Step 1 Purchase AWR1843AOP EVM

- https://www.ti.com/tool/AWR1843AOPEVM
- For initial evaluation power supply is not needed. The EVM will be powered through USB.
- A power supply may be needed after initial evaluation.

Step 2 mmWave SDK

- Download the latest mmWave: Version: 03.06.00.00-LTS
- https://www.ti.com/tool/MMWAVE-SDK
-

Step 3 Install SICP2105 drivers on the PC

- Follow instructions in the EVM UG, “Section 2.10.1 Installing the Drivers”

Step 4 Prepare EVM for Flashing

- Configure the flashing SOP mode on the EVM
    - AWR1843AOP EVM User Guide available on the EVM page shows available switches and settings
        - https://www.ti.com/lit/ug/spruix8/spruix8.pdf

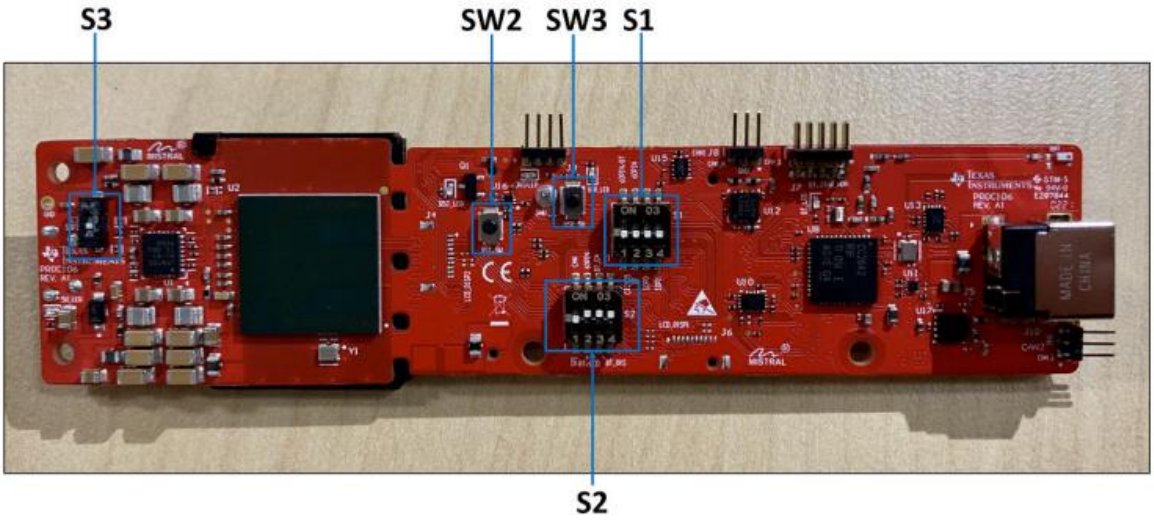


Figure 2-11. AWR1843AOPEVM Switches

Table 2-1. Switches

Reference Designator	Switch ON	Switch OFF
S1.1	UART routed to 60-pin connector / Bluetooth	UART routed to CP2105 UART
S1.2	UART routed to 60-pin connector	UART routed to Bluetooth
S1.3	SOP0 pulled down	SOP0 pulled up
S1.4	SOP1 pulled up	SOP1 pulled down
S2.1	SPI MISO/MOSI routed to CAN Transceiver	SPI MISO/MOSI routed to DCA1000/ MMWAVCEICBOOST / BT/ LCD
S2.2	SPI CS routed to 60-pin connector	SPI CS routed to BT/ LCD
S2.3	Bluetooth Enable	Bluetooth Disable
S2.4	Not Connected	Not Connected
S3	SOP2 Pulled up	SOP2 Pulled down
SW2	Reset switch	
SW3	User switch	

2.8.1 SOP Configuration

Table 2-9. SOP Switch Settings

	SOP0(S1.3)	SOP1(S1.4)	SOP2(S3)
Flashing	OFF	OFF	ON
Functional	OFF	OFF	OFF
MMWAVEICBOOST Mode (JTAG, and so forth)	OFF	OFF	OFF
DCA1000 (mmWave Studio)	OFF	ON	OFF
DCA1000 (SDK)	OFF	OFF	OFF

Note

SOP0 is pulled high when switch is on the OFF position and low when the switch is the ON position. SOP 1 and 2 are pulled low when the switch is OFF and high when the switch is ON.

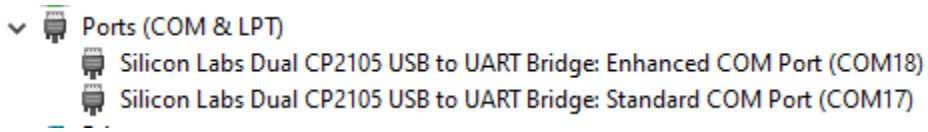
In MMWAVEICBOOST mode, the AWR1843AOPEVM is mounted on the MMWAVEICBOOST and the SOP mode is set by the MMWAVEICBOOST.

- Here is the Full Configuration

Flashing Mode - Modular			
Switch	Position	Description	Note
S1.1	OFF	UART routed to CP2105 UART	
S1.2	ON	UART routed to 60-pin connector	Does not matter for Flashing Mode - Modular
S1.3	OFF	SOP0 Pulled Up	
S1.4	OFF	SOP1 Pulled Down	
S2.1	OFF		Does not matter for Flashing Mode - Modular
S2.2	ON		Does not matter for Flashing Mode - Modular
S2.3	ON		Does not matter for Flashing Mode - Modular
S2.4	ON	Not connected	Does not matter for Flashing Mode - Modular

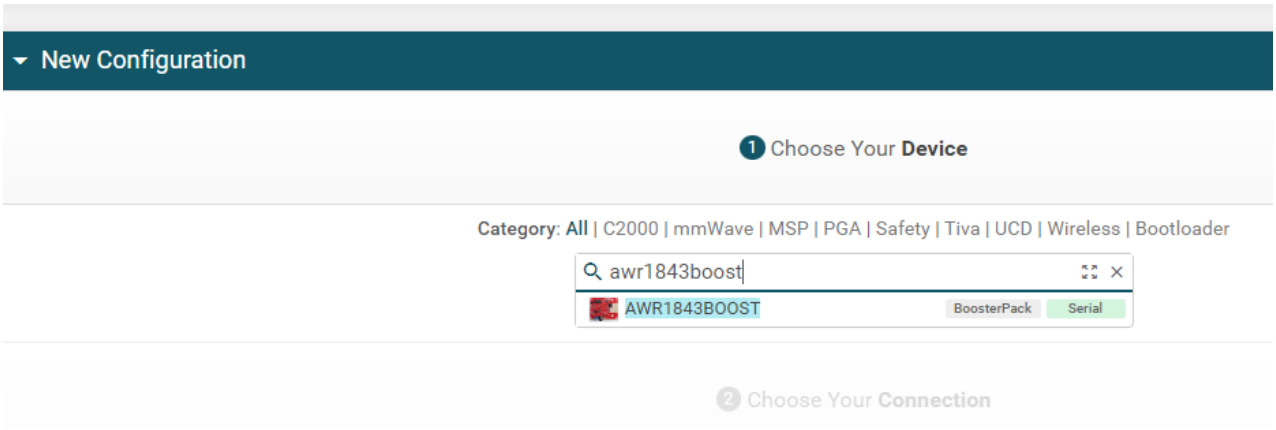
S3	ON	SOP2 Pulled up	Controls flashing

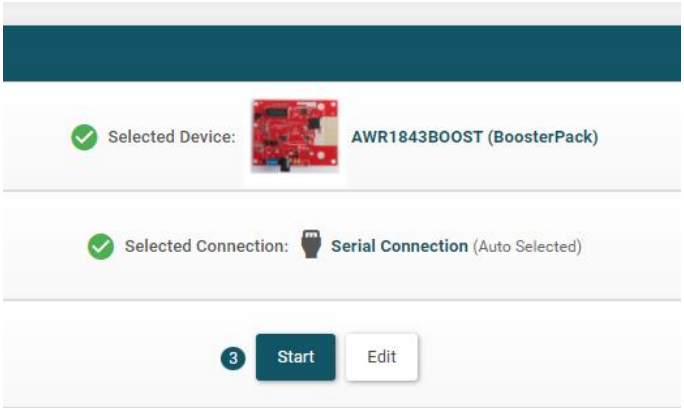
- Connect the EVM through the USB micro cable to the PC. This should power on the EVM
- Open “Device Manager” in Windows and check that the COM ports are visible as below. If the COM ports are not visible it means that the SICP2105 drivers have not been installed.

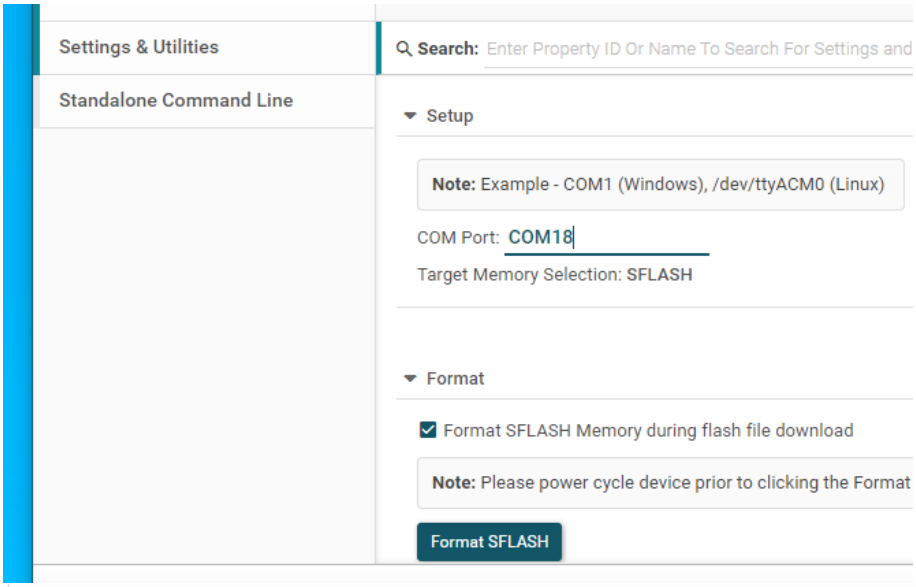


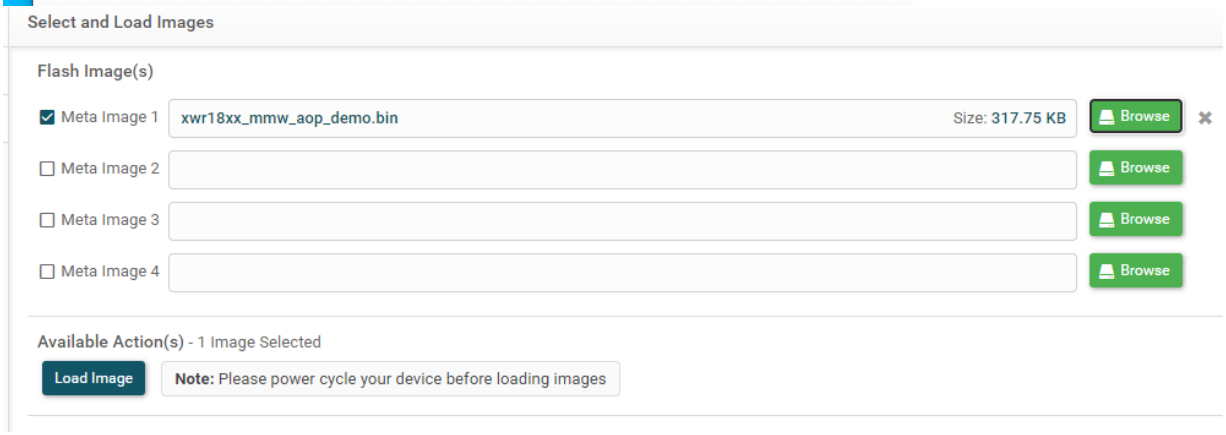
Step 5 Flash latest AWR1843AOP demo on the EVM using Uniflash tool

- Download latest version of Uniflash tool: https://www.ti.com/tool/UNIFLASH
- Open Uniflash
- Choose Device “AWR1843BOOST”
- Click “Start”
- Select “Settings & Utilities” (left menu)
- Update the “COM Port” with the value of the “Enhanced COM Port” read in the Device Manager
- Select “Program” (left menu)
- Browse to following AOP demo flashable binary:
  - C:\ti\mmwave_sdk_03_05_00_04\packages\ti\demo\xwr18xx\mmw\ xwr18xx_mmw_aop_demo.bin
- Select “Load Image”
- Upon successful completion one should see the following message:
  - [10/7/2022, 10:04:24 AM] [SUCCESS] Program Load completed successfully.
- Power off the EVM









Step 6 Prepare EVM to run the demo

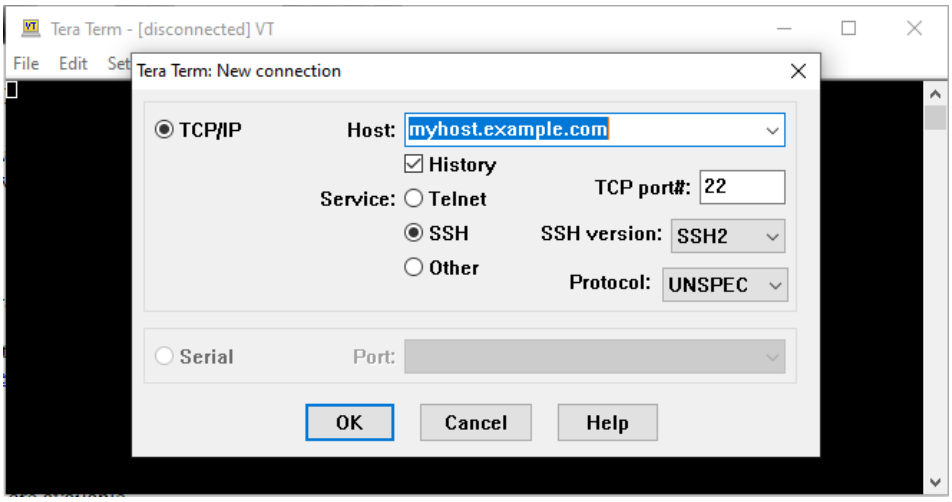
- Configure functional SOP Mode for EVM
- We only need to perform following update
    - S3 = OFF

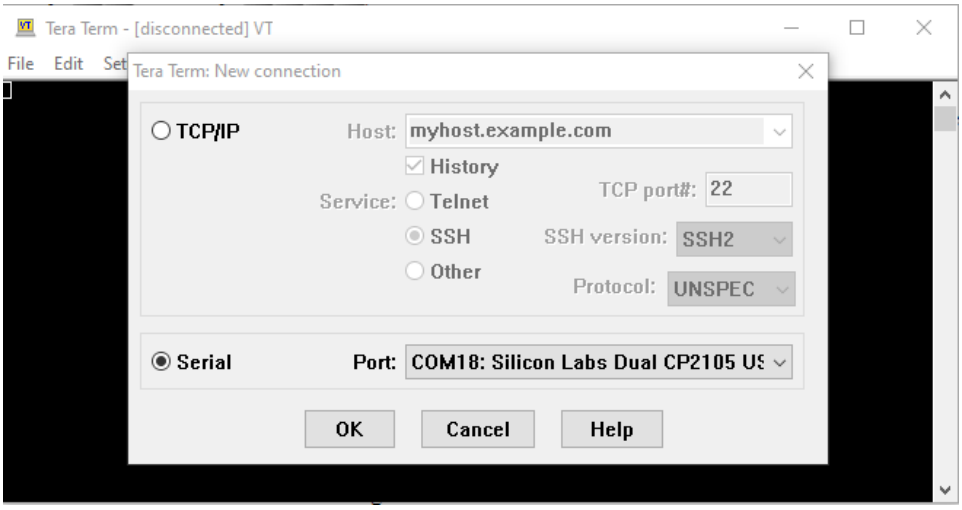
- For reference we provide following full configuration (Modular means that the EVM is used in standalone, not connected to other board such as DCA1000 or MMWICBOOST – we will view the purpose of these boards later)

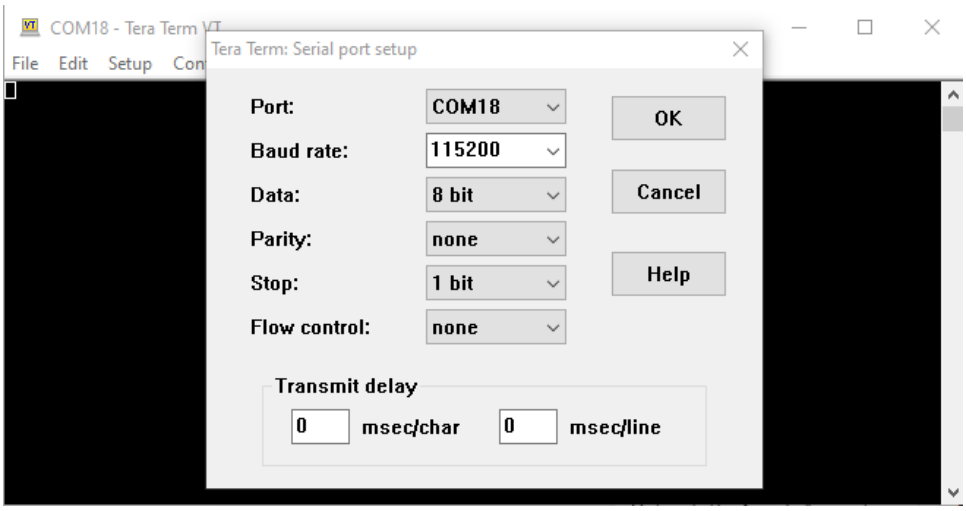
Functional Mode - Modular			
Switch	Position	Description	Note
S1.1	OFF	UART routed to CP2105 UART	
S1.2	ON	UART routed to 60-pin connector	Does not matter for Functional Mode - Modular
S1.3	OFF	SOP0 Pulled Up	
S1.4	OFF	SOP1 Pulled Down	
S2.1	OFF		Does not matter for Functional Mode - Modular
S2.2	ON		Does not matter for Functional Mode - Modular
S2.3	ON		Does not matter for Functional Mode - Modular
S2.4	ON	Not connected	Does not matter for Functional Mode - Modular
S3	OFF	SOP2 Pulled down	Controls flashing

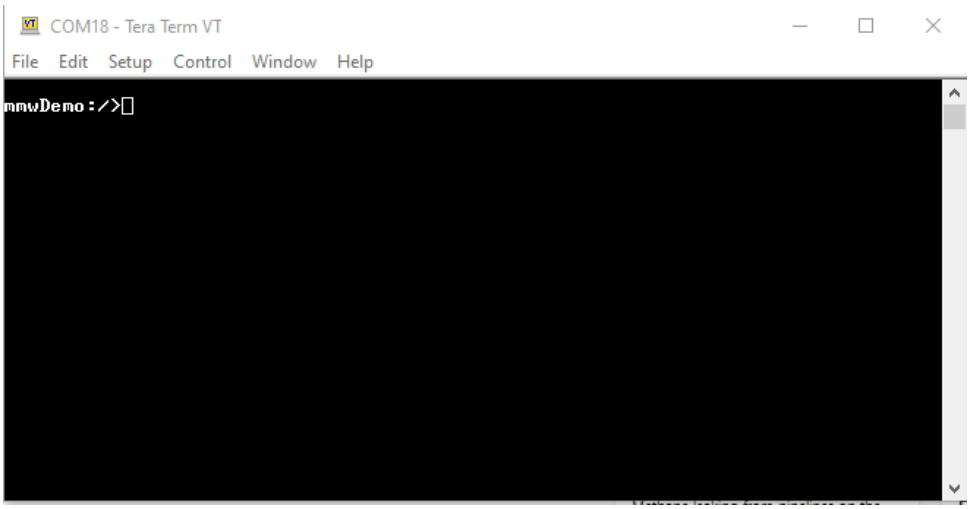
Step 7 Sanity Test that demo was flashed and runs successfully

- It is possible to perform a quick sanity test that the demo was flashed and runs on the EVM after power up.
- When the demo starts running it will send a prompt using the UART “Enhanced COM Port”.
- Here is how we can test
- Connect the AOP EVM to the PC using the micro USB cable to power on the board.
- Open a serial emulator terminal such as Tera Term (https://ttssh2.osdn.jp/index.html.en)
    - Select Serial and the “Enhanced COM Port” number COM 18 (in this example), Select OK
    - Select Setup-> Serial port…
    - Update the “Baud rate” to 115200, Select OK
    - Type Enter on the PC Keyboard
    - If the demo has been flashed and runs on the board one should see the prompt “mmwDemo :/>”


Tera Term - [disconnected] VT
File Edit Set
Tera Term: New connection
TCP/IP
Host: myhost.example.com
History
Service: Telnet
TCP port#: 22
SSH
SSH version: SSH2
Other
Protocol: UNSPEC
Serial
Port:
OK
Cancel
Help

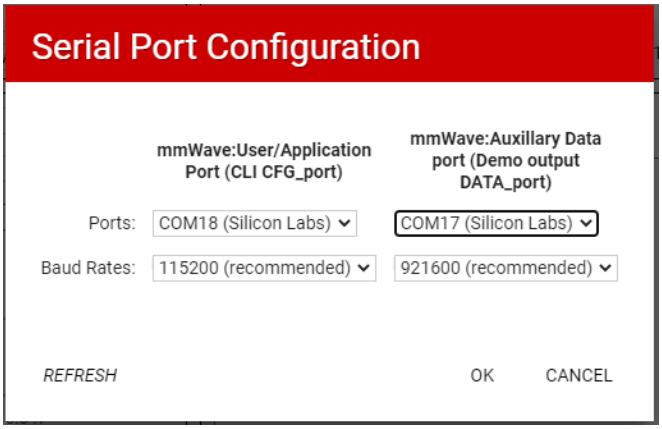

Tera Term - [disconnected] VT
File Edit Set
Tera Term: New connection
TCP/IP
Host: myhost.example.com
History
Service: Telnet
TCP port#: 22
SSH
SSH version: SSH2
Other
Protocol: UNSPEC
Serial
Port: COM18: Silicon Labs Dual CP2105 US
OK
Cancel
Help

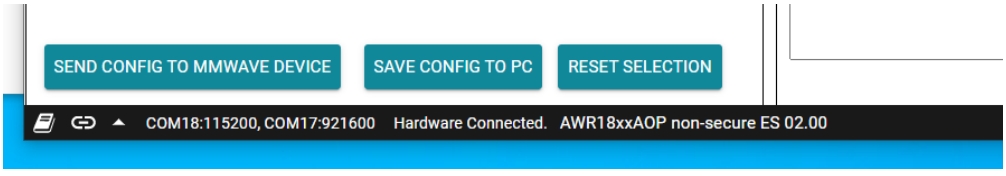

COM18 - Tera Term VT
File Edit Setup Con
Tera Term: Serial port setup
Port: COM18
Baud rate: 115200
Data: 8 bit
Parity: none
Stop: 1 bit
Flow control: none
OK
Cancel
Help
Transmit delay
0 msec/char
0 msec/line


COM18 - Tera Term VT
File Edit Setup Control Window Help
mmwDemo:/>

Step 8 mmWave Demo Visualizer - Start Visualizer and Configure Serial Ports

- A visualizer has been developed to be used with the mmWave SDK demo
- The visualizer can be downloaded and run on the PC or it can also be used from the TI Cloud Tools.
- The visualizer has two purposes
    - Configure the demo and radar sensor
    - Display the processed data sent through the “Standard COM” port to the PC from the sensor
- The following visualizer is used with AWR1843AOP EVM
    - mmWave Demo Visualizer (ti.com)
- At this point, make sure that the AOP EVM is powered on and is running the demo
- Also make sure that there is no other application (such as terminal emulator) using the COM ports.
- Here are the steps to use the Visualizer
    - Start the Visualizer with Chrome Browser. VERY IMPORTANT
    - Read “How to use “mmWave Demo Visualizer” (reading it one time is sufficient) – CLOSE the window
    - Configure Serial Ports
        - Click Select “Options-> Serial Port” (Upper Red Menu)
        - Update as follows
        - User/Application Port – “ Enhanced COM Port”
        - Auxiliary Data Port - “Standard COM Port”
        - Select OK
        - At this point there should be a message at the bottom of the page mentioning “Hardware Connected”

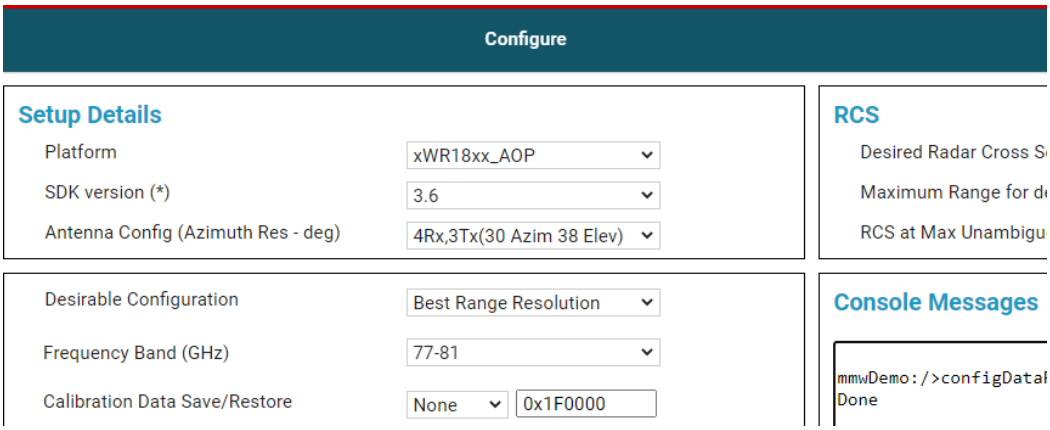




Step 9 mmWave Demo Visualizer – Demo and Sensor Configuration

There are two ways to configure the demo and sensor

- Create/Save a configuration using the “Configure” Tab in the Visualizer



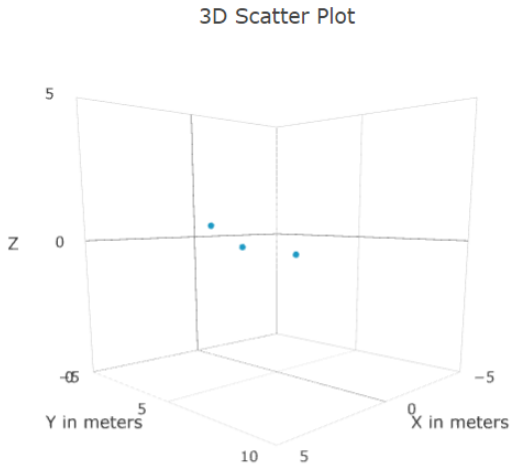
- Load a configuration that was provided in the mmWave SDK in
    - C:\ti\mmwave_sdk_03_05_00_04\packages\ti\demo\xwr18xx\mmw\profiles

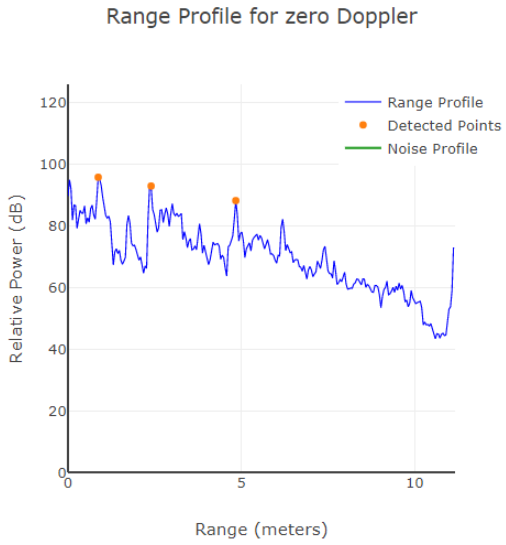
Step 10 mmWave Demo Visualizer – Create and Save a new configuration

- Fill out sections in the “Configure” menu
  - Setup Details
  - Scene Selection
  - Plot Selection
  - RCS
- Save Configuration for Reference
  - Select “SAVE CONFIG TO PC”
  - The configuration file is saved to the PC “Downloads” folder

- Run the Configuration
  - Select “SEND CONFIG TO MMWAVE DEVICE”
  - The “Console Messages” window should display the commands sent to the EVM. There should not be any Error Message

- Select the “Plots” Tab
- One should see the real-time display of data received from sensor. As shown below





Step 11 mmWave Demo Visualizer – Load a pre-defined configuration

- Assume the EVM has been powered on and it is running the mmWave SDK demo
- Assume the Visualizer has been started and the Serial Ports have been initialized as described in previous Step 7
- Select the “Plots” tab
- Select “LOAD CONFIG FROM PC AND SEND”
- Select one of the AOP profiles provided
    - C:\ti\mmwave_sdk_03_05_00_04\packages\ti\demo\xwr18xx\mmw\profiles\profile_2d_aop.cfg
    - C:\ti\mmwave_sdk_03_05_00_04\packages\ti\demo\xwr18xx\mmw\profiles\profile_3d_aop.cfg

- One should see the real-time display of data received from sensor. Similar to Step 9