

INTER-NETWORK OPERATION OF MULTIPLE LOCATION NETWORKS

ABSTRACT

The present invention discloses a system and method for allowing a position receiver to determine position solutions from positioning signals from a plurality of autonomous positioning networks, each of which is synchronized to a different timebase. Each of the plurality of autonomous networks comprises one or more positioning-unit device, which is a specialized transceiver capable of receiving and interpreting reference positioning signals from a reference transmitter, a position receiver, another positioning-unit device or all. At least one positioning-unit device within a first autonomous positioning network receives positioning signals from at least one positioning-unit device from a second adjacent autonomous positioning network and measures the timebase difference between the second network and the first network and subsequently calculates a timebase clock correction. The at least one positioning-unit device within the first network incorporates the timebase clock correction into its positioning signals for transmission. Other positioning-unit devices within the first network receive and replay the positioning signals incorporating the timebase clock correction. A position receiver situated near the boundary of two of the plurality of networks receives positioning signals incorporating the timebase clock corrections from any positioning-unit device within the first network and also receives positioning signals from one or more positioning-unit devices from the second network. The position receiver applies the timebase clock correction to the positioning signals received from one or more positioning-unit devices from the second network. The position receiver then calculates its own position using positioning signals from the first network and the second network. Hence, although the positioning signals from the positioning-unit devices from the different networks are synchronized to different timebases, the position receiver is able to use these signals for position solutions.

Figure 2