

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.

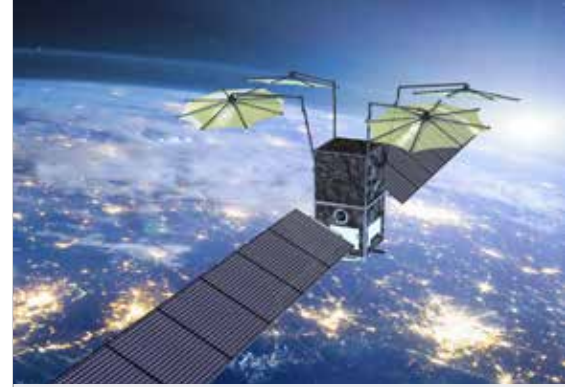
At less than 0.3 millimeter root mean square (RMS), L3Harris' Ka-band unfurlable reflectors address the needs of the HTS communications segment with larger aperture reflectors that can operate at higher frequencies. Larger apertures result in smaller spot beam sizes that enable increased frequency reuse 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

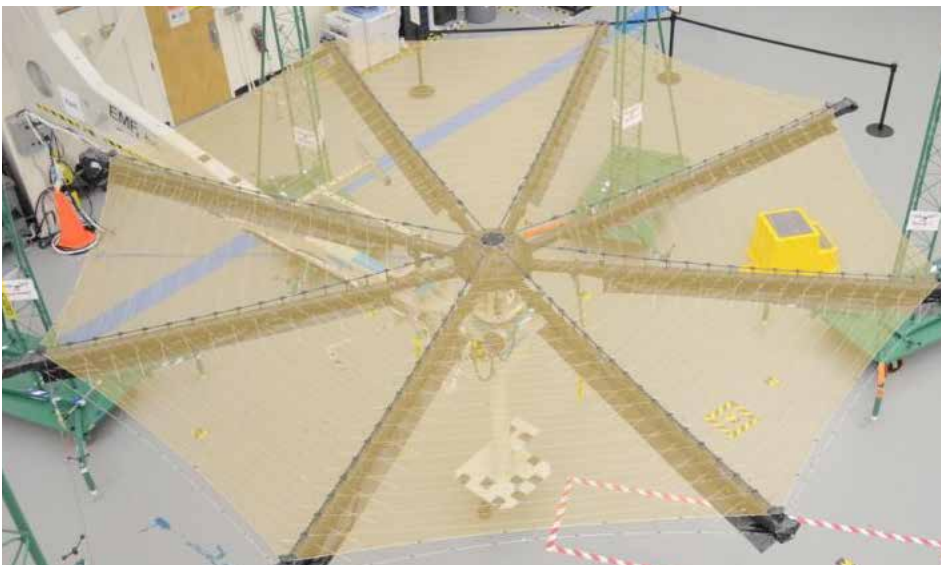
Our unfurlable reflectors feature state-of-the-art knit wire mesh designed specifically for the requirements of Ka band and higher frequencies. The high-performance mesh enables our reflectors to provide high-speed internet to unserved and underserved locations beyond the reach of terrestrial fiber. 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



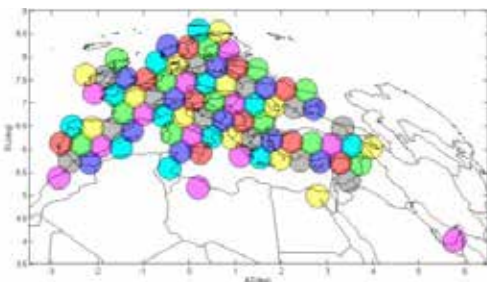
ABOUT OUR 5-METER UNFURLABLE REFLECTOR

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.

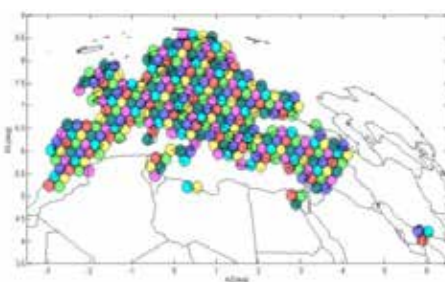
Additionally, the reflector can be incorporated into a hybrid approach in which a set of smaller reflectors provide lower gain beams over a broad coverage area and a single unfurlable reflector provides high gain beams over a specific area requiring enhanced coverage. The reflector is not subject to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

FIGURE 1: HTS SPOT BEAM PATTERN



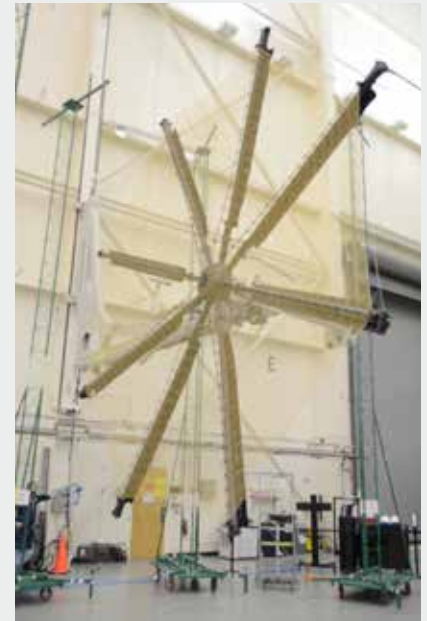
Four 2.6-meter reflectors: 83 beams; 7-cell reuse; frequency reuse is 11.7



Same coverage area with four 5-meter reflectors: 286 beams; 7-cell reuse; frequency reuse factor is 40.8

5-METER REFLECTOR SPECIFICATIONS

- > 5-meter diameter aperture size
- > Radio frequency reflectivity specifically for Ka band
- > < 0.3 mm RMS on-orbit surface accuracy
- > Accommodation of any focal ratio (f/D) requirement
- > Up to 85% optical transparency
- > Hub- or edge-mounted rib reflectors for prime focus or offset antenna geometries
- > Fully integrated deployable boom assembly
- > Compatible with gimbal actuators and fine-pointing mechanisms



FACTS

- > L3Harris is the world's most experienced unfurlable mesh reflector manufacturer
- > L3Harris has more on-orbit successes than any competitor in the industry
- > L3Harris started production on its 100th unfurlable mesh reflector in 2019
- > L3Harris unfurlable reflectors offer unparalleled performance from UHF to Ka-band frequencies
- > L3Harris mesh reflector aperture sizes range from 1 meter to 25 meters

Unfurlable Ka-band Reflectors

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Nonexport-controlled Information

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



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