VISIBLE LIGHT COMMUNICATION BASED POSITIONING

Technological advantages

Innovative :

- Use of Li-Fi : use visible light at a speed imperceptible to the human eye.

Efficient :

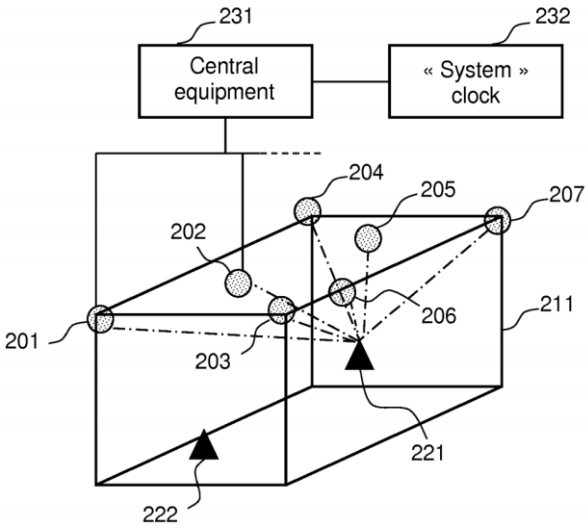
- High accuracy.
- Economical, does not require specific hardware.
- Can be deployed anywhere.
- No interference with electronic devices.

Invention synthesis

The invention deals with a positioning system based on Visible Light Communication (VLC).
Standard GNSS systems may be accurate but require clear line of sights. The accuracy decreases drastically for indoor positioning. Ad-hoc and hybrid fixes using RF signals are complex and costly to set-up. Using inertial sensors is time dependent and requires complex calibrations. VLC based methods have been proposed but with limited accuracy and added complexity.
The invention is based on using a set of VLC transmitters with a positioning signal with a navigation message and time information. Each VLC transmitter includes its own pseudo random sequence and is linked to a central clock (which does not need to be accurate). The receiver is configured to compute a pseudo range from the VLC emitters to obtain its location.

Potential applications

- Location and navigation, especially suited for indoor environments : warehouses, stadium, mall, …



Schematic of the device structure

(201,207) VLC transmitters
(221) Receiver
(222) Reference VLC receiver
(211) Room
(231) Central equipment to synchronize positional signal transmissions
(232) Clock

Commercial benefits

- Cheap system providing highly accurate positioning information.
- Simple to set-up and operate.
- No RF use.
- Works well especially when GNSS systems fails (e.g. indoor spaces).

Patented invention - under license.

For more information :

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