

***Characterization Testing of Space-Flight
Lockheed Martin Micro1-2 Cryocooler
for the Mapping Imaging Spectrometer
for Europa (MISE)***

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The Mapping Imaging Spectrometer for Europa (MISE) instrument on the Europa Clipper mission uses a Lockheed Martin “high power” Micro1-2 pulse tube cryocooler with a heat rejection temperature around 220 K. This paper describes the acceptance testing and performance testing and results of the space-flight Lockheed Martin Micro1-2 cooler optimized for these conditions. The cooler passed random vibration and thermal vacuum cycling acceptance testing. The thermal performance was measured in vacuum during thermal cycle testing for heat reject temperatures between 190 K and 290 K. The cooler was driven with input powers up to 40 W and drive frequency between 125 Hz and 150 Hz. In addition, the exported forces and torques of the space-flight cooler were measured and are reported.