

POWERFUL TERAHERTZ SOURCES



- **80 – 360 GHz frequency range**
- **Electronic frequency tunability**
- **Up to 1 W output power**
- **Continuous wave operation**
- **Electro-vacuum technology**
- **Customer-focused solutions**

Description

TeraSense has mastered technology to manufacture powerful electro-vacuum terahertz sources. The technology resides on a backward wave oscillator effect. An electron gun emits an electron beam that is longitudinally focused by an external magnetic field. The magnetic field is created by a permanent NdFeB magnet. The beam is interacting with a slow-wave structure. As a result, a traveling wave that moves backwards against the beam is generated. The wave is coupled to the output waveguide near the electron gun. By changing the acceleration voltage, the frequency of the device can be electronically tuned in a certain range. The electro-vacuum terahertz sources generate an immense output power. This property opens the doors for a number of long-awaited applications in terahertz frequency range.

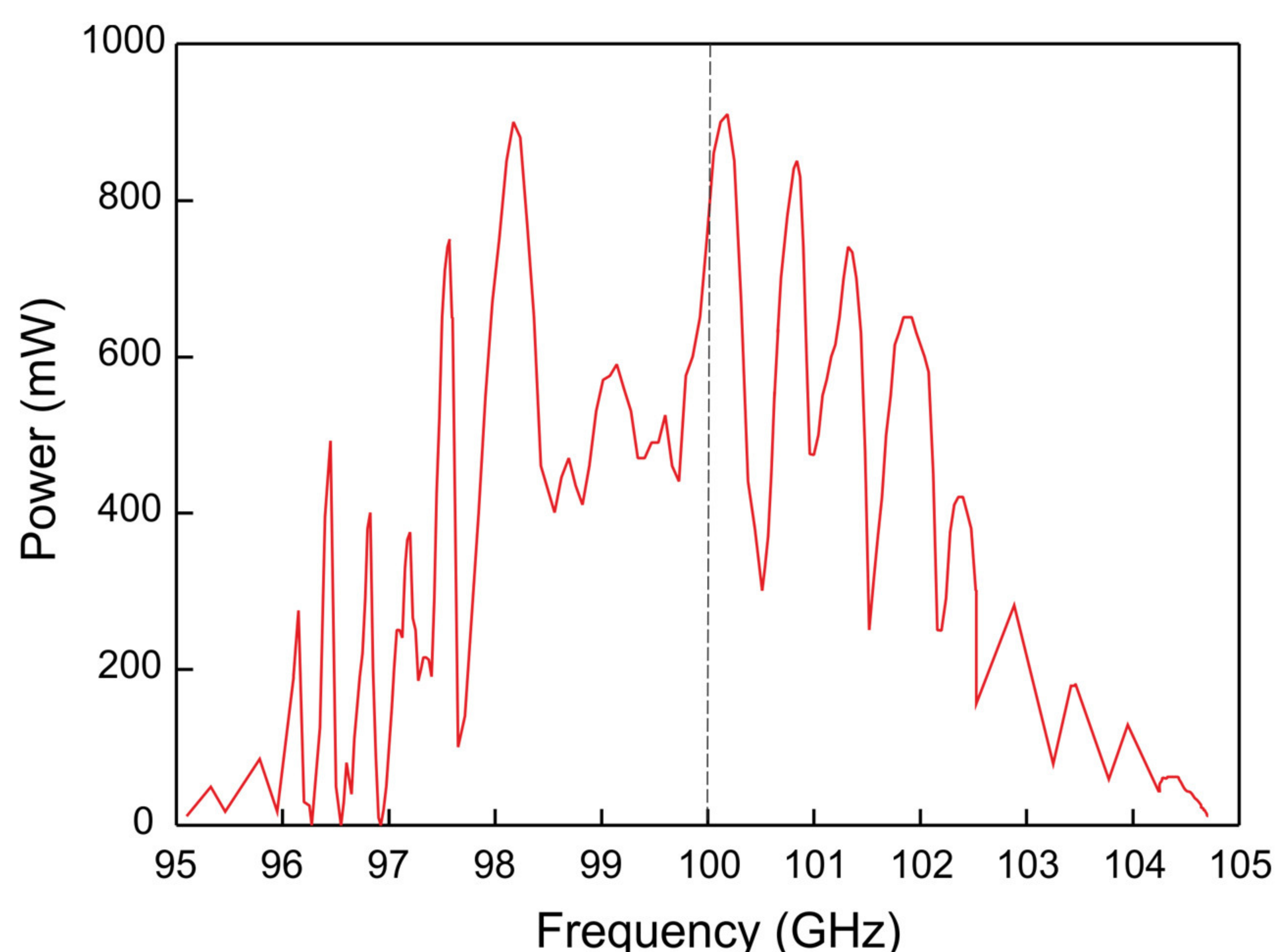
ELECTRO-VACUUM TUBE SPECIFICATIONS

Generator type	Standard frequency	Custom frequency	Frequency tunability	Linewidth	Peak power	Oscillator weight Dimensions
TERASOURCE – 3	100 GHz	80 – 120 GHz	10 GHz	< 1 MHz	0.5 - 1 W	5 kg (18x18x18 cm)
TERASOURCE – 2	140 GHz	120 – 160 GHz	15 GHz	< 1.5 MHz	0.5 – 0.75 W	8 kg (18x18x18 cm)
TERASOURCE – 1.5	200 GHz	160 – 240 GHz	20 GHz	< 2 MHz	0.2 – 0.5 W	10 kg (18x18x18 cm)
TERASOURCE – 1	300 GHz	240 – 360 GHz	30 GHz	< 3 MHz	0.05 – 0.1 W	13 kg (18x18x18 cm)

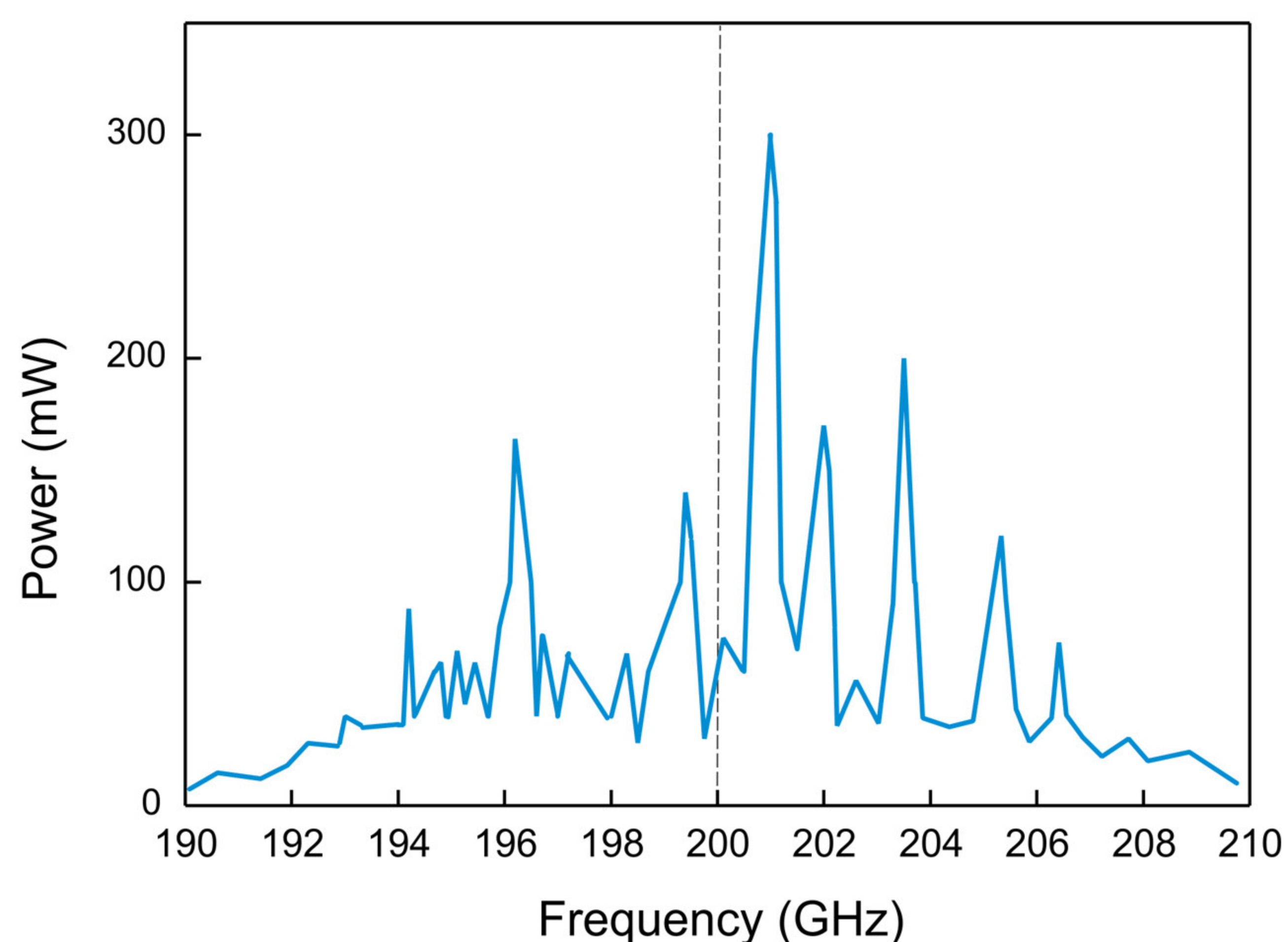
- ✓ Clients can order terahertz source with a specific frequency from the custom frequency diapasons. Such orders are treated as customization, and may require extra production time and resources.
- ✓ All listed terahertz sources require water cooling.

TYPICAL FREQUENCY DEPENDENCES OF OUTPUT POWER

TERASOURCE – 3



TERASOURCE – 1.5



The peak structure of the frequency dependency can be tuned at the production stage.

POWER SUPPLY SPECIFICATIONS

Output voltage	0 – 5 kV	Heater voltage	0 – 5 V
Beam current	0 – 200 mA	Heater current	0 – 7 A
Voltage ripple	< 5 V	Weight / Dimensions	20 kg (45x45x20 cm)

The power supply is universal and fits to all TERASOURCE tubes.

ABOUT TERASENSE

TeraSense is a manufacturer of low-cost portable sub-terahertz imaging cameras, generators and ultrafast detectors. Our products balance at the cutting edge of scientific and technological knowledge. The company has a strong team of 20 skilled scientists and engineers. A wealth of experience in the technologies to detect, generate and manipulate THz light allows TeraSense to meet a variety of end-user needs across a number of sciences and industries.