SPIDER'S ANTENNAS (ORG9802)

PASSIVE ANTENNA

Datasheet

OriginGPS.com

INDEX

TABLE INDEX

FIGURE INDEX

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

№	DOCUMENT NAME
1	Spider and Hornet - Software User Manual for CSR® based receivers
2	Spider and Hornet - NMEA Protocol Reference Manual for CSR® based receivers
3	Spider and Hornet - One Socket Protocol Reference Manual for CSR® based receivers

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
2.3	March ,2017	Update on GLONASS support

TABLE 2 – REVISION HISTORY

8. GLOSSARY A-

GNSS **A**ssisted **GNSS**
BPF **B**and **P**ass **F**ilter
CE European Community conformity mark
CGEE™ **C**lient **G**enerated **E**xtended **E**phemeris
CMOS **C**omplementary **M**etal-**O**xide **S**emiconductor
COMPASS PRC GNSS (same as **BDS** **B**ei**D**ou-2 Navigation Satellite **S**ystem)
EGNOS **E**uropean **G**eostationary **N**avigation **O**verlay **S**ervice
EMC **E**lectro-**M**agnetic **C**ompatibility
ESD **E**lectro-**S**tatic **D**ischarge
EVB **E**valuation **B**oard
EVK **E**valuation **K**it
FCC **F**ederal **C**ommunications **C**ommission
GALILEO EU GNSS
GLONASS **Glo**bal **Na**vigation **S**atellite **S**ystem
GNSS **G**lobal **N**avigation **S**atellite **S**ystem
GPS **G**lobal **P**ositioning **S**ystem
I²C **I**nter-**I**ntegrated **C**ircuit
IC **I**ntegrated **C**ircuit
ISO **I**nternational **O**rganization for **S**tandardization
LDO **L**ow **D**rop**o**ut regulator
LGA **L**and **G**rid **A**rray
LNA **L**ow **N**oise **A**mplifier
MSAS **M**ulti-functional **S**atellite **A**ugmentation **S**ystem
MSL **M**oisture **S**ensitivity **L**evel
NFZ™ **N**oise-**F**ree **Z**ones **S**ystem
NMEA **N**ational **M**arine **E**lectronics **A**ssociation
MEMS **M**icro**E**lectro**M**echanical **S**ystems
PCB **P**rinted **C**ircuit **B**oard
PPS **P**ulse **P**er **S**econd
QZSS **Q**uasi-**Z**enith **S**atellite **S**ystem
REACH **R**egistration, **E**valuation, **A**uthorisation and Restriction of **Ch**emical substances
RF **R**adio **F**requiency
RHCP **R**ight-**H**and **C**ircular **P**olarized
RoHS **R**estriction of **H**azardous **S**ubstances directive
ROM **R**ead-**O**nly **M**emory
RTC **R**eal-**T**ime **C**lock
SAW **S**urface **A**coustic **W**ave
SBAS **S**atellite-**B**ased **A**ugmentation **S**ystems
SGEE™ **S**erver **G**enerated **E**xtended **E**phemeris
SIP **S**ystem **I**n **P**ackage
SMD **S**urface **M**ounted **D**evice
SMT **S**urface-**M**ount **T**echnology
SOC **S**ystem **O**n **C**hip
SPI **S**erial **P**eripheral **I**nterface
TCXO **T**emperature-**C**ompensated Crystal **O**scillator
TTFF **T**ime **T**o **F**irst **F**ix
TTL **T**ransistor-**T**ransistor **L**ogic
UART **U**niversal **A**synchronous **R**eceiver/**T**ransmitter
WAAS **W**ide **A**rea **A**ugmentation **S**ystem

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

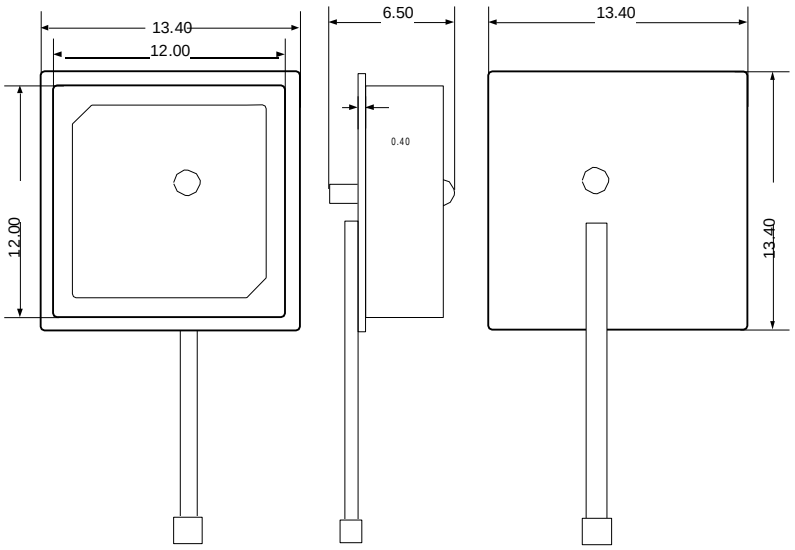

FIGURE 1 – MECHANICAL OUTLINE

Dimensions	Length	Width	Thickness
mm	13.4 ± 0.2	13.4 ± 0.2	6.5 ± 0.1
inch	0.528 ± 0.008	0.528 ± 0.008	0.256 ± 0.004

Weight	
gr	4.0
oz	0.14

TABLE 3 – MECHANICAL SUMMARY

14. SPECIFICATIONS

14.1. ELECTRICAL CHARACTERISTICS

Parameter	Value		Unit	Notes
Resonant Frequency (f_C)	GPS	1575 ± 2	MHz	13mm x 13mm GP
	GLONASS	1598 - 1606		
Return Loss (S_{11})	-10 (min)		dB	@f_C
Bandwidth (BW)	10 (min)		MHz	@ f(S_{11}=-9dB)
VSWR	1.5 (max)			
Impedance (Z_A)	50		Ω	
Axial Ratio (AR)	5.0 (max)		dB	
Gain @ f_C	GPS	-0.3 (max.)	dBic	13mm x 13mm GP
	GLONASS	-3.5 (max.)		
Polarization	RHCP			
Temperature Factor (t_F)	0±20		ppm/°C	-40°C to +85°C

TABLE 4 – ELECTRICAL SPECIFICATIONS

14.2. TYPICAL S111

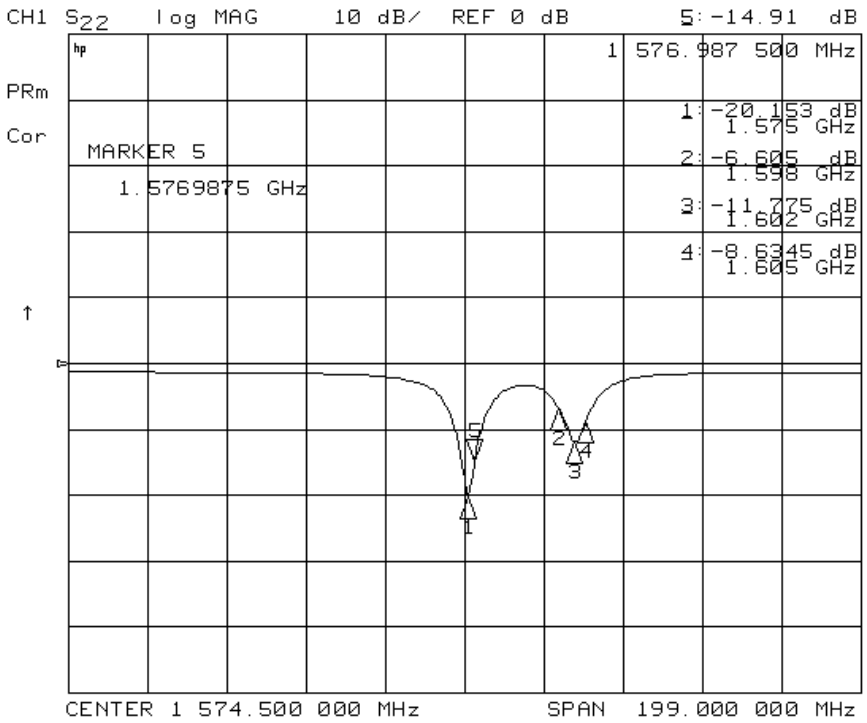

FIGURE 2 – S11 SMITH CHART

Note:

1. Measured on 13x13mm Ground Plane of exposed ENIG FR4 with adhesive tape.

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