Points/Waveform captured using a DS1000E/D and DG1022

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Solution: The DS1000E/D series of oscilloscopes can capture and save waveform data as a WFM file. These files are binary representations of the collected data that can then be saved to a USB memory device and transferred to a Rigol DG series of Arbitrary waveform generators for playback and manipulation.

For a single channel acquisition, the saved WFM file type is comprised of 16k (16,384) data points centered around the midpoint of the scope display. Approximately 8k points before and 8k after.

When this WFM is loaded into the DG1022, the instrument will sample 4096 data points from the midpoint of the original 16k points of data.

So, each WFM captured on a DS1000E/D series scope that is replayed on a DG1022 consists of 2043 points before and 2043 points after the central part of the scope display.

In a practical implementation, this represents an additional 25% window of data that lies just to the right and 25% just to the left side of the displayed data.

Figure 1 represents an example. The pink box surrounds the displayed data set. The red box surrounds the displayed data as well as an additional 25% on either side of the displayed data. The red box surrounds the data that would be replayed by the DG1022.

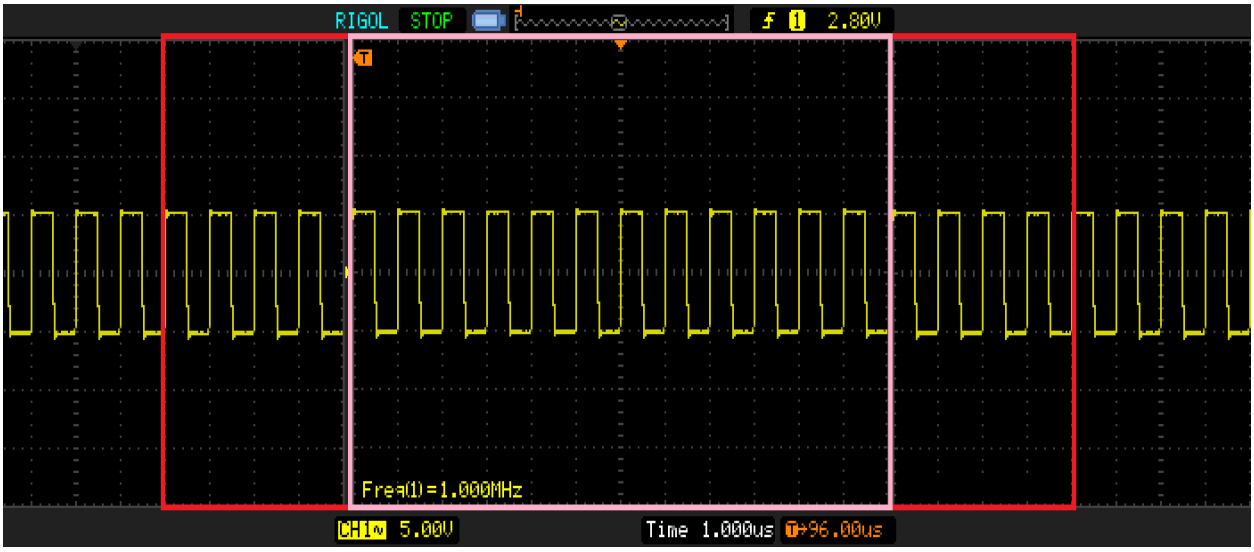

Figure 1: Composite of real displayed data (pink box)n and the additonal captured data replayed by DG1022 (red).

To replay the arbitrary waveform at the same rate as the originally acquired signal, take 4096/Sample Rate to calculate the playback period. Then set the DG1022 arbitrary waveform playback period to this value.

The Sample Rate parameter for the DS1000E/D scopes can be found by pressing the Menu key in the Horizontal control area of the front panel.

For example, if you acquired a waveform using a horizontal range with a sample rate of 100MSamp/s, the playback period would be 4096/(100E6 Samples/Sec) = 40.96us