Imager sensitivity is often given in terms of visual units,
such as VOLTS / LUX*SECOND (V/lx*s)
There will also be a note regarding the test spectrum,
Such as “Measured with a tungsten lamp of 2856K”

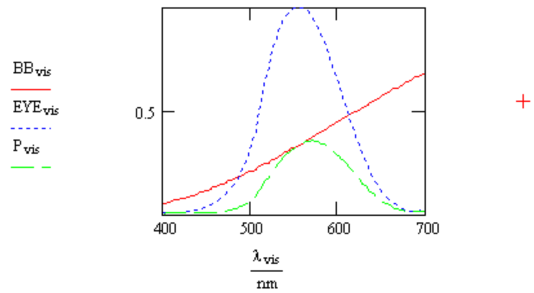
There is a lot to unravel to bring these specifications into typical engineering units, and there is a trap regarding the spectral sensitivity of an imager.

The tungsten lamp filament operating at a given temperature has an emission spectrum determined by that temperature. It is called the black body spectrum.

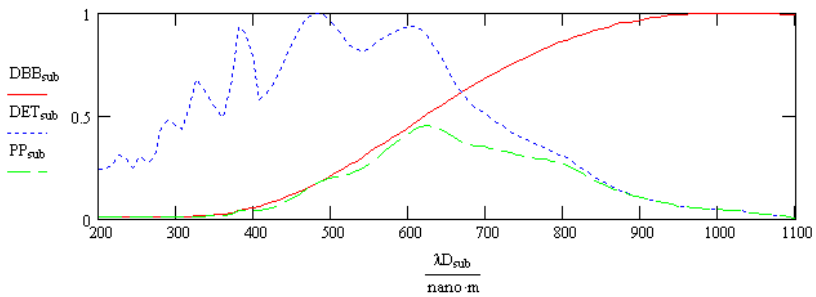
The light from the 2856 Kelvin tungsten lamp is visible, illumination engineers and photographers (mindless art weenies!) measure the light in terms of the ability to illuminate. The amount of light is lumens. The amount of light falling on a surface (lumens/meter^2) is lux. The net effect of a particular light source on the eye is the area under the curve which is the product of the lamp spectrum, and the spectral sensitivity of the eye.

The light also falls upon the imager surface. The amount of light is watts. The amount of light falling on a surface is (watts/meter^2). The net effect of the light source on the imager is the area under the curve which is the product of the lamp spectrum, and the spectral sensitivity of the imager.

2856 K black body spectrum multiplied by photopic visual response spectrum



2856 K black body spectrum multiplied by Hamamatsu S8377 detector spectral response



These graphs have the same horizontal scale factor, and they are closely lined up over the visual range; 400nm to 700nm. The area under the green curve in the top graph is the excitation measured in lux*seconds, the area under the green curve in the bottom graph is the response of the imager in volts.

A good explanation of radiometry and photometry is from:
Professor Jim Palmers Radiometry FAQ page University of Arizona
http://www.optics.arizona.edu/Palmer/rpfaq/rpfaq.htm

The recipe for the calculations is on the actinica website in pdf and mathcad forms.
SpectroscopyDetector-011408.mcd
SpectroscopyDetector-011408.pdf