



SARANTEL

Drive Testing With 15x15mm Patch and GeoHelix Antenna in an Athermic Wind Screened Vehicle

Test Set-up



Antenna set-up:

15mmx15mm Patch with 18mmx18mm Ground Plane

GeoHelix antenna with no Ground Plane

25mmx25mm with 30mmx30mm Active Patch reference antenna

In vehicle set-up:

15mmx15mm Patch and GeoHelix antenna placed on the dashboard

25mmx25mm Active Patch placed on the roof of the vehicle

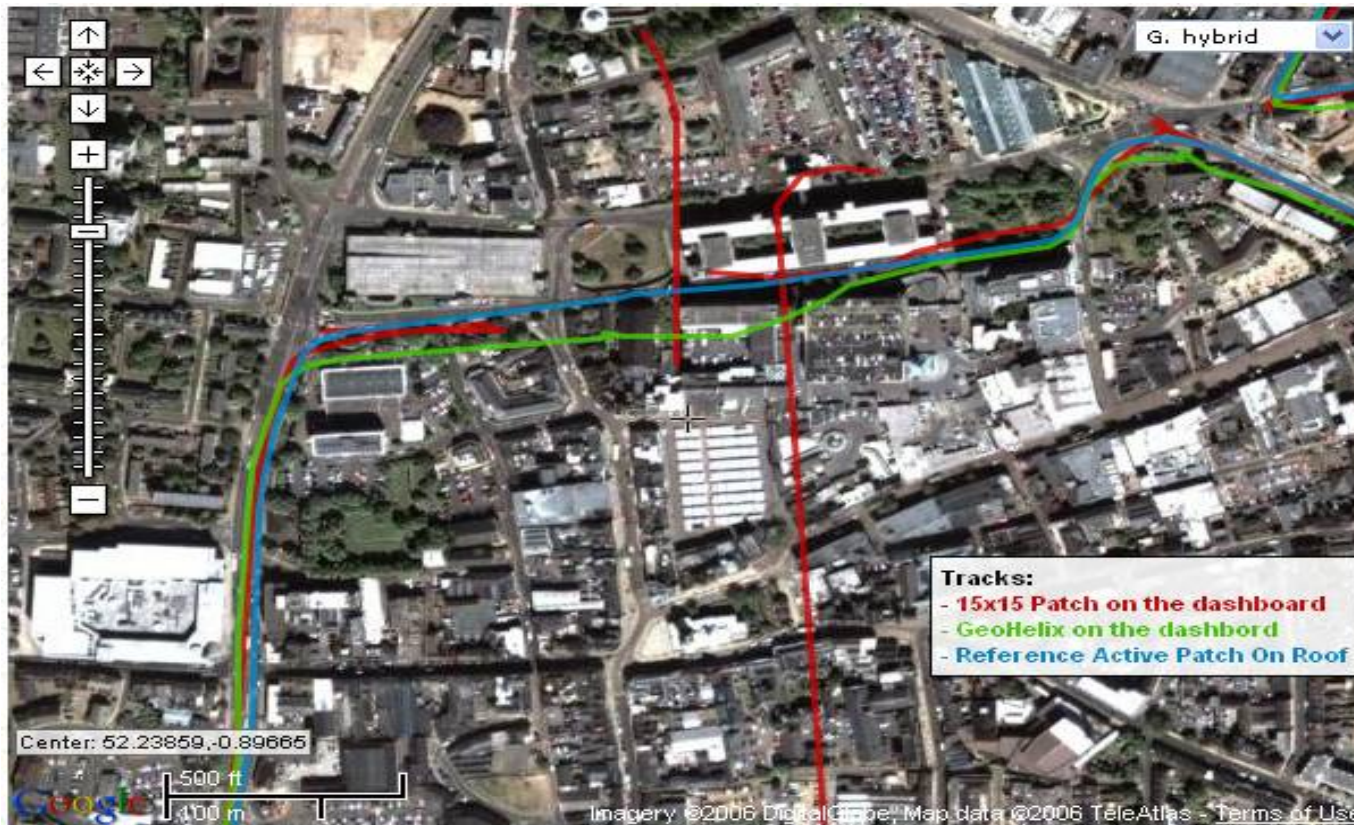
- this is the reference measurement as the best achievable

All three antennas connected to SiRF Star III based reference designs and NMEA data logged. The emphasis of this test was on positional accuracy.

Drive route covered both rural and urban areas. Test carried out in the morning and afternoon.

Detailed Positional Accuracy Analysis

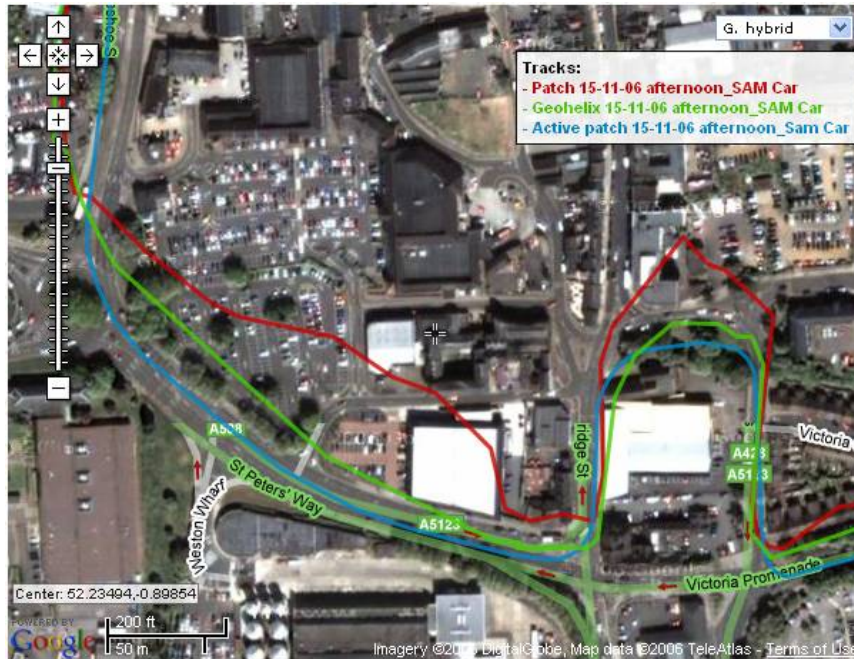
MORNING DRIVE TEST



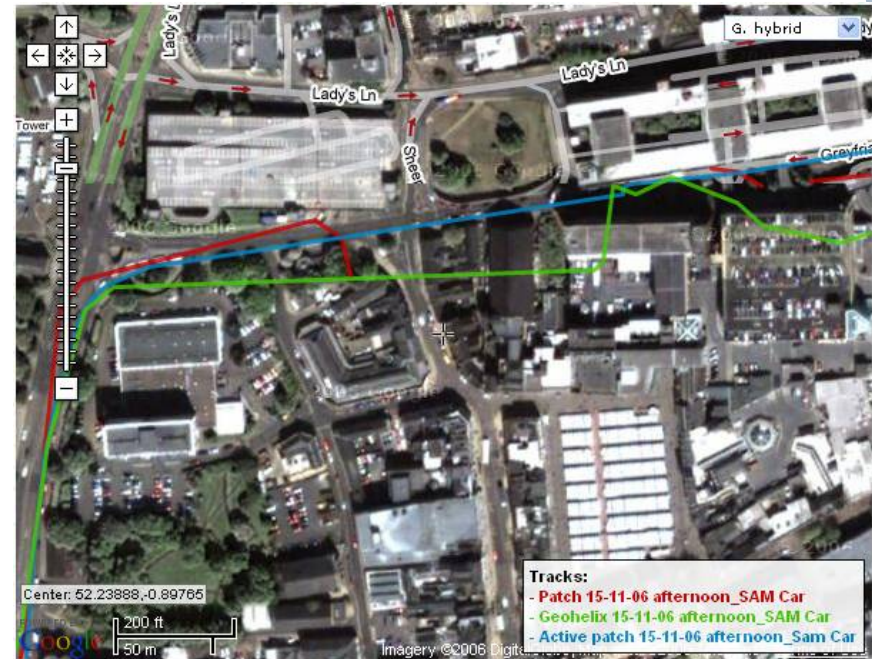
15x15 Patch loses positional accuracy in urban canyons as shown by the red plot above – its track is significantly inaccurate in comparison to the road.

Small inaccuracy of the GeoHelix can be rectified by the software 'snap to the road' capabilities whilst not possible with the 15x15 patch.

AFTERNOON DRIVE TEST



Accuracy of the patch is poor going round bends



Patch loses its position completely

In the afternoon drive test, the positional accuracy of the 15x15 patch is significantly inaccurate at two occasions. The active patch was mounted on the roof of the vehicle as a reference.

Conclusions



- Drive tests have highlighted that 15mmx15mm patch antennas lose positional accuracy in semi-urban areas and it cannot be compensated by the 'snap to nearest road' capabilities of the software.
- The 15mmx15mm patch antenna also struggles going round bends with its track significantly away from the road.
- GeoHelix performs significantly better than the 15mmx15mm patch and its slight inaccuracy in the urban canyon can be compensated by the capabilities of the mapping software.
- The GPS signal attenuation through the athermic wind screen is significantly large and hence the antenna has to rely on signals penetrating through side and back windows of the vehicle. The GeoHelix is omni-directional and has a large 3dB beamwidth allowing the pick up of satellites through the side windows and back. This is particularly important in picking up low elevation satellites in clustered environments.
- Overall the GeoHelix provides a more stable navigational experience in comparison to the 15mmx15mm Patch.