



Horn Paraboloid Aerials and Associated Feeder Systems

HORN paraboloid aerial systems are used on microwave radio-relay networks transmitting 960-1800 telephone channels or 625-line N.T.S.C colour television signals.

Features

Simultaneous operation in the 4000 Mc/s and 6000 Mc/s bands.

Capable of operation on dual polarization.

Front-to-back ratio better than 65 dB.

Higher illumination efficiency than paraboloid dishes (a minimum of 60%).

CONSTRUCTION

Marconi's currently manufacture two sizes of aerial 108 and 54 sq.ft in aperture. Choice of size depends on the individual system characteristics and path lengths involved.

The design developed by The Marconi Company has double-skin construction. The aerial can therefore withstand the severe wind loadings encountered in service without distortion of the internal reflecting surfaces, which would lead to a substantial degradation of electrical performance.

The double-curvature reflecting surface situated at the top of the horn, above the flare portion, is formed from 'Marconi-Surface' construction, described on page 404. A Hypalon terylene window, attached

to the outer framework, seals the aerial aperture. This permits pressurization of the aerial up to 6 inches (15.24 cm) water gauge without applying a bending moment to the top reflecting surface.

The main vertical run of feeder to the aerial consists of circular-section waveguide, the support systems being so arranged that all main vertical loads are taken at the top of the tower.

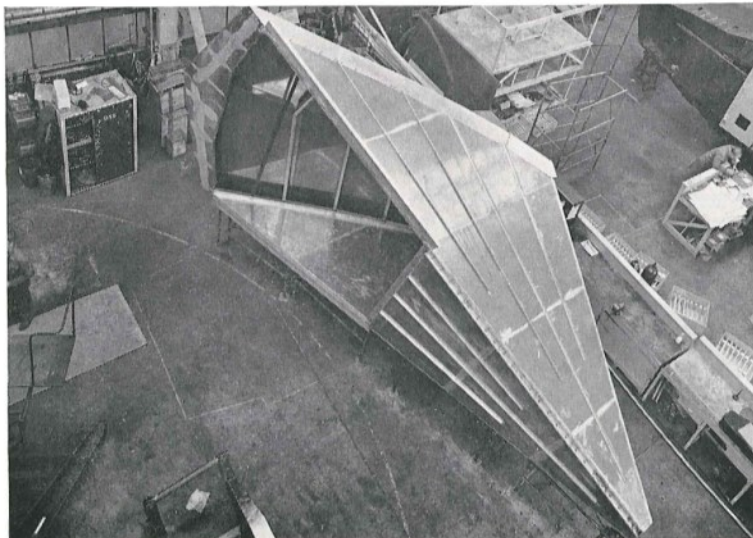
Panning the aerial in azimuth is performed by rotating the aerial framework on a circular ring. Large panning angle adjustment (up to 360°) may be made manually, and fine adjustments (up to $\pm 5^\circ$) are made by screwing a turnbuckle connected be-

tween the aerial frame and the circular track. Panning in elevation (up to $\pm 1\frac{1}{2}^\circ$) is made by screwing a turnbuckle connected between the circular ring and the back of the horn.

FUNCTION

Radio energy from transmitter/receiver is fed into the aerial feeder system through the respective ports of band-branching equipment normally situated near ground level. The band-branching equipment enables orthogonal polarizations in different frequency bands to be transmitted simultaneously through the aerial system.

Type No.	J 0201	J 0202
Aperture size:	54 sq.ft	108 sq.ft
Gain of aerial (at 6200 Mc/s):	42 dB	45 dB
Beamwidth (at 6200 Mc/s):	1.4°	0.9°
Weight:	1100 lb (500 kg)	2200 lb (1000 kg)
Frequency range:		3770-7110 Mc/s
V.S.W.R (measured at horn transition):		Better than 1.02:1
Back-to-front ratio:		65 dB
Cross polarization discrimination (in direction of main beam):		Better than 35 dB
Max. height above ground level:		Up to 300 ft (90 m)
Maximum wind speed for normal operation:		100 mile/h (160k m/h)
Operational temperature range:		0 to 120°F



X1002

108 sq. ft. projected aperture horn paraboloid aerial.

Marconi

The Marconi Company Limited
Mechanical Products Division
Felling Works, Gateshead 10, Co. Durham
Telephone: Felling 692501 · Telex: 53312
Telegrams: Expanse Gateshead Telex