HVS Tutorial Exercise

Exercise

The spatial response of the human visual system can be approximated by the following equation: $H(\omega_r) = A(a + \frac{\omega_r}{\omega_0})exp(-(\frac{\omega_r}{\omega_0})^\beta)$, where $\omega_r = \sqrt{\omega_1^2 + \omega_2^2}$ is the circular spatial frequency (in circles per degree), $A = 2.6$, $a = 0.00192$, $\omega_0 = 8.772$ and $\beta = 1.1$. Which is the minimum spatial sampling frequency ω_s that has to be used for sampling a video, considering that the human visual system impulse response weakens the signal at 40 dB for frequencies above the Nyquist frequency?