



SSB Receiver Type CRD 150/20B with Type SSR2 Equipment

THE SSR 2 EQUIPMENT is used in conjunction with the Type CRD 150/20 B triple diversity receiving equipment to form a single sideband



receiver with facilities for the independent reception of both upper and lower sidebands.

Both equipments are housed in single bay cabinets with individual units mounted on runners. This allows withdrawal of panels with power supplies connected and in order to give complete accessibility when servicing, the panels may be swung into a locked position so that the chassis are vertical and facing outwards. General illumination of the front of the equipment is provided by a floodlight fitting which also serves as a call sign indicator.

CIRCUITS

Type CRD 150/20B

The receiver cabinet comprises three separate signal-frequency and intermediate-frequency amplifiers, one common oscillator unit and one combining unit. Each of the three input circuits is arranged for connection to a $75\ \Omega$ coaxial aerial feeder and consists of a two-stage signal-frequency amplifier covering 1.5–30 Mc/s in five bands. Each signal-frequency amplifier is followed by a pentode frequency-changer, which is driven from the common first oscillator unit. In addition to the normal L/C controlled oscillator, an alternative crystal-controlled oscillator is incorporated. Facilities are available for the selection of any one of nine crystal frequencies.

The first IF has a mid-frequency of 1200 kc/s, and no amplification occurs at this frequency. A double-tuned transformer couples the first and second frequency changers. The latter is also driven from the common oscillator unit and gives a frequency change to a mid-frequency of 465 kc/s. There are two stages of amplification at this frequency and the passband of the amplifier is

variable in four steps, giving total passbands at 6 db below optimum of 1000 c/s, 2500 c/s, 8000 c/s, and 13,000 c/s.

There is also a fifth position of the passband switch which inserts an LF filter with an optimum frequency of 100 c/s and having a total passband of 100 c/s at 6 db below optimum. The filter is only used for the reception of hand-speed CW telegraph signals.

The outputs from the three 465 kc/s amplifiers are fed to the SSR 2 cabinet.

Type SSR 2

The three input paths are taken from the three 465 kc/s intermediate frequency outputs of the CRD 150/20 cabinet and fed *via* 75 Ω cables to the third frequency changer unit (FC3). The mid-frequency is changed to 100 kc/s and these outputs are fed through three separate single sideband paths each of which is split into three channels corresponding to the upper sideband (100–106 kc/s), the carrier (100 kc/s) and the lower sideband (94–100 kc/s). The outputs of the two

sideband channels are then taken through variable attenuators to sideband amplifiers and combined with the carrier in balanced demodulators. The resultant signals are passed *via* AF amplifiers to the output stages to provide independent outputs for upper and lower sideband channels respectively. Alternatively, the three upper sidebands and the three lower sidebands are fed to path selector units where the best of the three upper sideband outputs and the best of the three lower sideband outputs are automatically selected and passed to the line output. A simple combination of any two or all three paths may also be made if desired.

Both automatic frequency control (AFC) and automatic gain control (AGC) systems are incorporated.

Voice-frequency channelling filters or other auxiliary line units are not embodied in the equipment, which simply provides outputs covering 0–5000 c/s and carrying all the respective modulation frequencies imposed at the transmitter on the upper and lower sidebands.

DATA SUMMARY

Frequency range: 1.5–30 Mc/s in five bands.

Input: 75 Ω coaxial feeder.

Noise factor: Between 4 and 8 db according to frequency.

Sensitivity: With a single frequency sideband and with carrier at 26 db below the sideband level, the s/n ratio is not less than 20 db for sideband inputs of 4 μ V at any frequency up to 25 Mc/s.

Image suppression:

Not less than 70 db from 1.5 to 9 Mc/s.

Not less than 50 db from 9 to 16.5 Mc/s.

Not less than 30 db from 16.5 to 30 Mc/s.

AFC: Follows frequency shifts of up to ± 4 kc/s with residual frequency shifts of less than ± 25 c/s.

AGC: Output does not increase by more than 5 db for an increase in sideband input of 80 db (rel. to 1 μ V).

Output: Each sideband available either as 3 independent outputs or 1 combined output giving 100 mW into 600 Ω .

Power supplies: 110 or 200–250 V 50 c/s AC mains.

Power consumption:

Type CRD 150/20 B: 450 W.

Type SSR 2: 400 W.

Dimensions:

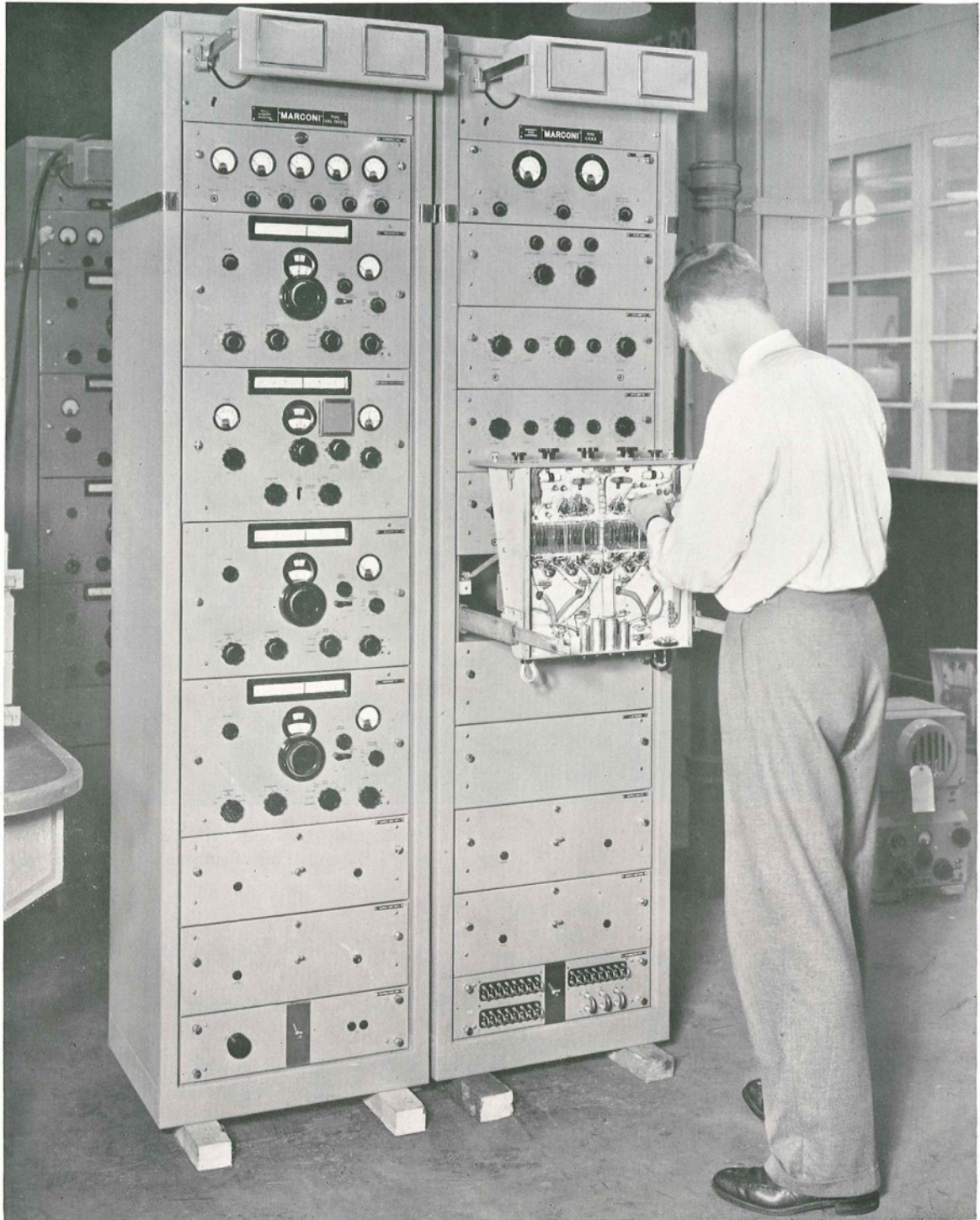
Height	Width	Depth	Weight
Type CRD 150/20 B.			
87 in.	23.5 in.	23 in.	670 lb.
(221 cm)	(59.5 cm)	(58 cm)	(304 kg)
Type SSR 2.			
87 in.	23.5 in.	23 in.	782 lb
(221 cm)	(59.5 cm)	(58 cm)	(355 kg)

Marconi

MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED

Head Office: Marconi House, Chelmsford

Telephone: Chelmsford 3221. Telegraphic Address: Expanse, Chelmsford



Every Marconi product is subjected to rigorous and exacting tests before leaving the Chelmsford Works. The Type CRD 150/20/SSR 2 equipment is here shown undergoing test.