

# Band-Selective Phased Array Shading for Satellite Communications

ID: 2014-008

## Executive Statement:

This technology significantly enhances mobile satellite communications through innovative phased array shading techniques.

## Technology Overview:

This invention from Brigham Young University proposes a novel method to improve satellite communication transceivers. It focuses on using band-selective phased array shading to enhance the performance of mobile satellite terminals. By employing phased array antennas with electronic beam steering, the technology offers a lighter, less expensive alternative to traditional mechanically steered antennas. The core innovation lies in designing separate receive and transmit illumination shading across the phased array aperture, optimizing sensitivity and reducing interference.

## Key Advantages:

- Enhanced sensitivity and reduced interference in satellite communications
- Cost-effective and lighter alternative to mechanically steered antennas
- Electronic beam steering for dynamic and efficient communication
- Meets regulatory requirements with low sidelobe transmission
- Significant improvements in sidelobe reduction through innovative shading techniques

## Problems Addressed:

- Bulky and expensive mechanically steered antennas in mobile satellite terminals
- High sidelobe levels leading to interference and regulatory non-compliance
- Limited sensitivity and performance of traditional satellite communication systems

## Market Applications:

- Mobile satellite communication terminals
- Telecommunications infrastructure for remote and mobile applications
- Defense and aerospace satellite communication systems
- Commercial satellite broadcasting and data transmission services