



HIGH COMPACTION RATIO REFLECTOR ANTENNA

HIGH-ACCURACY ANTENNAS OPTIMIZED FOR SMALLSATS

HIGHLIGHTS

One- to five-meter apertures that meet the needs of smallsat form factors

Highly efficient packaging for missions on 6U and Evolved Expendable Launch Vehicle Secondary Payload Adapter (ESPA) compliant spacecraft

High data transfer rates typical at large apertures at a smaller stowed volume

Harris' High Compaction Ratio (HCR) unfurlable space reflector antenna offers best-in-class volume compaction and operation at high frequencies.

OVERCOMING SMALLSAT LIMITATIONS

Antenna gain is a common limitation in smallsat communication systems. While most reflectors are effective at increasing gain, there is a challenge in fitting and deploying large-aperture, high-accuracy antennas in smallsat form factors.

To overcome this challenge, Harris has developed the HCR reflector antenna, capable of fitting a 1-meter reflector and feed in approximately a 2U volume or a 5-meter reflector in less than a quarter of an EELV Secondary Payload Adapter (ESPA) class satellite.

REDUCING CUSTOMER RISK

The HCR reflector antenna product was developed by Harris in 2014 to address the needs of the emerging commercial smallsat market.

We have been engineering first-of-their-kind payloads that meet and exceed the needs of our customers for more than 50 years. Our position as the most experienced reflector manufacturer in the world has been earned by continually pushing the boundaries of space antenna technology. Today, we are the number-one provider of large high-accuracy reflectors, with more than 90 lightweight, mesh antennas on orbit.

By drawing upon this experience and our repeatable designs, proven processes, and rigorous testing capabilities, we are reducing risk for our space antenna customers, who want to tap the potential of smallsats for their communications missions.

BENEFITS

Delivers the high performance and reliability required for critical missions—in a small package

Enables high-frequency, high-gain antenna performance up to 40 GHz

Provides integrated package of deployable reflector and antenna designed for Harris' half ESPA compliant bus-frame



Five-meter reflector antenna

DELIVERING HIGH VALUE FOR SMALLSAT MISSIONS

When used in constellations, smallsats enhance the resiliency of space missions and offer tremendous opportunity for affordable expanded coverage. Harris' HCR reflector antenna is designed to be affordable and accommodate the fast production turnaround needed to support smallsat constellation development.

We reduce reflector manufacturing costs and schedules by using additive manufacturing processes and commercial off-the-shelf components where possible. We apply fabrication and surface-shaping processes that are based on 40 years of reflector heritage to both streamline production and minimize development risk for our customers.

Our complete HCR solution, an integrated package of deployable reflector and antenna feed, weighs less and offers greater gain than any other commercially available product in its class. Other advertised ESPA-compliant 5-meter reflector antennas require larger diameters for stowed volume, resulting in the need for full-sized ESPA. Harris' 5-meter HCR reflector antenna fits within half of the ESPA form factor. As a result, the number of satellite vehicles that can be launched together on a single ESPA ring doubles.

Harris HCR reflector antennas are available as single reflector or dual-reflector optical designs and can be adjusted to accommodate specific customer requirements from X band to Ka band.

SPECIFICATIONS FOR:

HARRIS HIGH COMPACTION RATIO REFLECTOR ANTENNA SERIES INCLUDING INTEGRATED FEED

Antenna Size	1M	3M	5M
Frequency	X through KA and above	X through KU	X
Mass (KG)	4	14	58
Packaging	2U (3.75" x 3.88" x 9.2")	1/4 ESPA (13" x 13" x 26")	1/4 ESPA (13" x 13" x 32")
Reflector Accuracy (RMS)	~0.5 mm	<1.0 mm	<1.0 mm
Optical Transparency	Up to 85%	Up to 85%	Up to 85%

About Harris Corporation

Harris Corporation is a leading technology innovator, solving customers' toughest mission-critical challenges by providing solutions that connect, inform and protect. Harris supports government and commercial customers around the world.

Learn more at harris.com.

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