Brief analysis on the selection of the diffraction grating

The CCD sensor that I brought have 3840\*2160 resolution, and I planned to detect the visible spectrum that is 400nm to 800nm. Assuming the spectrum is uniformly distributed on the sensor, the minimal distinguishable wavelength difference is and the best color resolution is .

The diffraction grating that I brought is 20 mm x 20 mm, made of glass. It works at 200 nm to 10000 nm range of light. So, by the resolution equation of grating , to fully use the CCD sensor, the minimal number of slots is 7681 and the slots density is 384.05 slots per mm. However, I choose to buy the 1000/mm grating, because the prices of 1000/mm and 500/mm are the same, 250/mm one is cheaper but not satisfice the specs, and 2000/mm one is twice more expensive.