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Loupe Data Sheet

The Loupe system is a new portable TEM instrument, which takes advantage of a wide range of developments in electronics and signal processing. It is designed for safe and productive operation in a range of near-surface conductivity-mapping applications. It is a fully time-domain EM system, designed to generate high quality, high spatial resolution EM data, enabling mapping of conductivity variations from the near-surface to around 20-30 metres depth penetration (depending on the ground electrical properties). Loupe, unlike other time domain EM instruments, is designed to be used in continuous operation while the operators are walking. The backpacks have been designed for safe use by field-fit operators for day long data collection.



The receiver records full time-series data and there are various real time processing and visualisation options. The system has real-time signal processing that is designed to eliminate most noise sources and generate high quality TEM data at urban / industrial sites that have significant EM interference. The signal processing includes functions for stacking, filtering VLF and power line fields, windowing and removing motion noise.

Features

- A fully time-domain EM system, designed to give high quality, high spatial resolution EM data from the near-surface

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- Designed to be used while walking
- A range of transmitter frequencies and sampling options
- Full time-series data storage, processing and visualisation abilities
- Designed to generate high quality TEM data at urban / industrial sites that have significant EM interference
- A handheld PDA is used to communicate with the Loupe backpack via WiFi link using web-based software. A variety of PDAs or smartphones can be used.

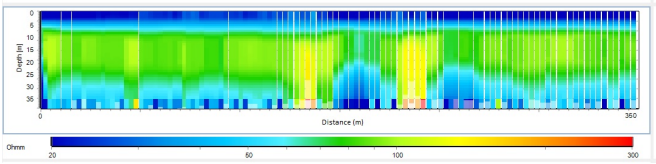
Technical Specifications

Configuration:	Slingram -10m transmitter to receiver offset
Channels:	3 component receiver coil with 100kHz
Receiver coils:	200m²active area per component
Receiver sampling:	500k samples per second at 24 bit
No time gates:	23
Time gates:	0.00198,0.00397,0.00595,0.00794,0.00992,0.01190,0.01786,0.02381,0.03175,0.04365,0.05754,0.07738,0.10317,0.13690,0.18254,0.24405,0.32341,0.43056,0.57341,0.76389,1.01587,1.35119,1.79960,2.39286,3.18254,4.23214,5.63095,7.48810,9.96032,13.24603,17.61905,23.43254,31.16667,41.45238,55.13095,73.32540,97.52183,129.70437,172.50794,229.43452,305.14881ms
Transmitter coil:	13 multi turn loop
Transmitter moment:	Aprox 100Atm²
Waveform:	Square wave with 50% duty cycle
Switch off time:	8usec
Cycle rate:	75Hz - 3000Hz (mains frequency dependent)
VLF:	Enabled
Power:	Two (hot swappable) 14V Li-Ion batteries
GNSS:	In built RTK GPS
Radio link:	In built 900MHz radio for base station link
Memory:	400GB internal memory
Communication:	Wifi Link
User interface:	Web portal user interface. Accessible from any web browser.

Gallery

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Blocky Inversion of processed Loupe data showing a solution feature in the chalk downs, Southern Britain. Data courtesy of Terradat

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