

GUIDED ACTIVITY:

1. Interface with each of the sensors and make sure that they're functioning
2. Test the intensity meter with your phone's flashlight
3. Test the multi-spectrum meter with different colors of light.

UNGUIDED ACTIVITY (Choose one of the following activities to do with a small group:)

1. Determine the color temperature of the lights in the room using the multi-spectrum light meter
 - a. First, find a definition of color temperature online to use. It should be based on spectral information
 - b. Then, try and figure out the spectral power in different bands in the room
 - c. You should use filters if possible to try and calibrate the relative intensities at different colors.
2. Many lights flicker (OLED screens, lightbulbs connected to AC power, etc.). Choose a light source and using the intensity meter determine if its output is flickering and if so at what frequency.
 - a. You'll need to measure the light with a reliable timing first.
 - b. After you can sample the signal, look for patterns in the intensity.
 - c. A fast fourier transform may be helpful. You can also try other demodulation methods.
3. Using the UV sensor (Sunny day only): Find a piece of clear/transparent material, and determine its absorption coefficient in the UV-A spectrum. How thick would the material need to be in order to block 90% of UV-A light?
 - a. Make sure your UV source gives you enough counts to be useful. If the flashlight is not helpful, you can go outside and use solar light.
 - b. Use some cardboard to try and block indirect light so that all the light is coming through the material.
 - c. In the end, you should be able to calculate the absorption coefficient through a measurement of the thickness of the material, and a measurement of the light with and without it in front of the sensor.