Option /R VideoText

In this video we are going to illustrate the ability of the Novatech Instruments' Model 409B signal generator to phase lock it's four output signals to an external precision 10MHz reference signal. To do this the 409B must have option /R installed.

This is a view of the front panel of the 409B. Note that there are four BNC connectors labeled 0 to 3. The output signal on each of these four BNC connectors is independently programmable for frequencies up to 171 MHz.

The external precision 10MHz reference signal must be connected to a BNC connector mounted on the 409B rear panel. This connector is labeled 10MHz REF IN.
If this connector does not have the 10MHz label, then it does not have the option /R installed.

To provide the precision 10MHz reference signal we will use the Novatech Instruments Model 2975AR Rubidium Atomic Clock. At calibration the 2975AR is accurate to 5 parts in 10 ^11. This is much more precise than the 409B which is accurate to 1.5 parts in 10^6.

In our demonstration here, 10MHz from the 409b is in blue and 10MHz from the 2975AR is in yellow. As you can see these two signals slip with respect to each other since the 409B is not as accurate at the 2975AR.

To improve the accuracy of the 409B we will connect the 10MHz output of the 2975AR to the 10MHz Reference Input on the rear of the 409B. After doing this you will note that the two signals on the scope stop slipping because now the 409B is phase locked to the 2975. The LED on the front of the 409B blinks red for a few seconds and then turns solid green.

You can now independently set any of the output channels on 409B to any frequency up to 171MHz and the accuracy of these signals will be equal to the accuracy of the 2975AR.

Thank you for watching this video.