

Quantum Technician Bootcamp

Brian Rashap

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Safety



Safety Walk

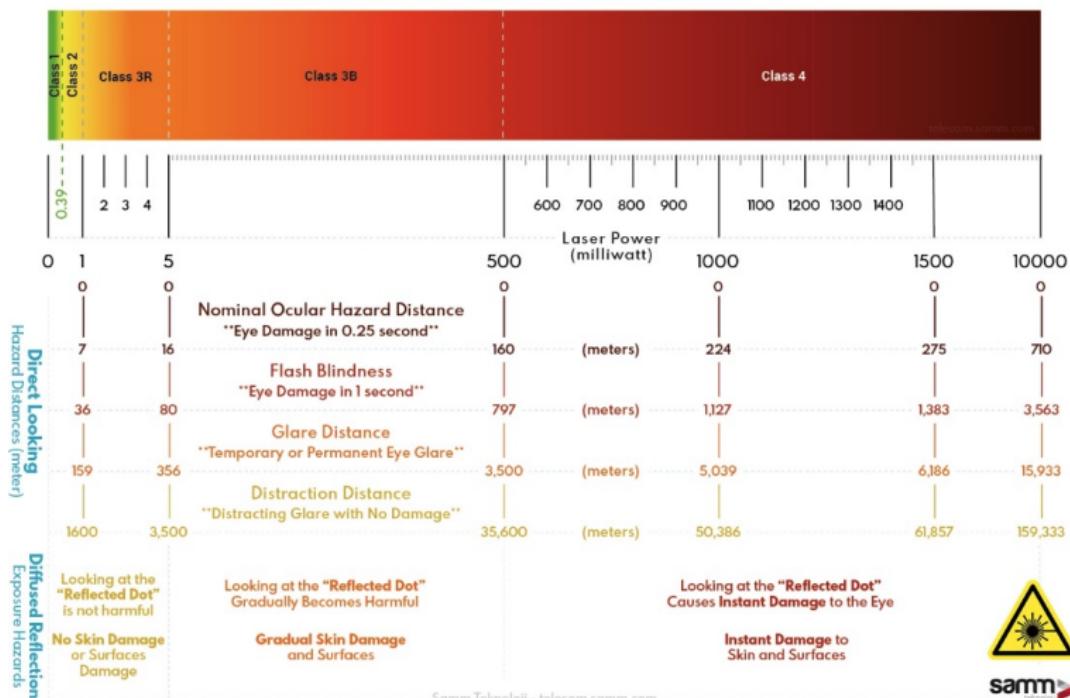




Laser Safety - Laser Classes

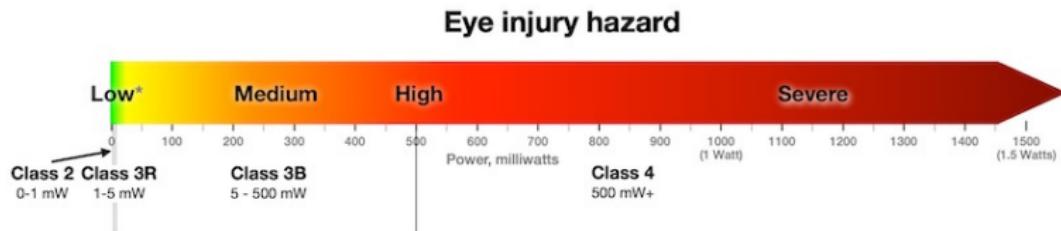
Laser Hazard Classes

*** Avoid eye exposure to direct or reflected laser beams, especially within the “Nominal Ocular Hazard Distance”





Laser Safety - Class 2



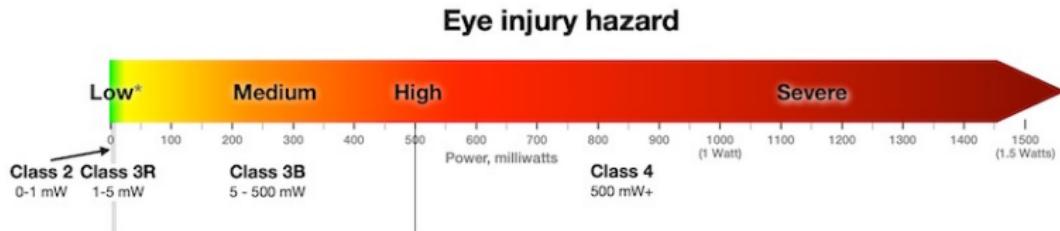
*Eye injury hazard descriptions above are valid for exposures relatively close to the laser. Because the beam spreads, less light will enter the pupil at greater distances. The hazard decreases the farther a person is from the laser, and the shorter the exposure time (e.g., do not deliberately look or stare into the beam). For example, a 1mW Class 2 laser beam is eye safe for unintentional exposures after about 23 ft (7 m), a 5mW Class 3R beam is eye safe after about 52 ft (16 m), a 500 mW Class 3B beam is eye safe after about 520 ft (160 m), and a 1500 mW Class 4 beam is eye safe after about 900 ft (275 m).

(Calculations are for visible light, a 1 milliradian beam, and a 1/4 second Maximum Permissible Exposure limit.)

- Class 2 lasers, which are limited to 1 mW of visible continuous-wave radiation, are safe because the blink reflex will limit the exposure in the eye to 0.25 seconds. This category only applies to visible radiation (400 - 700 nm).



Laser Safety - Class 3R

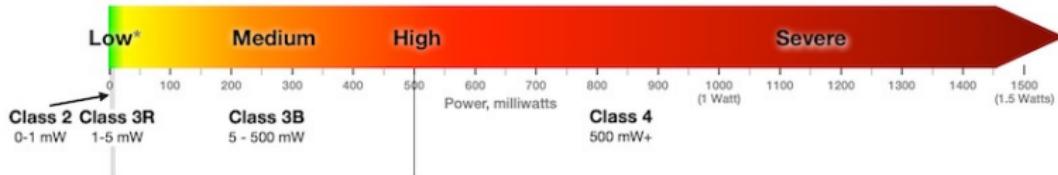


- Class 3R lasers produce visible and invisible light that is hazardous under direct and specular-reflection viewing conditions. Eye injuries may occur if you directly view the beam, especially when using optical instruments. Lasers in this class are considered safe as long as they are handled with restricted beam viewing. Visible, continuous-wave lasers in this class are limited to 5 mW of output power.



Laser Safety - Class 3R

Eye injury hazard



*Eye injury hazard descriptions above are valid for exposures relatively close to the laser. Because the beam spreads, less light will enter the pupil at greater distances. The hazard decreases the farther a person is from the laser, and the shorter the exposure time (e.g., do not deliberately look or stare into the beam). For example, a 1mW Class 2 laser beam is eye safe for unintentional exposures after about 23 ft (7 m), a 5mW Class 3R beam is eye safe after about 52 ft (16 m), a 500 mW Class 3B beam is eye safe after about 520 ft (160 m), and a 1500 mW Class 4 beam is eye safe after about 900 ft (275 m).
(Calculations are for visible light, a 1 milliradian beam, and a 1/4 second Maximum Permissible Exposure limit.)

- Class 3B lasers are hazardous to the eye if exposed directly. Diffuse reflections are usually not harmful. Safe handling of devices in this class includes wearing protective eyewear where direct viewing of the laser beam may occur. Lasers of this class must be equipped with a key switch, laser safety signs should be used. Laser products with power output near the upper range of Class 3B may also cause skin burns.



Lock Out Tag Out



- Electrical Energy
- Mechanical Energy
- Mechanical Energy - Pneumatics



Sharps





High Voltage

