RELAY VEHICLE FOR TRANSMITTING POSITIONING SIGNALS TO ROVERS WITH AN OPTIMIZED DILUTION OF PRECISION

Technological advantages

Innovative :

- Use of mobile relay platforms to transmit GNSS carrier signals from satellites in complex terrestrial and submarine environments.

Efficient :

- Significant improvements to the receivers accuracy in tough receiving conditions.
- Enhanced resilience to transient failures.

Invention synthesis

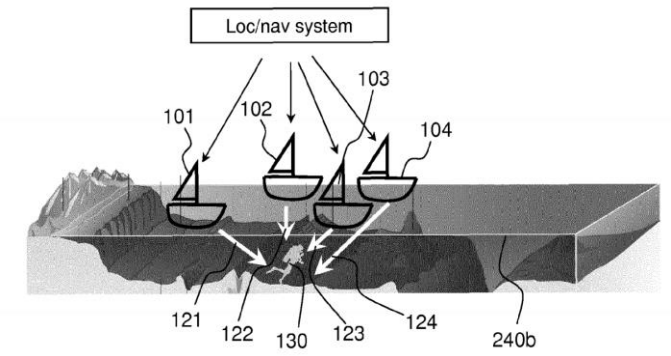
The invention presents a mobile platform for relaying positioning signals; its location may be adapted (even in real time) to improve the signal quality.

GNSS receivers calculate the position, velocity, time from satellites GNSS carrier signals using pseudo-ranges between the receiver and the satellites. Errors arise from atmospheric perturbations, orbit variations or clock accuracy, satellites dispersion. Errors due to multiple path reflections, temporary loss in line of sight are difficult to correct. Methods to correct these errors can be complex and costly.

The invention proposes the use of a relay mobile vehicle (an air or sea surface vehicle), to receive, process and transmit (RF, acoustic, optical methods) positioning signals. The relay vehicle position can be adjusted to improve the signal (for example taking into account the topography near the target GNSS receiver).

Potential applications

- Positioning in tough conditions : urban canyons, thick tree cover, underwater and deep sea vehicles.



Schematic application based on this invention

(101,102,103,104) Above sea GNSS relays
(121,122,123,124) Signals from the relays to an underwater receiver
(130) Diver to be guided
(240b) Sea level

Commercial benefits

- Improvement in GNSS receiver accuracy / reliability in complex terrestrial and submarine applications.
- Relays can be dynamically relocated for performance optimization.
- No change on the GNSS receiver side.

Patented invention - under license.

For more information :

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