

ABSTRACT

DUAL POLARIZED RADIATOR FOR LENS ANTENNAS

- 5 A dual polarized radiator forms a beam having beamwidth varying inversely with frequency or at least having a minimal deviation from this dependence. A dual polarized radiator includes a radiating arrangement, a feeding element containing two feeding lines and forming two perpendicular baluns supporting the radiating arrangement above a reflective conductive plate containing side walls, a dielectric body and four conductive strips.
- 10 The radiating arrangement comprises two crossed dipoles electrically connected by four outer conductors, the four outer conductors forming an outer contour of the radiating arrangement, the outer contour having a shape of a circle or a polygon. Each dipole comprises two dipole arms, each dipole arm comprising two equal branches connected together at a point of connection between the dipole arm and one of the two feeding lines.
- 15 The first gap between the two equal branches of each dipole arm, and the second gap between adjacent branches of different dipole arms increase towards the outer contour of the radiating arrangement. Each outer conductor has a middle portion and two end portions. The middle portion connects adjacent branches of different dipole arms with the two end portions, wherein one end portion is placed between the branches of one dipole arm and the other end
- 20 portion is placed between the branches of an adjacent dipole arm. One end portion of one outer conductor and the other end portion of an adjacent outer conductor are placed between two branches of one of dipole arm, and are separated from each other by the third gap creating a capacitive coupling between the two adjacent outer conductors.
- A dielectric body is placed above a radiating arrangement. Four conductive strips are placed
- 25 above a reflective conductive plate and below a radiating arrangement. Each conductive strip is placed in parallel of the middle portion of one of outer conductors between the said middle portion and a side wall of a reflective conductive plate.
- A Luneberg lens illuminated by the said radiator forms a beam having a small beamwidth deviation as a function of frequency.

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Fig. 2a

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