Measurement Kit for Cutting Edge Terahertz Research

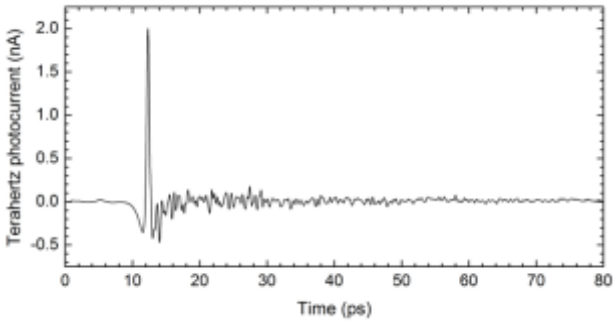
Kit includes femto-second laser, all optical, and electronic components

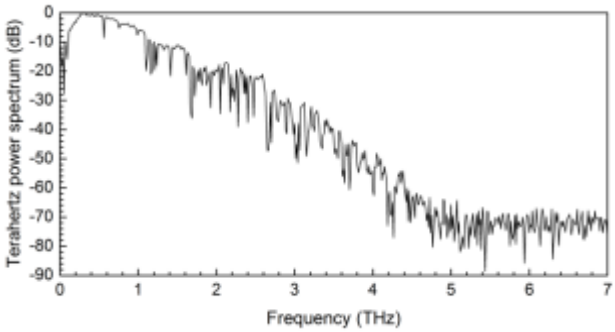
Key Features of Air-Coupled Kit

- ✓ Transmission and reflection measurement configuration
- ✓ Flexible and quick to set up (plug and play in 20 min)
- ✓ Terahertz imaging raster scan hardware with image data acquisition software
- ✓ ATR Module
- ✓ Friendly user interface LabView software
- ✓ Fast Scan Module with 10 Measurements per Second Speed and Control Software
- ✓ LabView code adaptable (write your own UI code)
- ✓ High signal-to-noise-ratio
- ✓ More than 70 dB spectrum dynamic range
- ✓ More than 5 THz bandwidth
- ✓ Dry air purge box

Figure 1: Image of the air-coupled measurement kit

TeTechS patented THz-PCAs used in the measurement kit

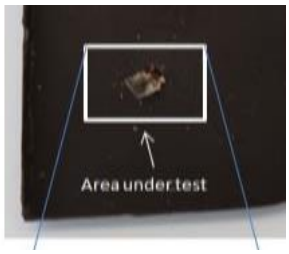




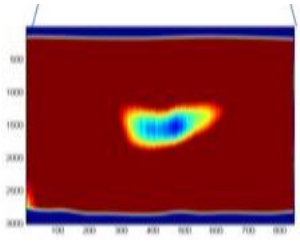
Example of a measured terahertz pulse and its corresponding power spectrum in the terahertz time-domain measurement kit shown in Figure 1 produced in 5 min.

System Specifications

Excitation Laser	780 nm, 40 mW, 100 fs, Toptica pulse laser
Measurement Modalities	Transmission & Reflection
Transmitter Module	T-Era-100A-800-air
Receiver Module	T-Era-20D40P-800-air
Average Optical Power on Transmitter	15 mW
Average Optical Power on Receiver	15 mW
Bias Voltage on Transmitter	± 50V square wave
Terahertz Peak Measured Photocurrent	>2 nA high BW; >30 nA high signal
Terahertz Spectrum Bandwidth	>5 THz high BW; >4 THz high signal
Power Spectrum Dynamic Range	>70 dB high BW; > 80 dB high signal
Typical Scan Time	2-5 min



Protruded glass in a square piece of chocolate



Example of an obtained terahertz image with the measurement kit

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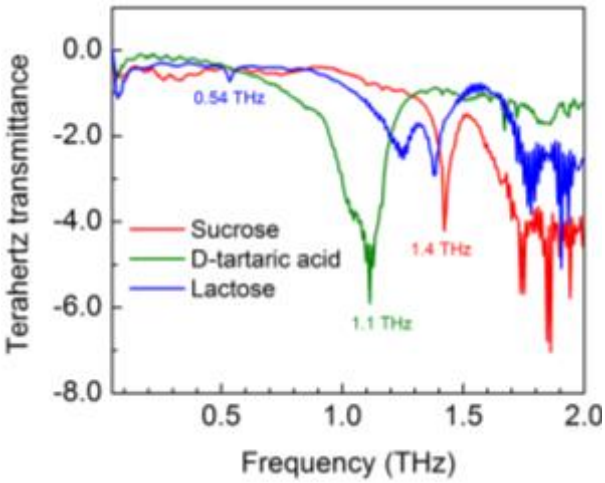
TeTechS
Measure, Identify, Inspect

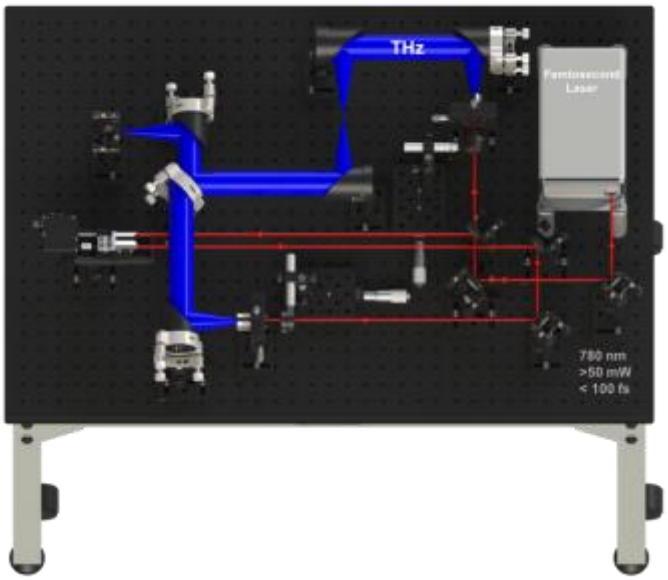
Measurement Kit for Cutting Edge Terahertz Research

Kit includes femto-second laser, all optical, and electronic components now

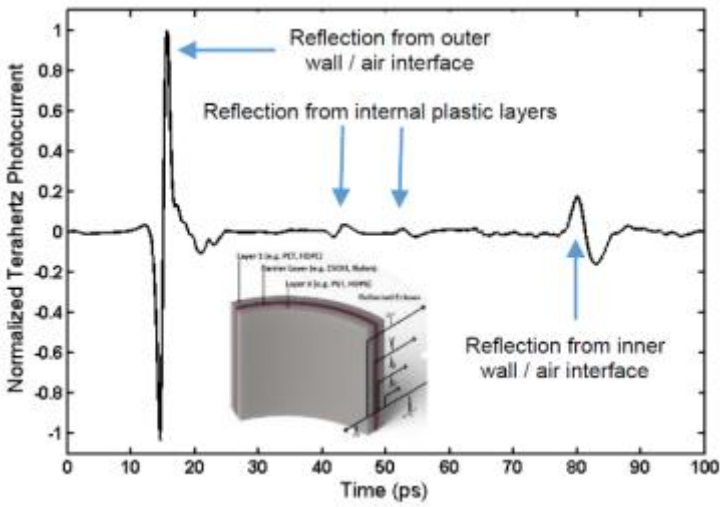
TeTechS terahertz measurement kit is used by scientific researchers to custom build their terahertz time-domain measurement setups. The highest quality set up components are selected for optimal realization of transmission and reflection measurement configurations. This selection of components has been extensively tested and designed to save researchers time and money. It also provides them with the flexibility to choose the right set of components that fits their specific measurement needs. TeTechS' T-Era photoconductive antennas achieve new levels of low noise performance among terahertz sources and detectors, to achieve superior system dynamic range and discrimination.



Example of a spectroscopy measurement of organic pow ders w ith the measurement kit



Optical and terahertz path schematic of the kit



Example of a reflection terahertz measurement obtained w ith the measurement kit: Echo pulses off a multi-layer plastic

Air-Coupled Kit Components

780 nm, 100 fs, 40 mW Toptica Pulse Laser	✔
Transmitter Photoconductive Antenna Package	✔
Receiver Photoconductive Antenna Package	✔
50 mm Motorized Translation Stage	✔
Dry air purge box	✔
Imaging raster scan hardware and software	✔
Retro-reflector Mirror	✔
Lock-in Amplifier	✔
Low-Noise Current Amplifier	✔
Square-wave Signal Generator	✔
2' x 3' x 0.98" Breadboard and Frame	✔
XY Translator with Micrometer Drives	✔
Off-axis Mirror	✔
Manual Linear Translation Stage	✔
50:50 Optical Beam-splitter	✔
2" High Resistive Silicon THz Beam-splitter	✔
Optical Plano-convex Lens	✔
Dielectric Mirror	✔
Gold Mirror	✔
MMCX and BNC Cable	✔
Control Box and User Interface Software	✔
ATR Module	✔
Fast Scan Module with 10 Measurements per Second Speed and Control Software	✔

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