

10 Specifications, Certification Labels, and Patents

10.1 Specifications

Table R shows the Class IV laser specifications for the Raydiance Desktop Ultrafast R&D Laser System. Table S shows the Class IIIa laser specifications for the Raydiance Desktop Ultrafast R&D Laser System. Table T shows the system input trigger specifications. Table U shows the system output signal specifications.

Table R. Class IV Laser Specifications

| Parameter | Specification ¹ | Notes |
|-----------------------------------|----------------------------|---|
| Center Wavelength (laser band) | 1552.5 nm | Defines the center of the spectral band for beam delivery optics. |
| Spectral Bandwidth (cut-off) | 15 nm | External optics should support this bandwidth to prevent spectral clipping. |
| Pulse Repetition Rate | 1 Hz to 100 kHz | User selectable rate ($fp=300\text{ kHz}/\text{integer}$), plus packet mode programming. |
| State of Polarization | Linear, Horizontal | Polarization azimuth $\Phi \approx 0$ degrees relative to table surface. |
| Polarization Contrast | > 99 | Terminology defined in ISO $\text{Contrast} = \frac{P_x - P_y}{P_x + P_y}$ where P_x and P_y are the power measured in the horizontal & vertical planes. |
| Pulse Duration (FWHM) | < 1 ps | Typical performance is 800 fs, specified at 22 °C ambient. Measurement performed with a Femtochrome FR-103XL, and sech ² pulse shape is assumed. |
| Pulse Shape Figure of Merit | 90% in < 10 ps | 90% of the specified pulse energy is contained within the 10 ps pulse centroid. Measurement is outlined in the Raydiance user manual. |
| Pre-Pulse or Post-Pulse Intensity | < 5% | Intensity of any feature outside the 5 ps pulse centroid window. |
| Single Pulse Energy | 50 μJ | Measured with external meter at 1 kHz. +5%, -0% tolerance. |
| Average Power | 5 W | Measured with external meter. +5%, -0% tolerance. |