CDCE6214 Programming

Write to EEPROM from Registers

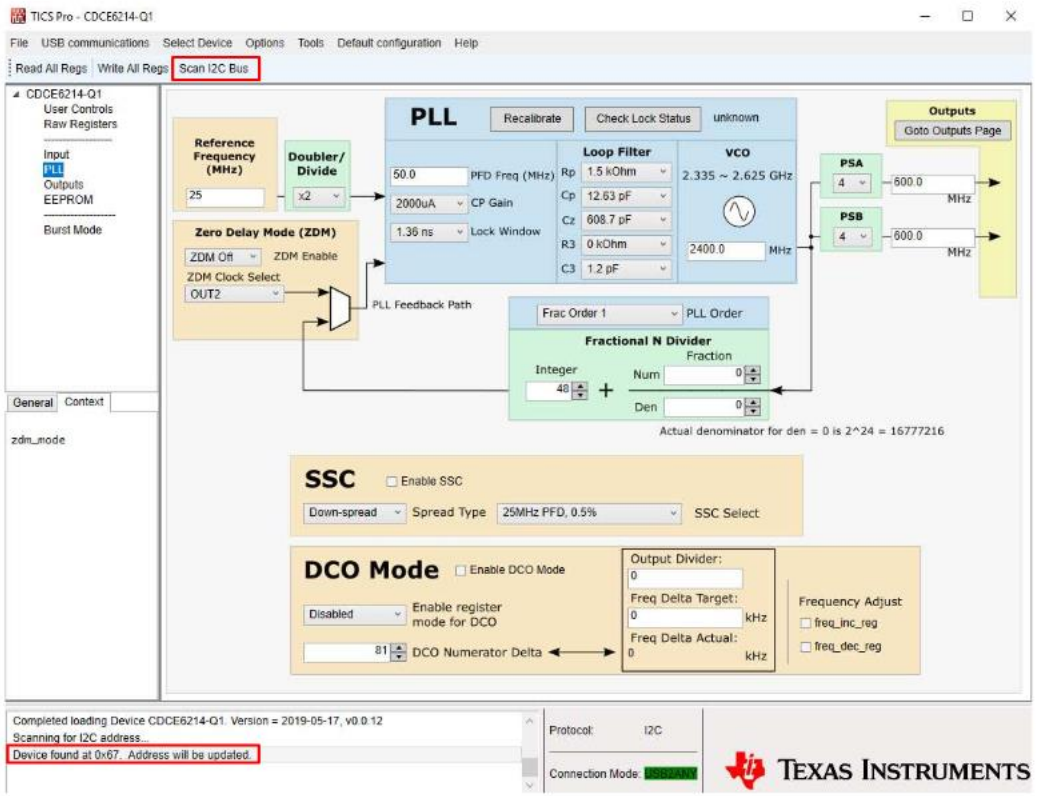
Using TICSPro

Connect to Device

- Power on device and Scan I2C as shown to the right
- The default I2C address is 0x67

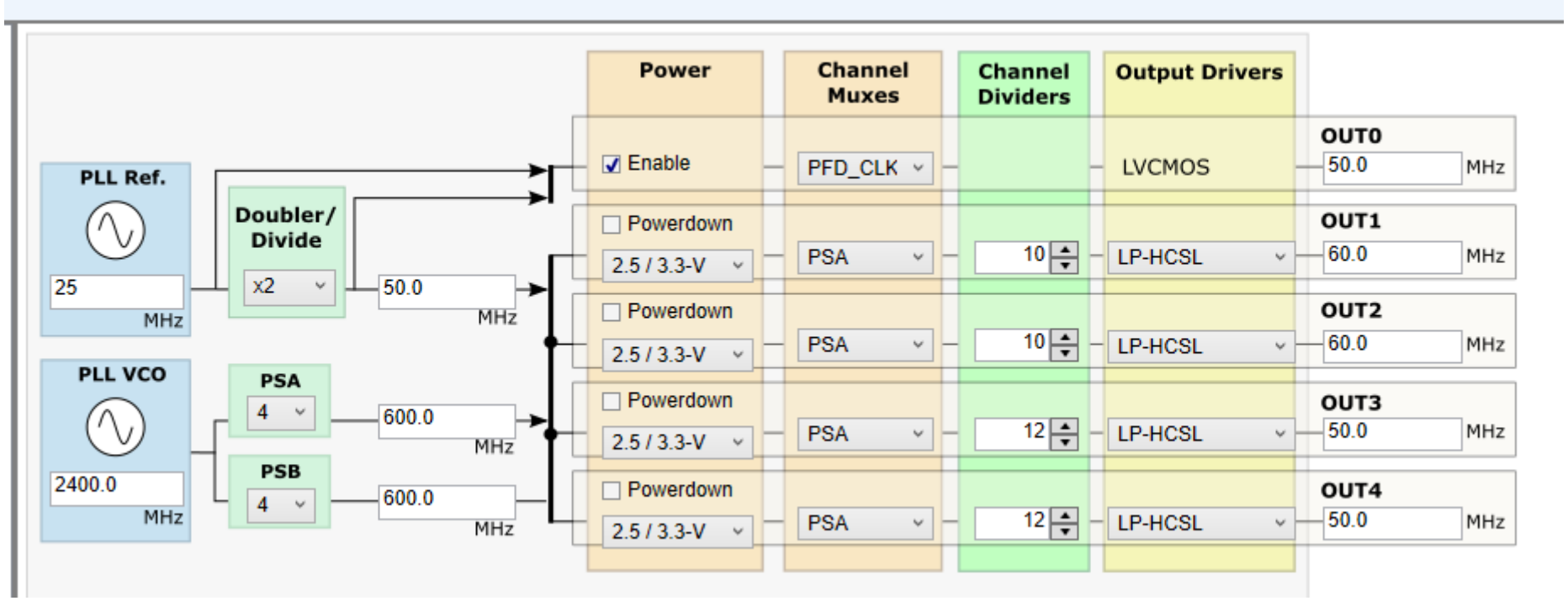
1.4 Scan I2C Bus

1. Click the **Scan I2C Bus** tab in the small toolbar.
2. Look for the "Device found at 0x67. Address will be updated." text in the message window.



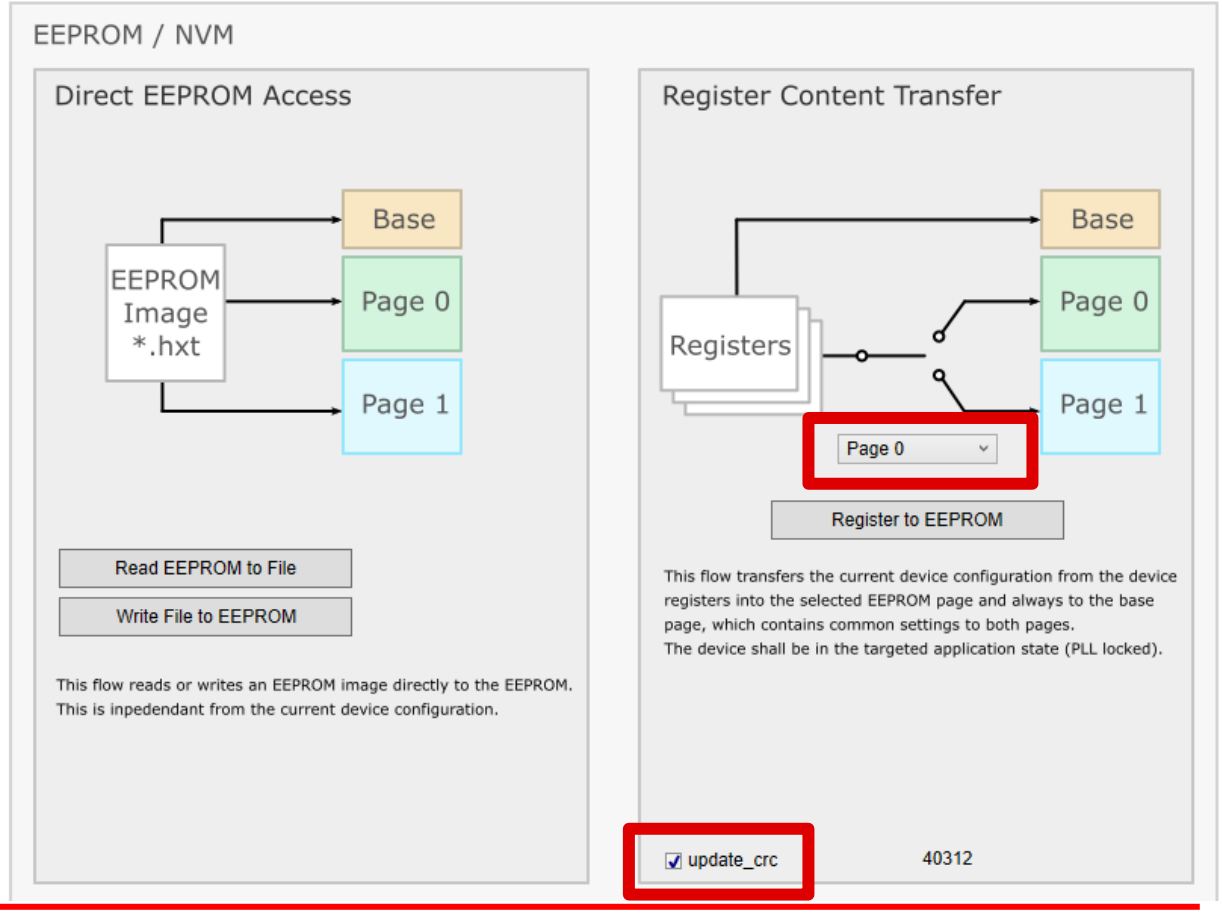
Verify Config

- Create or Load the desired config using the TICSPro GUI
- Write All Registers and verify part is outputting as expected
- Read All Registers and confirm desired config is properly displayed



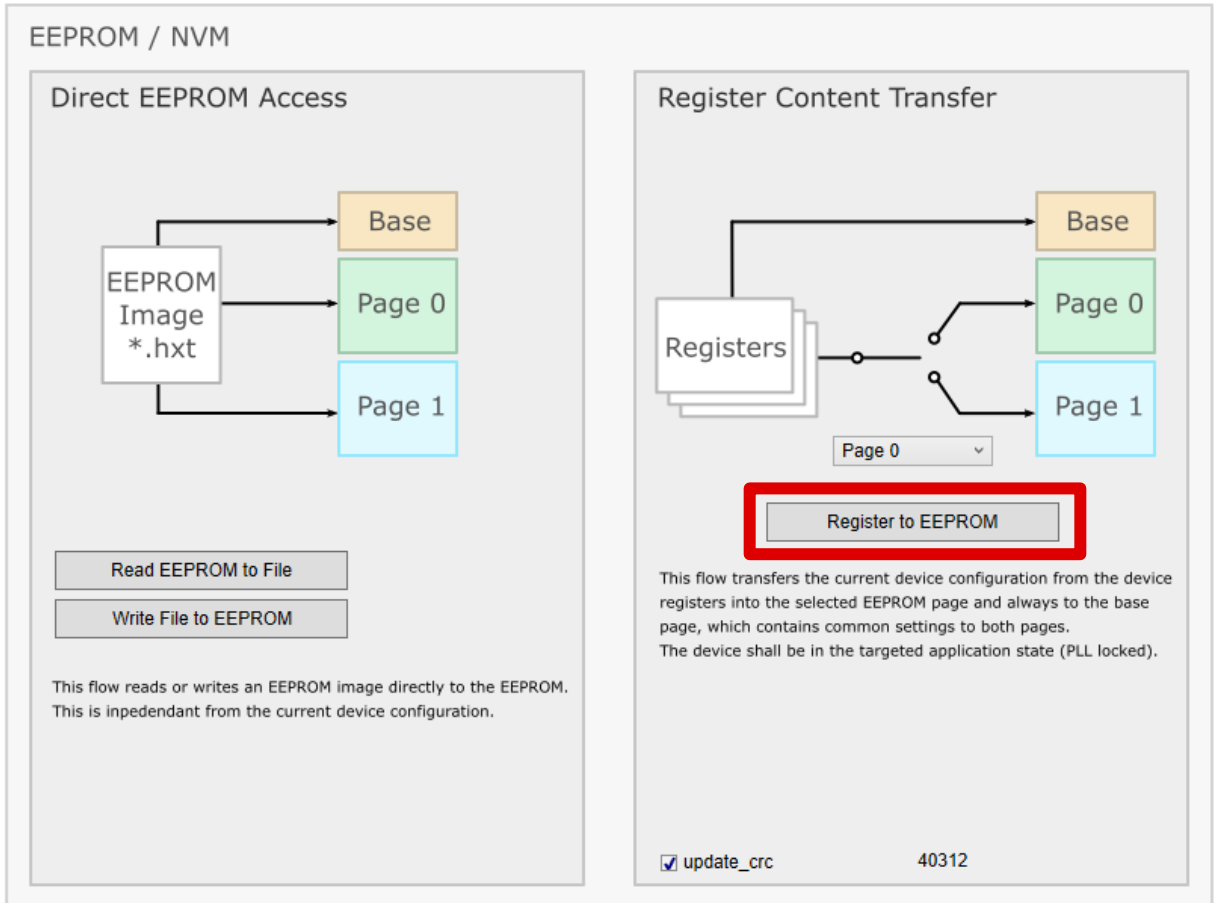
Select EEPROM Page

- Using the drop down menu under Register Content Transfer, select which EEPROM page you want the current config to be written to
- Select *update_crc* in the bottom corner

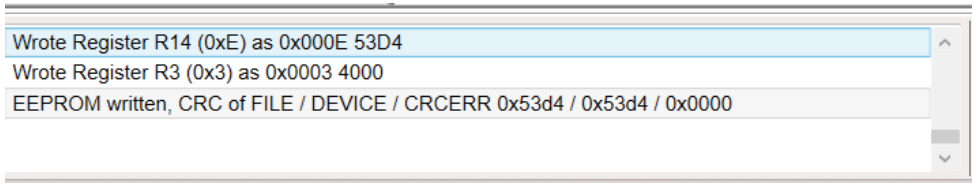


Program EEPROM

- Click *Register to EEPROM*



After EEPROM write is complete, you will see the following in the Status Box:



CRC of FILE and DEVICE values may be different than above, but they should be equal each other. CRCERR should be 0x0000

After EEPROM write is complete, ***power cycle*** the device.

For More Info

- More info can be found in the EVM User's Guide
- https://www.ti.com/lit/ug/snau244a/snau244a.pdf

Without TICSPro

EEPROM Access

9.5.2.3 *EEPROM Access*

NOTE

The EEPROM word write access time is typically 8 ms.

There are two methods to write into the internal EEPROM

1. Register Commit method.
2. EEPROM Direct Access Method

Use the following steps to bring the device into a good known configuration.

1. Power down all the supplies.
2. Apply PDN = LOW.
3. REFSEL and HW_SW_CTRL pins can be High, Low or High-Z. For factory programmed device, I^2C interface is not available when HW_SW_CTRL is LOW.
4. Apply power supplies to all VDD pins. When device operation is not required, apply power supply to VDDREF.
5. Apply PDN = HIGH.
6. Use the I^2C interface to configure the device.

Writing EEPROM Data from Registers

9.5.2.3.1 Register Commit Flow

In the Register Commit flow, all bits from the device registers are copied into the EEPROM. The recommended flow is:

1. Pre-configure the device as desired, except the serial interface using mode.
2. Write 1 to RECAL to calibrate the VCO in this operation mode.
3. Select the EEPROM page, to copy the register settings into, using REGCOMMIT_PAGE.
4. Unlock the EEPROM for write access with EE_LOCK = x5.
5. Start the register commit operation by writing 1 to REGCOMMIT.
6. Force a CRC update by writing a 1 to UPDATE_CRC.
7. Read back the calculated CRC in NVMLCRC.
8. Store the read CRC value in the EEPROM by writing 0x3F to NVM_WR_ADDR and then the CRC value to NVM_WR_DATA.

Power cycle the device after the EEPROM has finished being written to.

For More Info

- More info can be found in the Programming section of the Datasheet
- https://www.ti.com/lit/ds/symlink/cdce6214.pdf

Write to EEPROM from File

Using TICSPro

Connect to Device

- Power on device and Scan I2C as shown to the right
- The default I2C address is 0x67

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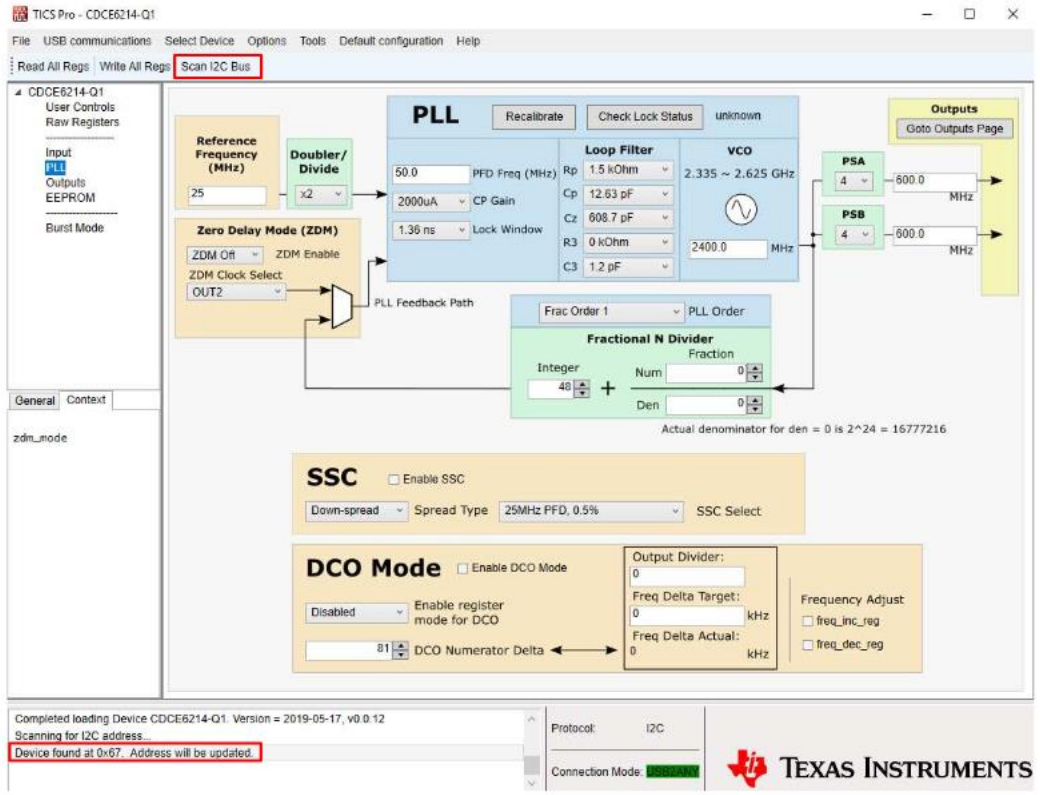
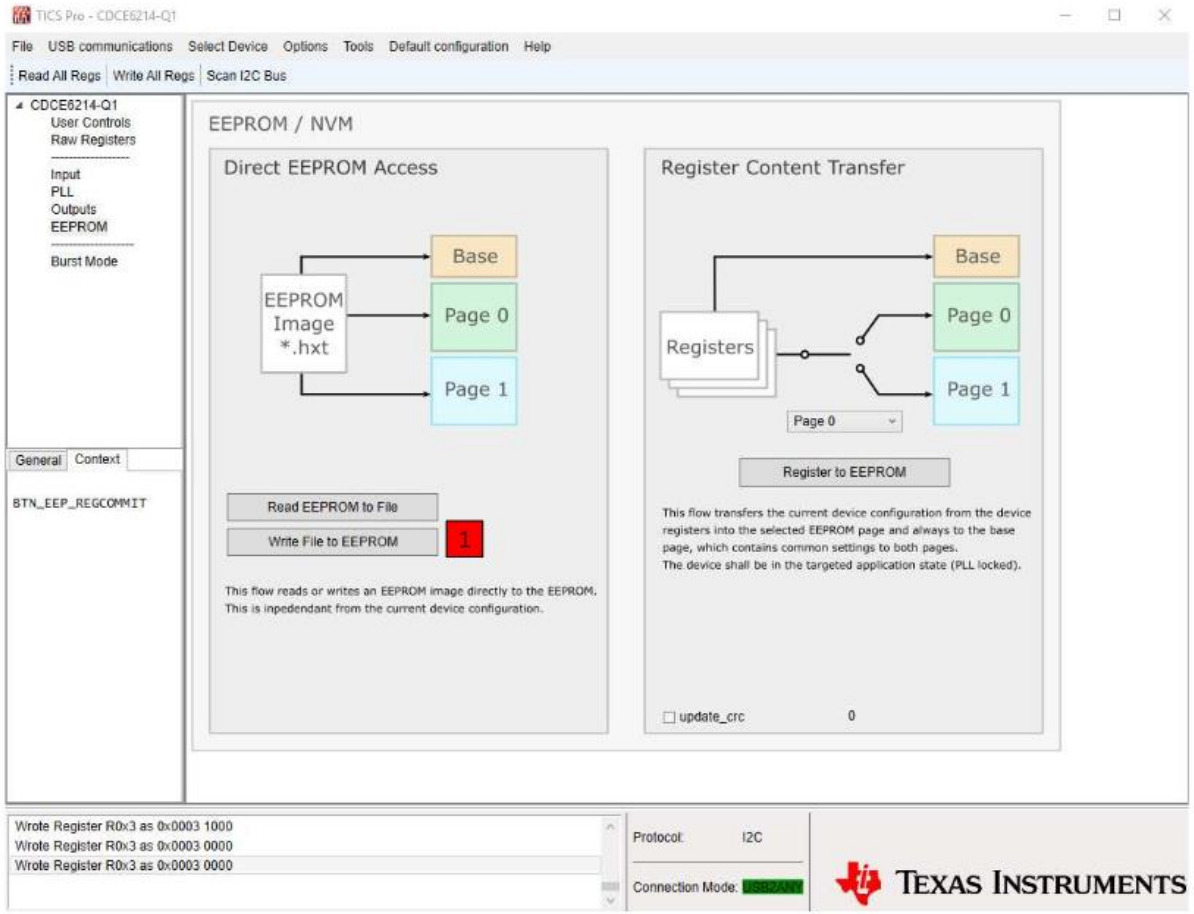
2. Look for the "Device found at 0x67. Address will be updated." text in the message window.



Program EEPROM

2.5.1 *Direct Access*

1. Under **Direct EEPROM Access**, click the **Write File to EEPROM** button
2. Select the .hxt EEPROM file.



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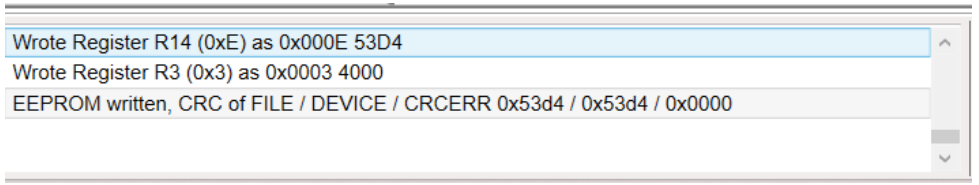

CRC of FILE and DEVICE values may be different than above, but they should be equal each other. CRCERR should be 0x0000

After EEPROM write is complete, ***power cycle*** the device.

Verify Config

- Power on device
- Connect to Device by Scanning for I2C
- Read All Registers and verify config displayed is correct

For More Info

- More info can be found in the EVM User's Guide
- https://www.ti.com/lit/ug/snau244a/snau244a.pdf

Without TICSPro

EEPROM Access

9.5.2.3 *EEPROM Access*

NOTE

The EEPROM word write access time is typically 8 ms.

There are two methods to write into the internal EEPROM

1. Register Commit method.
2. EEPROM Direct Access Method

Use the following steps to bring the device into a good known configuration.

1. Power down all the supplies.
2. Apply PDN = LOW.
3. REFSEL and HW_SW_CTRL pins can be High, Low or High-Z. For factory programmed device, I^2C interface is not available when HW_SW_CTRL is LOW.
4. Apply power supplies to all VDD pins. When device operation is not required, apply power supply to VDDREF.
5. Apply PDN = HIGH.
6. Use the I^2C interface to configure the device.

Writing EEPROM Data from File

9.5.2.3.2 Direct Access Flow

In the EEPROM direct access flow, the EEPROM words are directly accessed using the address and the data bit-fields. The recommended flow is:

1. Prepare an EEPROM image consisting of 64 words of 16 bits each.
2. Unlock the EEPROM for write access with EE_LOCK = 0x5.
3. Write the initial address offset to the address bit-field. Write a 0x00 to NVM_WR_ADDR.
4. Loop through the EEPROM image from address 0 to 63 by writing each word from the image to NVM_WR_DATA. The EEPROM word address is automatically incremented by every write access to NVM_WR_DATA.

Power cycle the device after the EEPROM has finished being written to.

For More Info

- More info can be found in the Programming section of the Datasheet
- https://www.ti.com/lit/ds/symlink/cdce6214.pdf

Reading EEPROM to File

Using TICSPro

Connect to Device

- Power on device and Scan I2C as shown to the right
- The default I2C address is 0x67

1.4 Scan I2C Bus

1. Click the **Scan I2C Bus** tab in the small toolbar.
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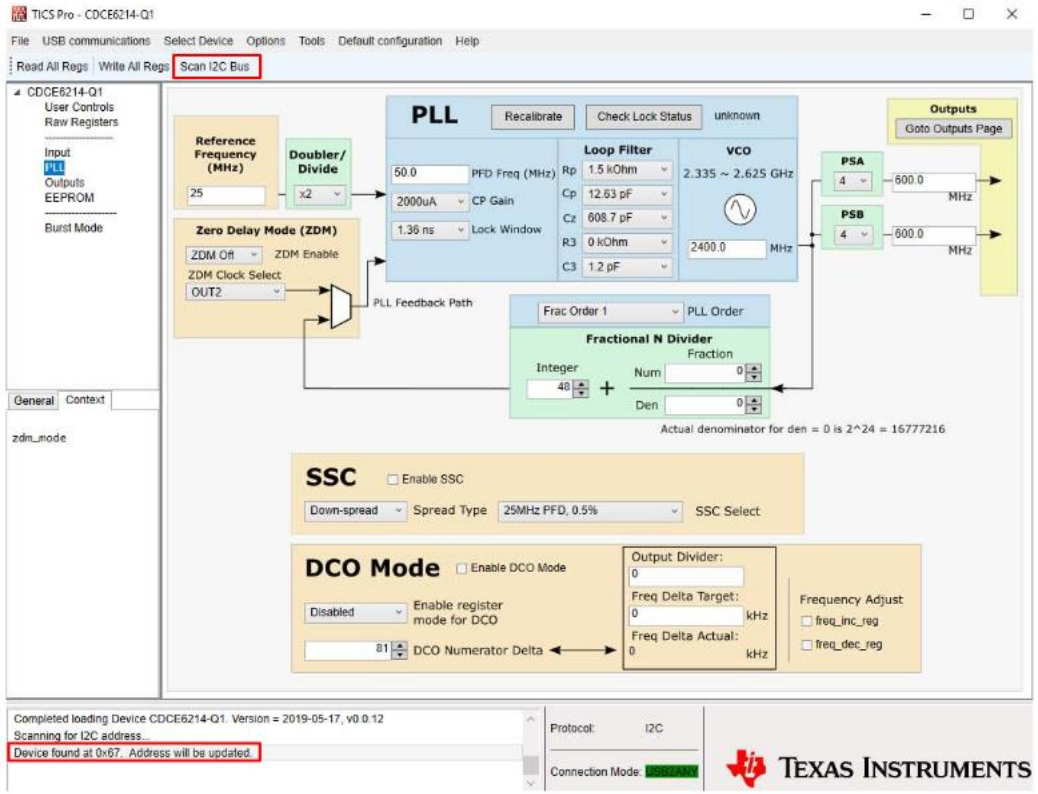
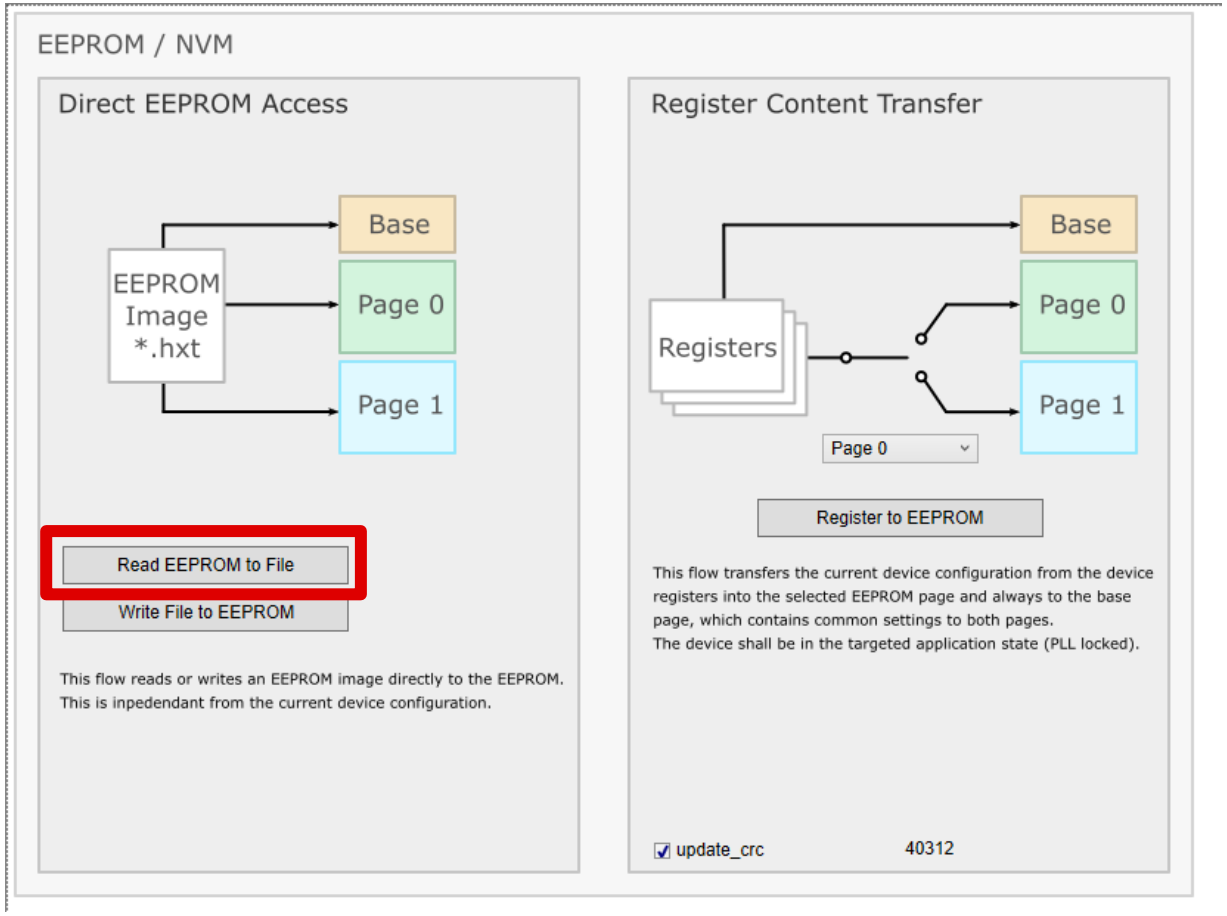


Read EEPROM Content

2.5.3 *Read EEPROM Content*

To read EEPROM to .hxt file, click the **Read EEPROM to file** button under **Direct EEPROM Access**.



Adjust EEPROM File if needed

- After the .hxt file has been exported, it may need to be adjusted
- *nvmlcrc* and *nvmscrc* MUST be the same value. If they are different, change *nvmscrc* to match *nvmlcrc*
- Byte 63 must also match *nvmlcrc* in both hex and decimal form
- *nvmcrcerr* must be 0x0000

```
----- CDCE6214-Q1 EEPROM HEX TEXT FILE ------
Header Info Wed Apr 10 10:14:11 2024
nvmbusy     0x0000
nvmcrcerr   0x0000
nvm_wr_error      0x0000
nvm_rd_error      0x0000
nvmlcrc     0xd848
nvmscrc     0xd848
nvm_rd_addr 0x0000
nvm_rd_data 0x0000
nvm_wr_addr 0x0000
nvm_wr_data 0x0000
```

```
59    0x0008      8
60    0x0000      0
61    0x0000      0
62    0x0000      0
63    0xd848      55368
----- END EEPROM HEX TEXT FILE ------
```