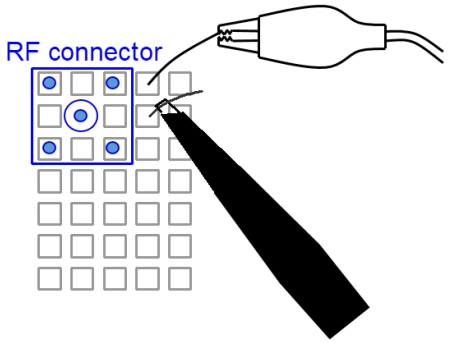
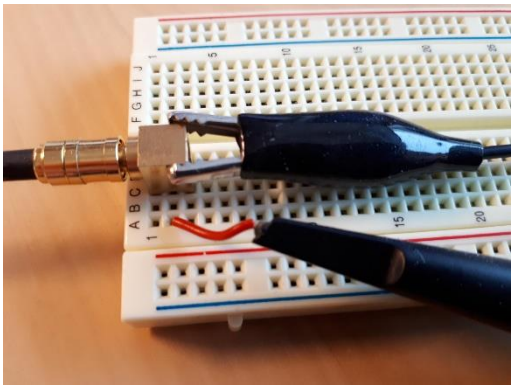
Introduction to NI Virtual Bench

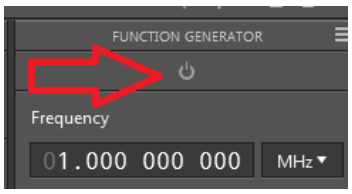
In this exercise you get started with the Virtual Bench (VB) by making simple testing: you take RF signal out from the function generator of the VB and measure that with its own oscilloscope.

Follow these instructions step by step:

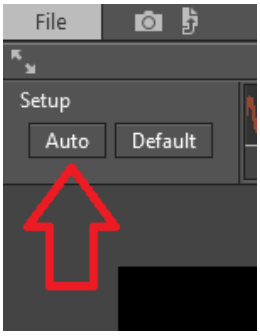
1. Connect *an RF coaxial connector* to the breadboard as shown below.
2. Connect *a cable* from VB's function generator (FGEN) to the RF connector.
3. Connect *an oscilloscope probe* to VB's channel one (CH 1).
4. Attach *a retractable hook tip* to the probe.
5. Connect *a short jumper wire* to the row where the center pin of the RF connector is.
6. Connect *the hook tip* to the wire as shown below.
7. Connect the *probe ground* to the RF connector as suggested below.




(an alternative way for grounding…)

8. Check that the *sliding (physical) probe attenuation switch* is set at 1X.
9. Set the function generator: Amplitude 1 Vpp, Frequency 1 MHz.
10. Turn on the generator: 

11. Press Auto in the top-left corner:

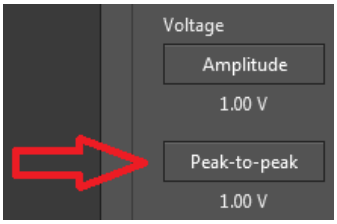


A signal should now appear on the screen.

12. Add peak-to-peak measurements to the screen.

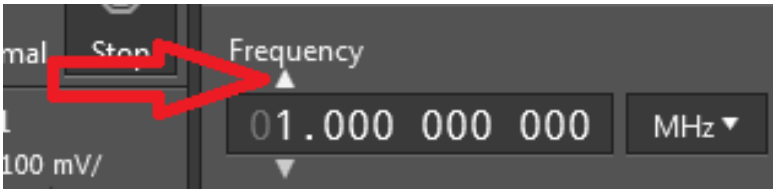
Press ruler

and then



(Note: for some reason, Virtual Bench shows equal amplitude and peak-to-peak values…)

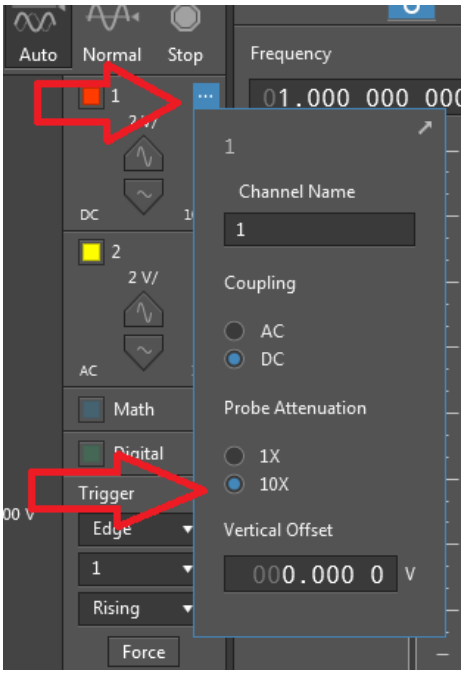
13. What is your measured peak-to-peak voltage compared to the "amplitude" setting (which is actually a peak-to-peak value) of the function generator?
14. Connect a 50-ohm resistor between the signal and ground at the RF connector. What is the measured peak-to-peak voltage in this case? _____
15. Remove the resistor. Set the frequency to 1 MHz and press Auto in the top-left corner. Increase the frequency from 1 MHz to 20 MHz by clicking on the arrow



or by scrolling with the cursor over the number. What happens to the measured-peak-to-peak voltages?_____

16. Slide the (physical) probe attenuation switch to 10X. Set the frequency 1 MHz and click Auto in the top-left corner. What is the peak-to-peak voltage shown on the screen? _____

To make Virtual Bench show the correct measured values on the screen, you have to manually set the probe attenuation setting in Virtual Bench according to your physical probe setting as shown here:



17. You can also play with other settings such as changing the amplitude of FGEN.