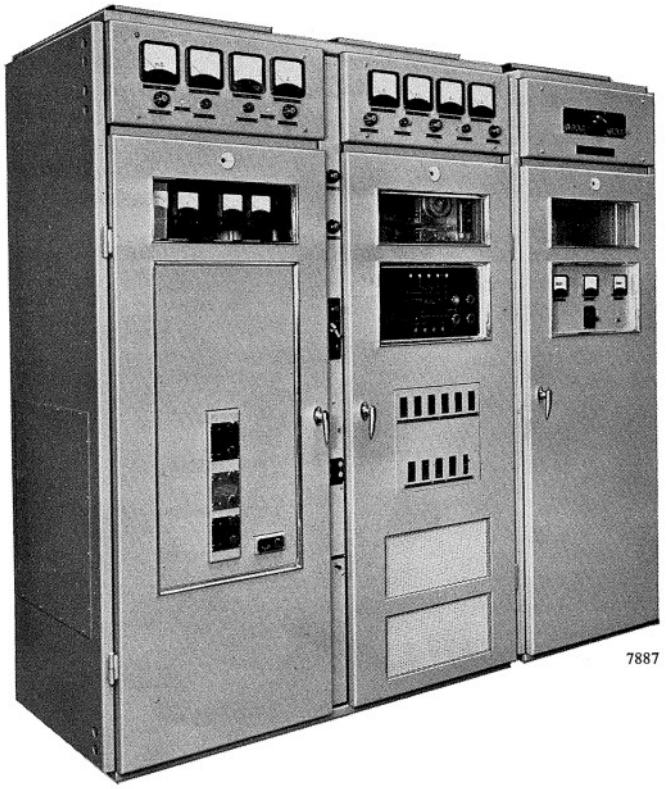
UHF Tropospheric-scatter Amplifier (1 kW)
Type HS 315

A LEADING PART in the development of long-distance communications at UHF, using tropospheric-scatter techniques, has been played by Marconi research and development engineers.

In addition to the Type HS 313 10 kW Tropospheric-scatter Amplifier (described on page 148) the Company offers the Type HS 315 1 kW Tropospheric-scatter Amplifier, for employment on the many services where a lower radiated power is sufficient.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Features

Three-cavity klystron providing 1 kW output (dependent on bandwidth).

Miniature circuit breakers of magnetic overload type give closer circuit protection than possible with fuses.

Operation over a wide range of ambient temperature without recourse to special equipment.

Accessibility of components through full-length front and rear doors. (Full access from front only if required.)

Suitable for operation in tropical climates under ambient temperatures from 0–45°C with up to 95% humidity.

EQUIPMENT

The 1 kW amplifier consists of a double-bay and single cabinet, the double-bay containing the RF amplifier complete with cooling fan and auxiliary circuits and the other housing the power supplies and control circuits. Front and rear access doors mechanically interlocked are provided to facilitate servicing.

The three-cavity klystron is driven at radiated frequency by the associated drive unit and produces a power output of 1 kW over the frequency range 720–980 Mc/s into a load of 50 Ω.

Cooling for the ceramic seals and final cavity of the klystron is provided by a fan mounted at floor level and having an air filter fitted at its input.

Interlocks are fitted to protect the klystron in the event of overheating or air supply failure.

The klystron beam supply of 8 kV at 0·5 amp. is derived from a three-phase full-wave rectifier circuit designed for operation over a wide range of ambient temperature without recourse to special conditioning equipment.

No fuses are used in the equipment, primary protection being by the use of miniature circuit breakers of the magnetic overload type. These have a suitable inverse time delay characteristic to enable closer and more effective protection to be obtained than with fuses. The circuit breakers, together with contactors, and time-delay relays are mounted on a panel in the power supply cabinet.

Circuit protection devices are incorporated to safeguard the equipment in the event of overload or failure of associated supplies.

Data Summary

Frequency range: 720–980 Mc/s. (Wider frequency range to special order.)
Service: Multi-channel telephony and telegraphy.
Power output: 1 kW.
Output impedance: 50 Ω unbalanced.
Frequency tolerances: ±10 parts in 10^6 from 0–50°C.
Frequency response: ±0·5 dB from 6–300 kc/s with ref. to level at 100 kc/s.
Input: 5 W into 50 Ω unbalanced at radiated frequency.
Associated drive unit: Type HD 313 (see page 164).
Power supply: 380–440 V (±10%), 45–65 c/s (±2½%), 3-phase AC, using associated voltage regulator.
Power consumption: 8 kW at 0·9 power factor.
Dimensions:
Height 7 ft 0¼ in. (213 cm)
Width 7 ft 6 in. (229 cm)
Depth 2 ft 6 in. (76 cm)

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