RESEARCH DEPARTMENT

Transmitting aerial for the Ventnor v.h.f. television station

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THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION

RESEARCH DEPARTMENT

TRANSMITTING AERIAL FOR THE VENTNOR V.H.F. TELEVISION STATION

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D.W. Osborne, A.M.I.E.E.

(R.D.A. Maurice)

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TRANSMITTING AERIAL FOR THE VENTNOR V.H.F. TELEVISION STATION

The Ventnor television relay station came into operation on 4th May 1964. It provides a service to Ventnor and Bonchurch.

SUMMARY OF INSTALLATION

Site:	The site is on Boniface Down about 0·5 mile (0·8 km) north of Ventnor town centre, grid reference SZ/567783, height 750 ft (229 m) a.m.s.l.
Support Structure:	The support structure consists of a 120 ft (37 m) square-section self-supporting tower oriented with one side on a bearing of 33° ETN.
General Arrangement:	See Fig. 1.
Channel:	Channel 5, with horizontal polarization is used. The vision carrier is offset -16·875 kc/s, and the sound carrier -30·125 kc/s.
Aerial:	The aerial consists of two tiers each of two horizontal $\lambda/2$ dipoles mounted on bearings of 109° and 214° ETN, spaced 5 ft 4 in (1·6 m) from the tower axis and fed with equal co-phased currents. The inter-tier spacing is $0{\cdot}7\lambda$ and the mean height 110 ft (34 m) a.g.l. The tower side dimension at this height is 1 ft 3 in (0·38 m). There are independent main feeders to each tier.
Power:	A translator with an output power of 10 W is used.
Templet and Horizontal Radiation Pattern (h.r.p.):	See Fig. 2 and Note.

Gain:

Mean intrinsic gain			1·8 dB
Deduct: losses due to possible misalignment and distribution feeders			0·2 dB
Mean net gain			1·6 dB
Deduct: loss in main feeder (type UR67)	2·3 dB		
network loss	0·6 dB		2·9 dB
Mean effective gain			-1·3 dB

Programme Link:

The programme is obtained by direct reception of the Channel 3 (vertical polarization) transmissions from Rowridge. The receiving aerial consists of a single 3-element Yagi mounted on the transmitting aerial tower at 50 ft (15 m) a.g.l.

Note:

The aerial design was based on a theoretical h.r.p. of the dipoles alone, neglecting the effects of the support mast and the dipole support booms. A more accurate h.r.p., which included the effect of the dipole support booms, was obtained from measurements on a small-scale model mounted on a thin support pole. This was a reasonable approximation to the full-scale aerial in view of the small electrical size of the tower cross section (0·079λ square) and the absence of horizontal screening bars.

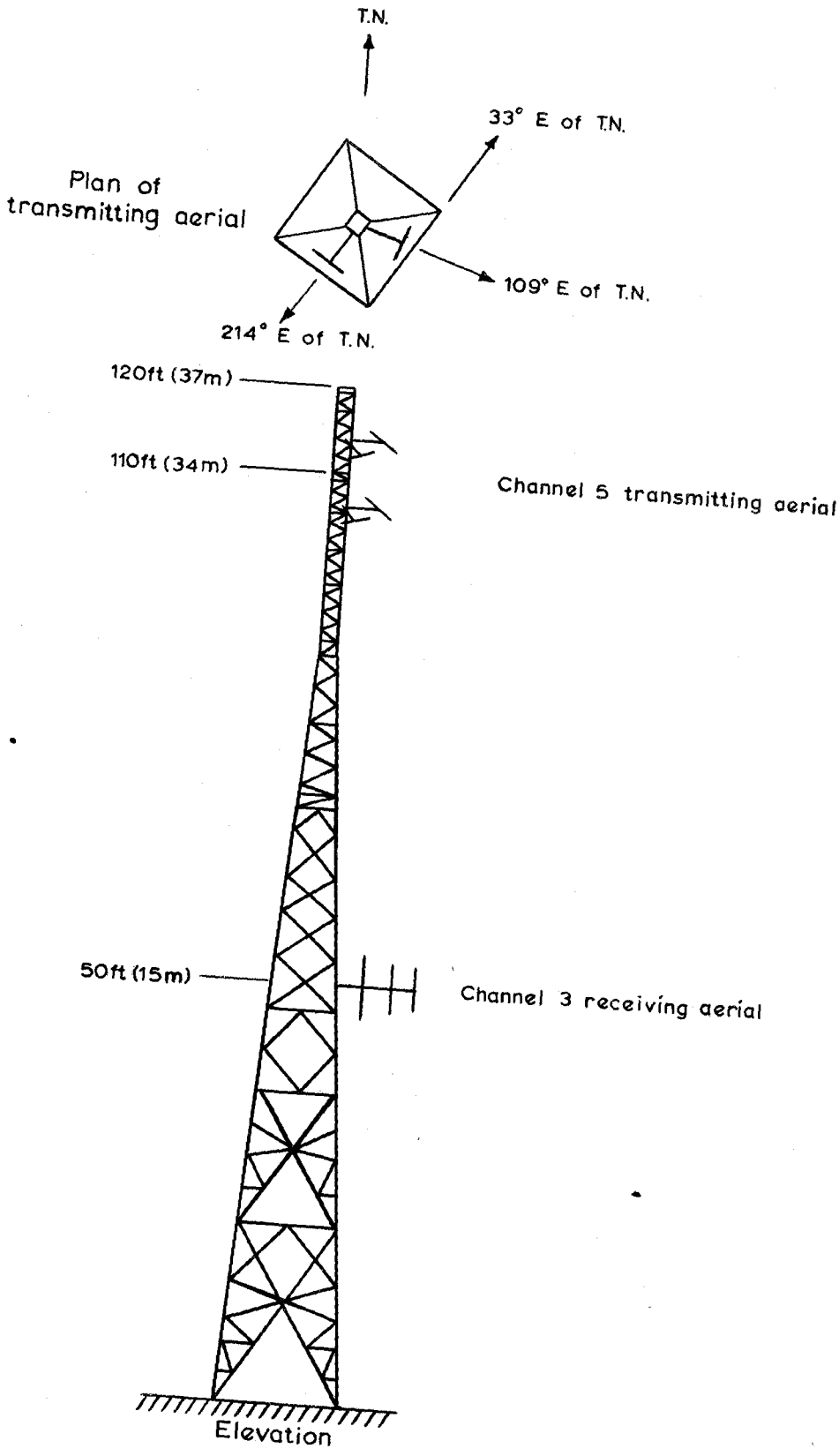

Fig1. General arrangement of aerials on tower

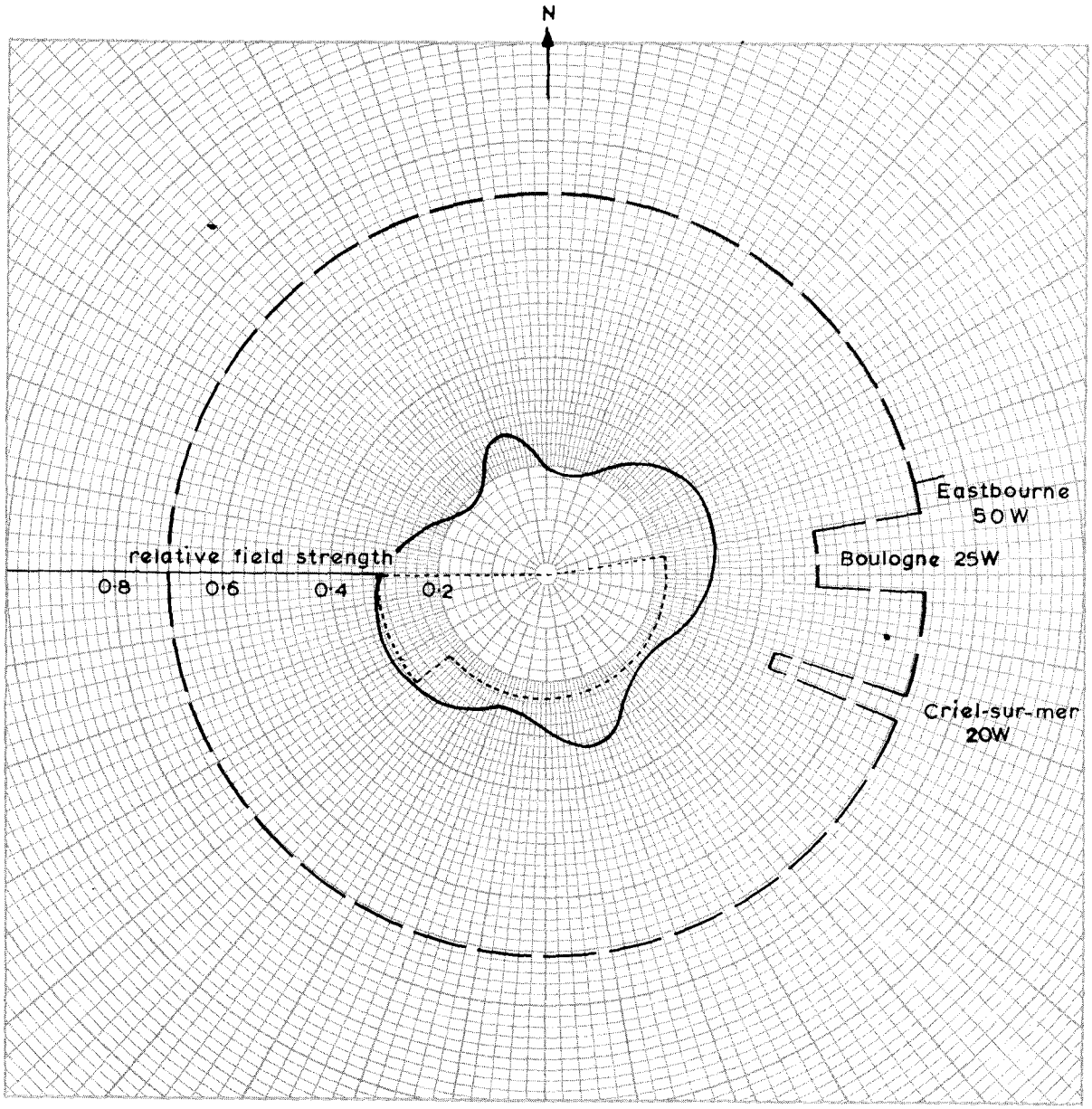

Fig.2 Templet and horizontal radiation pattern

Channel 5 (Vision carrier 66·75Mc/s, Sound carrier 63·25Mc/s)

HORIZONTAL POLARIZATION

Mean effective gain -1·3 dB
Transmitter power 10W
Mean E.R.P. 7·4W

—— —— Maximum permissible E.R.P.
---------- Minimum desirable E.R.P.

Unit field corresponds to an E.R.P. of 100W

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