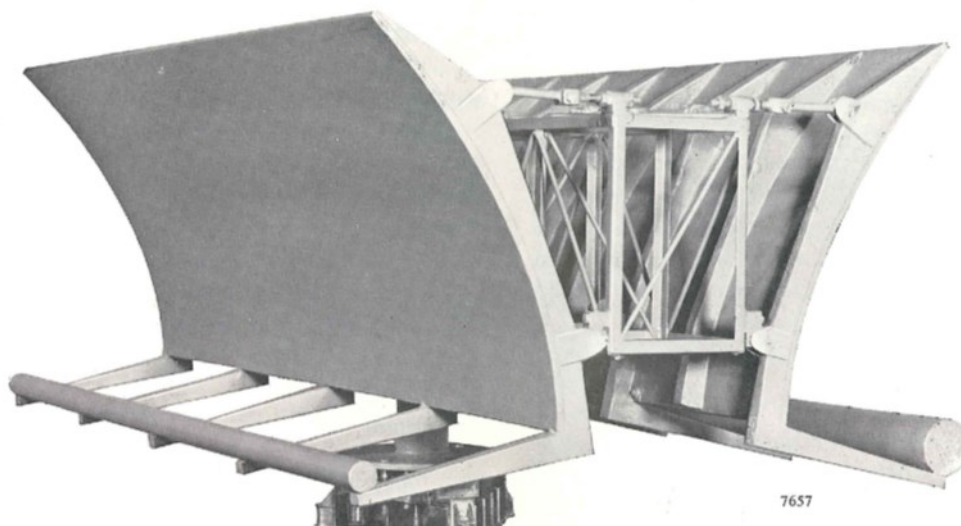




S and L-Band Long Range Surveillance Radar Type S247



THIS EQUIPMENT is the latest of the Marconi series of long-range surveillance radar systems and consists of two high-power radar transmitters, one S-band (10 cm) and one L-band (25 cm) feeding a combined aerial system. This combination gives the most complete cover possible.

FEATURES

Very high power, $2\frac{1}{2}$ megawatts, from two compact transmitters.

Independent transmitters, so that one can be kept operating while the other is being serviced.

Wide range of cover by use of two frequencies (one L-band and one S-band) and of low-looking high-gain S-band array and cosec-squared, high-looking L-band array.

Unattended operation and full remote control.

High-gain arrays mounted back-to-back on common mount.

Expensive synchronous turning gears not necessary.

Transmitters similar in design with many common units, simplifying spares.

Advanced automatic monitoring system, including continuous display of transmitter SWR, peak power and receiver noise factor.

Logarithmic and linear receiver outputs.
Facilities for provision of MTI, if required.

EQUIPMENT

The installation consists of a pivot mount, assembled to the top of a suitable gantry or tripod, and on this is mounted a supporting frame. This supports the two aerial arrays, which are mounted back-to-back. Each array consists of a reflecting surface, for the S-band a section of a parabolic cylinder and for the L-band of a modified parabolic profile 45 ft long, by 15 ft high and fed by horizontal, slotted, waveguides.

The S-band reflector has a high gain and gives a narrow beam in the horizontal plane, and to a lesser extent in the vertical plane, and is utilised to give long-range low-angle cover.

The L-band reflector gives a cosec-squared beam, that is, one which is designed to cover the high angles of elevation and so does not have such high gain as the S-band array. The two arrays are designed to give continuous cover on targets at a constant ceiling of upwards of 75,000 ft.

Two separate transmitters are used, the S-band SR 1000 and the L-band SR 1030. These two transmitters represent the latest techniques in radar transmitter design and each develops a peak power output of at least $2\frac{1}{2}$ MW. They are fully automatic in operation and have automatic control and resetting circuits for overload protection.

A comprehensive monitoring system is incorporated in each transmitter and this monitors continuously and automatically peak power, receiver noise factor and SWR, as well as providing full monitoring facilities for key waveforms and continuous monitoring of supply voltages and valve emission.

DATA SUMMARY

Radio frequency:

S-Band	L-Band
2700–2900 Mc/s	1300–1365 Mc/s

Peak power output:

S-Band	L-Band
3 MW (max.)	2.5 MW (max.)

Pulse recurrence frequency:

S-Band	L-Band
200–550	200–550

Pulse length:

S-Band	L-Band
2.5–5.5 μ s	1–5.5 μ s

Mean power output (maximum):

S-Band	L-Band
3.75 kW	4 kW 2.5–5.5 μ s
	3 kW 1.0–2.5 μ s

Trigger:

Sine wave, pulse or square wave
200–550 c/s, on internal 300 c/s generator.

Receiver overall noise factor:

S-Band	L-Band
8.5 dB	8 dB

Bandwidth:

S-Band	L-Band
400 kc/s	400 kc/s

Output:

Logarithmic and linear outputs available,
maximum video output 5 V from each.

Aerial system:

Horizontal beamwidth:

S-Band, 0.53°; L-Band, 1.25°

Side lobes: 22 dB down on main lobe.

Max. angle cover of complete system: 25°.

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