TRANSMISSION OF GNSS SIGNALS USING A RADIO COMMUNICATION NETWORK

Technological advantages

Innovative :

- Transmit multiplexed regular signals and GNSS like signals over standard emitters.
- Available for Wi-Fi, Bluetooth, 3G, 4G, 5G…

Efficient :

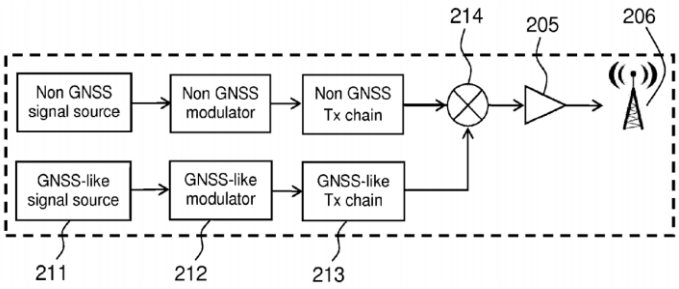
- Provides accurate indoor positioning.
- Accuracy increases with increasing number of emitters.
- Conforms to RF regulations.

Invention synthesis

The invention deals with indoor positioning systems integrated within an RF wireless network.
GNSS positioning provides metric precision when many satellites are in direct line of sight. Signal perturbations (multipath, masking, …) degrade the positioning accuracy. This is especially true for indoor positioning. Methods have been developed (using Wi-Fi, digital TV signal strength …), but are not very accurate. Other methods using different frequencies (eg UWB) suffer from RF regulations. Using sensors (inertial) or repeaters can be complex and costly.
The present invention uses regular standard transmitters (Wi-Fi, Bluetooth, 3G,4G,5G …) to emit GNSS like signals multiplexed with standard non GNSS data. The receiver can then be configured to process the navigation message and associated pseudo-range measurements relative to the different standard emitters.

Potential applications

- Malls, warehouses, stadium…



General functional architecture of a system according to this invention

(211) Unit generating the GNSS like source
(212) Unit modulating the GNSS like source
(213) Unit transmitting the GNSS like source
(214) RF signal mixer
(205) Amplifier
(206) Antenna

Commercial benefits

- Cost effective solution for indoor accurate positioning.
- Compatible with large number of receivers.
- Compatible with existing RF technology.
- Can be applied to new RF communication protocols.

Patented invention - under license.

For more information :

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