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C1Or1A-05: Thermal and Exported Vibration Characterization of Ricor K508N Cryocooler

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The Ricor K508N is an upgraded version of the K508 that has extensive flight heritage. This paper reports performance and exported force results for the COTS K508N as well as a K508N filled to a higher fill pressure with a high frequency motor. A comparison is made between the results of the K508N coolers and the K508 to determine their suitability for cooling on CubeSat missions. In addition, exported force results for various vibration damping techniques are discussed. The thermal performance of the coolers was measured in vacuum for -40°C, 20°C and 57°C heat reject temperatures. The coolers were operated in open-loop and in closed-loop mode during thermal performance testing. The exported vibration levels of the coolers were measured on a dynamometer with and without vibration isolators.

Author: Mr MOK, Mason (Jet Propulsion Laboratory)

Co-authors: MCKINLEY, Ian (Jet Propulsion Laboratory); Mr MASTROPIETRO, A.J. (Jet Propulsion Laboratory); Dr JOHNSON, Dean (Jet Propulsion Laboratory)

Presenter: Mr MOK, Mason (Jet Propulsion Laboratory)

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