



Fig 1. System Illumination Grid Result

Illumination Laboratory

For the military, shelter lighting must find a balance of illumination, light color, power consumption, and robustness in a small package. This need is driving new and innovative lighting solutions. Using MIL-PRF-44259E, *Performance Specification, Light Set, Fluorescent* as a baseline, the U.S. Army Natick Soldier Research Development and Engineering Center (NSRDE) developed an illumination laboratory for comparison of lighting fixtures on individual fixture levels and for shelter specific systems. Based on user specified needs a number of lights can be determined as a system and used to compare against other systems or current standards. Environmental chambers and a dark room complement the illumination laboratory for controlled environment evaluation of chromaticity, corrected color temperature, and power consumption. This capability to evaluate illumination as individual fixtures or as a system is quite unique and will prove to be extremely valuable illumination research and development as well as the trade off studies for the renewable energy community.



Fig 2. The Illumination Laboratory – Blackout Condition

Illumination Evaluation: System or Individual Fixture Measurements

- Illumination measurements taken in dark room for individual fixtures or on shelter grid as a system (Fig. 1)
- System or individual power draw measurements including power factor at specified conditions (MIL-STD-810 Methods 501.5, 502.5, and 507.5 or user specified).
- Chromaticity measurements per CIE 1976 or CIE 1931
- Corrected Color temperature measurements
- Dominant Wavelength measurements
- Fixture temperature
- System effectiveness: lux per watt