

SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations (IP)

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DESIGN APPROACH OF LOW GAIN ANTENNA FOR DEEP EXPLORATION VEHICLES

Abstract

Deep space exploration vehicles require real-time vehicle-earth communication along entire flight. Several existing types of low gain antennas for vehicle-earth communication are introduced. A new approach of combining the open-end waveguide with parasitic elements is presented. By diverse combination of waveguide dimension and the shapes of parasitic elements, a variety of shaped radiation pattern is available which realize vehicle-earth communication at different flight attitude. Employing this method, the low gain antenna for Yinghuo-1 mars exploration vehicle and low gain antenna for Chang'e-3 lunar rover are designed, which both meet their respective radiation pattern requirements.