Technical Bulletin 23cm Flat Plate Aerial

Subject: 23cm Flat Plate Aerial

From: G8MNY@GB7CIP.#32.GBR.EU
To : TECH@WW

By G8MNY (Published in BATC'S CQTV 11/97, Updated for Packet Jan 03)

This is a simplified design for /P aerials yet offers about a +12dBd gain over the whole 23/24cm band or it can be centred on 23 or 24cm (*) ends of the band. A detailed design can be found in UHF Compendium, but I have found simpler constructions work just as well, & on tests are better than some of the ATV long yagis on offer!

The high gain is explained if one considers each full wave length loop to have the gain of 2 dipoles = +3dBd, thus 2 loops = +6dBd so doubling again then 4 loops = +9dBd, & with a perfect reflector you get +12dBd, which is 14.4dBi. In practice there are losses but well constructed will give +10dBd at least.

FIGURE "8" ELEMENTS

Two elements are construction from mains 2.5mm Cable with the inner insulation left on. Each compound element is bent into a figure of "8" from 2 wave lengths 2x 24.5cms (* 23/24) long (2x49cms for both & leads), & equates to 4 dipoles (8 for both elements). The start & stop of the two 8s are at the top & bottom respectively, and the "8" centre cross over points are left insulated.

Stalk Mounting : Reflector 8" x 14" nominal made from ally sheet, foil 

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Point x is the wire crossover point, actually not bent in, just alongside crossover. Wires can be glued or tied together for neatness.

The Balun is 6cms of scrap coax alongside the feeder.

The feeder inner is connected to the dead coax braid either side of both of the 8s. The 2 coax balun can be glued into 2 holes in the reflector.

Stalk mountings can be made from UR67 inner insulation 1" long screwed into from the reflector side & slotted & heat moulded to capture the wire.

SWR can be adjusted by the distance the 8's are from the reflector. As shown aerial is horizontally polarised. The Polar diagram is 90deg coverage but very tightly pointed at the horizon (stacked array gain).

Higher gain can be had by stacking & baying 2, 4 or more aerials, provided they are all mounted flat to each other & the reflectors (one sheet?) do not overlap. Identical feeder lengths & matching the aerial array then becomes a problem.

Why don't U send an interesting bul?
73 De John, G8MNY @ GB7CIP