

CSAMT Tensor vs Scalar on a 1D Structure

Location: Slovakia

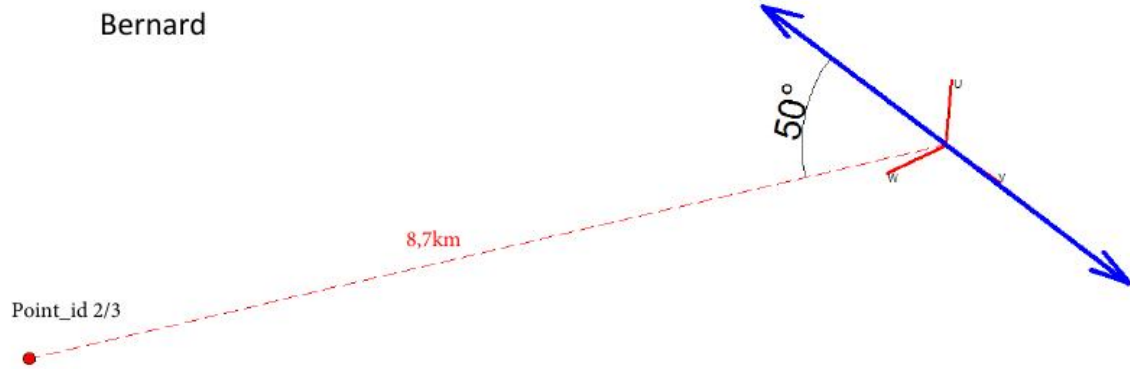


Figure 1 Setup

For testing the transmitter dipole was orientated as shown above (120 deg internal, ~ 130 deg N->E).

With 60-70 degrees one polarization at the receiver should be coupled best:

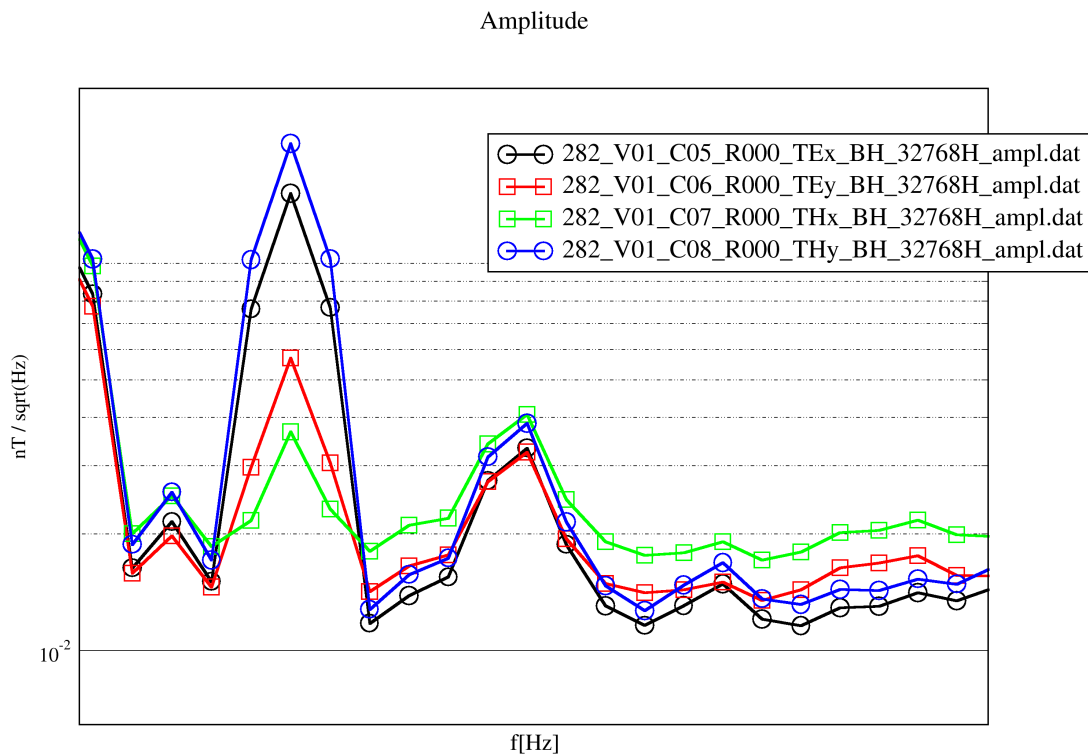


Figure 2 Ex, Hy circles, Ey, Hx squares

The amplitudes behave as predicted: Ex & Hy are coupled best.

At the same site tensor CSAMT was done as well.

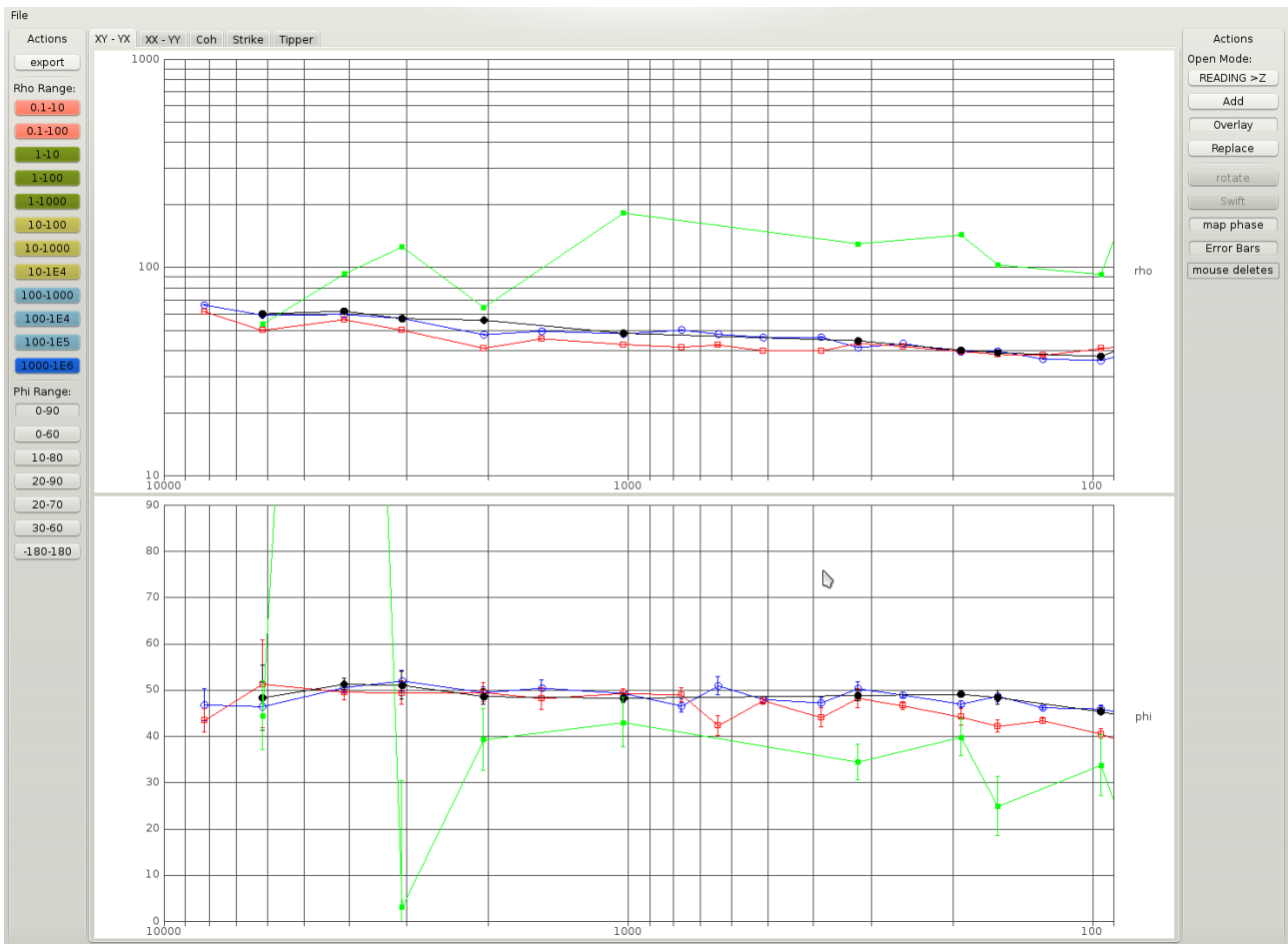


Figure 3 Blue, red: tensor, black, green scalar

The scalar comes close to the tensor result because the structure is a simple almost 1D structure.

Conclusion

On a simple 1D structure the transmitter dipole must be rotated into the optimum direction (black); otherwise scalar CSAMT will fail (green)

The black (scalar) will not be the same as the blue and red (tensor) in case the structure is 2D. On a 2D structure the scalar will always be wrong.

Only 1D structures can be measured with scalar CSAMT.