Large Area Pulsed Solar Simulator – LAPSS II

SPECTROLAB
A Boeing Company

www.spectrolab.com

Product Highlights

Lamphouse

Pulse Forming Network

Control Console

Key Specifications & Characteristics:

- **Closed matched AM0 (AMx) simulated Illumination with spectral balancing for industry standard 3J GaInP/GaAs/Ge solar cells**

- **AM0 Test Plane Area: 16 ft. (5 m) wide at 42 ft. (13 m)**

- **2.5ms pulse with repeatability of <±1%**

- **Multi-pulse mode of 5 pulses @ 20 seconds apart**

- **Current/Voltage Channel Resolution: 0.025% Full Scale**

- **Voltage Ranges from 1V to 100V (200V option)**

- **Current Ranges from .1 to 20 A (50A option)**

- **Lamp Life: 5000+ flashes, typical**

Applications

Large area pulsed solar simulator (LAPSS) for acceptance level & laboratory testing of multi-junction solar panels under simulated AM0 & AMx environment. Capable of testing individual cells, strings & full panels.

System Description:

Spectrolab's Large Area Pulsed Solar Simulator (LAPSS) systems have been in use by most of the worlds Space Panel manufacturers for over 40 years. There is a tremendous heritage and excellent on-orbit space power prediction history generated by this tool. The LAPSS system consists of very conservatively designed components that were designed for (1) users safety, (2) solar panel safety, (3) long term stability, (4) maintainability.

Spectrolab system uses oil filled highly stable HV capacitors. Our electronic load is based on a transistor array, designed to produce no transients that may be detrimental to the panels tested.

LAPSS system comes with the pre-installed WinLAPSS™ software and runs on Win7/10 computers.

System Specifications:

- LAPSS system is optimized for GaInP/GaAs/Ge based solar panel testing under simulate AM0 environment.
- Spectrolab LAPSS has been commercially used for majority of satellites in space
- Pulsed Solar Simulator System allows for repeat testing of large solar panels without changing the temperature of the cells
- Provides for measurement of current/voltage characteristics of solar arrays as large as 16 ft. (5 m) in diameter.
- Measurement of minimum 40 data points per pulse and up to 200 data points in multi-pulse mode.
- Beam uniformity is largely a function of the distance to target plane from lamphouse. Additional spatial filtering is possible.
- Spectral balance adjustment for individual junctions is a accomplished using motorized spectral band filters.
- Includes a stable, transistor array based Electronic Load capable of biasing the test article in continuous sweep from short circuit to open circuit.
- In multi-pulse mode, capable of biasing operator selectable segments of the I-V curve between short circuit and open circuit.

Test Plane Irradiation Uniformity

W/O Optional Uniformity Filter	With Optional Uniformity Filter
±1.5% inside 8x8ft. (2.5^2m)	±1%
±2.5% inside 10x10ft. (3^2 m)	±1%
±3.5% inside of 12x12 ft. (3.5^2 m)	±2%
±3% inside 12x10 ft. (3.5 x 3 m)	±1.5%
±3% inside 16 ft. (5 m) diameter	N/A

System Components

	W x H x L	Weight
Lamphouse		
Pulse Forming Network	21 x 48.5 x 72 in.	1,500 lbs.
	53.3 x 123.2 x 183 cm	682 kg
Control Console w/Desk	30 x 51 x 84 in.	250 lbs.
	76.2 x 130 x 213.3 cm	113kg
Cable Set		75 to 100 lbs.
		34 to 45 kg
System Weight		~1,980 lbs. (~900 kg)

Input Power

- Electric Input: (customer must specify voltage requirement)
  - Pulse Forming Network (PFN): 208/220VAC, 380VAC or 480VAC single phase
  - Control Console and Computer: 120VAC or 240VAC single phase

Optional Accessories

- Improved Uniformity Filter
- Extended Range Accessory External Loads
  - 200 Volt Load
  - 50 Amp Load

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