OriginGPS
mini+mighty

HORNET SERIES (ORG14XX)
FULLY INTEGRATED GPS MODULE

Datasheet

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1. SCOPE

This document is a quick start guide for the Hornet Series ORG14XX Evaluation Kits.

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.

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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	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	January 12, 2011	First release
2.0	January 14, 2015	Format update, content update according to PCN

TABLE 2 – REVISION HISTORY

8. GLOSSARY

A-GNSS Assisted **GNSS**

BPF Band **P**ass **F**ilter

CE European Community conformity mark

CGEE™ Client **G**enerated **E**xtended **E**phemeris

CMOS Complementary **M**etal-**O**xide **S**emiconductor

COMPASS PRC GNSS (same as **BDS B**ei**D**ou-2 Navigation Satellite **S**ystem)

EGNOS European **G**eostationary **N**avigation **O**verlay **S**ervice

EMC Electro-**M**agnetic **C**ompatibility

ESD Electro-**S**tatic **D**ischarge

EVB Evaluation **B**oard

EVK Evaluation **K**it

FCC Federal **C**ommunications **C**ommission

GALILEO EU GNSS

GLONASS Global **Na**vigation **S**atellite **S**ystem

GNSS Global **N**avigation **S**atellite **S**ystem

GPS Global **P**ositioning **S**ystem

I²C Inter-**I**ntegrated **C**ircuit

IC Integrated **C**ircuit

ISO International **O**rganization for **S**tandardization

LDO Low **D**rop**o**ut regulator

LGA Land **G**rid **A**rray

LNA Low **N**oise **A**mplifier

MSAS Multi-functional **S**atellite **A**ugmentation **S**ystem

MSL Moisture **S**ensitivity **L**evel

NFZ™ Noise-**F**ree **Z**ones **S**ystem

NMEA National **M**arine **E**lectronics **A**ssociation

MEMS Micro**E**lectro**M**echanical **S**ystems

PCB Printed **C**ircuit **B**oard

PPS Pulse **P**er **S**econd

QZSS Quasi-**Z**enith **S**atellite **S**ystem

REACH Registration, **E**valuation, **A**uthorisation and Restriction of **Ch**emical substances

RF Radio **F**requency

RHCP Right-**H**and **C**ircular **P**olarized

RoHS Restriction of **H**azardous **S**ubstances directive

ROM Read-**O**nly **M**emory

RTC Real-**T**ime **C**lock

SAW Surface **A**coustic **W**ave

SBAS Satellite-**B**ased **A**ugmentation **S**ystems

SGEE™ Server **G**enerated **E**xtended **E**phemeris

SIP System **I**n **P**ackage

SMD Surface **M**ounted **D**evice

SMT Surface-**M**ount **T**echnology

SOC System **O**n **C**hip

SPI Serial **P**eripheral **I**nterface

TCXO Temperature-**C**ompensated Crystal **O**scillator

TTFF Time **T**o **F**irst **F**ix

TTL Transistor-**T**ransistor **L**ogic

UART Universal **A**synchronous **R**eceiver/**T**ransmitter

WAAS Wide **A**rea **A**ugmentation **S**ystem

9. ABOUT HORNET FAMILY

Hornet family is offering the industry's smallest fully-integrated, highly-sensitive GPS and GNSS modules with integrated antennas or on-board RF connectors.

Hornet 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.

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

Just connect power supply on a single layer PCB.

10. 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.

11. PACKAGING LIST

The ORG14XX series Evaluation Kit contains:

✚ ORG14XX Series GPS Antenna module mounted on the Demo Board

✚ FTDI USB to UART cable

✚ Support CD

12. SETUP

12.1. Open CD. Select ORG14XX Series from the main menu.

FIGURE 1 –

12.2. Install FTDI USB-UART driver by pressing Driver button.

The driver setup is done in silent mode.

The presence of the Virtual COM port can be verified via Control Panel-System-Device Manager.

12.3. Install SiRFLive software by pressing SiRF Live Setup button.

Follow on-screen instructions during SiRFLive setup process.
Uninstall any previous SiRFLive version before current setup attempt.

12.4. Connect FTDI USB to UART cable between the Demo Board and the PC.
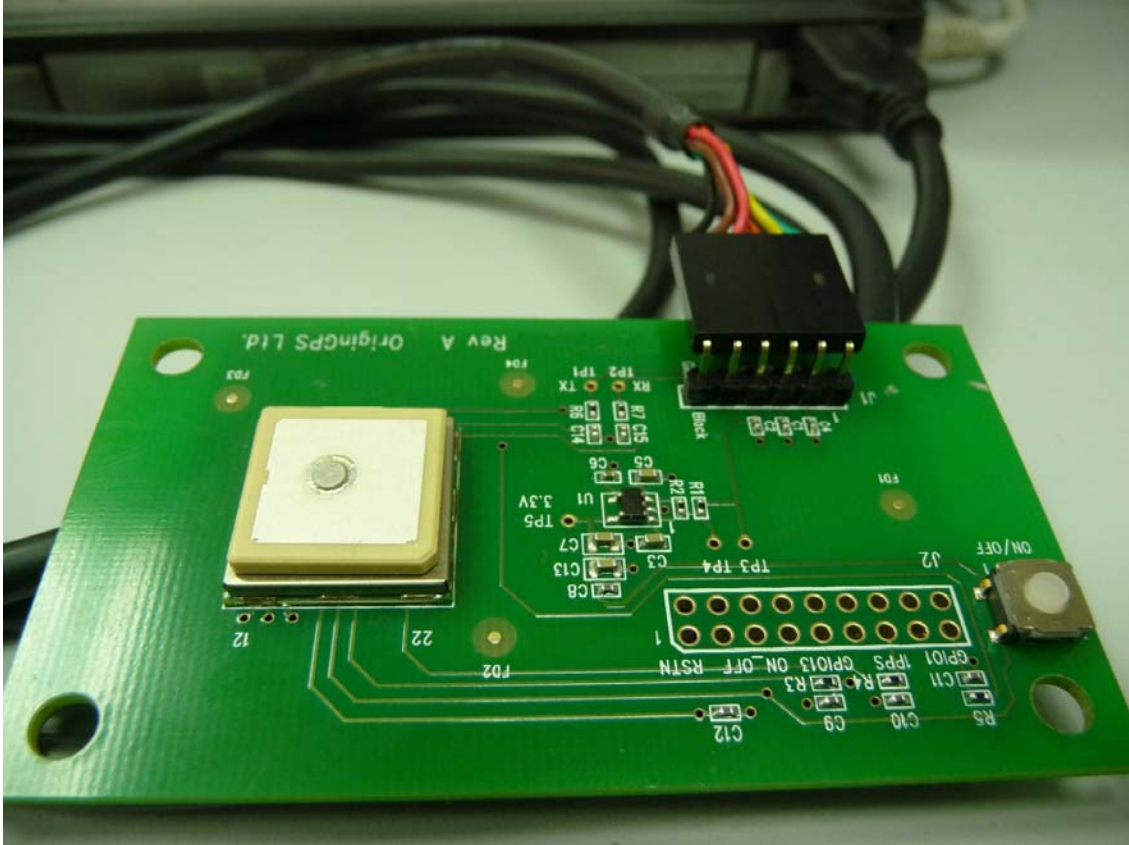

FIGURE 2 –

13. SiRFLive ESSENTIALS

13.1. Open SiRFLive by clicking desktop icon.
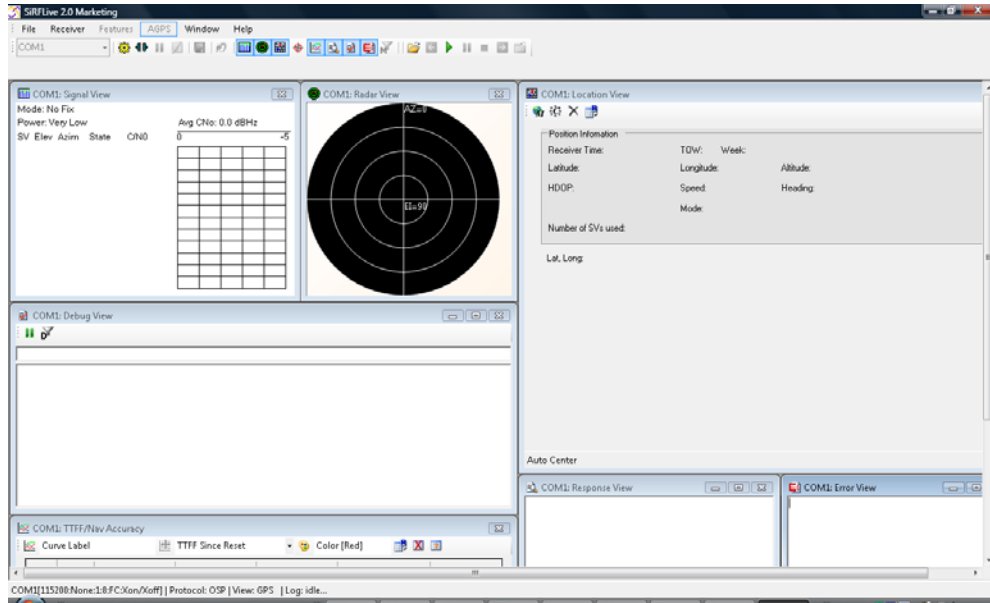

FIGURE 3 –

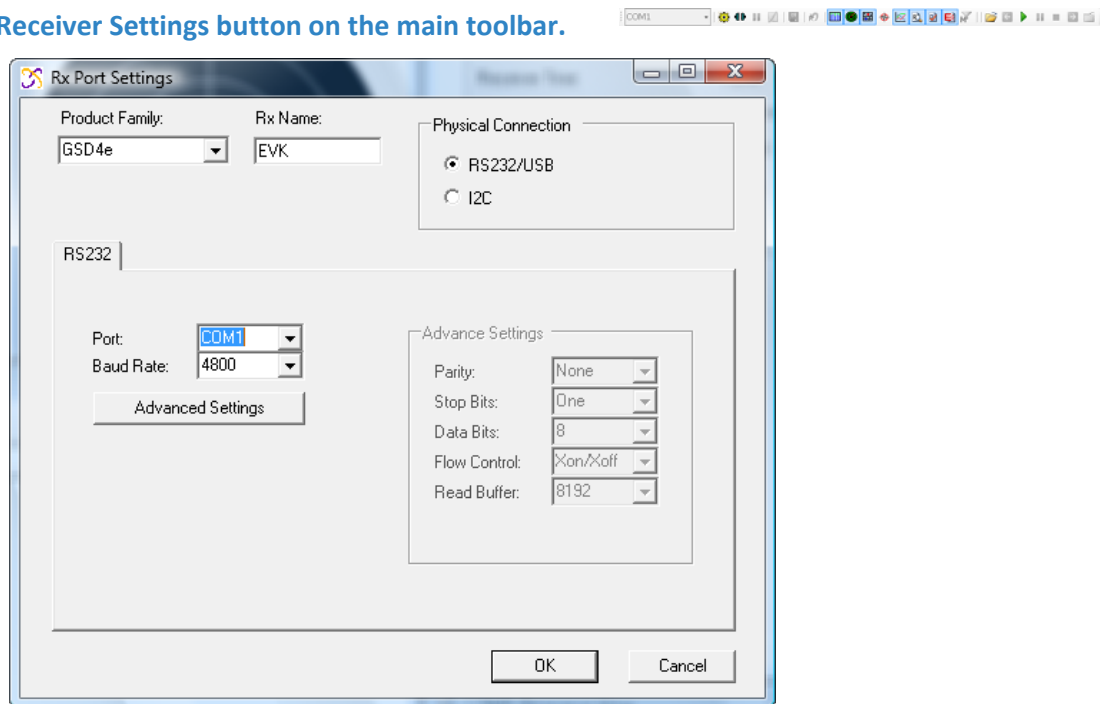### 13.2. Press Receiver Settings button on the main toolbar.

FIGURE 4 –

Select GSD4e in Product Family box.

Select RS232/USB for Physical Connection.

Select the Virtual COM port as assigned by the driver. Typically it would be the highest available.

Select 4800 for Baud Rate.

Press OK when finished.

13.3. Press Connect button on the main toolbar.

Auto Baud Rate routine will start.

At the end, the NMEA messages will start bursting in Debug View window.

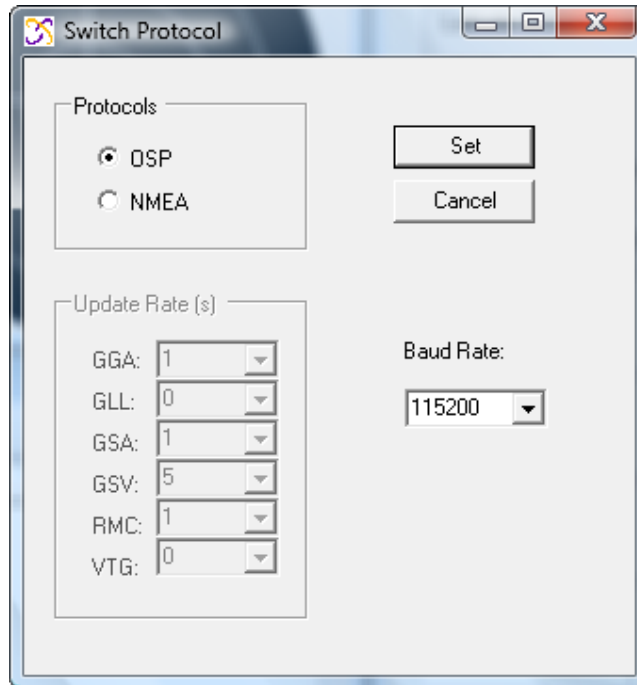It's highly recommended to switch to Binary Protocol by Receiver-Command-Switch Protocols:

FIGURE 5 –

For extended support for SiRFLive software refer to the SiRF Live Manual on this CD.

14. EVALUATION KIT ESSENTIALS

14.1. PATCH ANTENA

GPS antenna is embedded on the top of the module.
GPS antenna upper surface should be placed up towards the sky to keep GPS satellites in view.

14.2. TACTILE SWITCH FUNCTION

The tactile switch is used to wake up to GPS module from the Hibernate state of one of the low power modes, typically for triggering Push-To-Fix (PTF™).