

Experimental investigation on target detection and tracking in passive radar using long-term evolution signal

ABSTRACT

This study examines the feasibility of the recently deployed wireless communication system, namely, long-term evolution (LTE), for passive radar applications. Specifically, the capability of the system to detect and track a ground moving target is analysed. A theoretical analysis is conducted on the actual LTE signal transmitted in the atmosphere, followed by field experimentation using a moving vehicle with different bistatic geometries. The experiment examines the capability of an LTE-based passive radar to detect a moving vehicle and then track it using a standard Kalman filter. Results show that the LTE-based passive radar can detect and track the ground vehicle at different locations, speeds and trajectories, and localise it in the XY-axis coordinate.

Keyword: Long-term evolution (LTE); Target tracking; Ground moving targets; Radar