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Alternate Arbitrary Waveform Creation using UltraStation

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Solution: The Rigol DG1000Z, DG4000, and DG5000 series of arbitrary waveform generators can use the Rigol UltraStation software package to create and edit arbitrary waveforms.

The current version of UltraStation allows users to draw and edit waveforms, but it does lack the ability to work with columns of raw values for each point. Creating columns of data points can be easier to manipulate and create using applications such as MatLAB or Excel. This technique can be time consuming because it requires the user to create the full application.

In this note, we are going to describe a method that uses UltraStation to display a CSV file and download it directly to the DG. We will also outline saving the file to a USB stick and replaying it.

You can also use CSV data from an Oscilloscope or other data acquisition system. The important thing to remember is to save a data set that has a number of samples that are close to the number of data points that you plan on using with your Arbitrary waveform generator.

A few words on file format

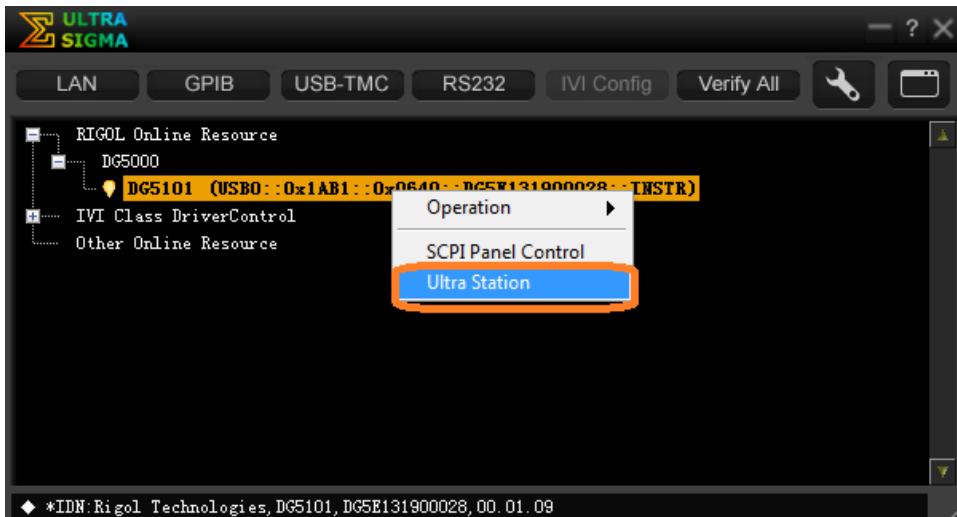
The DG series can most efficiently work with arbitrary waveform files that are encoded in a binary format. These files end in RAF file extensions. Unfortunately, the binary files are not easily edited or viewed. In this case, CSV (comma separated value) formats are much easier to edit.



Create a Template CSV

You can create a template for your application by opening UltraStation and creating an empty waveform.

- Connect the DG to the controlling computer
- Select the generator from the list, right-click, and select UltraStation



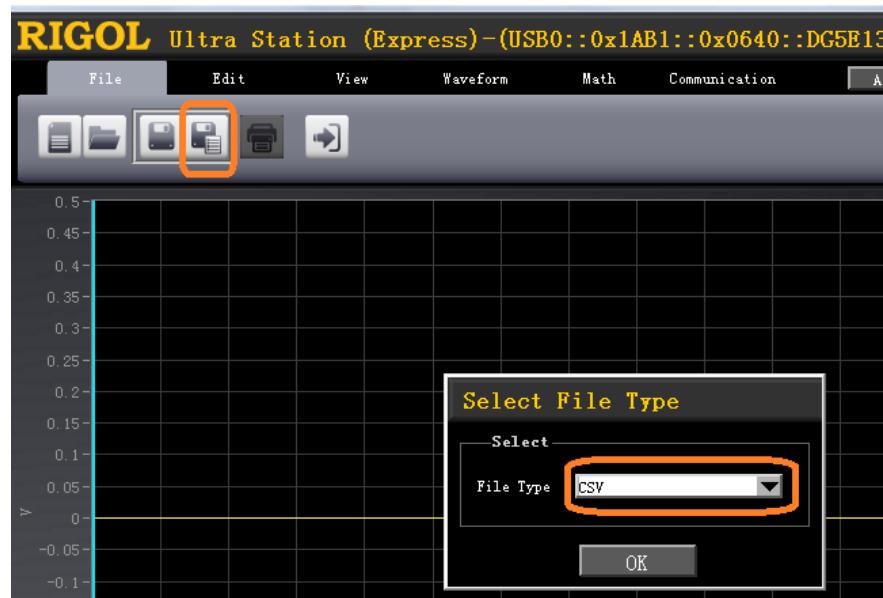
- Select New



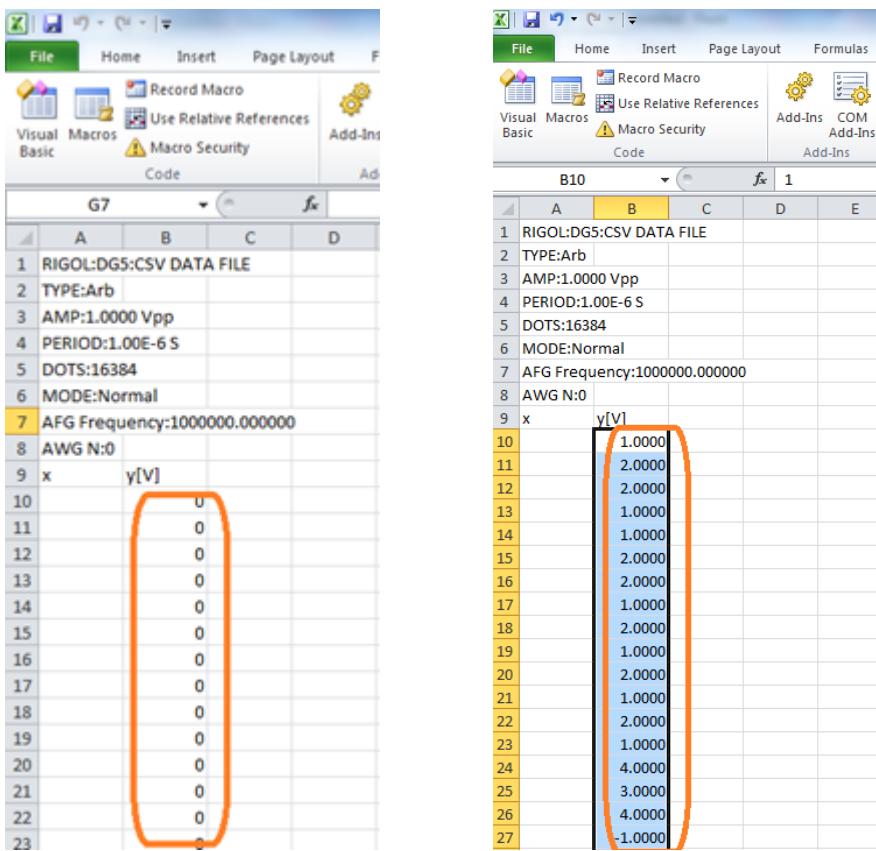
- Select the waveform parameters that are appropriate for your application



- Save As CSV

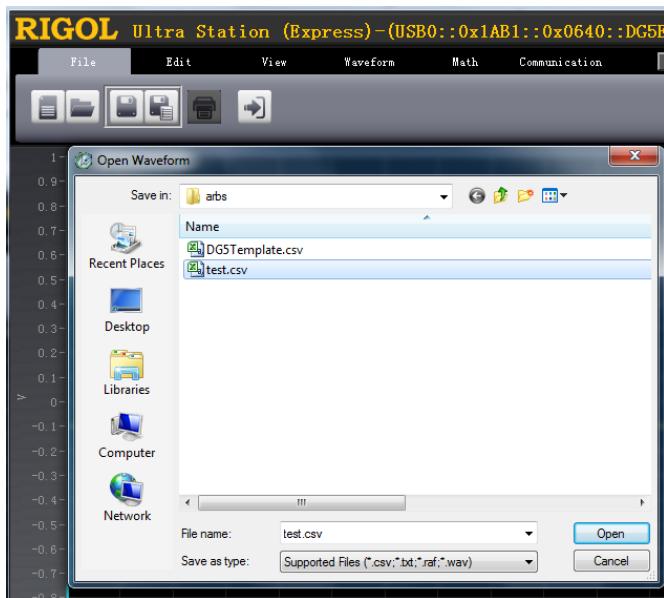


- Name the CSV “DGTemplate” or something helpful.
- Open the CSV file. You should see a column of values. These represent the voltages that the generator will sample and output as the file is reproduced. You can use this as a template and simply replace the column in the template with your own column of voltage values.

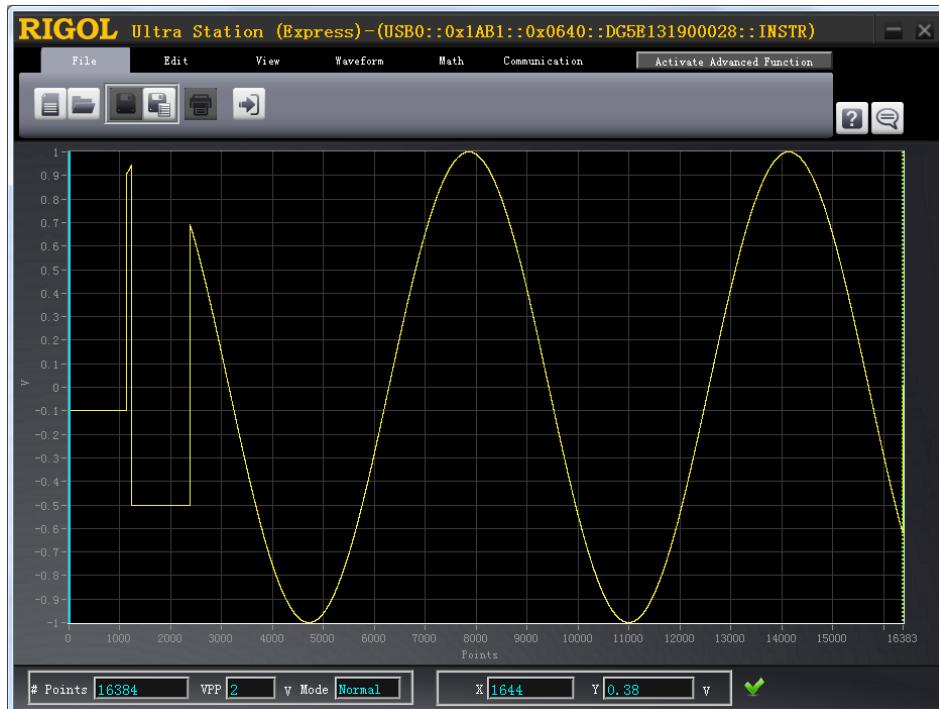


- Save the file as CSV and give it an appropriate name

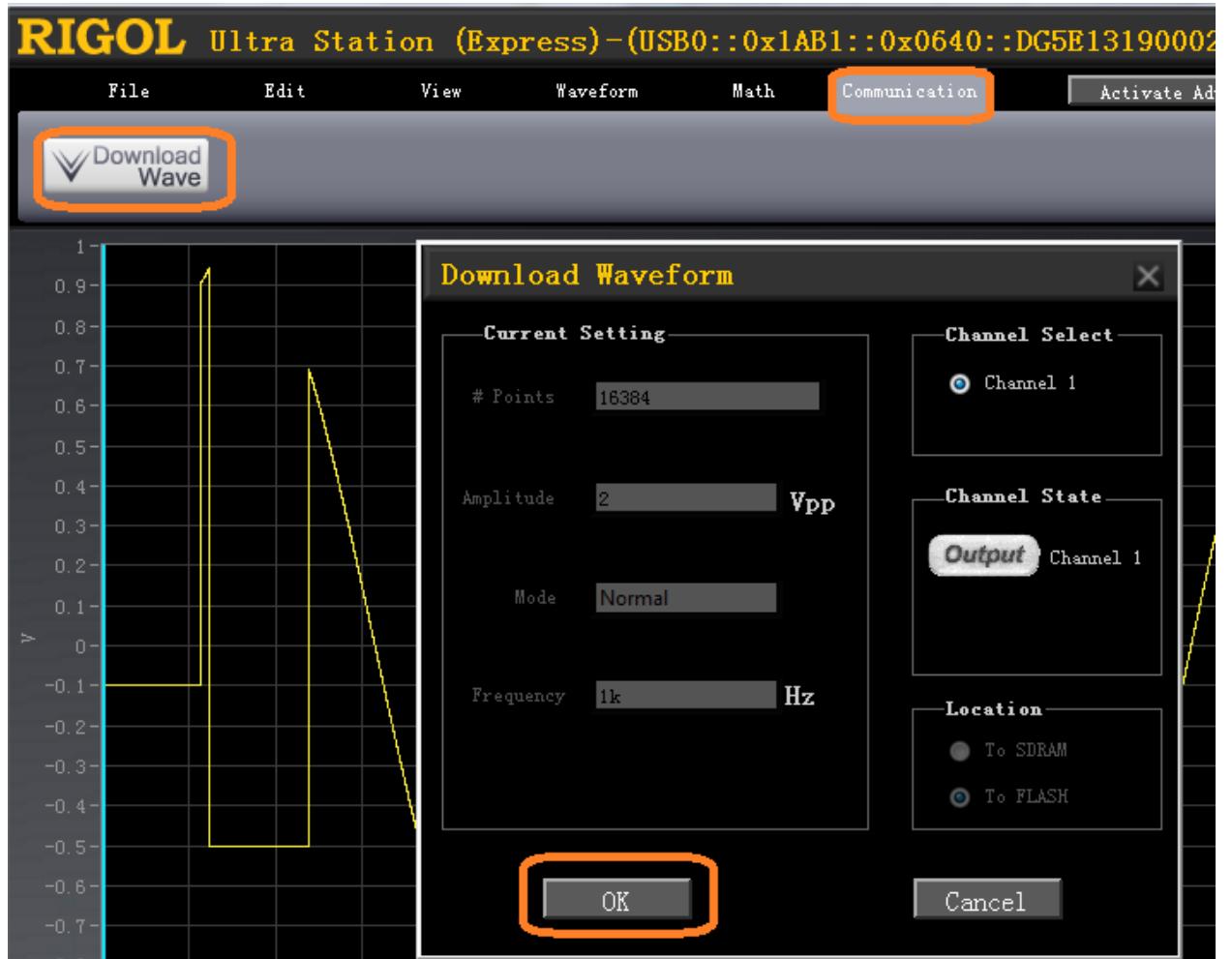
- Open the file using the Open function in UltraSigma



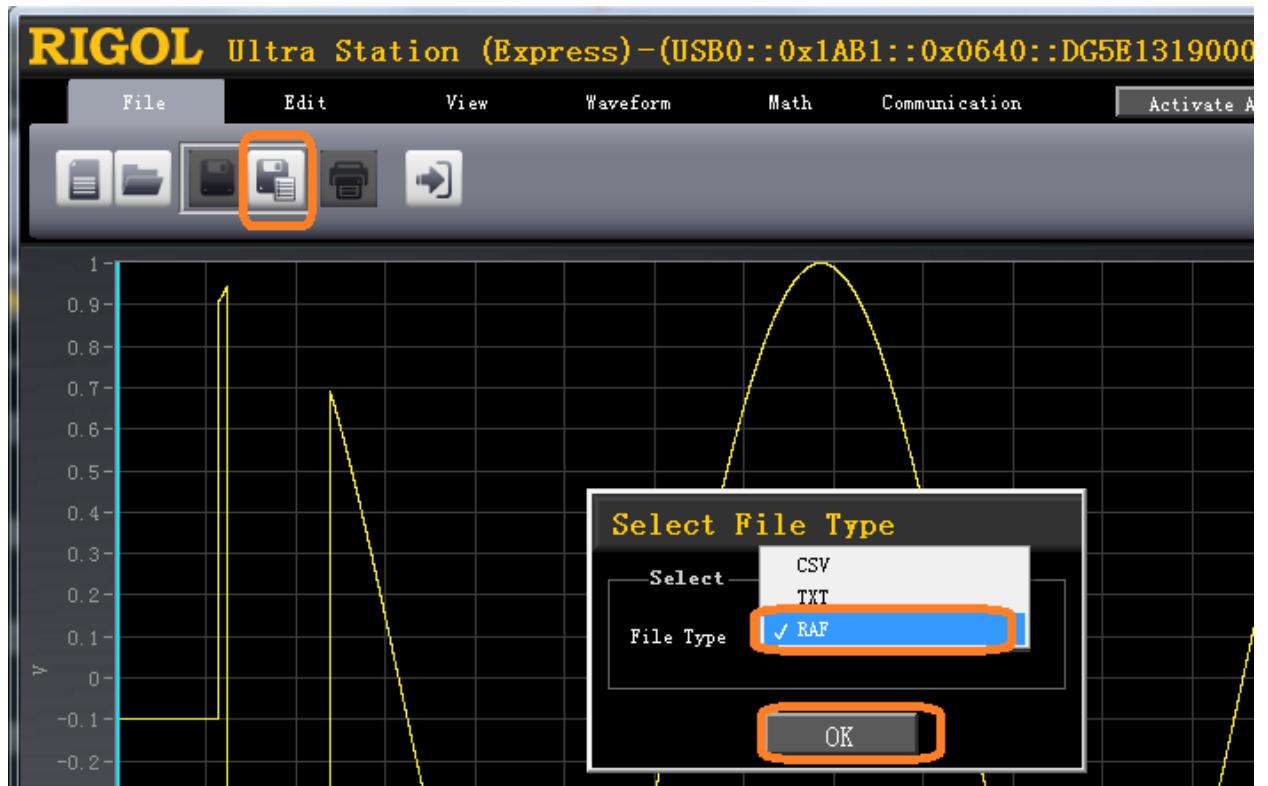
- Check that the waveform looks correct



- If everything is OK, Download the waveform to the instrument



- Alternately, you can save the waveform as an RAF file and then save it to a USB stick and transfer it to the DG manually



- After saving the file to the USB stick, you can transfer the file to the DG and use the Store menu on the DG to recall the saved waveform.



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