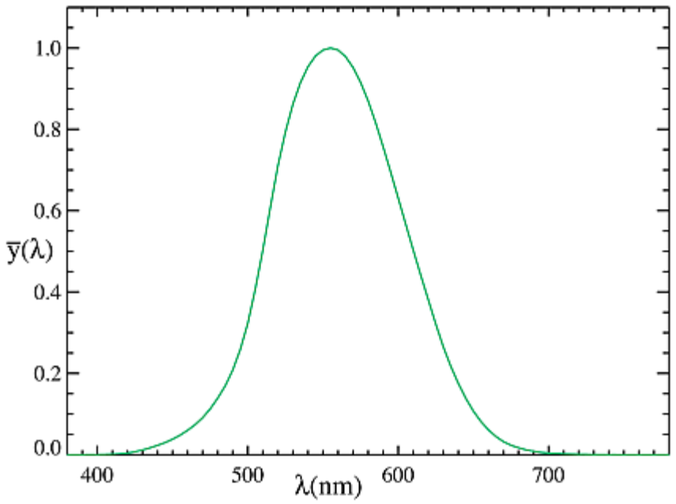
Utility Function

$fit(x, \Xi, \Psi) := interp(cspline(\Xi, \Psi), \Xi, \Psi, x)$ I use this function to make discrete data continuous

Capture of Photopic Lumnosity Function



Photopic Luminosity Function (Wikipedia)

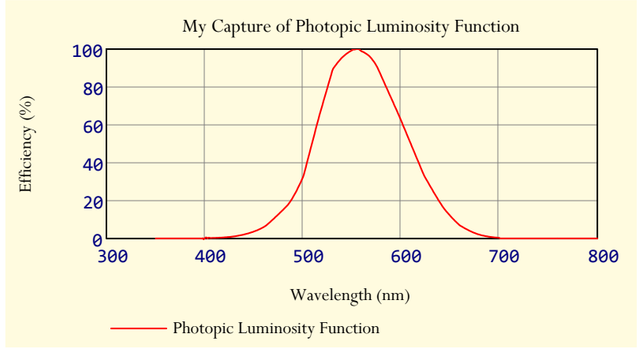
Curve Capture from Dagra

$Z :=$

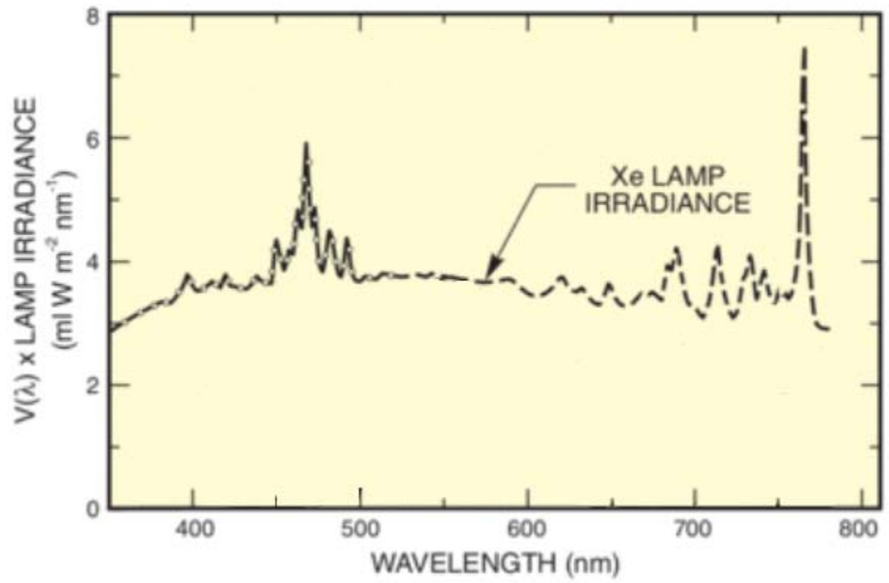
Wavelength	Efficiency
350.2714	0
350.4162	0
350.8267	0
351.5027	0
352.4202	0
353.5308	0
354.8587	0
356.3798	0
358.0457	0

$pe(\lambda) := fit(\lambda, Z^{\langle 0 \rangle} \cdot nm, Z^{\langle 1 \rangle})$ $\lambda := 350nm, 351nm .. 800nm$

My curve fit of the function



Capture of Lamp Irradiance Function

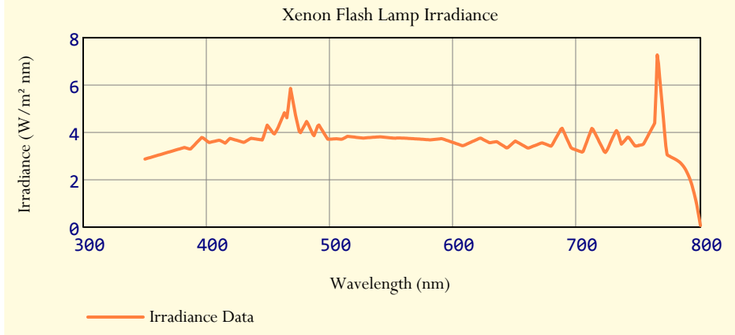


Data Capture from Dagra

$I :=$

Wavelength	Irradiance	
351.8868	2.897557	
352.6415	2.909144	
353.184	2.917512	
354.6698	2.940043	
356.6038	2.969654	
358.8915	3.005057	
361.4387	3.044323	
364.1745	3.086165	
366.9811	3.129294	

$$Ir(\lambda) := fit\left(\lambda, I^{\langle 0 \rangle} \cdot nm, I^{\langle 1 \rangle} \cdot \frac{mW}{m^2 \cdot nm}\right)$$



Link

$$Ev := 683.002 \frac{lx}{\frac{W}{m^2}} \left(\int_{300nm}^{800nm} Ir(\lambda) \cdot pe(\lambda)\, d\lambda \right) = 274.2 \cdot lx$$

The reference lists the illuminance as 270 lux, so my result is quite close.