

# FAQ: X-Cite® Radiometer

## 1. Why is a special X-Cite® Radiometer required? Isn't it just a power meter?

The X-Cite® Radiometer is more than a standard power meter. It is designed to fit X-Cite® light guides and communicate directly with the X-Cite® *exacte* to transfer calibration data.

## 2. Why is the X-Cite® Radiometer a separate device? Wouldn't an internal Radiometer in the X-Cite® *exacte* be simpler?

Making the X-Cite® Radiometer a separate device is really a matter of overall convenience and economy:

- A single Radiometer can be used with any number of X-Cite® units. A facility has the option of sharing a Radiometer between labs or departments.
- An external Radiometer minimizes imaging system down time. Recalibration of the Radiometer can only be performed at a qualified EXFO service center. If the Radiometer was internalized in the X-Cite® *exacte*, the entire unit would have to be sent out.
- Not all imaging applications require calibrated illumination, so having an external, optional Radiometer can help keep equipment costs down.

## 3. Can the X-Cite® *exacte* be purchased without a Radiometer and be upgraded to use with a Radiometer at a later date?

Not necessary! All X-Cite® *exacte* units are "Radiometer compatible", so the decision to purchase a Radiometer can always be made at a later date without requiring hardware or software changes, and without incurring any additional upgrade costs.

## 4. Why is recalibrating the Radiometer necessary?

As with any other precision measuring device, to obtain accurate results, occasional recalibration is required to ensure that it doesn't drift over time.

## 5. What is the difference between "absolute mode" and "relative mode" on the Radiometer?

When in absolute mode, the Radiometer measures the output intensity of the X-Cite® in absolute units (watts or watts/cm<sup>2</sup>). This is useful information to include in the records for an imaging experiment that may continue over a long period of time, as it enables the researcher to account for changes in the lamp as it ages – by adjusting the iris on the X-Cite® *exacte* until the original power setting is reached or by using the power values to calculate a correction factor.

Relative mode provides intensity readings in terms of % of a "reference" or "initial" value. In this context, the reference value is whatever the power reading is when the Radiometer is toggled into relative mode. This mode can be used to quickly compare the output from multiple units, or test linearity of the iris settings. For a linearity test, ensure that the iris setting on the X-Cite® is 100% and the shutter is open when toggling to relative mode.

## 6. What is the difference between "power" and "irradiance" measurements on the Radiometer?

Power measurements are reported in watts or milliwatts (W or mW).

Irradiance measurements, an industry standard measure of energy density, are derived using the power reading, and are reported in power/area units (W/cm<sup>2</sup> or mW/cm<sup>2</sup>).

Note that in either case, the measurement is made at the end of the light guide, and the actual power reaching the specimen on the microscope stage will be less due to losses through the lenses and filters within the microscope.

## 7. Why are there extra, non-functional buttons and ports on the Radiometer?

We are planning ahead for future add-ons and accessories. With the extra buttons and ports already in place, hardware upgrades won't be necessary in order to take advantage of the new features when they become available.

## 8. Can the Radiometer be used with X-Cite® 120 units?

Yes, but function will be limited to taking a power measurement. There is no communication path to calibrate the X-Cite® 120 unit.