Q-SUN Xe-8

The NEW standard for large capacity, rotating rack xenon weathering testers

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Q-Lab's New Product Series

Today is the second of a two-part webinar series on new product releases from Q-Lab

All upcoming and archived webinars can be accessed at: q-lab.com/webinars

Date	Topic
24 Apr	TUV-421 Lamps
01 May	Q-SUN Xe-8 Xenon Arc Tester

Administrative Notes

You'll receive a follow-up email from info@email.q-lab.com with links to a survey, registration for future webinars, and to download the slides

Use the **Q&A feature in Zoom** to ask us questions today!

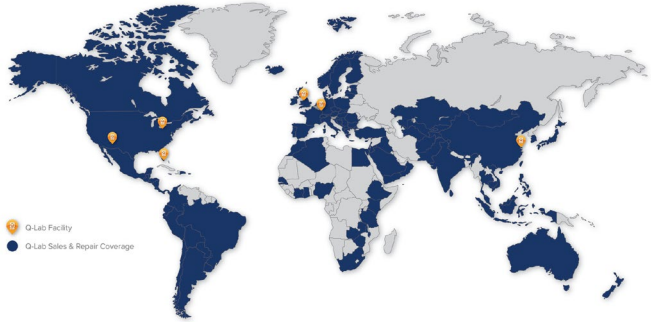
Q-Lab

- World Leader in Weathering & Corrosion testing
  - Xenon arc
  - UV fluorescent
  - Cyclic corrosion

- Testing services
  - ISO 17025-accredited labs
  - Florida and Arizona outdoor
  - Q-TRAC and AIM box accelerated outdoor

- Founded as Q-PANEL standard substrates in 1956
  - Aluminum
  - Steel

- Worldwide locations: USA, UK, Germany, China
  - All manufacturing in USA



Q-SUN Xe-8 Overview

- Large capacity, rotating rack, xenon arc weathering tester
- All maintenance, calibration, and simple repairs can be performed from front
- 100% air-cooled for ease of operation and maintenance
- Dual touchscreen interface available in 17 different languages
- Meets nearly all major international, national, and industry test standards

Technical Benefits

- Many applications require a large number of sample variations:
  - Additives * Suppliers * Colors * Replicates * …
- Test specifications in many markets have #000-hour durations
- While flat-array is great for ease-of-use, rotating rack testers have some advantages and are specified in some test standards
- Air-cooled lamps eliminate the need for expensive water-cooling systems, are more environmentally friendly, and “flood-proof”

Q-SUN Xe-8 Features

- Four (4) air-cooled LIGHT/YEAR® xenon arc lamps last for a full year
- Tri-band (340 nm, 420 nm, TUV) irradiance sensor
- Optical filters last indefinitely
- Full control of chamber air temperature and RH
- Two black panel and two insulated black panel sensors confirm temperature uniformity
- Easy calibration with UC80 Smart Sensor Array
- Front and back water spray systems standard
- On-screen and networked test performance display

Other User Conveniences

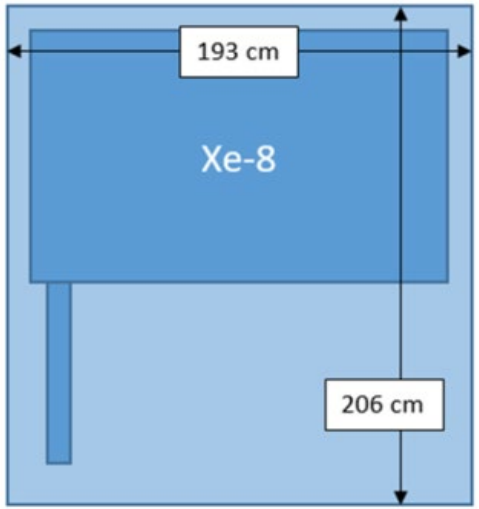
- Simple spring-clip holds samples in place
- Multi-color LED status indicator light
- Drain height accommodates most raised floor drains
- Lamp replacement takes 15 minutes (annually)
- Air filters automatically detect when they need cleaning
- USB port for data transfer, troubleshooting and free software updates
- *More features on the way!*

Xe-8 Configuration and Utilities

- Models
  - Q-SUN Xe-8-HBSX
  - No other configurations; fully equipped
- Compressed Air
  - Required for humidification
- Electrical
  - 3Φ
  - 208/230/400 V (80/80/50 A)
- Water purity
  - > 5 MΩ·cm; < 0.2 µS /cm
  - < 0.1 ppm TDS; < 0.1 ppm silica
- Capacity and Dimensions
  - Area 78 × 48 cm = 11,560 cm^2
  - Dimensions 104×173 cm;
    30 cm needed on all sides

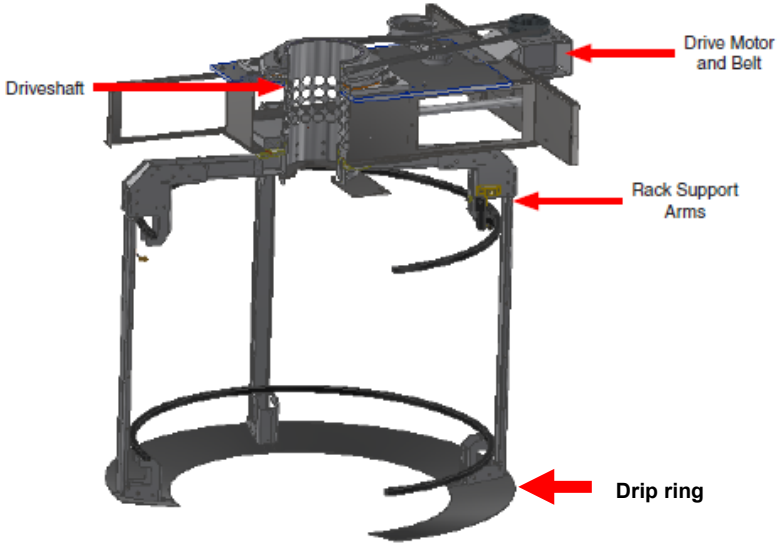
Footprint (including access area)

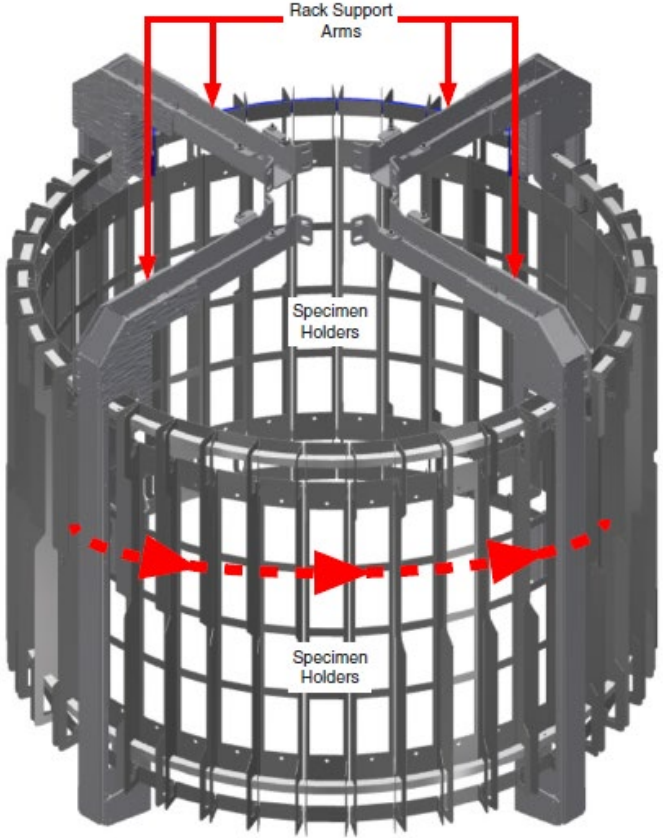
- Width × Depth = 193 × 206 cm (76″ × 81″)
- Total area = 3.98 m^2 (42.8 ft^2)
- Capacity/footprint = 24.1 samples/ m^2
- Only 30 cm space needed on each side



Operating Footprint

Specimen Rack





- Fixed at 3 rpm (initially)
- Can be rotated manually or via touchscreen control

Specimen Mounting

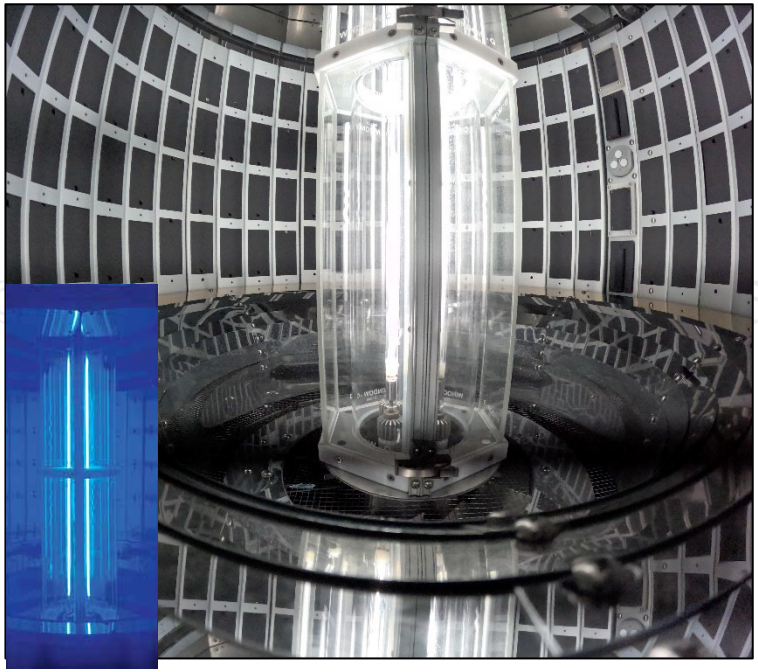
- Up to 164 Q-Lab-size 51 × 102 mm (2 × 4") panels
- Up to 96 larger-size (2.62 × 5.71") panels
- Specimen holders reversible top to bottom
- Drop-down bar allows specimen holder storage

Onboard Sensor Array

- Two IBP
  - Upper/lower
- Two BP
  - Upper/lower
- Three irradiance sensors
  - 340/420/TUV
- RH/CAT sensor
- UC80 calibration array is virtually identical

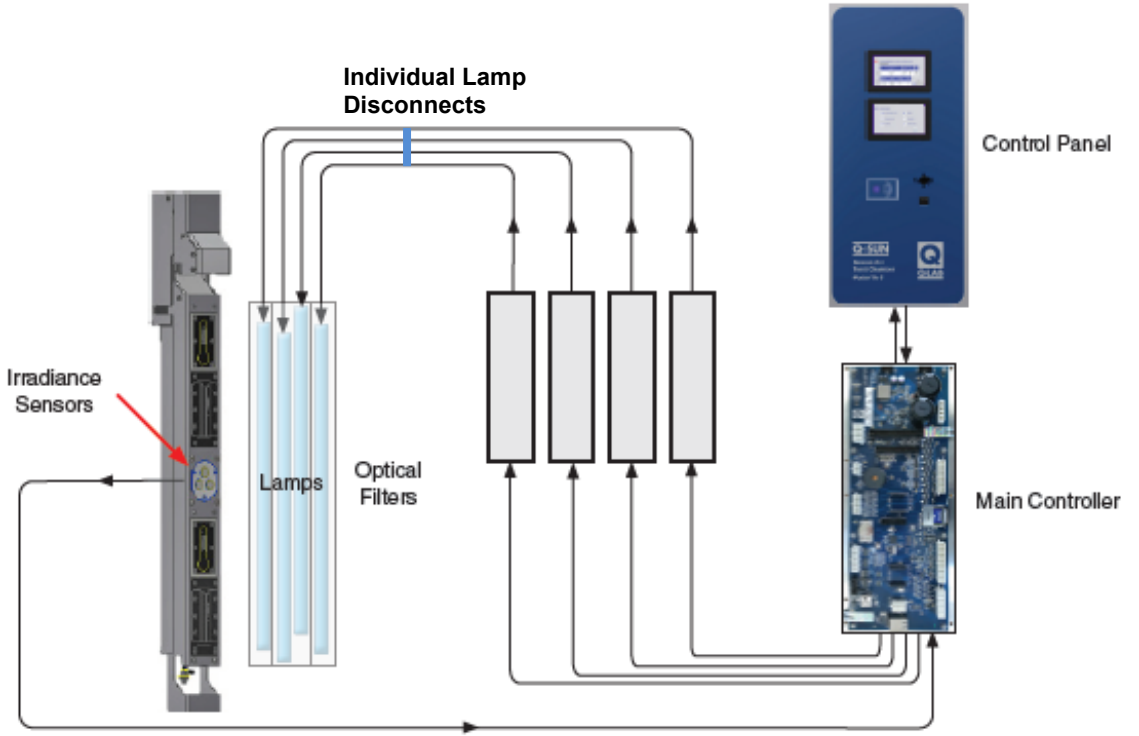
Irradiance

- Four air-cooled lamps (no tap water required)
- 8000-hour warrantied life under typical irradiance conditions
- Higher irradiance levels above “typical” may reduce lamp life
- Filters are non-aging and with proper care/maintenance, never need replacing
- Tri-band SOLAR EYE® irradiance array; All three common wavelength control points (340 nm, 420 nm, 300-400 nm) monitored at the same time
- Irradiance range capable of running all common test methods, except 180 W/m^2 (Japanese OEM spec)



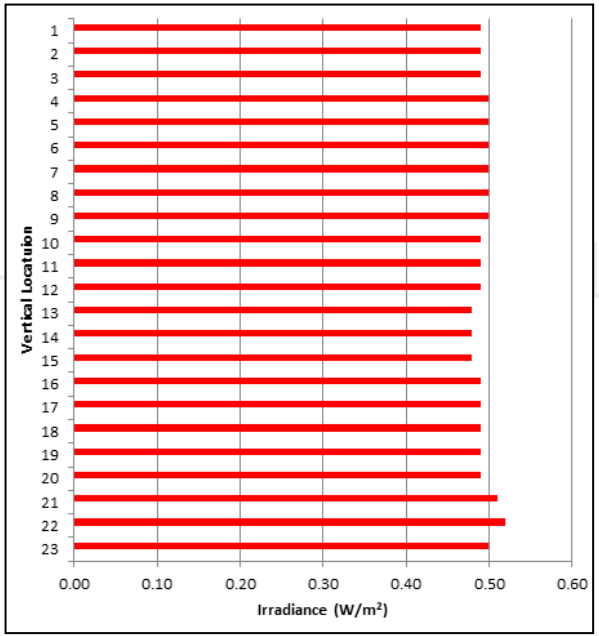
LIGHT/YEAR Irradiance System

- Four lamp control modules
- Each controls one of the lamps
- 340, 420, and TUV sensors all standard; only one controls the test
- Safety features included



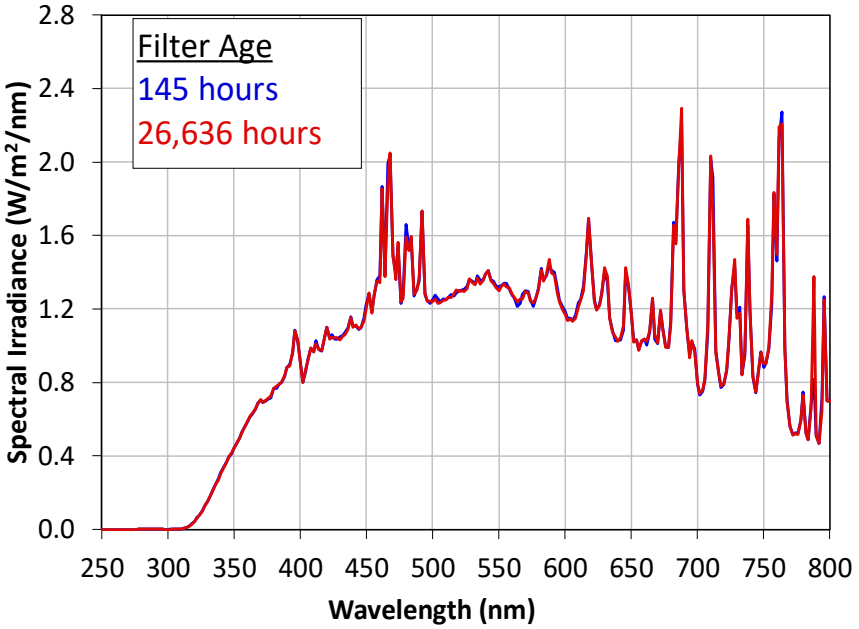
Irradiance Uniformity

- Lamp length exceeds sample exposure height
  - Distance from sample exposure plane to lamp equal at all locations → excellent uniformity
- Sample holders are reversible (in vertical position) for easy sample repositioning to improve overall exposure uniformity
- Operational fluctuation meets all common test method requirements (±0.01 W/m^2 narrow band; 1.0 W/m^2 for TUV)
- 92% Top-to-Bottom uniformity measured



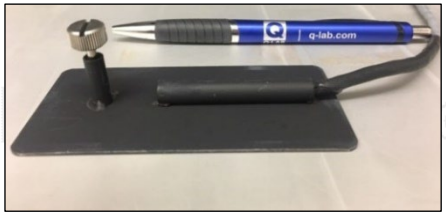
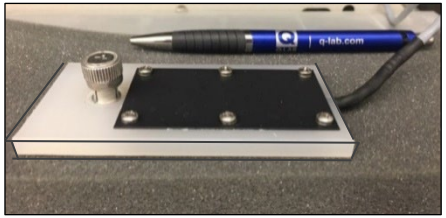
Non-Aging Optical Filters

- Materials used to provide specific spectral transmittance can "solarize" under extremely high irradiance
  - Air-cooled filters are further away from the light source vs. filters in water-cooled assemblies, eliminating this effect
- DI water will ultimately leave deposits
  - Optical filters in air-cooled testers will not collect these deposits and will not shift their transmittance



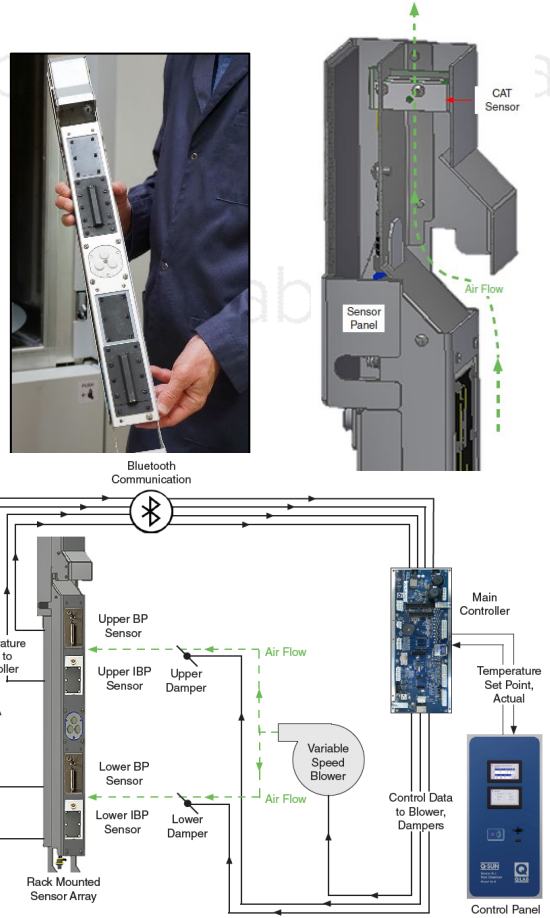
Optical filters in air-cooled testers maintain their transmittance indefinitely

Black Panel Temperature Sensors

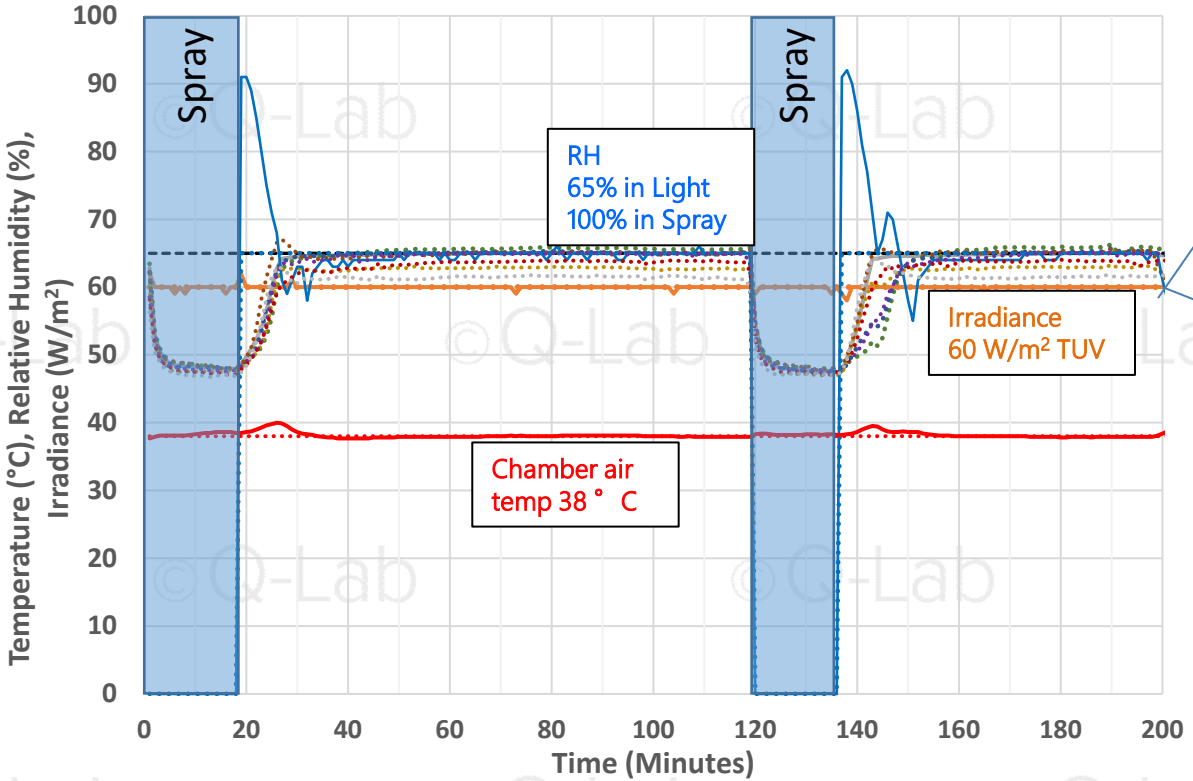
Panel	Construction	ASTM Designation	ISO Designation
	Black painted stainless steel	Uninsulated Black Panel	Black Panel
	Black painted stainless steel mounted on 0.6 cm white PVDF	Insulated Black Panel	Black Standard

Temperature Control

- BP and Insulated BP both standard
- Upper/lower BP temps controlled individually
- BP temps averaged for overall better control to setpoint within the exposure zone
- Bluetooth communication to controller (no battery required); no mechanical slip ring
- Chamber air temp sensor located at the sample plane
- Two-point BP calibration for greater accuracy



Temperature Uniformity



IBP temps
65 C setpoint

- BST (Average)
- BST Set Point
- BST 1 Upper
- BST 2
- BST 3
- BST 4 Center
- BST 5
- BST 6
- BST 7 Lower

Excellent BST uniformity

Humidity/Water Spray

- Uses atomizing nozzle combining compressed air and DI water
- RH Sensor located near both CAT and sample exposure area
- Front/back spray standard; pressure regulators on both lines to ensure consistent spray pressure; sensor for front spray to confirm operation

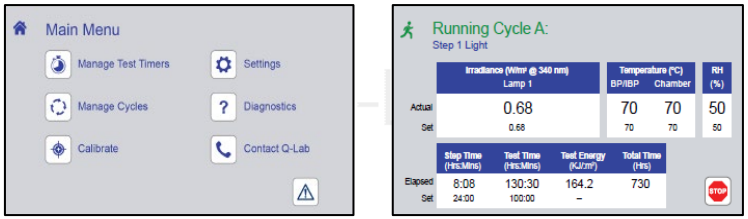
Q-SUN Water Quality

- Purified (RO/DI) water is **required**
- Q-Lab follows ASTM G151 recommendations

Resistivity (Ω·cm)	Conductivity (µS/cm)	Silica (ppm)	Total Dissolved Solids (ppm)	pH
> 5 M	< 0.2	< 0.1	< 0.1	6-8

Operation and Calibration

- Dual Full-Color Touchscreen displays
- 17 different languages available
- All Q-Lab testers use the same design and general touchscreen navigation/layout
- Universal Calibrator System (UC80) allows fast, easy, reliable temperature and irradiance AUTOCAL® calibrations
- Complete calibration can be done by the operator



Dual Touchscreens

UC80 Calibration Sensor Array

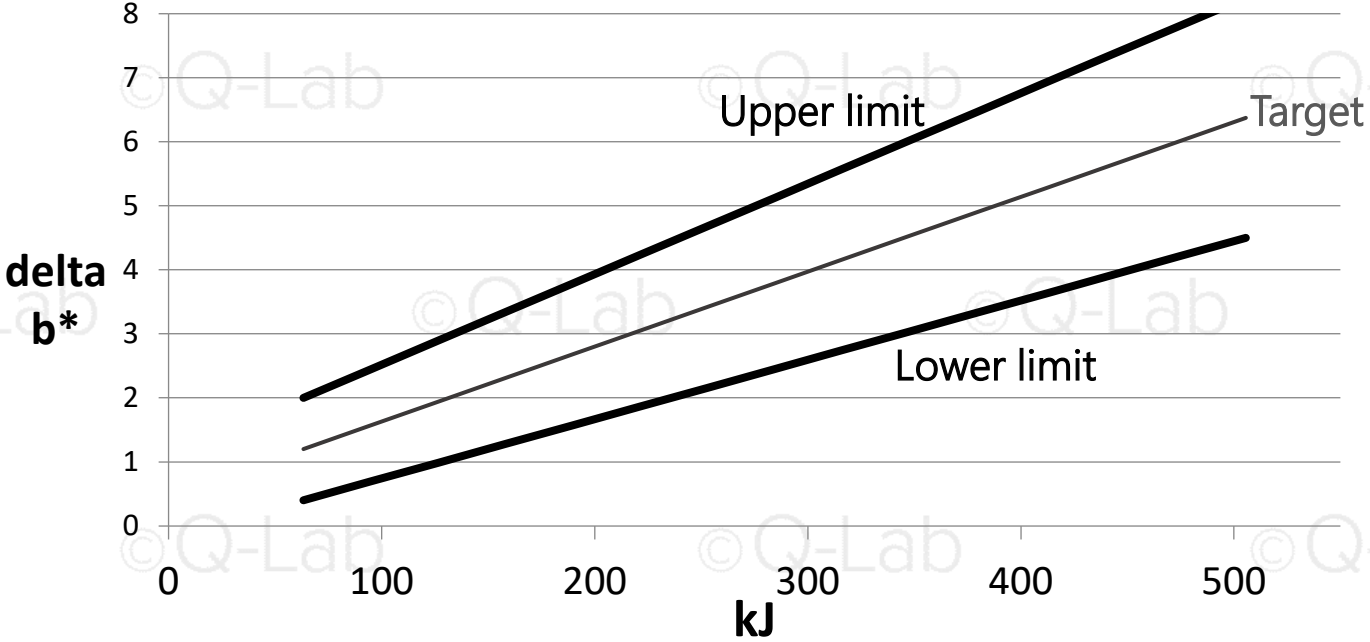
Performance Capabilities

	Xe-8 Irradiance Values by Control Point - Typical (& Maximum)		
	W/m²/nm @340 nm	W/m²/nm @420 nm	W/m² @TUV (300-400 nm)
Daylight-F	0.80 (1.30)	1.50 (2.40)	75 (125)
Daylight Q	0.68 (1.10)		
Extended UV (-Q/B, -Quartz)			
Daylight-B/B			
Window (-Q, -B/SL)	0.55 (0.85)		70 (108)
Window (-SF5, -IR)	-		42 (68)

	BP	IBP
Black Panel Temp² (°C)		
Light	39-100	39-110
Dark	25-45	25-45
Chamber Air Temp² (°C)	CAT	
Light (any filter)	35-65	
Dark	25-45	
Relative Humidity²	20-95%	

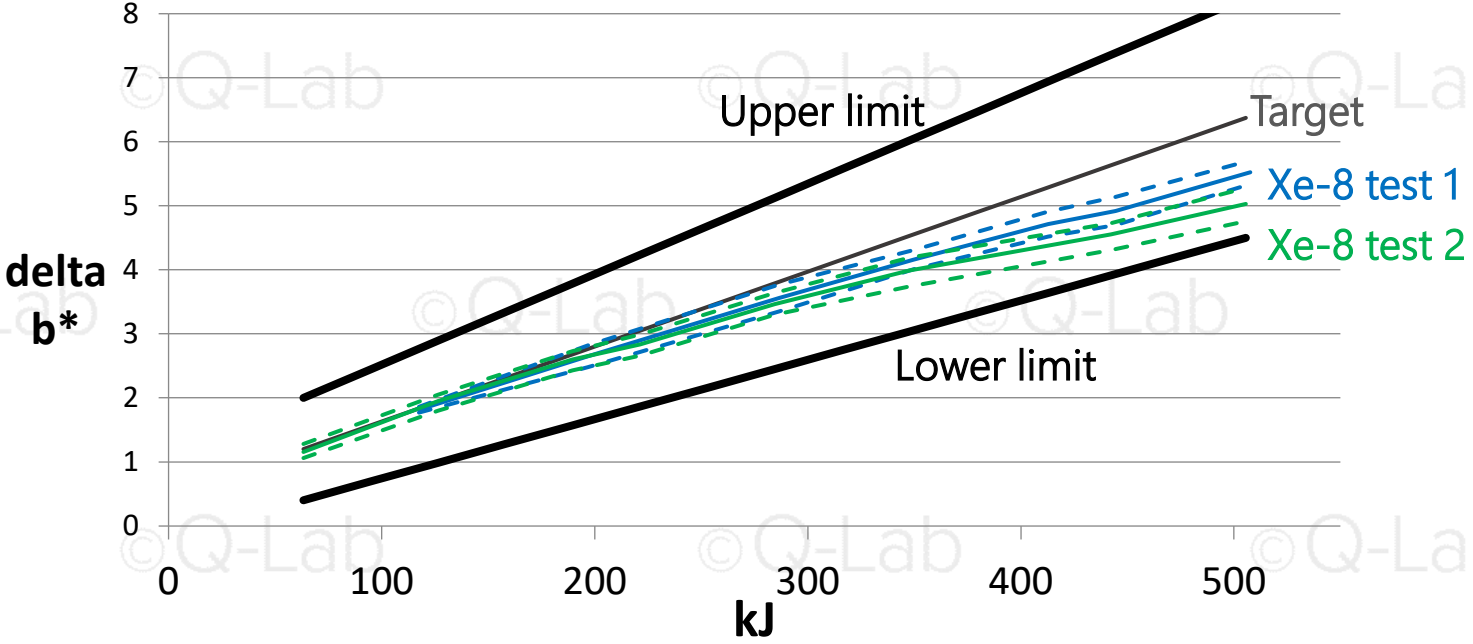
Meets performance requirements of virtually all major international standards

Performance Validation



Interlaboratory comparison established tolerances for polystrene yellowing in SAE J2527

Performance Validation



Q-SUN Xe-8 is well within tolerance for multiple specimens at multiple vertical positions

Q-SUN Xe-8

- The **NEW** standard for large-format rotating rack xenon
- Up to 164 specimens 2 × 4″ (51 × 102 mm) or 96 specimens 2.62 × 5.71″ (66 × 145 mm)
- Outstanding performance capability
- Front accessibility minimizes lab footprint
- Simple to operate, calibrate, and maintain

Thank you for your time.

Questions?

info@q-lab.com

We make testing simple.

Q-LAB