



SPIDER'S ANTENNAS (ORG9802)

PASSIVE ANTENNA

Datasheet

OriginGPS.com



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1. SCOPE

This document describes the features and specifications of Spider’s Antennas ORG9802 Antenna.

2. DISCLAIMER

All trademarks are properties of their respective owners. Performance characteristics listed in this document do not constitute a warranty or guarantee of product performance. OriginGPS assumes no liability or responsibility for any claims or damages arising out of the use of this document, or from the use of integrated circuits based on this document. OriginGPS assumes no liability or responsibility for unintentional inaccuracies or omissions in this document. OriginGPS reserves the right to make changes in its products, specifications and other information at any time without notice. OriginGPS reserves the right to conduct, from time to time, and at its sole discretion, firmware upgrades. As long as those FW improvements have no material change on end customers, PCN may not be issued. OriginGPS navigation products are not recommended to use in life saving or life sustaining applications.

3. SAFETY INFORMATION

Improper handling and use can cause permanent damage to the product.

4. ESD SENSITIVITY

This product is ESD sensitive device and must be handled with care.



5. CONTACT INFORMATION

Support - info@origingps.com or [Online Form](#)

Marketing and sales - marketing@origingps.com

Web – www.origingps.com

6. RELATED DOCUMENTATION

No	DOCUMENT NAME
1	Micro Spider – ORG4475 Evaluation Kit Datasheet
2	Micro Spider – ORG4475 Product Change Notification
3	Spider and Hornet - Software User Manual for CSR® based receivers
4	Spider and Hornet - NMEA Protocol Reference Manual for CSR® based receivers
5	Spider and Hornet - One Socket Protocol Reference Manual for CSR® based receivers
6	Spider and Hornet - Host Interface Application Note
7	Spider and Hornet - Low Power Modes Application Note
8	Spider and Hornet - Jammer Detector and Remover Application Note
9	Spider and Hornet - Client Generated Extended Ephemeris Application Note
10	Spider and Hornet - Server Generated Extended Ephemeris Application Note
11	Spider and Hornet - Ephemeris Push Application Note

TABLE 1 – RELATED DOCUMENTATION

7. REVISION HISTORY

REVISION	DATE	CHANGE DESCRIPTION
A00	March 31, 2011	First release
2.0	January 14, 2015	Format update
2.1	January 31, 2016	Cable connector P/N update
2.2	February 11, 2016	Addition of ordering information

TABLE 2 – REVISION HISTORY



8. GLOSSARY

A-GNSS Assisted **GNSS**

BPF Band Pass Filter

CE European Community conformity mark

CGEE™ Client Generated Extended Ephemeris

CMOS Complementary Metal-Oxide Semiconductor

COMPASS PRC GNSS (same as **BDS BeiDou-2** Navigation Satellite System)

EGNOS European Geostationary Navigation Overlay Service

EMC Electro-Magnetic Compatibility

ESD Electro-Static Discharge

EVB Evaluation Board

EVK Evaluation Kit

FCC Federal Communications Commission

GALILEO EU GNSS

GLONASS Global Navigation Satellite System

GNSS Global Navigation Satellite System

GPS Global Positioning System

I²C Inter-Integrated Circuit

IC Integrated Circuit

ISO International Organization for Standardization

LDO Low Dropout regulator

LGA Land Grid Array

LNA Low Noise Amplifier

MSAS Multi-functional Satellite Augmentation System

MSL Moisture Sensitivity Level

NFZ™ Noise-Free Zones System

NMEA National Marine Electronics Association

MEMS MicroElectroMechanical Systems

PCB Printed Circuit Board

PPS Pulse Per Second

QZSS Quasi-Zenith Satellite System

REACH Registration, Evaluation, Authorisation and Restriction of Chemical substances

RF Radio Frequency

RHCP Right-Hand Circular Polarized

RoHS Restriction of Hazardous Substances directive

ROM Read-Only Memory

RTC Real-Time Clock

SAW Surface Acoustic Wave

SBAS Satellite-Based Augmentation Systems

SGEE™ Server Generated Extended Ephemeris

SIP System In Package

SMD Surface Mounted Device

SMT Surface-Mount Technology

SOC System On Chip

SPI Serial Peripheral Interface

TCXO Temperature-Compensated Crystal Oscillator

TTF Time To First Fix

TTL Transistor-Transistor Logic

UART Universal Asynchronous Receiver/Transmitter

WAAS Wide Area Augmentation System



9. ABOUT SPIDER FAMILY

OriginGPS GNSS receiver modules have been designed to address markets where size, weight, stand-alone operation, highest level of integration, power consumption and design flexibility - all are very important.

OriginGPS' Spider family breaks size barrier, offering the industry's smallest fully-integrated, highly-sensitive GPS and GNSS modules.

Spider family features OriginGPS' proprietary NFZ™ technology for high sensitivity and noise immunity even under marginal signal condition, commonly found in urban canyons, under dense foliage or when the receiver's position in space rapidly changes.

Spider family enables the shortest TTM (Time-To-Market) with minimal design risks.

Just connect an antenna and power supply on a 2-layer PCB.

10. ABOUT SPIDER'S ANTENNAS

L1 Ceramic Patch Antennas – For ultimate compatibility and best-in-class performance use our Spider's modules together with Spider's Antennas.

11. ABOUT ORIGINGPS

OriginGPS is a world leading designer, manufacturer and supplier of miniature positioning modules, antenna modules and antenna solutions.

OriginGPS modules introduce unparalleled sensitivity and noise immunity by incorporating Noise Free Zone system (NFZ™) proprietary technology for faster position fix and navigation stability even under challenging satellite signal conditions.

Founded in 2006, OriginGPS is specializing in development of unique technologies that miniaturize RF modules, thereby addressing the market need for smaller wireless solutions.



12. GENERAL

ORG9802 is a miniature antenna assembly, comprising four components:

- + Ceramic patch antenna element
- + Adaptor PCB
- + Coaxial cable (optional)
- + WFL Connector (optional). The P/N of the connector cable is MCD-ST-00T W.FL-R-SMT.

13. MECHANICAL SPECIFICATIONS

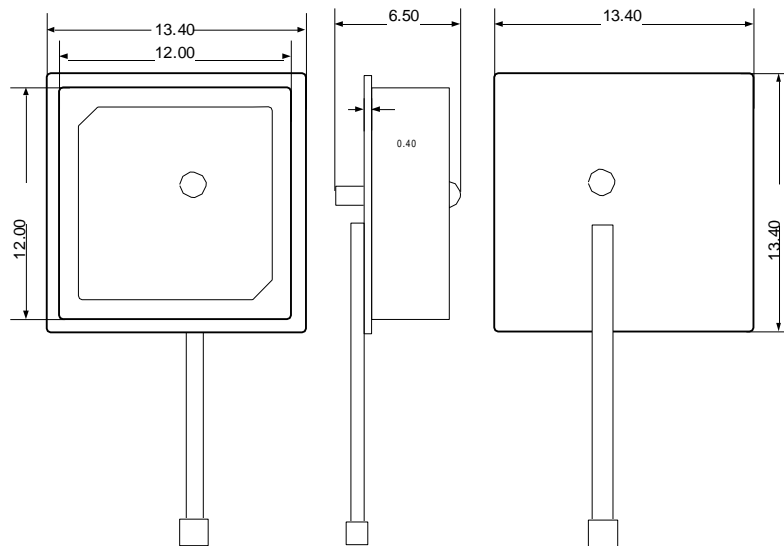


FIGURE 1 – MECHANICAL OUTLINE

Dimensions	Length	Width	Thickness	Weight	
	mm	13.4 ± 0.2	13.4 ± 0.2	6.5 ± 0.1	gr
inch	0.528 ± 0.008	0.528 ± 0.008	0.256 ± 0.004	oz	0.14

TABLE 3 – MECHANICAL SUMMARY



14. SPECIFICATIONS

14.1. ELECTRICAL CHARACTERISTICS

Parameter		Value	Unit	Notes
Center frequency (fC)		1575 ± 3	MHz	
Return Loss (S11)		-15 (min)	dB	@fC
Bandwidth (BW)		7 (min)	MHz	@ f(S11=-9dB)
VSWR		1.2 (max)		
Impedance (ZA)		50	Ω	
Axial Ratio (AR)		2.5 (max)	dB	Properties of antenna element
Gain @ fC	900 Elevation	-1.0 (typ)	dBic	
	100 Elevation	-6.5 (typ)	dBic	
Polarization		R.H.C.P		
Insertion Loss (S21)		3	dB/m	Property of coaxial cable
Operating Temperature		-40 to +85	°C	

TABLE 4 – ELECTRICAL SPECIFICATIONS

14.2. TYPICAL S111

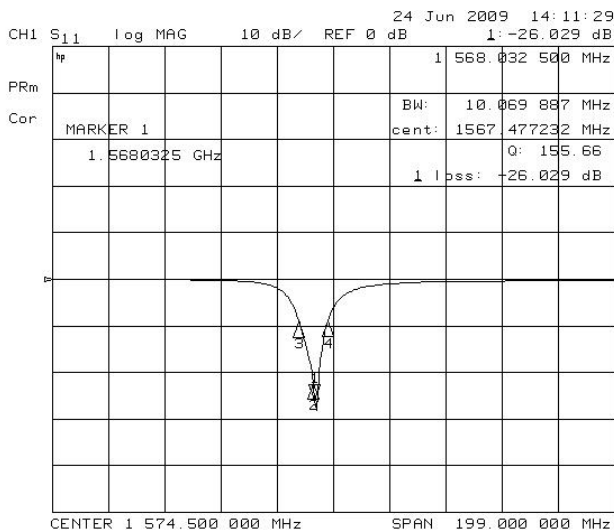


FIGURE 3 – S11 LOG MAGNITUDE

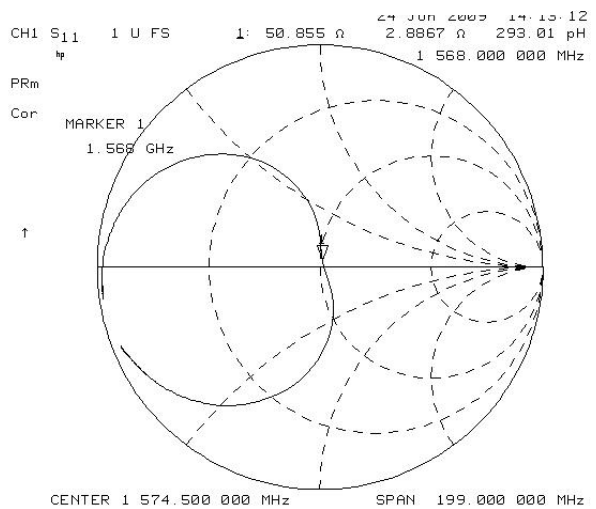


FIGURE 2 – S11 SMITH CHART

Note:

1. Measured with 38mm length cable and W.FL connector



15. ASSEMBLY

Antenna assembly without connector is intended for manual iron soldering (Solder Sn/Ag/Cu 96.5/3.0/0.5)
Soldering temperature is 300 ± 5°C, 5 sec. max

Antenna assembly with connector is intended for manual assembly process.

16. STORAGE

Avoid intentional shock or drop to prevent cracking of antenna.

17. COMPLIANCE

Antenna assembly was designed and being manufactured and handled to comply with and according with Pb-Free/RoHS Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



Antennas are manufactured in ISO 9001:2000 accredited facility.

18. ORDERING INFORMATION

	OriginGPS P/N	Description
1	Passive antenna ORG9802-000	Only ORG9802 antenna, no cable attached
2	Passive antenna ORG9802-043	ORG9802-043 antenna + 43 mm (= 4.3 cm) cable attached
3	Passive antenna ORG9802-150	ORG9802-150 antenna + 150 mm (= 15 cm) cable attached