Environmental Verification Standards for Space Hardware

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To capture and transfer knowledge, the Jet Propulsion Laboratory prepared a set of documents that support the development of products for use in space and products that support ground and space operations. JPL's *Flight Project Practices* include design and verification practices that demonstrate environmental compatibility. Two examples include:

- At the system level, the baseline environmental verification program includes modal,static, random vibration, acoustic, thermal, electromagnetic interference/ electromagnetic compatibility, and pyro shock tests.
- At the assembly/subsystem level, the baseline environmental verification program includes random vibration, acoustic, thermal, electromagnetic interference/ electromagnetic compatibility, pyro shock, and atmospheric tests, as well as analyses for radiation and micrometeoroids.

To implement these practices, three environmental requirement standards were developed: one for system dynamics testing, one for system temperature testing, and one for assembly/subsystem environmental verification. In this paper, the process used to develop these standards is described, a summary of the requirements is presented, and the lessons learned during the activity are provided.