

Novel Collapsible Lens Antenna Design for Smallsat Applications

Nizar Sultan, Guy Seguin
Canadian Space Agency
St. Hubert, Canada

Peter J. Wood
CAL Corporation
Ottawa, Canada

When an antenna of large aperture is required for a small-satellite application, this antenna is most conveniently realized as a collapsible structure. This can be implemented as space-fed antenna (a reflector or lens). The lens antenna has particular advantages, because the lens can be realized in the form of thin copper circuits printed on a flexible membrane.

A further advantage of the lens is that it is relatively insensitive to the exact surface profile which is achieved after deployment. Different types of printed structures have been analyzed in order to determine the optimal design strategy for a printed, collapsible lens. In order to simplify the mechanical design of the collapsible structure itself, a major emphasis of the study has been to arrive at a design for which the electrical performance of the lens is essentially independent of the profile of the lens surface, and also of the distance between this surface and the primary feed device. The electrical performance has been calculated for promising candidate lens designs.

For more information contact:

Dr. R. Nizar Sultan
Director Space Systems
Canadian Space Agency
6767 Route de L'Aéroport
Saint-Hubert, Quebec J3Y 8Y9
Canada
514-926-4633
514-926-4613 fax
sultann@sp-agency.ca