# SOLAR ENERGY ELECTROMAGNETIC RADIATION & SPECTRUM

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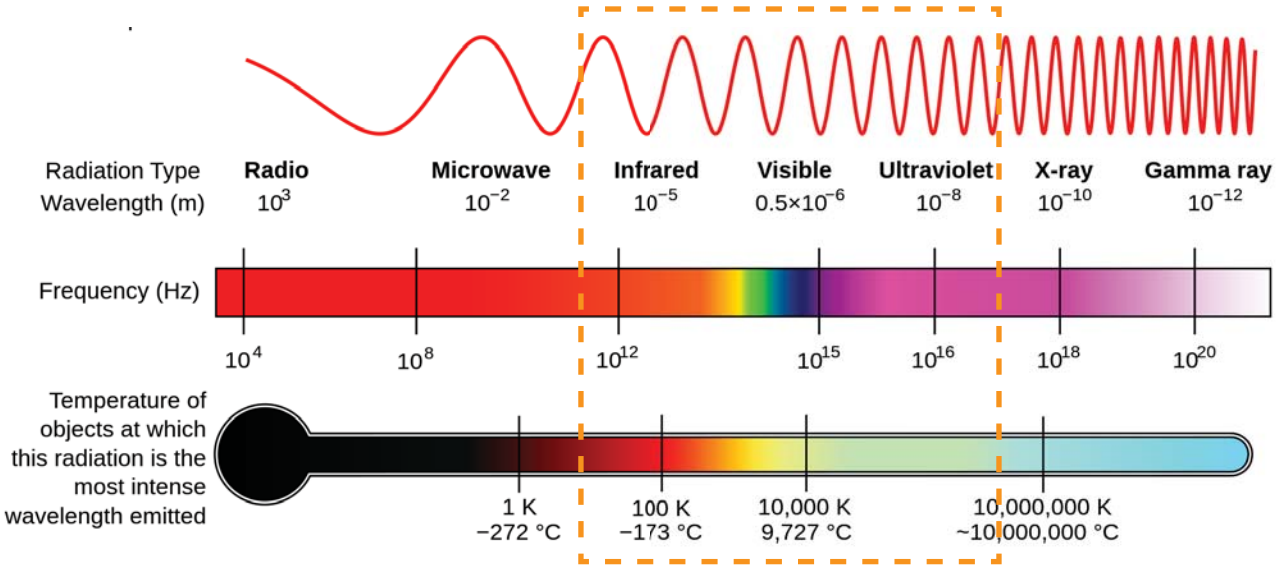


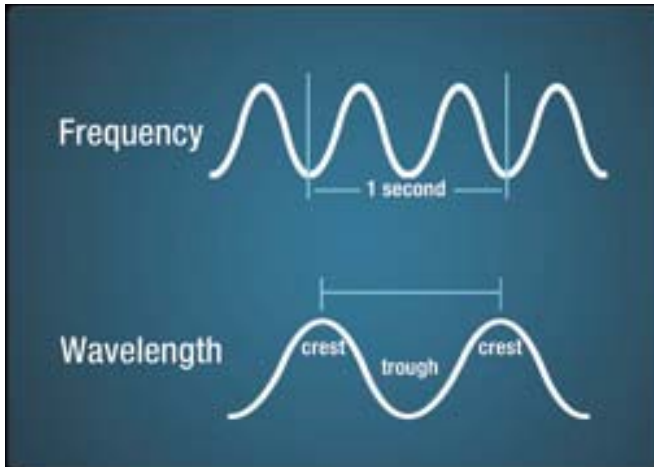

All living things on Earth depend on the electromagnetic radiation or light received from the Sun. Because not all elements of electromagnetic radiation are visible to the human eye, we can use the electromagnetic spectrum to visualize the various properties of it. For example, identification, wavelength, frequency and energy. The higher the frequency, the shorter the wavelength and the more energy stored by it. The lower the frequency, the longer the wavelength, thus less energy is stored.

When studying light and its interaction with the built environment we are less concerned with the ultra-long (radio/microwaves) or ultra-short wavelengths (x-ray/gamma ray), which represent a very small percentage of the radiation that reaches the earth's atmosphere. We are concerned most with the effects of infrared, visible and ultraviolet rays; each of which represent approximately 50%, 45% and 5% of the suns energy, respectively.

**Visible Light** as the term indicates is the part of solar energy that is visible to the human eye. It constitutes a broad spectrum of colors (ROYGBIV or red, orange, yellow, green, blue, indigo and violet) based on the wavelength.

**Infrared Radiation** is heat energy registered just beyond the visible spectrum and is subdivided into three divisions based on wavelength: far, thermal and near. While we cannot see this spectrum (without appropriate tools), we can feel or sense it.

**UV Radiation** entering buildings is just as critical to manage as it is for human skin. Just as extended exposure to UV radiation can cause skin diseases and expediated aging in humans, it can also cause colors and fabrics to fade or deteriorate within buildings.




**Sources**

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