

This Quick Guide describes the process of selecting the most appropriate damping resistor to provide the best performance from the chosen transmitter loop. This procedure requires the use of a Rogowski coil and the waveform analysis tool which are included with all ABEM WalkTEM 2 RX Advanced units. These are optional extras on the RX Standard model and if you would be interested in adding this useful functionality, please contact sales@guidelinegeo.com.

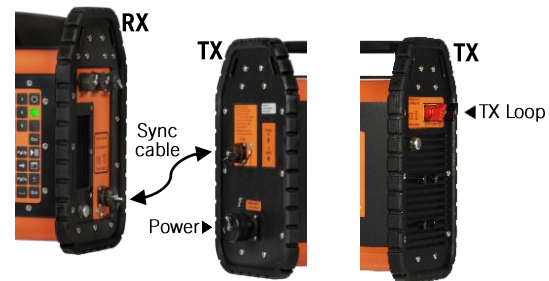
INTRODUCTION

Rapidly shutting off the current in a transmitter loop creates a ‘ringing’ effect – unwanted oscillating and decaying current. Using a damping resistor in parallel with the transmitter loop minimises this effect and the size of the resistor depends upon the loop properties and the ground over which it lies. Inside the WalkTEM 2 TX-8 / TX-20 units are a range of damping resistors which it is possible to test and analyze in order to determine the best resistance value for any given loop and survey area. The analyzer will also run a test on the loop without any of the internal resistors connected thus allowing a custom resistor to be mounted externally and tested; mounting of an external resistor is covered in Part D of this Quick Guide.

ANALYSIS PROCEDURE

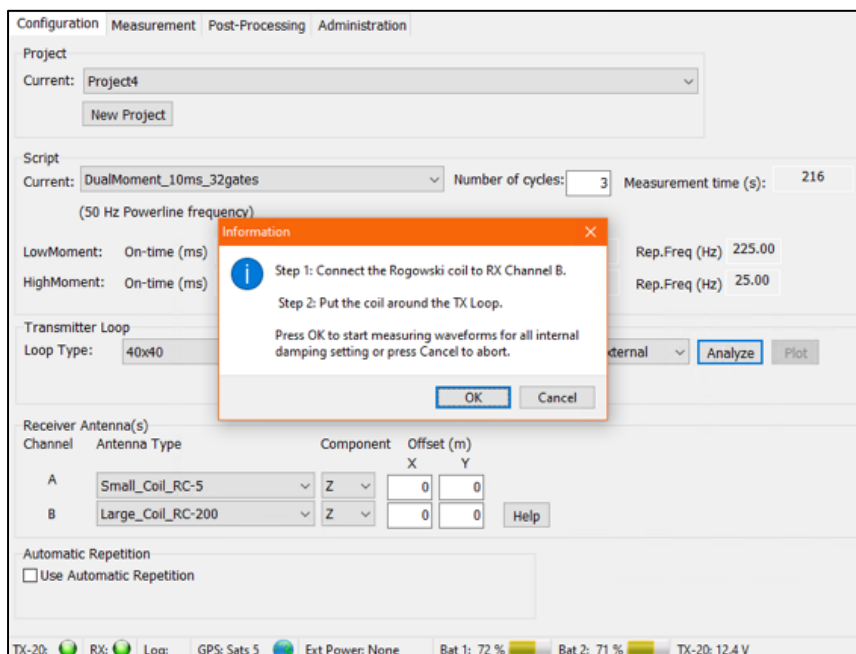
A. Set-up the instrument with a transmitter loop

- connect RX and TX and attach a transmitter loop to the TX (see WalkTEM 2 User Manual or Quick Guides);
- you need an active project and to select a measurement script before the “Analyze” button will activate.



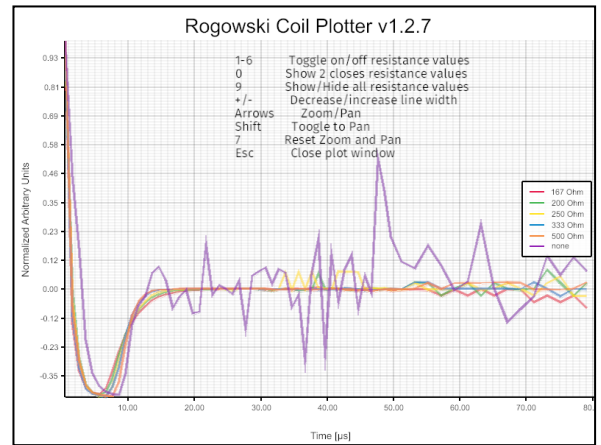
B. Select “Analyze”, press Ent, and follow the on-screen prompt

- take out the Rogowski coil (below left) and open it, if necessary, by pulling the free end of the loop (A) from the blue connector;
- wrap the loop around one of the transmitter coil leads, using the arrow on the blue connector to orient in the correct direction with respect to the direction of current flow in the transmitter loop;
- plug the other end of the Rogowski coil into Input B on the left side of the RX unit (you may need to unplug the RC-200 from Input B first);
- press “OK”



C. Once the test measurements have finished, plot the data

- press “Plot” and a new window will open showing the resulting curves;
- the time axis is in real units but the decay curves are normalized within the current zoom level to arbitrary units;
- the arrow keys allow panning and zooming with the “Shift” key (⇧) toggling between the functions;
- keys 1 to 6 will switch on/off the individual decay curves;
- pressing 0 cycles through adjacent decay curves, showing two at a time, for easier comparison;
- decreasing the line width can help visualize the curves better;
- pressing 0 cycles through adjacent decay curves, showing two at a time, for easier comparison;
- decreasing the line width can help visualize the curves better;
- if the curve is inverted, reverse the Rogowski coil or place it on the other tail of the TX;
- the aim is to pick the decay curve with the steepest drop-off which also returns to zero quickly and without too much further oscillation – typically larger loops and more conductive ground require bigger damping resistors;
- once the best resistance value has been identified, press “Esc” to close the Rogowski plotter and select the relevant resistor from the drop down menu.



D. Using an external damping resistor

- if a custom resistance value is desired it is possible to mount one externally in parallel with the transmitter loop;
- use a good quality “power resistor” that can withstand the load put on it by the transmitter;
- the resistor should be attached to the instrument end of the 3m TX lead-in cable (right);
- connection of the Rogowski coil should be on the TX lead-in cable and not around the resistor leads;
- the results of the Rogowski test for this external resistor will be the decay labelled “none” as none of the internal resistors are in use.

NOTE: When a Rogowski coil test is run with an external resistor attached, the decays shown for the internal resistors will be affected by the external resistor’s presence; those decays will show the combined effect of the external resistor and the internal resistor.



E. Export of damping resistor test results

- The results of the tests are written out to a timestamped folder and stored within the file structure of the regular measurement data;
- The results are in a simple text format and therefore can be imported into other software packages for plotting and / or further analysis.

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