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DESIGN AND ON-ORBIT TEST FOR VIDEO SATELLITE: TIAN TUO-2

Abstract

Following the skybox imaging company in real-time satellite image and video monitoring field to explore feasible for commercial and residential value, China has also played the role of Tiantuo-2 satellite. Tiantuo-2 satellite is the second satellite developed by National University of Defense and Technology, and is the first satellite using video imaging system model in china. The satellite is launched accurately into orbit in Taiyuan Satellite Launch Center on September 8, 2014. The size of Tiantuo-2 satellite is 515mm*524mm*685mm, the weight of 67 kg, and the payload for 4 cameras at different performance, the 4.1m@490km of high resolution video imaging is realized. The main missions are to conduct real-time transmission of video imaging, man in-loop interactive operation and other scientific experiments. Tiantuo-2 satellite using video imaging and real-time video transmission, with real-time video imaging, people in-loop interactive operation, based on network remote operation control, can realize the dynamic process of continuous observation and tracking, access to video data of the observation region. Tiantuo-2 satellite is composed of two parts with platform and load, the platform consists of space data management, power, telemetry and command, attitude determination and control, structure, thermal control and so on. And space data management, power, telemetry and command three points system constitute the basic system, can complete the basic of satellite communication, instructions are executed directly. The payload using video camera and video real-time data transmission, including high and low, wide and infrared video camera Tiantuo-2 satellite uses 70% industrial grade parts and 80% percent of commercial components, through the space environmental adaptability transformation, reinforcement, screening and environmental testing, the satellite realized the low cost and high reliability. In video imaging, interactive operation, network control, industrial components screening and reinforcement, fast video application aspects, the satellite has made a series of breakthroughs in key technologies. Since launching into orbit, Tiantuo-2 satellite is working normal on orbit, and has completed the platform and load test, in-loop interactive operation test, and has got the real-time video images at domestic and abroad. Tiantuo-2 video satellite is a new earth observation satellite, and has wide application prospect in terms of resource survey, disaster monitoring, dynamic event observation.