

## Sample Handling Information of the SPF-290AS™

There are several changes to this new model in comparison to the SPF-290AS™ previously offered. The key points include:

1. The SPF-290AS™ is offered with the automated X-Y sample stage only. This provides the lab technician with the time saving benefit of not having to manually reposition the sample up to 9 times to perform the required measurement sequence required in test methods. From a competitive standpoint, this is very important. The competitive system manufactured by LabSphere is only supplied with a manual sample stage. When the lab technician wants to measure a sample, they must move the sample by hand. The method that they use is inconsistent, and forces them to try to align the sample by referencing the position by their eye, and not an accurate mechanical method. We have heard from many of the competitors customers that this makes it very difficult to take repetitive measurements of the same sample (one after the other) and receive the same result. Because of this, the repeatability of the competitive system is poor.

The SPF-290AS™ is automatically positioned by the motor drive on the X-Y stage which has an opto-mechanical reference point. Using this design method, the customer is assured that 2 sequential measurements of the same sample will measure the same point on the sample, providing extreme accuracy and consistent results. This provides excellent data from their tests, and is very valuable in providing confidence to their customers.

This saves the technician a large amount of time while the analyzer takes all of the necessary measurement without the need of manual and inaccurate repositioning assistance.

2. The electronic system of the SPF-290AS™ has been improved in several ways to both meet the strict requirements demanded by the European CE Certification process (the analyzer is now CE Certified), as well as reduce the electronic noise which would contribute to the dark current reading. By reducing this electronic noise, a higher accuracy of the sample signal divided by the reference signal is obtained, resulting in greater accuracy in the UVA and SFF values.

The previous design of the SPF-290AS™ was already superior to our competitors system. One of the measures of this is specified as Absorbance, which is also a measure of system measurement dynamic range. Currently, Solar Light® specifies the Absorbance as 3.2A, whereas the competitors system is published as 2.7A.

Higher Absorbance, or dynamic range, determines the ability to accurately measure a higher SPF value. Solar Light® is confident that the new SPF-290AS™ will result in even higher performance, and we are in the process of determining what this higher dynamic range is. Updated information will follow.

Improved electronics, higher performance power supplies, and a new thorough system common grounding strategy results in increased accuracy and capability for your customers.

3. Like the previous analyzer, the new SPF-290AS™ provides the highest spectral resolution of 1.66nm, compared to the specification published by the competitive system of less than 4 nm.
4. Previously, Solar Light® provided Transpore tape with each new system for the customer to begin using with their sample testing. It has now been recognized that although Transpore tape may be inexpensive to use, it does not allow proper spreading of the samples being tested, and results in very inconsistent readings. Many current customers are not aware the Transpore tape is the cause of this, and therefore they believe that the analyzer is working improperly. This is almost always untrue. The analyzer is very accurate, repeatable, and robust. The method used for preparing the sample is the biggest variable, and this is therefore the most important information to teach your customers.

Under the new Colipa methods, 5 micron roughness PMMA plates are recommended. Other methods call for 2 micron or 5 micron PMMA plates to be used. The PMMA plate has a much higher consistency of the surface roughness, and provides for better uniformity of spreading for a great number of the formulation types. Because of this, Solar Light® now provides, as standard, two 50mm x 50mm PMMA sample plate holders with each analyzer, along with a sample of each of the 2 micron and 5 micron surface roughness PMMA plates to begin their testing with. Transpore tape is still available if the customer chooses to use it.

It is also important to read and inform the customer of studies which have been made regarding the method for spreading the formulation on the PMMA plate, and even more importantly the different performance (data) results which are measured when comparing the PMMA plate type sold by Solar Light® (Schonberg), versus the PMMA plate type sold by our competitor (Helioplate). It

has been shown that the Solar Light® PMMA plate supply provides a more accurate and consistent result correlation to in-vivo testing. Solar Light® is now selling boxes containing 200 of these highly accurate PMMA plates at a very competitive price.

5. One additional important item Solar Light® has added to the accessory list is a very useful positive displacement Pipette. The Pipette is used like the syringe, although allows the customer to apply accurately metered doses (droplets) of the formulation evenly over the area of the sample plate. Droplets can be The technician can adjust the Pipette so that each droplet will contain between 1 to 20 micro liters of formulation. In this way, they can evenly distribute as many droplets (for example 50 or 100) over the surface of the PMMA plate. Now, when they begin spreading the formulation with their finger, it will automatically assist is the equal spreading thickness, and add to the highly accurate and repeatable results obtained by the analyzer.