

MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Space Vehicles – Mechanical/Thermal/Fluidic Systems (7)

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QUALIFICATION OF AN INFRARED ARRAY BASED ON NICR STRIPS FOR CBERS 4A
SATELLITE'S SPACE SIMULATION TEST

Abstract

During all development stages of a satellite project, several thermal tests are performed to confirm their functionality when exposed to the space environment. These tests must be carried out on all components, equipment or subsystems, either in engineering and flight models, or qualification and acceptance levels. These tests must meet certain specific requirements to allow the comparison with the thermal mathematical model and to evaluate the performance of the thermal control subsystem of the satellite. To perform these tests, several equipment are required such as thermal vacuum chambers, and other special apparatus to simulate the orbital thermal environment or to fulfill a particular test requirement. The Integration and Testing Laboratory - LIT, together with the Engineering and Space Technology - ETE, both from the National Institute of Space Research - INPE, in São José dos Campos, Brazil, designed and built an infrared array system, based on Nickel-Chrome (NiCr) strips, for simulating external orbital thermal loads during the thermal balance test of the China-Brazil Earth Resources Satellite (CBERS 04A) flight model, to be tested in acceptance levels in 2018 at LIT. This paper describes the qualification process of this apparatus, as well as design parameters, materials, qualification test method, results and all relevant information will be addressed.