How To Compare the LightWorks to Other Light Units

There are two comparisons that are generally made when comparing the LightWorks unit to other light devices on the market. The first comparison is the output – stated as milliwatts or in some cases millicandella. The second comparison is to compare LED light to Laser light.

When comparing outputs, there is much confusion surrounding the correct way to measure the output of LED light units. Some manufacturers of LED light units are erroneously describing the light output of their units. There are three ways to describe LED lights—only one of the ways actually describes the light output or health value.

Millicandella (mcd) This is a measurement of brightness, which is a relative measurement. For example, our Red LEDs can be described with a high level of brightness. The Near Infrared (NIR) LEDs, on the other hand, have a rating of zero (0) brightness as we cannot see NIR light. So, millicandella is not an appropriate measurement to describe the health value.

Milliwatts (mW) can be used to describe two different outputs.

Milliwatts (mW) Milliwatts as a measurement of power/heat dissipation. Here's an example that shows the manufacturer has confused the output. A unit is described with the LED output as 50 milliwatts. This would mean the LEDs have so much power they would be blinding. The manufacturer is erroneously using the power/heat dissipation measurement—meaning the LEDs can function at a maximum heat of 50 mW and still work. The power/heat dissipation for each LightWorks LED is 100 mW. In this instance, milliwatts is not an appropriate measurement to describe the health value, as it refers to the power/heat dissipation and not the actual light output.

Milliwatts (mW) Milliwatts as a measurement for the actual light or energy output. For a health value of the actual light energy, the LED output should be rated using an Optical Power Meter. The LEDs used in the SOTA LightWorks have been measured with a Newport Optical Power Meter, Model 1830-C. The light output of the LEDs is

accurately described as 4.09 mW for each Red LED and 4.56 mW for each NIR LED. In this instance, milliwatts is an appropriate measurement to describe the health value.

The second comparison that is most often made with LED light units is to compare them to Laser light. The differences between LED light and Laser light can be difficult to fully explain without getting into the physics and behavior of light and light waves. The simplest way to explain it is this:

All light is made up of photons, or electromagnetic energy. With Laser light, these photons are held within a narrow, extremely focused band of light. The light waves of Laser light are considered to be highly coherent; that is they follow the same wave pattern, with all of the photons and waves behaving almost as if one – a cohesive unit. This allows Laser light to be used for very fine, specific procedures. Many feel that Laser gives results faster, perhaps in part to the cohesiveness of the light. It should be noted that there is a great range in the intensity of Laser light – from a hand held pointer to more complex applications.

By contrast, with LED light, the photons are emitted in all directions – there is no focus or cohesion. As a result, light emitted from an LED source is less intense than Laser light and is considered by some to be gentler. LED light can offer the user the opportunity to combine the use of light and color, as LEDs are available in a wide range of colors.

When comparing LED light units, it is best to compare knowing what type of output is being measured and whether the value can be checked using standard testing equipment. Any values stated should be backed up by actual testing, with the correct equipment. The manufacturer should be able to provide you with the name of the testing equipment used and the equipment should be suitable for that purpose. Proper testing equipment is expensive – it is reliable and accurate in the results provided. Less expensive equipment may give inaccurate results, which cannot be relied on.

It is important to not only compare the electrical specifications of the units but also to compare any external testing, certifications or testing standards that the units have or have not met. The SOTA units have been CE approved and are RoHS compliant. CE is a European standard that ensures that a product meets certain regulatory standards set by the European Union. Having CE on the units ensures products are safe to use and do not output hazardous levels of EMRs (electro-magnetic radiation, like cellular phones do). RoHS is the Restriction of use of Hazardous Substances and is again, a European standard. In order to be RoHS compliant, electronic products must not use any of the following six substances: Cadmium (Cd), hexavalent Chromium (CR VI), Lead (Pb), Mercury (Hg), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE).

It is very important to make an informed and intelligent decision before purchasing any equipment. Be willing to ask the manufacturer for the test data. They should have this data readily available and be ready to share it.