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## **C2Po1D-01 [09]: Development of Stirling type pulse tube cryocooler**

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This paper presents the design and performance test of a single stage coaxial pulse tube cryocooler operating at 80 K using a moving magnet type linear compressor. We designed the compressor with the input capability of 100 W at the operating frequency of 50 Hz. A pulse tube cold finger with a double segmented inertance tube was designed for the cooling capacity of over 1.5 W at 80 K. The coiled inertance tube was assembled inside the reservoir. Cooler drive electronic using 28 Vdc control the linear compressor with input power of up to 120 W. In experiment, the pulse tube cryocooler cool from ambient temperature to 80 K in less than 10 minutes. The pulse tube cryocooler is capable of providing the cooling capacity of 2.0 W at 80 K with power consumption of 100 W. The cooling capacity increases from 0 W to 2 W with the power consumption changing from 25 W to 100 W. Thermal vacuum, random and sinusoidal vibration tests have been conducted to evaluate their performance characteristics and structural integrity.

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