UNFURLABLE KA-BAND REFLECTORS

L3Harris’s large, unfurlable ka-band mesh reflectors meet the increasing demand for high-throughput satellite (HTS) antennas that can operate at higher frequencies. These reflectors easily integrate into all spacecraft configurations.

PUSHING THE BOUNDARIES OF TECHNOLOGY

L3Harris has leveraged over 40 years of experience in designing unfurlable reflectors and internal research and development initiatives to produce never-before-achieved accuracy in unfurlable mesh reflectors. Our innovative surface-shaping technology improves mission performance by maximizing system capabilities, while our radial rib design accommodates a wide range of geometries and satellite configurations.

At less than 0.3 millimeter root mean square (RMS), L3Harris’ Ka-band unfurlable reflectors address the needs of the HTS communications segment with larger aperture reflectors that can operate at higher frequencies. Larger apertures result in smaller spot beam sizes that enable increased frequency reuse and capacity over specified geographical areas. Concurrently, they significantly increase satellite segment gain to allow smaller user terminals.

After successful flight qualification of the new reflector design, L3Harris now has multiple 5-meter Ka-band reflectors deployed on orbit.

APPLICATIONS

Our unfurlable reflectors feature state-of-the-art knit wire mesh designed specifically for the requirements of Ka band and higher frequencies. The high-performance mesh enables our reflectors to provide high-speed internet to unserved and underserved locations beyond the reach of terrestrial fiber. Our Ka-band reflectors meet today’s market needs ranging from inflight internet connectivity on airplanes to broadband communications for battlefields and disaster areas.

The only
5-meter Ka-band unfurlable reflector commercially available

BENEFITS

> Increases frequency reuse and capacity over a selected geographical area
> Reduces cost per bit
> Enhances mission performance through innovative surface-shaping technology
> Improves tracking performance through unique hub mounting configuration
L3Harris’ 5-meter unfurlable reflector operates up through Ka band (30 gigahertz) to meet HTS market demands. Compared to conventional solid reflectors in the 2- to 3-meter class, the 5-meter unfurlable reflector provides an increased number of small spot beams for more efficient frequency reuse for greater capacity.

Additionally, the reflector can be incorporated into a hybrid approach in which a set of smaller reflectors provide lower gain beams over a broad coverage area and a single unfurlable reflector provides high gain beams over a specific area requiring enhanced coverage. The reflector is not subject to International Traffic in Arms Regulations.

Figure 1 illustrates the improved spot beam pattern that can be achieved by replacing four smaller 2.6-meter solid reflectors with four 5-meter unfurlable reflectors.