



ReliaSat

**Your LED Satellite
Communication Partner**

ReliaSat.com

Connecting To LEO With ReliaSat Ka-band Technology

ReliaSat's team of experienced PhD Engineers have developed a range of world leading satellite communications technology at affordable prices. Our range opens up previously inaccessible, high data rate technology to commercial markets.

Below is ReliaSat's Ka-band LEO constellation solution. It provides high data rates and low latency for users while being simple and cost effective to implement, making use of existing ground network infrastructure. This method relies on Ka-band Phased Array Antennas to connect to orbiting satellites.



ReliaSat LEO Constellation Products

ReliaSat has a range of products for both Space and Earth to enable high data rate satellite communications. This brochure shares details of the following solutions:

- Flat Panel Antennas for Space - K and Ka-band
- Electronically steered Phased Array Antennas for Earth - Ka-band
- Transceivers for Space and Earth - Ku to Ka-band
- Transponders for Space - Ku to Ka-band
- Solid State High Power and Low Noise Amplifiers for Space and Earth - K and Ka-band
- Space Debris Radars - K and W-band
- Patch Antennas for Space and Earth - L to Q/V-band

Why Use Ka-band?

Using Ka-band instead of lower frequency bands for satellite communication systems provides a range of benefits including higher bandwidth, lower latency and a reduced payload size. These deliver financial and performance benefits for both the satellite communication provider and end users.

Benefits of higher frequencies

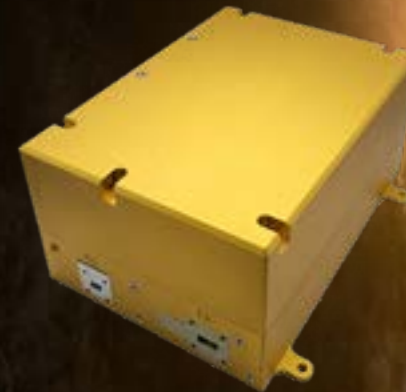
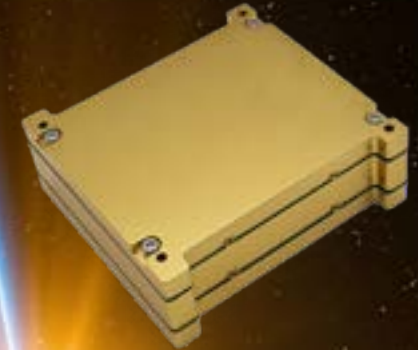
Band	Data Rate	Antenna Size 8 x 8 Array
L	Very slow - few kb	Very large - 80 x 80 cm
S	Slow - 10 kb	Large - 40 x 40 cm
X	Slow - <100 kb	Medium - 15 x 15 cm
Ku	Medium - <5 mb	Medium - 10 x 10 cm
Ka	Fast - >100 mb	Very small - 4.8 x 4.8 cm

Ka-band Transceivers

ReliaSat offer two satellite transceiver formats. Our standard Ka-band Downlink Transceiver fits within a 1U CubeSat and our Complete Ka-band SatCom System is designed for larger satellites.

Downlink Transceiver

ReliaSat's Ka-band Downlink Transceiver which has space heritage, has a high gain input, lower than 2.5 dB noise figure and offers 27 dBm output power. ReliaSat also offers Ka-band Transponders, using two Downlink Transceivers in one unit to relay data.



Complete Ka-band SatCom System

This Transceiver unit is a complete RF satellite communications system enabling a direct interface with a modem or SDR.

Included within is a Downlink Transceiver, Micro Controller, Low Noise and Power Amplifiers.

[Ka-band Downlink Transceiver datasheet](#)

[Complete Ka-band SatCom System datasheet](#)

Antennas

Ka-band Electronically Steered Phased Array Antenna

ReliaSat's Ka-band electronically steered Phased Array Antenna enables users to connect with orbiting Ka-band LEO satellites via a RS232 interface. The Antenna has highly complex tapering algorithms and calibration to enable a scan range of $\pm 60^\circ$ degrees in all directions while delivering up to 22 dBi gain and 48 dBm EIRP. A Ku-band version is also available.

The steerable flat Antennas are fitted within aerodynamic, low profile housings, suitable for fixing to vehicles for applications such as Aviation, Maritime, Rail and Military. The Antenna can also be fixed to existing network towers to supply data to the LEO satellite constellation.



Aerodynamic model
(60 x 20 x 8 cm)

[Download datasheet](#)

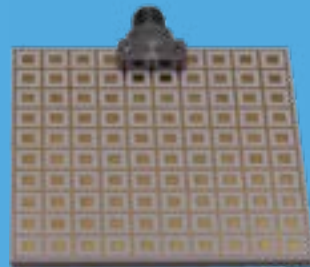
Industries:

- Maritime
- Aerospace
- IoT
- Aviation
- Defense

Fixed Focus Flat Panel Antennas

ReliaSat offers Phased Array and Patch Antennas from L to Q/V-band. Our Ka-band Antennas are unique in their design and performance.

Available in a range of sizes and gains from 21 to 27 dB, each antenna has a carefully designed feed so as to maintain the beam shape. Our antennas are available with left or right hand circular polarisation with >20 dB cross polarisation rejection.



ReliaSat Ka-band FPA
(51 x 51mm)



ReliaSat
Transponder,
Power Amplifier
and Phased Array
Antenna

ReliaSat Transceiver and
electronically steered
Phased Array Antenna

Amplifiers

Power Amplifiers

ReliaSat has a range of Power Amplifiers available from K to W-band. Our core range of 10 Watt K-band Amplifiers are available as bare die, in a QFN package or housed with a power conditioner as a module. 25 Watt K-band amplifiers will be available soon.

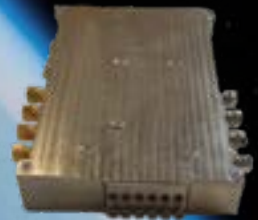


Low Noise Amplifiers

Our range of Low Noise Amplifiers for Earth and Space are available from K to W-band. Our K and Ka-band Amplifier provides up to 34 dB gain with 2.5 dB noise figure.

Space Debris Radar

ReliaSat offers market leading millimetre wave radar products for Earth and Space applications. Our 22 GHz Radar has a 20 km range with 10 cm range resolution. Our 94 GHz version has a 500 m range and 4 cm resolution. Both versions are monopulse and can track objects as they progress.



Integrated Circuits

ReliaSat has a vast range of Integrated Circuits available for Space and Earth applications across K, Ka, E and W-band.

The range includes: Power Amplifiers, Low Noise Amplifiers, Oscillators, Mixers, Switches, Multipliers, Dividers, Phase Shifters and Up / Down Converters.