



What's the difference between history and sequence function?

Current high-performance oscilloscope provides a high sampling rate and high bandwidth, but in some continuous measurement of multiple low duty ratio of pulse or have a long free time pulse sequence signal (Burst), such as laser pulse and the stability, low duty ratio radar pulse, or even embedded in the circuit the occasional narrow pulse signal, to capture and view the multiple continuous pulse, must increase the oscilloscope sampling time.

According to the theorem the sampling rate \times the sampling time = the storage depth, to improve the sampling time with the storage depth in a certain number, we have to reduce the sampling rate. Another way is to upgrade the storage depth, but because of the high-speed storage in oscilloscope is very precious, It's a high cost way.

SDS2000 series oscilloscopes Siglent recently launched have 28 Mpts deepest memory. Under the 2 GSa/S sampling rate, the oscilloscope can only capture 14 ms signal. It's not enough to view the continuous multiple free time signal. So upgrade the storage depth to solve the problem is not an economic and efficient way.

To this end, Siglent provides an effective way to solve the similar problem: the Sequence (Sequence waveform). Just as its name implies is the memory of the oscilloscope can be divided into a number of sequences, each sequence of waveform that is put in the current triggered waveform, trigger a save one. In Sequence mode, the waveform capture rate can reach 300000 times. Cooperate SDS2000 oscilloscope unique History (History waveform) function, can see every moment of waveform captured and the time interval between two times. By this technique, the oscilloscope

can maintain the high sampling rate, means it can't lost signal details information, at the same time, we can acquire the signal we interest in for a long time, and not leak any useful information.

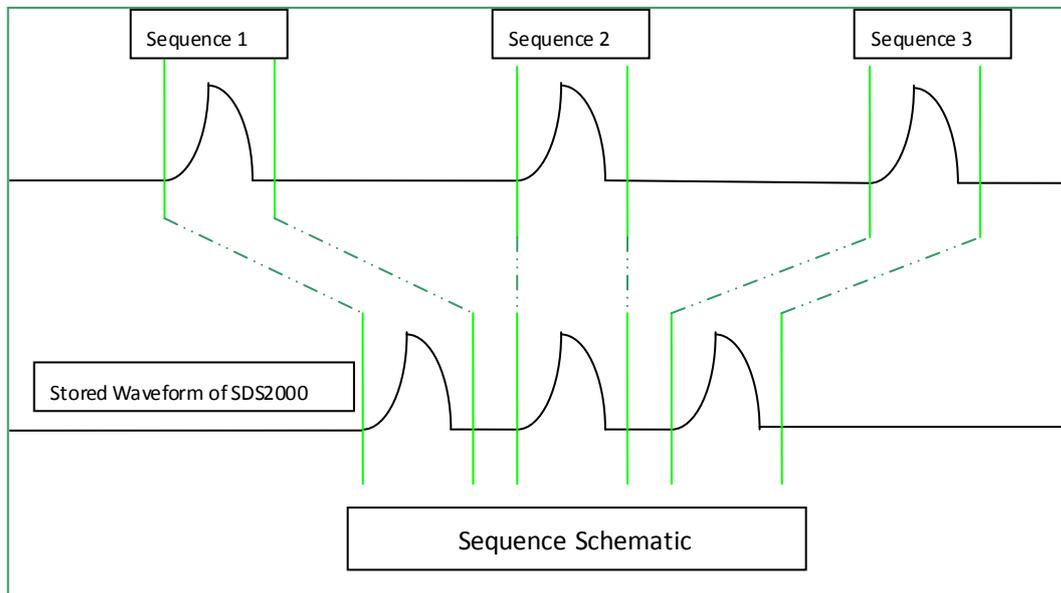


Figure 1 the principle of Sequence

1. For a long time to acquire burst signal.

The Burst signal is often used in radar and sonar signals. Long time acquiring Burst signal with the traditional sampling method is a big challenge, which has to compromise between the acquisition time and sampling rate. In many cases, even reduce the sampling rate can't satisfy the acquisition time required. By adopting Siglent SDS2000 segmented storage technology to divide memory into several sequences, can achieve the purpose of collection and storage Burst signal for a long time, and can analyze the stored Burst signal.

As shown in figure 2, the period of Burst signal is 1 ms and duty width is about 5 us. Under 28 Mpts storage depth and 2GSa/S sampling rate, the acquisition time of SDS2000 is 14 ms, that is, a total of 14 Burst signals can be acquired, which can be verified in figure 2. It is not enough to analyze the Burst signal. If the storage depth drop to 2.8 M, the oscilloscope acquisition time reduces for shorter 1.4 ms, one Burst signals can be acquired at most.

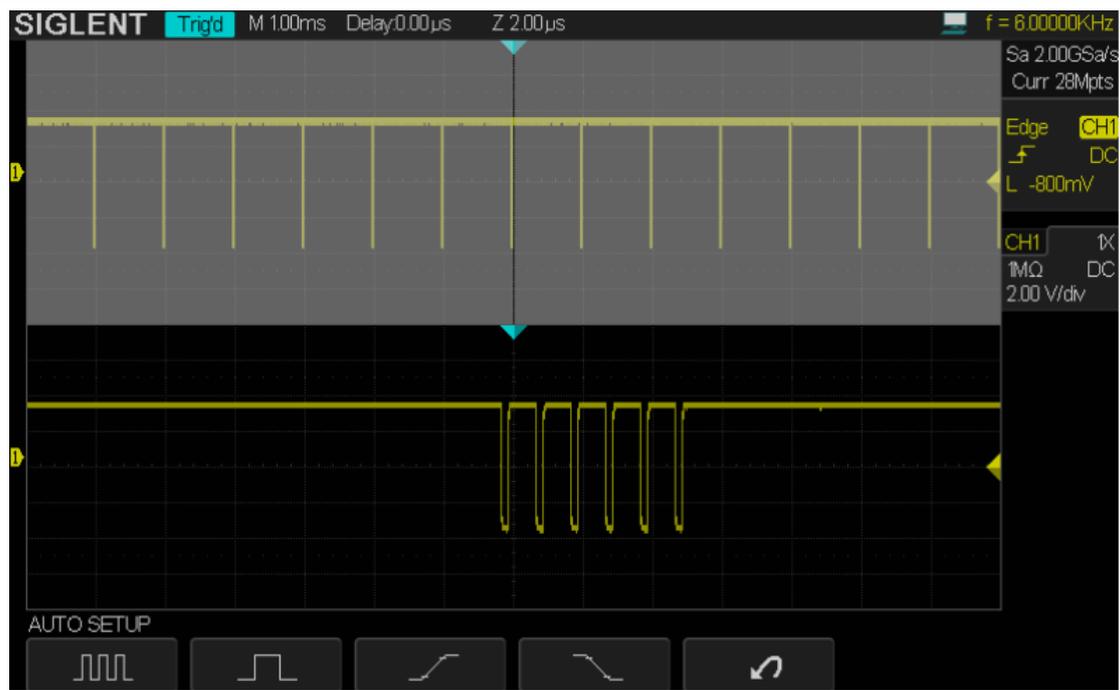


Figure 1 Burst waveform's Zoom view of SDS2000

For the same Burst signals, if open the Sequence mode, SDS2000 can acquire Burst signal for a longer time. As shown in figure 3.

SDS2000 series oscilloscope in 28 MPTS standard memory can support up to 80000 frame sequence. For example, when set the oscilloscope waveform sequence frames to 4067, as shown in figure 3 and 4, the oscilloscope can acquire 4067 segments Burst signal.

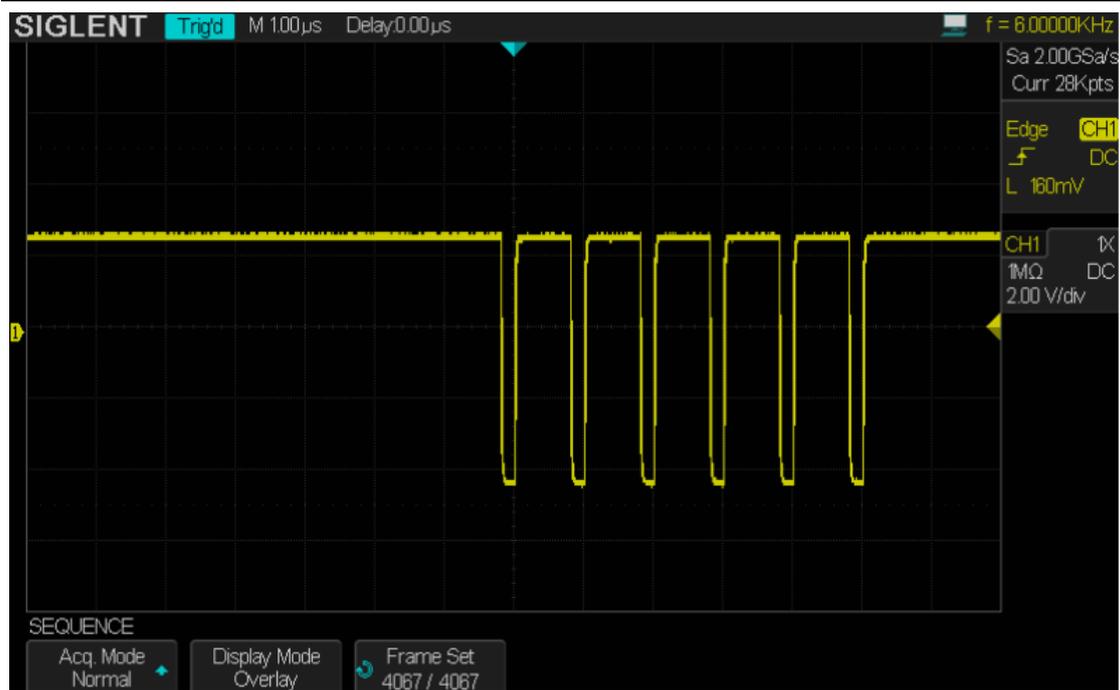


Figure 2 Sequence waveform in overlay display mode view

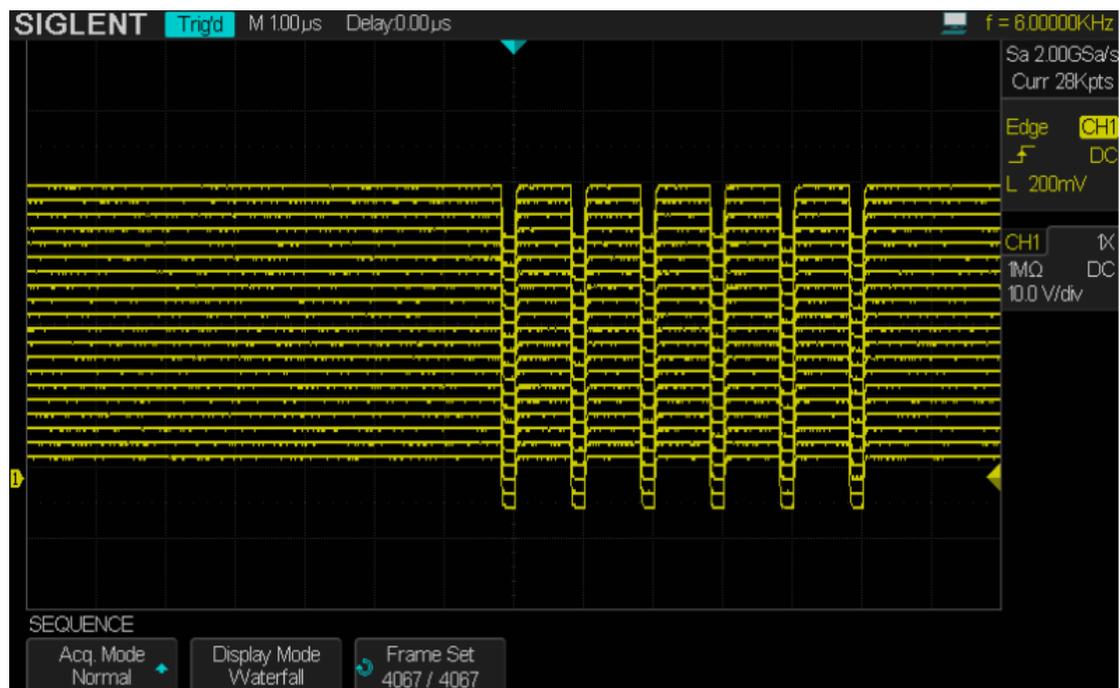


Figure 3 Sequence in waterfall display mode view

Open History function

History furnish navigation and playback of the Sequence, by using the fast forward and fast rewind function, you can quickly find the time period wanted to know, and view the current sequence number (NO) and the sequence of Time

information (Time) which can be used to determine the Time interval between the Time and events. The figure shows the time interval of the Sequence is 1 ms.

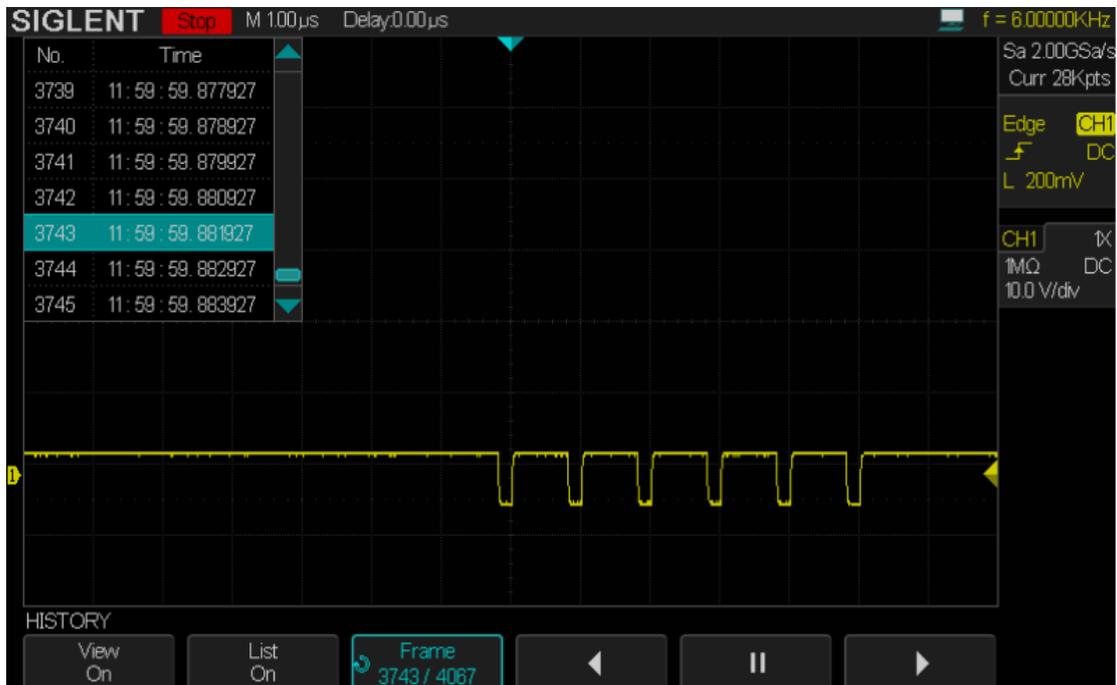


Figure 4 waveform playback view in History function

2. Acquire narrow pulse for a long time

Same to Burst waveform, for continuous accidental narrow pulse signal, firstly adopts the range owed method make the signal triggered stability. Under the maximum 28M storage depth, to maintain the 2G sampling rate, can only acquire 28M/2G, namely 14 ms waveform. That is a total of 14 narrow pulse signal can be collected.

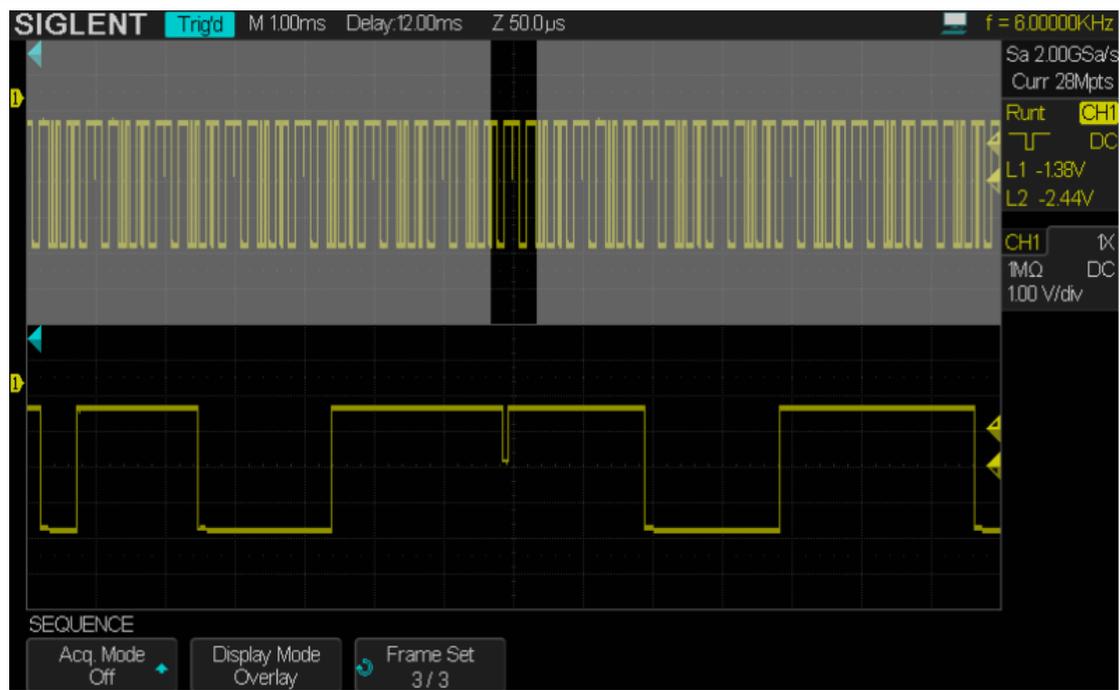


Figure 5 the narrow pulse's Zoom view of SDS2000

If you open the sequence function, SDS2000 can acquire more occasional narrow pulse signal. Open the History function we can playback and analysis the narrow pulse signal which we care about.

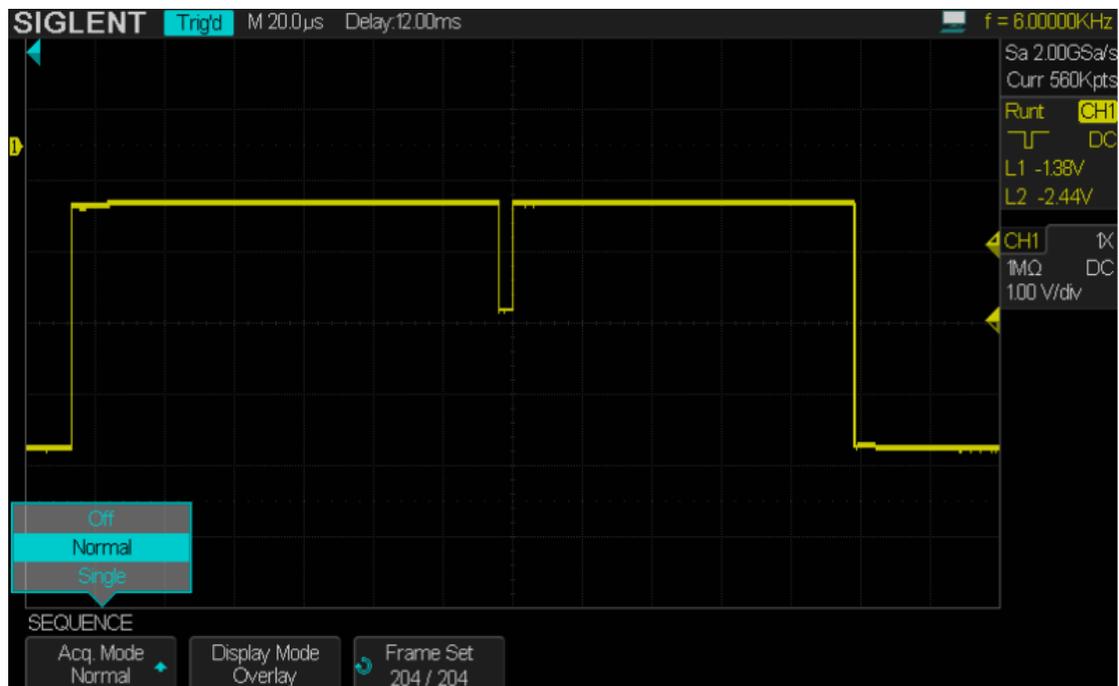


Figure 6 the narrow pulse view in Sequence waveform

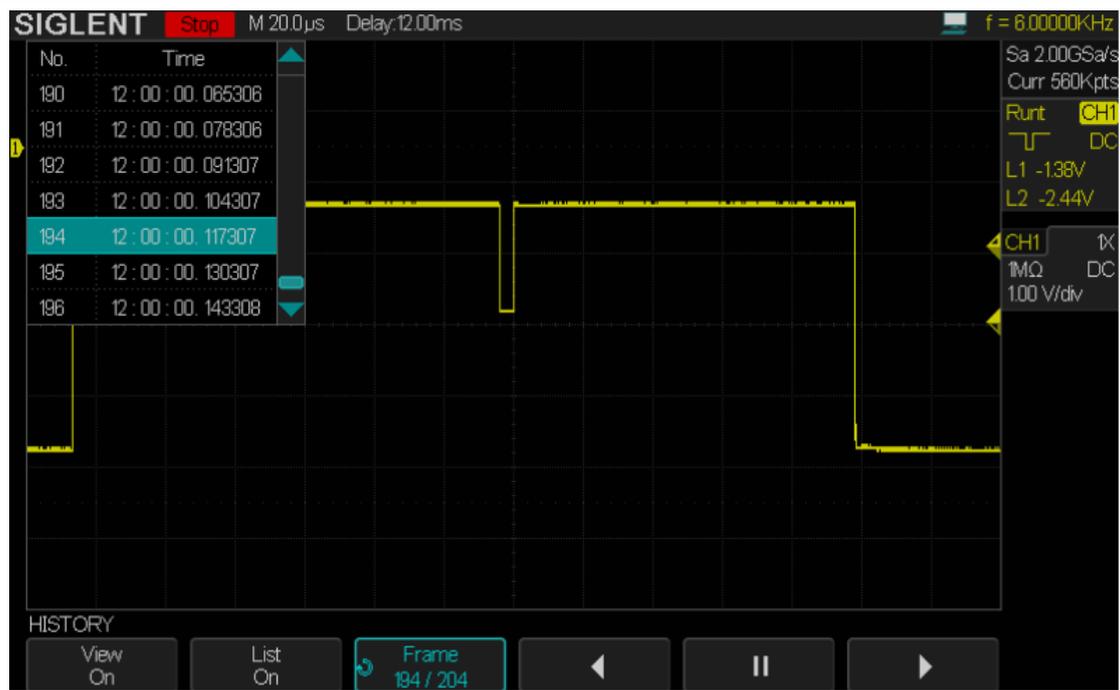


Figure 7 the narrow pulse's History playback view