TXM-22
Geophysical Transmitter

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A new idea for a versatile transmitter for EM application

Geophysical transmitters available on the market feed a current into a grounded dipole or into a loop.

If different dipoles need to be used as it is required for Tensor CSAMT it is necessary to reconnect the transmitter and to redo the transmission in order to obtain the other polarity.

The new Metronix transmitter uses a 3 electrode arrangement which does not require a reconnection of electrodes and which can switch the polarity within less than a millisecond controlled by software only.

Tensor CSMT vs. Scalar CSMT

Tensor CSMT

- \+ Better resolution of geological structures
- \+ Allows 2D and 3D modelling & inversion
- \- Longer measurement times

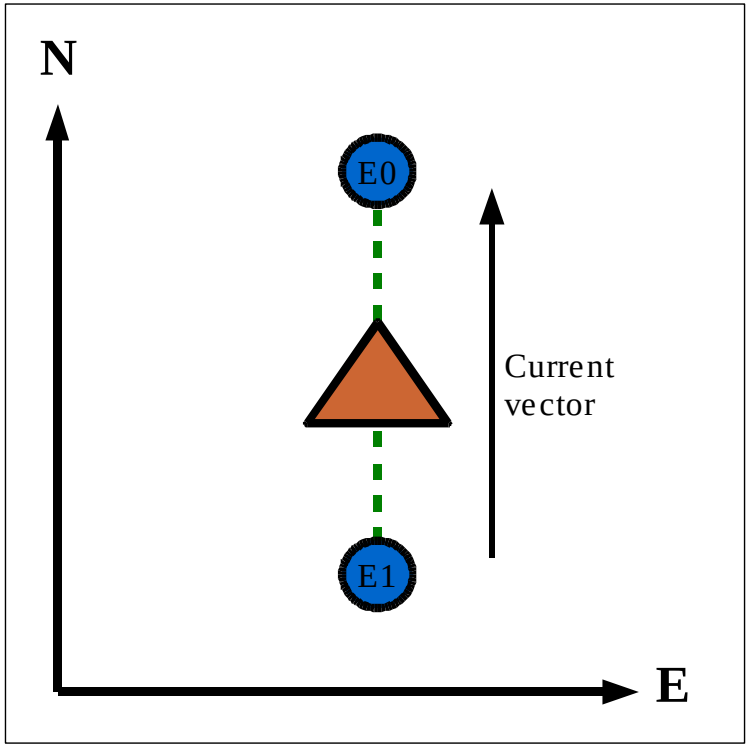
Scalar CSMT

- \- Only resolves structures crossing the profile
- \- Possibility to miss geological structures in unknown terrain
- \- 1D modelling only
- o Shorter measurement times

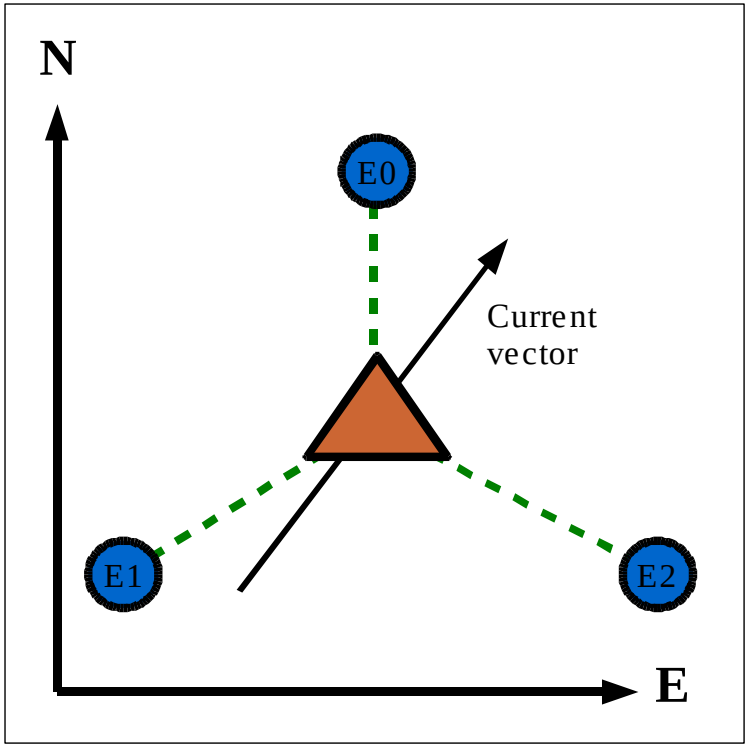
Fields of Application for TXM-22

- Controlled Source Audio Magnetotellurics
- Tensor CSAMT; CSMT
- Long Offset Transient Electromagnetics
- Current Source can be grounded dipole or a horizontal loop configuration
- Rotating Electromagnetic fields

Standard Transmitter vs. TXM-22

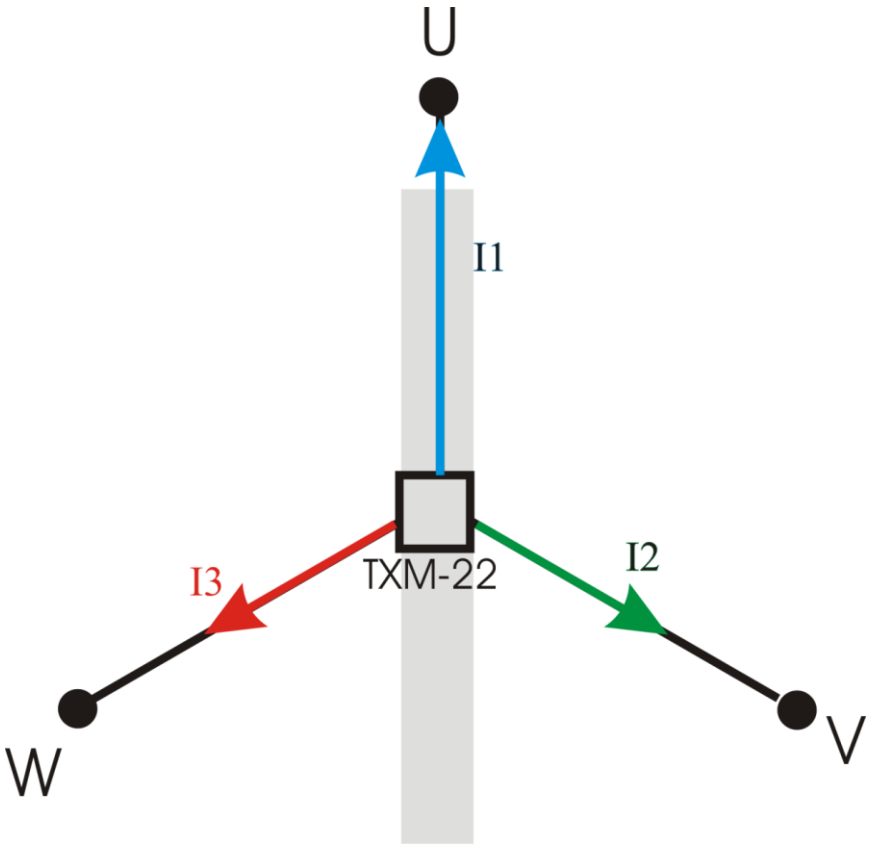


Standard CSAMT Transmitter

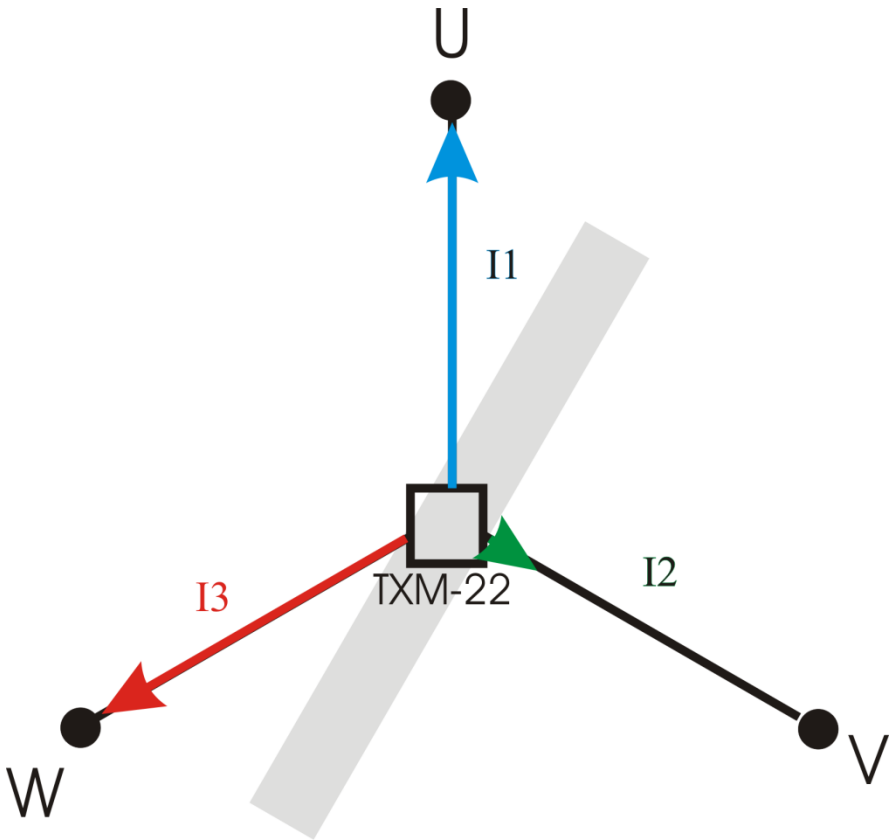


TXM-22 Tensor CSAMT Transmitter

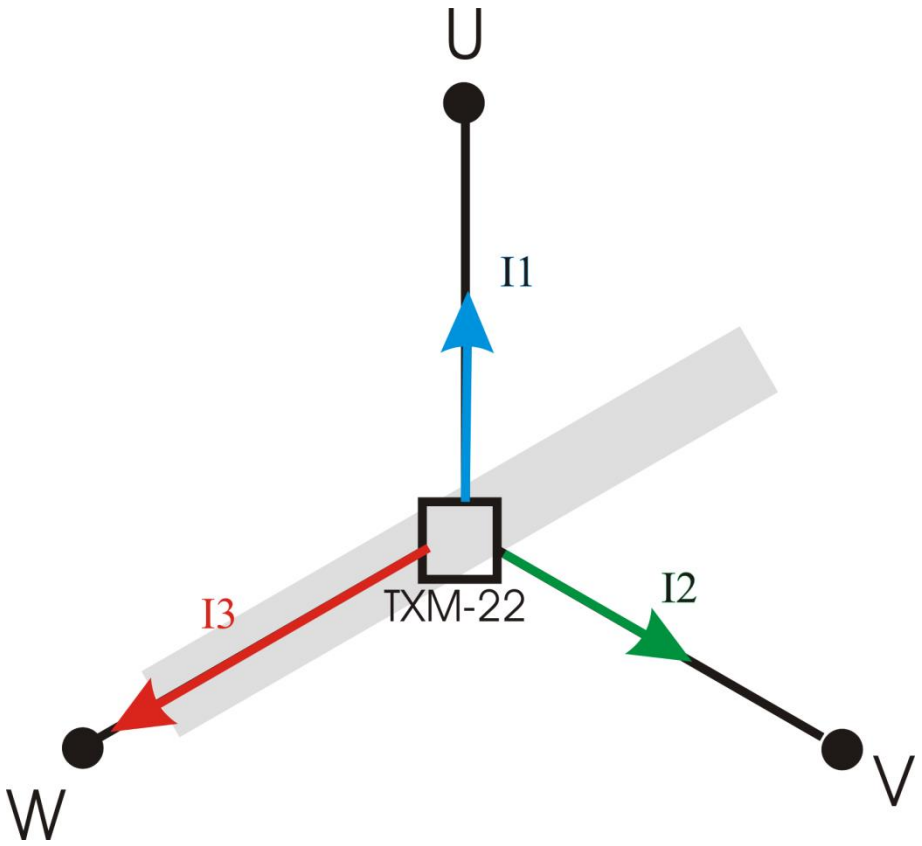
Rotating Current Dipole 0°



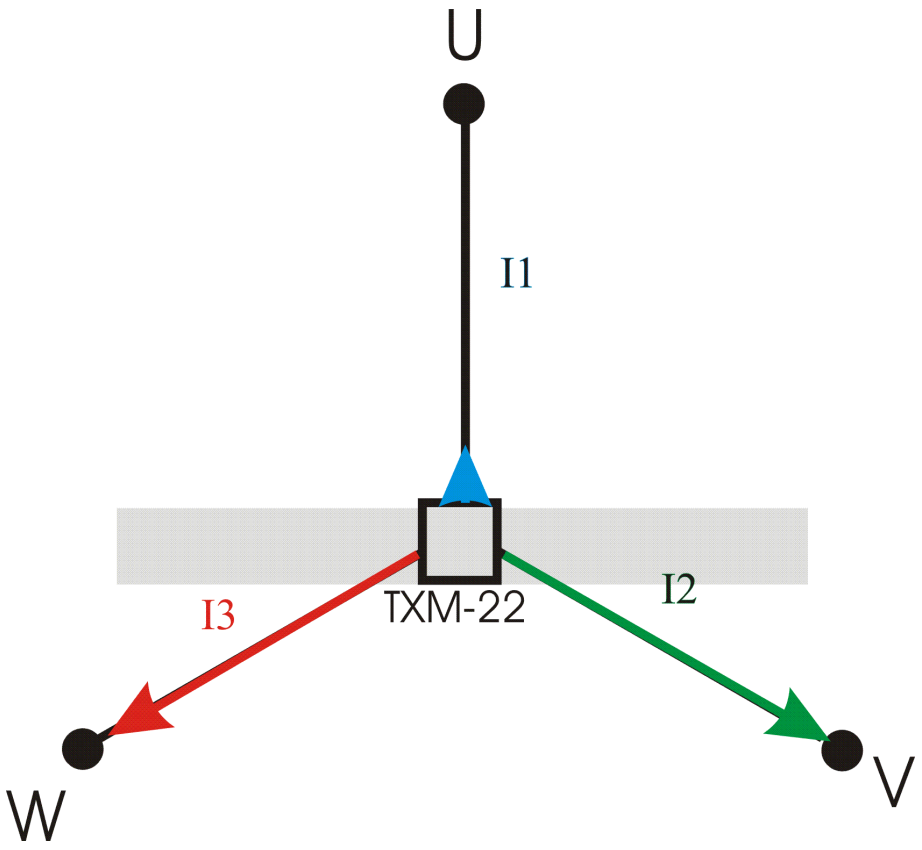
Rotating Current Dipole 30°



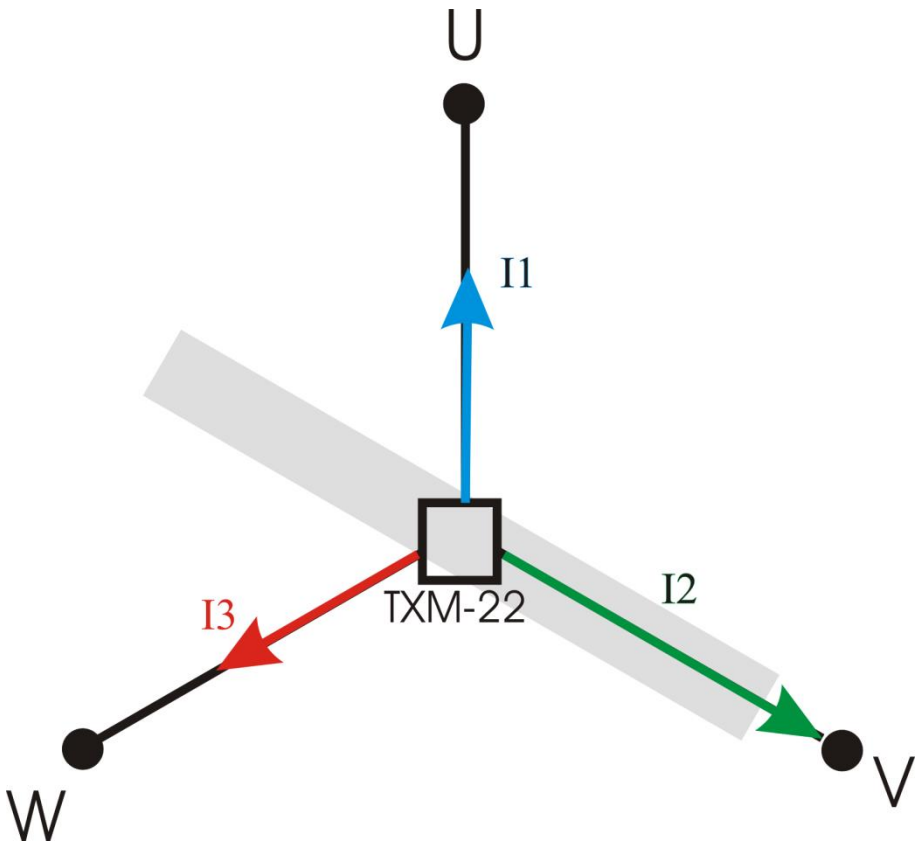
Rotating Dipole 60°



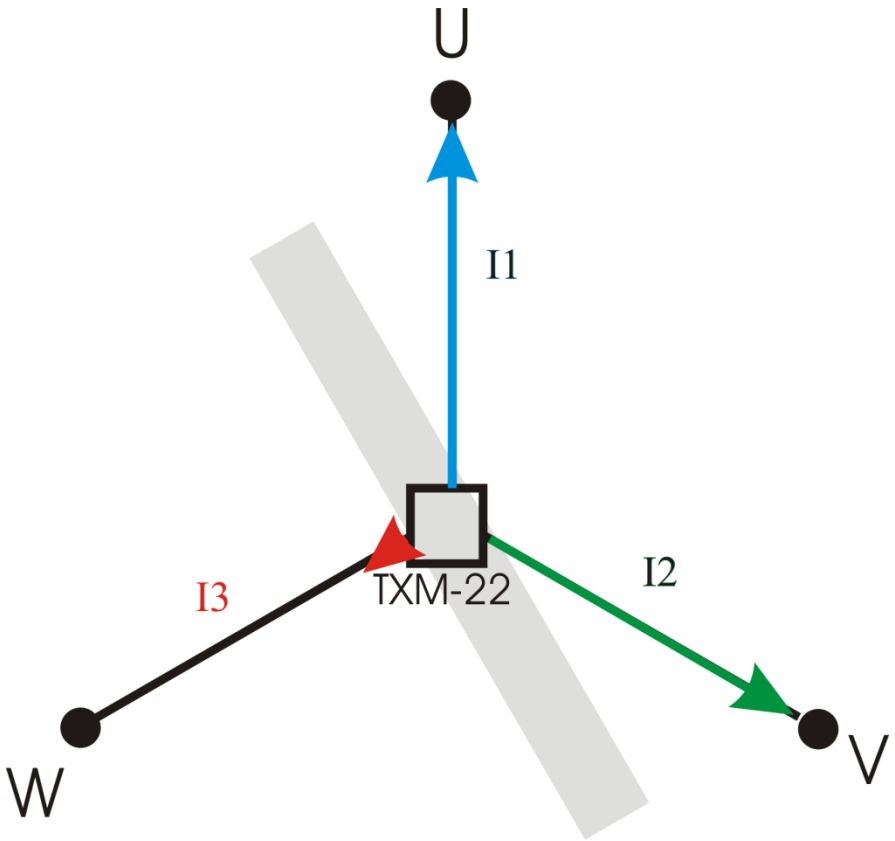
Rotating Current Dipole 90°



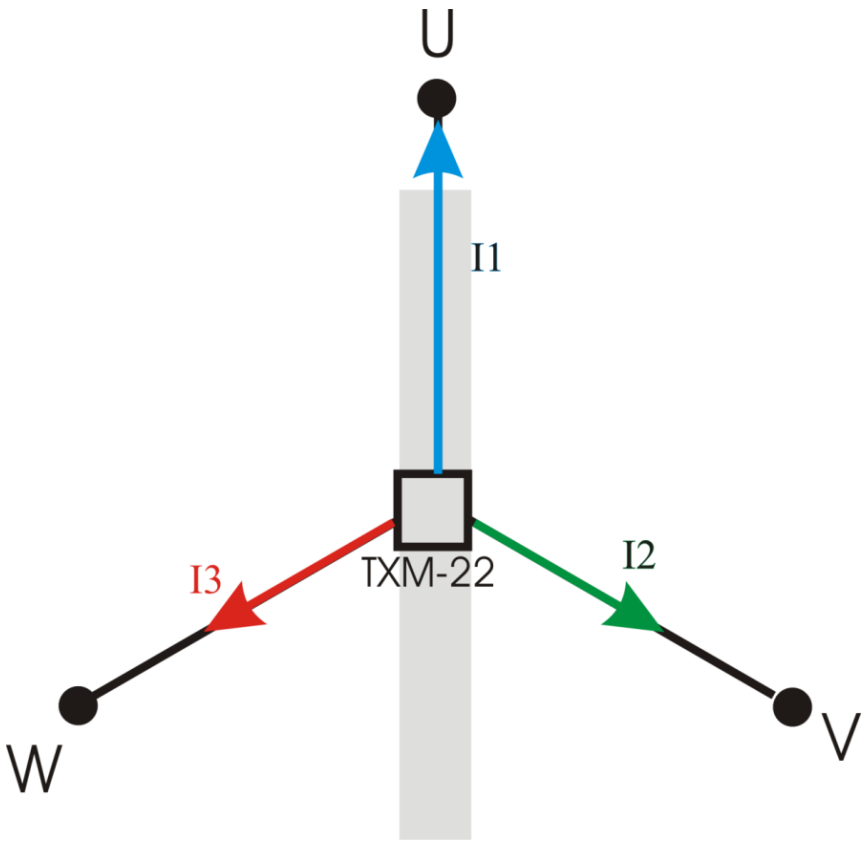
Rotating Current Dipole 120°



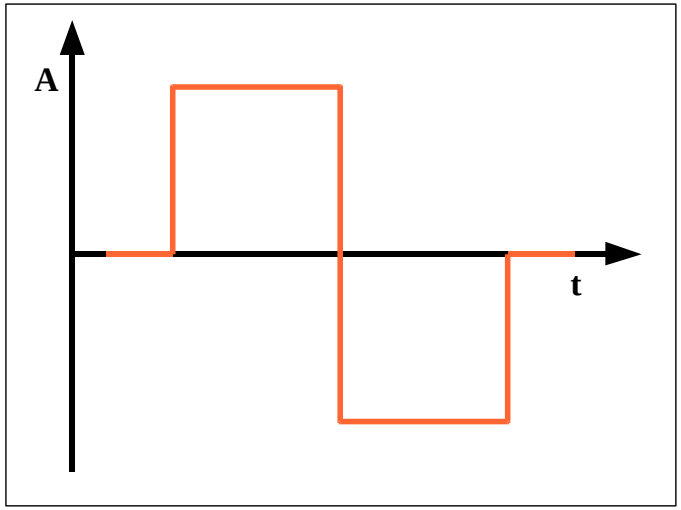
Rotating Current Dipole 150°

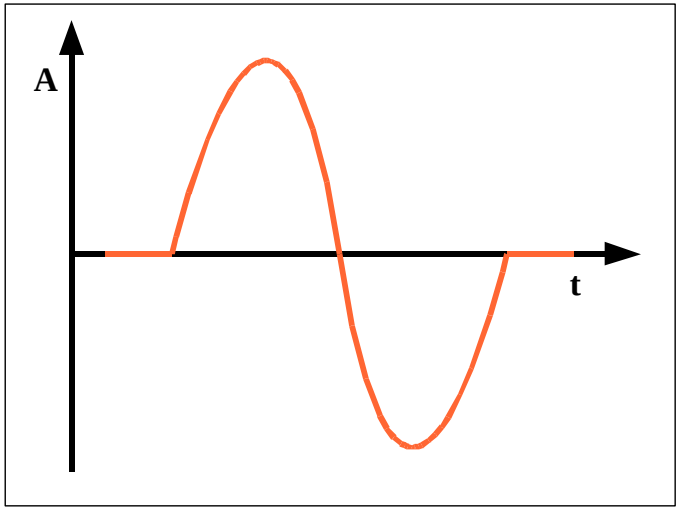


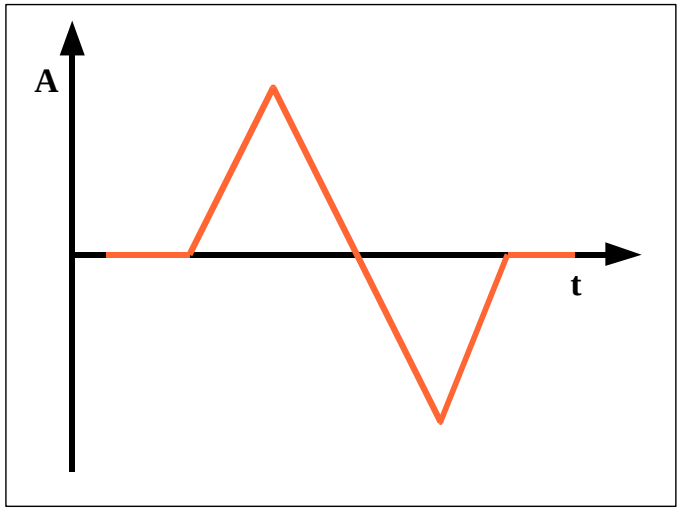
Rotating Current Dipole 180°

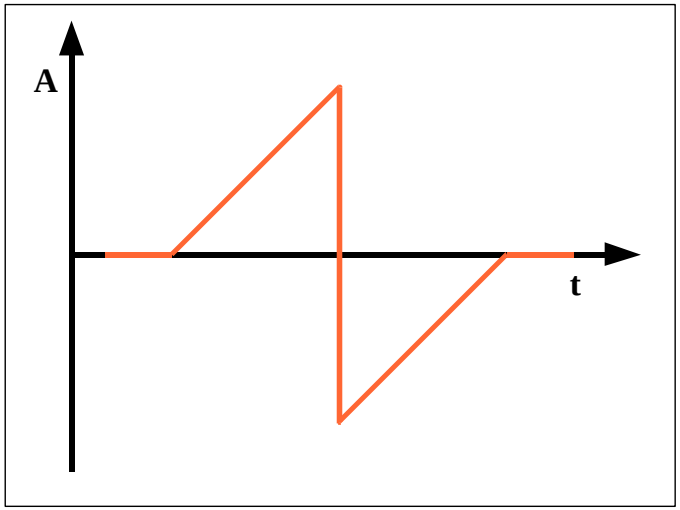


Different Default Waveforms



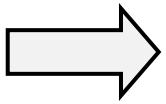


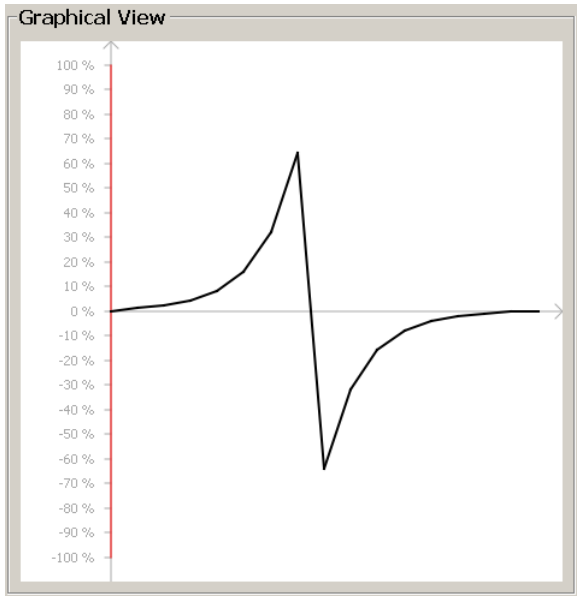




User Definable Waveforms

	Value
1	0
2	1
3	2
4	4
5	8
6	16
7	32
8	64
9	-64
10	-32
11	-16
12	-8
13	-4
14	-2
15	-1
16	0





Core Unit of TXM-22

Besides manufacturing of geophysical instruments Metronix has a long traditi
in development and production of servo drives.

A high power Metronix Intelligent Servo Drive
is the core Unit of the TXM-22 geophysical transmitter.

On standard it is used as an intelligent servo for synchrone motors.

Now, a new field of application is the usage as geophysical transmitter

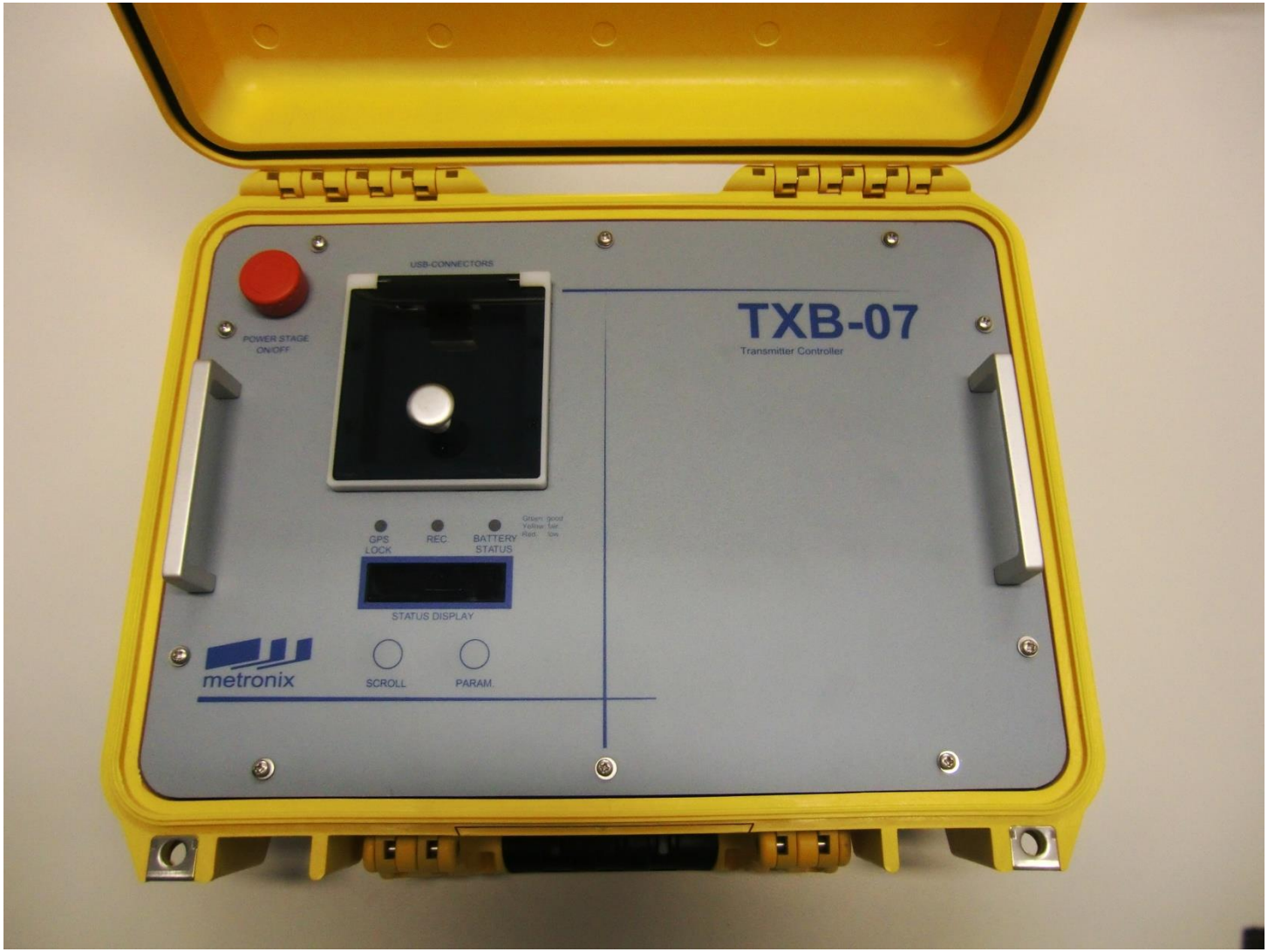
TXM-22 Power Unit

Technical Data of TXM-22

Input Voltage	50-60Hz, 3-phase 400V
Max. output voltage	+/- 560V
Max. output current long term	40A
max. Output power	22kW
Frequency range	0.001Hz up to 8192Hz
Output signal	Squarewave (up to 8192Hz) or any user selectable arbitrary wave forms such as sinewave, Sawtooth, PRBS
Output current	Adjustable by user
Temperatue range	Up to 40° ambient temperature without degrading
Controller	TXB-07 Control Box connected by cable, synchronized by GPS, incl. W-LAN functionality


OUTPUT ACTIVE
metronix
geophysics
E1
E2
E3
POWER GOOD
TXM-22
24V GOOD
READY
ERROR
TO CONTROL UNIT
EMERGENCY
POWER-OFF
CURRENT MEASUREMENT
E1
E2
E3

TXB-07 Controller Unit



Technical Data of TXB-07

Input Voltage	12V coming from TXM-22 or external battery
Synchronization	GPS controlled synchronization
Channels	3 channels for recording of each phase current
Control	By external computer or by pre-programmed time schedule
Temperature range	-30°C to 60°C
Weight	7 kg incl. accessories

Transmitter Setup in the Field

Electrode 1

Cable length 0.2..1km

Isolation transformer
for safety

Controller
TXB-07

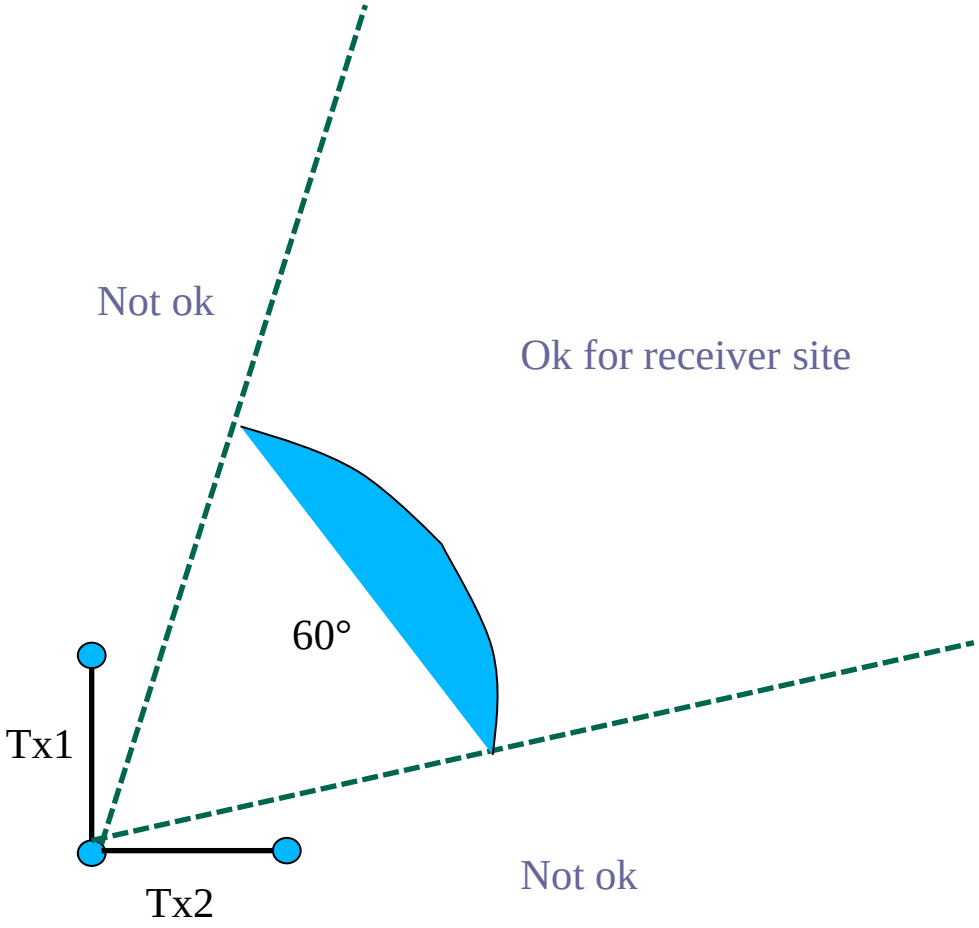
Transmitter
TXM-22

Motor Generator

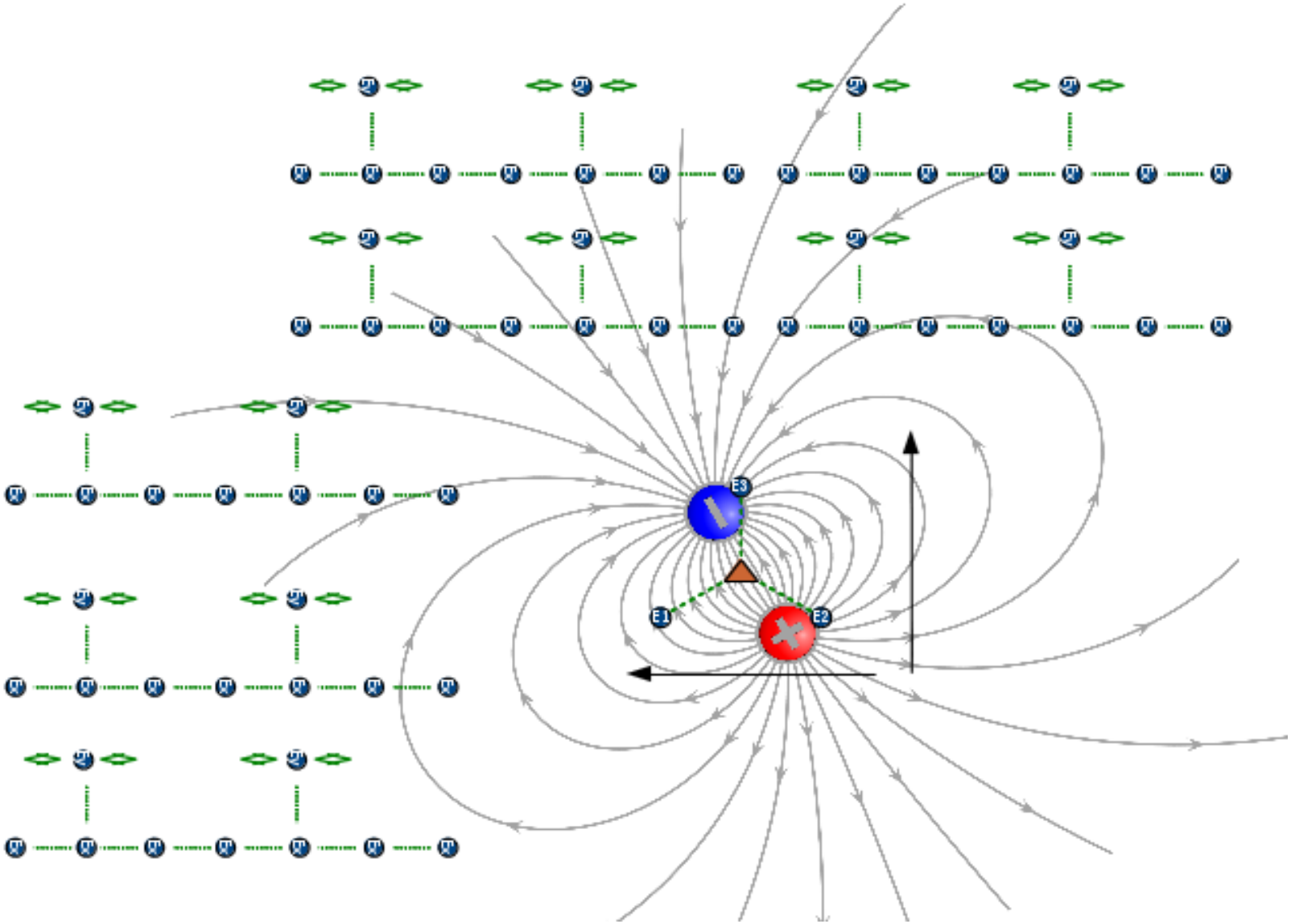
Electrode 2

Electrode 3

Tensor CSAMT with standard transmitter

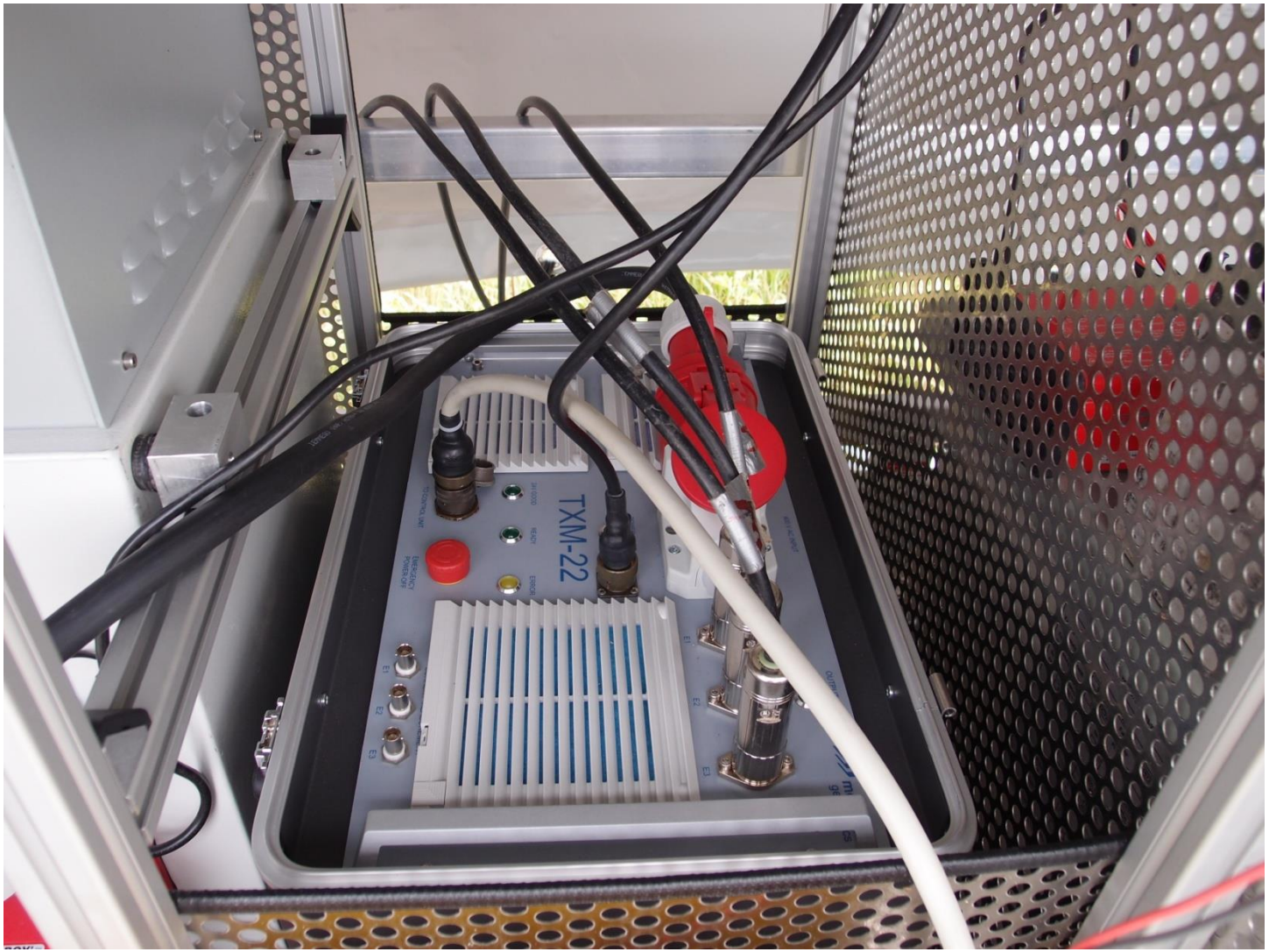


Multiple receiver array can be covered with one transmitter position



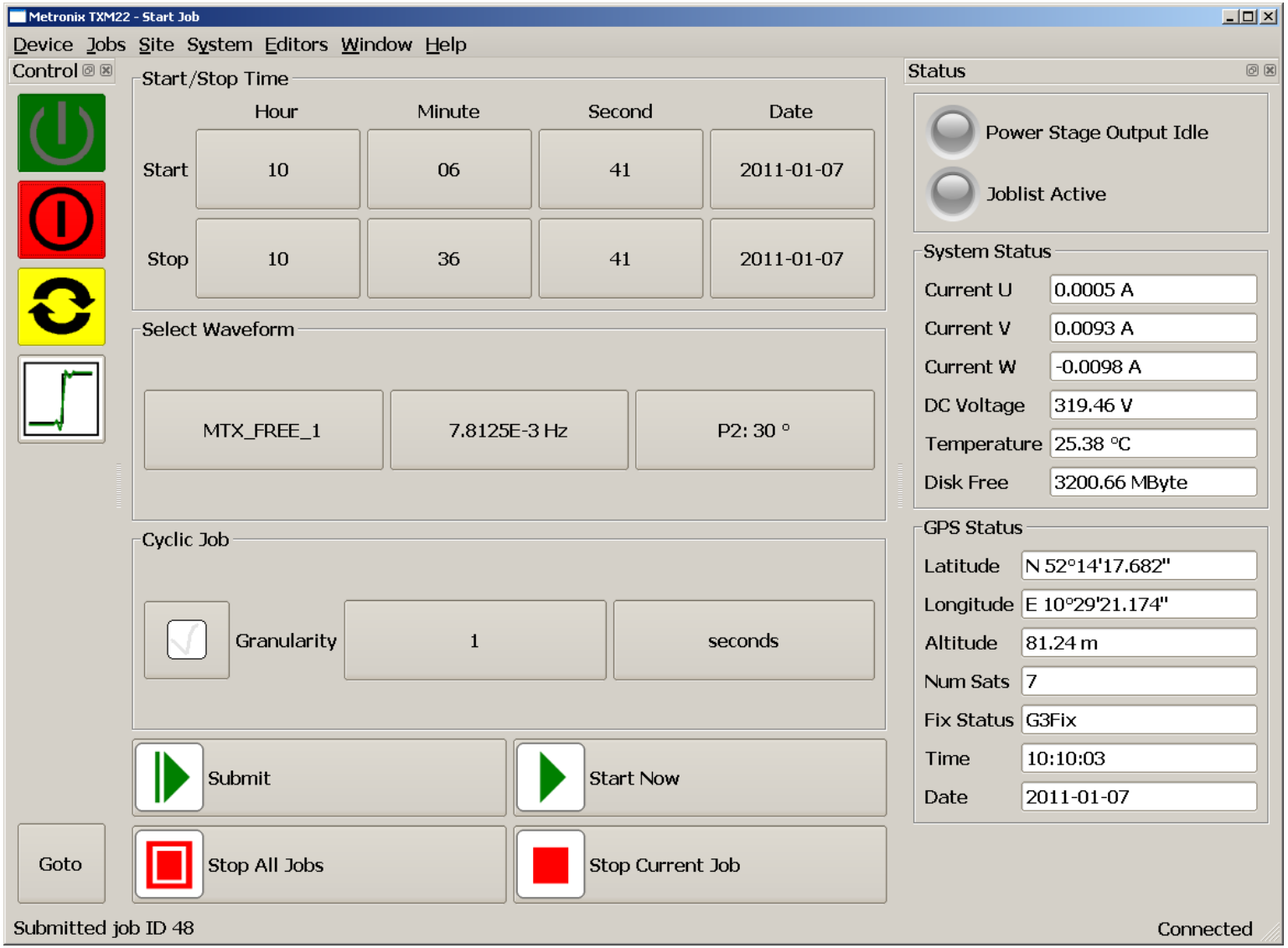
TXM-22 in Operation

TXM-22 mounted on Trailer

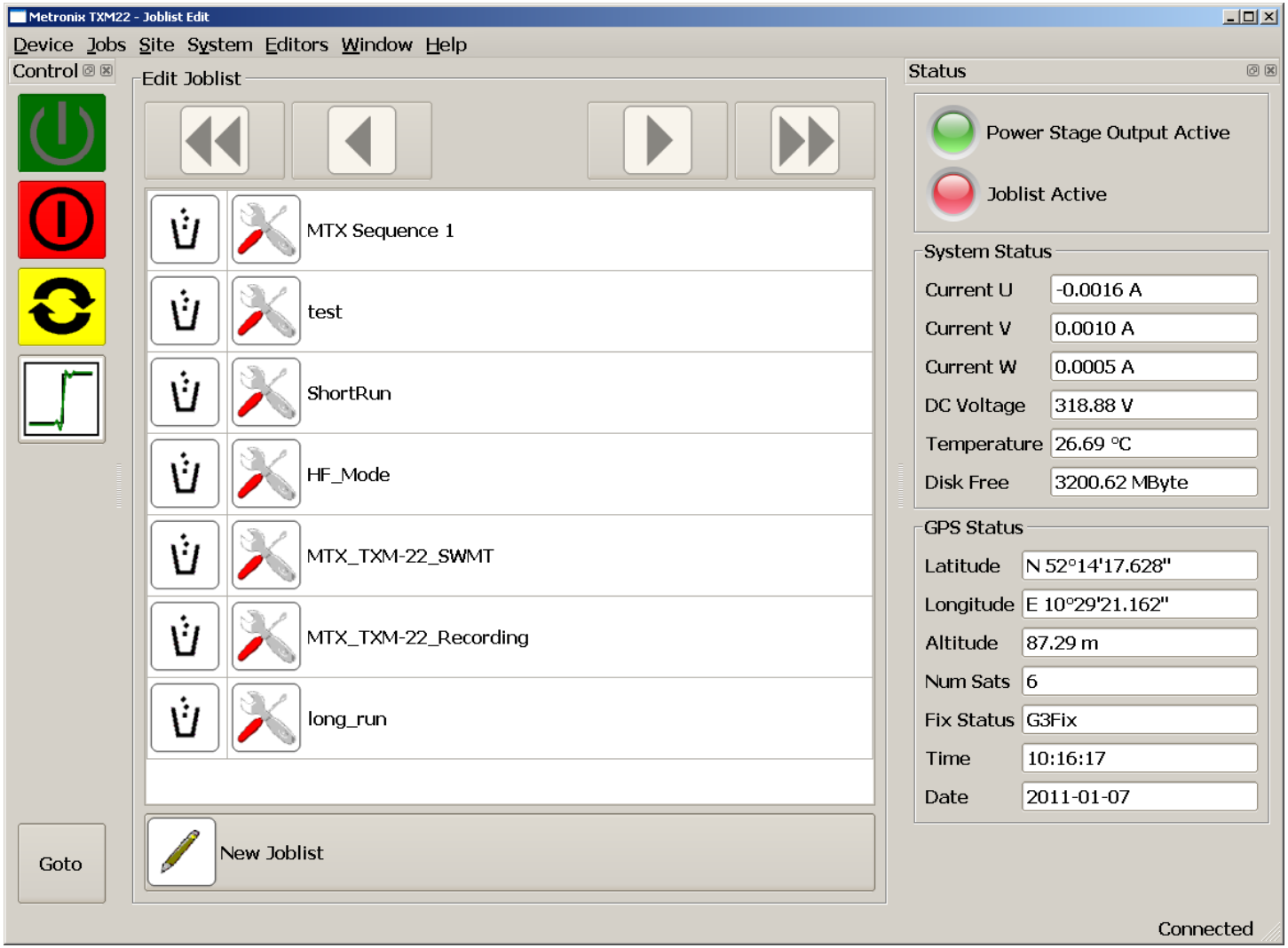


Isolation Transformer mounted on Trailer

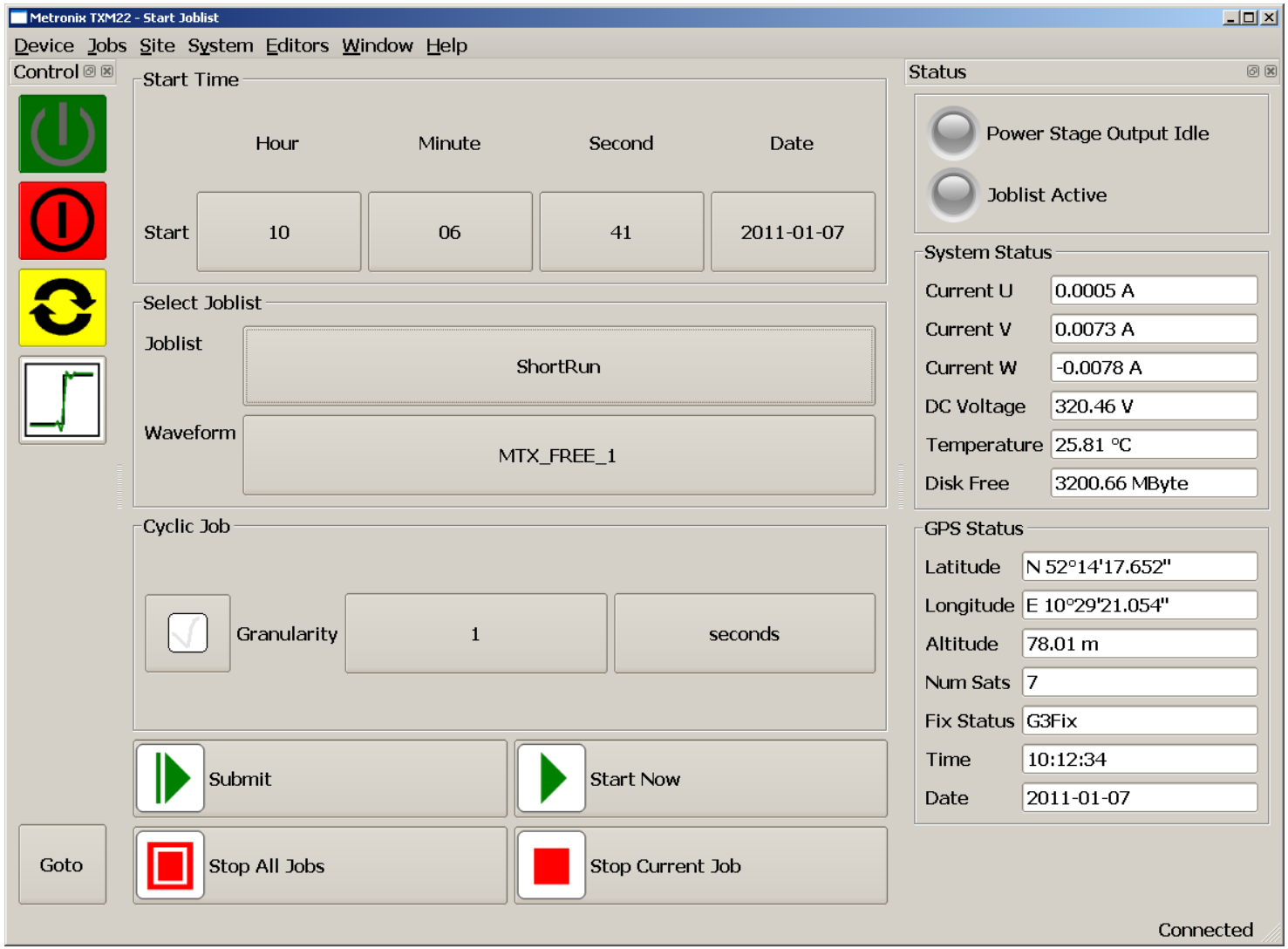
TXM-22 User Interface (Main Screen)



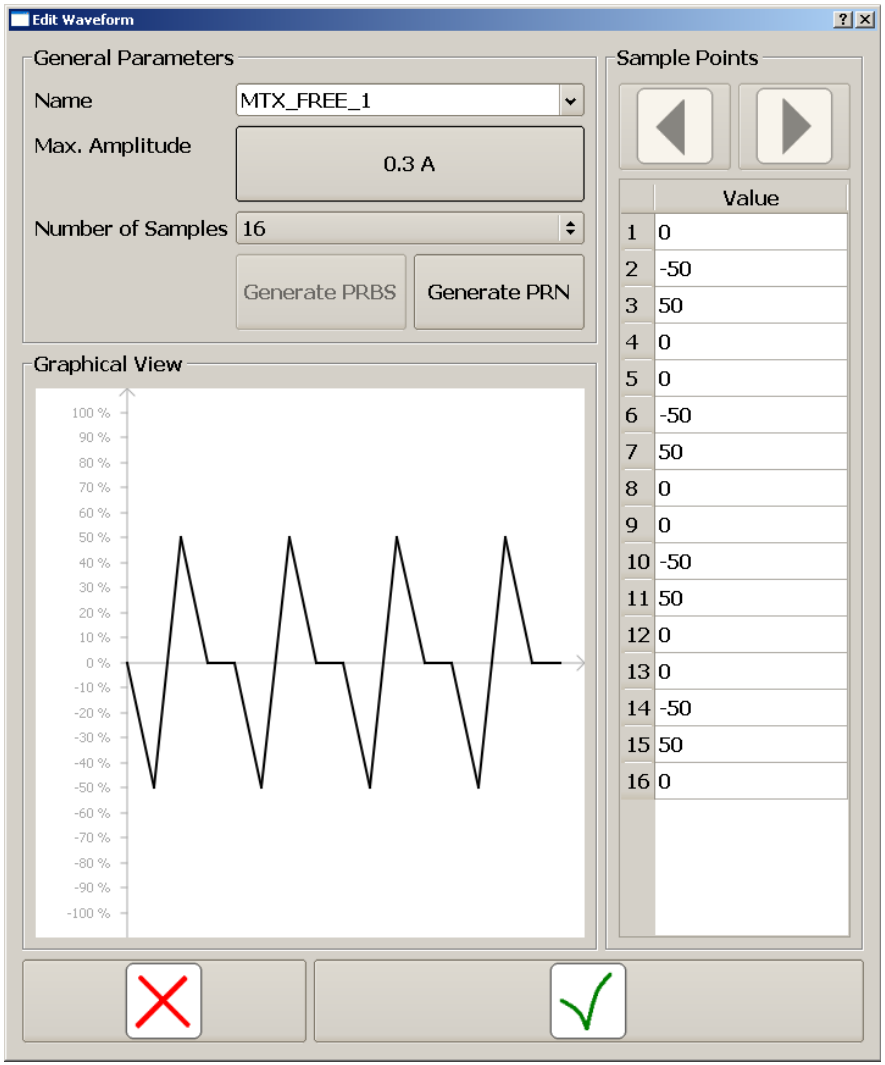
User Interface (Edit Joblist)



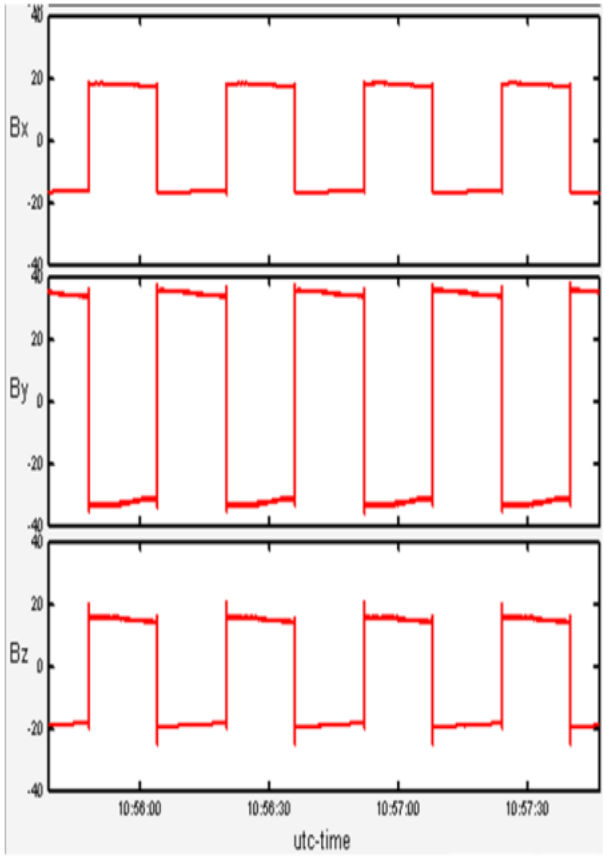
User Interface (Start Job List)

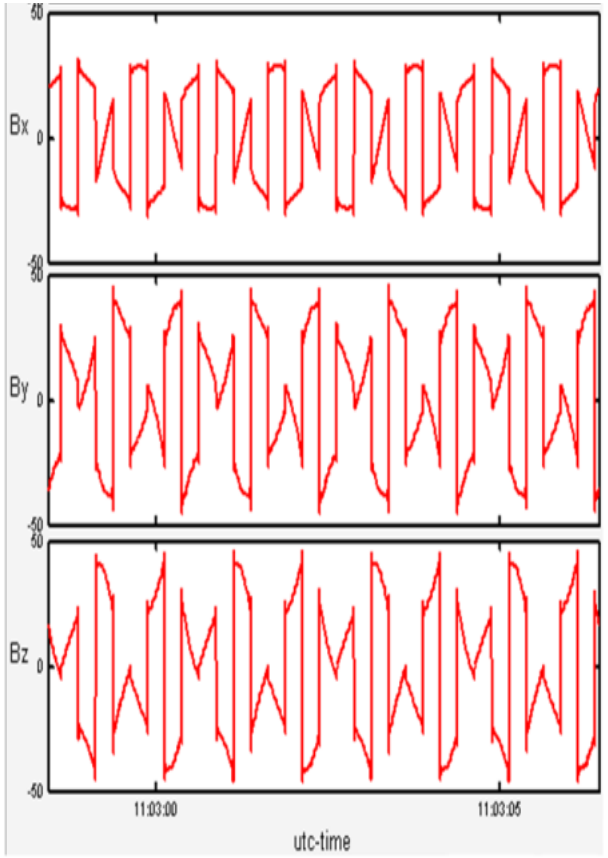


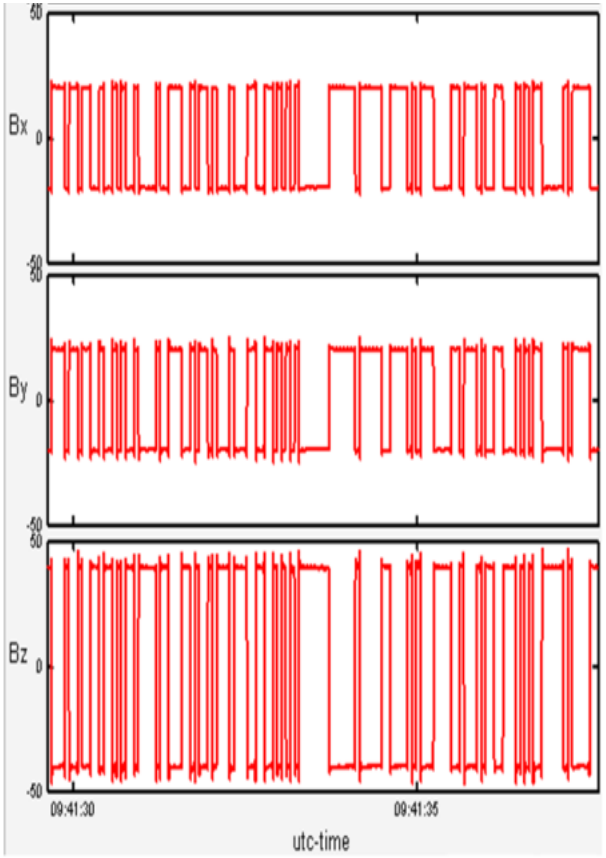
User Interface (Waveform Editor)



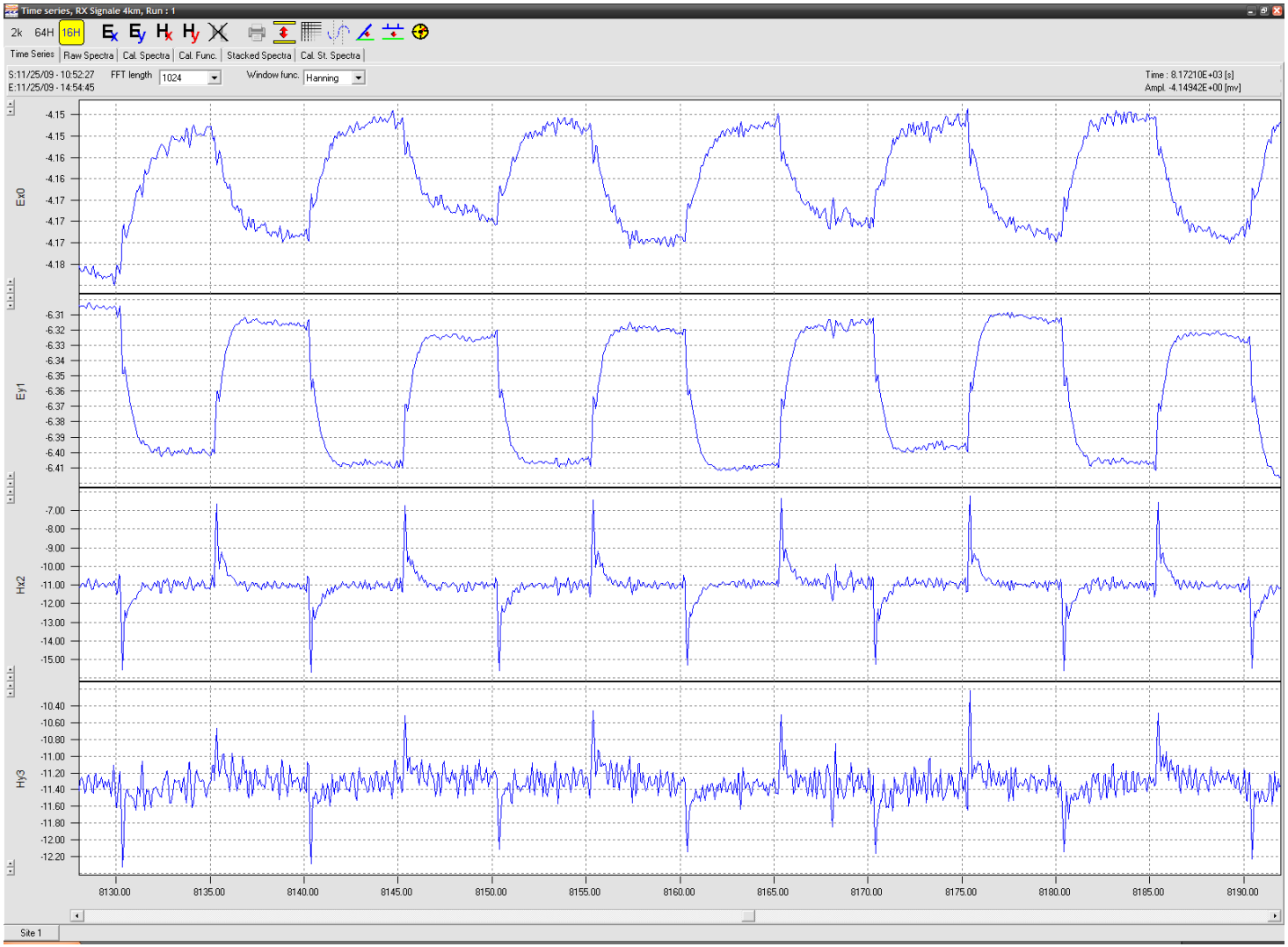
Different Tx-Signals



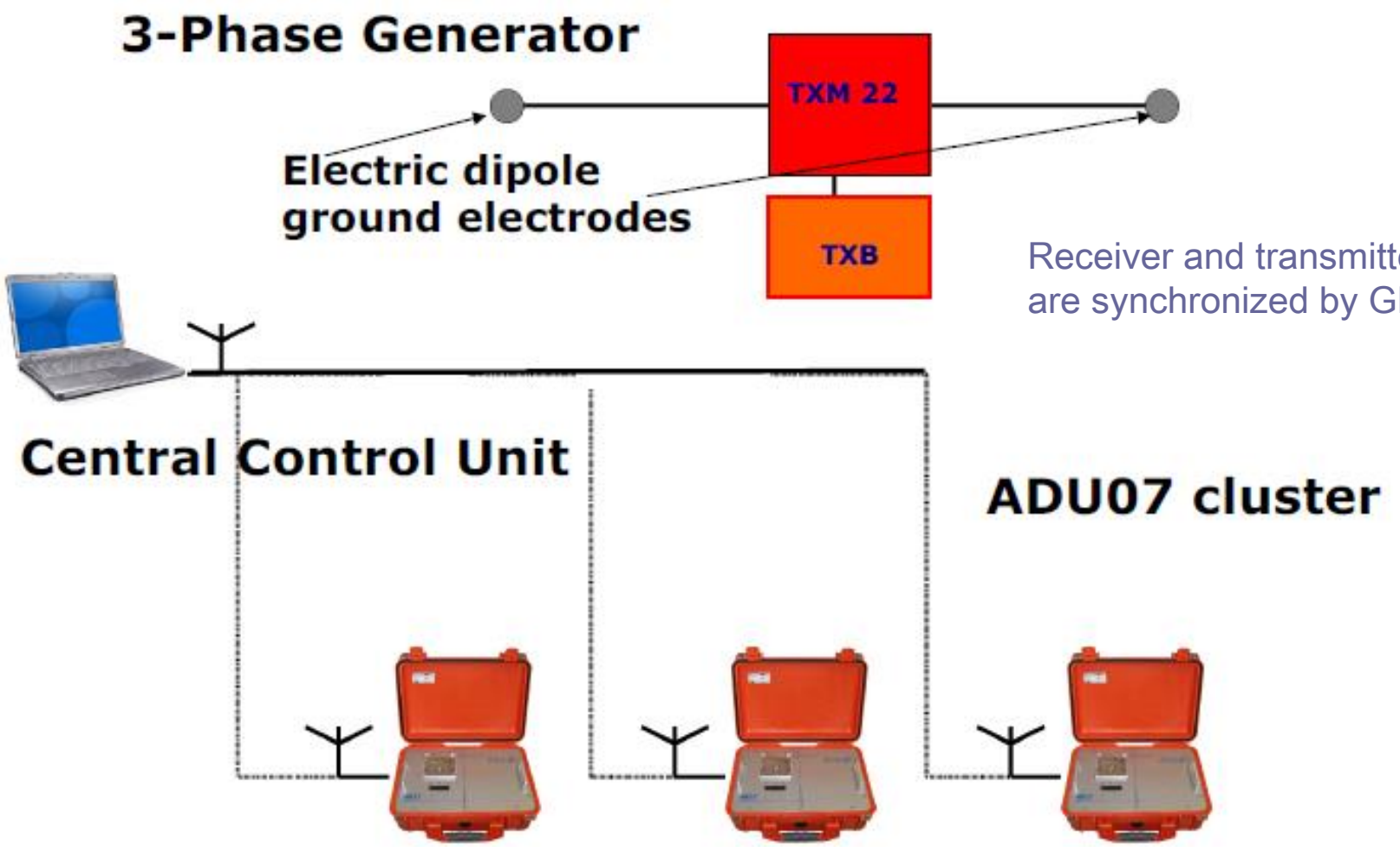




Raw Time Series of Tx signal in 5km Dist.



Measuring Cluster along with ADU-07



Receiver and transmitter are synchronized by GPS

Receiver Units ADU-07e