Achieving efficient GPS antenna installation and assisting in synchronization of base stations

Optimizing the location of an antenna that receives GPS satellite signals is a problem when navigation satellite systems are applied to time synchronization of mobile base stations. Precision of time synchronization and positioning is substantially improved and antenna installation cost is greatly reduced by using a technique to estimate GPS satellite signal detection characteristics from spatial information of GPS antenna surroundings.

Features

- GPS antenna installation costs are drastically reduced by estimating GPS satellite signal detection characteristics via simulation using image data of GPS antenna surroundings taken with an all-direction camera.
- The effect of multipath signals with reflective and diffractive waves that degrade the precision of time synchronization is avoided by using proprietary synchronization techniques* with dynamic selection of visible GPS satellite signals. Cost-effective and high-precision time synchronization can be achieved.
- Operation with a software tool used on tablet devices assists in selecting the GPS antenna's location.

Application Scenarios

- Time synchronization for mobile base stations
- High-precision time synchronization with GPS antennas installed inside office buildings
- Applications requiring time synchronization such as high frequency trading (HFT), smart grids, and grid computing
- Traffic, ITS (intelligent transportation systems), land surveys, and automated navigation
- Positional evaluation of antenna location of general satellites such as broadcast satellites
- Promotion of various services in which positioning, navigation, and time synchronization by navigation satellite systems are used toward realizing a G-space society* in the IoT era.

* Active navigation satellite selection (ANSS) / Active holdover (AHO)
* G-space society: a society that highly utilizes geographical spatial information with geographic information systems and navigation satellite systems