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C3Or3C-01: Characterization testing of the Thales LSF9589 cryocooler

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Two Thales LSF9589 commercial off-the-shelf (COTS) Stirling cryocoolers were parametrically performance tested for cold tip temperatures between 37 K and 250 K, heat rejection temperatures between 0°C and 40°C, and drive frequencies between 46Hz and 51Hz. The effect of compressor and expander temperature difference is also discussed. Both LSF9589 coolers had identical transfer line configurations. The test results revealed small unit-to-unit thermodynamic performance variation between the two units tested. The thermodynamic performance of the LSF9589 is compared to that of the COTS LPT9510 pulse tube cooler that utilizes the same compressor as the LSF9589.

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