Horticultural Lighting Characterization Testbed

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Project Summary

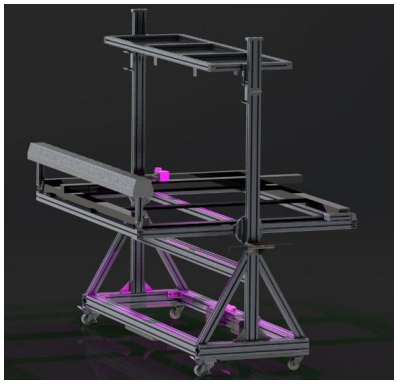
3M requested a group of University of St. Thomas engineering students to design a system that would measure light intensity, spectrum, and uniformity over a large testing area. It will measure properties of the light coming from LED arrays that would be used for indoor horticultural/vertical farming purposes.

Design Goal

Develop and fabricate a testbed that provides efficient characterization of horticultural luminaires with respect to intensity and color distributions on a target surface. Fill current gap in current metrology capabilities between handheld point and goniophotometer measurements to support technology development, competitive analysis, and customer collaborations.

Design Constraints

- Suitable target illumination area
- Adjustable separation distance between luminaire and target surface, 2” to 36”
- Compact footprint for storage and transport
- Calibration capabilities for alignment/position and optical measurement(s)
- AC power connection with voltage, current, and power factor measurements



Final CAD Rendering - Operation

Final CAD Rendering - Storage