

resolution²

THz generation with highest resolution and lowest phase noise

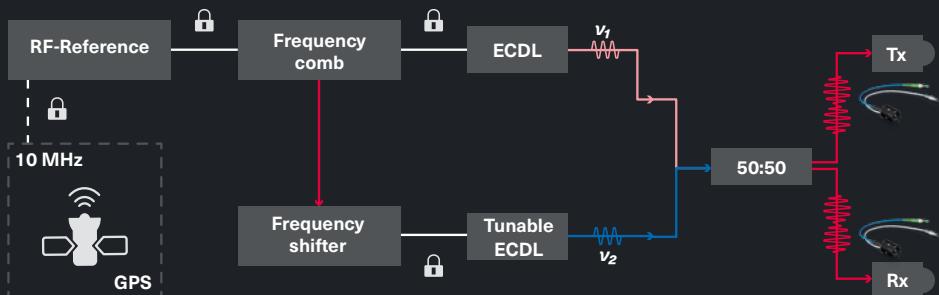
TeraScan ultra

Ultra-high-precision comb-locked
cw-terahertz platform

- Tunable yet precisely controlled THz source
- Spectral resolution as high as 1 Hz
- Enables photonic vector network analysis up to 5 THz



THz communication research, channel sounding, wafer probing



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TeraScan ultra



WARNING – VISIBLE AND INVISIBLE LASER RADIATION, AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT,
EN60825-1:2014
IEC 60825-1:2014

Specifications

| | |
|--|--|
| Difference frequency tuning (laser) | 0 – 10 THz |
| Difference frequency tuning (THz emission) | 20 GHz – 5 THz |
| Tuning speed | Up to 0.1 THz/s |
| Frequency accuracy | Up to 1 Hz, depending on clock reference. Calibration-free! |
| Frequency resolution and step size | Up to 1 Hz |
| Terahertz power (typ.) | 100 μ W @ 100 GHz / 10 μ W @ 500 GHz |
| Terahertz emitter | PCA-FD-1550-100-TX-1, InGaAs photodiode |
| Terahertz receiver | PCA-FD-1550-130-RX-3, Rh:InGaAs photomixer |
| Antenna type | Bow-tie |
| Terahertz polarization | Linear |
| Waveguide-coupled terahertz antennas | Upon request |
| Modes of operation | Fixed frequency Frequency scan, user-selected range and speed Triggered step scan |
| Frequency comb | MDFC Core 200+ CERO ("zero- f_{CEO} ") technology $f_{CEO} = 0$, by passive stabilization via difference frequency generation |
| Comb line spacing | 200 MHz |
| Integrated phase noise f_{CEO} | < 40 mrad (100 Hz .. 2 MHz), < 65 mrad (70 mHz .. 20 MHz) |
| Optical bandwidth | 80 .. 100 nm FWHM, with integrated extension module |
| Tunable laser | DLC CTL 1550 Tuning range 1510-1630 nm, mode-hop-free & computer-controlled |
| Fixed-frequency laser | DL pro or DLC CTL at 1550 nm |

6.5 THz emission line of a pulsed emitter, pumped by the frequency comb of the TeraScan ultra, and analyzed by a cw-receiver driven by a 6.5 THz beat signal. The frequency resolution is 1 Hz and the FWHM linewidth of the signal is 2.3 Hz

Source: B. Krause, Technical Univ. Darmstadt

