Development of TOA/TDOA Positioning Algorithm Simulator

For MLAT System

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**ABSTRACT**

The next-generation aerial surveillance system in accordance with international standards is Multilateration (MLAT) system to meet continuous increase of the air traffic and needs of the safety. MLAT system is able to receive Mode A/C/S and ADS-B to transmitting from transponder using several receivers and localize position of aircraft by calculating time difference of arrival (TDOA). Furthermore, MLAT system is possible to check information validation of ADS-B so that MLAT system is used to ADS-B support system.

MLAT system is made up of several receivers and the central processor subsystem. To calculate the position of aircraft, more than four receivers should be detect the signal from aircraft.

In this paper, MLAT simulator is developed for TDOA positioning. Correlating received signal and signal replica, TDOA measurement is acquired from Mode A/C/S signal. Furthermore, the position of aircraft is calculated from this measurement and the performance of MLAT system is analyzed.

Keywords: Multilateration, air surveillance, time difference of arrival