

L-Band Satellite Receive Antenna with Integrated LNA

OMP designs and builds a wide range of RF & Microwave Subsystems and Antennas.

This product series data sheet is one in a number of publications where we present general specifications of product series that we have developed.

These documents are intended to give an overview of the type of work we do and they will help in determining your requirements for a specific application.



Application

This antenna is one in a series of L-Band patch antennas. It is optimized to yield a simple, relatively low cost design with excellent reproducibility in medium volumes.

This antenna is part of an L-Band, satellite, asset tracking modem with built in GPS L1 receiver.

The radiating element is a planar structure that is optimized for best possible coverage at the lower elevations.

Configurations

The board material used is a thick (3 mm) low loss yet low cost RF substrate. Right hand circular polarization is excited inside the patch. While this method is relatively narrow band, it yields sufficient bandwidth for this specific requirement and saves cost since no external power splitter and phase shifter are needed. Additionally, losses in any external circuitry are avoided.

The radiating element is grounded to protect LNA and receiver against static discharges while assuring EMC compliance.

Additional filtering stops leakage of the L-Band uplink signal into the LNA and avoids blockage.

An LNA is mounted to the back of this antenna: this eliminates coax losses and helps in achieving the best possible total receiver noise figure.

KEY FEATURES

- Covers L-Band space segment downlink and GPS L1
- Hemispheric coverage
- Low cost
- Excellent axial ratio
- Low profile, planar structure
- Small size
- DC grounded for protection against static discharges
- Integrated, low noise, high IP LNA
- Integrated power supply
- Circular polarization generated inside element

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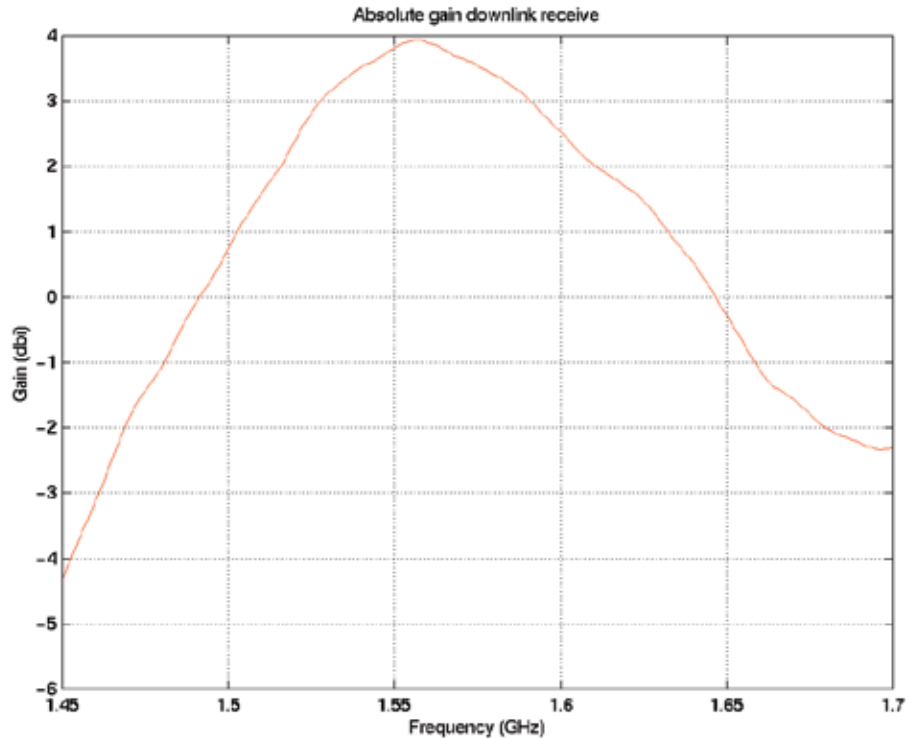
This type of radiating element typically covers a 3% bandwidth and it is one of the lowest cost structures that meet this bandwidth requirement. Wider bandwidths can be covered with different structures.

Options

This antenna can be delivered for different frequency bands, with different polarizations or with higher gains.

Transmit and receive antennas can be integrated in a single enclosure or in a single radiating element.

Structures that cover larger bandwidths are available and an antenna with 40% bandwidth that maintains gain, radiation pattern and axial ratio over its entire frequency range has been built.



PRODUCT SERIES DATA SHEET

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Specifications

Parameter	Value
Antenna Specifications	
Frequency range	1.525 to 1.559 GHz GPS L1
Gain	> 3 dBi
Return loss	< 10 dB
LNA gain	> 12 dB
Operating temperature range	-40°C to +70°C -40°F to +158°F
Connector type	SMA female
LNA power consumption	3.7 to 20 V @ 50 mA Power supplied via coax cable
Dimensions	8 cm by 8 cm 3 in by 3 in

Optional Custom Modifications:

Custom frequency ranges

LNA's with different gain

Different connector type like MCX or MMCX

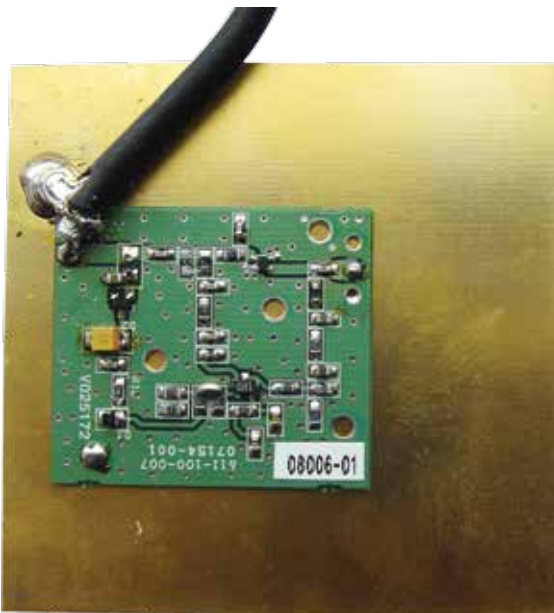
Passive antenna

Additional filtering

Custom enclosures

Custom marking

If you have different requirements for a similar design or a completely new set of requirements, please contact us at the numbers listed below or via mail or refer to the sales page on our website for a representative in your area.



Antenna with cover removed

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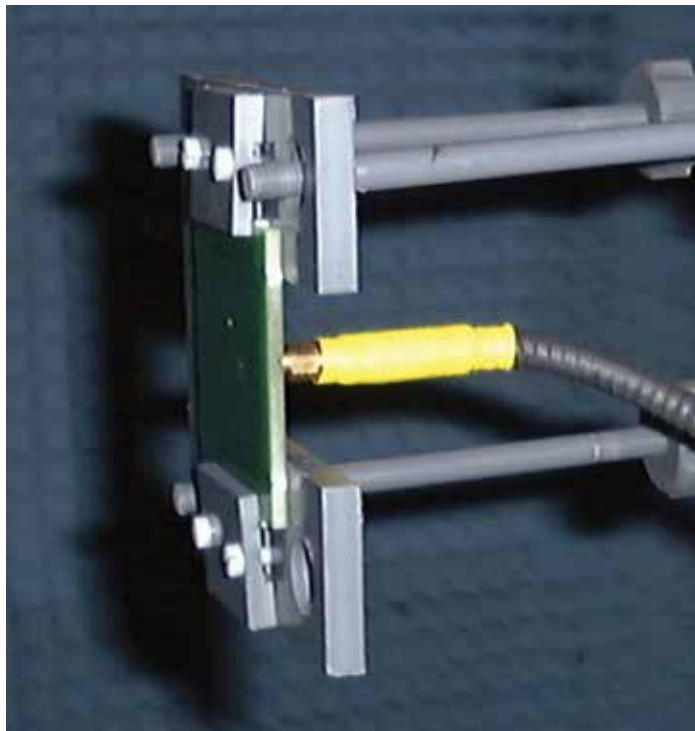
OMP was established in 1996 and specializes in the design, manufacture and support of a wide range of RF & Microwave and Antenna Subsystems.

Our products are integrated in a wide range of applications serving various markets.

Our typical customer is unable to locate a standard product to fit his requirements or may not have an in house design and build capability.

We are an economic, complete and quick answer to this need.

Since we are not a catalog manufacturer who depends on high volume production, your custom requirement is our only priority. We have been exclusively making specials for years, we have produced numerous variations and we draw on that experience to reduce design cost and lead times.



L-Band antenna under test in anechoic chamber

- OMP designs and builds to customer's specifications
- We support products through their entire product lifecycle
- An extensive library of designs is used to create custom products
- OMP uses state-of-the-art circuit and 3D electromagnetic simulations tools
- OMP uses rapid prototyping for fast turnaround
- We will work with our customers on the integration of products designed
- We work with selected partners for agency approval.

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