

BlueWave® MX-150 LED Spot-Curing System High-Intensity Curing System with the Flexibility of Multiple Systems

The BlueWave® MX-150 curing system provides manufacturers with the curing flexibility they need, in a smaller, more efficient design. The unit is comprised of two main parts, a controller with an easy-to-use touchscreen interface and a high-intensity LED emitter. Curing energy is created using an LED chip in the emitter, unlike traditional spot-cure systems, where it is located in the controller. Locating the LED chip at the point-of-cure provides more consistent curing by addressing potential intensity loss caused by the use of long or bent lightguides. The controller can run up to four emitters independently.

The system can be truly tailored to users' curing needs – allowing them to choose from three different wavelength LED emitters (365, 385, or 405 nm) so optimal cures are achieved. Users also have endless set up flexibility; for automated curing processes, the emitter can be easily mounted to robotic arms or further from the controller without fear of intensity variations. When used as a bench-top curing system, the unit can be paired with a stand and shielding or a lightguide can be connected to the system for specialized applications.

System Features & Benefits

Features	Benefits
High Intensity of up to 40 W/cm ²	<ul style="list-style-type: none"> Quickly cures a variety of materials
LED emitters available in 365, 385, or 405 nm wavelengths	<ul style="list-style-type: none"> Compatible with a variety of UV and visible light-curable materials Wavelength flexibility allows co-optimization of adhesive and curing system for optimal cure
LED chip located in the emitter, not the controller	<ul style="list-style-type: none"> Consistent intensity Mounted emitter saves the cost of lightguides Eliminates potential intensity loss from long or bent lightguides Easily mounted to robotic arms with no intensity variation Emitter can be mounted closer to application, while the controller remains close to the operator
One controller runs up to four emitters	<ul style="list-style-type: none"> Reduces the number of controllers required Emitters can be added to grow with your application Each emitter can be controlled independently of the others with four separate work stations from a single controller Reduces equipment footprint and cost.
Admin and Production Modes	<ul style="list-style-type: none"> Production mode for simple on/off operation Curing programs can be saved and easily recalled Units can be password protected so only the production mode can be accessed by workers
Touch screen with full keyboard	<ul style="list-style-type: none"> Improved user interface Curing programs can be easily entered, stored, and recalled when needed
Compatible with 3- and 5-mm lightguides with Wolf connector	<ul style="list-style-type: none"> Utilizes standard/readily available lightguides
Instant on-off	<ul style="list-style-type: none"> No warm-up period More energy efficient
Efficient LED temperature management and system monitoring	<ul style="list-style-type: none"> Maximized continuous operation without overheating Comfortable hand-held operating temperature Temperature monitoring assures maximum LED life Checks presence of lightguide or other delivery optic
PLC interface	<ul style="list-style-type: none"> Easily incorporated into automated systems

Admin and Production Modes

Admin mode fully unlocks the device and allows for setting curing time and intensity cycles. Each individual curing cycle can be entered and saved as a program and recalled when needed. The production mode is designed for simple operation by manufacturing personnel. Settings and access to admin mode can be password protected using the full QWERTY keyboard.

LED Light-Curing Technology

Dymax LED spot-curing systems generate curing energy using high-intensity LEDs instead of conventional metal-halide or mercury-arc lamps. The relatively narrow frequency band of energy emitted by LEDs results in cooler substrate temperatures compared to traditional UV-style lamp systems, making them ideal for curing thermally sensitive materials. Dymax LED-curing systems offer many energy and cost-saving benefits, such as no warm-up period, lower energy consumption, no bulbs to change, and more consistent frequency and intensity output for better process control.

Ordering Information

A complete BlueWave® MX-150 system features a controller/power supply and LED emitter. Emitters are available in 365, 385, and 405 nm wavelengths. Lightguides and other accessories noted below can be added for specific applications. Components are sold separately.

Units are warrantied against defects in material and workmanship for one year from date of purchase.



PART NUMBERS			
LED Emitters Note: 5-mm lightguide simulator comes with every emitter.			
BlueWave® MX-150 Emitter	42336 RediCure® (365 nm)	42337 PrimeCure® (385 nm)	42338 VisiCure® (405 nm)
Controllers Note: Interconnect cables to connect controller to emitters and foot pedals sold separately.			
2-Channel Controller	43185 North American Power Cord	43186 Asian Power Cord (Type G)	43184 No Power Cord**
4-Channel Controller	43182 North American Power Cord	43183 Asian Power Cord (Type G)	43181 No Power Cord**
BlueWave® MX-MIM	43299 Machine Interface Module		
Lightguides and Optics			
Lightguides*	36619 Single-Pole, 3-mm x 1,000 mm	35102 Single-Pole, 5-mm x 1,000 mm	
	37043 2-Pole Liquid-Filled, 3-mm x 1,000 mm	36238 Single-Pole, 5-mm x 1,500 mm	
	37044 3-Pole Liquid-Filled, 3-mm x 1,000 mm	38998 Single-Pole, 5-mm x 2,000 mm	
	35101 Single-Pole, 5-mm x 500 mm		
Lightguide Conversion Kit	42932 Converts to D-Style Lightguides		
Lightguide Simulators	36987 Lightguide Simulator, 5-mm Diameter		
Angled Terminators	39029 60° for 3-mm Lightguide	39030 90° for 3-mm Lightguide	
	38042 60° for 5-mm Lightguide	38049 90° for 5-mm Lightguide	
Optics	41148 Adjustable Taper Focusing Lens (5 mm)		
Accessories			
Interconnect Cables	42287 2-Meter Interconnect Cable Assembly	43010 10-Meter Interconnect Cable Assembly	
	42889 5-Meter Interconnect Cable Assembly	43011 20-Meter Interconnect Cable Assembly	
Foot Pedal	43106 Foot Pedal		
Stands and Shielding	43070 MX Emitter Stand – Includes LED Stand 41268 and 43019 Kit for up to 4 Emitters		
	43019 MX Emitter Stand Kit – Attaches to Stand 41268 and Holds up to 4 Emitters		
	41268 BlueWave® LED Mounting Stand with Acrylic Back Shield		
	41395 3-Sided Acrylic Shield - Works with Stand 41268		
Radiometers	40505 ACCU-CAL™ 50-LED Radiometer Kit for LED Spots, Floods, and BlueWave® QX4®		

* All standard Wolf entrance-fitting lightguides will physically couple to this system, but only configurations listed above have been tested and verified to be fully functional.

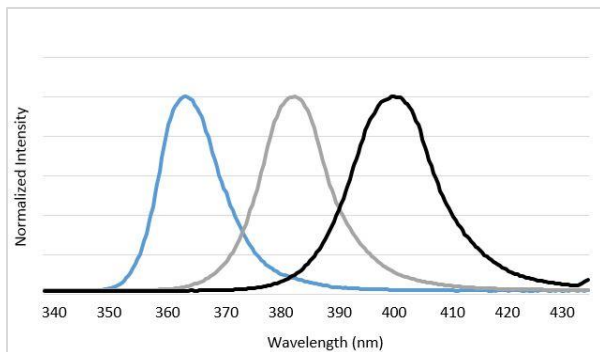
** The appropriate power cord will be added for European customers.

System Specifications

Property	Specification		
MX-150 Emitter	RediCure®	PrimeCure®	VisiCure®
Output Frequency	365 nm	385 nm	405 nm
Intensity Output*	24 W/cm ²	38 W/cm ²	36 W/cm ²
Power Supply Input	100-240V≈ 2.5A, 50-60Hz		
LED Timer	0 to 999 seconds		
LED Activation	Foot pedal, LCD touch screen, or PLC		
Cooling	Air cooled		
Dimensions (H x W X D)	Controller: 5.14" x 7.19" x 7.35" (13.1cm x 18.3cm x 18.7cm) Emitter: 7.9" x 1.97" x 1.97" (20.06 cm x 5 cm x 5 cm)		
Weight	Controller: 2.6 lbs. (1.18 kg) / Emitter: 1.4 lbs. (0.64 kg)		
Unit Warranty	1 year from purchase date		
Operating Environment	10-40°C		

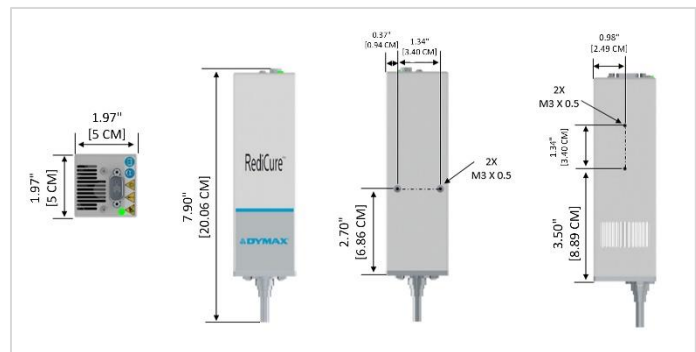
* Measured using a Dymax ACCU-CAL™ 50-LED Radiometer at a distance of 0 mm.

Figure 1. BlueWave® MX-150 Spectral Output Chart



— RediCure — PrimeCure — VisiCure

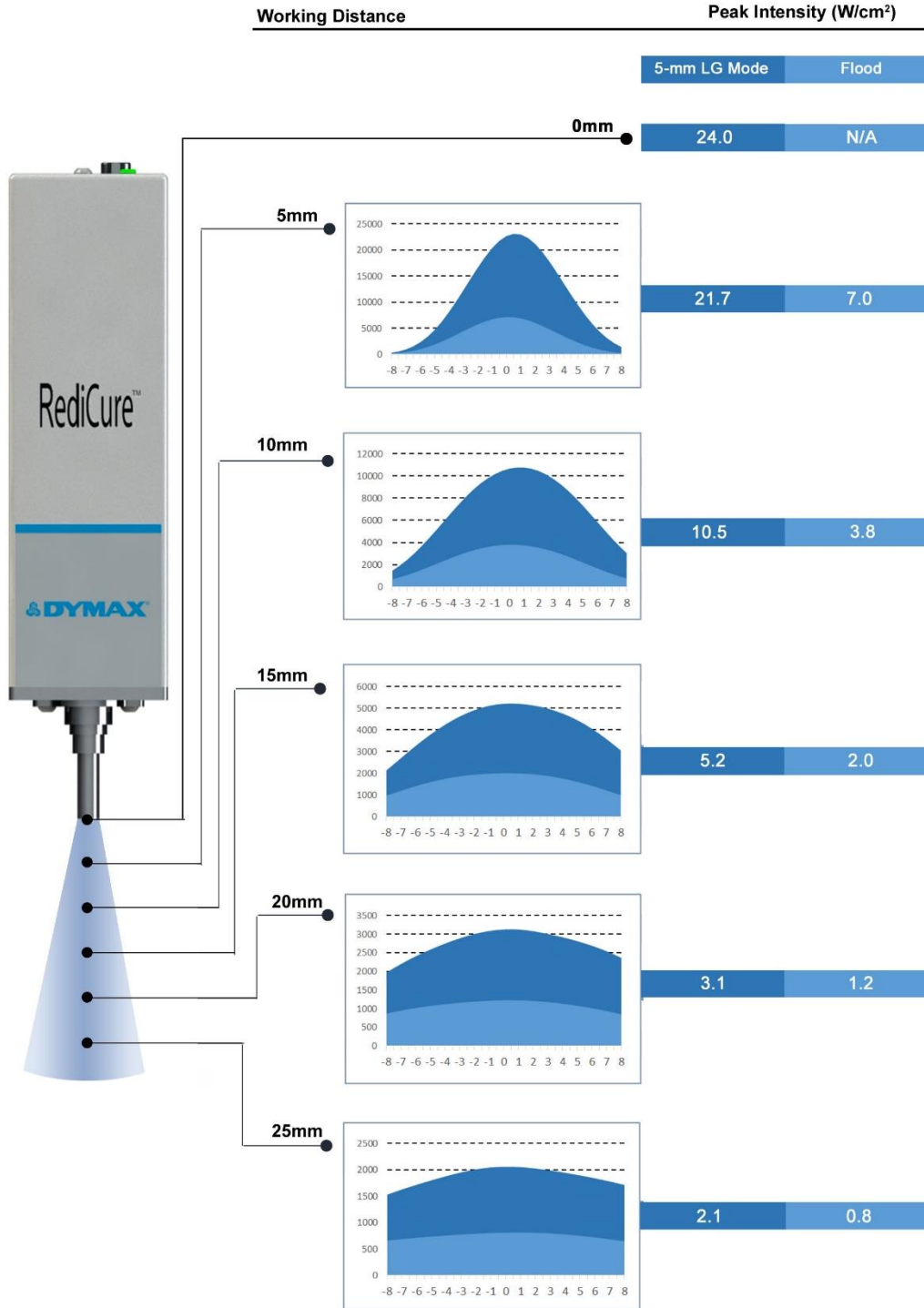
Figure 2. BlueWave® MX-150 Emitter Dimensional Drawing



System Intensity Using Emitters

Figure 3. RediCure®, 365 nm - Intensity at Various Working Distances

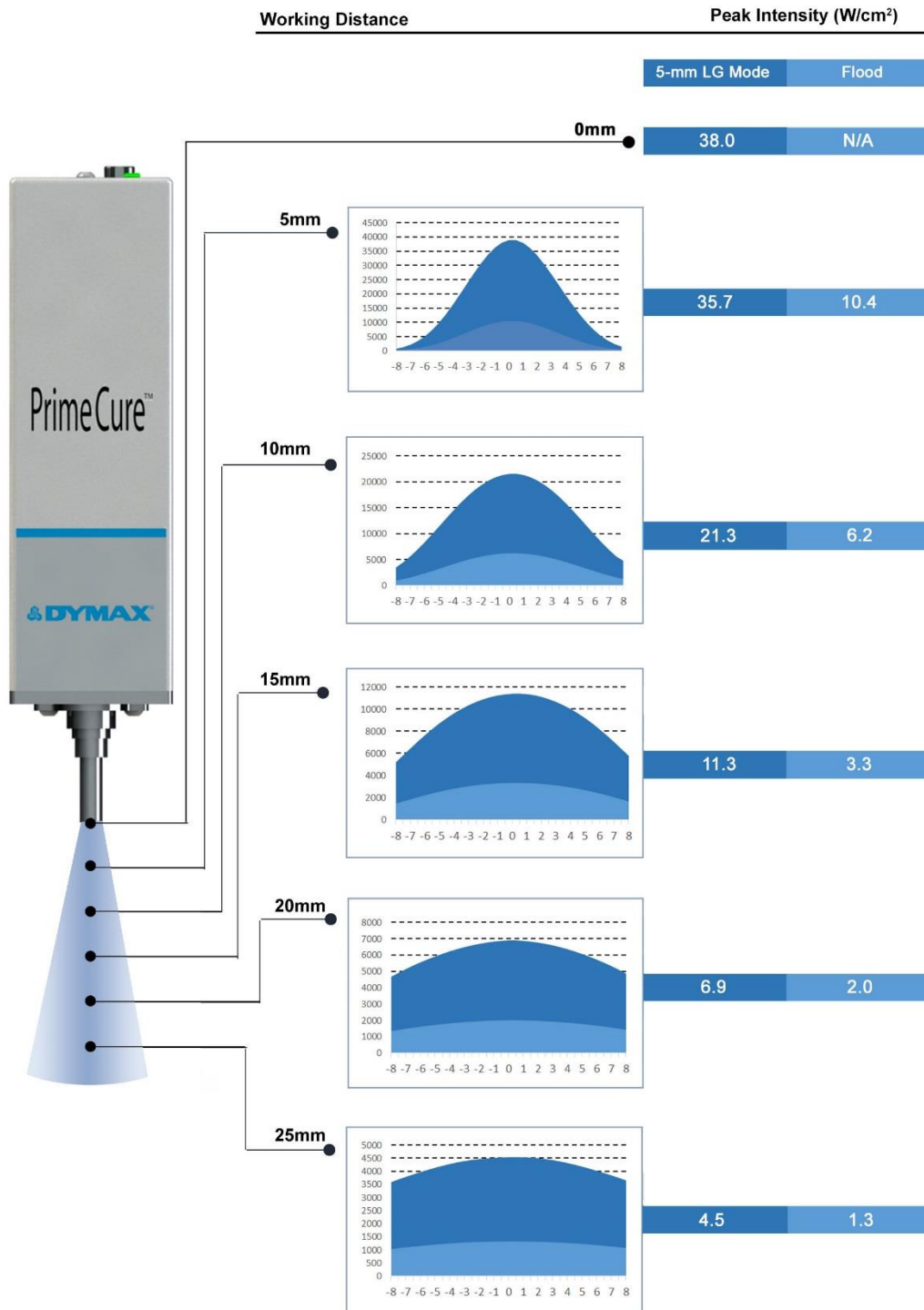
Measured with an ACCU-CAL 50-LED in both 5-mm lightguide (LG) and flood source modes*



* Dymax recommends using the 5-mm lightguide source mode on the ACCU-CAL™ 50-LED, when measuring at 0 mm with the provided adapter in the ACCU-CAL kit. If measurements are made at greater working distance, Dymax recommends using the flood mode source for measurements. For convenience, both numbers are provided in this chart.

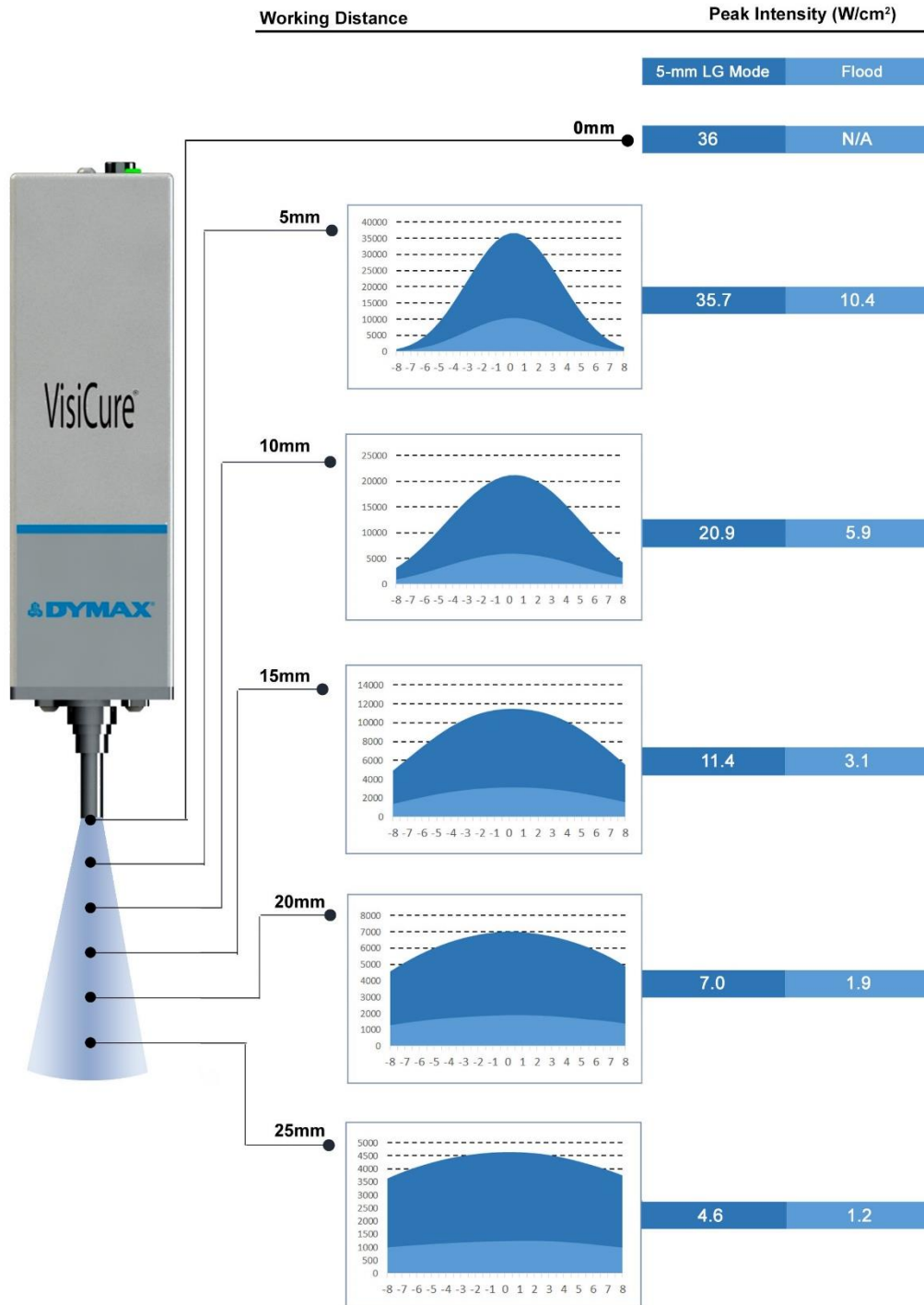
Figure 4. PrimeCure®, 385 nm - Intensity at Various Working Distances

Measured with an ACCU-CAL 50-LED in both 5-mm lightguide (LG) and flood source modes*



* Dymax recommends using the 5-mm lightguide source mode on the ACCU-CAL™ 50-LED, when measuring at 0 mm with the provided adapter in the ACCU-CAL kit. If measurements are made at greater working distance, Dymax recommends using the flood mode source for measurements. For convenience, both numbers are provided in this chart.

Figure 5. VisiCure®, 405 nm - Intensity at Various Working Distances
 Measured with an ACCU-CAL 50-LED in both 5-mm lightguide (LG) and flood source modes*



* Dymax recommends using the 5-mm lightguide source mode on the ACCU-CAL™ 50-LED, when measuring at 0 mm with the provided adapter in the ACCU-CAL kit. If measurements are made at greater working distance, Dymax recommends using the flood mode source for measurements. For convenience, both numbers are provided in this chart.

Optional Lightguide Configuration

Dedicated optics are not necessary to accommodate larger irradiation areas such as an 8-mm diameter spot. These larger areas can be achieved by increasing the distance between the emitting end of the standard 5-mm optic to ~10 mm.

Figure 6. BlueWave® MX-150 with 5-mm Lightguide Simulator, Measured 10 mm from the Surface of the Radiometer

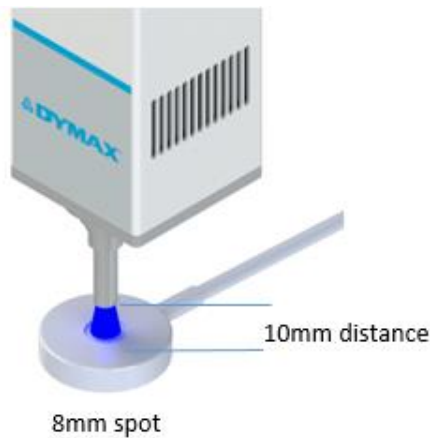


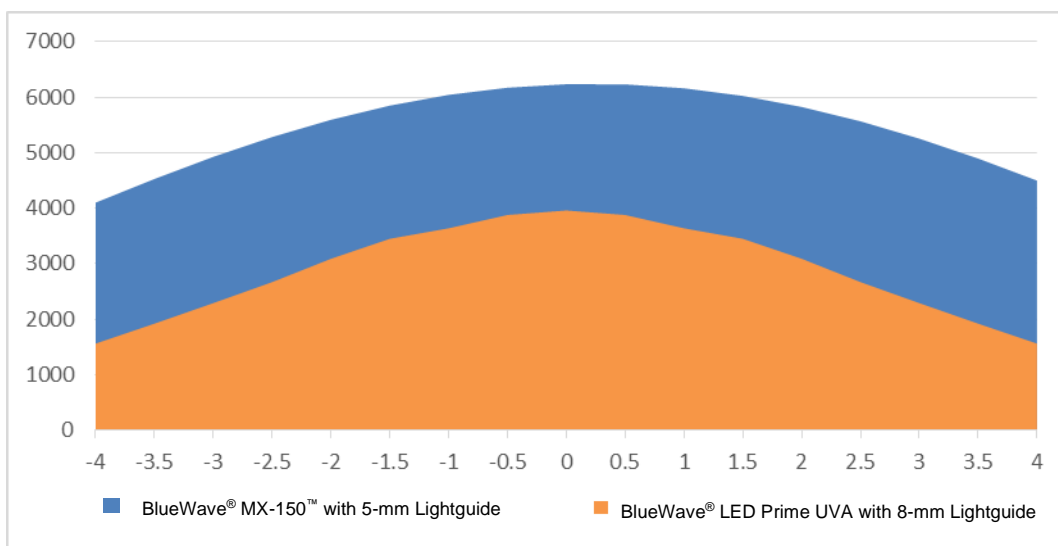
Figure 7. BlueWave® LED Prime Using a 8-mm Lightguide, Measured Directly on the Surface of the Radiometer



Both cover the same target cure area, however, the new BlueWave® MX-150 provides a much higher intensity, see chart below.

Figure 8. Intensity Comparison

Intensity Measured with ACCU-CAL™ 50-LED



The system can be outfitted with a 3 or 5-mm Wolf-style lightguide. A 5-mm lightguide/simulator couples perfectly with the 5-mm aperture of the LED chip (Figure 9) while a 3-mm lightguide only transfers part of the UV light emitted by the LED chip (Figure 10), resulting in lower efficiency. See the intensity chart on the next page for more information.

Figure 9. Aperture with 5-mm Lightguide



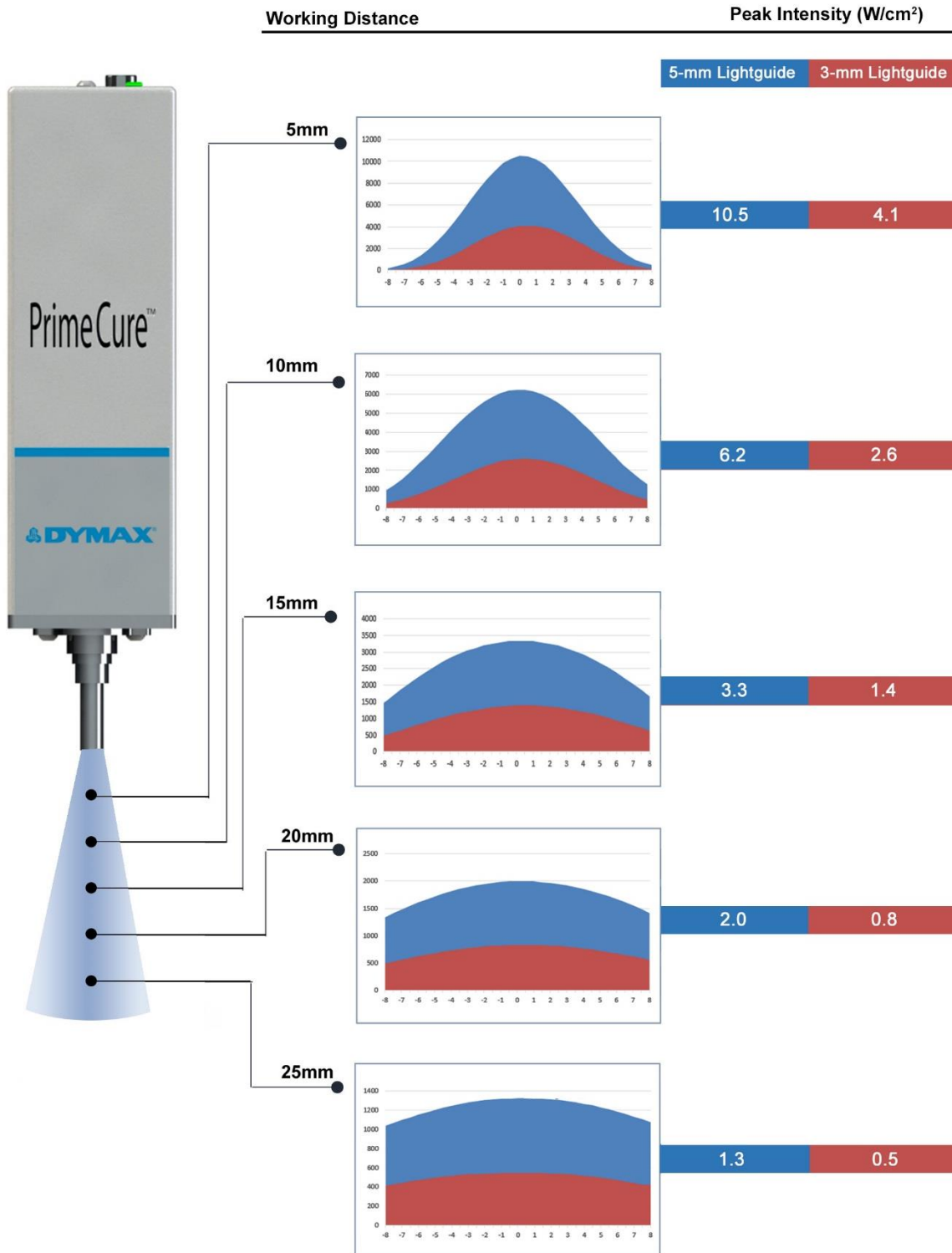
Figure 10. Aperture with 3-mm Lightguide



The high intensity of the BlueWave® MX-150 can be illustrated by comparing a 3-pole lightguide (PN 37044) to a single-pole lightguide on a Dymax BlueWave® LED Prime UVA or BlueWave® LED VisiCure® unit. The intensities of each of the 3 poles on the BlueWave® MX-150 is higher in intensity than a single-pole lightguide on those units:

	Average Intensity, W/cm ²	
	BlueWave® MX-150 with 3-Pole Lightguide	BlueWave® LED Prime with Single-Pole Lightguide
RediCure®, 365 nm	15	N/A
PrimeCure®, 385 nm	24	15
VisiCure®, 405 nm	22	15

Figure 11. PrimeCure®, 385 nm - Intensity with a 3- or 5-mm lightguide at Various Working Distances
 Measured with an ACCU-CAL 50-LED in flood mode.



* PrimeCure™ shown for illustrative purposes. Expect similar performance with the VisiCure® and RediCure™ systems. For more specific data at various working distances and optics, please consult with Dymax Application Engineering.

Accessories

Angled Terminators

Angled terminators can be attached to 3 and 5-mm liquid lightguides to provide significant value when delivering curing energy to hard to reach and semi-hidden bond lines.

- Compact, cost effective design
- Available in 60° and 90° versions
- Easy to connect to the BlueWave® MX-150 emitter
- Optimized energy delivery
- Possible for curing in motion and dynamic curing
- Better uniformity with three lightguide terminators or a tri-furcated lightguide, as compared with a bi-furcated lightguide
- Easily mounted to fixture with close working distance

Part Number	Size	Angle	Approximate Loss
39029	3 mm	60°	35%
38042	5 mm	60°	35%
39030	5 mm	90°	30%
38049	5 mm	90°	30%

Figure 12. 5-mm, 90° Terminator (PN 38042)

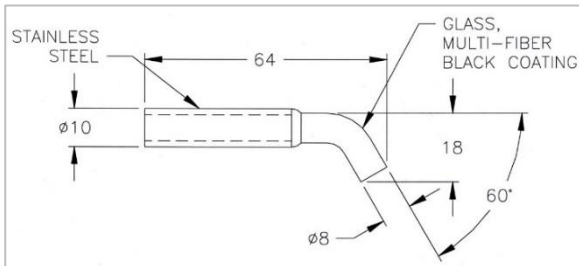


Figure 13. 5-mm, 90° Terminator (PN 38049)

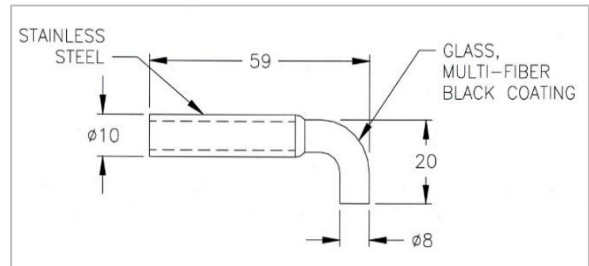
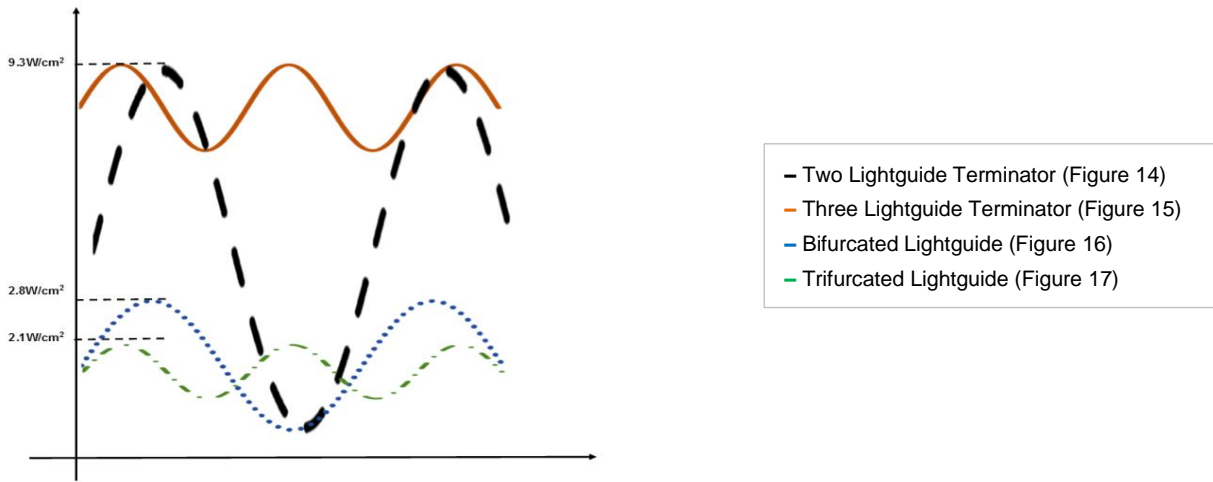


Figure 14. Typical Uniformity on the Perimeter of the Cylindrical Curing Target*



* The uniformity and intensity vary with the diameter of the curing target and working distance. The intensity is measured using the PrimeCure® and ACCU-CAL™ 50-LED with flood mode, at 0-mm working distance.

Figure 15. Two Lightguide Terminators

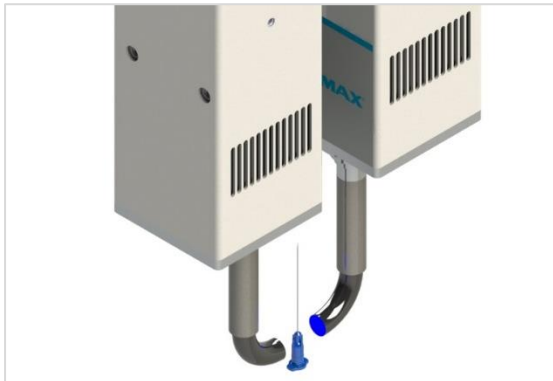


Figure 16. Three Lightguide Terminators

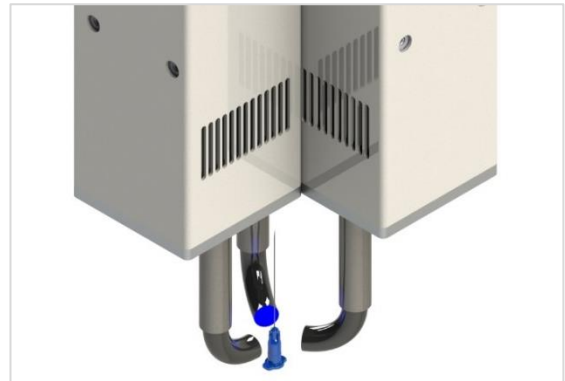


Figure 17. Bifurcated Lightguide



Figure 18. Trifurcated Lightguide



Radiometers

The typical intensity output degradation rate of the unit when run at 100% power and a 100% duty cycle is approximately 7% per 1,000 hours of run time. As with any type of energy source, environmental and operating conditions will have a direct effect on actual degradation rates. Intensity on the BlueWave MX-150 can be measured with a standard ACCU-CAL™ 50-LED. For applications with lightguides, the appropriate standard lightguide adapters should be used and “Lightguide” mode should be selected in the “Source-Mode” section of the optometer. For flood applications, the ACCU-CAL™ 50-LED can be used in flood mode.

Figure 19. ACCU-CAL™ 50-LED



Adjustable Taper Focusing Lens

The adjustable taper focusing lens (PN 41148) can be attached to the BlueWave® MX-150 to provide a focused and adjustable curing area. Uniformity is increased at a distance of 10-20 mm, while intensity is maximized at a 40-50 mm working distance.

Figure 20. Adjustable Taper Focusing Lens with Dimensions

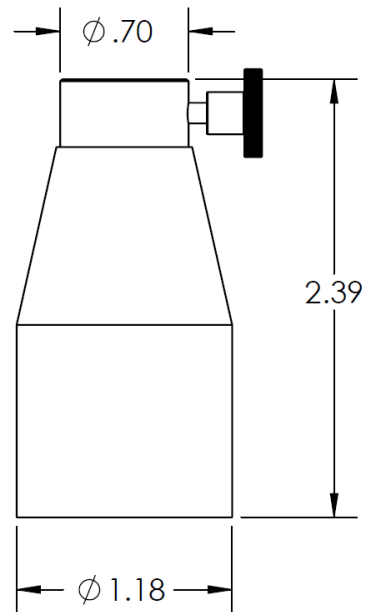
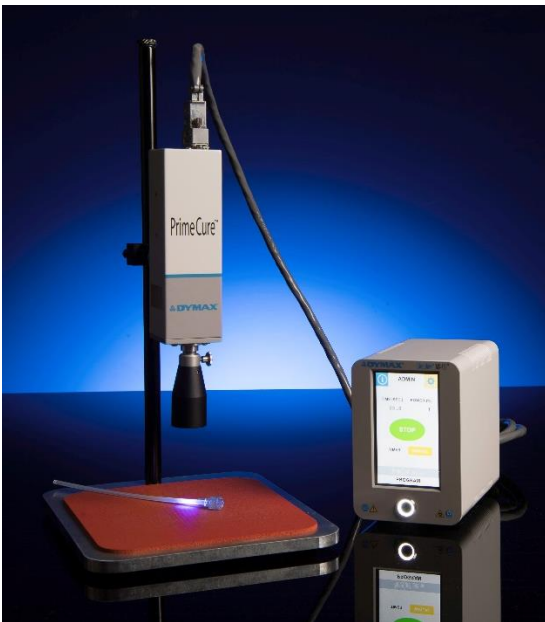
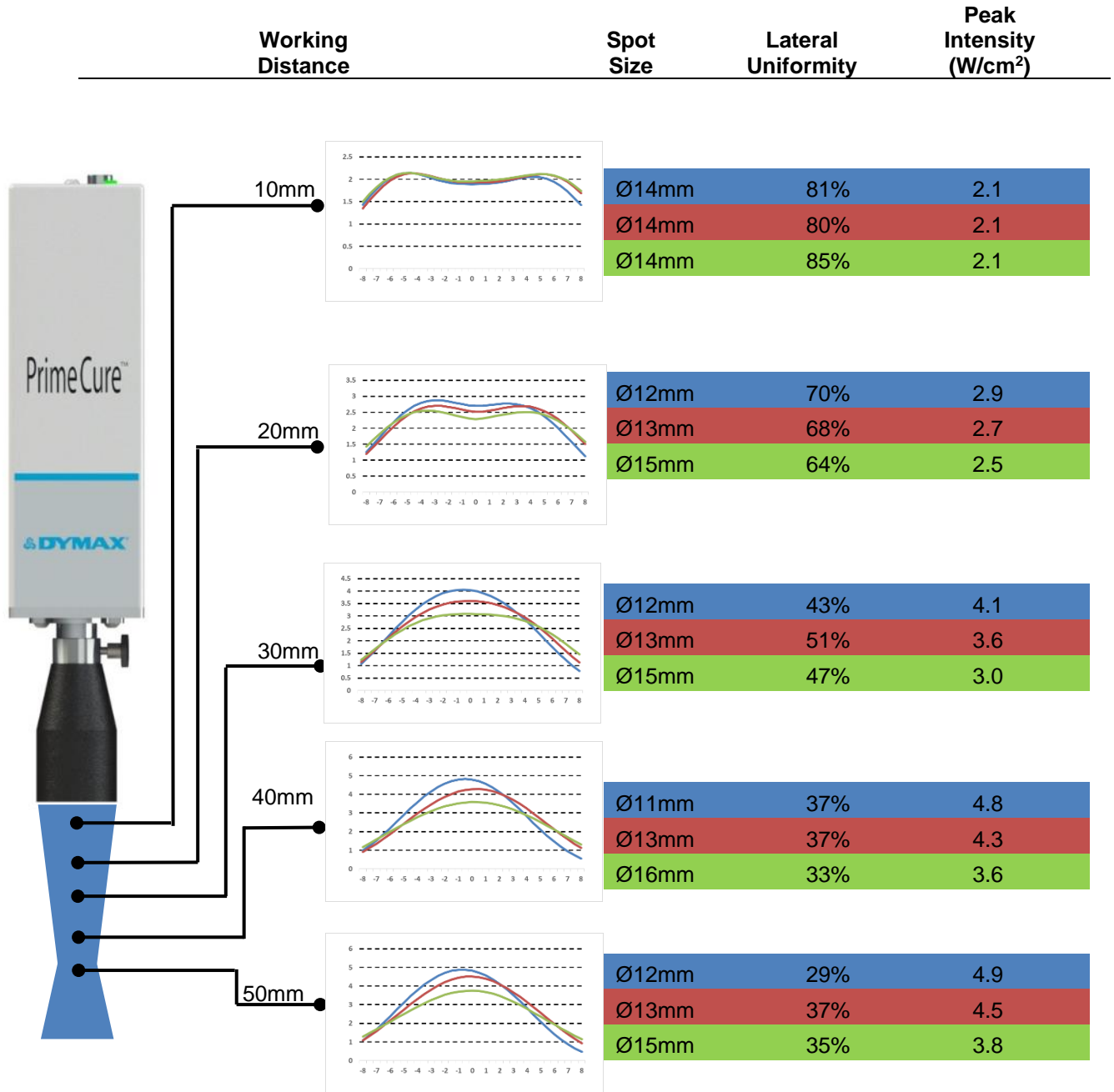


Figure 21. Intensity Measurements, BlueWave MX-150 PrimeCure® Outfitted with Adjustable Taper Shoulder Focusing Lens (PN 41148)

Measured with an ACCU-CAL 50-LED in flood source modes*



* Dymax recommends using the flood mode source for measurements. The units of the X-axis in the charts are millimeters (mm). The spot size varies with both the distance of the emitter and the focus change of the lens. By referring this chart, the best combination of spot size, uniformity and intensity can be obtained by adjusting the emitter distance and focus of the lens.



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