INFINEON TECHNOLOGIES AG
Internal Correspondence

Date:	9/17/24 WW: 2438
To:	**SPPD**
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Author File#:	KASARAGOD#14
Subject:	**Test procedure for KIT_A3G_TC4D7_LITE V02**
Distribution:	SPPD, BKLL, Komma, RASB, VJYM, KumarAvnendr, AZEK, ClausseK, Dienst

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PURPOSE AND SUMMARY:

This memo provides the manual test procedure for KIT_A3G_TC4D7_LITE V02.

REVISION HISTORY:

Version	Changes	Work week
**	First version of Plan	WW2438

1. Hardware Requirements

1	KIT_A3G_TC4D7_LITE V02 Evaluation board
2	USB-C to USB-C cable
3	12V 2A DC Adapter
4	Multimeter
5	CAN Test Jig (based on KIT_A3G_TC4D7_LITE V02, refer Preparing Test Jigs)
6	Ethernet Test Jig (based on KIT_A3G_TC4D7_LITE V02 refer Preparing Test Jigs)

2. Software requirements

1	Infineon Memtool 2024.2
2	Any serial terminal (eg: Termite or TeraTerm)
3	FT PROG from FTDI
4	FTDI VCP driver installed

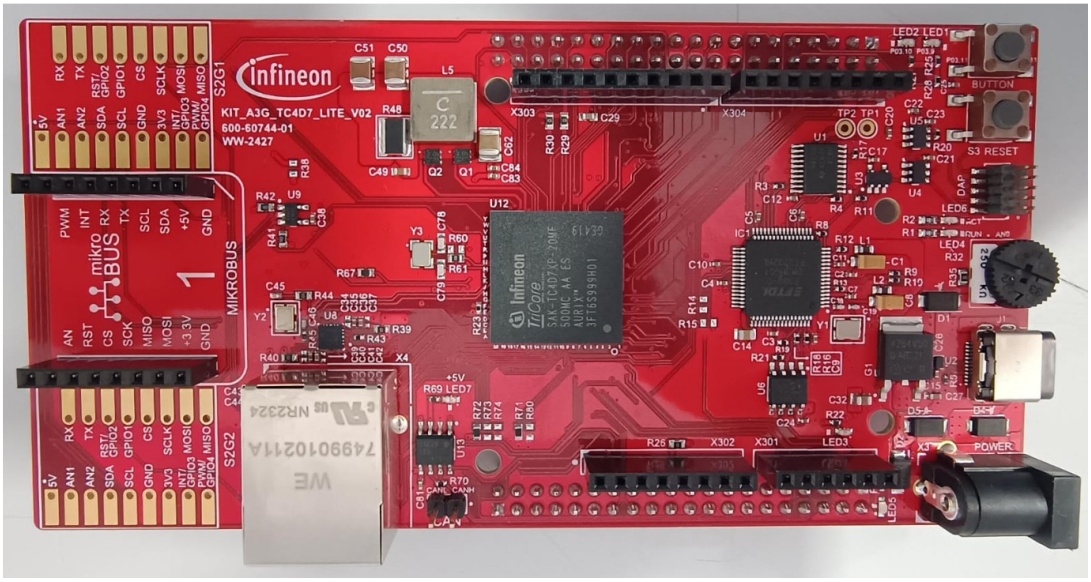

Figure 1: KIT_A3G_TC4D7_LITE V02 Top side

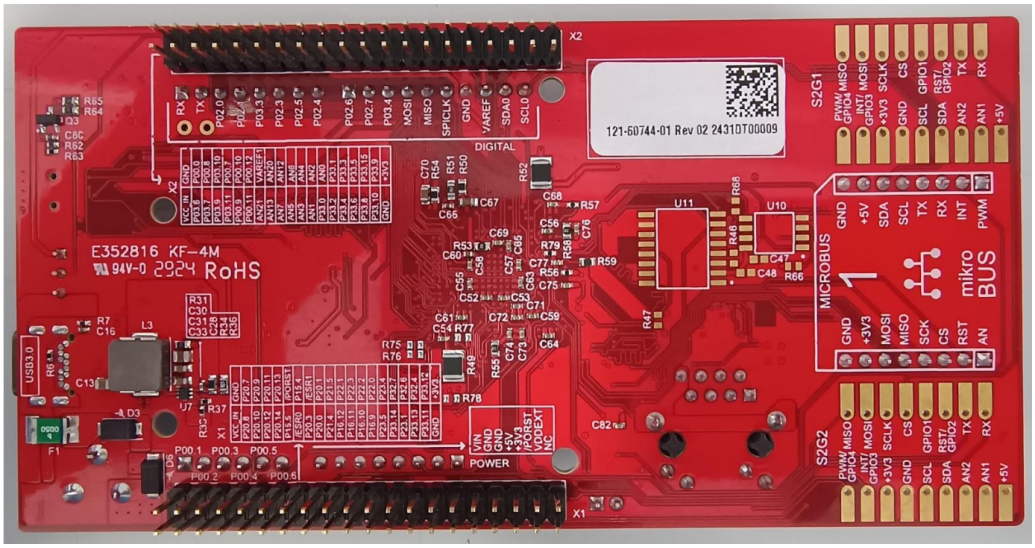

Figure 2: KIT_A3G_TC4D7_LITE V02 Bottom side

3. Test List

Following test procedures need to be followed to qualify a KIT_A3G_TC4D7_LITE V02 board.

Sl. No.	**Test item**
1	Visual Inspection
2	Short test
3	Power ON test
4	FTDI configuration
5	Flashing Blinky code
4	Reset test
7	Serial UART through FTDI
8	GPIO button test
9	ADC Potentiometer test
10	I2C EEPROM test

11	CAN interface test
12	10/100Mbps Ethernet test
13	Power ON Test with 12V DC Adapter
14	Shipping Firmware

4. DNL Components

Sl No.	Component
1	R73, R74, R75, R76, R77, R78, R80
2	R14, R15, R38, R46, R47, R60
3	R66, R68
4	C34, C39
5	C37, C42
6	C47, C48
7	U10, U11

5. Test Procedure

5.1 Visual Inspection

1) Make sure that all components are mounted properly
2) Make sure that DNL components are not mounted. For list of DNL Components see DNL Components.

5.2 Short test

The short test is used to check if there are unwanted shorts circuits in the KIT.

1) Use multimeter to check for shorts in following points of the board:

   i) X302.4 to GND

   ii) X302.5 to GND

   iii) X302.8 to GND

   iv) X3 to GND

5.3 Power ON Test

1) Turn on KIT_A3G_TC4D7_LITE V02 board by connecting USB-C port to PC using USB-C to USB-C cable

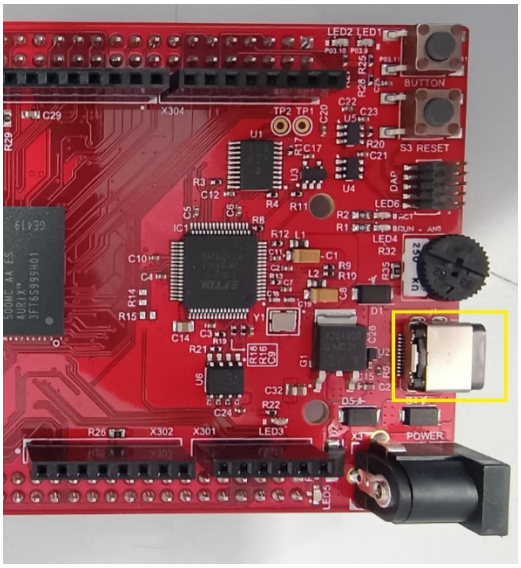

Figure 3: KIT_A3G_TC4D7_LITE V02 Top side

2) Once USB port is connected to PC make sure that following LED's are turned ON.

   i) LED3 (for 3.3V)

ii) LED7 (for 5V)

3) Use multimeter to measure voltages at following points:

i) X302.4 to GND should measure 3.3V

ii) X302.5 to GND should measure around 5V.

5.4 FTDI Configuration

The on board FTDI chip IC1 needs to be configured with FT Prog. Make sure that board is connected to the PC & FTDI VCP driver is already installed.

1) Open *FT_Prog.exe*

Figure 4: FT_Prog.exe

2) Once FT Prog application open, Click **Scan & Parse** icon from the toolbar.

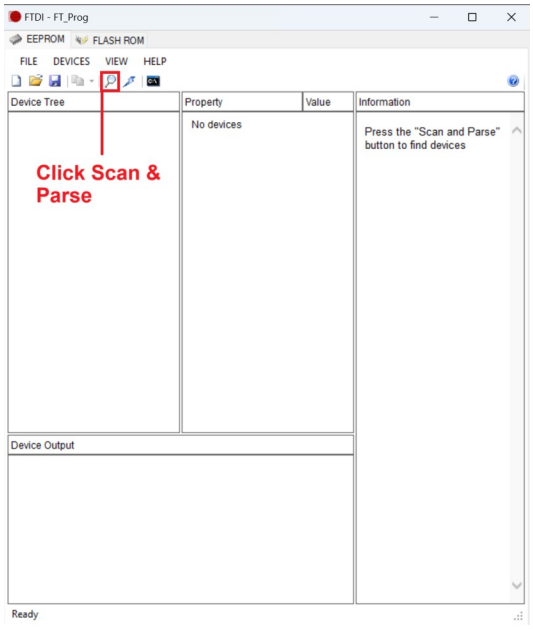

Figure 5: FT_Prog.exe

3) The connected FTDI device will get listed under Device tree. *Right click -> Apply Template -> From File* & open template "*AURIX lite Kit V10 TC4D7.xml*" stored in Zip folder shared. Once the file is opened you will Operation Successful message box.

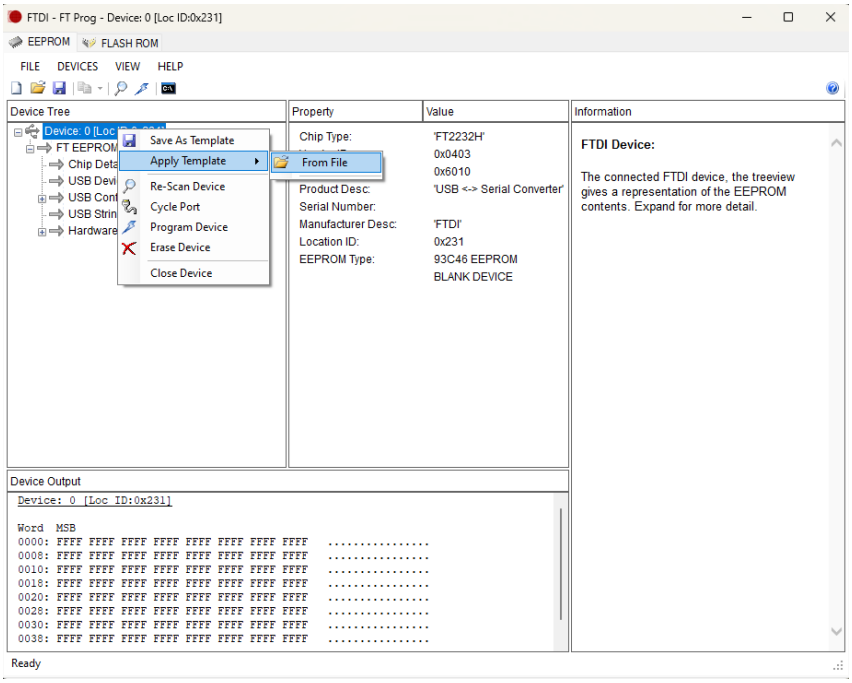

Figure 6: Apply Template

4) Click **Program Devices** icon from the toolbar. You will see dialog box of Program devices. Make sure that Device 0 is selected under Device List.

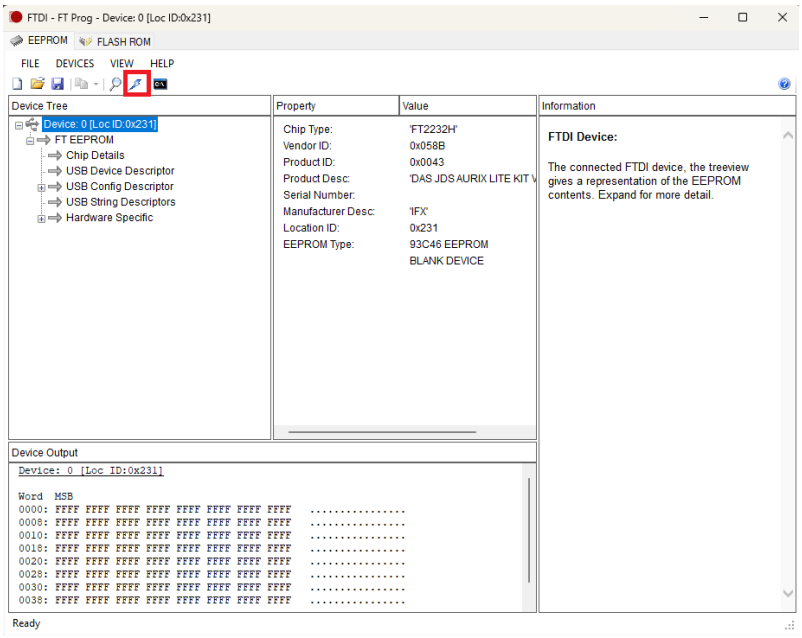

Figure 7: Program Devices

1) Click **Program** button. Once the program is done you can close the dialog box.

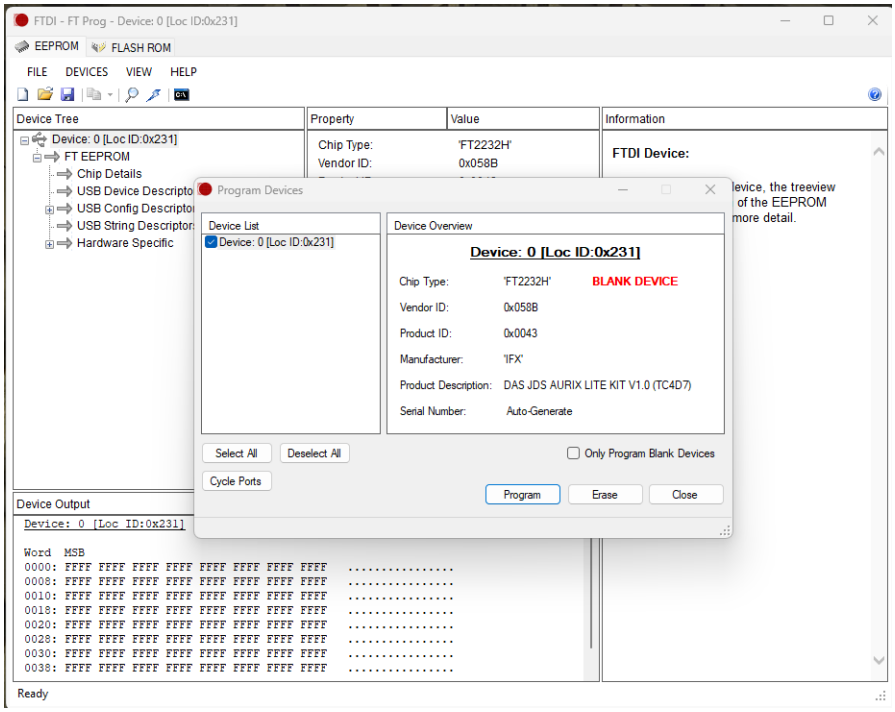

Figure 8: Program Devices Dialog box

2) After successful programming of FTDI configuration, Disconnect the board from the PC. After some time reconnect the board back to the PC.

3) Open device manager & check if *Infineon DAS JDS COM* comes under *Ports (COM & LPT)* as shown below.

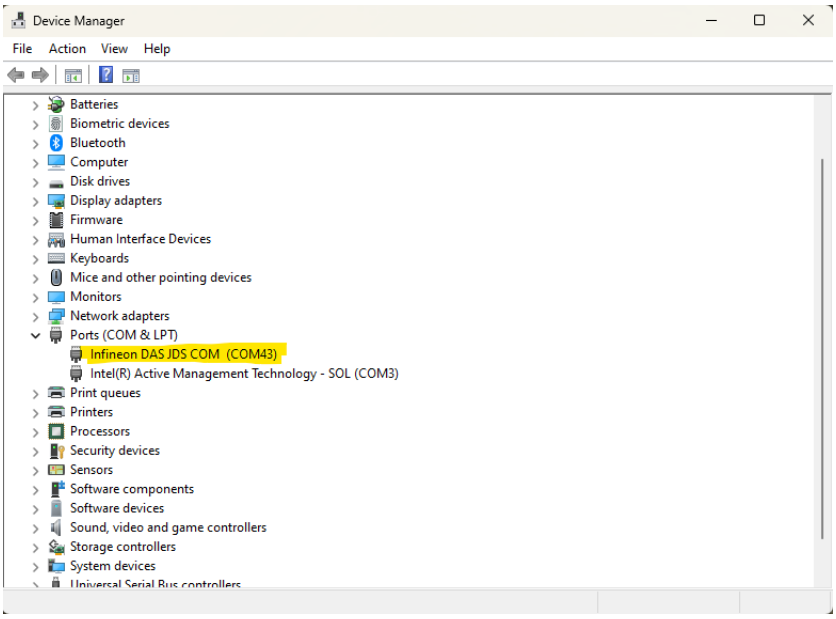

Figure 9: Device Manager

5.5 Flashing Blinky code

Make sure that board is connected to the PC & *Memtool 2024.2* is installed.

1) Open Infineon *Memtool 2024.2*.

Figure 10: Infineon Memtool 2024.exe

2) Once the memtool opens, click **Open File** Button.

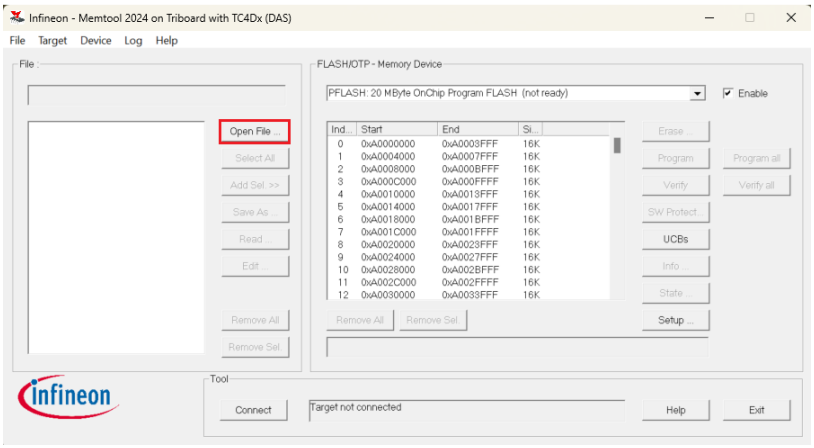

Figure 11: Open Hex file

3) Locate and open *iLLD_TC4D7_COM_ADS_Blinky_2.hex*

4) Once the hex file is opened. Click **Connect** button to connect to minWiggler (FTDI) of the Kit.

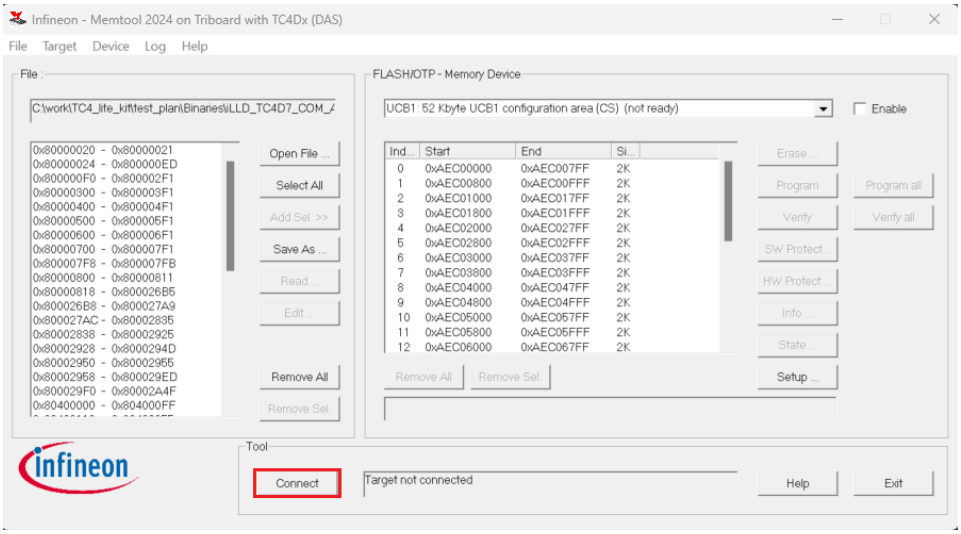

Figure 12: Connect button

5) Once the memtool can connect to the kit. Click **Select All** button.

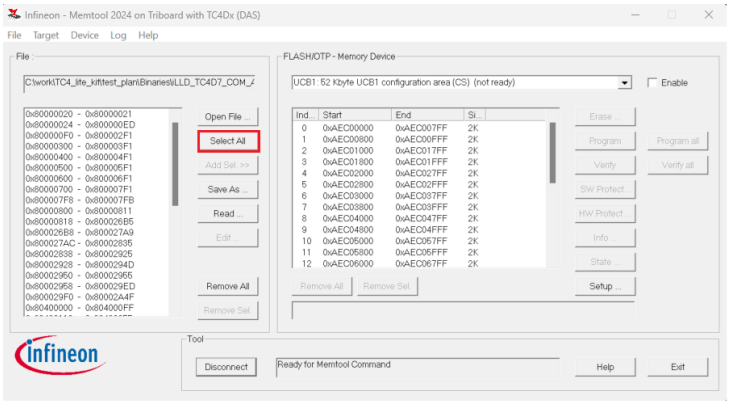

Figure 13: Select All button

6) Then Click **Add Sel** button for PFLASH & UCB0. Make sure that both PFLASH & UCB0 is enabled.

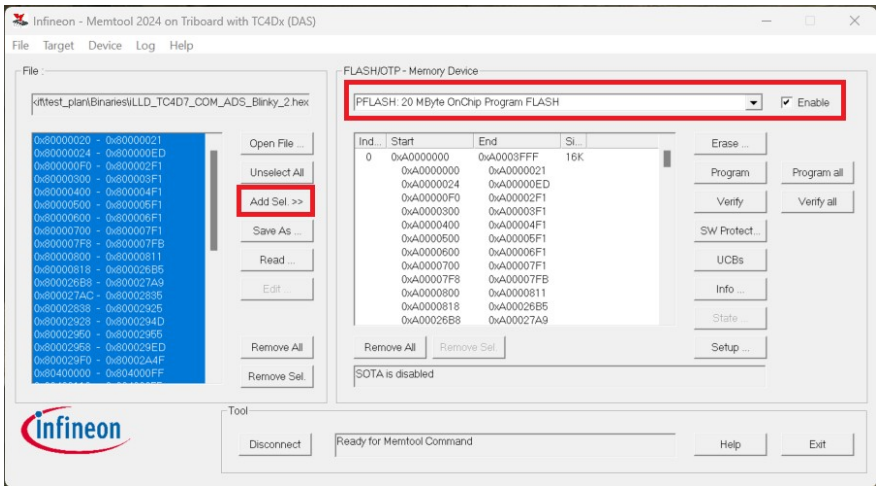

Figure 14: Add Sel button

7) Click **Program All** button. A warning message might pop-up. Click **Yes** button.

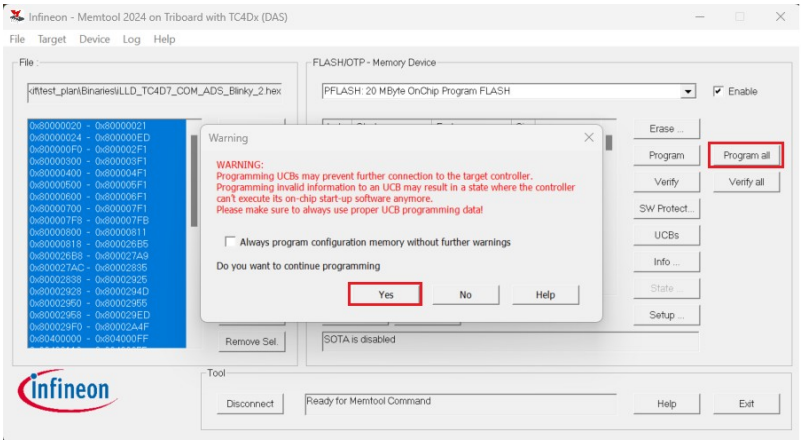

Figure 15: Program all button

8) Now flashing will take place. Wait until you get Result as success. Then click **Exit** button.

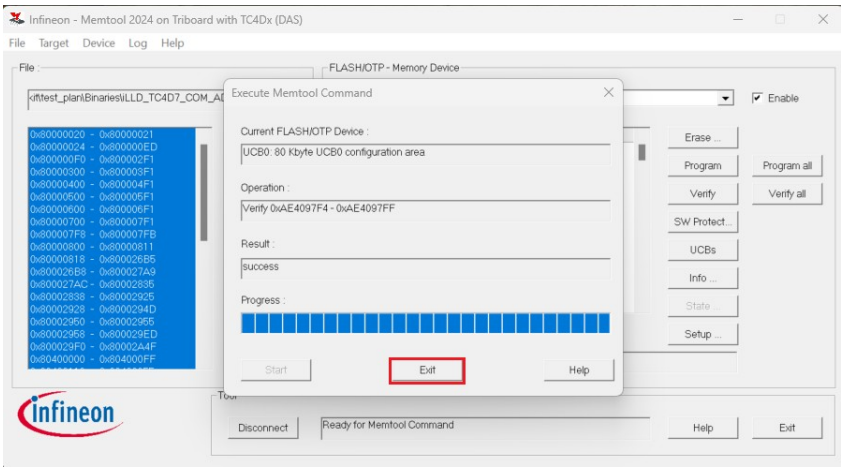

Figure 16: Program result success

9) Click Disconnect Button.

10) Now press S3 RESET button on the Kit, make sure that LED1 & LED2 are blinking alternatively.

11) Disconnect the Kit. After some time connect the Kit back to PC. Check if LED1 & LED2 are blinking again.

5.6 Reset test

Make sure that board is connected to PC and flashing of blinky binary code from 5.5 Flashing Blink.

1) Keep the S3 Reset button pressed (Do not release the button). LED1 & LED2 will stop glowing. The MCU is held on Reset now.

2) Check if LED5 is turned ON (Glow in Red colour).

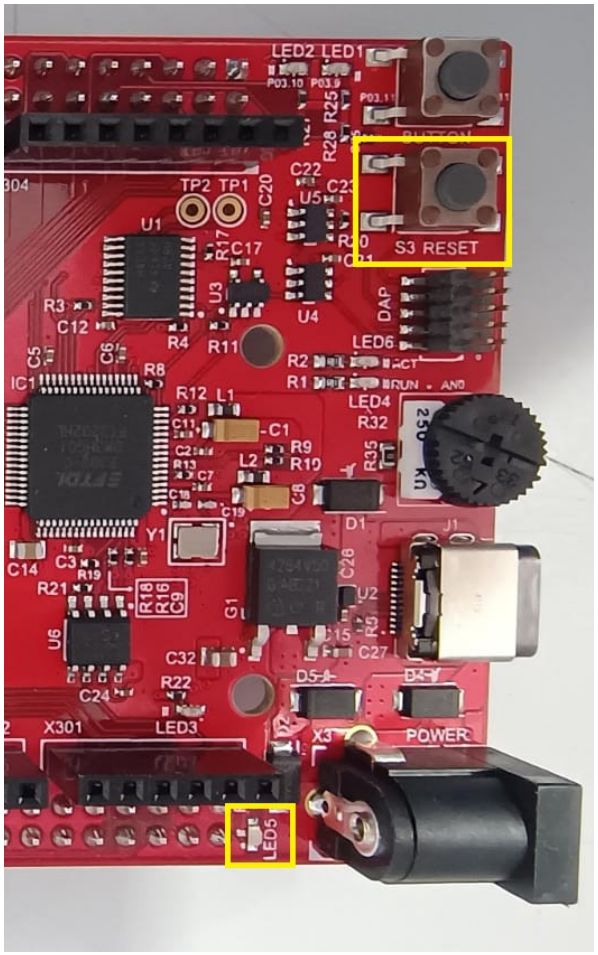

Figure 17: LED5 turns ON if Reset button S3 is pressed.

3) Release S3 Reset button, the LED5 should stop glowing. LED1 & LED2 should start blinking alternatively.

4) Press S3 Reset button multiple times to confirm the MCU reset is working.

5.7 Serial UART through FTDI

Make sure that board is connected to PC.

1) Flash *iLLD_TC4D7_COM_ADS_Uart_Shell.hex* with the help of Infineon memtool (See section 5.5 Flashing Blinky code). Make sure that UCB0 is not enabled during flashing.

2) Open Termite serial terminal (or any other serial terminal).

3) Identify the right COM port of the board & connect the serial terminal to it with buadrate of 115200.

4) Press Reset button S3 and check if you get serial message in your serial terminal.

5) Check if LED1 is turned OFF & LED2 is turned ON.

6) Type in “toggle 1” and check if LED1 is turned ON.

7) Type in “toggle 2” and check if LED2 is turned OFF.

5.8 GPIO button test

Make sure that board is connected to PC.

1) Flash *iLLD_TC4D7_COM_ADS_GPIO_LED_Button.hex* with the help of Infineon memtool (See section 5.5 Flashing Blinky code). Make sure that UCB0 is not enabled during flashing.

2) Press S3 Reset button.

3) Press P03.11 BUTTON & check if LED2 is glowing.

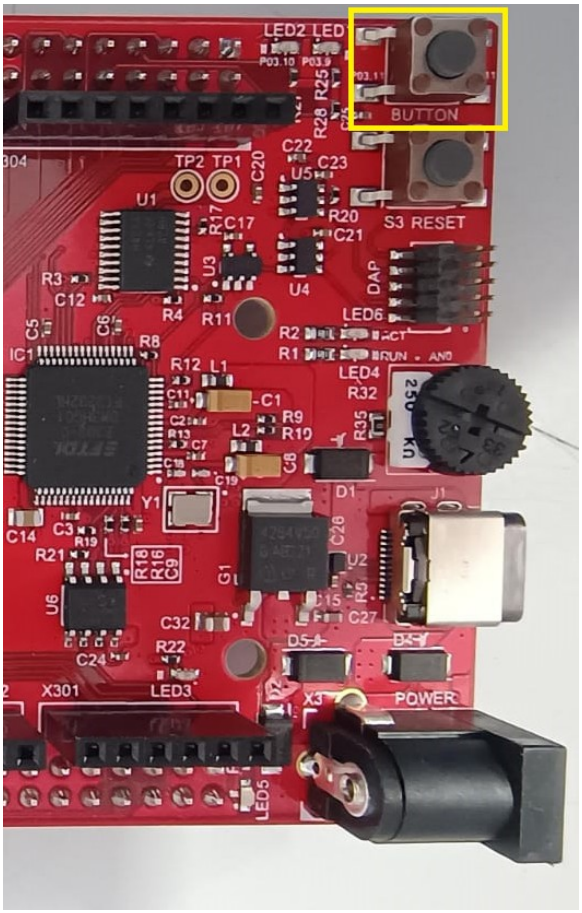

Figure 18: P03.11 BUTTON

4) Release P03.11 BUTTON & check if LED2 is turned OFF.

5.9 ADC Potentiometer test

Make sure that board is connected to PC

1) Flash *iLLD_TC4D7_COM_ADS_TMADC_1.hex* with the help of Infineon memtool (See section 5.5 Flashing Blinky code). Make sure that UCB0 is not enabled during flashing.

2) Press S3 Reset button.

3) Move the Dial of potentiometer R32 as shown in below figure.

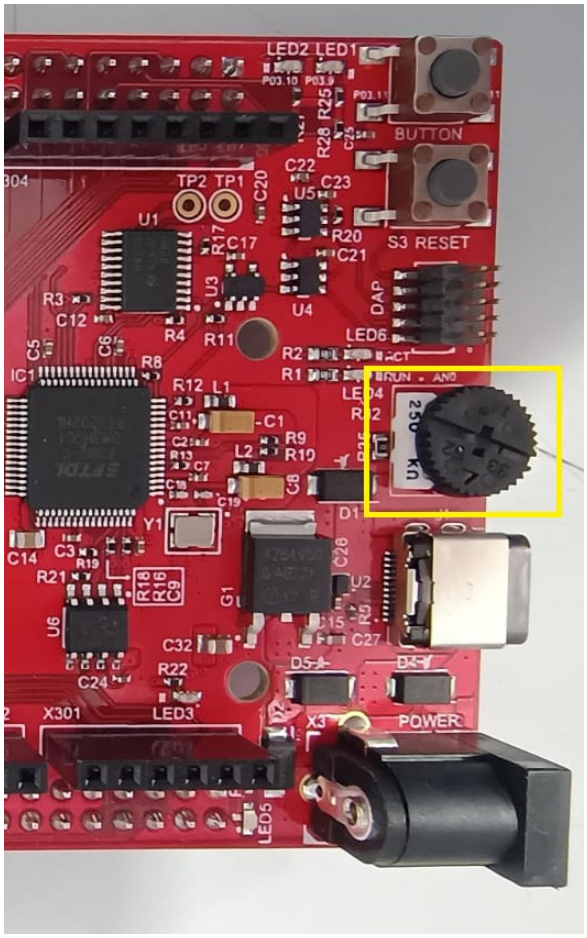

Figure 19: P03.11 BUTTON

4) Check if LED1 & LED2 are changing their toggle.

5.10 I2C EEPROM test

Make sure that board is connected to PC.

1. Flash *iLLD_TC4D7_COM_I2C_EEPROM_1.hex* with the help of Infineon memtool (See section 5.5 Flashing Blinky code). Make sure that UCB0 is not enabled during flashing.
2. Press S3 Reset button.
3. Check if LED1 is turned ON for successful execution.

5.11 CAN interface test

Make sure that board is connected to PC.

1. Flash *iLLD_TC4D7_COM_ADS_Can_Tx_Rx.hex* with the help of Infineon memtool (See section 5.5 Flashing Blinky code). Make sure that UCB0 is not enabled during flashing.
2. Press S3 Reset button.
3. Power ON the CAN Test Jig board using 12V 2A DC adapter.
4. Connect CAN.CANH of Kit to CAN.CANH of CAN Test Jig
5. Connect CAN.CANL of Kit to CAN.CANL of CAN Test Jig.
6. Check if LED1 of Kit and LED1 of CAN Test Jig is toggling.
7. Press S3 Reset button of CAN Test Jig, the LED1 of Kit should stop toggling.
8. Release S3 Reset button of CAN Test Jig, the LED1 of Kit should start toggling.

5.12 10/100Mbps Ethernet test

Make sure that board is connected to PC.

1. Flash *iLLD_TC4D7_COM_ADS_Etherent_Tx_Rx.hex* with the help of Infineon memtool (See section 5.5 Flashing Blinky code). Make sure that UCB0 is not enabled during flashing.
2. Press S3 Reset button.
3. Power ON the Ethernet Test Jig board using 12V 2A DC adapter.

4. Connect X4 of the kit to X4 of Ethernet Test Jig using RJ45 Ethernet cable.
5. Both LED1 & LED2 should start toggling.
6. Now press S3 Reset button of Ethernet test jig, only LED1 of Kit should toggle.
7. Release S3 Reset button of Ethernet test jig, now both LED1 & LED2 of Kit should start toggling after some time.
8. Now press S3 Reset button of Kit, only LED1 of Ethernet test jig should toggle.
9. Release S3 Reset button of Kit, now both LED1 & LED1 of Ethernet test jig should start toggling after some time.
10. Check if Left led in both X4 connector in Kit & Ethernet test jig is toggling.

5.13 Power ON Test with 12V DC Adapter

1. Make sure that board is not connected to PC.
2. Disconnect the Kit from the PC.
3. Connect 12V 2A DC adapter to X3 and turn on the power to DC adapter.
4. Make sure that following LED's are turned ON.

iii) LED3 (for 3.3V)

iv) LED7 (for 5V)

5. Use multimeter to measure voltages at following points:

iii) X302.4 to GND should measure 3.3V

iv) X302.5 to GND should measure around 5V.

5.14 Shipping Firmware

1. Remove 12V 2A DC Adapter power connection.
2. Connect the Kit to PC using USB-C to USB-C connector.
3. Flash *iLLD_TC4D7_COM_ADS_Blinky_2.hex* binary code. (See Section 5.5 Flashing Blink).
4. Disconnect the Kit. After some time reconnect the Kit back to PC and make sure that LED1 and LED2 should be toggling alternatively.
5. Make sure that LED5 is not glowing Red.
6. Make sure that R32 Potentiometer is kept at 50% dial position.

6. Preparing Test Jigs

1. CAN Test Jig can be prepared by flashing *iLLD_TC4D7_COM_ADS_CAN_TJ.hex* onto a tested and qualified KIT_A3G_TC4D7_LITE V02 board. Please refer 5.5 Flashing Blink for information regarding flashing binaries in KIT_A3G_TC4D7_LITE V02. Make sure that UCB0 is not enabled during flashing.
2. Ethernet Test Jig can be prepared by flashing *iLLD_TC4D7_COM_ADS_Ethernet_Tx_Rx.hex* onto a tested and qualified KIT_A3G_TC4D7_LITE V02 board. Please refer 5.5 Flashing Blink for information regarding flashing binaries in KIT_A3G_TC4D7_LITE V02. Make sure that UCB0 is not enabled during flashing.

-End of Memo-