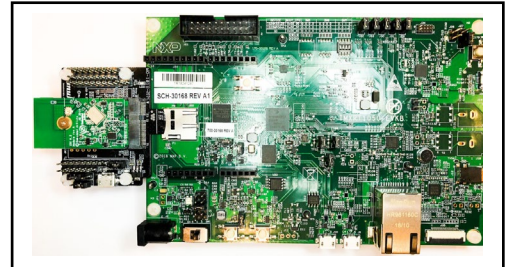


**Murata Wi-Fi/BT (CYW)
Solution for i.MX**

FreeRTOS Quick Start Guide



Revision History

Revision	Date	Author	Change Description
1.0	May 29, 2019	T. Inoue P. Sah	Initial Release
2.0	Nov 17, 2020	TF	Stripped the document to be Quick Start Guide. See FreeRTOS User Guide in References section for previous version.

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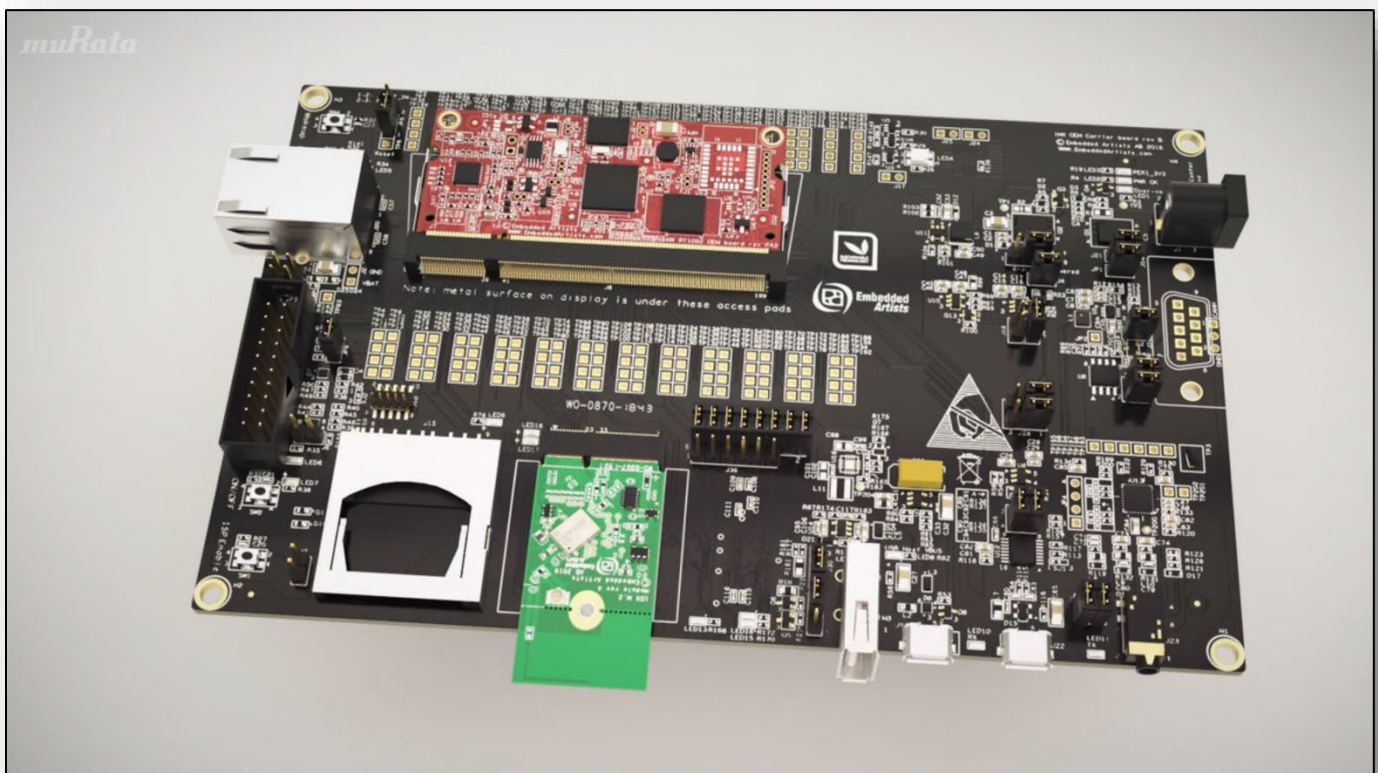
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1 Introduction

This document details enabling [Murata's Wi-Fi/Bluetooth modules](#) on [NXP i.MX RT Evaluation Kits](#) (running FreeRTOS), using [Embedded Artists' Wi-Fi/BT EVB's](#). Murata supports several combinations of NXP i.MX RT10xx EVK's and Wi-Fi/Bluetooth M.2 EVB's. This Quick Start documents only one hardware/software configuration to introduce users to the Murata solution. For more details on different configurations supported, please refer to the [Murata Wi-Fi/BT \(CYW\) Solution for i.MX FreeRTOS User Guide](#).

The [NXP](#) and [Embedded Artists](#) platforms currently supported are based on i.MX RT microprocessors. The wireless solution for these platforms use either the Embedded Artists' Wi-Fi/BT M.2 EVBs directly, or by combining with the [Murata's uSD-M.2 Adapter](#).

Figure 1: Murata M.2 EVB on Embedded Artists' i.MX RT1062 Developer Kit



The example setup used to illustrate the various steps is NXP [i.MX RT1050 EVKB](#) with Murata [Type 1DX](#) module (on Embedded Artists' M.2 EVB with uSD-M.2 Adapter interconnect), connected to a host PC running Windows®.

2 References

2.1 Murata's uSD-M.2 Adapter Landing Page

This [website landing page](#) provides latest/comprehensive information on Murata's adapter including links to where it can be purchased.

2.2 Embedded Artists' M.2 Modules Landing Page

This [website landing page](#) provides latest/comprehensive information on Embedded Artists' M.2 Evaluation Boards which enable Murata Wi-Fi/BT modules for easy evaluation.

2.3 Murata's i.MX Wireless Solutions Landing Page

This [website landing page](#) provides latest/comprehensive information on Murata's i.MX Wireless solutions which use the uSD-M.2 Adapter as a key enabler so customers can easily evaluate Murata's modules on i.MX processors.

2.4 Murata's Community Forum Support

Murata's Community provides online support for all of Murata's i.MX Wireless solutions. Refer to [this link](#) for existing support threads.

2.5 Murata Wi-Fi/BT Solution for i.MX Hardware User Manual

This [manual](#) describes the Murata uSD-M.2 Adapter hardware. All interface signals to the NXP i.MX RT, 6, 7, and 8 EVK's are described. Specifics on interfacing each i.MX EVK to Murata uSD-M.2 Adapter are provided.

2.6 Murata Wi-Fi/BT (CYW) Solution for i.MX FreeRTOS User Guide

This [User Guide](#) details steps to get Murata Wi-Fi/BT Cypress chipset-based solution up and running quickly on i.MX RT EVK's.

2.7 Murata uSD-M.2 Adapter Datasheet (Rev B1)

This [datasheet](#) documents the current version of the Murata's latest uSD-M.2 adapter hardware and its interfacing options.

2.8 Murata uSD-M.2 Adapter Datasheet (legacy Rev A)

This [datasheet](#) documents the current version of the Murata's legacy uSD-M.2 adapter hardware and its interfacing options. This adapter version is no longer manufactured.

3 Example Setup (i.MX RT1050 EVK with Type 1DX)

3.1 Hardware

The figures below show the hardware setup used in this example. The Embedded Artists' 1DX M.2 EVB is connected to the i.MX RT 1050 EVKB using Murata's uSD-M.2 Adapter.

Figure 2: Connecting the EVB to the EVK

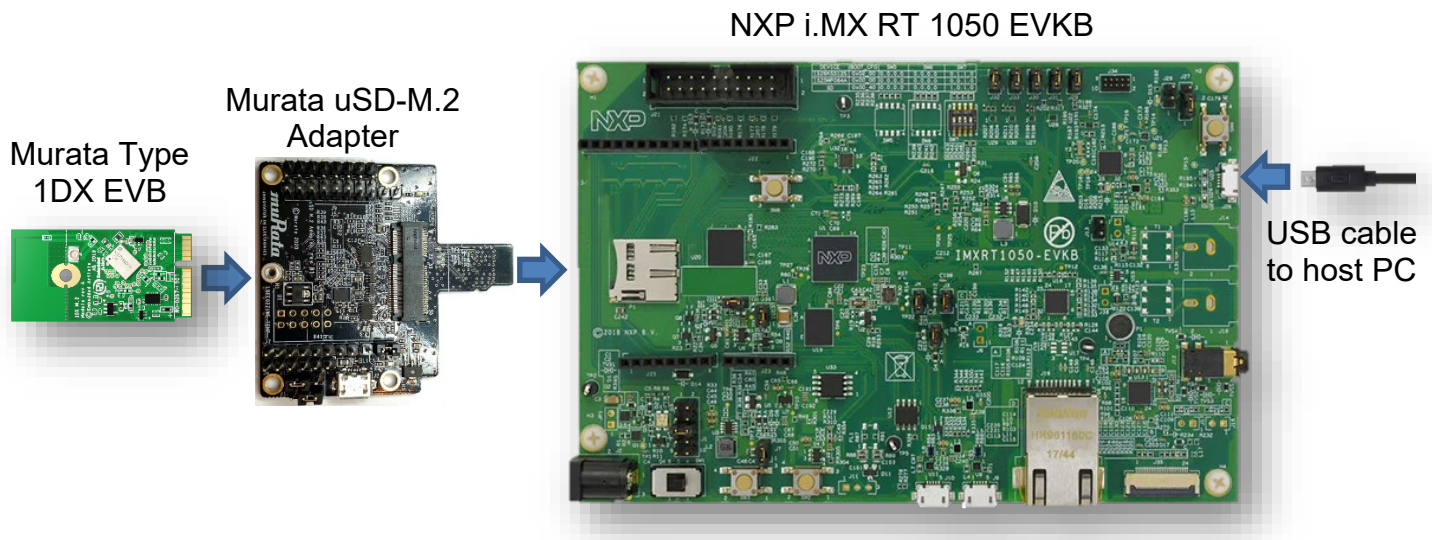
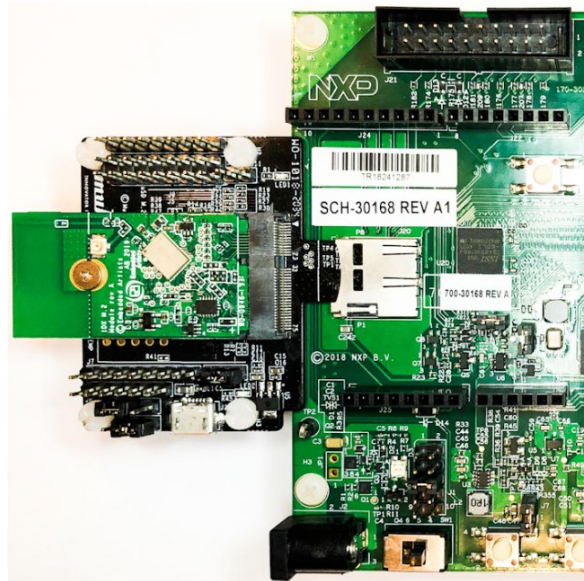


Figure 3: Connected setup



3.2 Software

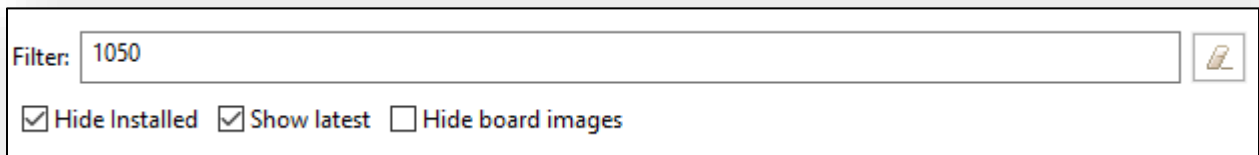
While multiple IDEs can be used to develop on the i.MX RT 1050 EVKB, this example uses the NXP MCUXpresso IDE.

1. Download and install the following software.
 - a. [MCUXpresso IDE](#)
 - b. [mbed Virtual COM Port Driver](#) (The EVKB must be plugged in before installing this)
 - c. A terminal application ([Tera Term](#), [PuTTY](#), etc.).
 - d. [iPerf](#)

Refer to the [NXP i.MX RT 1050 EVKB getting started page](#) for more details.

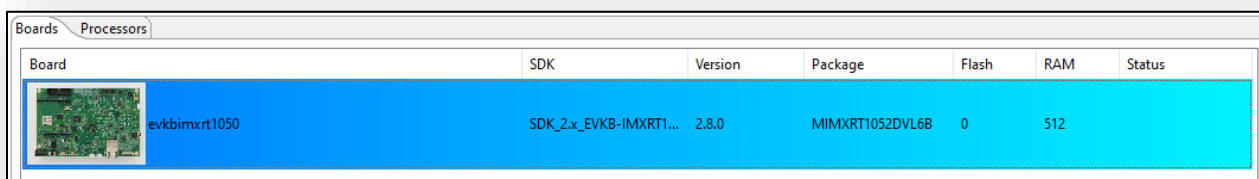
2. Launch the installed MCUXpresso IDE
3. On the Welcome page, click on **Download and Install SDKs**. If the Welcome page is not shown, it can be accessed from the menu item Help -> Welcome.
4. Type “1050” in the filter box.

Figure 4: Finding SDK for i.MX RT1050 EVK



5. Click on **evkbimxrt1050** item on the search result (Board pane) and click on **Install**.

Figure 5: Selecting correct SDK



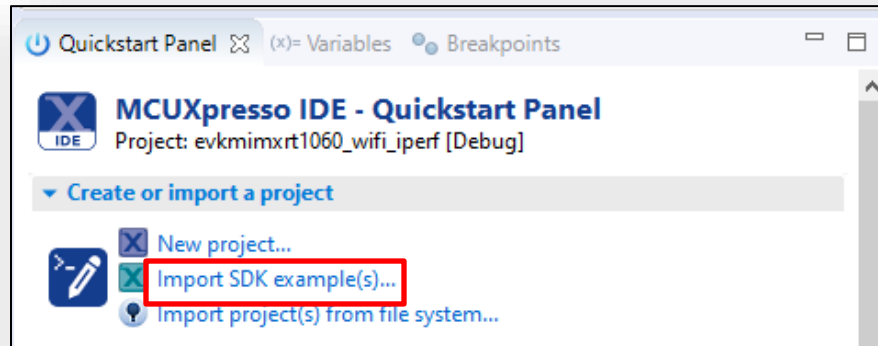
6. Accept the license agreement and click on **Finish** download and install the SDK.

4 Import Example

Various sample applications are provided by the SDK. The `wiced_iperf_4343W` example, which is a performance test for the 1DX EVB, will be used in this document.

1. Click on **Import SDK example(s)...** in the Quickstart Panel. (If the Welcome page is still open, either close it, or click on the **IDE** icon).

Figure 6: Import SDK



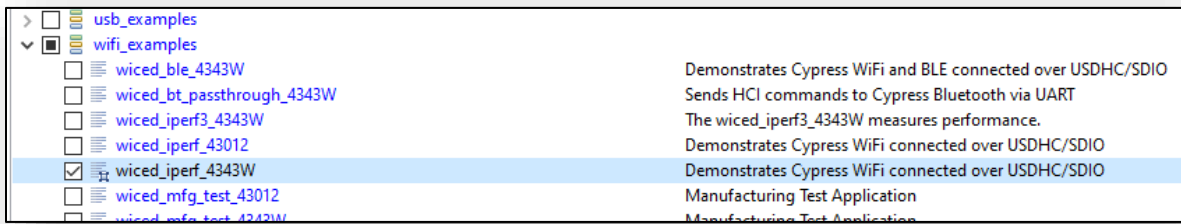
2. Select **evkbimxrt1050** board and click the **Next** button.

Figure 7: Select EVK to use



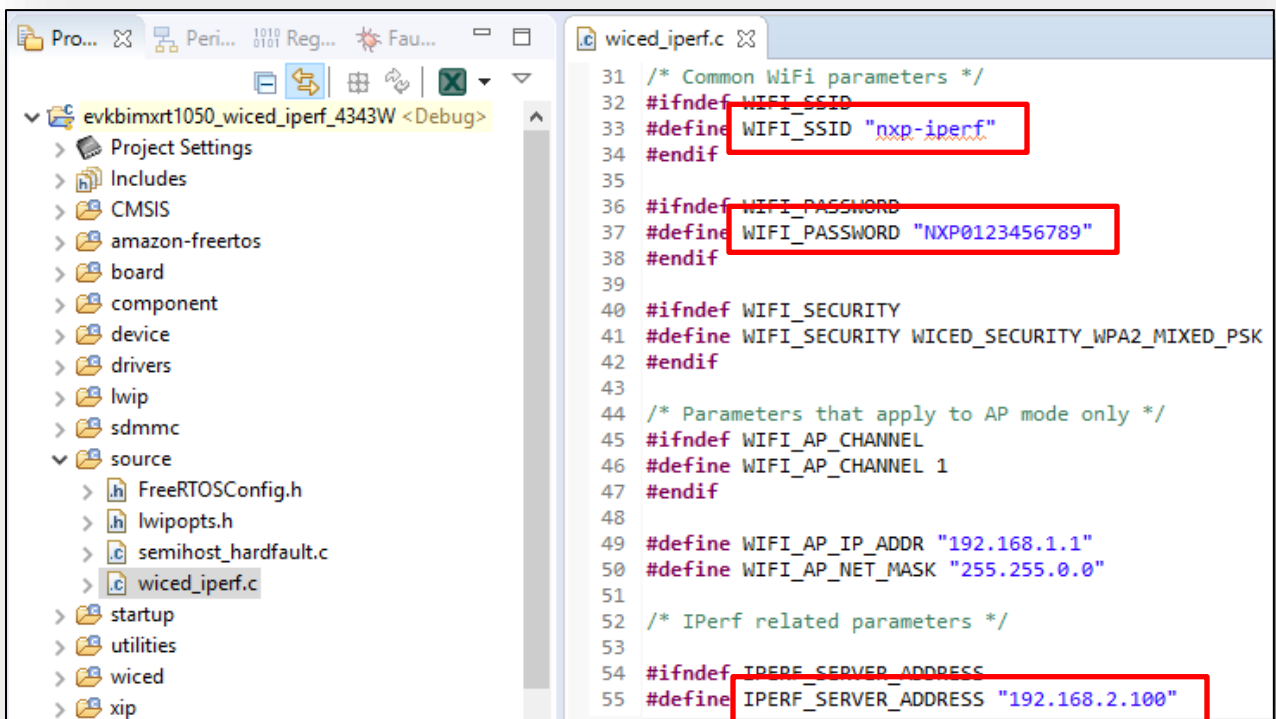
- Expand **wifi_examples** and select **wiced_iperf_4343W**. Click **Finish**. Ensure **SDK Debug Console** is set as **UART** in **Project Options**.

Figure 8: Import example



- Open `evkbimxrt1050_wiced_iperf_4343W/source/wiced_iperf.c` file and modify the **WIFI_SSID**, **WIFI_PASSWORD** and **IPERF_SERVER_ADDRESS** macros as per your setup.

Figure 9: Customize example

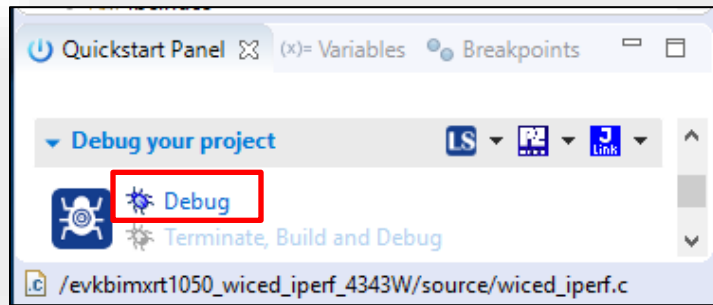


- Save the changes.

5 Build and Run

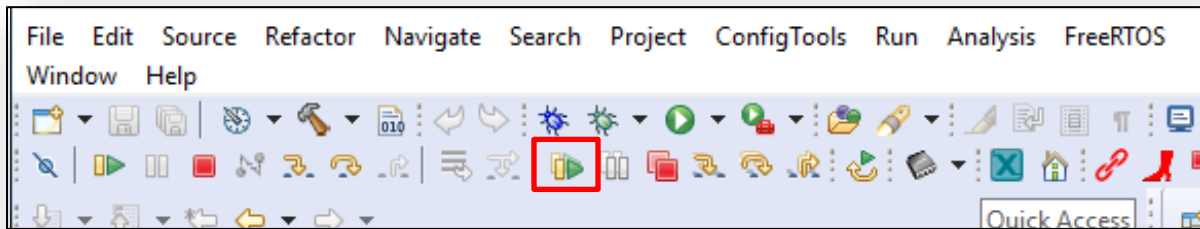
1. Click Debug in the QuickStart Panel.

Figure 10: Build example



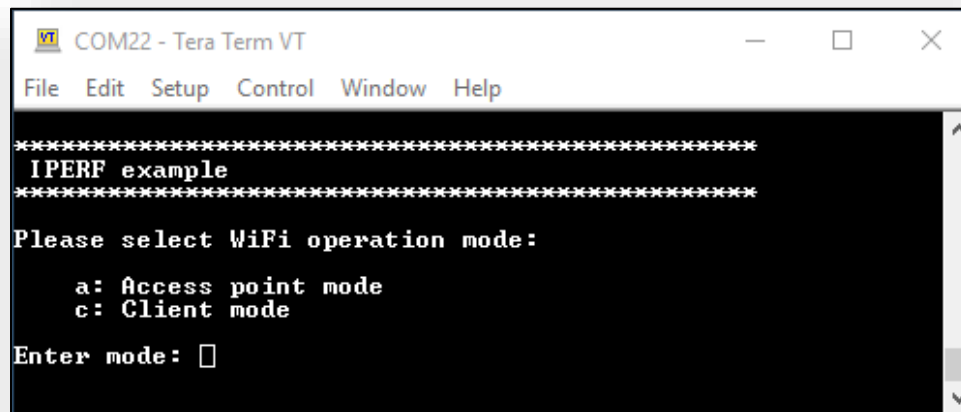
2. Once the build completes, open the terminal application (e.g. Tera Term) on the appropriate COM port (you can check the port number in Windows Device Manager, under **Ports (COM & LPT)**). Configure port for 115200 bps, 8 bits data, no parity, and 1 stop bit (115200/8/N/1).
3. Click resume button in MCUXpresso.

Figure 11: Run example



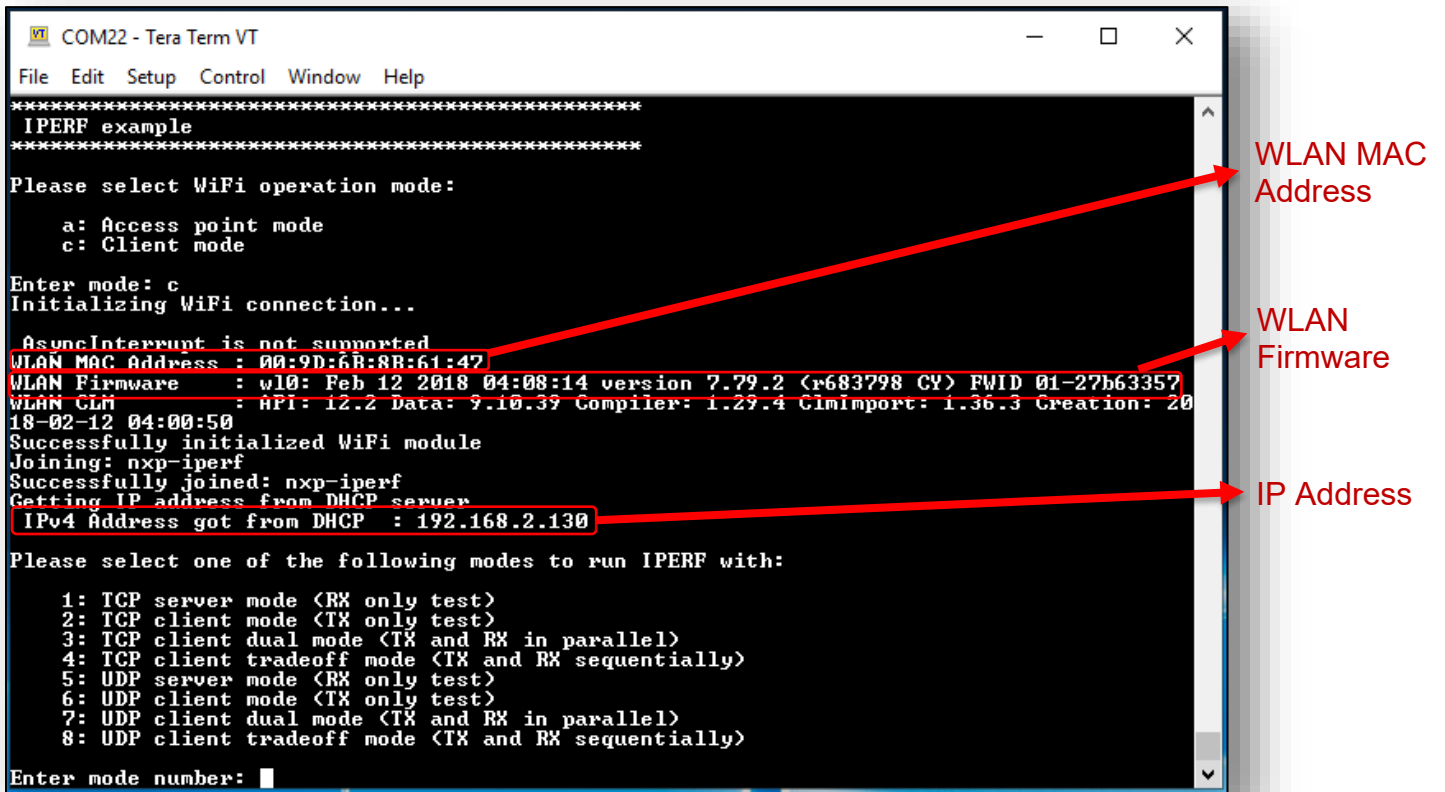
4. You should see this output on the terminal. Enter mode 'c' to run as client.

Figure 12: Output on EVKB terminal



5. Enter mode number '1' to select TCP server mode (RX only test)

Figure 13: Test server mode



6. Connect the host PC to the same Wi-Fi network as the EVKB (**nxp-iperf** in this example).
7. Run iperf on the host PC in client mode (replace the server IP address with the IP address of the EVKB).

```
iperf -c 192.168.2.130 -w 256k -i 1 -P 1
```

8. You will see test result on both host PC as well as terminal connected to the EVKB.

Figure 14: Output on EVKB terminal

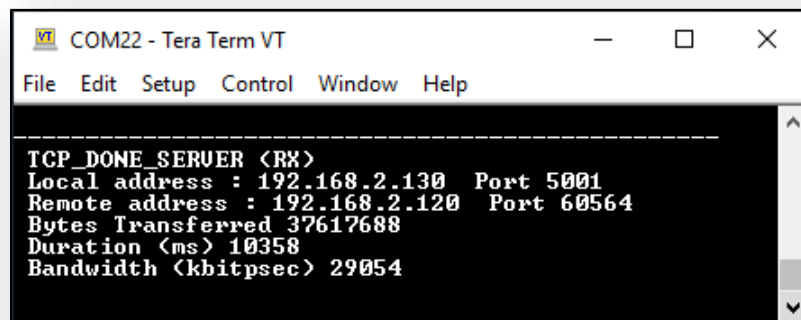


Figure 15: Output on host PC

```
skerr@SDK-W520: ~
skerr@SDK-W520:~$ iperf -c 192.168.2.130 -w 256k -i 1 -P 1
-----
Client connecting to 192.168.2.130, TCP port 5001
TCP window size: 416 KByte (WARNING: requested 256 KByte)
-----
[ 3] local 192.168.2.120 port 60564 connected with 192.168.2.130 port 5001
[ ID] Interval      Transfer    Bandwidth
[ 3] 0.0- 1.0 sec  4.12 MBytes 34.6 Mbits/sec
[ 3] 1.0- 2.0 sec  3.38 MBytes 28.3 Mbits/sec
[ 3] 2.0- 3.0 sec  3.25 MBytes 27.3 Mbits/sec
[ 3] 3.0- 4.0 sec  3.88 MBytes 32.5 Mbits/sec
[ 3] 4.0- 5.0 sec  3.00 MBytes 25.2 Mbits/sec
[ 3] 5.0- 6.0 sec  3.88 MBytes 32.5 Mbits/sec
[ 3] 6.0- 7.0 sec  3.38 MBytes 28.3 Mbits/sec
[ 3] 7.0- 8.0 sec  3.38 MBytes 28.3 Mbits/sec
[ 3] 8.0- 9.0 sec  4.00 MBytes 33.6 Mbits/sec
[ 3] 9.0-10.0 sec  3.50 MBytes 29.4 Mbits/sec
[ 3] 0.0-10.1 sec 35.9 MBytes 29.9 Mbits/sec
skerr@SDK-W520:~$
```

6 Murata Community Forum

For more support, please go to Murata’s Wireless Community Forum at <https://community.murata.com/>.

Figure 16: Links to Adapter and Wi-Fi/BT M.2 EVB’s

