripple apears on the final amplifier grid bias. This ripple is amplified and rectified by a diode. The resulting dc voltage, which is proportional to the amount of flat topping, is applied to the first *if* amplifier grid as a control bias, thereby reducing its gain and driver output .

Initial installation is quite simple. Power supply, mike, and antenna are connceted and then inserting a voltmeter into two tip jacks on the power supply, the bias voltage is checked and its pot adjusted for the correct value.

Tuneup consists of injecting some carrier through the Carrier control and then peaking the Driver Tune and Final Tune controls for maximum S-meter reading. No loading control is provided as the output network is designed for a 50 ohm load. The Carrier control is then momentarily advanced to obtain a maximum S-meter reading. No carrier balancing is needed.

In push-to-talk operation, the Mike Gain control is adjusted for an S-meter swing equal to one half of the maximum S-meter tuneup value. This adjustment is not critical because of AALC action.

Several notable points were observed in operating the transceiver. The tuning control is very smooth and precise with a good weighted feeling. The receiver sensitivity of 1 microvolt for a 20 db signal-to-noise ratio produces a very low background level with signals almost leaping out of the noise. Tuning is not critical and stability is excellent. The advertised stability is "within 300 cps after warm-up" and operation confirmed this. Banging and dropping the cabinet produced no reaction. Receiver audio is communication quality but not excessively peaked and with plenty of reserve.

On the air tests produced excellent audio reports with no trace of any flat topping, even driving hard, but with plenty of punch. The carrier suppression is -50db down. Mike gain is more than adequate.

Provisions are provided on the read apron for driving a linear amplifier.

No objections of any kind were found in operating the transceiver. Extra features might be desired but would raise the present $349.95 price.

Hallicrafters has entered the medium price transceiver market effectively with a very pleasing piece of equipment, and demand should soon confirm this.

. . . W8GTT