

NT242 SERIES



BENEFITS

- ▶ High repetition rate 1000 Hz enables fast data collection
- ▶ End pumping with diode technology ensures high reliability and low maintenance costs
- ▶ Narrow linewidth (down to 3 cm^{-1}) and superior tuning resolution ($1 - 2\text{ cm}^{-1}$) allow recording of high quality spectra
- ▶ High integration level saves valuable space in the laboratory
- ▶ In-house design and manufacturing of complete systems, including pump lasers, guarantees on-time warranty and post warranty services and spares supply
- ▶ Variety of control interfaces: USB, RS232, LAN and WLAN ensures easy control and integration with other equipment
- ▶ Attenuator and fiber coupling options facilitate incorporation of NT242 systems into various experimental environments

NT242 series lasers produce pulses at an unprecedented 1 kHz pulse repetition rate, tunable over a broad spectral range. Integrated into a single compact housing, the diode pumped Q-switched Nd:YAG laser and OPO offers hands-free, no-gap tuning from 210 to 2600 nm. With its 1000 Hz repetition rate, the NT242 series laser establishes itself as a versatile tool for many laboratory applications, including laser induced fluorescence, flash photolysis, photobiology, metrology, remote sensing, etc.

NT242 series systems can be controlled from a remote control pad

or/and a computer using supplied LabVIEW™ drivers. The control pad allows easy control of all parameters and features on a backlit display that is easy to read even with laser safety eyewear.

Thanks to a DPSS pump source, the laser requires little maintenance. It is equipped with air-cooled built-in chiller, which further reduces running costs. A built-in OPO pump energy monitor allows monitoring of pump laser performance without the use of external power meters. The optional feature provides a separate output port for the 1064, 532 or 355 nm beam.

Broadly Tunable kHz Pulsed DPSS Lasers

FEATURES

- ▶ Integrates DPSS pump laser and OPO into a single housing
- ▶ Hands-free no-gap wavelength tuning from 210 to 2600 nm
- ▶ 1000 Hz pulse repetition rate
- ▶ More than 60 μJ output pulse energy in UV
- ▶ Less than 5 cm^{-1} linewidth
- ▶ 3–6 ns pulse duration
- ▶ Remote control via key pad or PC
- ▶ Optional separate output for the OPO pump beam 355 nm, 532 nm or 1064 nm

APPLICATIONS

- ▶ Laser-induced fluorescence spectroscopy
- ▶ Pump-probe spectroscopy
- ▶ Non-linear spectroscopy
- ▶ Time-resolved spectroscopy
- ▶ Photobiology
- ▶ Remote sensing
- ▶ Determination of the telescope throughput

SPECIFICATIONS ¹⁾

| Model | NT242 | NT242-SH | NT242-SF | NT242-SH/SF |
|-------------------------------------|-------------------------------------|--------------------|-----------------|-------------|
| OPO | | | | |
| Wavelength range | | | | |
| Signal | 405–710 nm | | | |
| Idler | 710–2600 nm | | | |
| SH and SF | — | 210–300 nm | 300–405 nm | 210–405 nm |
| Pulse energy ²⁾ | | | | |
| OPO | 450 µJ | | | |
| SH and SF | — | 40 µJ at 230 nm | 60 µJ at 320 nm | |
| Pulse repetition rate | 1000 Hz | | | |
| Pulse duration ³⁾ | 3–6 ns | | | |
| Linewidth ⁴⁾ | < 5 cm ⁻¹ | | | |
| Tuning resolution ⁵⁾ | | | | |
| Signal | 1 cm ⁻¹ | | | |
| Idler | 1 cm ⁻¹ | | | |
| SH and SF | — | 2 cm ⁻¹ | | |
| Polarization | | | | |
| Signal | horizontal | | | |
| Idler | vertical | | | |
| SH and SF | — | vertical | | |
| Typical beam diameter ⁶⁾ | 3 × 6 mm | | | |
| PUMP LASER | | | | |
| Pump wavelength ⁷⁾ | 355 nm | | 355 / 1064 nm | |
| Max pump pulse energy ⁸⁾ | 3 mJ | | 3 / 1 mJ | |
| Pulse duration ³⁾ | 4–6 ns at 1064 nm | | | |
| PHYSICAL CHARACTERISTICS | | | | |
| Unit size (W × L × H) | 456 × 1040 × 297 mm | | | |
| Power supply size (W × L × H) | 520 × 400 × 286 mm | | | |
| Umbilical length | 2.5 m | | | |
| OPERATING REQUIREMENTS | | | | |
| Cooling | built-in chiller | | | |
| Room temperature | 18–27 °C | | | |
| Relative humidity | 20–80 % (non-condensing) | | | |
| Power requirements | 100–240 V AC, single phase 50/60 Hz | | | |
| Power consumption | < 1.5 kVA | | | |

¹⁾ Due to continuous improvement, all specifications are subject to change. Parameters marked typical are illustrative; they are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise, all specifications are measured at 450 nm and for basic system without options.

²⁾ See tuning curves for typical outputs at other wavelengths.

³⁾ Measured at FWHM level with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.

⁴⁾ Linewidth is <8 cm⁻¹ for 210–405 nm range.

⁵⁾ For manual input from PC. When wavelength is controlled from keypad, tuning resolution is 0.1 nm for signal, 1 nm for idler and 0.05 nm for SH and SF.

⁶⁾ Beam diameter is measured at 450 nm at the 1/e² level and can vary depending on the pump pulse energy.

⁷⁾ Separate output port for the 3rd and other harmonic is optional.

⁸⁾ The laser max pulse energy will be optimized for best OPO performance. The actual pump laser output can vary with each unit we manufacture.



Accessories and optional items

| Option | Features |
|--------------|--|
| -SH | Tuning range extension in UV range (210–300 nm) by second harmonic generation |
| -SF | Tuning range extension in 300–405 nm range by sum-frequency generation |
| -SH/SF | Tuning range extension in 210 – 405 nm range by combining second harmonics and sum-frequency generator outputs for maximum possible pulse energy |
| -SCU | Spectral filtering accessory for improved spectral purity of pulses |
| -H, -2H, -3H | 1064, 532 and 355 nm output via separate port |
| -FC | Fiber coupler |
| -Attn | Attenuator option |

PERFORMANCE



Near field

Far field

Fig 1. Typical beam profiles of NT242 series lasers at 500 nm

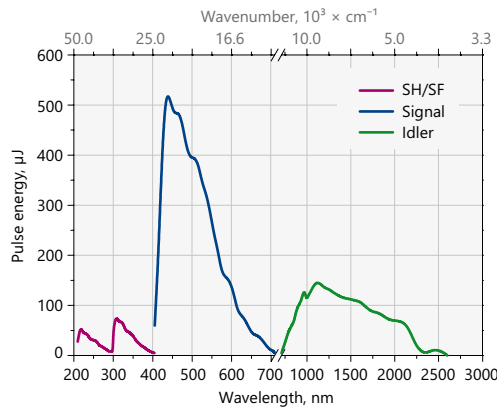


Fig 2. Typical output pulse energy of NT242 series tunable laser

Femtosecond Lasers

Picosecond Lasers

Picosecond Tunable Systems

Nanosecond Lasers

Nanosecond Tunable Lasers

High Intensity Lasers

Other Ekspla Products

OUTLINE DRAWINGS

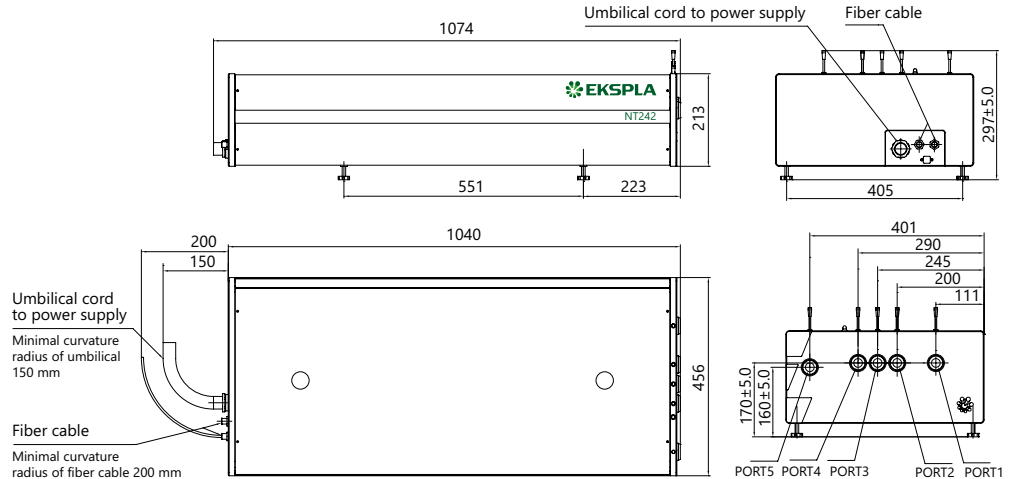


Fig 3. NT242 series laser head dimensions

ORDERING INFORMATION

Note: Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer than 1 hour then laser (system) needs warm up for a few hours before switching on.

NT242-SH-H-2H-SCU

| Model | Options: |
|----------------------------------|------------------------------------|
| Optional tuning range extension: | H → extra 1064 nm output |
| SH → 210–300 nm | 2H → extra 532 nm output |
| SF → 300–405 nm | SCU → spectral filtering accessory |
| SH/SF → 210–405 nm | |

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NT252 SERIES



Tunable Wavelength UV-NIR Range DPSS Lasers

FEATURES

- ▶ Integrates DPSS pump laser and OPO into a single housing
- ▶ Dry, no water inside!
- ▶ Hands-free no-gap wavelength tuning from 335 to 2600 nm
- ▶ 1000 Hz pulse repetition rate
- ▶ More than 1.1 mJ output pulse energy in NIR
- ▶ 3–6 ns pulse duration
- ▶ Remote control via key pad or PC

BENEFITS

- ▶ High repetition rate (1000 Hz) enables fast data collection
- ▶ End diode pumping and water-free technology ensure high reliability and low maintenance costs
- ▶ Superior tuning resolution ($1 - 2 \text{ cm}^{-1}$) allows recording of high quality spectra
- ▶ High integration level saves valuable space in the laboratory
- ▶ In-house design and manufacturing of complete systems, including pump lasers, guarantees on-time warranty and post warranty services and spares supply
- ▶ Variety of control interfaces: USB, RS232, LAN and WLAN ensures easy control and integration with other equipment
- ▶ Attenuator and fiber coupling options facilitate incorporation of NT252 systems into various experimental environments

APPLICATIONS

- ▶ Photoacoustic imaging
- ▶ Laser-induced fluorescence spectroscopy
- ▶ Pump-probe spectroscopy
- ▶ Photobiology
- ▶ Remote sensing
- ▶ Metrology

NT252 series tunable laser systems integrates into a single compact housing a nanosecond Optical Parametric Oscillator (OPO) and Diode-Pumped Solid-State (DPSS) Q-switched pump laser.

Diode pumping enables fast data acquisition at high pulse repetition rates up to 1 kHz while avoiding frequent flashlamp changes that are common when flashlamp pumped lasers are used. Special cooling technology eliminates the need for tap water, thus further reducing running and maintenance costs.

All lasers feature motorized tuning across the specified tuning range. The output wavelength can be set from control pad with backlit display that is easy to read even while wearing laser safety glasses. Alternatively, the laser can be also controlled from personal computer using supplied LabVIEW™ drivers.

High conversion efficiency, stable output, easy maintenance and compact size make our systems excellent choice for many applications.

Accessories and Optional Items

| Option | Features |
|---------|---|
| -SH | Tuning range extension in UV range (335 – 670 nm) by second harmonic generation |
| -H, -2H | 1064 and 532 nm output via separate port |
| -FC | Fiber coupler |
| -Attn | Attenuator option |

SPECIFICATIONS ¹⁾

| Model | NT252 |
|--|-------------------------------------|
| OPO | |
| Wavelength range | |
| Signal | 670–1063 nm |
| Idler | 1064–2600 nm |
| SH | 335–670 nm |
| Pulse energy ²⁾ | |
| OPO | 1100 µJ at 750 nm |
| SH | 200 µJ at 400 nm |
| Pulse repetition rate | 1000 Hz |
| Linewidth ³⁾ | <8 cm ⁻¹ |
| Tuning resolution ⁴⁾ | |
| Signal | 1 cm ⁻¹ |
| Idler | 1 cm ⁻¹ |
| SH | 2 cm ⁻¹ |
| Polarization | |
| Signal | horizontal |
| Idler | vertical |
| SH | horizontal |
| Typical beam diameter ^{5) 6)} | 3 × 6 mm |
| PUMP LASER | |
| Pump wavelength ⁷⁾ | 532 nm |
| Max pump pulse energy ⁸⁾ | 4 mJ |
| Pulse duration ⁹⁾ | 4 – 6 ns |
| Pulse energy stability (StdDev) | <2.5 % |
| PHYSICAL CHARACTERISTICS | |
| Unit size (W × L × H) | 456 × 1040 × 297 mm |
| Power supply size (W × L × H) | 520 × 400 × 300 mm |
| Umbilical length | 2.5 m |
| OPERATING REQUIREMENTS | |
| Cooling | air-cooled |
| Room temperature | 18–27 °C |
| Relative humidity | 20–80 % (non-condensing) |
| Power requirements | 100–240 V AC, single phase 50/60 Hz |

¹⁾ Due to continuous improvement, all specifications are subject to change. Parameters marked typical are illustrative; they are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise, all specifications are measured at 750 nm and for basic system without options.

²⁾ Please refer to tuning curves for typical outputs at other wavelengths.

³⁾ In signal and idler range.

⁴⁾ For manual input from PC. When wavelength is controlled from keypad, tuning resolution is 0.1 nm for signal, 1 nm for idler and 0.05 nm for SH.

⁵⁾ Measured at the wavelength indicated in the "Pulse energy" specification row.

⁶⁾ Beam diameter is measured at the 1/e² level at the laser output and can vary depending on the pump pulse energy.

⁷⁾ Separate output port for the 2nd and other harmonic are optional.

⁸⁾ Laser max pulse energy will be optimized for best OPO performance. The actual pump laser output can vary with each unit we manufacture.

⁹⁾ Measured at FWHM level with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.



PERFORMANCE

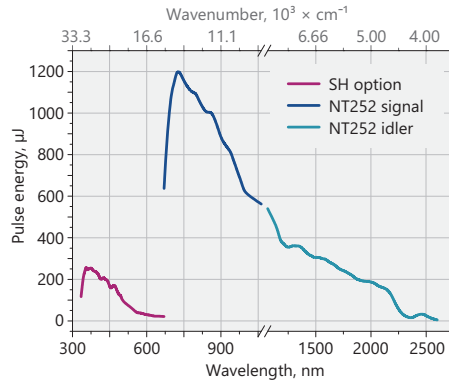


Fig 1. Typical output pulse energy of the NT252-SH tunable laser

OUTLINE DRAWINGS

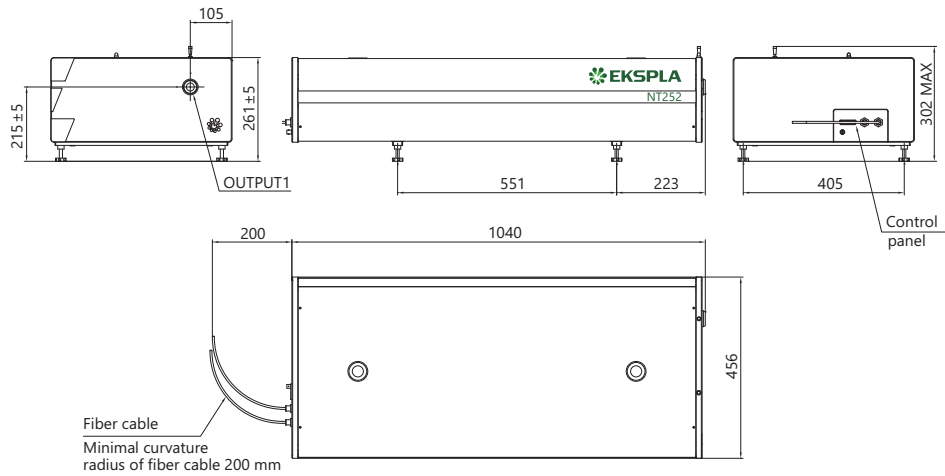


Fig 3. NT252 series laser head dimensions

ORDERING INFORMATION

Note: Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer than 1 hour then laser (system) needs warm up for a few hours before switching on.

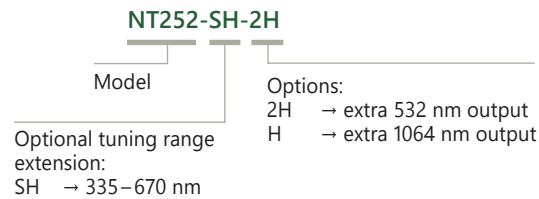


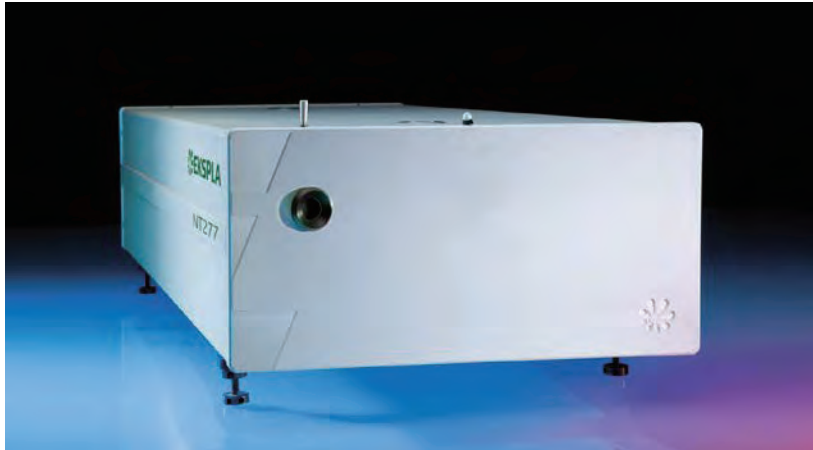
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NT270 SERIES



BENEFITS

- ▶ Wide (2500 – 12000 nm) tuning range is highly useful for s-SNOM and other IR applications
- ▶ NT270 is the cost effective solution covering a wide tuning range from a single source
- ▶ End pumping with diode technology ensures high reliability and lots of fired shots leading to low maintenance costs
- ▶ High integration level saves valuable space in the laboratory
- ▶ Air cooling eliminates the need for water, ensuring easy operation and simple installation or integration
- ▶ In-house design and manufacturing of complete systems, including pump lasers, guarantees on-time warranty and post warranty services and spares supply
- ▶ Variety of control interfaces: USB, RS232, LAN and WLAN ensures easy control and integration with other equipment

NT270 series tunable laser systems integrate into a single compact housing a nanosecond Optical Parametric Oscillator (OPO) and Diode-Pumped Solid-State (DPSS) Q-switched pump laser.

Diode pumping enables fast data acquisition at high pulse repetition rates up to 1 kHz while avoiding frequent flashlamp changes that are common when flashlamp pumped lasers are used.

The pump lasers do not require water for cooling, thus further reducing running and maintenance costs.

All lasers feature motorized tuning across the specified tuning range. The output wavelength can be set from control pad with backlit display that is easy to read even while wearing laser safety glasses. Alternatively, the laser can be controlled also from personal computer using supplied LabVIEW™ drivers.

High conversion efficiency, stable output, easy maintenance and compact size make our systems excellent choice for lots of applications.

Tunable Wavelength NIR-IR Range DPSS Lasers

FEATURES

- ▶ Integrates DPSS pump laser and OPO into single housing
- ▶ Separate output ports for the pump laser and OPO beams
- ▶ OPO output wavelength range from **2500 nm to 12000 nm** (depending on model)
- ▶ Narrow linewidth
- ▶ Hands-free tuning
- ▶ **<7 ns** pulse duration
- ▶ Remote control via key pad or PC

APPLICATIONS

- ▶ Scanning Near-field Optical Microscopy (s-SNOM) microscopy
- ▶ Single molecule vibrational spectroscopy
- ▶ IR spectroscopy
- ▶ Gas spectroscopy

NT270 series available models

| Model | Features |
|-----------|--|
| NT277 | High pulse repetition rate OPO producing tunable output in 2500 – 4475 nm spectral range |
| NT277-XIR | Tunable output from NIR to far-IR range, 2500 nm to 12 000 nm |

SPECIFICATIONS ¹⁾

| Model | NT277 | NT277-XIR |
|--|------------------------------------|---|
| OPO | | |
| Wavelength range | | |
| Idler | 2500–4475 nm | 2500–4475 nm 4500–12000 nm ²⁾ |
| Pulse energy ³⁾ | | |
| Idler | 80 µJ at 3000 nm | 80 µJ at 3000 nm 20 µJ at 7000 nm |
| Pulse repetition rate | 1000 Hz | |
| Linewidth ⁴⁾ | <10 cm ⁻¹ | <12 cm ⁻¹ |
| Tuning resolution ⁵⁾ | | |
| Idler | 1 cm ⁻¹ | |
| Polarization | | |
| Idler | vertical | horizontal |
| Typical beam diameter ^{6) 7)} | 4 mm | 6 mm |
| PUMP LASER | | |
| Pump wavelength | 1064 nm | |
| Max pump pulse energy ⁸⁾ | 1.9 mJ | |
| Pulse duration ⁹⁾ | <10 ns | |
| Beam quality | fit to Gaussian >90% | |
| Pulse energy stability (StdDev) | <0.5 % | |
| PHYSICAL CHARACTERISTICS | | |
| Unit size (W × L × H) | 305 × 701 × 270 mm | |
| Power supply size (W × L × H) | 365 × 395 × 290 mm | |
| Umbilical length | 2.5 m | |
| OPERATING REQUIREMENTS | | |
| Cooling | by air | |
| Room temperature | 18–27 °C | |
| Relative humidity | 20–80 % (non-condensing) | |
| Power requirements | 90–240 V AC, single phase 50/60 Hz | |
| Power consumption | < 0.5 kVA | |

¹⁾ Due to continuous improvement, all specifications are subject to change. Parameters marked typical are illustrative; they are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise all specifications are measured at 3000 nm for NT277, NT277-XIR unit and at 7000 nm for NT277-XIR units and for basic system without options.

²⁾ Available wavelength range. Custom tuning ranges are available.

³⁾ See tuning curves for typical outputs at other wavelengths.

⁴⁾ Higher energy 10 – 150 cm⁻¹ option is available for 2500 – 4475 nm tuning range.

⁵⁾ For manual input from PC. When wavelength is controlled from keypad, tuning resolution is 1 nm.

⁶⁾ Measured at the wavelength indicated in the “Pulse energy” specification row.

⁷⁾ Beam diameter is measured at the 1/e² level at the laser output and varies depending on the wavelength.

⁸⁾ The laser max pulse energy will be optimized for the best OPO performance. The actual pump laser output can vary with each unit we manufacture.

⁹⁾ Measured at FWHM level with photodiode featuring 1 ns rise time and 300 MHz bandwidth oscilloscope.



Femtosecond Lasers

Picosecond Lasers

Picosecond Tunable Systems

Nanosecond Lasers

Nanosecond Tunable Lasers

High Intensity Lasers

Other Ekspla Products

PERFORMANCE

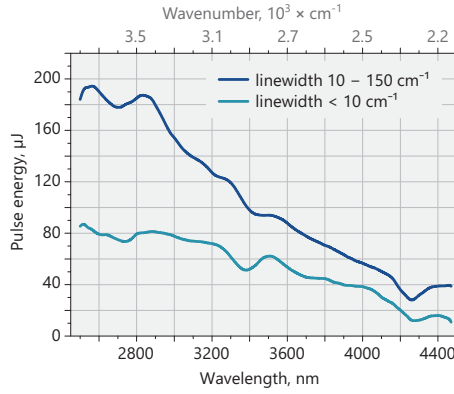


Fig 1. Typical output pulse energy of the NT277 and NT277-XIR tunable laser

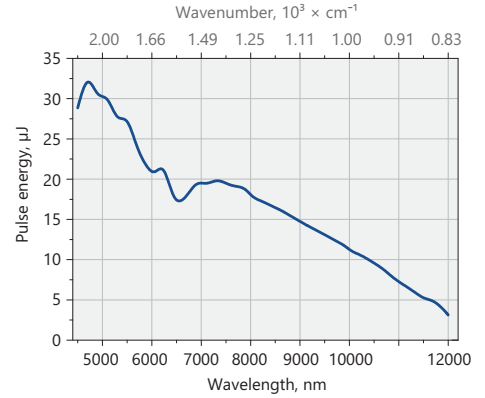
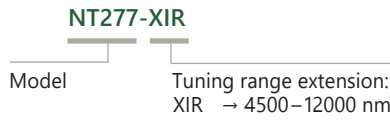


Fig 2. Typical output pulse energy of the NT277-XIR tunable laser

ORDERING INFORMATION

Note: Laser must be connected to the mains electricity all the time. If there will be no mains electricity for longer than 1 hour then laser (system) needs warm up for a few hours before switching on.



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