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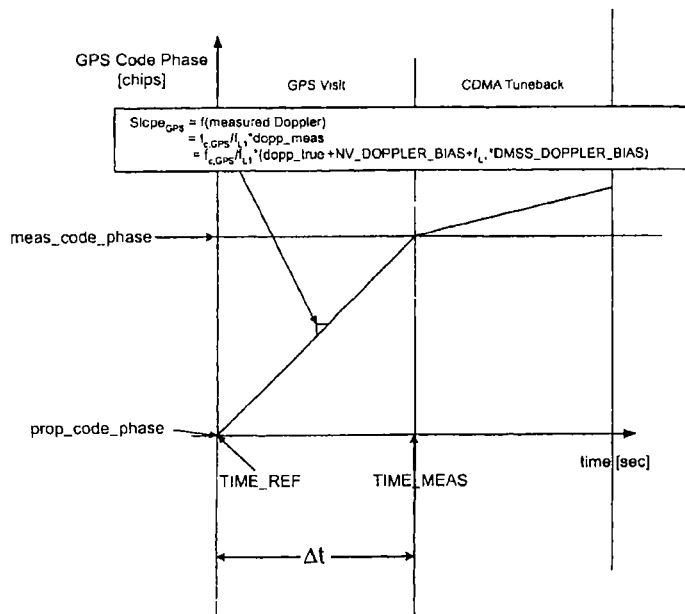
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(54) Title: METHOD AND APPARATUS FOR OPTIMIZING GPS-BASED POSITION LOCATION IN PRESENCE OF TIME VARYING FREQUENCY ERROR



(57) Abstract: Position determination accuracy of a wireless communication device may be negatively affected by a large unaccounted GPS doppler bias, which in turn may affect GPS doppler estimations and GPS doppler measurements conducted by the wireless communication device. The quality of GPS doppler measurements is very important for position location, because poor quality GPS doppler measurements may prevent the wireless communication device from acquiring satellites in the most sensitive modes with narrow frequency ranges, which results in reduced GPS pseudorange measurement yield. Large unaccounted GPS doppler bias also adversely affects position accuracy because of the adverse effect on the GPS code phase measurements time propagation to common time prior to their use in position location calculation. The same is true in the case of unaccounted CDMA code doppler, through the adverse effect on the AFLT code phase measurements time propagation to common time prior to their use in a position location engine. This effect is the biggest concern in the case of large search windows.

Therefore, the present disclosure provides a method of optimizing GPS based position location in the presence of time-varying frequency error, including the steps of continuously measuring and/or calculating resulting GPS doppler bias and CDMA code doppler bias and then minimizing their adverse effects with regard to position location determination by re-centering GPS doppler search windows based on the GPS doppler bias value, as well as using GPS doppler bias and CDMA code doppler bias value to properly propagate GPS pseudorange and AFLT pilot phase measurements, respectively, to common time prior to their use in a position location engine.



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