

## Exercise 1:

Aim: Showing radar stationery targets (Clutter) on the screen; see that the signals strength significantly decreases with the radar range; and check the influence of the Sensitivity Time Control

Procedure: Connect the parabolic antenna to the Didactical Primary Radar; be sure that the Power line and the USB-line are connected and start the program Didactical Primary Radar. The Antenna should be orientated through the window using a slightly decreased tilt (downwards: 7...10 Degrees).

Settings: (in Modulator Setup):           Pulse modulation:   Off  
   PRF:                    ≈25 Hz  
   Pulse length:       20 ns

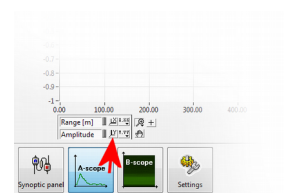
                  (in Processor Setup):           MTI:                   Off  
   Doppler:             Off  
   Doppler Bins 0...7: Off (all)

                  (in STC Setup):             STC:                   Off

All other settings in the Synoptic panel may be in default position.

Switch the Transmitter Power ON.

Switch the A-scope on screen; click on the Button for an automatic selection of the optimum amplitude values (in Y-dimension of the A-scope). Reduce the distance scale (in X-dimension) in the desired range (150 to 200 meters). Observe the signals on the A-scope. Find out which signals are echo signals, and which signals are only noise peaks.



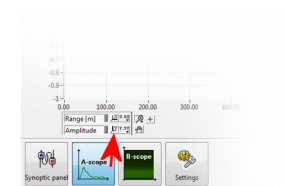
Find a value of voltage amplitude (in millivolts) that is higher than the most noise peaks but lower than the most echo signals. Write down this value:

This value will later used to as a threshold. ....mV

Find a second value of voltage amplitude that is nearly the maximum amplitude of the targets in the middle of the range of interest. Write down this value:

This value will later used to as a clipping level. ....mV

Switch the B-scope on screen; click again on the Button for an automatic selection of the optimum amplitude values. Remember: this is now in Z-dimension. The higher the value, the brighter the used color on the B-scope.



Adjust the range scale from zero to 150 or 200 meters.

Set the threshold level (black color) and the clipping level (white color) of the B-scope according the measured milli-voltages in A-scope.

Threshold level means that all signals having amplitudes less than this level are shown in black color. Clipping level means that all signals having higher amplitude than the clipping level are shown in white. All signals between these two levels are shown in a color



Why there are different bars of the same color over the entire length on the B-scope?

Why there are echo signals in a near region of distances although there are no obstacles?

Please switch the Sensitivity Time Control (STC) on and repeat all measurements! The very strong echo signals in near region that are received over the side lobes of the antenna are reduced now.