**Matlab Setup with AD9081 and ZCU102**

Jon.Kraft@analog.com, Dec 2023

Note: These were created, and verified to work, in Dec 2023. Things may have changed a bit since that time... But the general flow should be the same

* 1. First follow the instructions “General Setup Instructions for AD9081 and ZCU102”
  2. Install Matlab: 2022b (or later)
  3. Install all the toolboxes found here:
     1. <https://wiki.analog.com/phaser_matlab#installing_matlab>
  4. Install the latest version of "High Speed Converter Toolbox"
     1. <https://github.com/analogdevicesinc/HighSpeedConverterToolbox/releases>
     2. For me, I downloaded "AnalogDevicesHighSpeedConverterToolbox\_v22.2.1.mltbx"
     3. Then double click on that file. You may get a message that the toolbox "isn't supported" with this rev of Matlab. Just click ok.
  5. Install the "Phased Array Toolbox"
     1. This is only needed for the adaptive beamforming demos (not needed for the regular beamforming examples)
     2. <https://www.mathworks.com/products/phased-array.html?s_tid=AO_PR_info>

* 1. At a Matlab prompt, type:
     1. doc(adi.AD9081.Rx)
     2. help adi
     3. If it gives you an error, you didn't install the board support packages. If it shows you documentation, then you're good!
  2. Now try this example. At the Matlab prompts type:

rx = adi.AD9081.Rx;

rx.uri = 'ip:192.168.0.10';

rx.SamplesPerFrame = 1024;

rx.ChannelNCOFrequencies = [750e6,750e6,750e6,750e6];

dataNCO1 = rx()

If you got a bunch (actually exactly 1024 points) of complex data, then you're doing good!

* 1. Example:
     1. Open this example: <https://github.com/analogdevicesinc/HighSpeedConverterToolbox/blob/master/hsx_examples/ad9081/ad9081_rxtx_loopback.m>
     2. Change the uri to the IP address of your FPGA board
     3. Run the example!

