

TPO-850 / TPO-1500

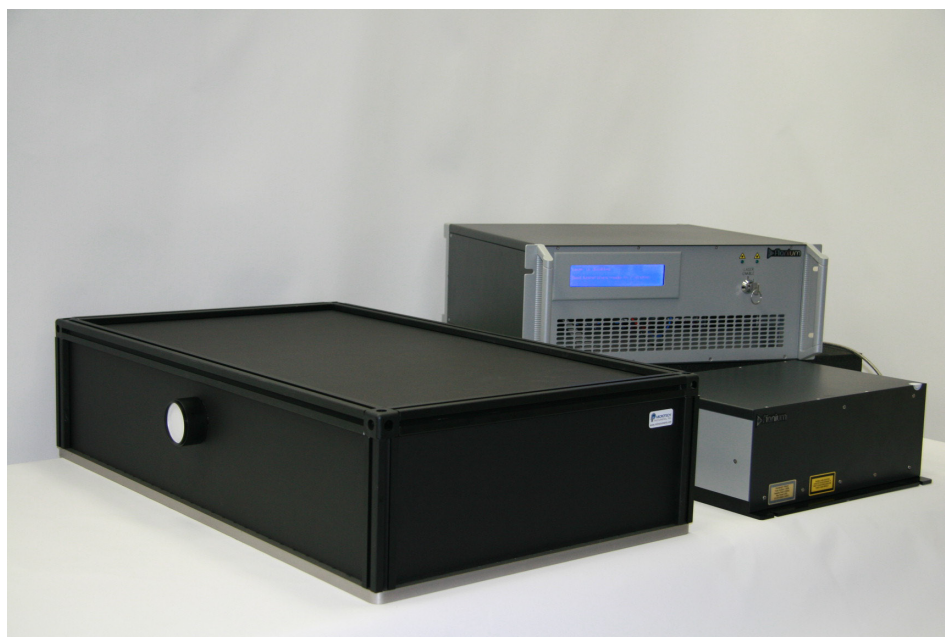


Terahertz OPO System

Product Description:

The TPO-850 and TPO-1500 are based on difference frequency generation in quasi-phase matched GaAs crystals placed inside an optical parametric oscillator (OPO) pumped by an ultrafast fiber laser. It generates 6-10 ps THz pulses at repetition rate of 110 MHz, delivering 0.1 mW of average power and over to 140 μ W of peak power. Central wavelength of 0.85 or 1.5 THz and spectral width of 100 GHz fits perfectly into the atmospheric transmission windows, making these sources ideal for THz imaging application. Very high peak powers make the TPO suitable for imaging systems employing non-linear effects, while sufficiently high average power makes it suitable for thermal detector array imaging as well.

Product Image:



Product Specifications:

Model	Central Frequency	Spectral Width	Duration	Power	Rep Rate
TPO-850	850 GHz +/- 50 GHz	< 200 GHz	6 +/-2 ps	> 100 μ W	109 MHz
TPO-1500	1.55 THz +/- 50 GHz	< 200 GHz	6 +/-2 ps	> 100 μ W	109 MHz

Notes: Polarization: Linear, Vertical

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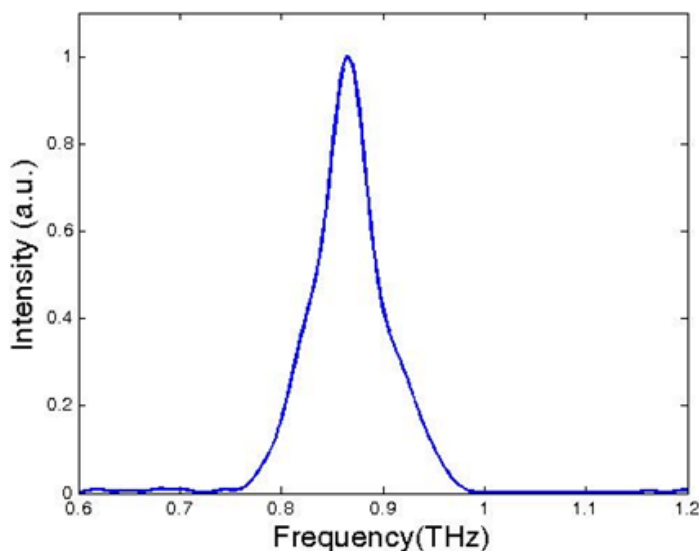
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Diagram & Description:

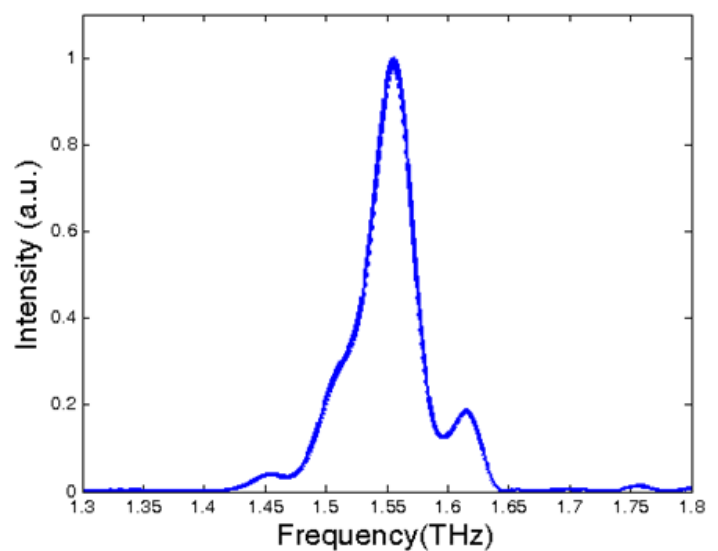
The mode locked fiber laser pumps the OPO with a 10 W average power in 6 picosecond pulses at 1064 nm. These are parametrically down converted to 2.1 micron signal and idler pulses separated by 0.85 THz or 1.55 THz in spectrum. Difference frequency generation between signal and idler pulses in a quasi-phase matched gallium arsenide placed inside the OPO cavity produces stable output at the difference frequency. The THz waves are extracted from the OPO cavity via a right angle parabolic mirror with a passage for the mid IR so that the THz waves are collimated and reflected out of the cavity. A THz long pass filter is used as a window for the THz waves while filtering out any low power IR that may have inadvertently been scattered inside the OPO to provide a pure 0.85 or 1.55 THz output. Additional outputs at 1 and 2 μm are available on request for pump-probe and time domain experimentation.

Applications:

- THz Imaging



Typical output spectra for TPO-850



Typical output spectra for TPO-1500