

## Mechanical Qualification Test Campaign on the Demise Observation Capsule

**Authors :** B. Tiseo, V. Quaranta, G. Bruno, R. Gardi, T. Watts, S. Dussy

**Abstract :** This paper describes the qualification test campaign performed on the Demise Observation Capsule DOC-EQM as part of the Future Launch Preparatory Program FLPP3. The mechanical environment experienced during launch ascent and separation phase was first identified and then replicated in terms of sine, random and shock vibration. The loads identification is derived by selecting the worst possible case. Vibration and shock qualification test performed at CIRA Space Qualification laboratory is herein described. Mechanical fixtures' design and validation, carried out by means of FEM, is also addressed due to its fundamental role in the vibrational test campaign. The Demise Observation Capsule (DOC) successfully passed the qualification test campaign. Functional test and resonance search have not been point any fault and damages of the capsule.

**Keywords :** capsule, demise, demise observation capsule, DOC, launch environment, re-ntry, qualification

**Conference Title :** ICAEST 2019 : International Conference on Aerospace Engineering and Space Technologies

**Conference Location :** Paris, France

**Conference Dates :** August 27-28, 2019