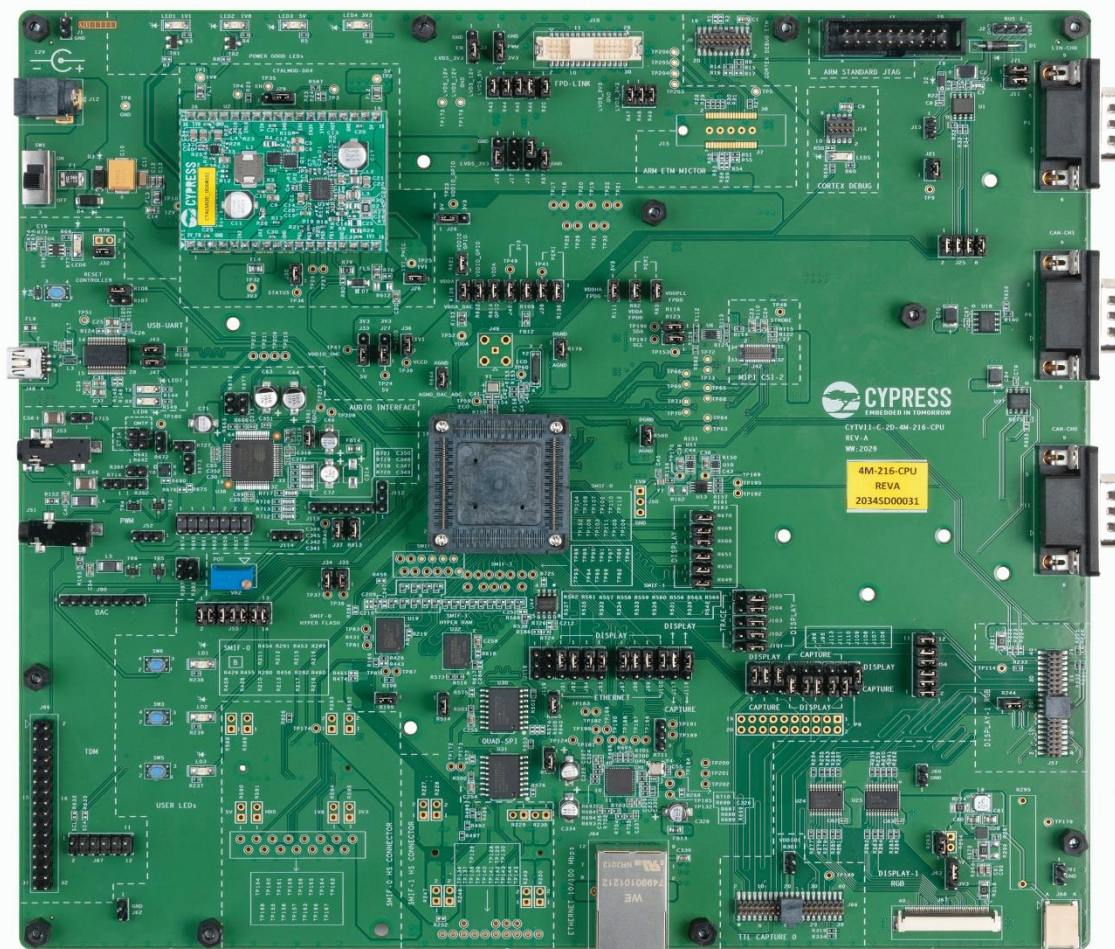


# CYTVII-C-2D-4M-216-CPU and CYTVII-C-2D-4M-216-SET

## Manufacturing Test Procedure



<b>Assembly number:</b> 121-60597-01	<b>Revision:</b> 14
<b>Schematic number:</b> 600-60597-01	<b>Revision:</b> 1.0
<b>Product:</b> CYTVII-C-2D-4M-216-CPU and CYTVII-C-2D-4M-216-SET	
<b>Contact person:</b> Dharani Kumar (Dharani.Kumar-EE@infineon.com)	

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 1/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------

## Table of Contents

Manufacturing Test Procedure.....	1
1.1 Product version supported .....	4
1.2 Total test coverage .....	4
1.3 Test time per unit .....	4
2 Documentation .....	5
2.1 Documentation details .....	5
2.2 Delivery method for documentation .....	5
3 Equipment requirement .....	6
3.1 Kit content .....	6
3.2 Hardware requirements .....	6
3.3 PC/laptop requirements .....	7
3.4 Software requirements.....	7
3.5 Firmware requirements .....	7
4 Download default hex files .....	9
5 Test overview .....	10
5.1 Graphical User Interface (GUI) Overview .....	10
5.2 General procedure for each test .....	11
6 Initial setup .....	13
6.1 One time setup .....	13
6.2 Programming test-Jig .....	14
6.3 Initial jumper settings .....	14
7 Top level flowchart .....	16
7.1 Test procedure flowchart .....	16
8 Run the tests .....	18
8.1 Power Supply test .....	18
8.1.1 Powering the test Setup .....	18
8.1.2 Device Lifecycle Conversion.....	19
8.2 Peripherals test (Firmware1 – Test Firmware): .....	21
8.2.1 User-LEDs test.....	22
8.2.2 User-Button test .....	23
8.2.3 Potentiometer test .....	24

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 2/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------

8.2.4	Hyper-Flash test .....	25
8.2.5	Hyper-RAM test .....	26
8.2.6	TDM Sound Test.....	27
8.2.7	CANFD test.....	28
8.2.8	LIN test .....	29
8.2.9	Gigabit Ethernet Test .....	30
8.2.10	FPD Display Test.....	31
8.3	MIPI Camera test (Firmware2 – JTAG Firmware): .....	32
8.4	Shipping Firmware (Firmware3 – Shipping Firmware): .....	33
9	Sample Test Report:.....	34
10	Default Jumper Position.....	36
11	Special Instructions for Failed Units: .....	39
12	Appendix: .....	40

---

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 3/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------

## 1 Test Summery

### 1.1 Product version supported

The product version supported is the CYTVII-C-2D-4M-216-SET and CYTVII-C-2D-4M-216-CPU board.

### 1.2 Total test coverage

The below table shows how many components are tested in this manufacturing test procedure.

Total no. of components	No. of components tested	Percentage tested
660	618	93%

### 1.3 Test time per unit

The test time per unit is 3 minutes.

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 4/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------

## 2 Documentation

### 2.1 Documentation details

Documentation Details of CPU Board

S.No	PCBA	Document	Arena Part #
1	CYTVII-C-2D-4M-216-CPU	CYTVII-C-2D-4M-216-CPU BOARD PCB LAYOUT	600-60597-01
2		CYTVII-C-2D-4M-216-CPU BOARD FABRICATION DRAWING	610-60597-01
3		CYTVII-C-2D-4M-216-CPU BOARD ASSEMBLY DRAWING	620-60597-01
4		CYTVII-C-2D-4M-216-CPU BOARD SCHEMATIC DRAWING	630-60597-01

Documentation Details of PMIC Board

S.No	PCBA	Document	Arena Part #
1	CYTVII-C-2D-4M-PMIC	CYTVII-C-2D-4M-216-CPU-PMIC BOARD PCB LAYOUT	600-60584-01
2		CYTVII-C-2D-4M-216-CPU-PMIC BOARD FABRICATION DRAWING	610-60584-01
3		CYTVII-C-2D-4M-216-CPU PMIC BOARD ASSEMBLY DRAWING	620-60584-01
4		CYTVII-C-2D-4M-216-CPU PMIC BOARD SCHEMATIC DRAWING	630-60584-01

### 2.2 Delivery method for documentation

The delivery method is ARENA PLM System.

Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality restricted	Document Number: 002-32902	Revision: *A	Date: 2025-01-31	Page/Pages 5/41
-------------------------------	-------------------------------	-----------------	---------------------	--------------------

## 3 Equipment requirement

### 3.1 Kit content

The kit content is: -

- (a) CYTVII-C-2D-4M-216-CPU assembled PCB
- (b) 12V Power Adapter
- (c) USB Mini-B Cable
- (d) Quick Start Guide Document

### 3.2 Hardware requirements

S no.	Equipment	Quantity	Supplied by
1	12V Power Adapter	1	Infineon
2	MiniProg4 programmer with USB-C-Type cable	1	Infineon
3	USB Mini-B cable	1	Infineon
4	Basic Digital Multimeter	1	Infineon
5	Female to Male Jumper	1	Infineon
6	Female to Female DB 9 Cable	1	Infineon
7	Earphone	1	Infineon
8	Ethernet & LIN test Jig	1	Infineon
9	Arm JTAG 20 pin connector and 10 pin connectors	1	Infineon
10	RJ45 Cable	1	Infineon
11	LVDS Display	1	Infineon

#### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 6/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------

### 3.3 PC/laptop requirements

The below are the minimum requirements for the PC/Laptop used for testing.

S no.	Specification	Requirement
1	Processor	2 GHz or higher
2	RAM	2 GB or higher
3	Operating system	Win 7/ Win 10/ Win 11
4	Hard drive free space	1 GB or more
5	USB port	USB3.0 and USB2.0

### 3.4 Software requirements

S no.	Software	Arena part #	Gitlab link
1	SW.zip	150-60342-01	<a href="#">KIT_T2G_C-2D-4M_LITE MTP SW</a>

### 3.5 Firmware requirements

S no.	Software	Arena part #	Gitlab link
1	FW.zip	101-60456-01	<a href="#">KIT_T2G_C-2D-4M_LITE MTP FW</a>

#### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 7/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------

**Note:** For each new build make sure that the latest software and firmware is downloaded from Arena before starting the testing.

**Note:** For the software and firmware files downloaded from arena, verify that the checksum for the file is matching to the arena checksum.

---

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 8/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	---------------------------



## 4 Download default hex files

Download the Hex files from the link mentioned above in section 3.4 and 3.5. Programming the hex files is mentioned in the section 8.2.

---

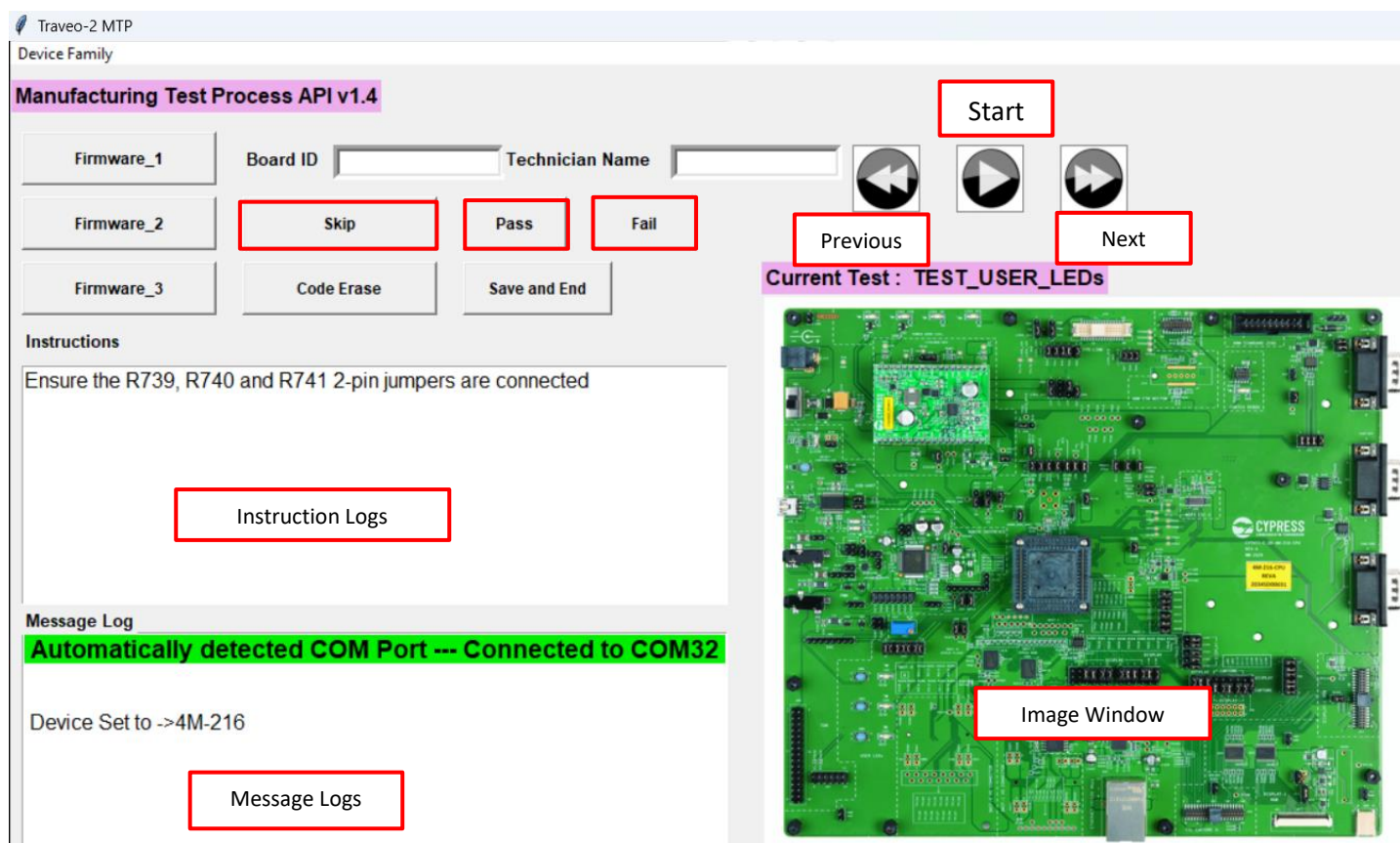
**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	9/41

## 5 Test overview

### 5.1 Graphical User Interface (GUI) Overview

Connect the Type-B Mini USB cable at J48 (Refer to Figure 5), on the CPU board under test (DUT). Connect the other end of the cable to a PC and then open the GUI. The Graphical User Interface gives an interactive way to perform the test. Each part of the GUI is explained below.



**Figure 1: MTP GUI Overview**

#### Instructions Log Window:

It shows the instructions to perform each test. Please refer to these instructions before starting a test.

#### Message Log Window:

This displays messages about the status of the on-going test. Please refer to these messages while doing a test.

#### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	10/41

### Image window:

The title of the Image window displays the current test. This window displays the image of the board, in which the particular item(s) under test is highlighted.

### Buttons:

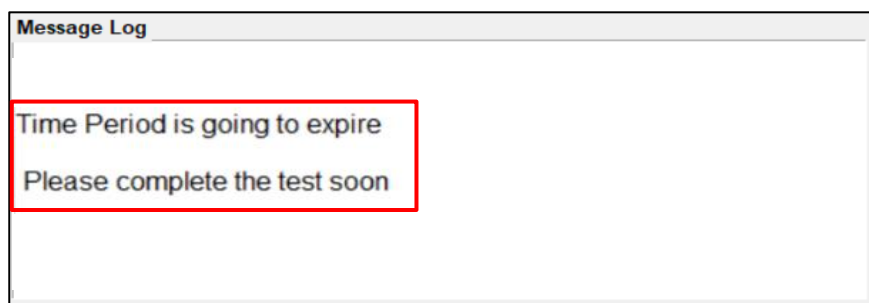
Next button	:	Click this to move to the next test.
Previous button	:	Click this to move to the previous test.
Start Button	:	Click this button to start a test.
Skip Button	:	Click this to skip a test.
Pass Button	:	Click this if a test is passed.
Fail Button	:	Click this if a test is failed.

## 5.2 General procedure for each test

1. Navigate to the test using the Next/Previous buttons.
2. Follow the instructions shown in the Instruction Window to perform the test.
3. Refer to the Image Window to find the item under test. Make the connections as shown in Image window.
4. Press the Start button to start the test or Next button to skip it.
5. If a test is skipped, it will be marked as failed.
6. Once the start button is pressed, the test must be completed before moving to next test.
7. Message Log Window will display the status of the current test.
8. Press the PASS/FAIL after each test result shown in Message Window.
9. Some of the tests will have pre-defined time period within which the test has to be completed.
10. A warning message will be displayed in the Message log if half the time period is over (highlighted below).

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 11/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------



**Figure 2: Test time expiration warning message**

11. If the test is not passed within this time period, it will be automatically marked as failed.
12. Once the last test is over, enter the Board number and Technician name in the respective boxes and then click “Save and End” button. Test reports will be saved in the “Test\_Reports” folder created before.

## 6 Initial setup

### 6.1 One time setup

- Download files FW.zip and SW.zip from the arena. Unzip both the files at a known location.
- Please install the software: TVII\_MTP-1.4 found inside the SW folder (ignore if already done).
- Please install Auto Flash Utility 1.3.0 found inside SW folder (ignore if already done).
- Create a new folder in C drive and name it as “MTP\_SREC\_FILES” (ignore if already done).
- Create a new folder “TVII-C-2D-4M” inside the “MTP\_SREC\_FILES” folder (if already present ignore this step).
- Copy the folder “4M-216” from the folder FW and paste it inside the folder “TVII-C-2D-4M”.
- Create a new folder “Test\_Reports” inside the C drive (ignore if already done).

MTP_SREC_FILES	26-05-2023 12:03	File folder
PerfLogs	07-12-2019 14:44	File folder
Program Files	27-05-2023 12:38	File folder
Program Files (x86)	24-05-2023 12:15	File folder
programs	06-01-2023 17:32	File folder
Sample Driver Library	19-05-2023 18:49	File folder
SMSTSLog	06-01-2023 16:03	File folder
software driver	22-05-2023 11:15	File folder
Softwares	28-04-2023 12:06	File folder
System Validation	25-04-2023 11:03	File folder
temp	06-01-2023 17:54	File folder
Test_Reports	27-05-2023 14:04	File folder

**Figure 3: folders to be created inside C drive**

- Copy the “MTP\_Py\_Config.txt” file from the FW folder and paste it in location C:\Program Files \TVII\_MTP folder.
- If it asks for administrative access, click continue.
- Copy the “LIFE\_CYCLE\_conversion\_4M\_A0\_Si” folder from the FW folder and then paste it to “C:\”

## 6.2 Programming test-Jig

1. Connect Minipro4 10 pin cable to Cortex Debug (J14) on Test-Jig.
2. Do the Initial Jumper Settings (section - 6.3), then remove the R735, R736, R737, R738, R739, R741.
3. Connect the jumpers R740, R742, R743, R744, R745.
4. Connect the jumpers J91(2-3), J92(2-3), J93(2-3), J94(2-3), J97(2-3), J98(2-3), J99(2-3), J100(2-3), R711(2-3).
5. Connect the 12V power adapter at J12 on the Test-Jig board and then power on.
6. Go to inside "C:\MTP\_SREC\_FILES\TVII-C-2D-4M\4M-216\TestJig\ " directory.
7. You will find one TestJig\_Firmware.bat file, double click on that.
8. It will take some time to flash. If flash is completed then you can see "LD2" is blinking on the Test-Jig board.
9. Disconnect the Minipro4 and now the Test-Jig board is ready for the testing

## 6.3 Initial jumper settings

Make sure the following Mini jumpers are installed before starting the test.

Jumper# on Board to test	Position
J29	1-2
J30	1-2
J28	1-2
J21	1-2
J27	1-2
J38	1-2
J36	1-2
J37	1-2
J33	1-2
J26	1-2
J34	1-2
J40	1-2
J35	1-2
R136	1-2
R614	1-2
R613	1-2
R83	1-2
R82	1-2
R111	1-2
R621	1-2
R622	1-2
R109	1-2
R128	1-2
R644	1-2
R580	1-2

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 14/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

Jumper# on Board to test	Position
R176	1-2
R581	1-2
J32	1-2
J43	1-2
J47	1-2
R108	1-2
J3	2-3
J4	2-3
J18	1-2
R43	1-2
R44	1-2
R49	1-2
R46	1-2
R20	1-2
R57	1-2
R47	1-2
R48	1-2
R45	1-2
J16	2-3
J11	1-2
J71	1-2
J112	1-2
R123	1-2
R116	1-2
J114	2-3
R293	1-2
J63	1-2
R714	1-2
R715	1-2

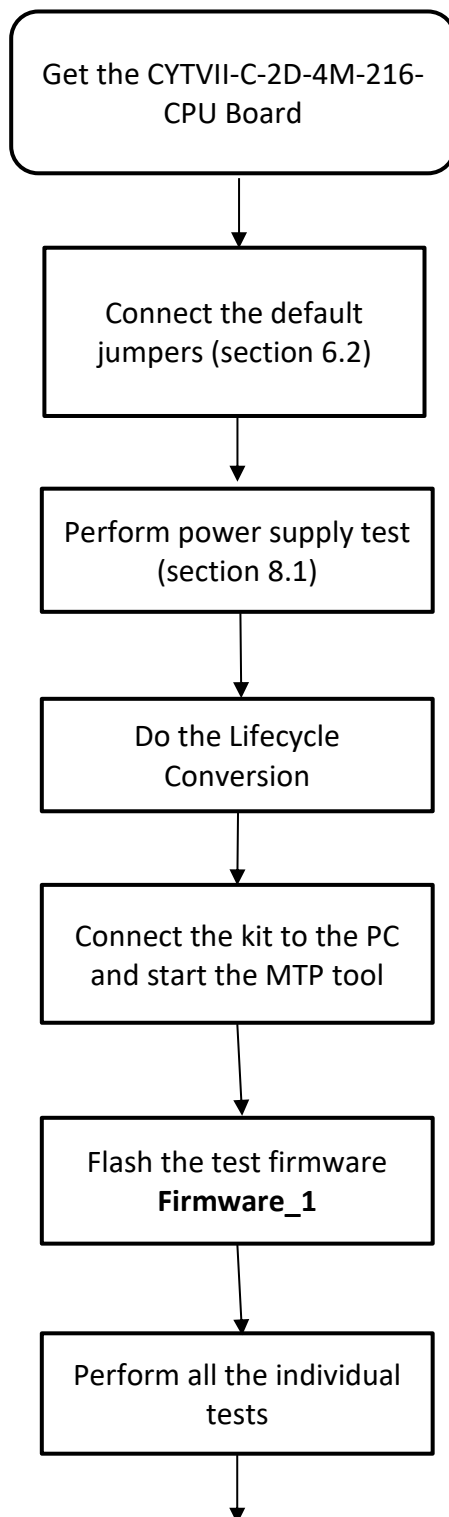
---

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 15/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

## 7 Top level flowchart

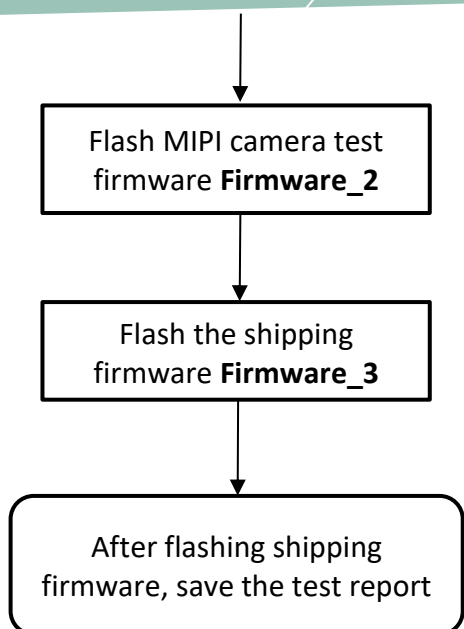
### 7.1 Test procedure flowchart



**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 16/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------





**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 17/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

## 8 Run the tests

### 8.1 Power Supply test

#### 8.1.1 Powering the test Setup

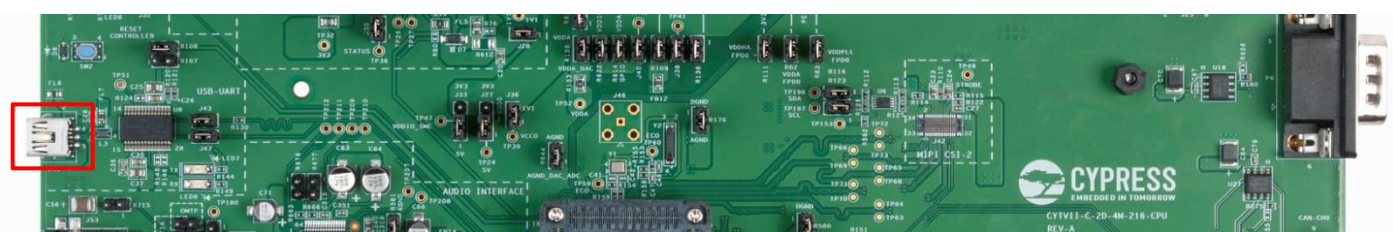
**Note:** Before power up the DUT board, connect the MIPI Camera to J42 connector (figure - 28).

1. Connect the 12V power adapter at J12 on the CPU board under test (DUT) and the other end to the mains supply. Refer to Figure 4



**Figure 4: Power Supply Connector J12 on CPU Board under Test**

2. Turn on the switch SW1 on the CPU board. The power LED1, LED2, LED3 and LED4 turns ON indicating the 1.1V, 1.8V, 3.3V and 5V is getting generated. Refer to Figure 4
3. Connect the Type-B Mini USB cable at J48, on the CPU board under test (DUT). Connect the other end of the cable to a PC. Refer to Figure 5



**Figure 5: USB Connector J48 on CPU Board under Test**

Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	18/41

4. Once the board is powered ON check for the below LED indications.

Sl. No	LED on Board under test	Status
1	LED4	ON
2	LED3	ON
3	LED2	ON
4	LED1	ON

5. Measure the voltage between the following points.

Sl. No	Measurement on test point	Expected Voltage
1	TP10 and TP6 (GND)	12.0V +/-10%
2	TP2 and TP6 (GND)	5.0V +/-10%
3	TP32 and TP6 (GND)	3.3V +/-10%
4	TP1 and TP6 (GND)	1.8V +/-10%
5	TP25 and TP6 (GND)	1.1V +/-10%
8	TP38 and TP6 (GND)	1.8V +/-10%
9	TP169 and TP6 (GND)	1.5V +/-10%
10	TP170 and TP6 (GND)	2.8V +/-10%

### 8.1.2 Device Lifecycle Conversion

1. Connect MiniProg4 10-Pin cable to J14 on DUT
2. Go to, C:/ LIFE\_CYCLE\_conversion\_4M\_A0\_Si/scripts folder
3. Click the “VirginToNormalProvisioned.bat” which is in the scripts folder.
4. Wait for some time and after the end of Lifecycle conversion.

#### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 19/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

5. Once the terminal closes, open “scripts/4M\_Silicon/ R01\_SortToNormalP” folder.
6. Open 8\_BasicTest.txt file.
7. Go to the end of the file and check whether “\*\*\*\*Part is in NORMAL Protection State\*\*\*\*” is there or not.

```

3023  lifeCycleStage = 7
3024
3025  ****Part is in NORMAL Protection State****
3026
3027
3028
3029  ****Part is in NORMAL_PROVISIONED Lifecycle State****
3030
3031  0x00003e00
3032  IOR (0x 17002000, 0x 00003e00) n.e.d.
3033  IOW (0x 28001000, 0x deadbeef)
3034  0xdeadbeef

```

**Figure 6: Lifecycle conversion output**

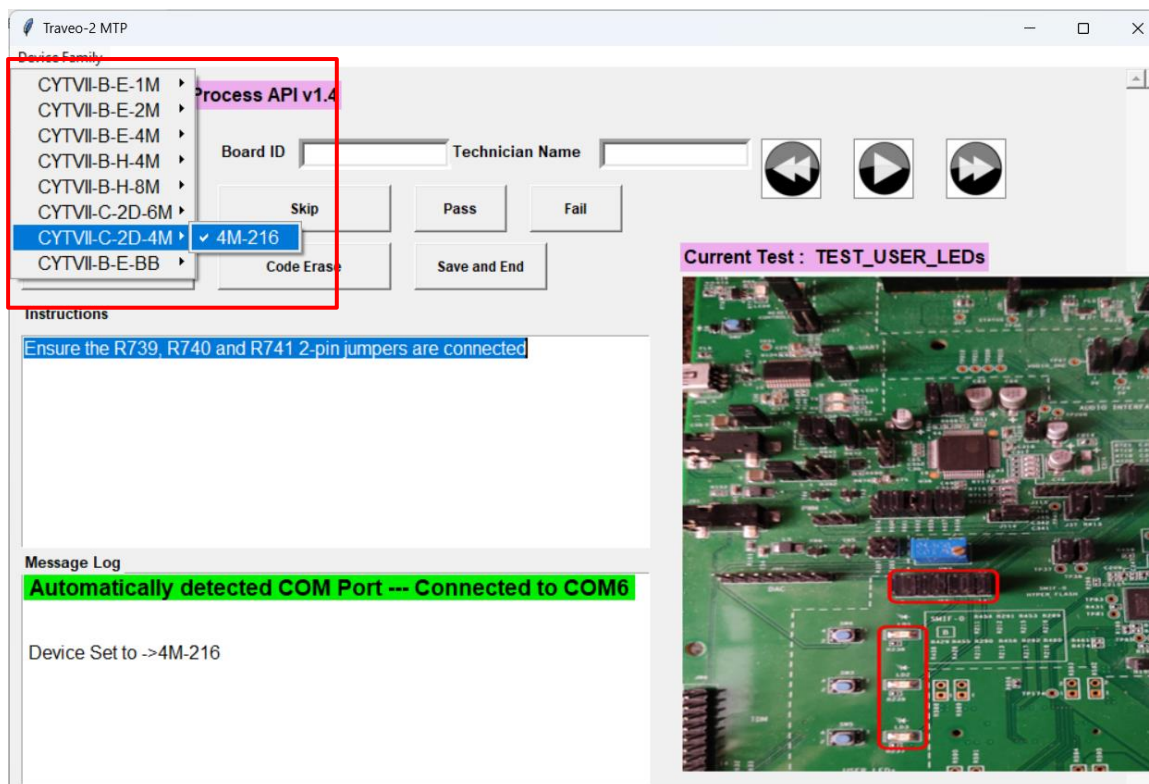
**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	20/41

## 8.2 Peripherals test (Firmware1 – Test Firmware):

Follow the below instructions –

1. Connect the Minipro4 using the 10-Pin cable to Cortex Debug (J14), and turn on the board.
2. Connect the Type-B Mini USB cable at J48 (Refer to Figure 5), on the CPU board under test (DUT).
3. Open the MTP application from C:\Program Files\TVII\_MTP\MTP\_GUI.
4. Go to Device Family -> CYTVII-C-2D-4M -> 4M-216, mentioned in Figure 7.



**Figure 7: Selecting TVII-C-2D-4M-216-CPU**

5. Press the Firmware1 button, it will take some time to flush the code.
6. After flushing the code, do the all peripheral testes.

**Note:** Read the instructions from the Instruction log window on the GUI and do the necessary changes on the board before starting the test.

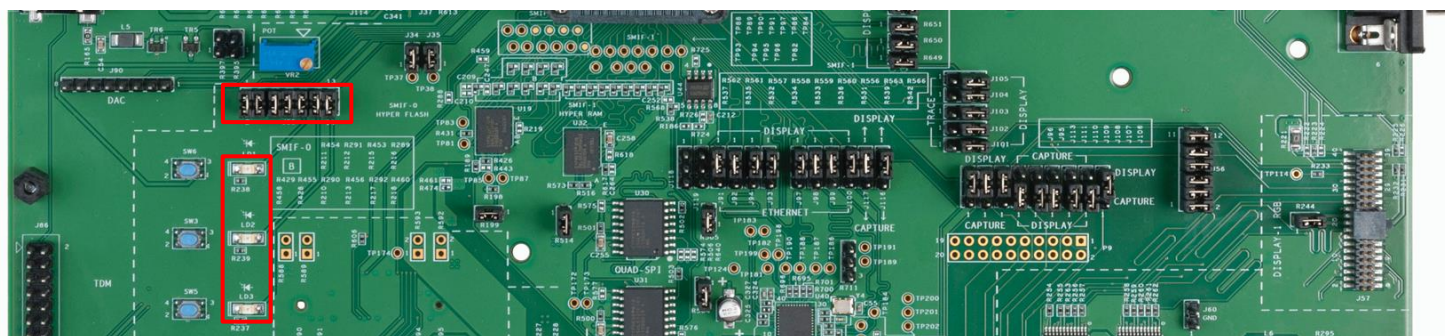
### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	21/41

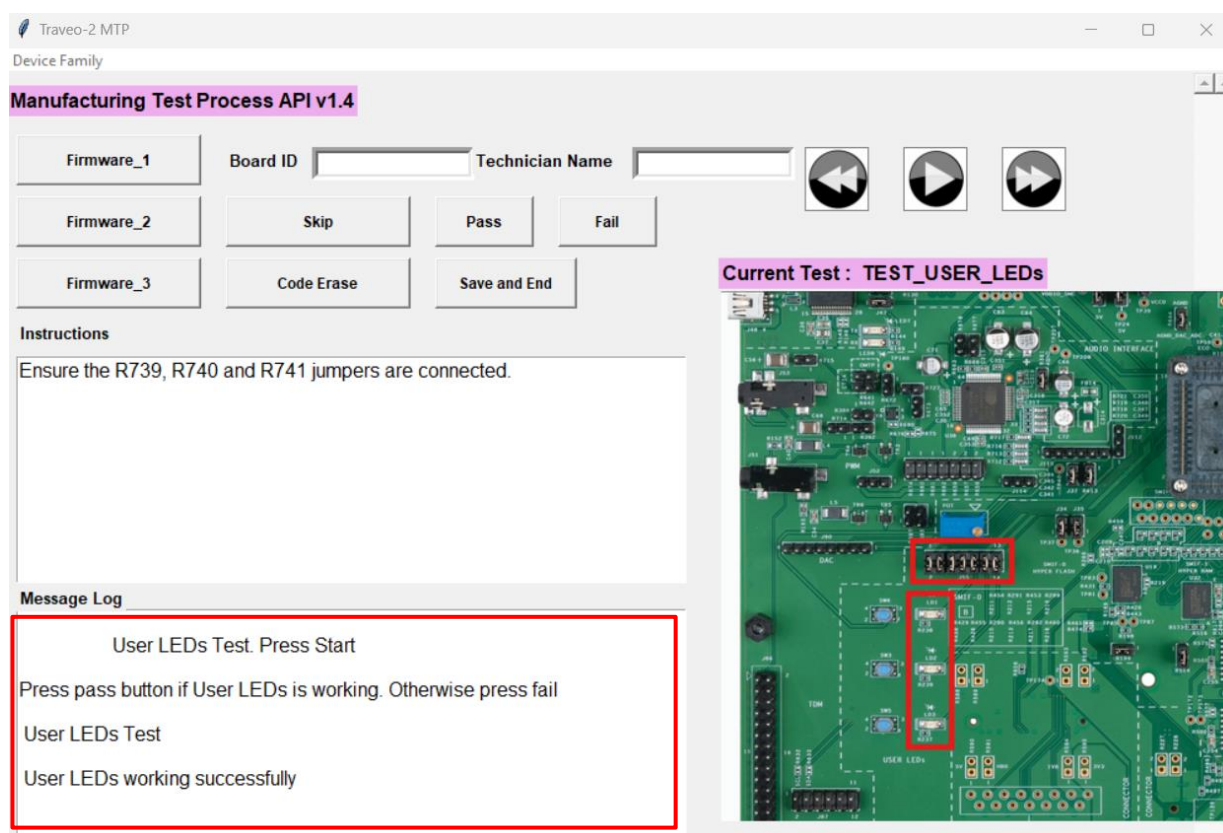


## 8.2.1 User-LEDs test

1. Ensure the R735, R736, R737, R738, R739, R740 and R741 jumpers are connected (figure – 8).
2. Press the start button in the MTP GUI to start the User-LED test.
3. Press the “Pass” button if the LD1, LD2 and LD3 are blinking, otherwise press “Fail” button.



**Figure 8: User LED Test**



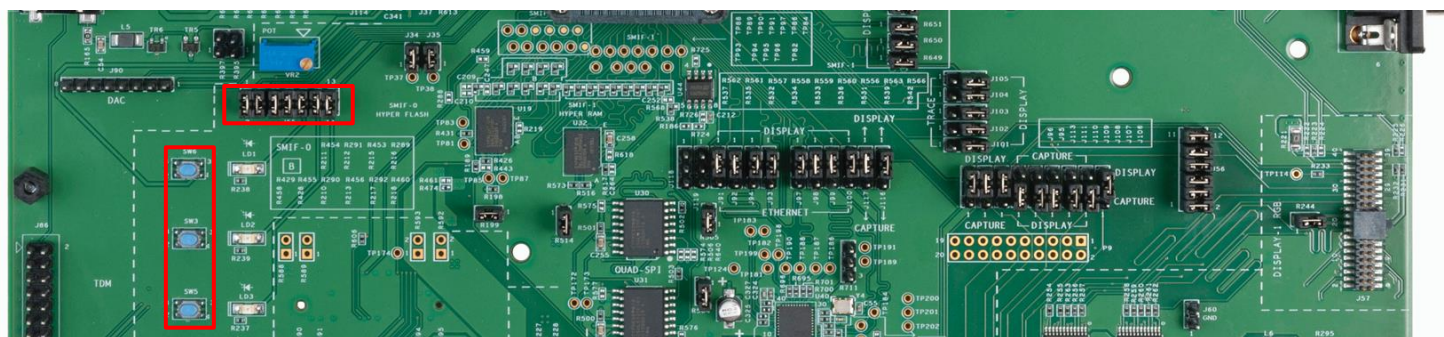
**Figure 9: User LED Output Message**

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

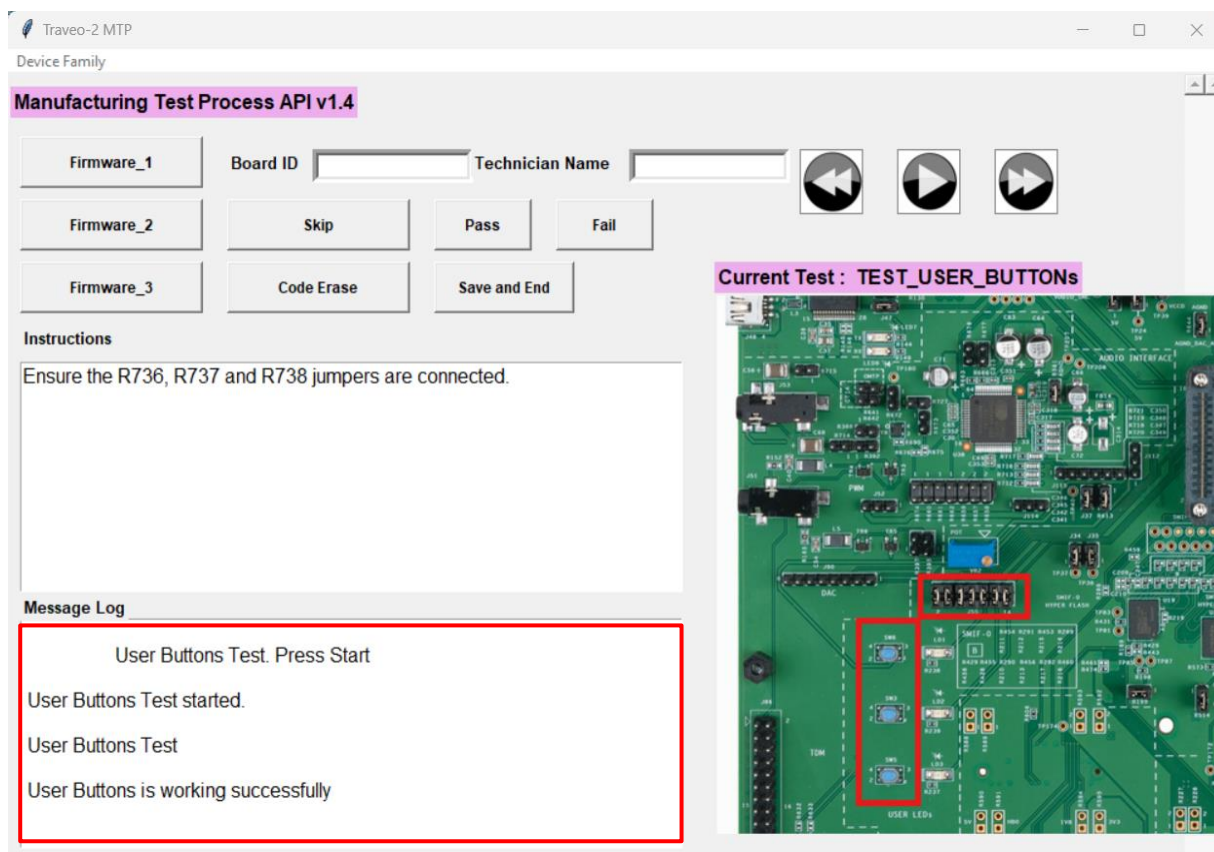
Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	22/41

## 8.2.2 User-Button test

1. Click on the next button to proceed to User-Button test and click on the play button to start the test.
2. After that press the SW5, SW3, SW6 one by one.
3. After pressing the three user button one by one, you will see the below success message (figure - 11).



**Figure 10: User Button Test**



**Figure 11: User Button Output Message**

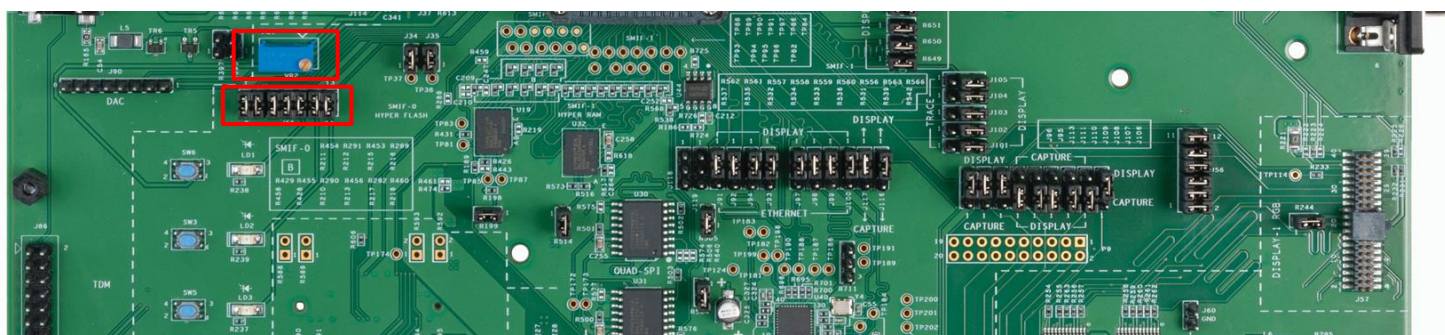
### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	23/41

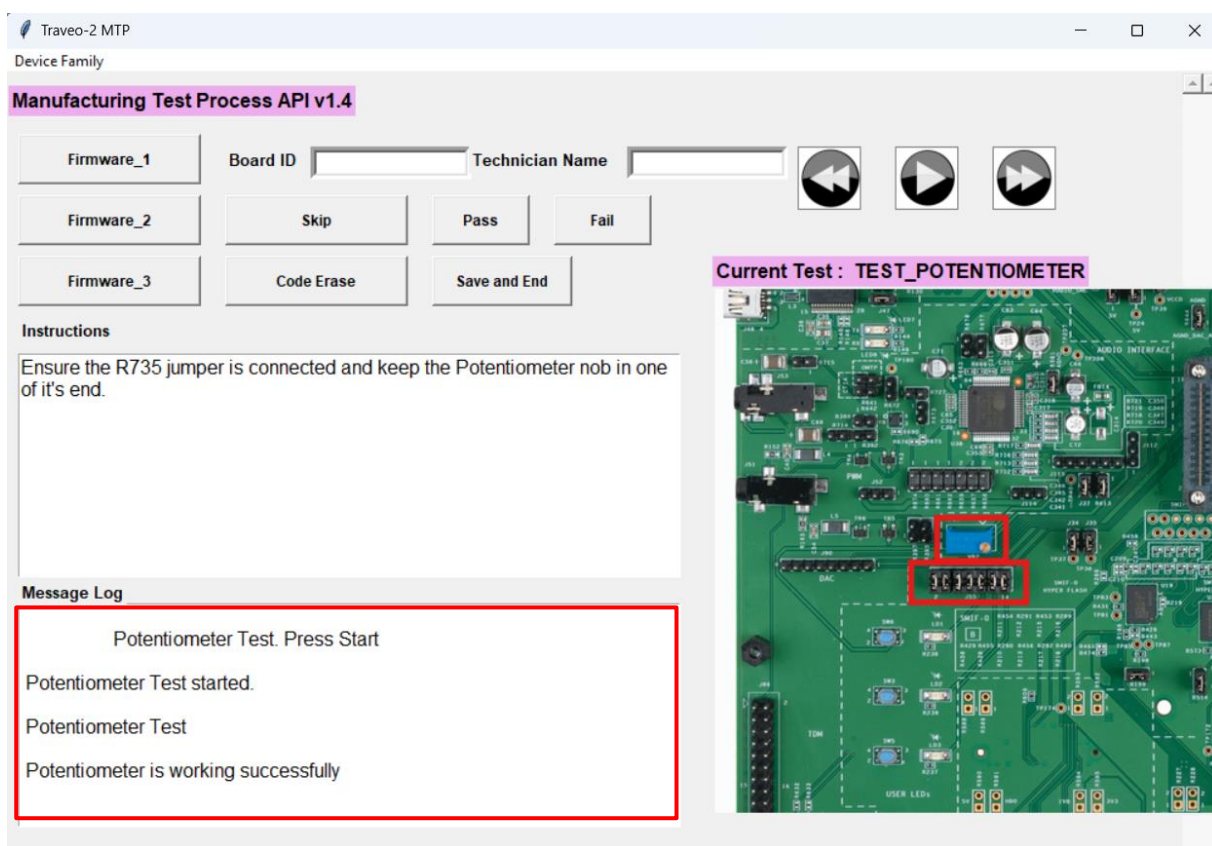


## 8.2.3 Potentiometer test

1. Keep the potentiometer nob in one of it's end (it could be left side or right side).
2. Click on the next button to proceed to next test and click on the play button to start the test.
3. After starting the test rotate the potentiometer nob towards the other end.
4. After a certain time you will see the below success message (figure – 13).



**Figure 12: Potentiometer Test**



**Figure 13: Potentiometer Test Output Message**

Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	24/41



## 8.2.4 Hyper-Flash test

1. Ensure the jumper R119 is connected.
2. Click on the next button to proceed to next test and click on the play button to start the test.
3. After 2-3 second by starting the test you will find the below success message (figure – 15).

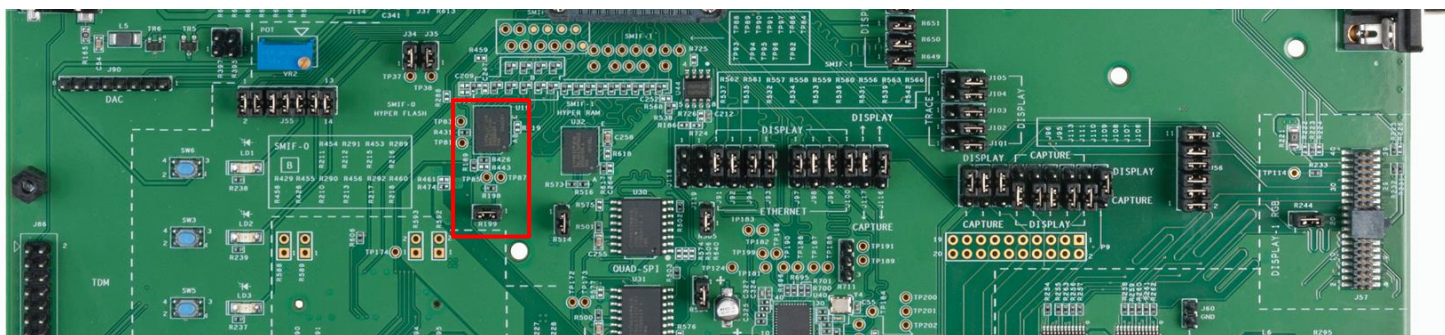


Figure 14: Hyper-Flash Test

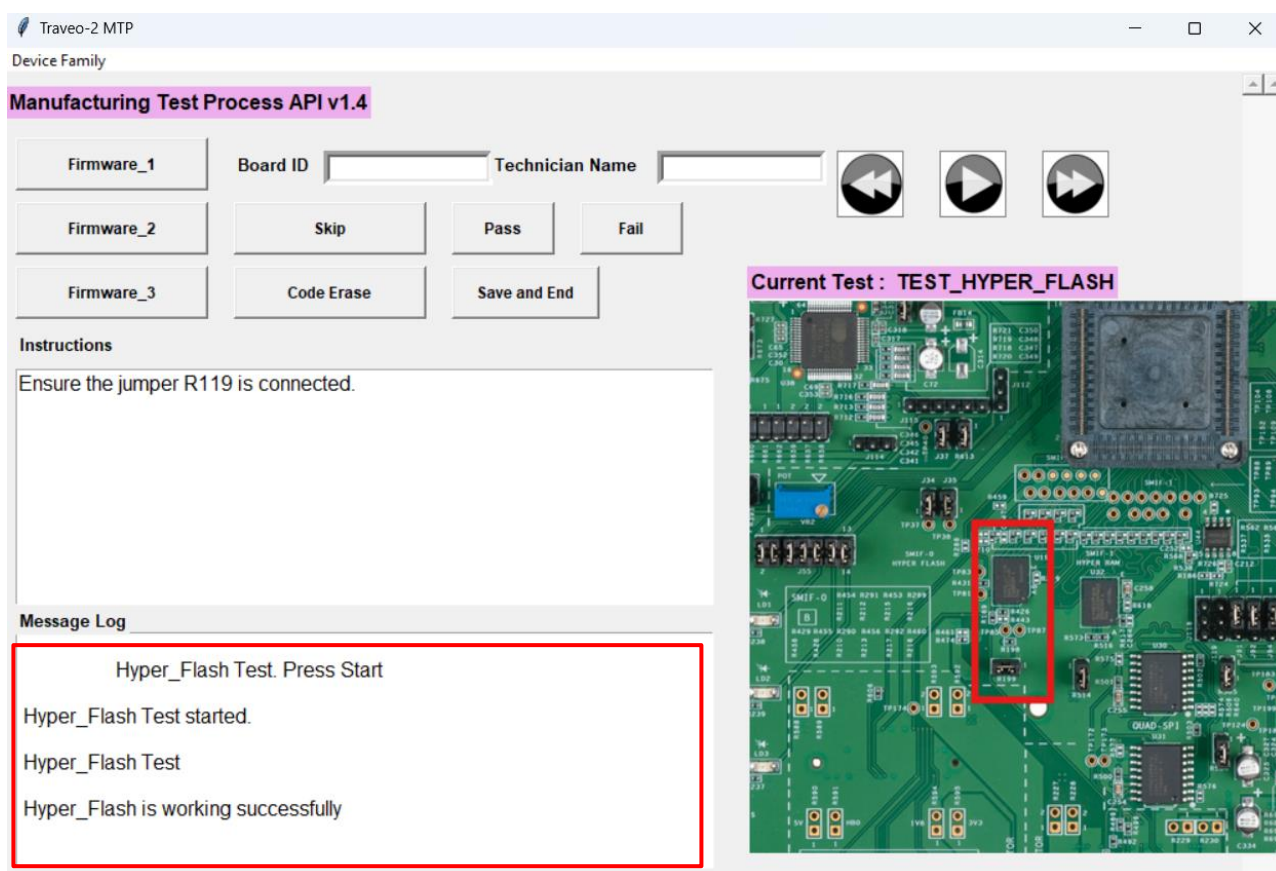


Figure 15: Hyper-Flash Output Message

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	25/41

## 8.2.5 Hyper-RAM test

1. Remove the jumpers R504 and R505 and ensure the jumper R514 is connected.
2. Click on the next button to proceed to next test and click on the play button to start the test.
3. After 2-3 second by starting the test you will find the below message (figure – 17).

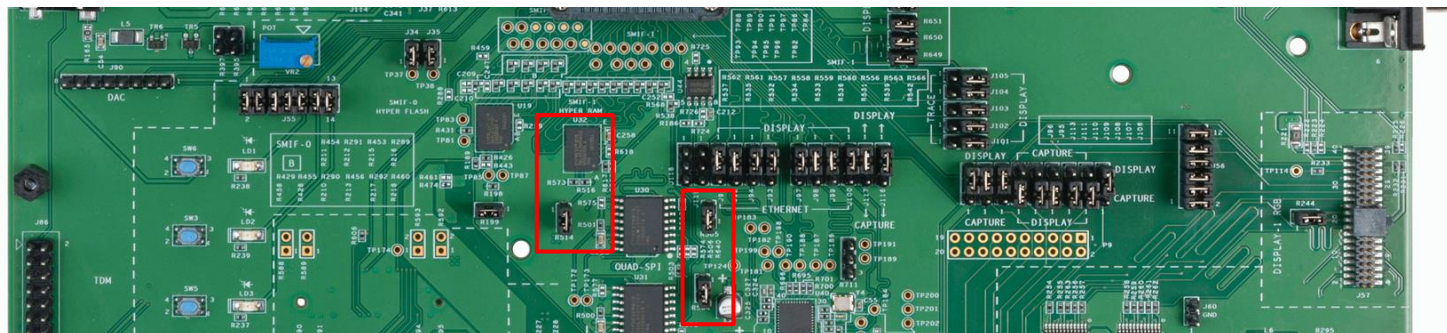


Figure 16: Hyper-RAM Test

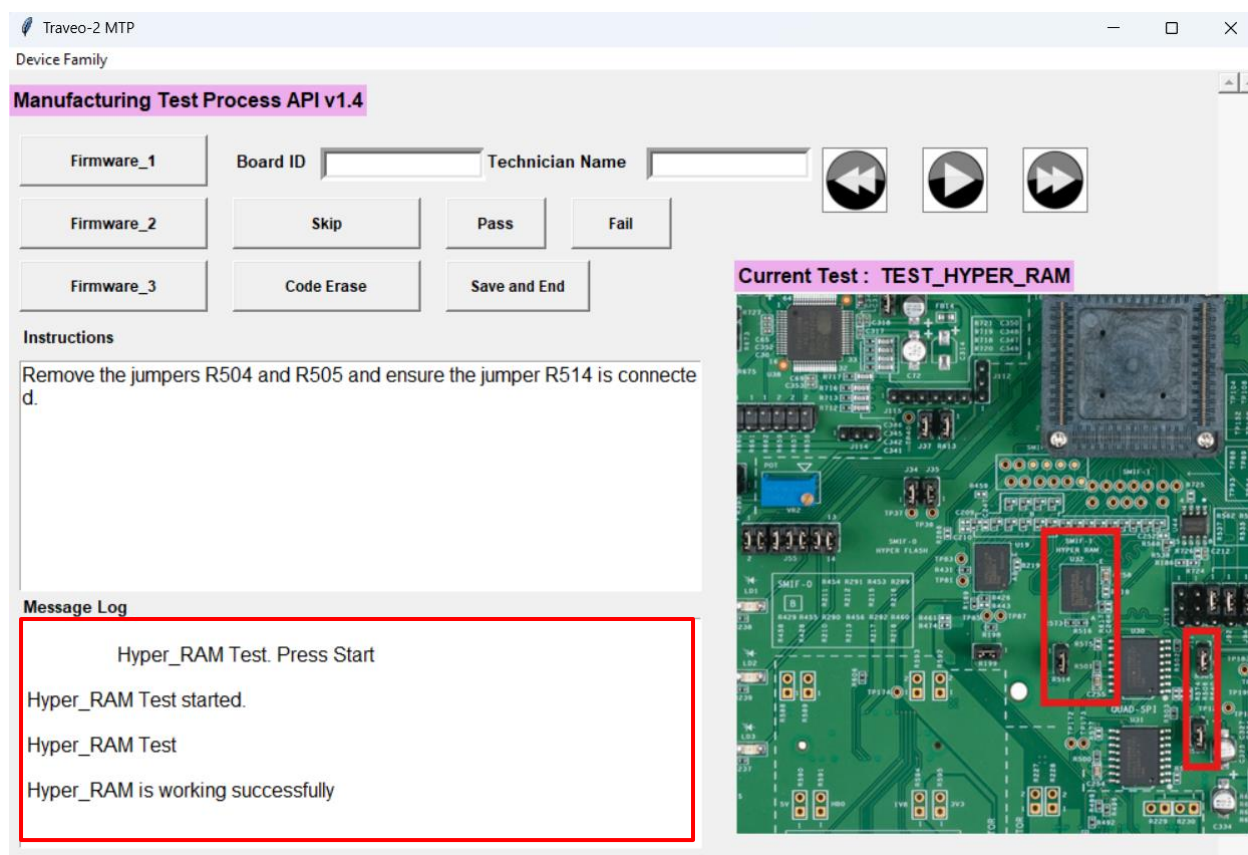


Figure 17: Hyper-RAM Output Message

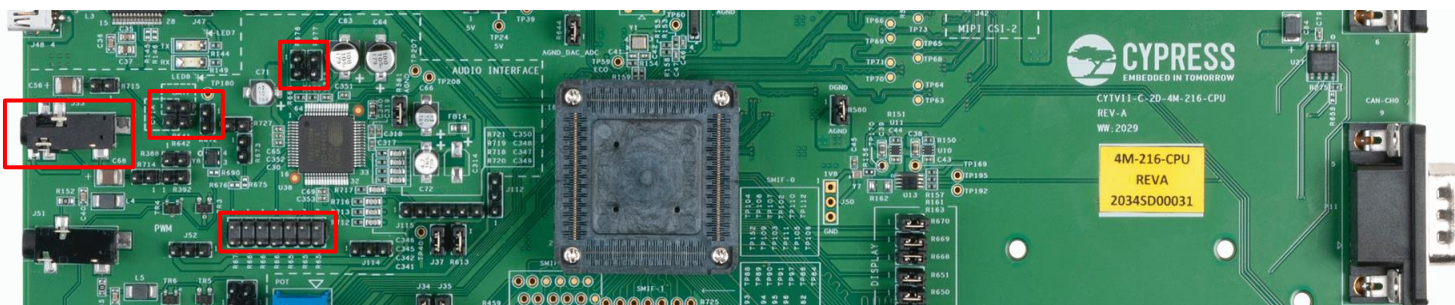
Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	26/41

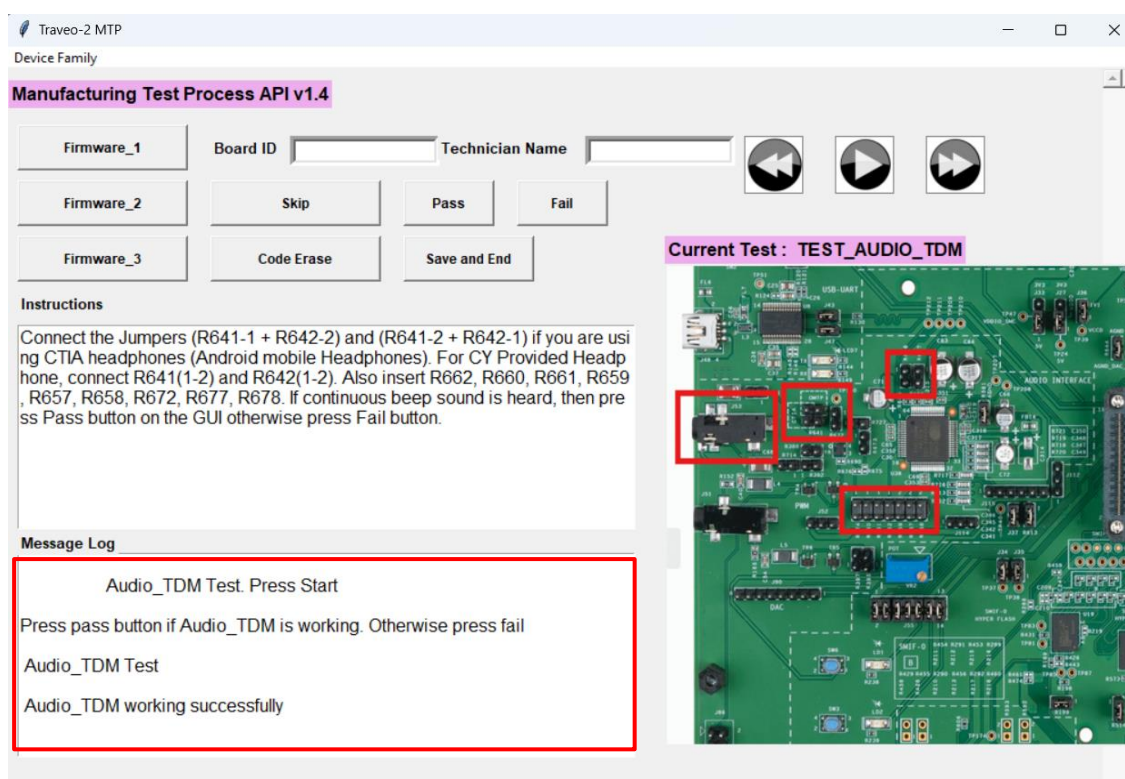


## 8.2.6 TDM Sound Test

1. Connect the Jumpers (R641-1 + R642-2) and (R641-2 + R642-1) if you are using CTIA headphones (Android mobile Headphones). For CY Provided Headphone, connect R641(1-2) and R642(1-2). Also insert R662, R660, R661, R659, R657, R658, R672, R677, R678.
2. Connect the headphones to the 3.5mm headphone jack (J53).
3. Click on the next button and click on the play button to start the TDM test.
4. Once you hear continuous beep sound then press “Pass” button on the GUI otherwise press “Fail” button.



**Figure 18: TDM Sound Test**



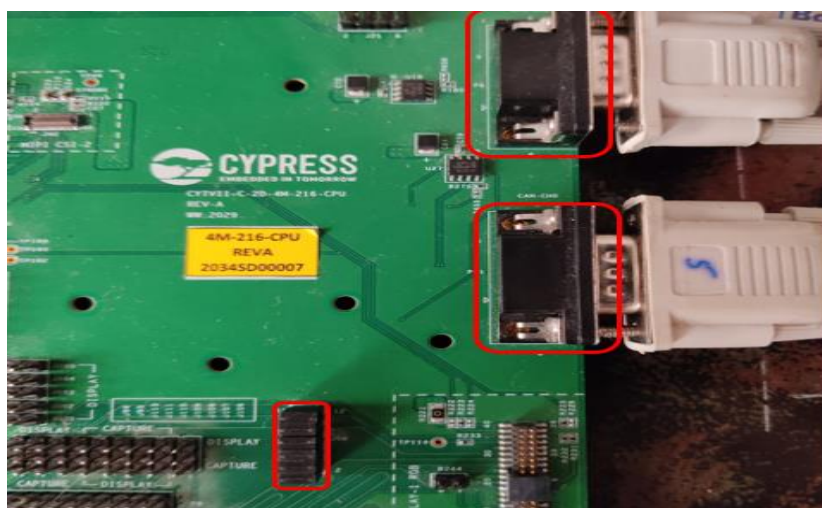
**Figure 19: TDM Sound Output Message**

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

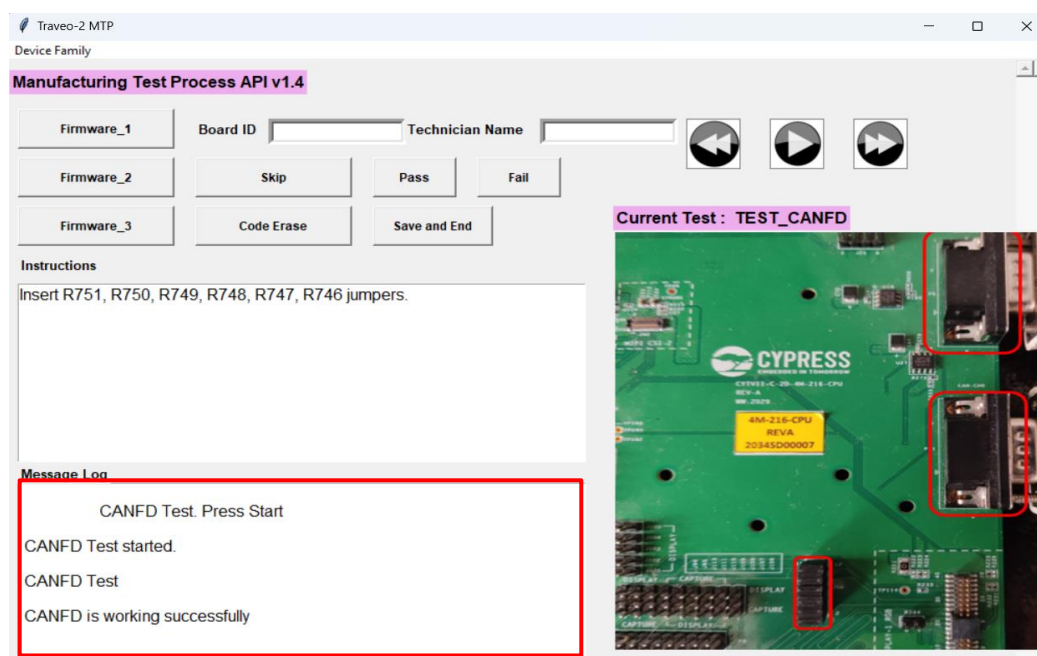
Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	27/41

## 8.2.7 CANFD test

1. Insert R751, R750, R749, R748, R747, R746 jumpers.
2. Now Connect the DB9 cable between the CAN0 (P11) and CAN1 (P6) channel.
3. Click the next button to proceed to CAN test and click on the play button on the GUI to start the test.
4. Then the data will be transferred between CAN0 and CAN1 channel and then the message log will be displayed as shown in the Figure - 21



**Figure 20: CANFD Test**



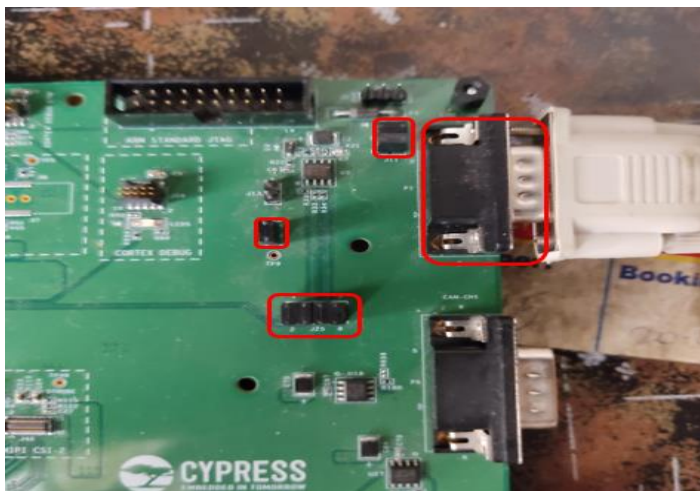
**Figure 21: CANFD Output Message**

### Title: CYT7V1-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

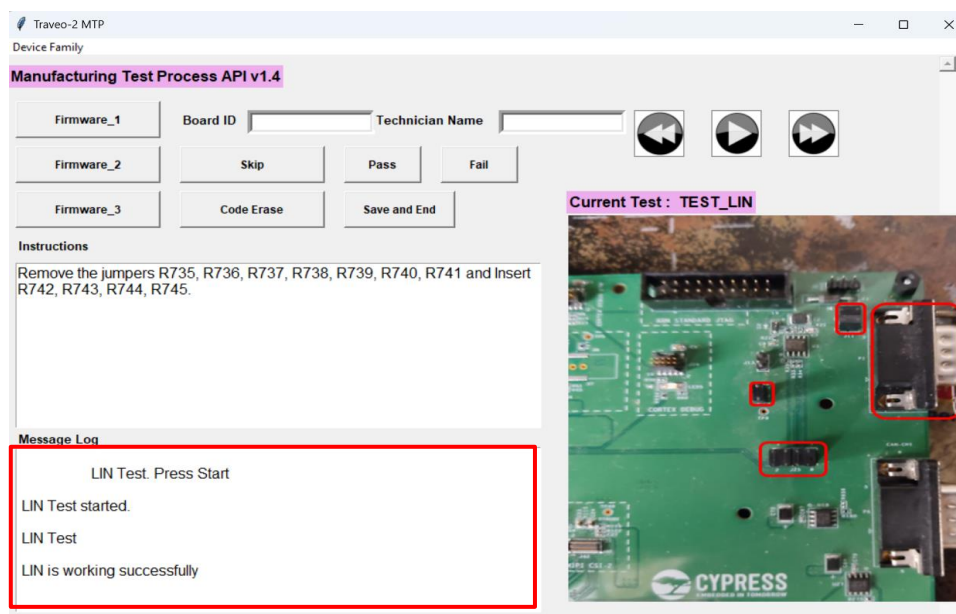
Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	28/41

## 8.2.8 LIN test

1. Remove the jumpers R735, R736, R737, R738, R739, R740, R741 and Insert R742, R743, R744, R745.
2. Connect LIN-0 (P1) on DUT and LIN-0 (P1) on test jig board with the DB9 female cable.
3. Press the Reset Button (SW2) on the Test-Jig board.
4. Click on the next button to proceed to the LIN test and click on play button to start the LIN test.
5. Data is transferred between the LIN0(DUT) and LIN0(Test Jig) and message is displayed on the message log as shown in the Figure-23



**Figure 22: LIN Test**



**Figure 23: LIN Output Message**

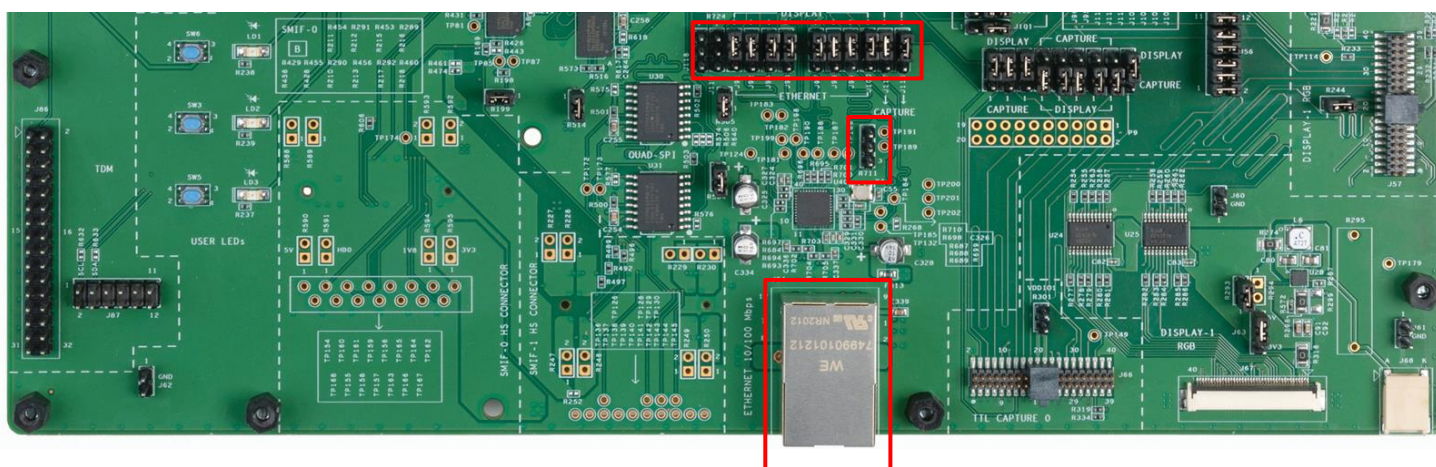
### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	29/41

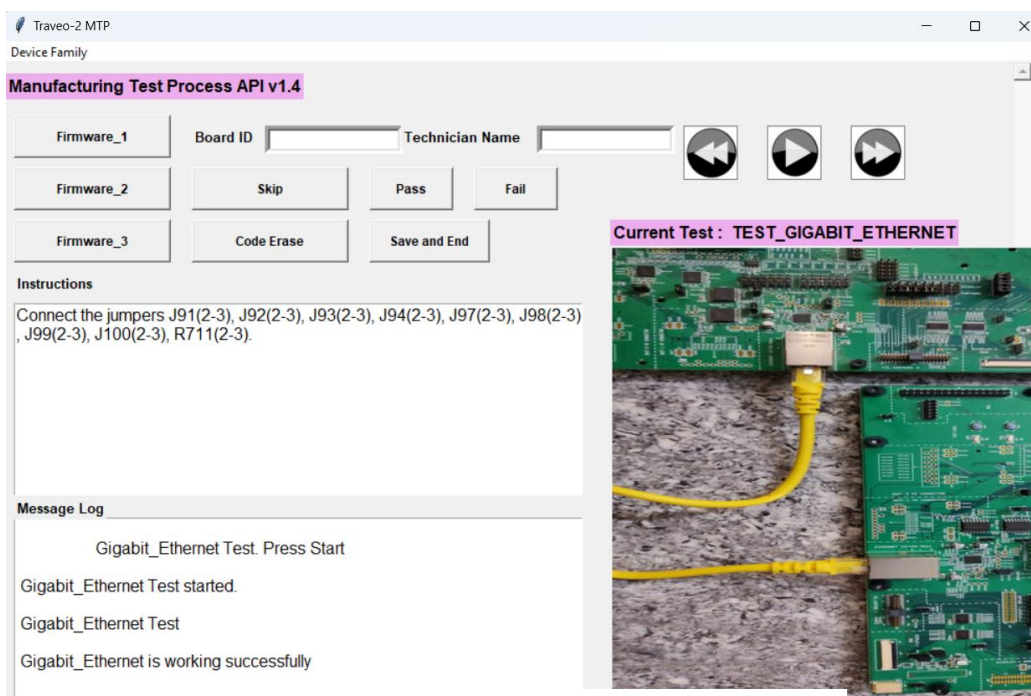


## 8.2.9 Gigabit Ethernet Test

1. Connect the jumpers J91(2-3), J92(2-3), J93(2-3), J94(2-3), J97(2-3), J98(2-3), J99(2-3), J100(2-3), R711(2-3).
2. Connect RJ45 cable to J64 on DUT and connect other end of RJ45 to Test-Jig.
3. Click the next button and start the test by pressing the play button on the GUI tool.
4. Once the ethernet data frame is received successfully a success message will be shown on the message log window as per Figure-25
5. Disconnect the Test-Jig board from the DUT board.



**Figure 24: Gigabit Ethernet Test**



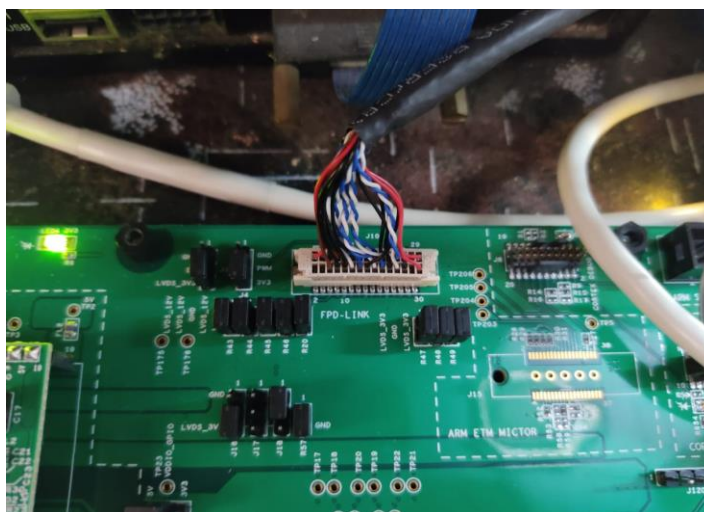
**Figure 25: Gigabit Ethernet Output Message**

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

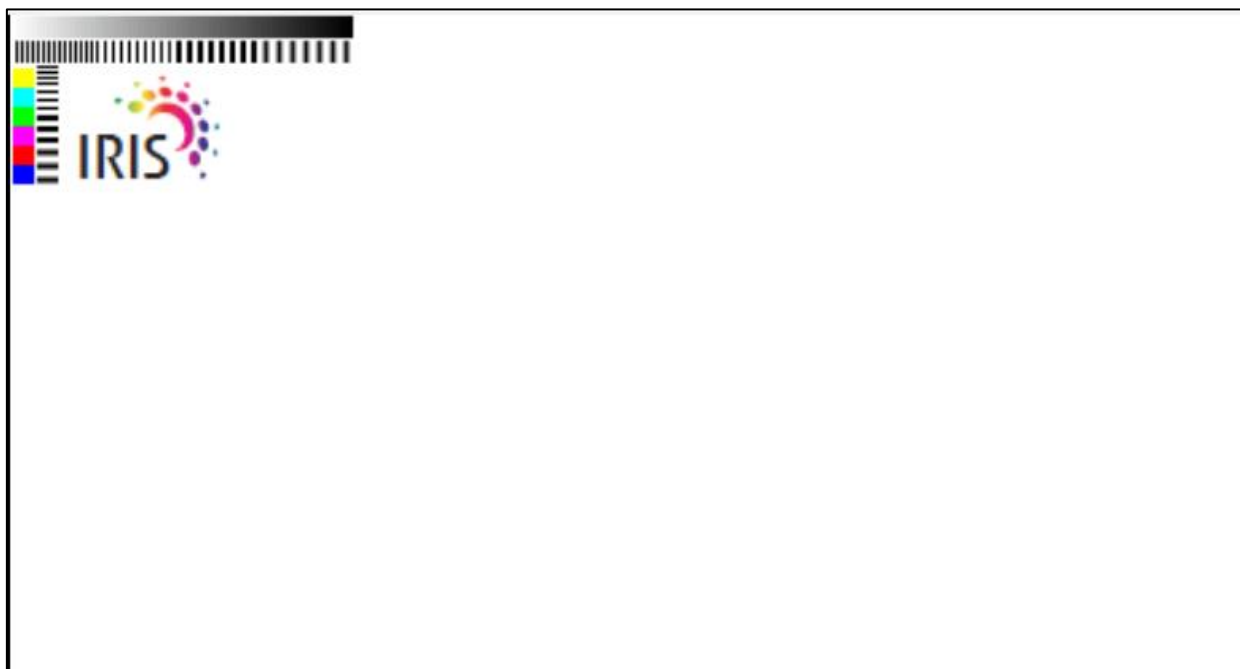
Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	30/41

## 8.2.10 FPD Display Test

1. Remove R742, R743, R744, R745 and insert R735, R736, R737, R738, R739, R740, R741. All the jumpers and FPD Display are connected by default.
2. Connect the FPD display into the J10 connector (figure – 26)
3. Click on the next button to proceed to the FPD test and click on play button to start the FPD test.
4. Press “PASS” button if you see the IRIS patter on the FPD display, otherwise press “FAIL” button.



**Figure 26: FPD Display Test**



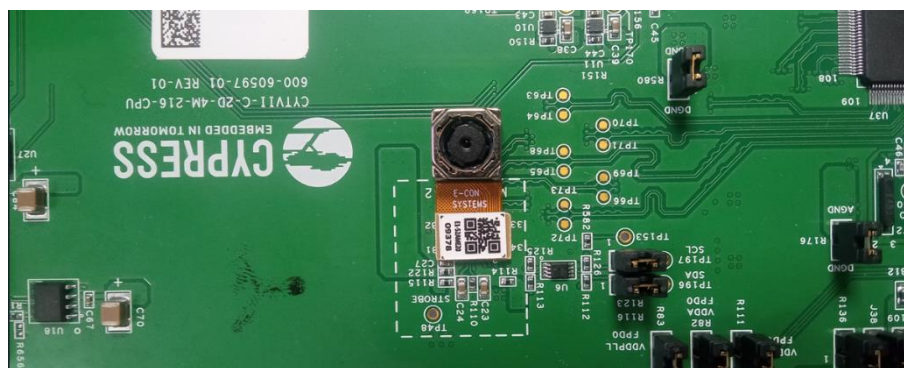
**Figure 27: FPD Display Output**

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	31/41

### 8.3 MIPI Camera test (Firmware2 – JTAG Firmware):

1. Connect the Minipro4 using the 20-Pin cable to CORTEX DEBUG ETM (J8) on the DUT board.
2. Connect the jumpers R736, R737, R739, R740 and R741.
3. Click on the “Firmware2” button on the GUI.
4. After successful flashing, you will see the image on the FPD display which was captured by the MIPI camera. Also you will see the LD1, LD2 and LD3 are toggling in a particular pattern.
5. Press the “SW3” button if image is showing on the FPD display. If image is not showing then press the “SW6” button.



**Figure 28: MIPI Camera Test**



**Figure 29: MIPI Camera Output**

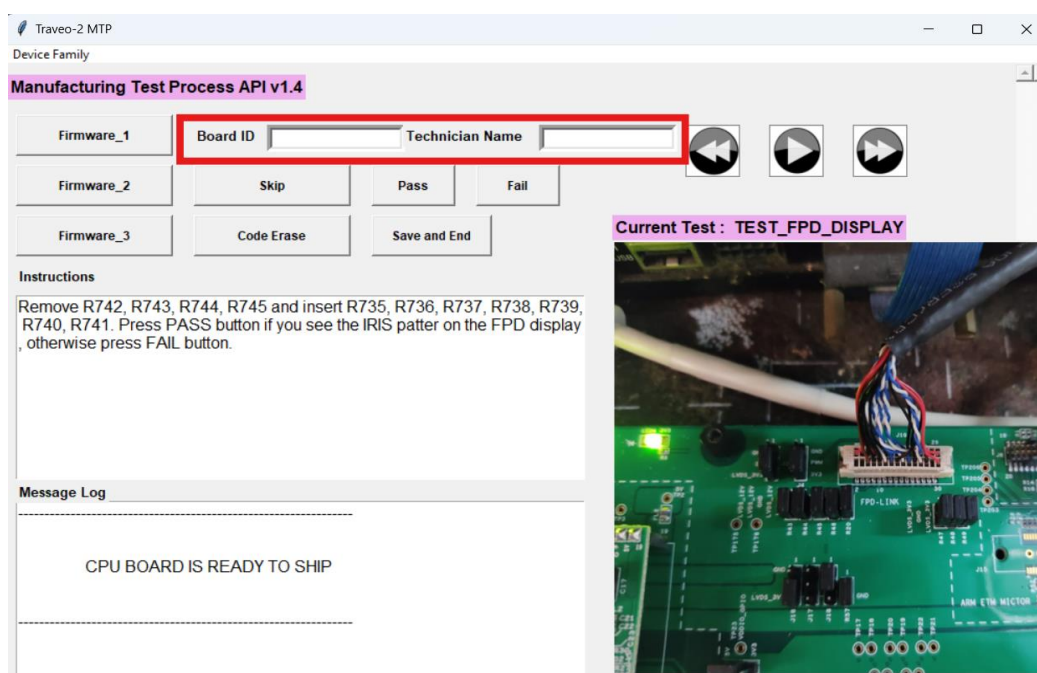
#### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	32/41



## 8.4 Shipping Firmware (Firmware3 – Shipping Firmware):

1. Connect the Minipro4 using the 20-Pin cable to ARM STANDARD JTAG (J7) on the DUT board.
2. Ensure the R735, R736, R737, R738, R739, R740 and R741 jumpers are connected
3. Click the “Firmware3” button on GUI.
4. After successful flashing remove the minipro-4 connected to the DUT board.
5. You will see the image on the FPD display which was captured by the MIPI camera. Also you will see the LD1, LD2 and LD3 are toggling in a particular pattern, this indicates the Shipping Firmware pass status.
6. Enter the Board ID and name of the technician in the Board ID and Technician Name filed respectively.



**Figure 30: Board ID and Technician Name**

7. Now click the “Save and End” button on GUI.
8. Close the GUI.
9. Now remove the Display, cable, power adapter.
10. Now the Board is ready for shipping.
11. The tested board to be shipped with power adapter and USB mini-B cable with which the board was tested.

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	33/41

## 9 Sample Test Report:



### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 34/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

```

Gigabit_Ethernet Test

Gigabit_Ethernet is working successfully

FPD_Display Test

FPD_Display working successfully
Test Time - 0 hr 1 min 25 sec

MIPI Camera Test

MIPI Camera working successfully

-----
TVII-C-2D-4M-216-CPU BOARD MANUFACTURING TEST SUMMARY
-----

----- MCU Details -----
SILICON_STATE = NORMAL
FB_MAJOR.FB_MINOR.FB_PATCH.FB_BUILD = 3.1.0.563
FAMILY_ID = 0x10B
SILICON_ID = 0xE850
SILICON MAJOR.MINOR Rev = 1.3
TOC2_FLAGS = 0x243
-----

----- Test Results -----
USB-UART Test Passed
Reset Button Test Passed
User LEDs Test Passed
User Buttons Test Passed
Potentiometer Test Passed
Hyper Flash Test Passed
Hyper RAM Test Passed
Audio TDM Test Passed
CANFD Test Passed
LIN Test Passed
Gigabit Ethernet Test Passed
FPD Display Test Passed
WCO Test Passed
MIPI CAMERA Test Passed
All tests passed

-----

CPU BOARD IS READY TO SHIP

-----

Board Tested on : 27/12/2024 11:40:43

Board ID : 121-60597-01 Rev 14 2446DT00054

Tested By: Dharani

```

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 35/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

## 10 Default Jumper Position

Jumper# on CPU Board	Position
J29	1-2
J30	1-2
J28	1-2
J21	1-2
J27	1-2
J38	1-2
J36	1-2
J37	1-2
J33	1-2
J26	1-2
J34	1-2
J40	1-2
J35	1-2
R136	1-2
R614	1-2
R613	1-2
R83	1-2
R82	1-2
R111	1-2
R621	1-2
R622	1-2
R109	1-2
R128	1-2
R644	1-2
R580	1-2
R176	1-2
R581	1-2
J32	1-2
J43	1-2
J47	1-2
R108	1-2
R735	1-2
R736	1-2
R737	1-2
R738	1-2
R739	1-2
R740	1-2
R741	1-2
R199	1-2
R514	1-2
J3	2-3
J4	2-3
J18	1-2
R43	1-2
R44	1-2
R49	1-2

### Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 36/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

Jumper# on CPU Board	Position
R46	1-2
R20	1-2
R57	1-2
R47	1-2
R48	1-2
R45	1-2
J16	2-3
R746	1-2
R747	1-2
R748	1-2
R749	1-2
R750	1-2
R751	1-2
R742	1-2
R743	1-2
R744	1-2
R745	1-2
J112	1-2
J21	1-2
R123	1-2
R116	1-2
R672	1-2
R677	1-2
R678	1-2
R641	1-2
R642	1-2
R714	1-2
R715	1-2
R727	1-2
R711	2-3
J91	1-2
J92	1-2
J93	1-2
J94	1-2
J95	1-2
J96	2-3
J97	1-2
J98	1-2
J99	1-2
J100	1-2
J107	1-2
J108	1-2
J109	1-2
J110	1-2
J111	1-2
R649	1-2
R650	1-2
R651	1-2

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 37/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

Jumper# on CPU Board	Position
J101	2-3
J102	2-3
J103	2-3
J104	2-3
J105	2-3
J106	2-3
J113	2-3
R668	1-2
R669	1-2
R670	1-2
J116	1-2
J117	1-2
J63	1-2
R293	1-2
<u>J11</u>	<u>1-2</u>
<u>J71</u>	<u>1-2</u>
<u>J114</u>	<u>2-3</u>

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 38/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

## 11 Special Instructions for Failed Units:

1. In case some test fails, please redo the same by pressing the reset button (SW2) on the CPU board to confirm the failure.
2. Upon repeated failure, the board should be sent to IFX for debugging.

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 39/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------

## 12 Appendix:

Once all the tests are completed Leave the existing jumpers on the board as it is and ensure that the jumpers are connected as mentioned in the below table. Also ensure the SW1 is in OFF position and then pack the board for shipping.

---

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

Confidentiality	Document Number:	Revision:	Date:	Page/Pages
restricted	002-32902	*A	2025-01-31	40/41



## Document History Page

Document Title: CYTVII-C-2D-4M-216-SET and CYTVII-C-2D-4M-216-CPU Manufacturing Test Procedure  
Document Number: 002-32902

Rev.	ECN No.	Orig. of Change	Description of Change
**	7113181	AVEN	New Spec
*A	7113975	AVEN	Removing jumpers after TDM Testing <u>and added 3 shipping jumpers</u>
*B	8104383	Dharani	Update the FW code into new MTP structure

**Title: CYTVII-C-2D-4M-216-CPU MANUFACTURING TEST PROCEDURE**

<b>Confidentiality</b> restricted	<b>Document Number:</b> 002-32902	<b>Revision:</b> *A	<b>Date:</b> 2025-01-31	<b>Page/Pages</b> 41/41
--------------------------------------	--------------------------------------	------------------------	----------------------------	----------------------------