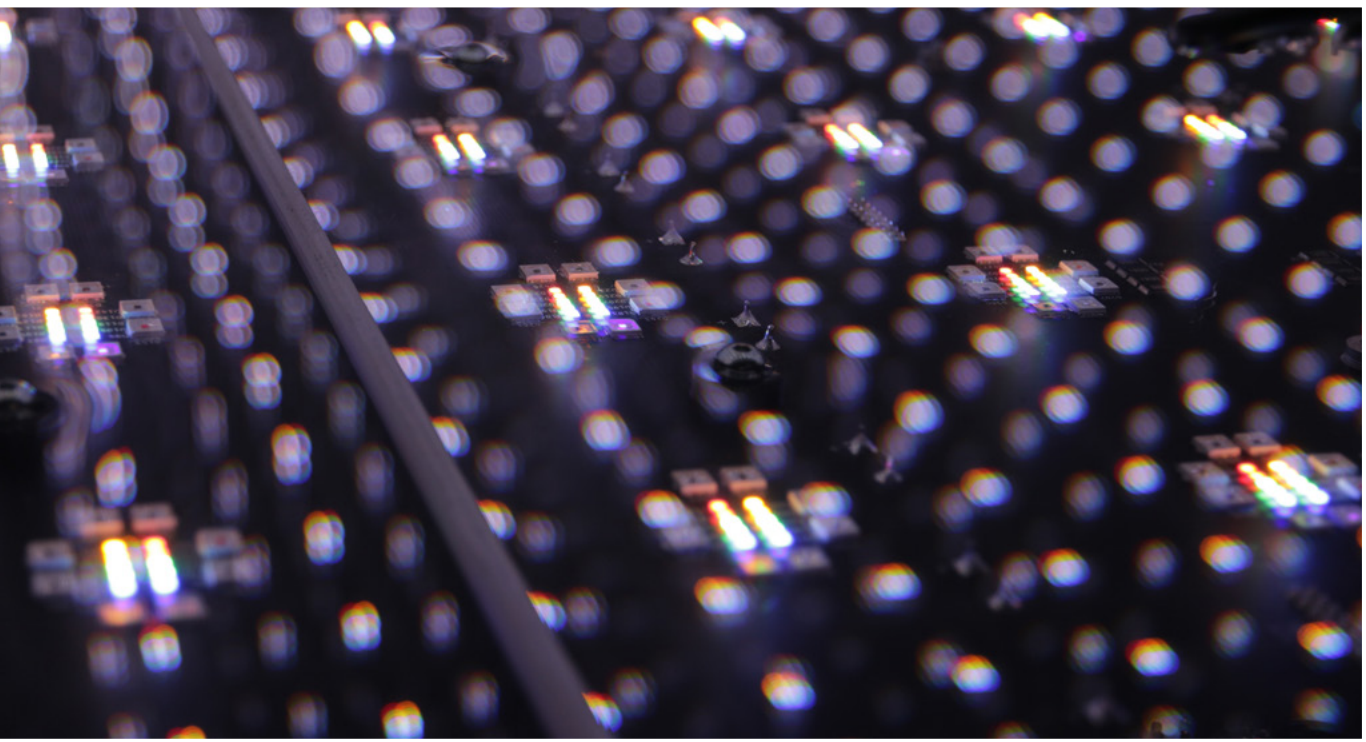


MBJ LED Technology

Future-proof and innovative



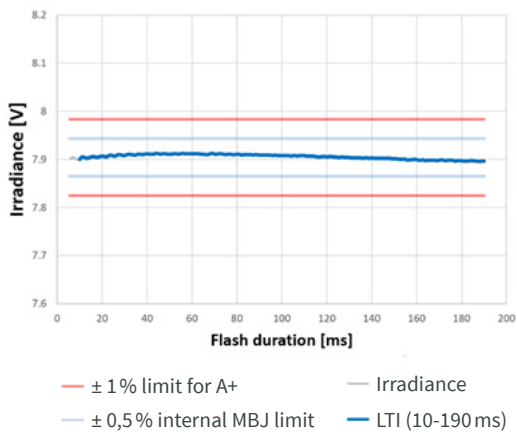
LED technology with excellent spectrum and lifetime

The light source is specifically designed for sun simulators in the PV industry. Up to 22 different LED types provide an almost perfect spectrum. The LED light source has a stable spectrum and light output over more than 10 years: no need for LED light source exchange over the full lifetime of the system. An additional benefit is the long flash duration possible with the LED technology. Thanks to the modular concept, the sun simulator light source can easily be adapted to any module size and inspection task.

Your Benefits

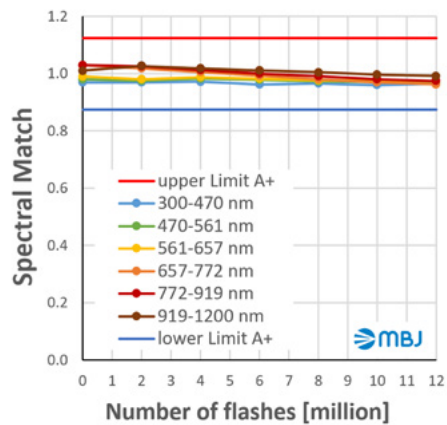
Future proof

Long stable flash pulses allow measuring all types of solar modules, including cells with capacitive effects.



Save Money and time

More than 10 years without light source exchange saves a significant amount of money and time for light exchange.



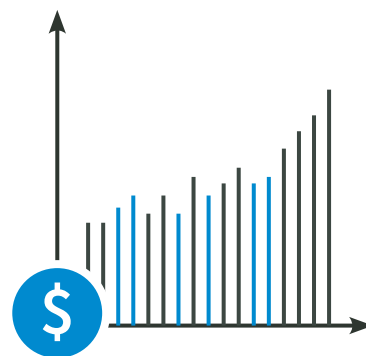
Good spectral performance

Spectral coverage, match and deviation are as good as Xenon allowing very accurate measurements over a long time period.

Spectral match		SPD	23.8%
Design with 22 LEDs		SPC	98.1%
300 - 470 nm	1.02	A+	169.8
470 - 561 nm	0.97	A+	162.1
561 - 657 nm	1.02	A+	170.9
657 - 772 nm	1.02	A+	168.8
772 - 919 nm	0.98	A+	163.7
919 - 1200 nm	0.99	A+	164.8

Fast return of investment

Return of investment in less than 3 years. Save money on flash tubes, maintenance downtimes and measurement inaccuracies.





MBJ Light Source

The innovative MBJ light source is certified according to the IEC 60904-9 Ed.3 standard by TÜV Rheinland to reach the A+A+A+ class for sun simulators in the PV industry.

It is available in two different configurations: as standard spectrum with 13 different LED types or with the advanced spectrum with 22 different LED types. The advanced spectrum leads to an outstanding spectral coverage of more than 98 % and a spectral deviation of less than 24 %.

The LED light source allows individual control of the LEDs, and thus easy spectral influence, keeping the inhomogeneity over the full flash area at a very low percentage of less than 1 %.

The individual LED light sources make scaling the size of the flash area really easy. They can be arranged next to each other, to create really large uniform flash areas. It also allows to form customer specific flash areas.

The unbeatable lifetime of the light source, more than 10 years without light source exchange, saves not only money and time. Compared to a Xenon light, it ensures a higher measurement accuracy as the light source spectrum stays stable over the full lifetime period.

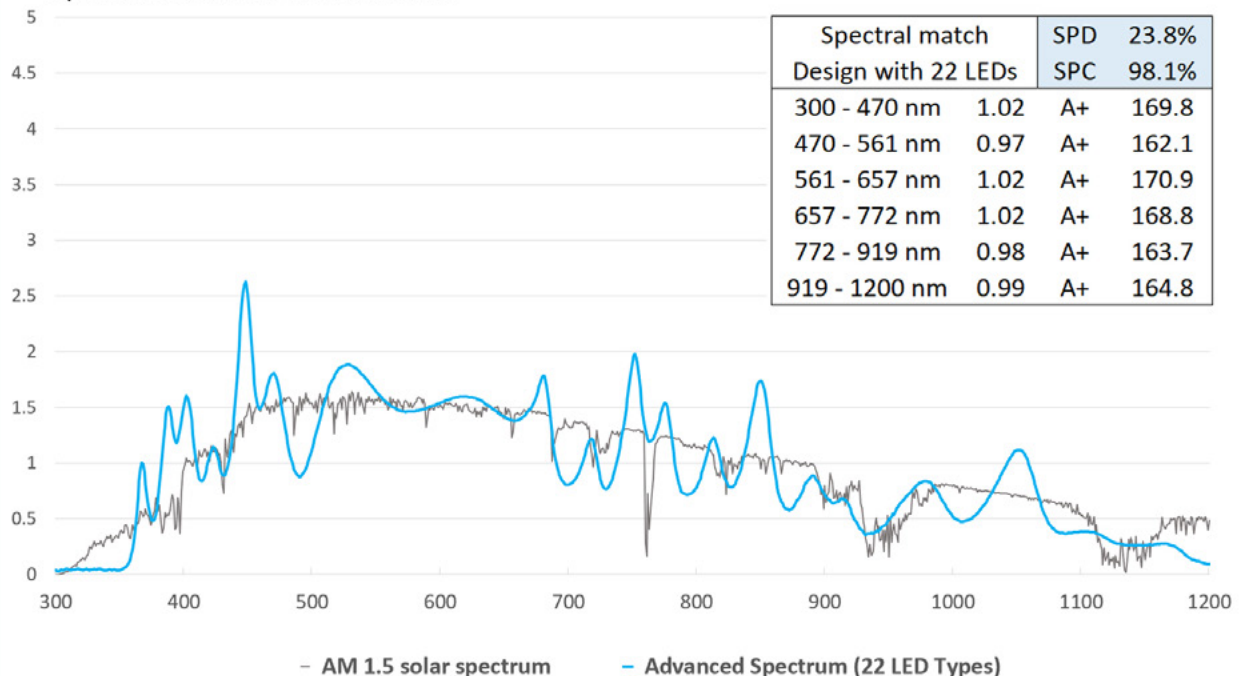
The long stable light pulse, up to 200 ms, has a maximum deviation of less than 0.1 % during the IV sweep. That is 10x times better than required by the IEC standard!

With outstanding repeatability over time and the innovative step wise IV-sweep measurement the latest high capacitive cell technologies such as PERC, heterojunction, TOPCon can be measured making the system ready for the PV future.

The light source is available for inline production equipment such as the MBJ Sun Simulator and also as a compact mobile version, the Mobile Lab 5.0, for on-site use directly in the solar park.

MBJ Advanced LED spectrum (22 LED types)

Spectral Irradiance Measurement



Specification

Technical details of the MBJ LED light source

Technical specification	Standard spectrum	Advanced spectrum
Spectrum / Light source	Class A+ IEC 60904-9 Ed.3 , LED with UV and IR extended spectrum	
No. of LED types	13	22
Spectral coverage (SPC)	> 94 %	> 98 %
Spectral deviation (SPD)	< 44 %	< 24 %
Total irradiance	200 - 1200 W/m ²	
Non uniformity	< ± 1 % (Class A+ IEC 60904-9 Ed.3 < ± 1 %)	
Long term instability (LTI)	< ± 0.5 % (Class A+ IEC 60904-9 Ed.3 < ± 1 %)	
Accuracy of Pmax	± 1 % based on reference module usage	
Repeatability Pmax	< 0.1 %	
Flash pulse duration	200 ms at 1000 W/m ² / 100 ms at 1200 W/m ²	
Load element	Passive electronic load	
Measurement options	Forward and backward sweep, high capacity measurement mode	
Life time of LED's	> 12 million flashes at 1000 W/m ²	

MBJ Solutions GmbH

Specialists for pv measurement systems



Made in Germany

We develop and manufacture all our machines exclusively in our production facility in Ahrensburg, Germany.



Expert Advice

Take advantage of our more than 20 year long expertise knowledge of automated inspection systems and LED lighting.



Fair prices

For your benefit we consequently challenge us to develop high quality products while keeping our prices very attractive.



ISO 9001-2015

We live our quality management system to continuously improve our products and services. We are certified by TÜV Nord since 2020.



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