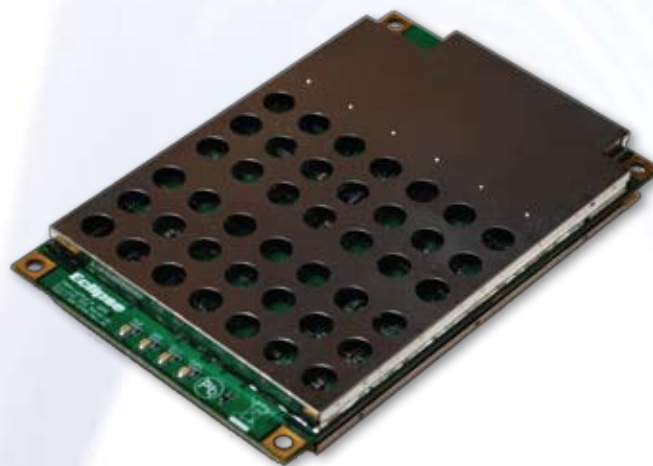# Eclipse OEM Board
## Dual-Frequency GPS Module

**Eclipse™**

Develop precise applications with superior performance and versatility of Hemisphere GPS' Eclipse™ OEM board. Eclipse receiver technology delivers reliable dual-frequency GPS solutions through Hemisphere GPS' exclusive techniques for reducing code measurement noise and mitigating multipath signals. Eclipse fits a wide range of applications with support for a variety of differential GPS solutions including RTK, OmniSTAR® (HP and XP) and SBAS (WAAS, EGNOS, etc.).

Integration is simplified with Eclipse multiple serial and USB ports and upgradable firmware for establishing the desired configuration and quick access to new features. In addition, an OEM development kit (available separately) makes integration configuration testing in a variety of applications quick and easy.

## Key Eclipse Advantages

- Affordable L1/L2 GPS solution with update rates of up to 20Hz
- High-precision positioning in RTK, OmniSTAR HP/XP and SBAS/DGPS modes
- Integrated L-band tracking powers down when not in use
- OmniSTAR subscriber access permits remote activation via satellite uplink
- COAST™ stability during temporary differential signal outage
- Raw GPS data output available

# Eclipse OEM Board

## GPS Sensor Specifications

| | |
|---|---|
| Receiver Type: | L1 & L2 RTK with carrier phase |
| Channels: | 12 L1CA GPS |
| | 12 L1P GPS |
| | 12 L2P GPS |
| | 3 SBAS or 3 additional L1CA GPS |
| Update Rate: | 10 Hz standard, 20 Hz available |
| Cold Start Time: | <60 s |
| Warm Start Time 1: | 30 s (valid ephemeris) |
| Warm Start Time 2: | 30 s (almanac and RTC) |
| Hot Start Time: | 10 s typical (valid ephemeris and RTC) |
| Reacquisition: | <1 s |
| Positioning Modes: | Autonomous, SBAS, DGPS, RTK, OmniSTAR |
| DGPS Formats: | External RTCM v2.x |
| RTK Formats: | CMR, CMR+[1], RTCM v3.x, Proprietary |
| OmniSTAR Formats: | HP, XP |

## Horizontal Accuracy

| | RMS (67%) | 2DRMS (95%) |
|---|---|---|
| RTK: [2,3] | 10 mm + 1 ppm | 20 mm + 2 ppm |
| OmniSTAR HP: [2,4] | 0.1 m | 0.2 m |
| SBAS (WAAS): [2] | 0.3 m | 0.6 m |
| Autonomous, no SA: [2] | 1.2 m | 2.5 m |

## L-Band Specifications

| | |
|---|---|
| Channels: | Single channel |
| Frequency Range: | 1530 to 1560 MHz |
| Satellite Selection: | Manual or Automatic (based on location) |
| Start Up and Satellite Reacquisition Time: | 15 seconds typical |

## Communications

| | |
|---|---|
| Serial Ports: | 3 full duplex 3.3 V CMOS |
| Baud Rates: | 4800 - 115200 |
| USB Ports: | 1 Communications, 1 Flash Drive data storage |
| Correction I/O Protocol: | Hemisphere GPS proprietary, RTCM v2.3 (DGPS), RTCM v3 (RTK), CMR, CMR+ |
| Data I/O Protocol: | NMEA 0183, Hemisphere GPS binary |
| Timing Output: | 1 PPS (HCMOS, active high, rising edge sync, 10 kΩ, 10 pF load) |
| Event Marker Input: | HCMOS, active low, falling edge sync, 10 kΩ |

## Environmental

| | |
|---|---|
| Operating Temperature: | -30°C to +70°C  (-25°F to +165°F) |
| Storage Temperature: | -40°C to +85°C  (-40°F to +185°F) |
| Humidity: | 95% non-condensing |

## Power

| | |
|---|---|
| Input Voltage: | 3.3 VDC +/- 3% |
| Power Consumption: | <2.9 W nominal |
| Current Consumption: | 875 mA nominal |
| Antenna Voltage Input: | 15 VDC maximum |
| Antenna Short Circuit Protection: | Yes |
| Antenna Gain Input Range: | 10 to 40 dB |
| Antenna Input Impedance: | 50 Ω |

## Mechanical

| | |
|---|---|
| Dimensions: | 109.2 L x 71.1 W x 16.0 H mm (4.3 L x 2.79 W x 0.63 H in) |
| Weight: | <68 g (<2.4 oz) |
| Status Indication (LED): | Power, GPS lock, differential lock, and DGPS position |
| Power/Data Connector: | 70-pin male header, 0.05" pitch |
| Antenna Connector: | MCX, female, straight |

1 Receive only, does not transmit this format.

2 Depends on multipath environment, number of satellites in view, satellite geometry and ionospheric activity.

3 Depends also on baseline length.

4 Requires a subscription from OmniSTAR.

Note: The Eclipse receiver technology is not designed or modified to use the GPS Y-Code

Authorized Distributor: