

An Uplink Timing Synchronization Method for GEO Mobile SAT-LTE System

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Abstract—In this paper, we investigate uplink timing synchronization problem in GEO mobile SAT-LTE system. Firstly, we introduce a two-hop GEO multi-beam satellite communication model, and simply analyze the issues of existed timing synchronization methods. After that, we set the round trip delay (RTD) of furthest point in a beam as the timing reference (TR), with this reference, an available uplink timing synchronization method named modified frame alignment (MFA) is proposed, which take into consideration of LTE signalling and minimum scheduling unit. In the end, the simulation result demonstrates that the proposed method has higher system efficiency, better Qos performance for delay sensitive services, and higher degree of commonality with the terrestrial LTE networks.

Keywords—Uplink timing synchronization, GEO mobile satellite communication, LTE.



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