



**CRI TM 115 –Laboratory Test
Procedure For Determining Energy
Consumption of Vacuum Cleaners
(Reference ASTM F2756)**

P.O. Box 2048 Dalton Georgia 30722-2048
706.278.3176
carpet-rug.org

Standard Laboratory Test Practice For Determining the Power Use Effectiveness of Residential and Commercial Vacuum Cleaners

1. Scope

- 1.1 This test method determines the amount of electrical power used by a vacuum when tested under specified conditions and combines that with the vacuums soil removal performance to measure its Power Use Effectiveness (P.U.E.). The P.U.E. ratio is derived by dividing the soil removal performance by power consumption. A high P.U.E. number for a vacuum means it removes more soil with less power consumption than one with a low P.U.E.

2. Purpose

- 2.1 Provide vacuum manufacturers a test method to measure energy efficiency.
- 2.2 Provide all consumers and specifiers of commercial vacuum cleaners additional information to assist in making a purchasing decision.
- 2.3 Provide test results to the Carpet & Rug Institute for their Optional Energy Efficiency Rating SOA/GL Vacuum Cleaner (VC) Program.

3. Reference Documents

ASTM F2756 Standard Test Method for Determining Energy Consumption of Vacuum Cleaners

CRI TM 112 Standard Test Method for Evaluation of Solid Particulate Removal Effectiveness Using X-Ray Fluorescence Techniques for Evaluating Cleaning Effectiveness of Residential/Commercial and Central Vacuum Cleaners

4. Procedure

- 4.1 Determine energy consumption of a vacuum cleaner following ASTM F2756.
- 4.2 Determine the Geometric mean of the soil removal performance of a vacuum cleaner following CRI TM XXX.
- 4.3 Divide the Geometric mean of soil removal performance by the watt/hour.

$$\text{P.U.E.} = \frac{\text{Geometric Mean}}{\text{Watt/hour}}$$

5. Report

- 5.1 Power Use Effectiveness (P.U.E.)
- 5.2 Manufacturer's name, product name, product model, and serial number.
- 5.3 Type of cleaner.
- 5.4 Nozzle height settings.
- 5.5 Cleaning head test width used for energy-use calculations and soil removal performance.

6. Precision and Bias

- 6.1 Precision – No interlaboratory tests have been performed; therefore, no precision statements regarding the repeatability and reproducibility of this test method are available at this time.
- 6.2 Bias – no justifiable statement can be made on the bias of the method to evaluate litter cleaning effectiveness of household/commercial vacuum cleaners since the true value of the property cannot be established by an acceptable referee method.