

Data Integrity Evaluation for Dependent Cooperative Airspace Surveillance Systems

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Abstract—In the presented work, based on the general characteristics of the three main types of radar surveillance of airspace, including independent non-cooperative surveillance, independent cooperative surveillance and dependent cooperative surveillance, the data integrity of the information of dependent cooperative surveillance of airspace was assessed. It is shown that the integrity of the coordinate data of the dependent cooperative airspace surveillance system is determined by the probability that information about the coordinates of the observed air object, transmitted in the messages of the dependent cooperative airspace surveillance system, used by consumers for the purpose of air traffic control and airspace control, should not contain undetected errors, the number of which exceeds the decision threshold.

Keywords—Multilateration (MLAT), Wide Area Multilateration (WAM), Automatic Dependent Surveillance-Broadcast (ADS), cooperative observation, secondary surveillance radars, Identification Friend or Foe (IFF), global positioning system (GPS), air object.

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