Power (P) = =

SI Unit of Power: Watt (W): W =

Intensity (I) = =

SI Unit of Intensity:

Light bulb example

Information

* Surface area = 4m2
* Bulb intensity of 100 W (Power)
* I =
  + I = 25

Solar constant

Information

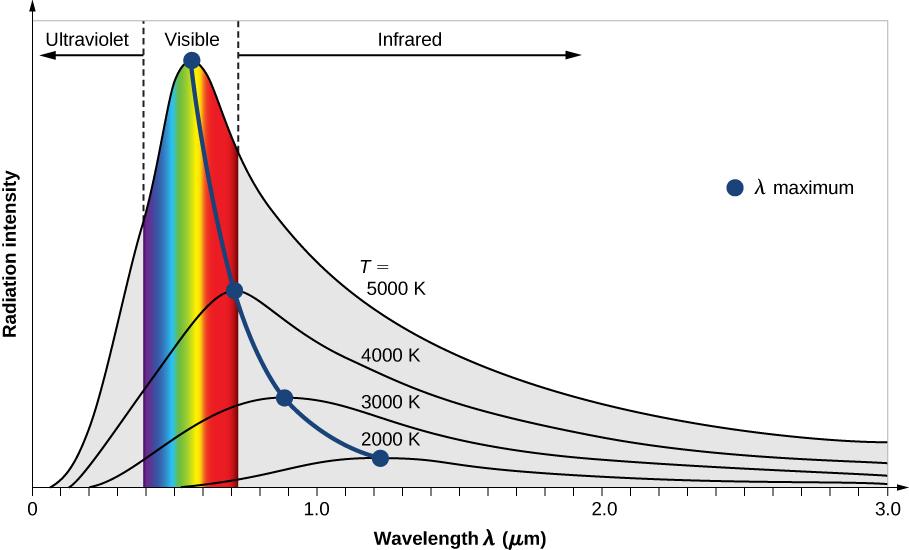
* d = 93,000,000 → miles
* What is the intensity of sunlight at 12:00 on a clear day?
* I = 1370

**Light (E.M waves) from surface (2 types)**

1. With room lights ON:
   1. Room light shine on blue book:
      1. Can see book
      2. Cannot see when light is turned off
   2. → Re-radiation from surface
2. With room lights OFF:
   1. Cannot see book however book still releases electromagnetic waves!
      1. It “glows” via infrared waves
      2. Thermal radiation from surface

Infrared Waves cont.

* All objects spontaneously emit electromagnetic radiation
* The amount and the **ƛ** (wavelength) of this radiation depends on temperature “T”
* Put any object in a dark room
  + The object will “glow” depending on the temperature
* Example one [Electric stove burner]:
  + Light intensity (thermal radiation) “I” depends on wavelength



Thermal Radiation

* I = total intensity for all wavelengths
* Find:
  + Temperature is in Kelvin
  + I = ← (Stafan-Boltzmann Law)
* Scaling:
* → →
* Example: Double the temperature and how does the intensity change?
  + → → → → 16 (times brighter)