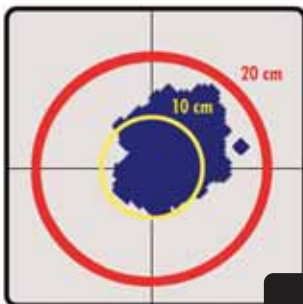




# STARFIRE

- Global Satellite Based Augmentation System (GSBAS)
- Real-time Decimeter Global Accuracy
- Worldwide Coverage
- No Base Station Necessary
- Six Satellite Constellation for Redundancy



A John Deere Company

[www.navcomtech.com](http://www.navcomtech.com)

## THE POWER TO DO IT ALL

The StarFire Network is the world's first Global Satellite Based Augmentation System (GSBAS) capable of real-time decimeter accuracy. Performance is no longer a function of your distance from a reference station, so you have the freedom to use StarFire anywhere in the world.

## REAL-TIME GLOBAL ACCURACY

- Less than 10 cm. one-sigma per horizontal axis (15 cm. vertical) using NavCom algorithms and receivers
- 10-30 cm. one-sigma per horizontal axis (15-60 cm. vertical) using external navigation algorithms and receivers
- No local base station / radio comm. link required
- Global availability

## METHODOLOGY

The StarFire Network is a major advance from earlier ground based augmentation systems because it considers each of the GPS satellite signal error sources independently. GPS satellite orbit and clock corrections are calculated from a global tracking network of dual frequency receivers. These corrections are transmitted via Inmarsat satellite links direct to StarFire receivers, resulting in minimal data latency and worldwide operation from 75 degrees North to 75 degrees South. All StarFire receivers use a dual frequency GPS receiver that measures the ionospheric delay for each satellite. Tropospheric zenith delays are calculated from a multi-state time and position model aided by redundant satellite observables.

## RELIABILITY

- 99.999% availability
- Extensive monitoring through internal checks
- Real-time monitoring of global positioning results
- Redundancy throughout all segments of the system

Redundant data links, geographically separated processing hubs and dual satellite uplink equipment ensure continuous reliable positioning. The system is inherently robust with the ability to calculate a full set of corrections even if multiple reference stations were to become unavailable.

## APPLICATIONS

StarFire receivers are available as fully integrated units or modular systems. Applications that can benefit from StarFire performance, accuracy and availability include:

- Land Survey
- Offshore Positioning
- Precision Agriculture
- Aerial Photogrammetry and LIDAR
- GIS and Asset Mapping
- Machine Control
- Unmanned Vehicles
- Government & Military

## SYSTEM INTEGRITY

A global network of dual frequency GPS receivers provides raw data every second via reliable redundant data links to two network processing centers located in Torrance, (S.W., USA) and Moline, (N.E., USA). These receivers are tied to the latest realization of the International Terrestrial Reference Frame (ITRF) coordinate system. StarFire's primary time reference is coupled to the International Atomic Time standard.

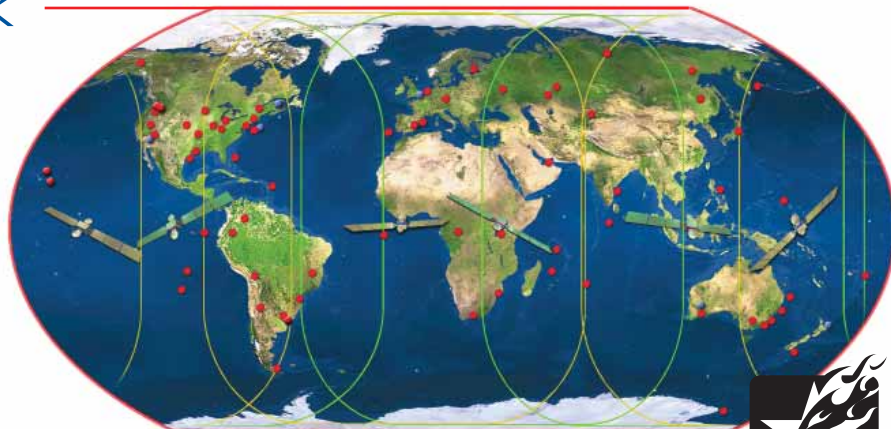
The network is a fully automated continuously self-monitoring system overseen around the clock by StarFire Network operators. The GSBAS algorithms developed by NavCom are based on technology licensed from NASA's Jet Propulsion Laboratory. Orbit and clock corrections from both processing centers are distributed via dedicated circuits with multiple communication backups to three Inmarsat satellite uplink stations. An independent network of StarFire user equipment continuously monitors system accuracy to ensure maximum reliability.

## PERFORMANCE

Using any of NavCom's StarFire GPS receivers provides better than 10 cm horizontal and 15 cm vertical accuracy (1 sigma).

Unlike DGPS positions that are relative to the reference station location, StarFire produces absolute, ITRF positions anywhere, any time. StarFire accuracy is independent of the distance to the nearest reference station.

# StarFire Network Coverage Area



A John Deere Company

20780 MADRONA AVENUE, TORRANCE, CA 90503 USA

WWW.NAVCOMTECH.COM • SALES@NAVCOMTECH.COM

TEL: +1 310 381 2000 • FAX: +1 310 381 2001

