



CASE STUDY | EVENT 38 UNMANNED SYSTEMS



“
Having Swift’s dual-frequency GNSS solution available at an affordable price enables Event 38 to make its products more accurate and reliable.
”

—Jeff Taylor, CEO & Founder

CUSTOMER

Event 38 Unmanned Systems

PRODUCTS

Piksi® Multi

USE CASE

UAV, Surveying

[Event 38 Unmanned Systems](#) began with the goal of making aerial data collection more affordable by using unmanned aircraft systems (UAS). Since its start in 2011, Event 38 has quickly grown as a designer and manufacturer of fixed-wing drones equipped with various sensor payloads. Carrying visible, multispectral, thermal and LiDAR sensors, Event 38 drones collect data to assist in surveying, inspection, mining, security and precision agriculture.

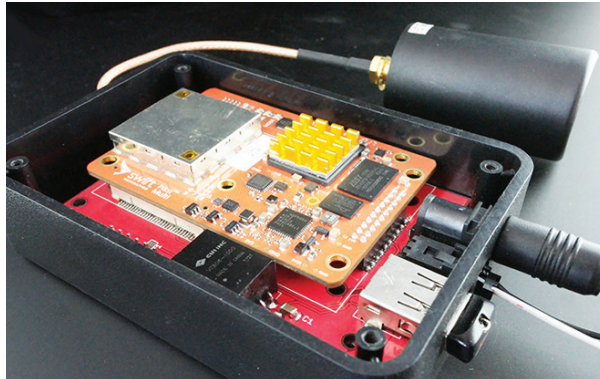
Challenge

Event 38’s fixed-wing drones utilize global navigation satellite systems (GNSS) to gather data via aerial surveying. Fixed-wing drones allow for longer flights while the use of GNSS systems decreases the time required in the field, eliminates the need for manual collection of data using ground control points (GCPs) and eliminates the need for an operator to travel around the survey area. Event 38 utilizes post processed kinematics (PPK) for its data collection and geotagging photos taken in air, and it is less labor intensive than applying ground control points, as GCPs each require multiple manual target identifications.

Solution

Initially, Event 38 utilized single-band receivers, but they required extensive boot-up times to gain a good fix. The time required to obtain this fix took away from the benefits its solution provided including limited time in field. Event 38 soon learned that a dual-frequency GNSS receiver was ideal for its application. Multiple signal bands enable faster convergence times, allowing Event 38 to connect with satellites more quickly. Multiple bands also allow for faster re-acquisition times should the need arise. Piksi Multi from Swift Navigation was the GNSS solution that met Event 38’s needs.

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Piksi Multi is a multi-band, multi-constellation real-time kinematics (RTK) GNSS receiver that provides centimeter-level accuracy at an affordable cost. Being multi-band means fast convergence times measured in seconds, not minutes. Access to multiple satellite constellations improves availability, reliability and range between base and UAS.

Though Piksi Multi can capture and share data in real-time, Event 38 recommends using its PPK functionality for most aerial surveying applications. Utilizing Piksi Multi's dual-frequencies helps ensure that Event 38 maintains a good fix—an essential feature when good data is needed on the first pass.

Piksi Multi powers Event 38's [Intellishoot Geotagging System](#). Intellishoot is a stand-alone unit designed to be easily integrated into any system requiring highly accurate and highly reliable image positioning. In addition to Piksi Multi, Intellishoot includes an antenna and PPK geotagging software.

Results

Data on the performance of the dual-frequency Intellishoot Geotagging System can be found in Event 38's detailed [case study](#). Intellishoot has demonstrated it is capable of producing extremely accurate orthomosaics for cameras integrated onto a UAS with horizontal and vertical Root Mean Square Error (RMSE) of 2.82 cm and 3.62 cm respectively, even from 100m AGL flying height and at 12 meters / second flying speed.

Contact [Swift Navigation](#) for GNSS solutions to benefit your UAS application.