Ekinox Test Results

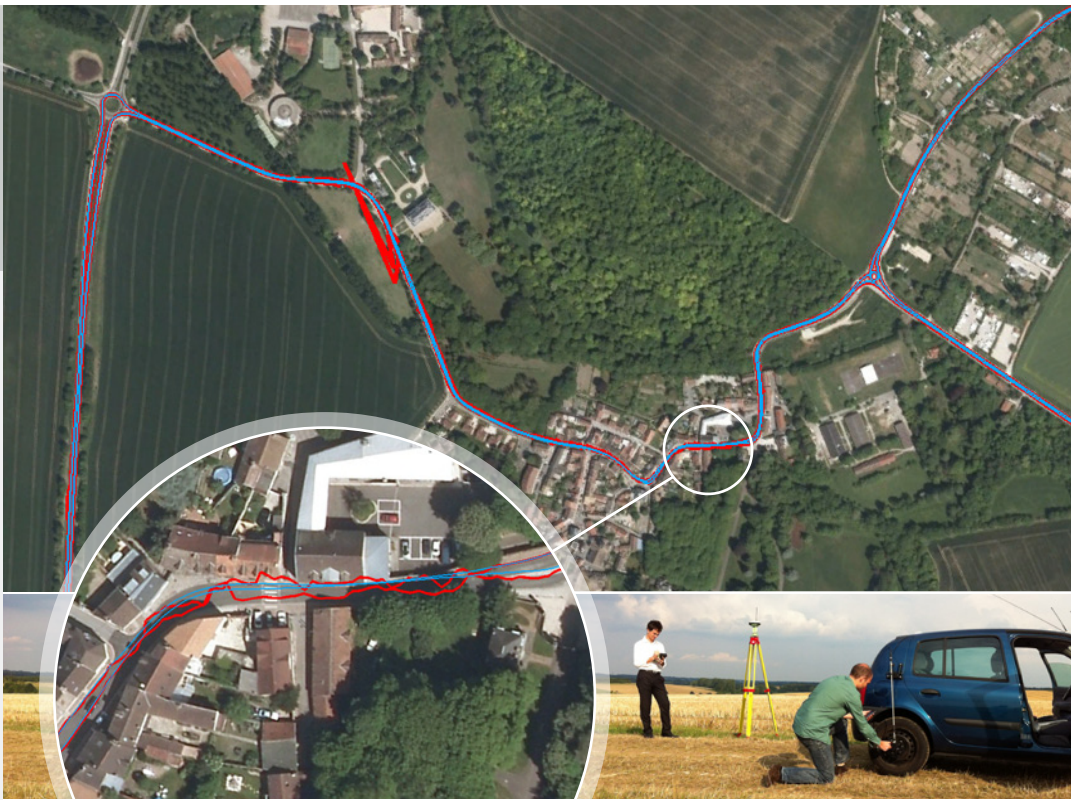
TEST ENVIRONMENT

AUTOMOTIVE

PRODUCT ON TEST

Ekinox Series

Ekinox Land Solution



Real time GPS data Real time Ekinox INS output

Test 1 - Countryside

Tested Equipment

Ekinox-D, Inertial Navigation System with integrated Dual Antenna GNSS receiver.

RTK GNSS base station with a SATEL RF modem to transmit differential corrections to the Ekinox.

Odometer connected to the Ekinox-D for velocity aiding.

Results

When entering in a small village downtown, the Radio was not able to send enough corrections to maintain RTK positioning accuracy. Spikes and jumps are observed on GPS data (in red on the picture above). The Ekinox data fusion (in blue) behaved exactly as expected in these situations and maintained optimal positioning accuracy. As there is no long outages in such environment, the use of an odometer is not required.

REAL-TIME 3D ORIENTATION (RMS)

Roll	Pitch	Yaw
0.028°	0.032°	0.14°

Roll and Pitch are more accurate than the announced accuracy (0.05°). With a baseline of 1.2m, Heading accuracy is within expectations (0.2° with 1 m baseline). A better heading accuracy could be achieve with a larger baseline.

REAL-TIME POSITION

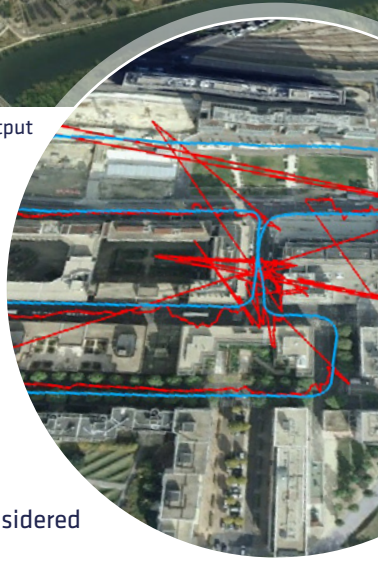
Northing	Easting	Altitude
2.0 cm	2.7 cm	3 cm

RMS errors observed here are close to what is achievable when RTK data reception is poor.

SBG SYSTEMS

Real time GPS data Real time Ekinox INS output

Test 2 - Urban Environment



Results

REAL-TIME PERFORMANCE DURING GPS OUTAGES

Real GPS outages such as long tunnels sections (3.75 km) were tested throughout the journey. Several position errors at the end of dead reckoning sections are measured below.

Outage Lenght	Error at end of outage	Error in % of TD*	Duration
300m	< 0.2m	< 0.066 %	16s
3,750m	4.2m	0.11 %	200s
1,200m	1.8m	0.15 %	63s
360m	0.25m	0.069 %	20s

** Travelled Distance*

Average dead reckoning error
0.11 % of traveled distance

Thanks to the automotive motion profile and odometer aiding, the Ekinox-D maintains excellent positioning accuracy.

REAL-TIME PERFORMANCE IN URBAN CANYONS

Standalone GPS (in red) cannot be considered as reliable in dense urban conditions.

Thanks to the internal real-time fusion of inertial, GPS, and odometer data, the Ekinox (blue line) always stayed on the track and did not get fooled by wrong GPS measurements.

Equipment

Ekinox-D, Inertial Navigation System with integrated Dual Antenna GNSS receiver.

Odometer connected to the Ekinox-D for velocity aiding.

ENHANCE EKINOX ACCURACY WITH POST-PROCESSING

If real-time data is not required by your application, Post-processing is an efficient solution to enhance data accuracy.

EKINOX POST-PROCESSING STANDARD ACCURACY

- Roll, Pitch 0.02°
- Heading 0.03°
- Position 2 cm

POST-PROCESSING AS A REFERENCE

Comparisons for both Test 1 and 2 were made between Ekinox real time and post-processing output using Inertial Explorer suite. The post processed data was considered as a reference.

SBG SYSTEMS
www.sbg-systems.com

SBG Systems EMEA (Headquarters)
Phone: +33 1 80 88 45 00
E-mail: contact@sbg-systems.com

SBG Systems North America
Phone: +1 (773) 754 3272
E-mail: contact.usa@sbg-systems.com