CEPSTRUM-BASED MULTIPATH MITIGATION OF A SPREAD SPECTRUM RADIOCOMMUNICATION SIGNAL

Technological advantages

Innovative :

- Removal of reflected propagation paths contribution from the received signal.

Efficient :

- Reduced requirements for computational power at the correlation step.

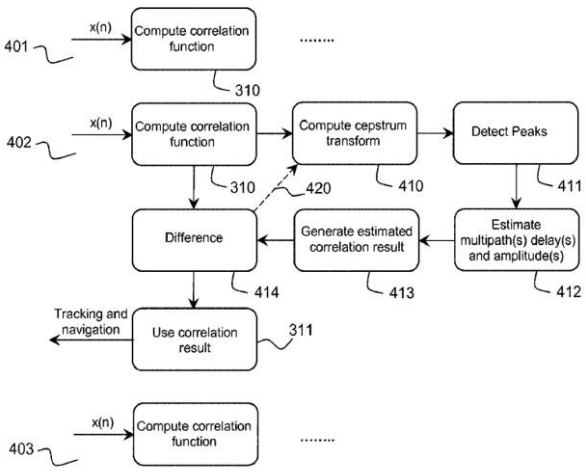
Invention synthesis

The invention deals with tracking satellite positioning signals (GNSS) in a multipath propagation environment. Depending on the environment, the satellite signal may be in direct line of sight or may result from reflections. Reflected signals are delayed replicas with different amplitude and phase. Techniques to mitigate multipath reflections are complex (large computational power), can be slow and do not perform well for low signal to noise ratio.

The present method computes at least one first correlation function between the received signal and a local replica. A Cepstrum transform of the correlation function output is done to detect the reflected propagation paths and their propagation characteristics. The detected reflection propagation paths can then be removed from the signal or from the correlation function output.

Potential applications

- All GNSS receivers, especially suited to complex environments such as navigation in urban areas.



Architecture of a system according to this invention

(311) Compute discriminators
(401,402,403) Tracking loops.
(310) Correlation function module
(410) Cepstrum transform compute module
(411) Peak detection module
(412) Multipath characteristics compute module
(413) Estimated correlation result module

Commercial benefits

- Improves GNSS accuracy in complex environments. Requires less computational power than similar techniques.

Patented invention - under license.

For more information :

Valo-TT@cnes.fr