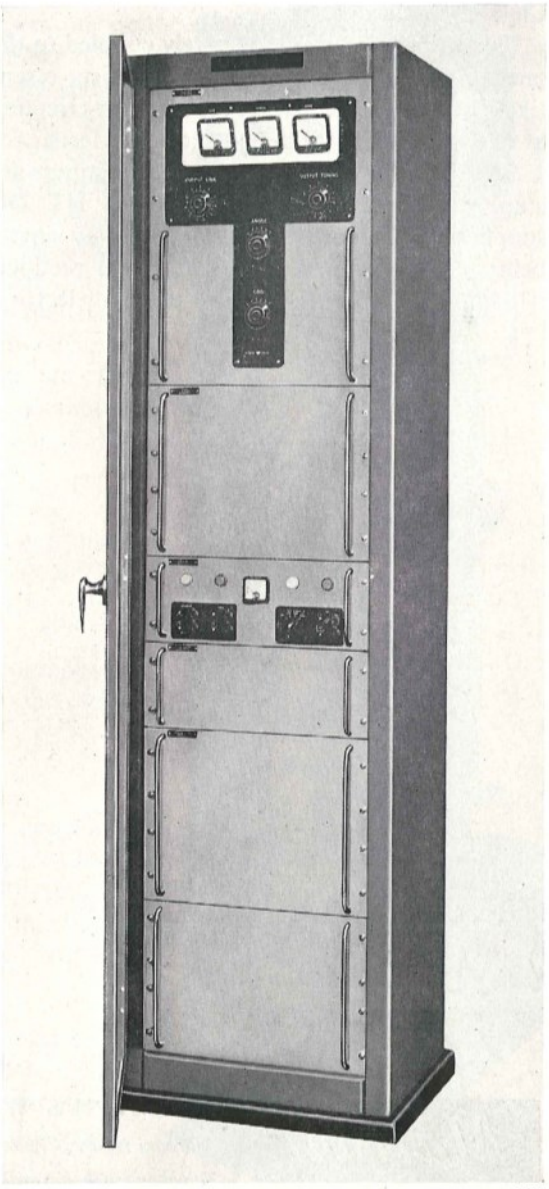
200-Watt VHF Amplifiers

HM 190 Series FOR MULTI-CHANNEL LINKS

IN VHF MULTI-CHANNEL COMMUNICATION systems it is not always possible to place terminal or repeater stations at locations giving the best optical propagation path from aerial to aerial. Increase of radiated power is one possible solution to the problem of fading over long non-optical paths, which permits greater latitude in the selection of station sites.

The HM 190 Series of VHF amplifiers have been specifically designed for use with the Marconi Type HM 101 and 102 Terminals and Type HM 151 and 152 Repeaters to increase the radiated power. These equipments are push-pull RF power amplifiers capable of delivering 200 W to the aerial and they incorporate their own power supply units. The amplifier and associated units including a cooling fan are housed in a 7 ft cabinet, conforming in appearance to the general style of Marconi multi-channel equipments. Doors are fitted front and rear. The rear door which gives direct access to dangerous voltages is also interlocked with the HT supply.

Anode, screen and grid current meters are mounted on the RF unit. Switches for the various supplies are fitted on the front panel of the control unit. At unattended stations these switches would be left in the 'on' position and the main power supply to the equipment would normally be switched on and off by remote control. The correct sequence of switching within the amplifier itself is performed automatically by the relay circuits and a thermal delay switch.



6958

A coaxial-type filter, mounted externally in a frame, is provided to prevent the radiation of unwanted harmonic frequencies.

CIRCUIT

The amplifier is driven by the output from the transmitter of the associated multi-channel equipment. This drive feeder is inductively coupled to the grid circuit of the amplifier. Two neutralised tetrodes with forced air cooling are employed, connected in push-pull and operating in Class C conditions.

The output feeder is inductively coupled to the tank circuit. The harmonic filter consists essentially of two quarter-wave stubs, short-circuited at one end and connected to the aerial feeder.

Separate half-wave bi-phase valve rectifiers are employed for the anode and screen HT DC supplies, the stabilised negative grid bias supply being derived from a full-wave metal rectifier. All smoothing capacitors have paper dielectrics.

DATA SUMMARY

Frequency ranges: Type HM 191 60–73 Mc/s.
Type HM 192 73–88 Mc/s.
Operation on any specified frequency.

Input: 75 Ω coaxial feeder.

Output: 75 Ω coaxial feeder.

RF drive: Not less than 15 W.

RF power output: Not less than 200 W.

Harmonic distortion: −40 dB at ±200 kc/s deviation.

Spurious radiation: Approx. 90 dB below fundamental using external aerial filter unit.

Power supply: 200–250 V, 50 c/s single-phase AC mains.

Power consumption: 1·4 kW.

Dimensions:

Height	Width	Depth
7 ft 0¼ in. (214 cm)	2 ft 1 in. (64 cm)	2 ft 1 in. (64 cm)

Marconi

MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED
Marconi House, Chelmsford
Telephone: Chelmsford 3221. Telex: 1953. Telegrams: Expanse Chelmsford Telex