

## Introduction to Segmented



## Memory Acquisition

## Function



Packet-burst signal can be commonly seen in various embedded electronic product design and processing signals from radar antenna. For instance, the communications between chipsets, I2C signal is definitely the burst signal. Since the burst idle period is quite long when using oscilloscope to capture this packet-burst signal, whenever users want to observe more packet signal, the requirement of longer memory length needed to be equipped in the oscilloscope. Though the time-base range can be expanded, however, it relatively sacrifices the speed of the sampling rate. When users temporarily narrow down the time-base range to capture the signal, this may result in the incapability of observing waveforms in details.

GDS-2000A Oscilloscope offer segmented memory function. With similar trigger condition, the whole memory length can be split up and can be used with efficiency and accuracy, which can save more idle memory and the memory can be divided into 2048 sections as the maximum. The maintenance of higher sampling rate can be processed even the signals are measured within segmented memory. After capturing the waveforms, the problems can still be examined precisely in details.

Take figure 1 for example, the traditional oscilloscopes take advantage of abundant memory space to capture the burst signals and the time-base need to be extended. However, the cost of longer memory is extremely high, thus, the idle of burst signal is always a waste for the memory space and only few waveforms can be observed.



Figure 1: Graph of Capturing Burst Signal of Traditional Oscilloscope

As can be seen from figure 2, the segmented memory function take advantages of the memory space with efficiency. The burst signal will be split and captured into different memory sections under the same trigger condition. It is about maintaining the high sampling rate and sustaining the original integrity of waveforms.

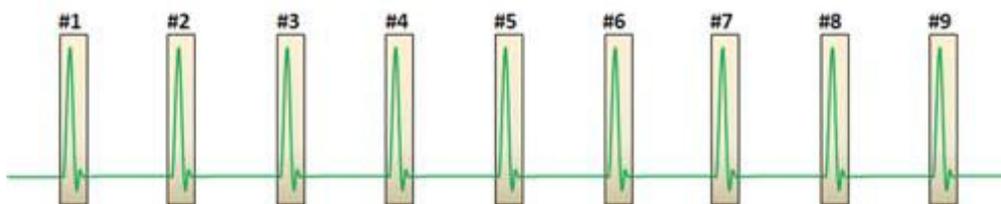


Figure 2: Graph of Segmented Memory Function

How to execute the segmented memory function on GDS-2000A oscilloscope?

Please refer to figure 3, first of all, select the **“Acquire”** bottom at upper-right hand side, then select the **“Segments”** button at the bottom of the screen, then subsequently turn on the **“Segments ON” Function**. After choosing the triggering condition and the measure parameters, then set the number of segment sections, which can be divided into 2048 as the maximum, at the upper-right hand side of the screen. Finally press the **“Segment RUN”**, then when finish capturing the waveforms, press **“Segment STOP”**. Choosing the **“Current Seg”** at the upper-right hand side of the screen, the burst signal in each memory segment can be easily observed. As can be seen in Figure 4, due to the

maintenance of high sampling rate, the range of time-base can be narrowed down to process the waveform observation in details without distortion.

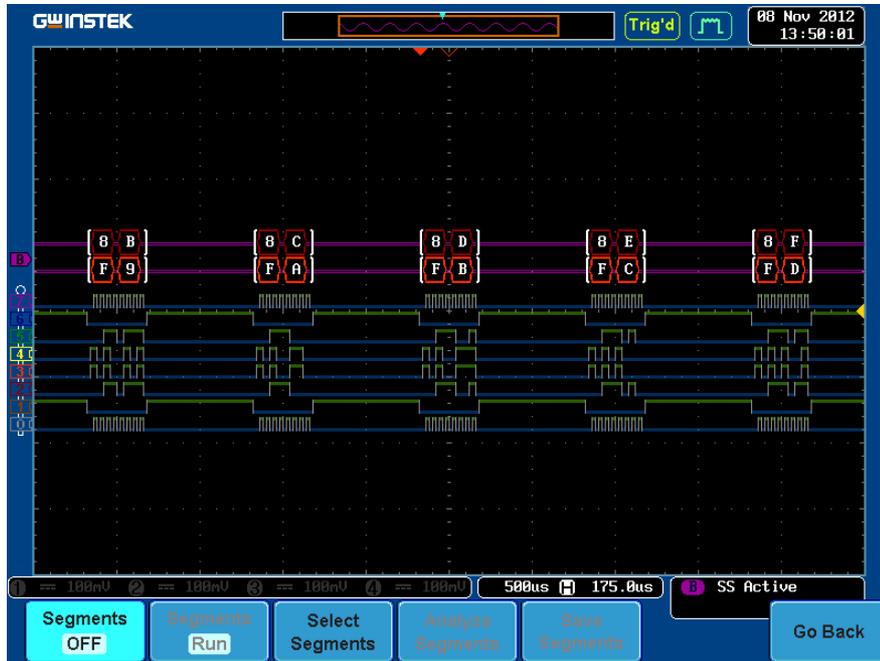


Figure 3: How to Implement Segmented Memory Function on GDS-2000A



Figure 4: The Implement Result of Segmented Memory Function.

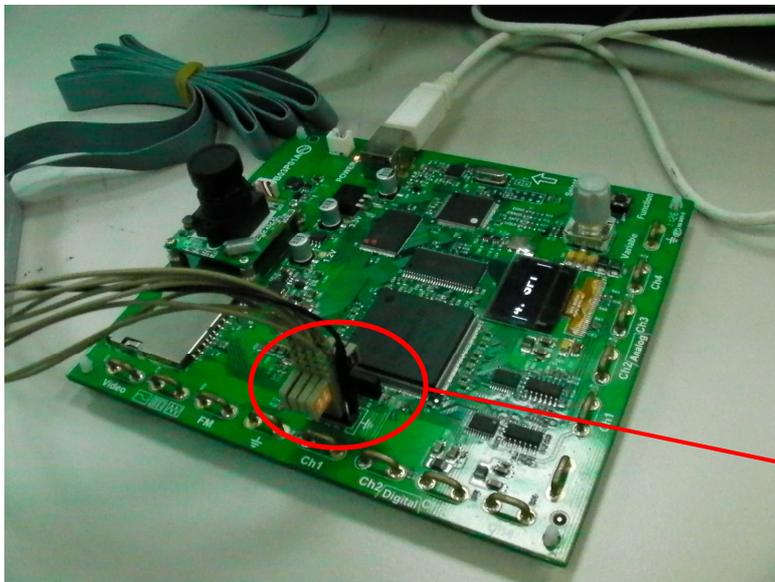
## Standard Demo Procedure of Segmented Memory Function

### Equipments:

1. GDS-2000A Digital Storage Oscilloscope + Logic Analyzer Selected Module \* 1
2. GDB-03 Demo Board \*1
3. Digital Probe \*1

### Steps/ Procedures:

1. Connect the digital probes with GDB-03 Demo Board via the connection port of Logic Analyzer on GDS-2000A.



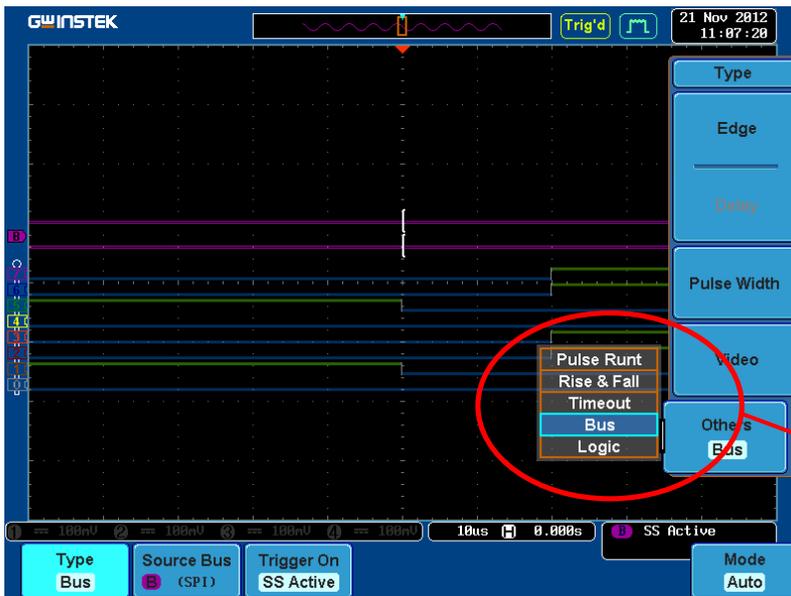
The connect point on GDB-03

2. Adjust the function adjusting knob of GDB-03 demo board to "SPI" function selection. Press the "Option" Key at the bottom-right hand side of the screen to turn on the Logic Analyzer, then turn on the 0-7 channel display.



Adjust the knob to "SPI" function

3. Press the "Menu" button at the right-hand side of the oscilloscope to set the bus mode as trigger condition.



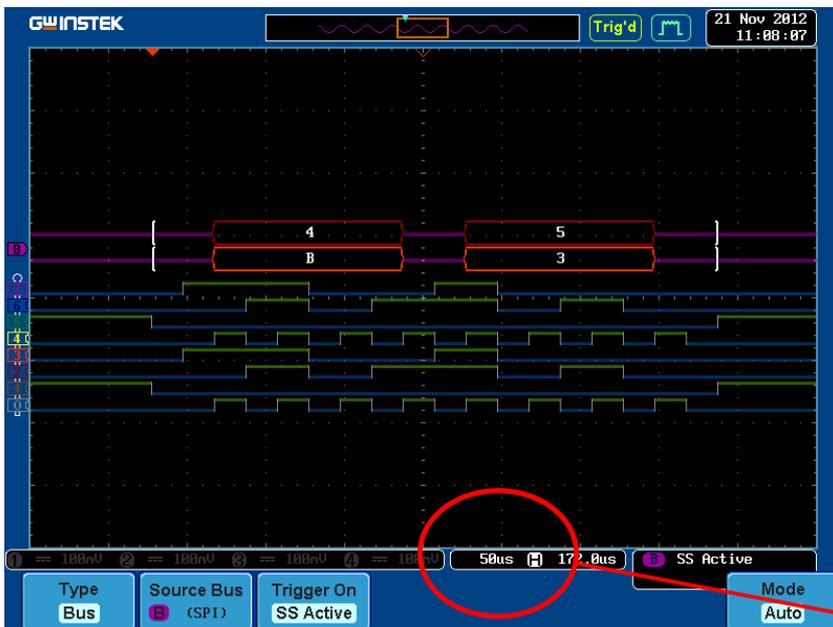
Set the trigger mode as Bus Mode

4. Press the bus decoding button at the middle of oscilloscope to set the decoding mode as bus mode.



Set bus decoding mode

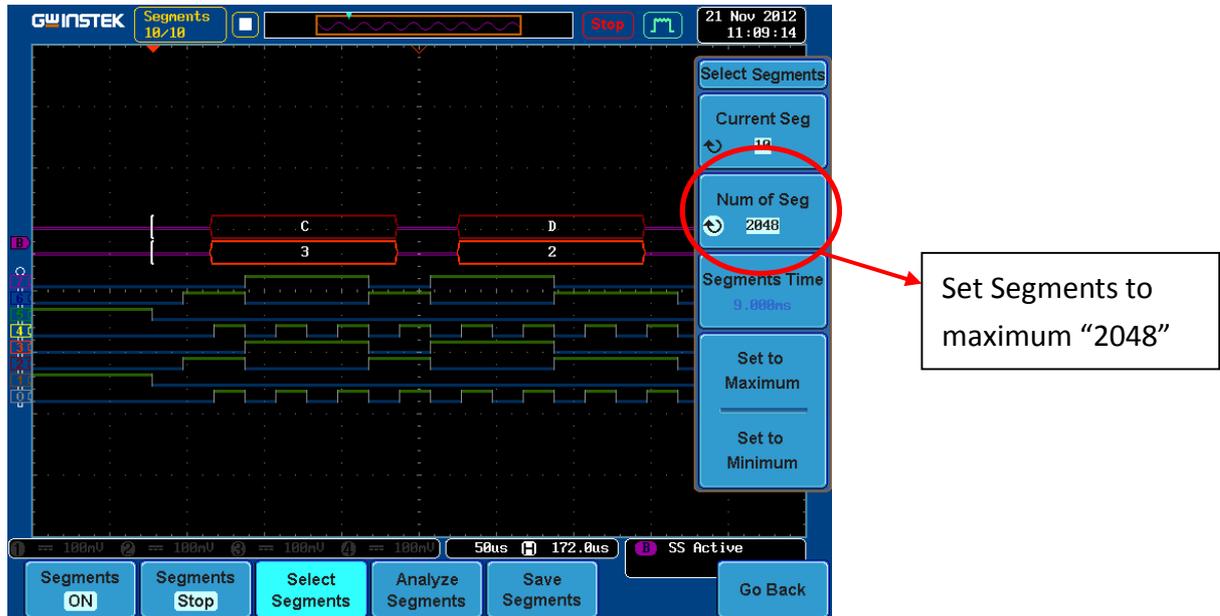
5. The events of interest can be moved to the middle position by pressing the horizontal adjustment button, then set the Time/Div horizontal time range to 50us/div.



Set Time base to 50us/div

6. Press the “Acquire” button at the upper-right hand side of oscilloscope to turn on the segmented memory function.

7. Press the “Select Segments” button at the bottom of the screen, then choose the interval range of each segment from “Num of Seg” on the right-hand side of the screen. If users want to choose the maximum segments, 2048 sets, they may press “Set to Maximum” button to set up the 2048 sets as maximum.



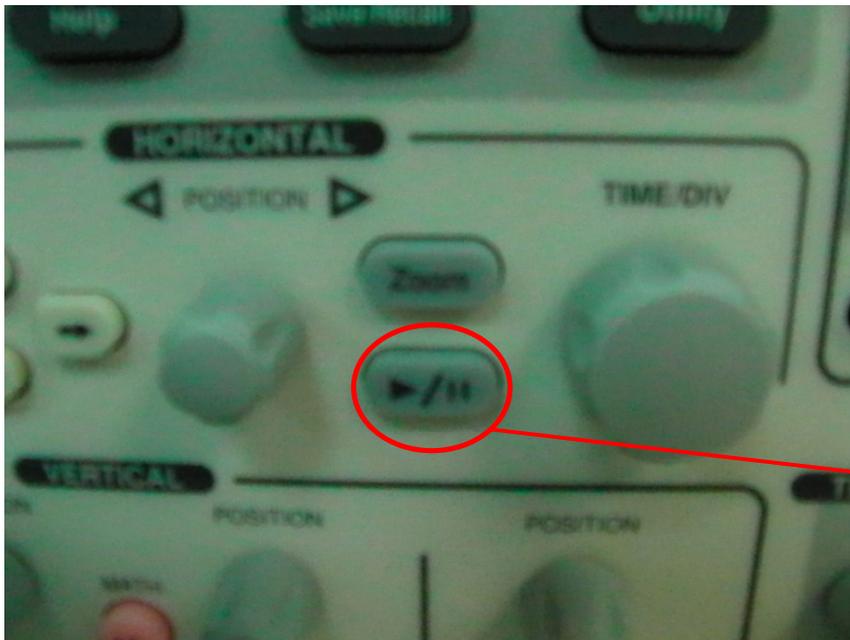
8. Press the “Segments Run” button at the bottom of the screen, then the oscilloscope will run the test within segments; after the measurement, press “Segments Stop”.

9. Press the “Current Seg” at the upper-right hand side on the screen, then users can adjust the anticipated segments by rolling Variable knob.



Observe the segments

10. Or press the “Play/Pause” button to run the automatic search function within segmented waveforms.



Using “Play/Pause” key to find the waveform in different segments