

# S-Band Quadrifilar Helix Antenna

## Applications

- Payload and Telemetry Downlink
- Earth Observation Missions
- Space Science Missions

The S-band quadrifilar (QFH) antenna supports payload and telemetry downlink data for Earth Observation and space science missions. In accordance with CCITT recommendations, the antenna produces a cardioid pattern with a nadir null to ensure constant power flux density (PFD) at the Earth's surface.

## Features

- Flight heritage
- Manufactured to ECSS standards
- Data rates up to 10 Mbps
- Cardioid gain pattern
- Right or left hand circular polarisation available
- Constant power flux density at the Earth's surface

## Interfaces

- 50 Ohm antenna interface (SMA)

## Key Specifications

- Up to 10 W RF power
- Dimensions 100 x 100 x 389 mm
- Mass < 500 g

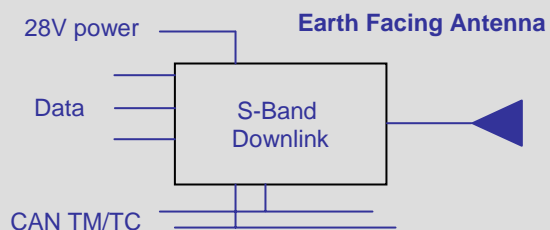
## Heritage (launch date)

- UK-DMC, ALSAT-1, NigeriaSat-1, BilSat (2003)
- Beijing-1 (2005)
- Deimos-1 (2009)



S-Band QFH Antenna

## Typical use

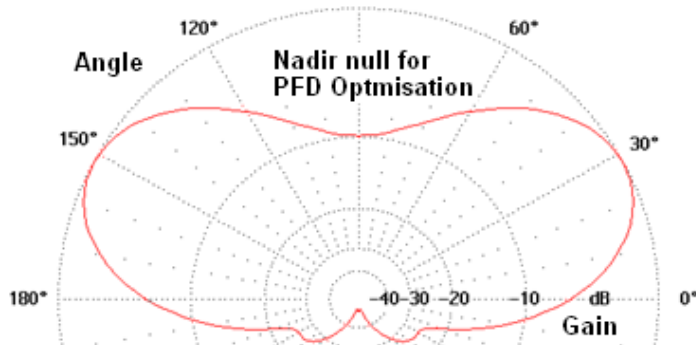


Typical Application within S-Band Payload Downlink

## SSTL Associated Products

- S-Band Patch Antenna
- S-Band Payload Transmitter
- S-Band TT&C Transmitter
- X-Band Antenna Pointing Mechanism

# S-Band Quadrifilar Helix Antenna



Simulated Antenna Pattern referenced to 0 dB. The antenna is matched to a 50 ohm system interfacing via a single coaxial SMA female connector

Frequency Range	Frequency tuneable in the 2.025 to 2.110 GHz uplink band or 2.200 to 2.290 GHz downlink band
RF Power Handling	Up to 10 W
Polarisation	Right or Left Hand Circular Polarisation
VSWR	< 1.2:1
Beam Width	~ 120 ° with nadir null for PFD optimisation
Axial Ratio	< 3dB
Cross Polar Isolation	> 20 dB
Mass	500 g
Dimensions	100 x 100 x 500 mm
Connector	Coaxial SMA Female
Mounting Interface	4 x M4 Through Hole
Operating Temperature	-20 to +50 °C Operating
Random Vibration	15 G <sub>rms</sub> in all axis
Radiation Tolerance	10 kRad (Si)

## SSTL is ISO9001:2008 certified

Subsystems manufactured to:

- ECSS Q-ST-70-08C
- ECSS Q-ST-70-38C
- All work overseen by ESA-trained assembly staff

## Standard delivery service includes:

- compliance testing
- vibration test
- thermal cycling
- user manual
- test results
- export license and shipping
- thermal vacuum testing available
- unit can be supplied prior to environmental testing

## Surrey Satellite Technology Limited

SSTL has launched over 34 satellites gaining almost 200 years in-orbit experience. SSTL draws on its world-class expertise in both small satellite platform technology and high and medium resolution optical instruments. SSTL provides complete turn-key system solutions; spacecraft, ground station, launch, operations and image processing.

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## Slide 2

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**SM1**

Changes:

- Date/SmarTeam #
- Added BilSat to 2003 missions
- Updated ECSS paragraph and reformat of text box
- Added Disclaimer

Simon Meik, 24/11/2010