



Licensing opportunity

Compact tracking antenna

Field of use

tracking of low-Earth-orbit satellites or aerial drones

Current state of technology

prototype for the 2.20-2.29GHz satellite-downlink band

Intellectual Property

patent SI-24732 2015-11-30

Publication

submitted to *Electronic Letters*

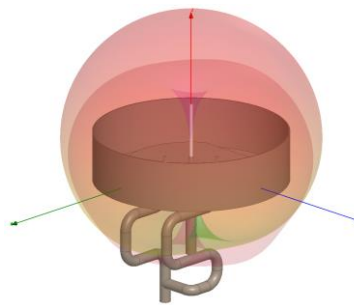
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Background

Currently known design of tracking monopulse antenna using multiple (usually four) antennas with partially overlapping beams and a hybrid network for adding and subtracting the right signals to obtain a sum and a difference signal. However small and efficient the hybrid network might be, it is still a limiting factor in the design and it usually requires waveguide feeding lines for low losses, as required for satellite communications.

Description of the Invention

A novel, very simple monopulse feed is presented consisting of a microstrip-patch antenna and a monopole, both inside a single cup. The patch is used for the sum (data) channel while the monopole provides the difference (tracking) information. The proposed monopulse feed can be used with circularly-polarized signals and/or in dual-polarization systems, where the two orthogonal linear polarizations carry independent, incoherent information. The design of a multi-band feed using the same monopulse principle on one or more supported frequency bands is relatively straightforward.

Main Advantages

The proposed simple monopulse feed efficiently illuminates deep parabolic mirrors with a low focal-to-diameter ratio between 0.3 and 0.4 and corresponding high numerical aperture directly from their primary focus, resulting in an inexpensive and compact monopulse antenna.



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