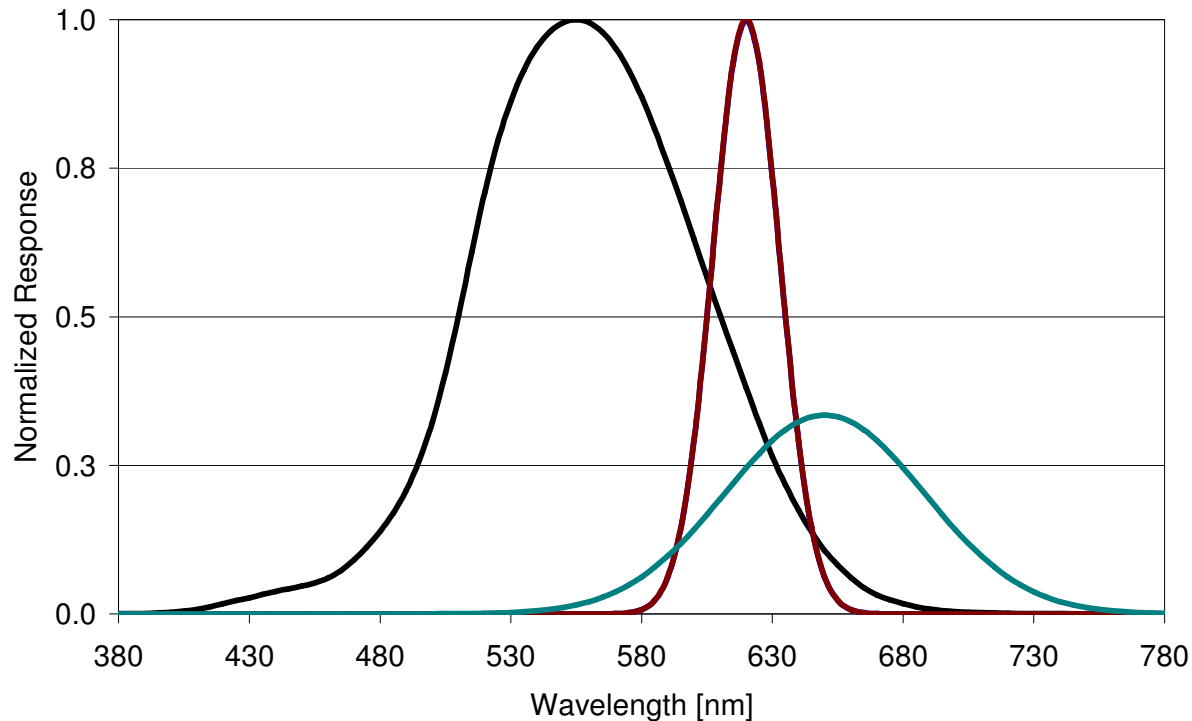


# QDs vs Red Phosphor

## Impact of FWHM on Luminous Efficiency

Photopic Response Curve of the Human Eye



### Two Gaussians

QD: 30nm FWHM, 620nm

Phosphor: 90nm FWHM, 650nm

### Area Under Curve

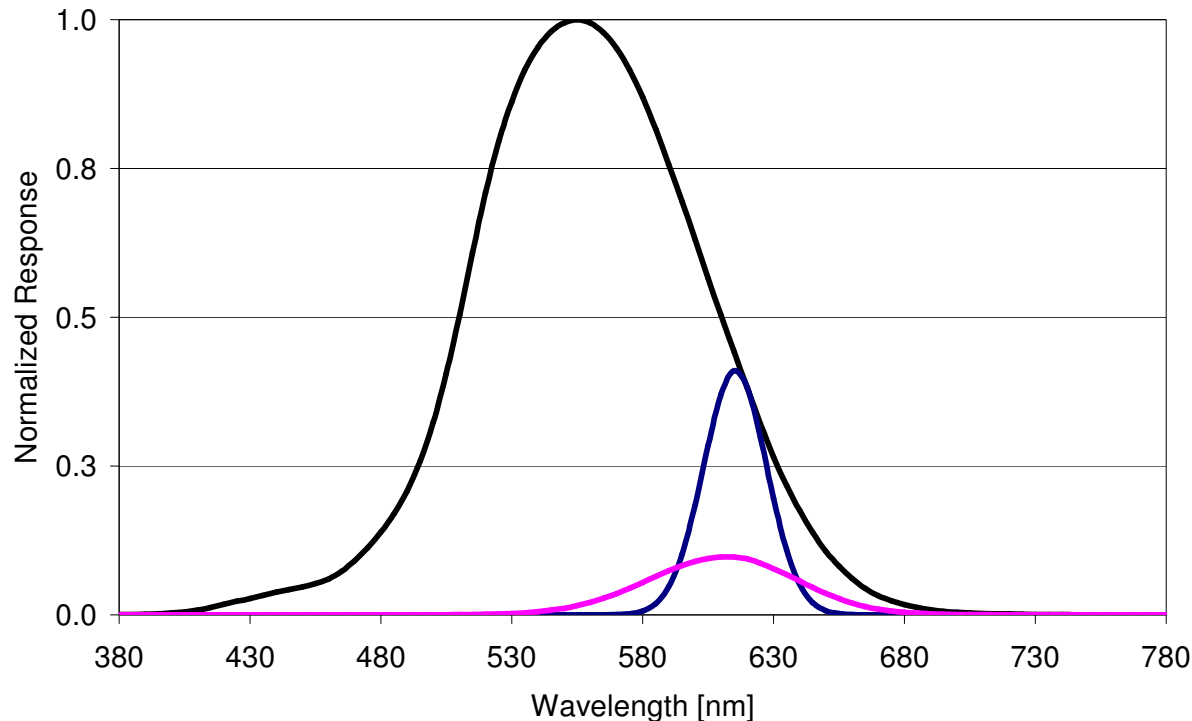
Equal for QD and Phosphor (i.e. same photon count)

Multiply QD and Phosphor spectra by photopic response curve

# QDs vs Red Phosphor

## Impact of FWHM on Luminous Efficiency

Photopic Response Curve of the Human Eye



### Convert to lumens

QD: 620 → 615nm

Phosphor: 650 → 610nm

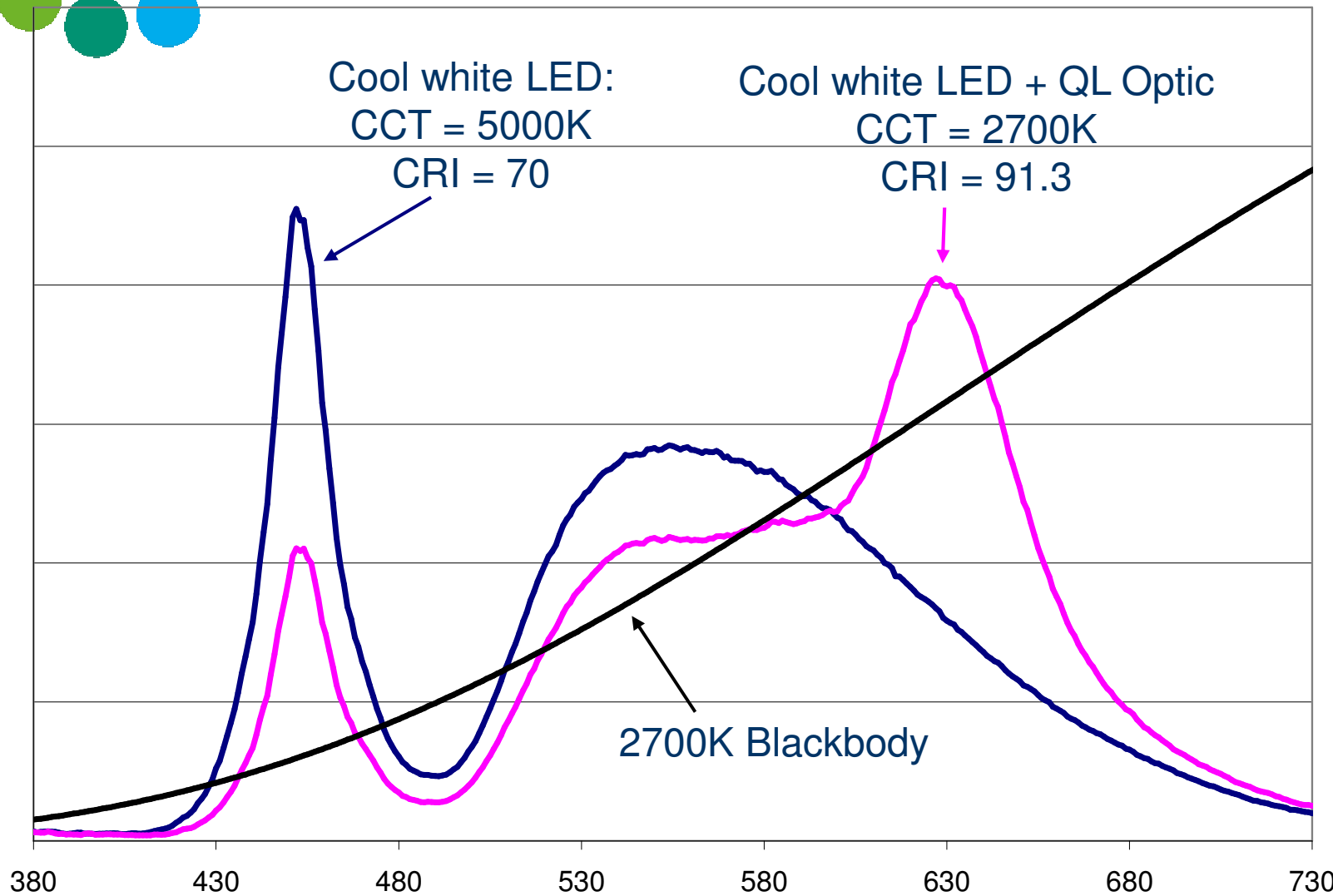
### Area under curve

Phosphor vs QD:

QD has 2X lumen advantage

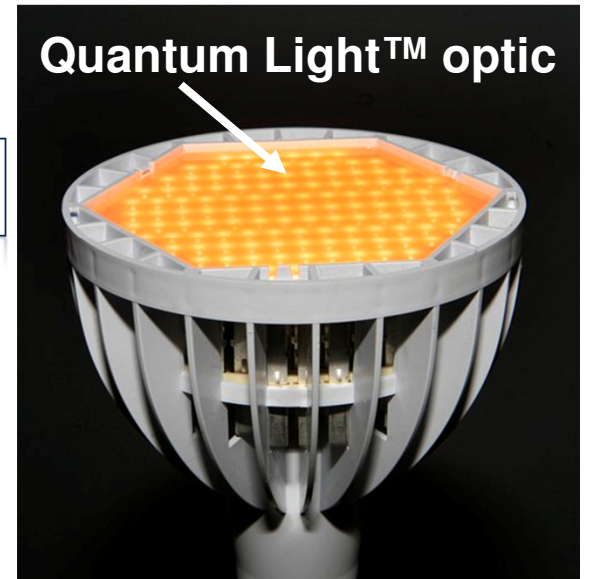
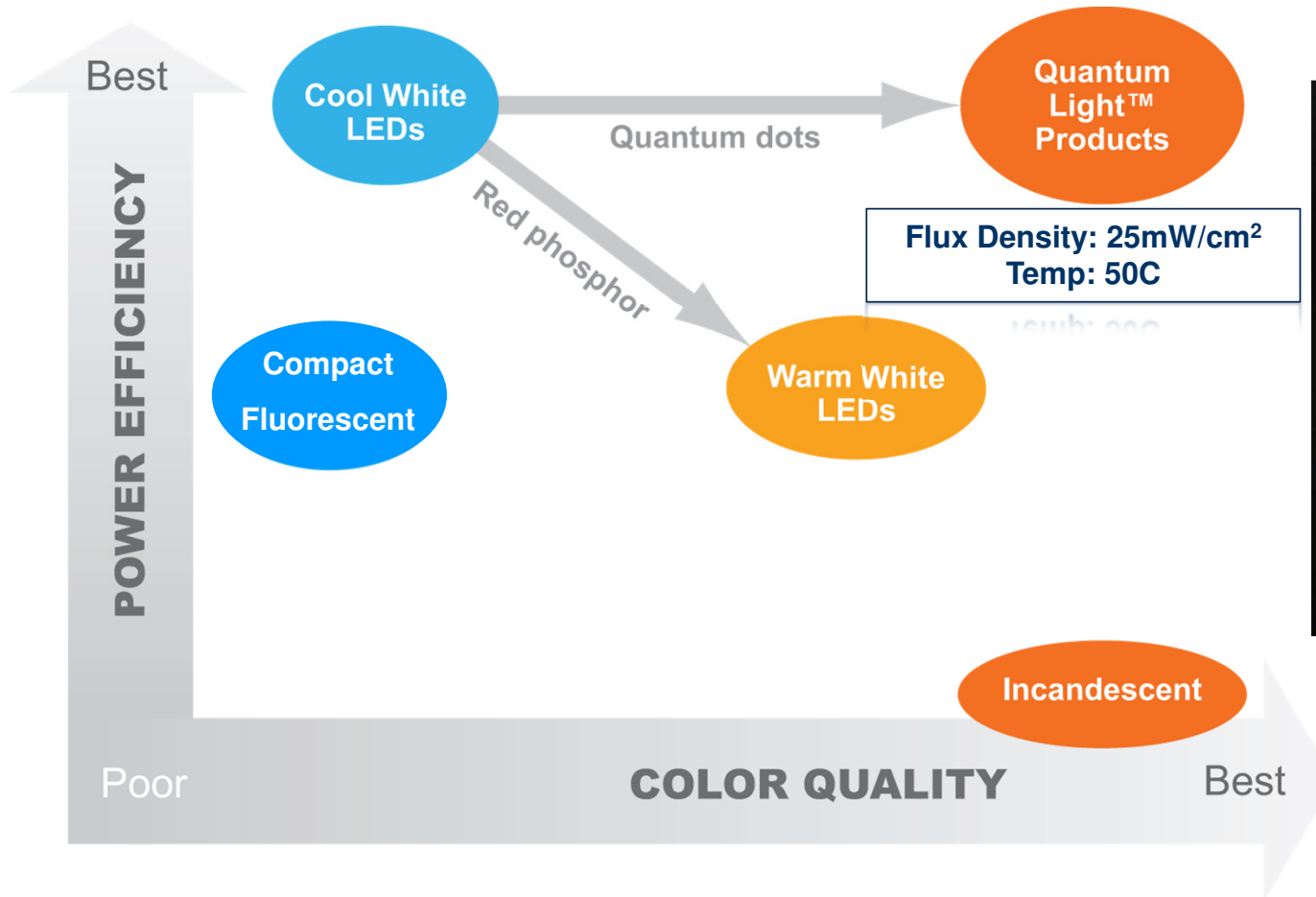
**Broad FWHM of phosphor significantly decreases luminous efficiency**

# QDs Efficiently Convert the Blue Light to Red



# Printed QD Optic For High Performance Lighting

## Quantum Dots break tradeoff paradigm



*Nexus R30 LED Array*  
2700K, 90+ CRI,  
>60 LPW

