Tutorials

About the Tutorials

This chapter consists of seven tutorials. You have selected the one that is highlighted in red:

- Tutorial 1 - Fundamentals
- Tutorial 2 - Working with Channels
- Tutorial 3 - Triggering
- Tutorial 4 - Working with Special Modes
- Tutorial 5 - Working with Subchannels
- Tutorial 6 - Arbitrary Waveform Generator
- Tutorial 7 - Using the Graphical Waveform Editor

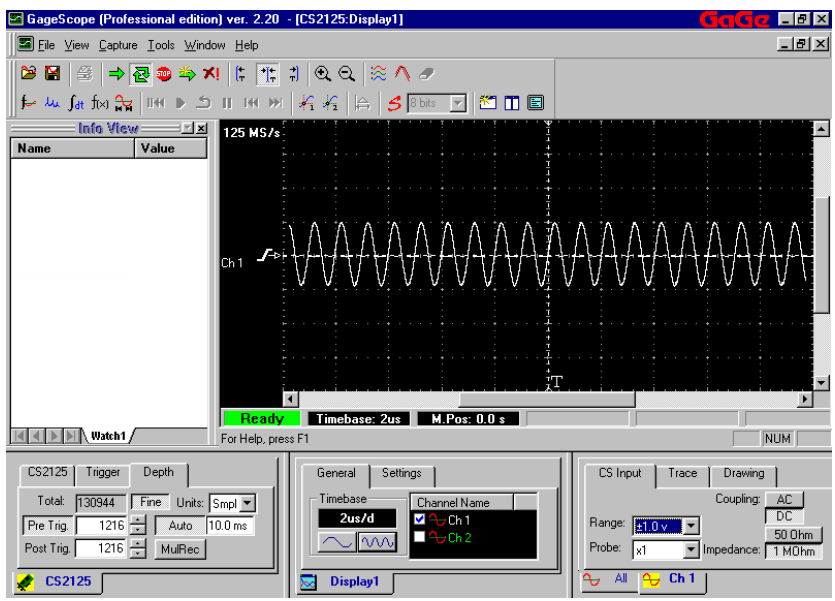
Each section is a self-contained tutorial. If you are new to GageScope®, it is recommended that you do the tutorials in the order they are presented, as each section assumes you have gone through the previous material.

Tutorial 5: Working with Subchannels

The Subchannel feature is of tremendous use in applications such as ultrasonics where the reflected echoes play a key role in identifying several key features of the medium.

Illustrative Example

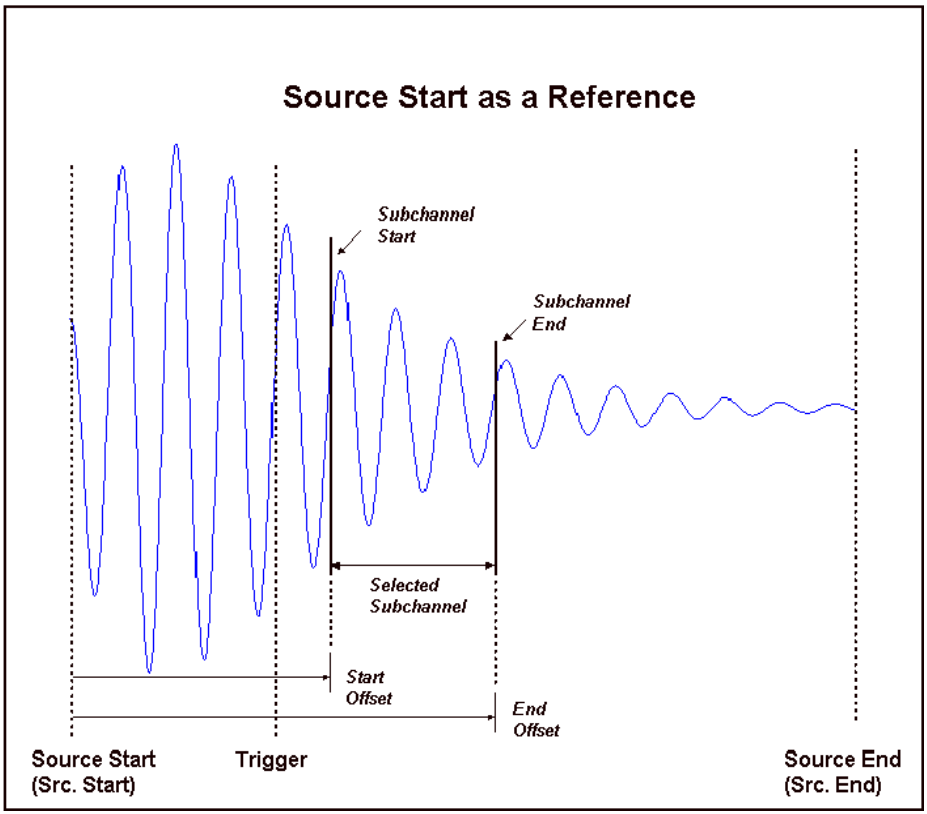
1 A 1MHz sine wave sampled at 125MHz is shown below:



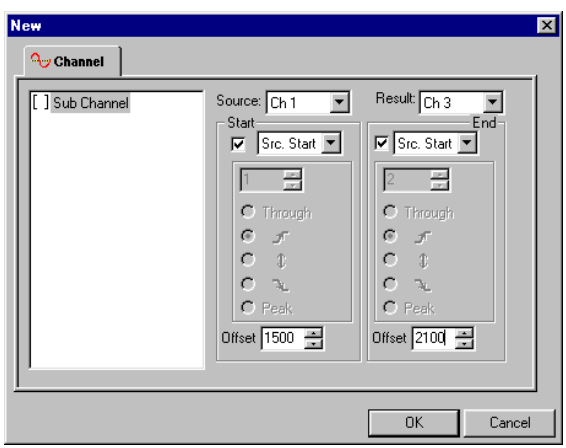
The acquisition contains 1216 pre-trigger and 1216 post trigger sample points. There are 10 cycles in the pre-trigger portion and 10 cycles in the post-trigger portion of the signal.

We will choose the portion of the signal between the sample point 1500 and 2100 such that the entire subchannel is extracted from the post-trigger part of the source channel 1. This means that the Start Offset is 1500 while the End Offset is selected to be 2100. Channel 3 is chosen as the resulting subchannel.

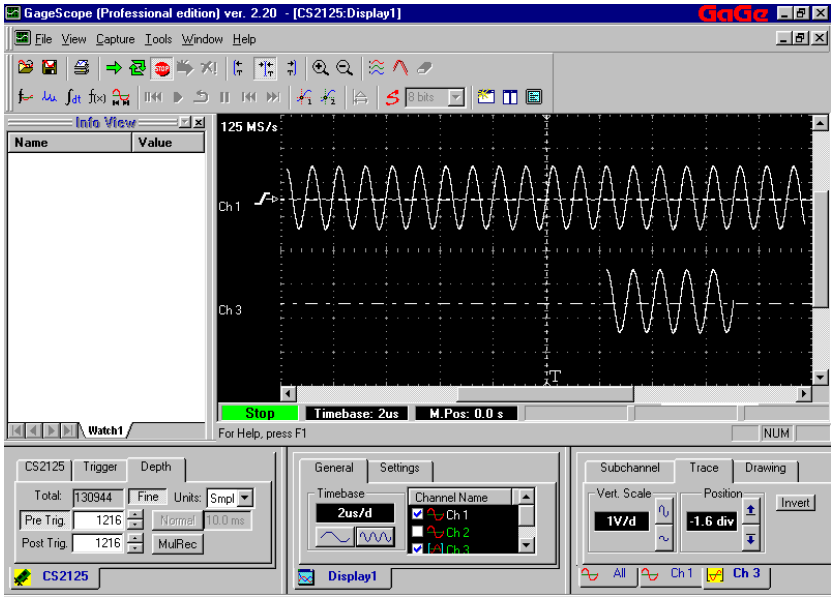
Figure below shows the acquisition parameters:



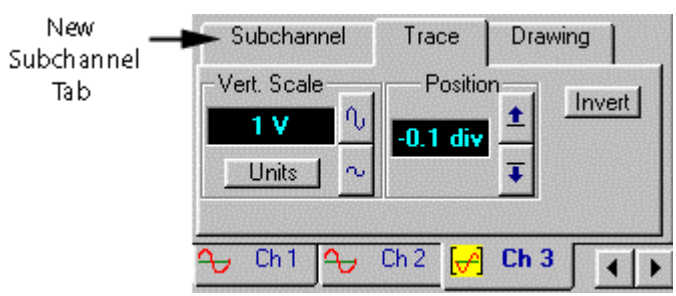
2 Settings in the subchannel window appear as:



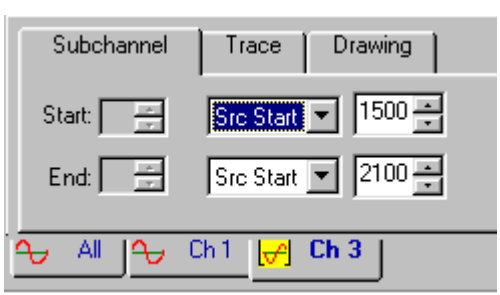
3 Click **OK**. The window with the Subchannel appears



4 Note that **Subchannel** now appears as a tab in the Channel Control area



5 Click on **Subchannel** to further explore the properties of the selected Subchannel



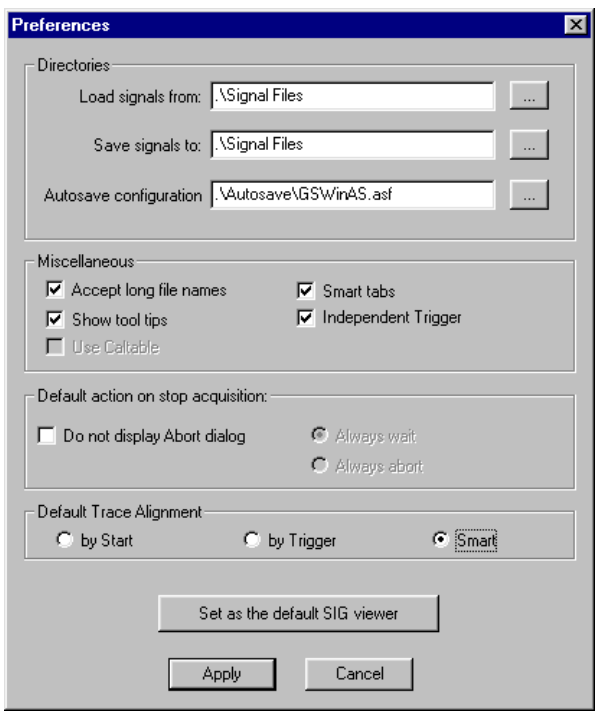
Note that the **Start** and **End** options are available in case the Subchannel is obtained

using the features of the source (Trough, Rising edge, Falling edge, and Peak)

The drop down menu shows that the Subchannel starts at sample point 1500 and ends at sample point 2100 with reference to the first point of the source channel i.e. **Src Start**

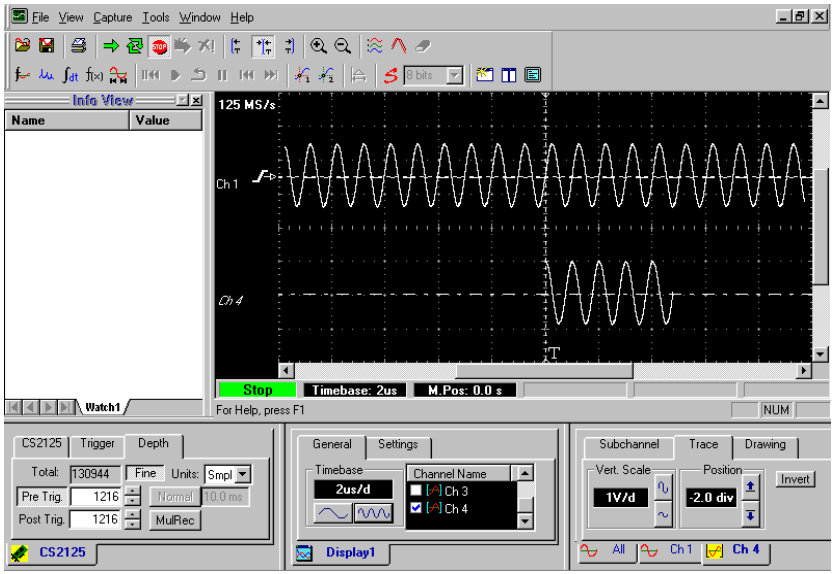
6 *The Subchannel can be aligned with the **Trigger**.*

From the **Tools** drop down menu, select **Preferences**. Now Select **Smart** in the **Default Trace Alignment** Box



Click **Apply**

7 ***Repeat steps 1 – 3***. The Subchannel appears aligned with the trigger position

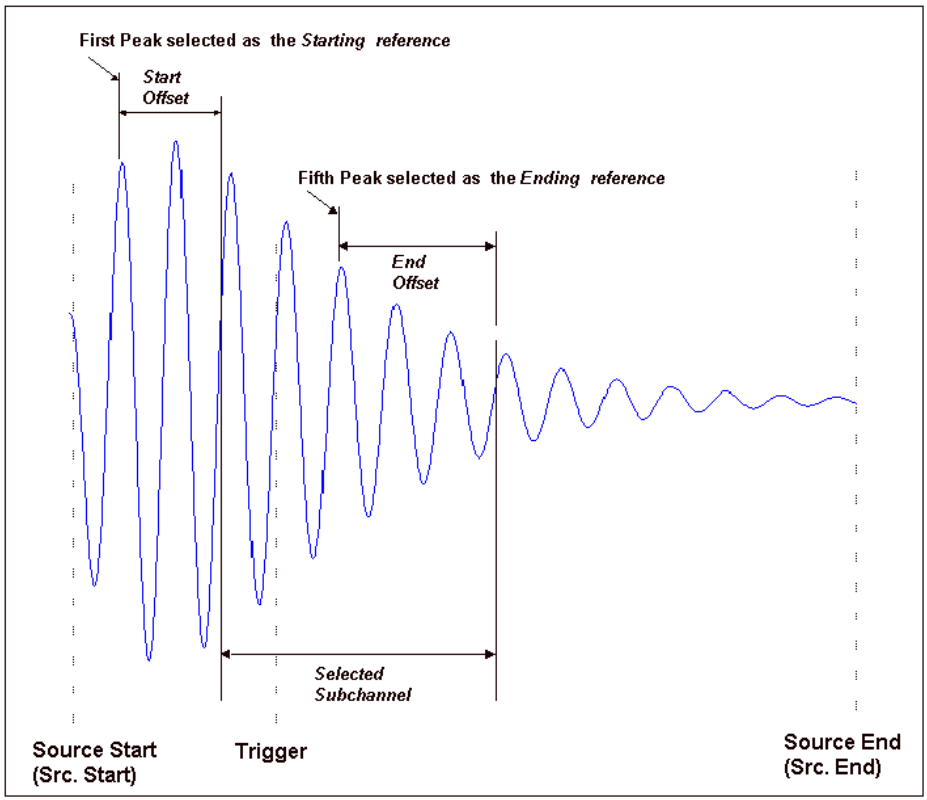


Note that the channel 3 appears as channel 4 as selected while repeating steps ***1 – 3.***

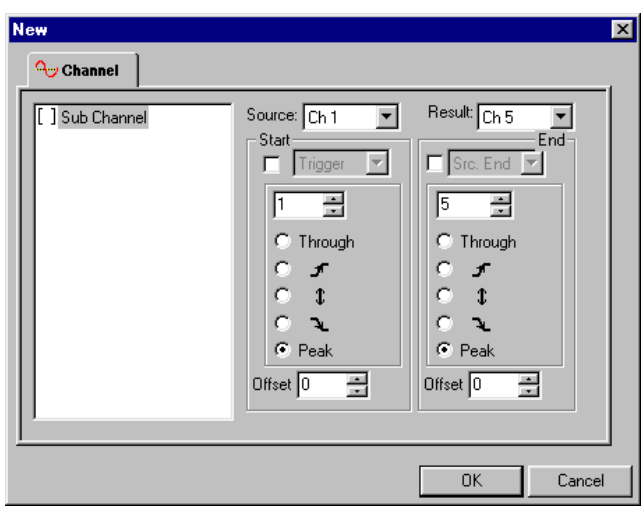
The Subchannel aligns itself with the trigger also when the **by Start** option is selected in the **Preferences** dialog box. Refer the Reference section in the manual for more details on Preferences.

8 Follow the procedure outlined below in case you wish to obtain the Subchannel using one the feature-based references (Peak, Rising edge, Falling Edge, Either Edge, and Trough) of the source signal.

Select the Subchannel between the first and the fifth peak of the original signal. There are no offsets specified for the present example:



9 Click on **Tools** in the Toolbar. Select **SubChannel**



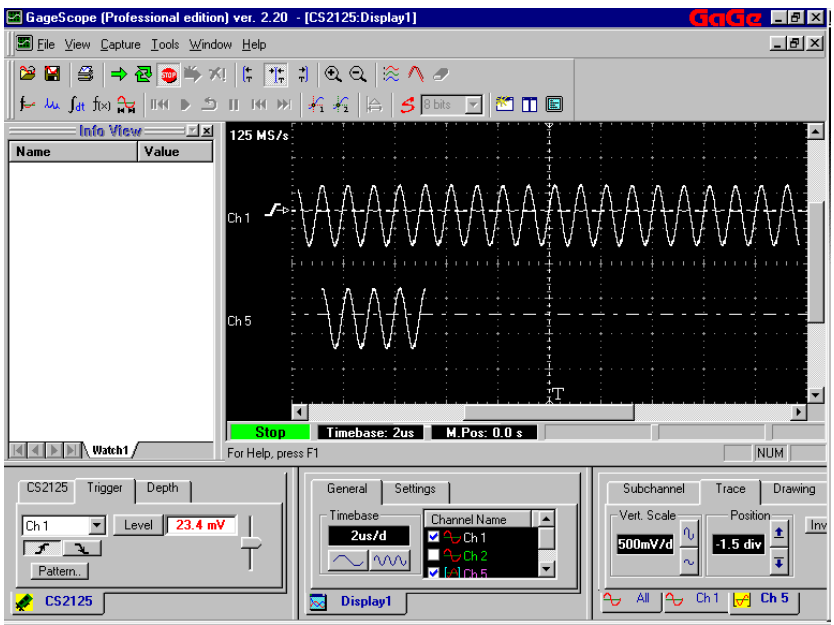
It can be seen that Channel 5 has been selected as the Subchannel. The Subchannel will conform to the following:

Sarting point of the Subchannel = First Peak + Offset

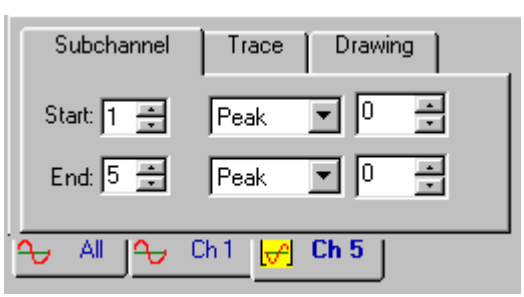
Ending point of the Subchannel = End Peak + Offset

In our case, since no offsets are applied, the Subchannel starts at the first peak and ends at the fifth peak.

10 Click **OK**. The Subchannel appears as Channel 5



11 Click on the **Subchannel** tab in the Channel Properties dialog box



The **Start** and the **End** options are now available.