**Document No. : 18-058785-01 Rev B**

**Title : EVAL-CN0534-EBZ Customer Evaluation Board**

**Test Procedure**

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| --- | --- | --- | --- | --- |
| REVISION HISTORY | | | | |
| **Revision** | **ECR #** | **Description of Change** | **Date** | **Author** |
| A |  | Initial Release | 4/16/20 | E. Reyta |
| B | ECR-102036 | DS2 (red LED) must turn ON. | 3/24/2021 | E. Reya |

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| --- | --- |
| **Required Approvers** | |
| **Approver Roles** | **Approver Names** |
| Apps Engineer | E. Reyta |
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# Equipment Needed

* One (1) ADALM-PLUTO
* One (1) EVAL-CN0534-EBZ
* Cables for powering up ADALM-Pluto and EVAL- CN0534-EBZ
  + Two (2) micro-USB power adaptors OR Two (2) micro-USB to USB cables
    - Note: If using the two micro USB to USB cables, a PC with USB port is needed. Else if the micro-USB power adaptors, no PC is needed.
* One (1) SMA male to SMA male cable
* One (1) SMA 10dB RF Attenuator (6610\_SMA-50-2/199\_NE) OR an equivalent RF Attenuator
* One >1GB USB mass storage device with a male micro-usb port
  + It should contain the test files (runme0.sh, parameters.txt, power\_check)

# ADALM-Pluto Preparation

**Firmware Loading**

1. Download Pluto firmware 0.30 version through this link:

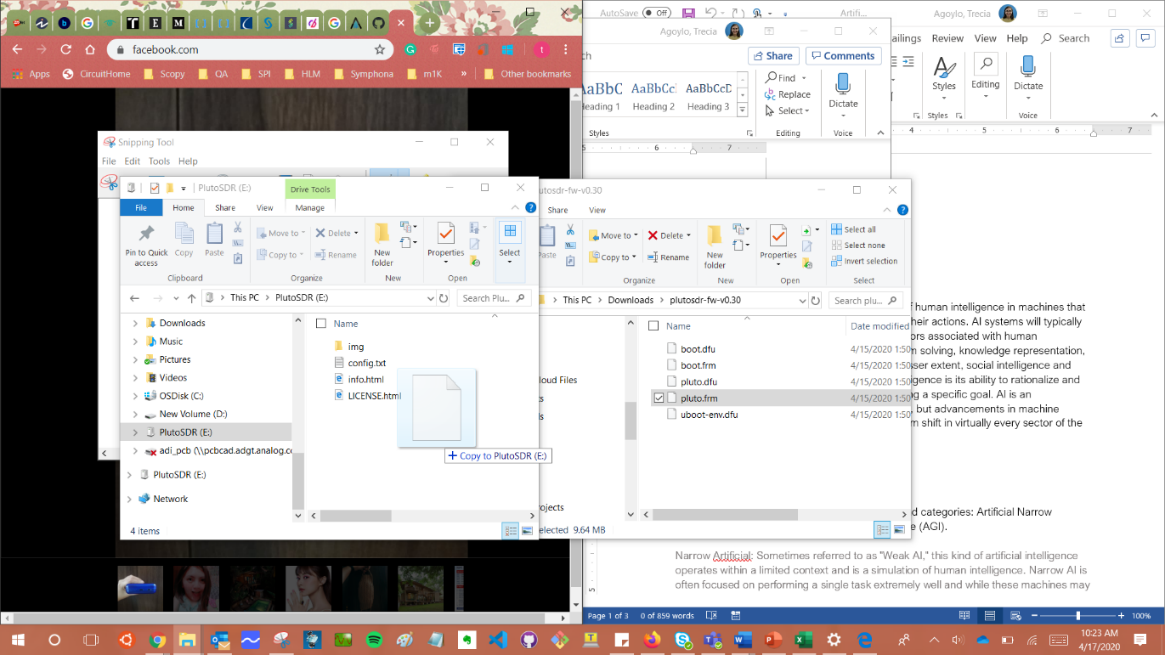
<https://github.com/analogdevicesinc/plutosdr-fw/releases/download/v0.30/plutosdr-fw-v0.30.zip>

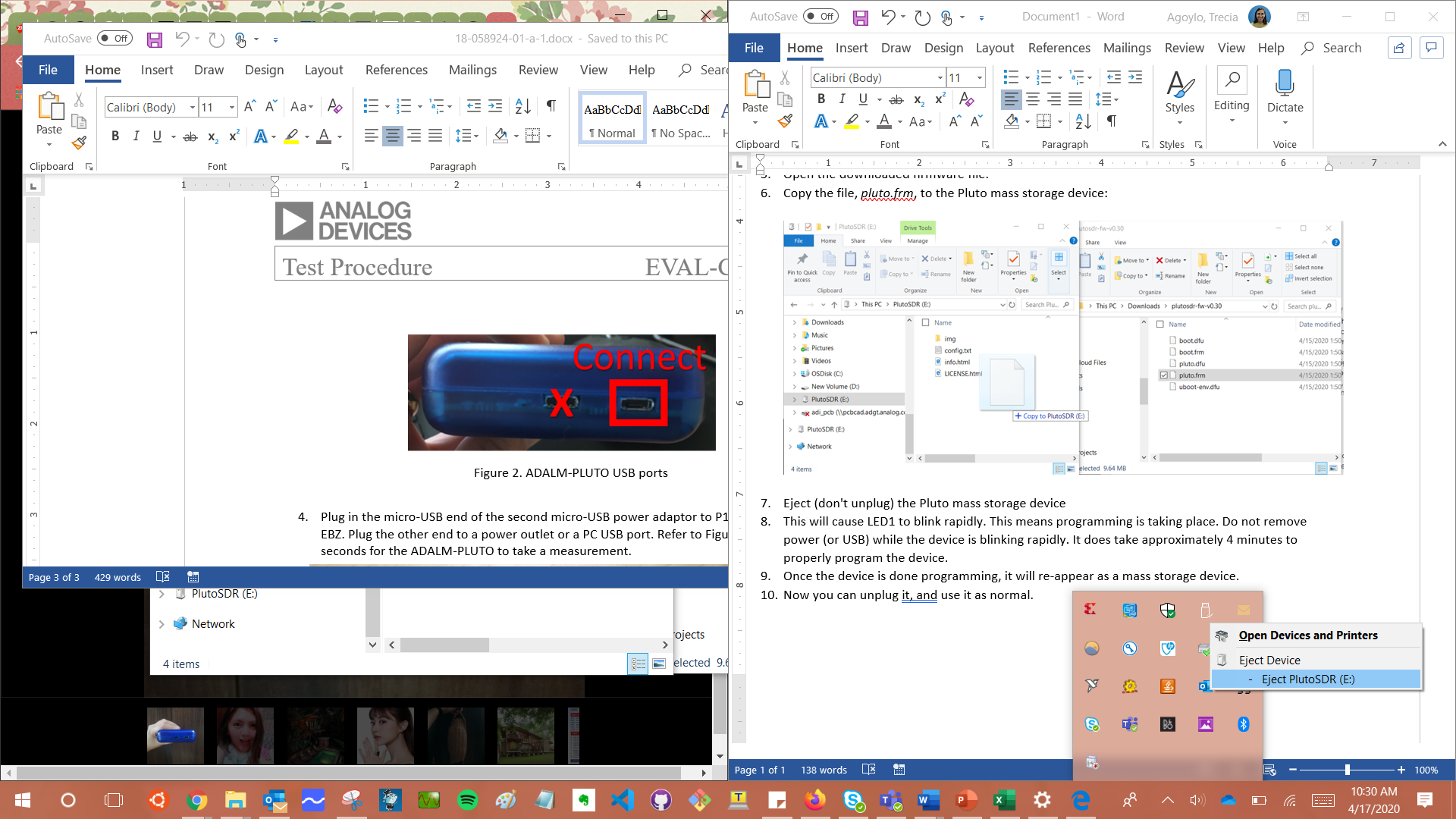
1. Unzip downloaded folder.
2. Connect Pluto to PC/Laptop using micro USB cable. Use the micro USB port in Pluto as shown in the picture.



**Connect**

**x**

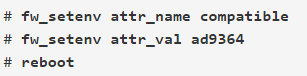
1. Open the Pluto mass storage device.
2. Open the downloaded firmware file.
3. Copy the file, *pluto.frm*, to the Pluto mass storage device:
4. Eject (don't unplug) the Pluto mass storage device.



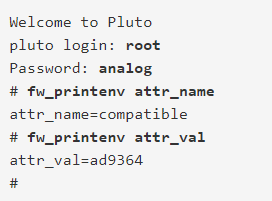
1. This will cause LED1 to blink rapidly. This means programming is taking place. Do not remove power (or USB) while the device is blinking rapidly. It does take approximately 4 minutes to properly program the device.
2. Once the device is done programming, it will re-appear as a mass storage device.
3. Now you can unplug it and use it as normal.

**Updating to the AD9364**

1. Connect again Pluto to PC/Laptop using micro USB cable.
2. Open any serial application (ex. TeraTerm, Putty) and ssh to 192.168.2.1, username is root and the password is analog.
3. To change things to the AD9364 configuration, type in the following commands, line by line:



1. After rebooting the device, this is what the AD9364 configuration looks like:



1. Now you can unplug it and use it as normal.

**USB Stick Preparation**

1. Copy power\_check () , runme0.sh (), and parameters.txt () to the USB stick.
2. Plug USB stick to pluto’s micro USB port, the one used during the firmware upgrade. Use USB OTG cable to connect USB stick to pluto.
3. Proceed to **Test Circuit Setup Step**.



# Test Circuit Setup

1. This test uses USB mass storage device(flash drive) containting the test files. The test files to be provided matches the Pluto to be used in the testing.
2. Plug in the USB mass storage device (flash drive) containing the test files.
3. Setup equipment and DUT as shown in Figure 1 and as shown in Figure 3. Directly connect the RX port of the ADALM-PLUTO to SMA 10dB RF Attenuator. Connect the other end of SMA 10dB RF Attenuator to EVAL- CN0534-EBZ RF Output (J1). The RF Input of the EVAL- CN0534-EBZ (J2) will then be connected to the TX port of the ADALM-PLUTO through a SMA male to SMA male cable.

Diagram

Description automatically generated



**SMA Male to SMA Male cable**

Figure 1. Setup for amplifier test

1. Plug in the micro-USB end of the second micro-USB power adaptor to P1 of the EVAL- CN0534-EBZ. Plug the other end to a power outlet or a PC USB port. Refer to Figure 3 below.

Figure 3. ADALM-PLUTO Test setup

1. Power on the ADALM-Pluto by plugging in a 5V power supply with micro-USB connector right at the bottom where this symbol  can be found. The correct port connection is shown in Figure 2 below. Plug the other end of the Pluto micro-USB power adaptor to a power outlet (if micro USB to USB cable is used, plug other end to a PC USB port).



1. Top View



(b) Bottom Side View

Figure 2. ADALM-PLUTO USB ports

NOTE:

* The “Ready” LED (right LED) should remain solid and “LED1” (left LED) should blink slowly like a **heart beat**. After around 5 seconds**,** LED1 (left LED) will blink faster if the USB Flash drive is connected correctly.
* Reconnect USB flash drive if LED1 doesn’t blink faster (it will take 3-5 seconds to blink faster if USB is reconnected after pluto is on). Wait for around 50 seconds for the test to finish. At some point during the test, **DS2 (red LED)** must turn **ON**.
* After execution of the test, **LED1** will be **Solid ON if the EVAL CN0534-EBZ passes** the RF tests. **LED1** will be turned **OFF if the EVAL-CN0534-EBZ fails** the tests. Record if this light, **LED1**, turns on for a given EVAL- CN0534-EBZ.

1. Unplug the other end of Pluto Micro USB from the outlet (if micro USB to USB cable is used, unplug other end from the PC USB port) to power off the Pluto.
2. Remove power on EVAL- CN0534-EBZ by unplugging micro-USB power adaptor from P1.
3. Replicate setup from Figure 1 for remaining EVAL-CN0534-EBZ boards and repeat testing from step 3.