

The K.W. Electronics S.S.B. Exciter

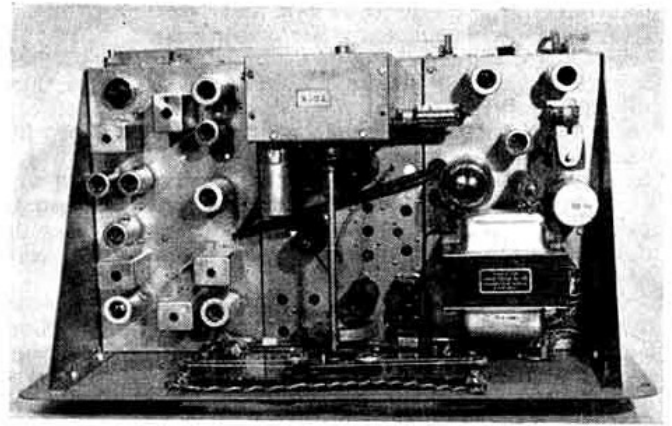
REVIEWED BY R. F. STEVENS (G2BVN)

THE KW Electronics S.S.B. Exciter is basically of the same design as the KW "Viceroy" transmitter but differs from the latter in that the linear amplifier has been replaced by a power supply, thus providing a self contained unit capable of driving to full output a pair of 6146, 807 or TT21 valves on all bands from 3.5 to 28 Mc/s. The unit, which measures 22 in. x 12 in. x 11 in. high, contains the following circuits: carrier oscillator and phase splitter (12AU7); balanced modulator (2 OA79); 435 kc/s amplifier (EF89); second balanced modulator (12AU7); mixer (6CL6); output stage (6CL6); v.f.o. and cathode follower (12AT7); v.f.o. amplifier (EF80); speech amplifier (12AX7); voice control and anti-trip circuits (2 12AU7 and 6AL5); rectifier (GZ32) and voltage regulator (OA2).

The carrier oscillator operates at a frequency of 435 kc/s and feeds, through a phase splitter, a balanced modulator into which audio is coupled from the speech amplifier designed for high impedance input. The resultant signal is passed through a half lattice filter which rejects the upper sideband. The filter, which is of conventional design, employs three vacuum mounted crystals, one of which is used as a series rejector. After amplification the 435 kc/s s.s.b. signal is mixed with the output of the v.f.o. to produce a signal in the 3.5 Mc/s band. For operation on other bands the output from a crystal oscillator and frequency multiplier is mixed with the 3.5 Mc/s signal to give a signal of the correct sideband, i.e. lower sideband on 7 Mc/s and upper sideband on 14, 21 and 28 Mc/s. This signal is amplified by a class A stage and is then available at low impedance from a socket on the rear apron, the power output being approximately 8 watts p.e.p.

The exciter contains its own voice control and anti-trip circuits, and there are two additional sets of contacts on the relay which can be used for receiver muting and aerial change-over. The exciter can be very effectively used for c.w. operation and a blocked grid system of keying is used in the grid circuit of the second balanced modulator. A form of low efficiency a.m. transmission is also possible by inserting some carrier and unbalancing the first balanced modulator.

The equipment is of attractive appearance with the controls grouped in two parallel lines under the Eddystone geared dial which is calibrated on all bands. There is no output indicator and tuning must be carried out by reference to the meter in the grid circuit of the following linear amplifier. The panel, chassis and cabinet are of substantial construction, and are finished in a grey hammertone. Internally, the exciter consists of three small chassis, two containing the r.f. and a.f. circuits, with the third housing the power supply and voice control components. The v.f.o. is mounted in a separate



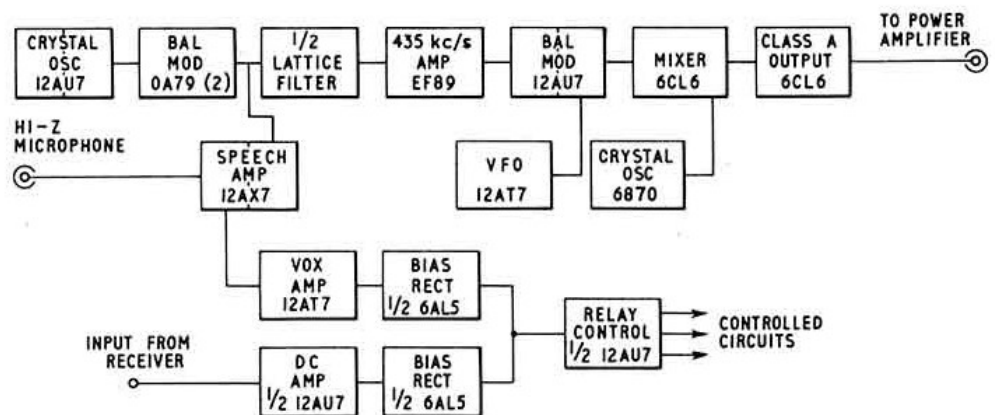
An above-chassis view inside the cabinet. The r.f. and a.f. circuits are on the left, with the v.f.o. in the centre and the power supply on the right.

box and operates from a stabilized h.t. supply. The wiring throughout conforms to the highest standards.

Operation

The exciter was used under test to drive a linear amplifier employing two TT21 valves and the reports received mentioned the excellent audio quality and good carrier and sideband suppression. The former was found to be better than 50db and the latter approximately 40db. Once the controls had been initially set up it was found that readjustment was only necessary following a large move in frequency or a change of band. After a suitable warm-up period the v.f.o. stability was good and within the strict limits necessary for s.s.b. operation. The built-in power supply contributes a good measure of internal heating and this could probably be reduced by the replacement of the GZ32 by silicon rectifiers. The OA2 voltage stabilizer is mounted on the v.f.o. box and this accounts for a portion of the temperature rise of the latter. The tuning dial is a precision unit and allows accurate netting, which is essential in "round table" operation.

The KW S.S.B. Exciter can be recommended as a well engineered and reliable piece of equipment. Being the only unit of its type manufactured in the U.K., no direct price comparison can be made, but the cost of £87 10s. is well below that of any comparable imported equipment.



Block diagram of K.W. Electronics single sideband exciter.