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RESEARCH ON APPLICATION OF TIME SYNCHRONIZATION IN SMALL SATELLITE TEST

Abstract

With the continuous development of satellite technology, small satellite has been widely used in the field of space earth observation, Electronic Reconnaissance, communication, space science probe and other space applications, which include different payloads and platforms. Therefore, the ground test system must be set up to verify the correctness of the various payload working modes and the reliability of the various control systems and actuators. The ground test system which is composed of various general and special test equipments simulate real environment in orbit test scenarios for satellite ground testing. The strict time synchronization is necessary among the various equipments or between the equipments and the satellite in some special scenes. The accuracy of time synchronization will affect the validity of the test results and the feasibility of the test plan. Therefore, we should consider the time synchronization of the ground test system for small satellite test. This paper discusses the time synchronization technology in small satellite different payload test modes. In this paper, we discuss time synchronization requirements for the ground test system in small satellite test. Then several time synchronization methods are proposed and compared. Finally, a feasible time synchronization method is presented based on the actual ground test system. The method improves the accuracy and effectiveness of test data in different payloads and platform working modes, and supports engineering applications for the small satellite test. This is important for small satellite automated, intelligent testing technology.