

# Abstracts

## The ACTS Multibeam Antenna

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*F.A. Regier. "The ACTS Multibeam Antenna." 1992 *Transactions on Microwave Theory and Techniques* 40.6 (Jun. 1992 [T-MTT] (Special Issue on Microwaves in Space)): 1159-1164.*

The Advanced Communications Technology Satellite (ACTS) to be launched in 1993 introduces several new technologies including a multibeam antenna (MBA) operating at Ka-band. The satellite is introduced briefly, and then the MBA, consisting of electrically similar 30 GHz receive and 20 GHz transmit offset Cassegrain systems--both utilizing orthogonal linear polarizations, is described. Dual polarization is achieved by using one feed assembly for each polarization in conjunction with nested front and back subreflectors, the gridded front subreflector acting as a window for one polarization and a reflector for the other. The antennas produce spot beams with approximately 0.3 degree beamwidth and gains of approximately 50 dbi. High surface accuracy and high edge taper produce low sidelobe levels and high cross-polarization isolation. A brief description is given of several Ku-band components fabricated for ACTS. These include multiflare antenna feedhorns, beam-forming networks utilizing latching ferrite waveguide switches, a 30 GHz HEMT low-noise amplifier and a 20 GHz TWT power amplifier.

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