

VERSION 1.0
FEBRUARY 11, 2022



CLS-4-420-TH

ASSEMBLY AND TEST PROCEDURE

REVISIONS

Revision	Author	Date	Changes
1.0	Engineering	February 11, 2022	Initial Draft

ABBREVIATIONS

Acronym	Description
CCA	Circuit Card Assembly
UUT	Unit Under Test

TABLE OF CONTENTS

Revisions	1
Abbreviations	1
Tools and Materials	4
Enclosure Assembly	7
Component List	7
Tools and Material List	7
Enclosure Assembly Procedure	8
Main Circuit Card Programming Procedure	11
Precaution	11
Component List	11
Tools and Material List	11
Procedure	11
Gas Gauge Programming Procedure	14
Precaution	14
Component List	14
Tools and Material List	14
Procedure	14
Intermediate Assembly Procedure	19
Precaution	19
Component List	19
Tools and Material List	19
Procedure	19
Assembly Test Procedure	23
Precaution	23
Component List	23
Tools and Material List	23
Procedure	23
Final Test Procedure	25
Precaution	25
Component List	25
Tools and Material List	25
Procedure	25

Final Test Pass Criteria	28
Label Application procedure	29
Component List	29
Procedure	29

TOOLS AND MATERIALS



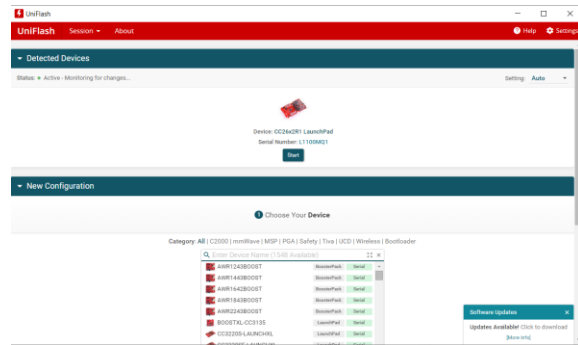
T6 Torx Screwdriver



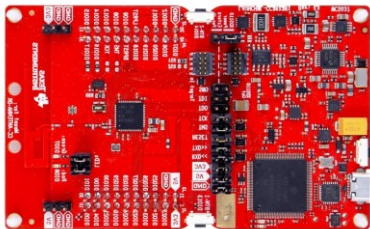
Phillips #2 Screwdriver



Black Decker Ratchet Screwdriver



UniFlash Software



Texas Instruments CC2652R1 Development kit



Micro USB Cable



Black Decker 18V Drill



JTAG Cable



DC Electric Load



Digital Multimeter



DC Power Supply



P-touch P700 Label Maker



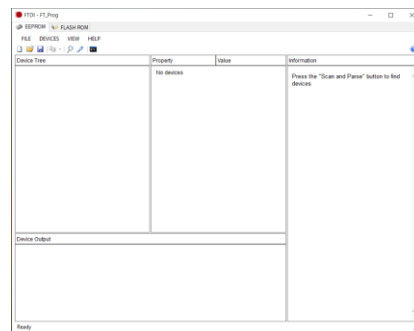
Tweezers



DROK Signal Generator



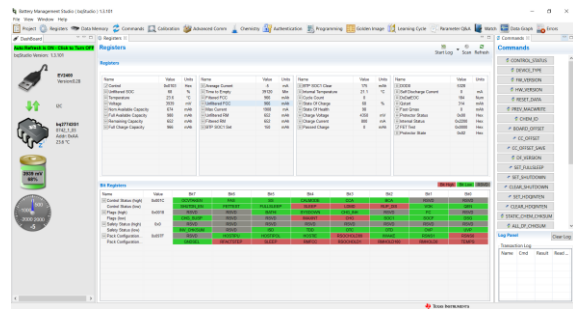
USB type-B Cable



FTDI Program



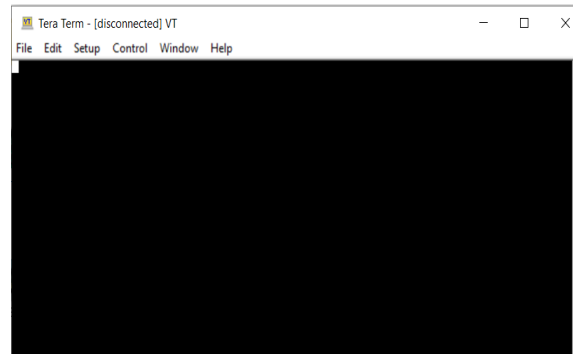
EV2400 Interface Adapter



Battery Management Studio



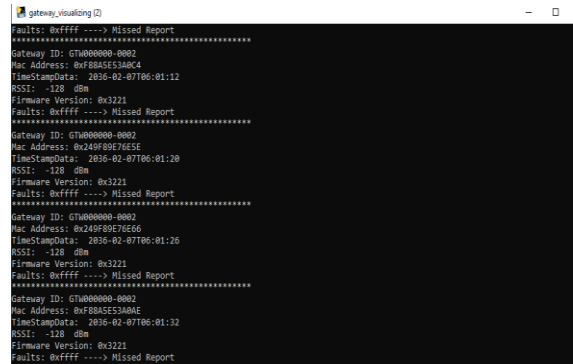
GTW-BL100



Tera Term Serial Terminal



Alligator Cable Clips



Gateway Visualizer

ENCLOSURE ASSEMBLY

COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Right Side Housing	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Left Side Housing	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Battery Door	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Rear Housing	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Membrane	Memtronik Inc.	Rev. 2.0
X-Lab CLS-4-420-TH Rotary Encoder CCA	Electronics4All	Rev. 1.0
Screw M2.2 X 4mm Pan Torx	McMaster-Carr	96817A861
Antenna Cable Assembly	Murata Electronics	MXFR01JA1000
DIN Rail Mounting Clip	Winford	dinm12-rc
Lock Washer No. 6	McMaster-Carr	90069A105
Machine Screw 6-32 x 3/8	McMaster-Carr	90273A146
Machine Screw 4-40 x 0.375	McMaster-Carr	90272A108

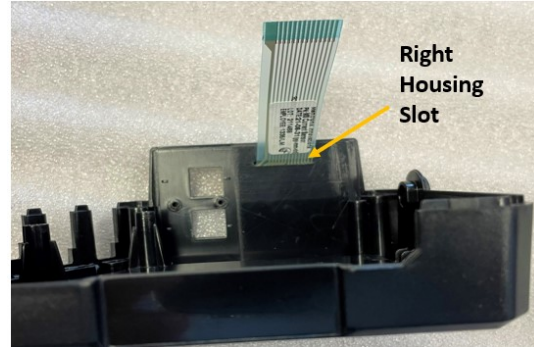
TOOLS AND MATERIAL LIST

1.	Phillips #1 Drive Bit
2.	Phillips #2 Drive Bit
3.	T6 Torx Drive Bit
4.	8mm Socket and Adapter
5.	Torque Screwdriver
6.	Tweezers

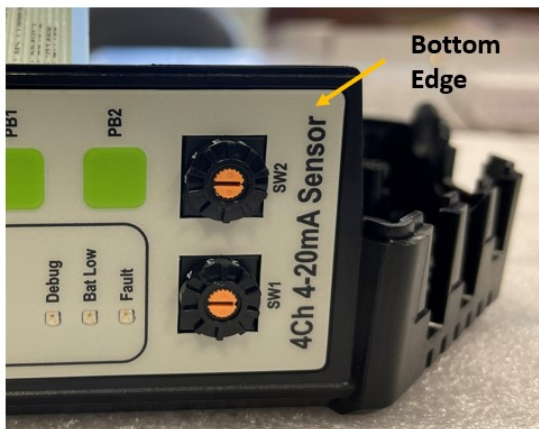
ENCLOSURE ASSEMBLY PROCEDURE



- 1 Remove the adhesive backing on the membrane. Do not touch the exposed adhesive after backing removal.



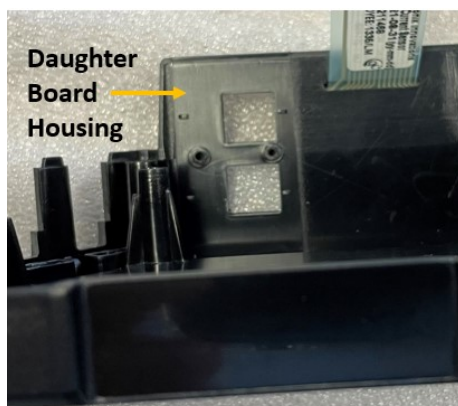
- 2 Feed the membrane tail through the right housing membrane slot.



- 3 Align the bottom edge of the membrane with the edge of the membrane cavity in the left housing.



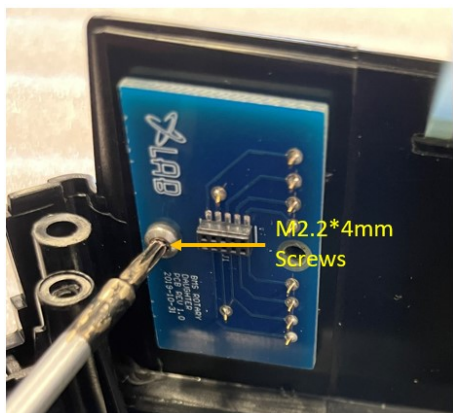
- 4 Press the membrane down onto the housing.



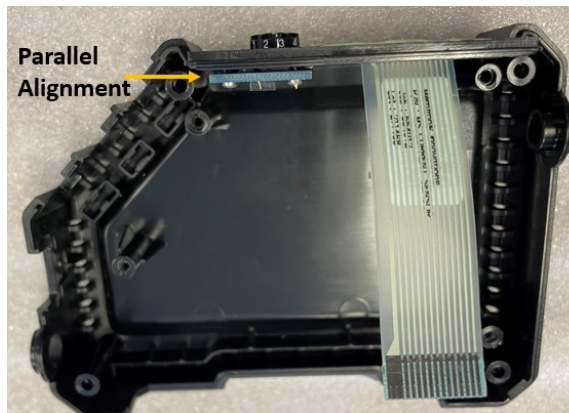
- 5 Place the Rotary Encoder Daughter CCA in the housing.



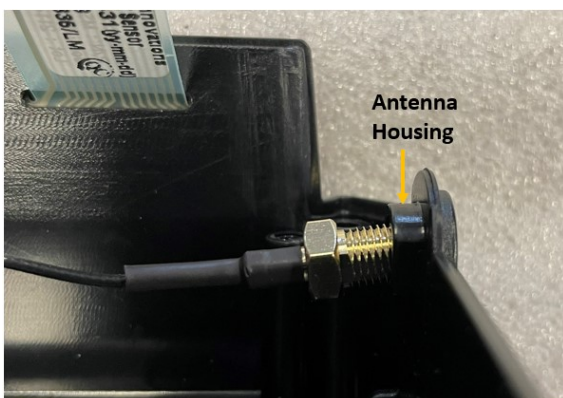
- 6 Ensure the screw holes in the CCA are aligned with the screw holes in the housing.



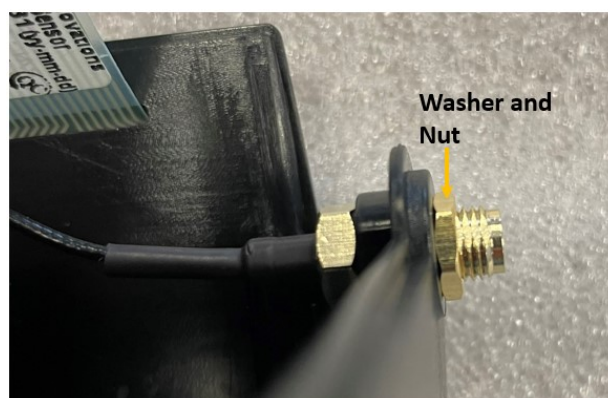
- 7 Install two (2) M2.2*4mm Screws using a T6 torx Screwdriver. Fingers tighten the screws.



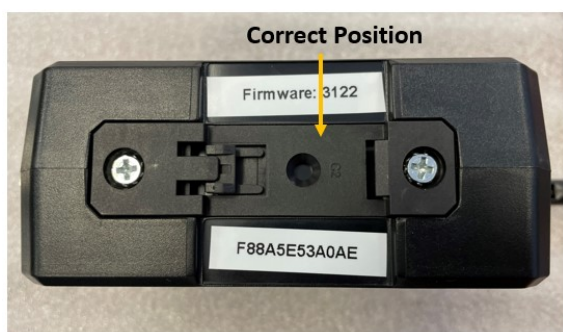
- 8 Ensure the rotary encoder circuit board is seated parallel to the enclosure.



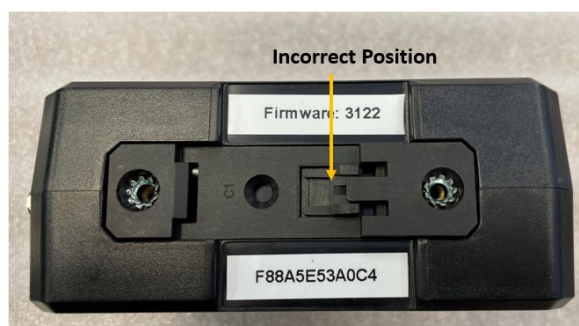
- 9 Install the antenna connector in the housing opening. The flat edge of the connector should face away from the membrane.



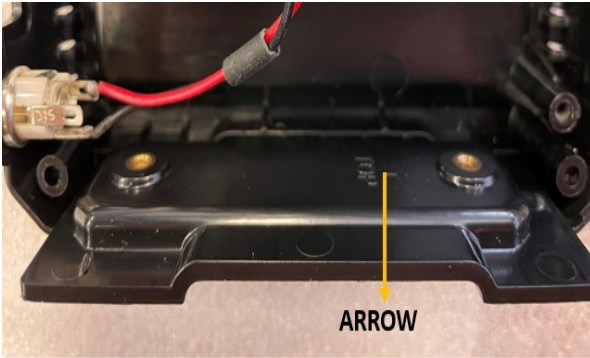
- 10 Loosely install the lock washer and nut supplied with the connector. Tighten the connector nut to 15 in-lbs using torque screwdriver.



- 11 Rest the DIN mount in the rear housing cavity. Install two (2) #6 lock washer into the outer screw holes. Install two (2) 6-32*3/8" screws using a #2 Phillips bit. Torque screws to 10 in-lbs.



- 12 Ensure the DIN mount is aligned correctly: The spring clip should be positioned opposite to the top of the housing.



- 13 Install the rear housing into the slot in the rear of the left housing. The TOP direction arrow should face towards the antenna connector.



- 14 Install one (1) 4-40*0.375 inch screw using a #1 Phillips bit. Finger tighten the screw.



- 15 Install the right housing into the left housing assembly. Install four (4) 3*35mm torx screw using Black Decker Drill. Finger tighten the screw.



- 16 Screw the antenna onto the antenna jack using a clockwise rotation. Hand tightens only.

MAIN CIRCUIT CARD PROGRAMMING PROCEDURE

PRECAUTION



This procedure involves the handling of ESD sensitive components. ESD protection measures should be employed.

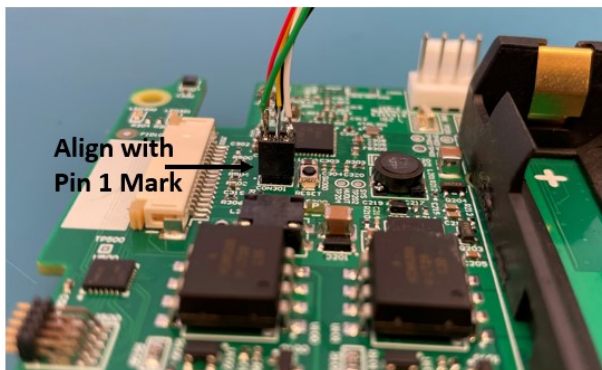
COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Main CCA	Electronics4All	Rev. 1.0
CLS-4-420-TH Test Firmware	Electronics4All	Rev. 1.0
Serial Number List	Electronics4All	NA

TOOLS AND MATERIAL LIST

1.	Computer
2.	Texas Instruments UniFlash Software
3.	Texas Instruments CC2652R1 Development kit w/ Micro-USB cable
4.	JTAG Programming Cable
5.	Label Printer

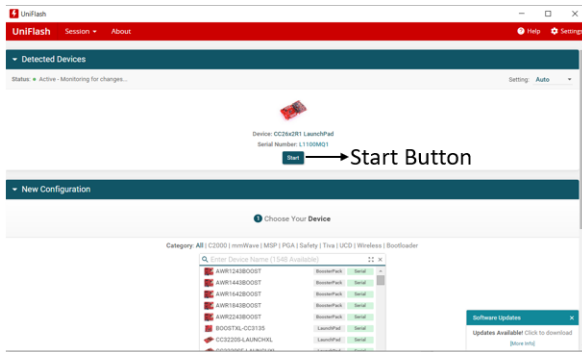
PROCEDURE



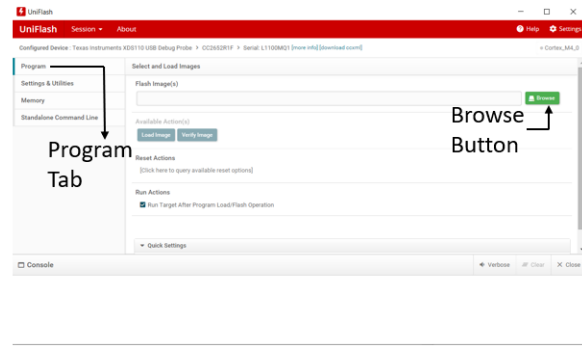
- 1 Connect the JTAG programming cable to CON301. The Green wire should align with the connector pin 1 mark on the silkscreen.



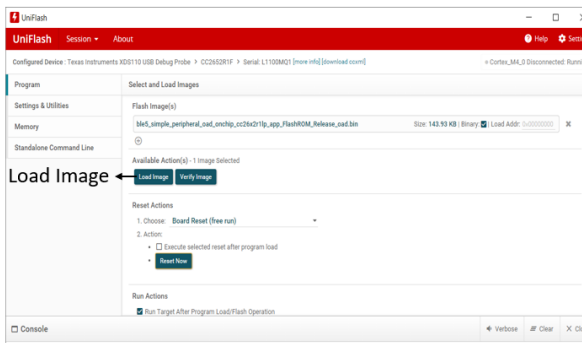
- 2 Connect the JTAG programmer to the computer.



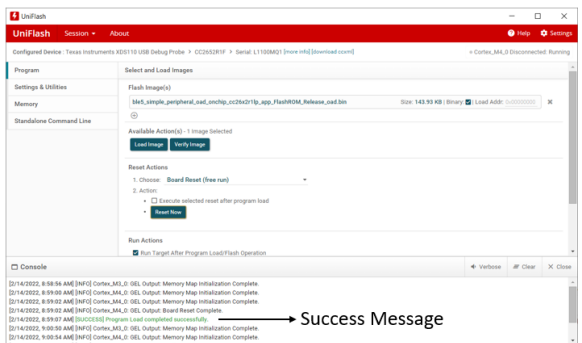
- 3 Start the Texas Instruments UniFlash software. The program should automatically detect and display the JTAG programmer. Select the start button.



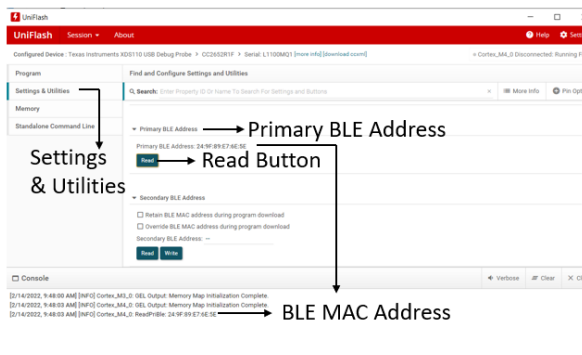
- 4 Under the Program tab, select the Browse button to the right of Flash Image(s). Navigate and select the firmware image to load into the CCA.



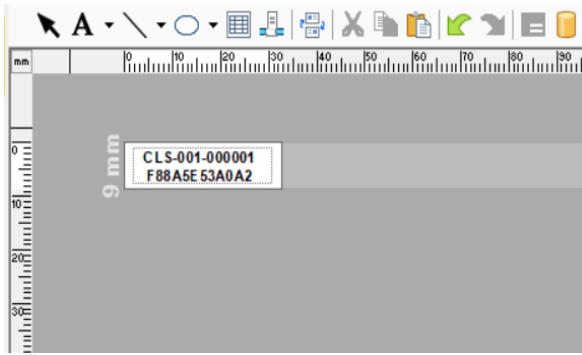
- 5 When the file is selected, the Load Image button will be enabled. Select the Load Image button.



- 6 Once the firmware has been loaded, a **SUCCESS** message will appear in the console window.



- 7 In the Settings & Utilities tab, scroll down to Primary BLE Address and select Read. The 12 characters BLE MAC address will be displayed in the console window.



- 8 Print a label with both the Main CCA serial number retrieved from the master spreadsheet and the 12-character BLE address using P-touch P-700 label maker and P-touch Editor software.



9 Affix the label to the Main CCA. Record the BLE address for corresponding Main CCA serial number in the master spreadsheet.

Unit SN	PCB SN	HW Revision	BLE MAC	BLE Version
CLS-001-000001	10001	2.1	F88A5E53A0FE	3122
CLS-001-000002	10002	2.1	F88A5E53A0DE	3122
CLS-001-000003	10003	2.1	F88A5E53A0EE	3122
CLS-001-000004	10004	2.1	F88A5E53A0E4	3122
CLS-001-000005	10005	2.1	F88A5E53A0AE	3122

10 Provide the updated master spreadsheet to Electronics4all. Case labels with the serial number and BLE address will be printed and provided to the manufacture for final assembly.

GAS GAUGE PROGRAMMING PROCEDURE

PRECAUTION



This procedure involves the handling of ESD sensitive components. ESD protection measures should be employed.

COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Main CCA	Electronics4All	Rev. 1.0
AC/DC Adapter	CUI Inc.	SWI24-12-N
Serial Number List	Electronics4All	NA
Battery Configuration File	Electronics4All	Rev. 2.1

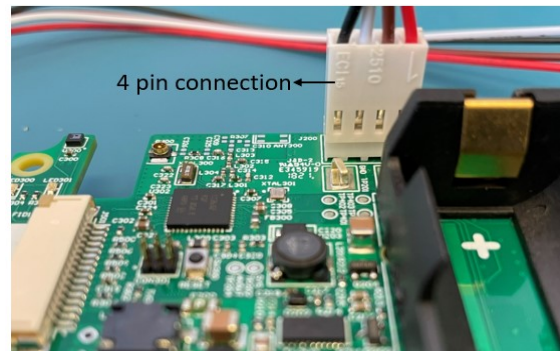
TOOLS AND MATERIAL LIST

1.	Computer
2.	Texas Instruments EV2400 Interface Adpater w/ 4-pin cable, USB Type-B cable
3.	Texas Instruments CC2652R1 Development kit w/ Micro-USB cable
4.	JTAG Programming Cable
5.	DC Power Supply (4.0 VDC, 3A Minimum)
6.	DC Active Load (1.00A Constant Current)
7.	Test Leads
8.	Multimeter

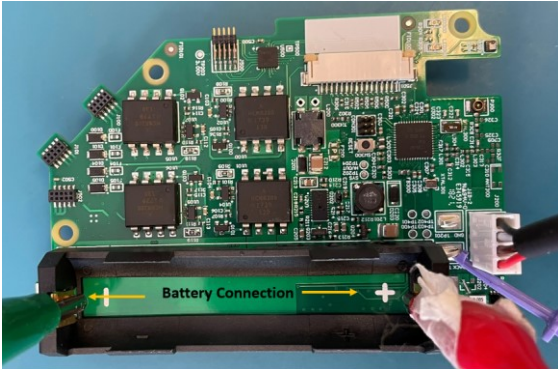
PROCEDURE



- 1 Connect the EV2400 Interface Adapter to the computer.



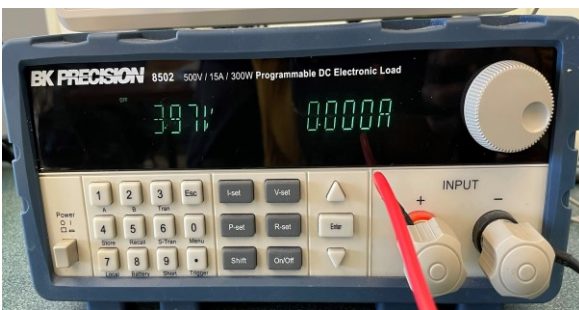
- 2 Connect the 4-pin cable from the EV2400 to J200 on the main CCA.



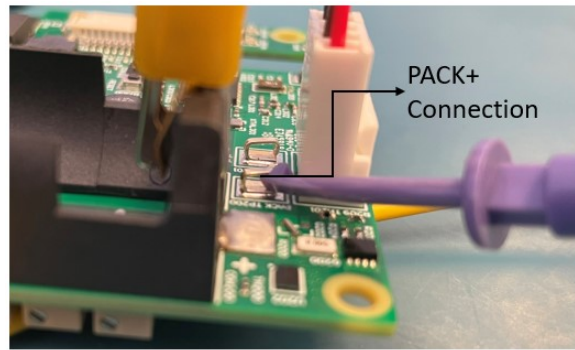
- 3 Set the DC power supply to 4.00VDC, 1.3A. Observing correct polarity, connect the power supply to the BAT+ and BAT- terminals.



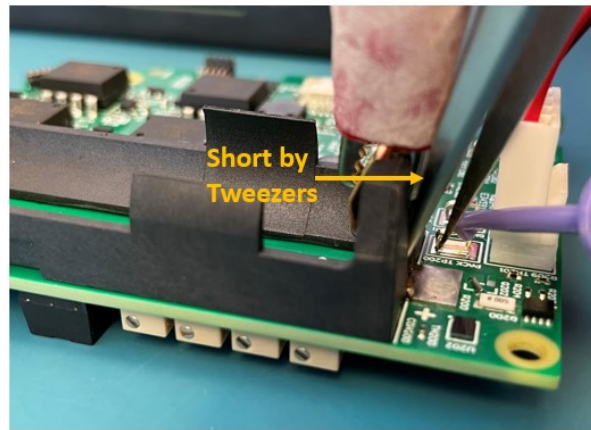
- 5 Turn on the DC active load. The Load should read 0.00 VDC.



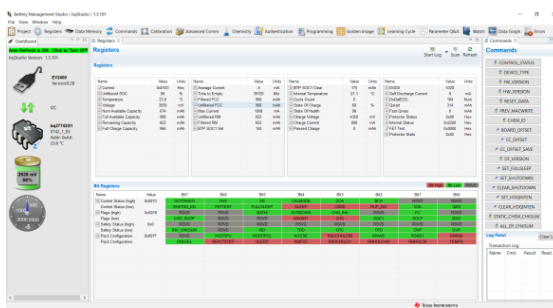
- 7 Once the gas gauge is activated, the DC load should display the same voltage as the DC power supply ± 10 mV.



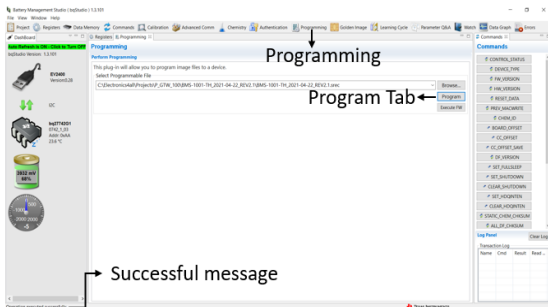
- 4 Connect the PACK+ test clip to the DC active load positive terminal. Connect the DC load negative terminal to either the GND test clip or BAT- terminal.



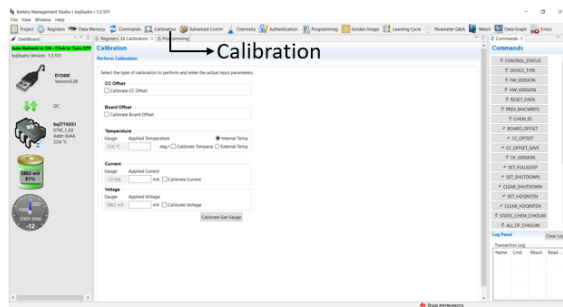
- 6 Activate gas gauge by temporarily shorting BAT+ and PACK+ terminals using conductive tweezers.



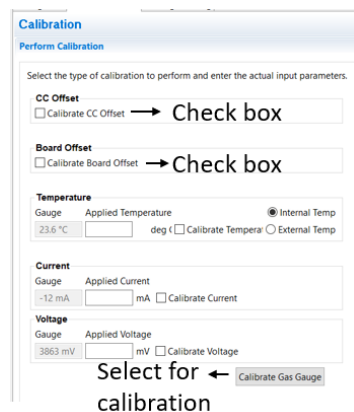
- 8 Start the Texas instruments Battery Management Studio Software. The program should automatically detect, read back, and display the default parameters stored in the gas gauge.



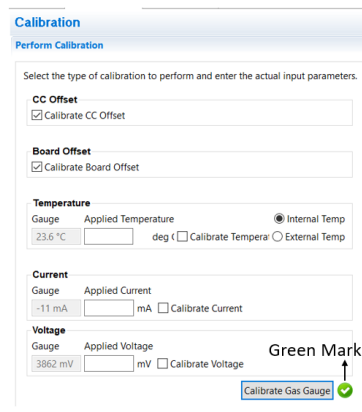
- 9 Select programming from the Top menu, select the appropriate gas gauge image file, and then select Program. A progress bar dialog will display the programming status. After that successful message will appear at left bottom corner.



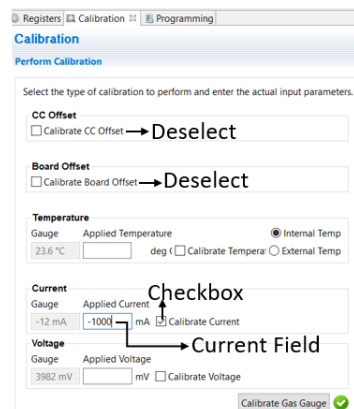
- 10 Select Calibration from the top menu. The calibration controls will be displayed in the main window.



- 11 Select the CC Offset and Board Offset checkboxes. **Ensure no other boxes are checked.** Select the Calibrate Gas Gauge button. This calibration process may take up to a minute to complete.



- 12 A Green checkmark will appear beside Calibrate Gas Gauge button when the process is complete.



- 13 **Deselect the CC Offset and Board Offset checkboxes.** Select the Calibrate Current checkbox. Enter **-1000** into the applied Current Field.



- 14 Set the active load for 1000 mA constant current. Enable the load and confirm **1000mA ± 5mA** is being drawn from the CCA

Calibration
Perform Calibration

Select the type of calibration to perform and enter the actual input parameters.

CC Offset
☐ Calibrate CC Offset

Board Offset
☐ Calibrate Board Offset

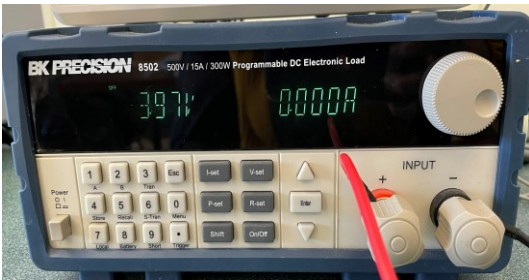
Temperature
Gauge Applied Temperature ☒ Internal Temp
23.7 °C deg C ☐ Calibrate Tempera ☐ External Temp

Current
Gauge Applied Current
-1000 mA -1000 mA ☒ Calibrate Current

Voltage
Gauge Applied Voltage
3651 mV mV ☐ Calibrate Voltage

Calibrate Gas Gauge ☒

- 15 Wait for few seconds for the Gauge box to display the load current. For previously uncalibrated gauges, current will read approximately **-1000 ± 5mA**. Select the Calibrate Gas Gauge button.



- 17 Using a multimeter, measure the voltage between the BAT+ and BAT- terminals.

Calibration
Perform Calibration

Select the type of calibration to perform and enter the actual input parameters.

CC Offset
☐ Calibrate CC Offset

Board Offset
☐ Calibrate Board Offset

Temperature
Gauge Applied Temperature ☒ Internal Temp
23.6 °C deg C ☐ Calibrate Tempera ☐ External Temp

Current
Gauge Applied Current
-11 mA -1000 mA ☐ Calibrate Current

Voltage
Gauge Applied Voltage
3994 mV 3994 mV ☒ Calibrate Voltage

Gauge Box Calibrate Gas Gauge ☒

- 19 Wait for few seconds for the Gauge box to display the applied voltage. For previously uncalibrated gauges, current will read approximately **±5mV**. Select the Calibrate Gas Gauge button.

Calibration
Perform Calibration

Select the type of calibration to perform and enter the actual input parameters.

CC Offset
☐ Calibrate CC Offset

Board Offset
☐ Calibrate Board Offset

Temperature
Gauge Applied Temperature ☒ Internal Temp
23.7 °C deg C ☐ Calibrate Tempera ☐ External Temp

Current
Gauge Applied Current
-1000 mA -1000 mA ☒ Calibrate Current

Voltage
Gauge Applied Voltage
3651 mV mV ☐ Calibrate Voltage

Reported Current Green Mark
Calibrate Gas Gauge ☒

- 16 When calibration is complete, a green checkmark will appear beside the Calibrate Gas Gauge button. Confirm that the reported current in the gauge box is approximately **-1000 ± 5mA**. Disable the active load.

Calibration
Perform Calibration

Select the type of calibration to perform and enter the actual input parameters.

CC Offset
☐ Calibrate CC Offset

Board Offset
☐ Calibrate Board Offset

Temperature
Gauge Applied Temperature ☒ Internal Temp
23.9 °C deg C ☐ Calibrate Tempera ☐ External Temp

Current
Gauge Applied Current
-11 mA -1000 mA ☐ Calibrate Current

Voltage
Gauge Applied Voltage
3981 mV 3994 mV ☒ Calibrate Voltage

Deselect Check box Voltage Field
Calibrate Gas Gauge ☒

- 18 **Deselect the Calibrate Current checkboxes**, Select the Calibrate Voltage checkbox. Enter the measured voltage in **mV** into the applied Voltage box.

Calibration
Perform Calibration

Select the type of calibration to perform and enter the actual input parameters.

CC Offset
☐ Calibrate CC Offset

Board Offset
☐ Calibrate Board Offset

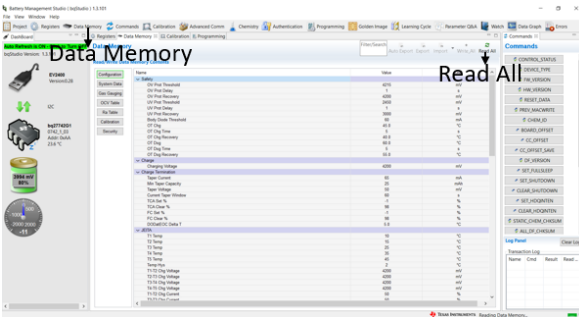
Temperature
Gauge Applied Temperature ☒ Internal Temp
23.6 °C deg C ☐ Calibrate Tempera ☐ External Temp

Current
Gauge Applied Current
-11 mA -1000 mA ☐ Calibrate Current

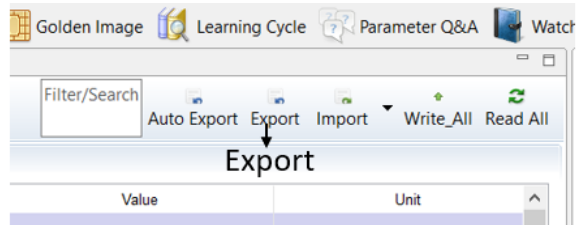
Voltage
Gauge Applied Voltage
3994 mV 3994 mV ☒ Calibrate Voltage

Gauge Box Green Mark
Calibrate Gas Gauge ☒

- 20 A Green checkmark will appear beside Calibrate Gas Gauge button when the process is complete.



- 21 At the top menu, select Data memory. In the top right corner, select Read All. After a few seconds, all data loaded into the gas gauge will be displayed.



- 22 Select the Export button and save the file using CCA board serial number as the filename.

INTERMEDIATE ASSEMBLY PROCEDURE

PRECAUTION



This procedure involves the handling of ESD sensitive components. ESD protection measures should be employed.

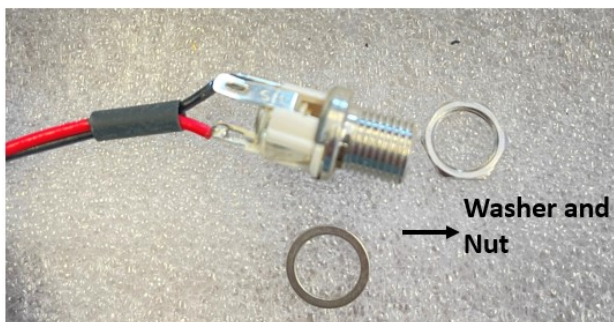
COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Main CCA	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Enclosure Assembly	Electronics4All	Rev. 1
Lithium-Ion Battery	Panasonic	NCR18650B
2AG Fuse	Eaton	BK/C519-125-R
4 x Screw 4-40 x 5/16	McMaster-Carr	90380A107
1 x Screw M3 x 8 mm	McMaster-Carr	92005A118

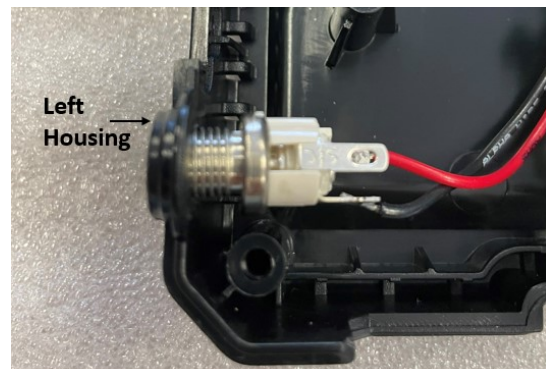
TOOLS AND MATERIAL LIST

1.	10 mm Socket and Adapter
2.	#1 Phillips Bit
3.	Torque Screwdriver
4.	Conductive Tweezers

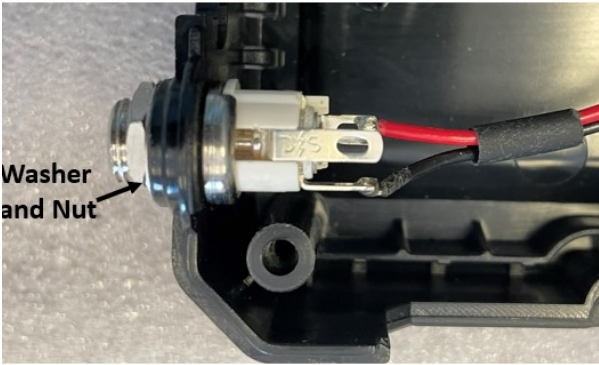
PROCEDURE



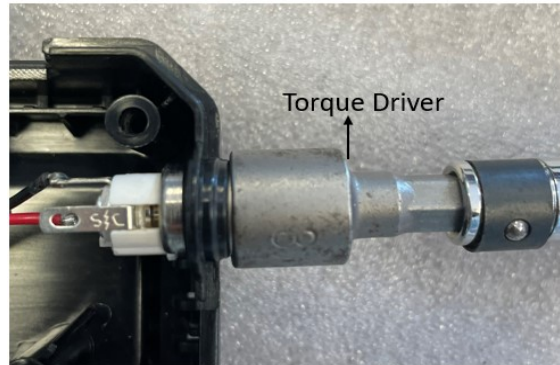
- 1 Remove the washer and nut from the DC input connector on the main CCA



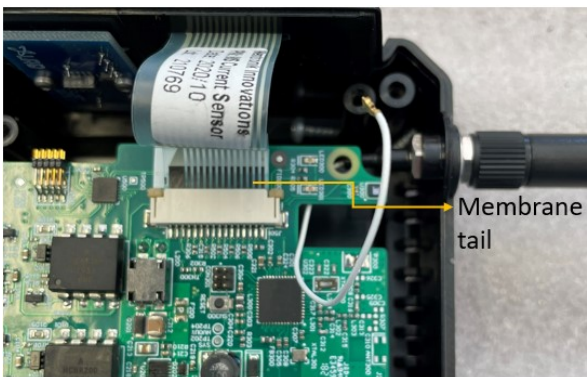
- 2 Feed the DC input jack through the opening in the left housing. The thread slot should face towards the rear of the housing.



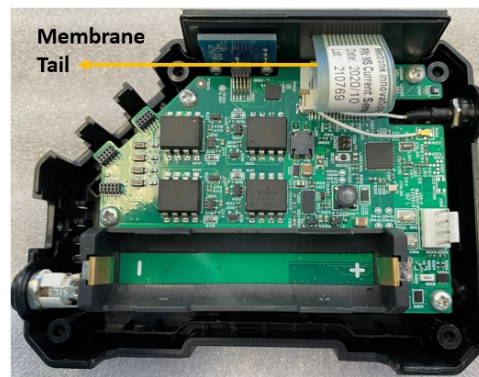
- 3 Install the washer and nut removed in step 1 back on to the DC input connector.



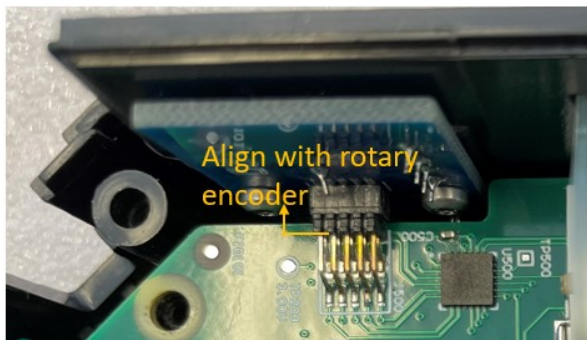
- 4 Tighten the DC input nut to **15** in-lbs. using a 10 mm socket and a torque driver.



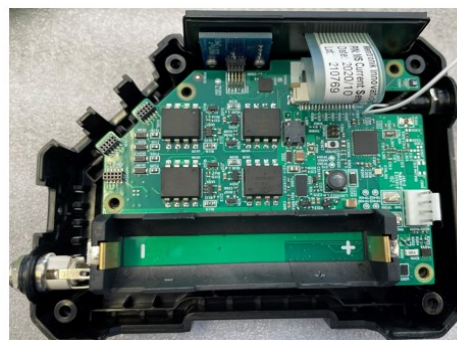
- 5 Install the membrane tail into the membrane connector on the main CCA.



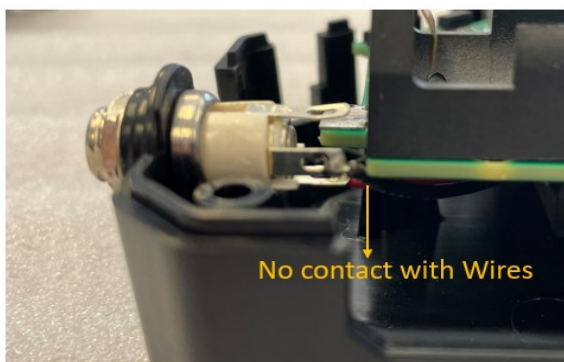
- 6 Carefully guide the main CCA into position. The membrane tail should loop as shown in the image, and the antenna connector tail should be located above the CCA.



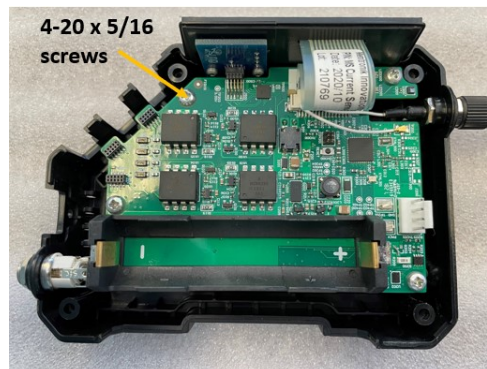
- 7 Ensure that the pins on J500 on the main CCA aligns correctly with the header on the rotary encoder CCA. Once aligned, push the board forward to seat the connection.



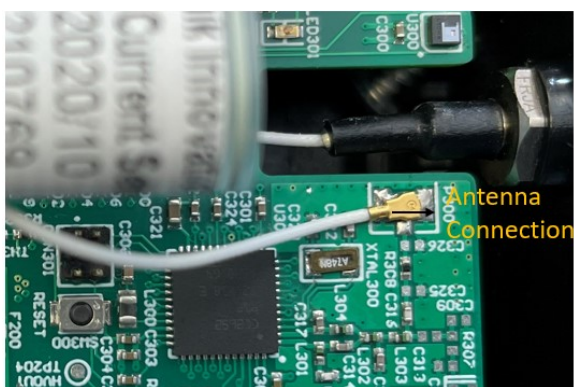
- 8 Let the main CCA rest on the housing. The four (4) holes on the main CCA should be aligned with the four (4) mounting posts on the housing.



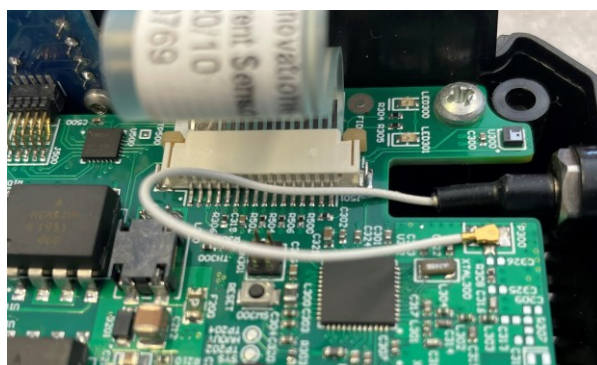
- 9 Ensure that the wires coming off the DC input jack are not in contact with the main CCA.



- 10 Install four (4) 4-20 x 5/16 screws using a #1 Phillips bit and driver. Finger tighten the screws.



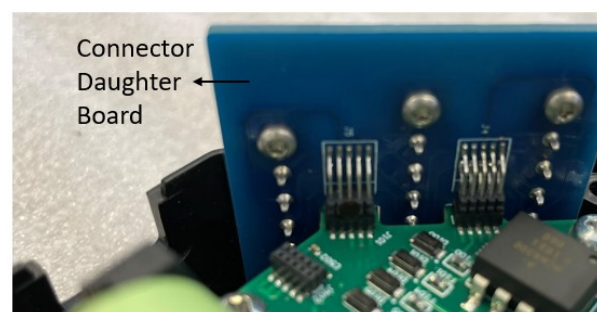
- 11 Connect the antenna cable to P300 on the main CCA. The connection should snap once seated correctly. Note that both the connector and cable are delicate, should be manipulated with care.



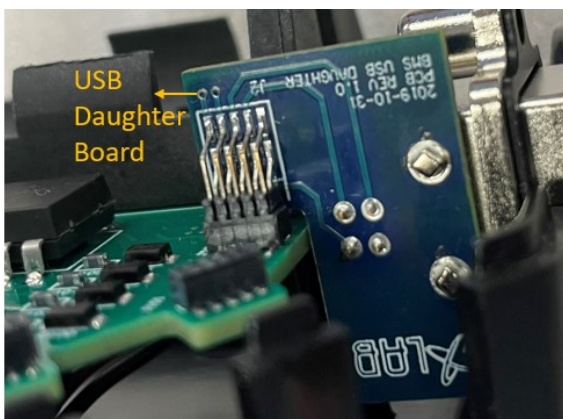
- 12 The coaxial cable from the antenna should form a gentle loop as shown in the above image.



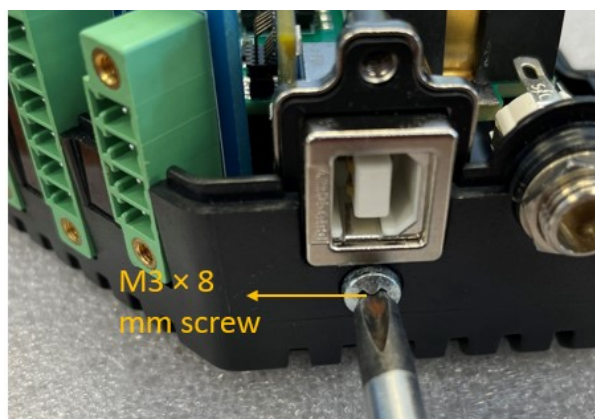
- 13 Install the lithium-ion battery in the battery holder. **ENSURE THAT BATTERY POLARITY IS FOLLOWED.** The battery should snap down into place in the holder.



- 14 Install the Daughter Connector CCA into J100 and J101 on the main CCA. Ensure the connection pins are aligned before pressing the board down into place.



- 15 Install the USB Daughter CCA into J502. Ensure the connection pins are aligned before pressing the board down into place.



- 16 Install one (1) M3 x 8mm screw into the left housing to hold the USB Daughter CCA in place. Use a #1 Phillips bit and driver. Finger tighten the screw.

ASSEMBLY TEST PROCEDURE

PRECAUTION



This procedure involves the handling of ESD sensitive components. ESD protection measures should be employed.

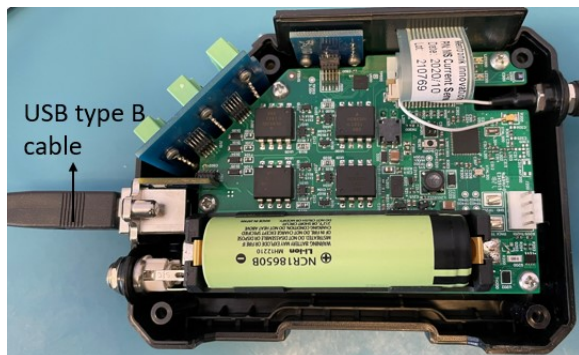
COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Intermediate Assembly	Electronics4All	Rev. 1.0
AC/DC Adapter	CUI Inc.	SWI24-12-N

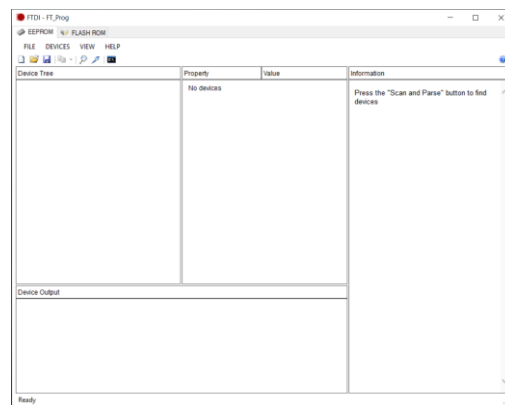
TOOLS AND MATERIAL LIST

1.	Computer
2.	FTDI FT Prog Software
3.	USB Type-B Cable
4.	Multimeter
5.	Tera Term Serial Terminal Software

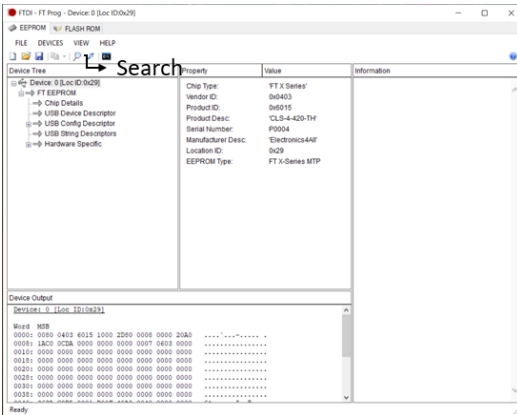
PROCEDURE



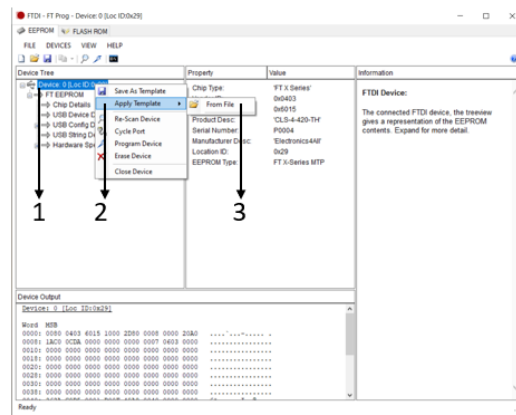
- 1 Connect a USB type-B cable to the UUT.
Connect the USB cable to the computer.



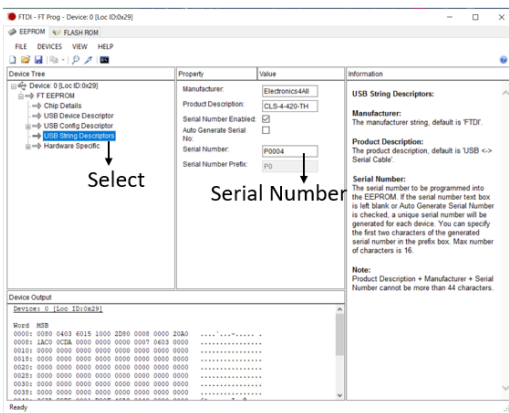
- 2 Start the FTDI FT Prog Software program.



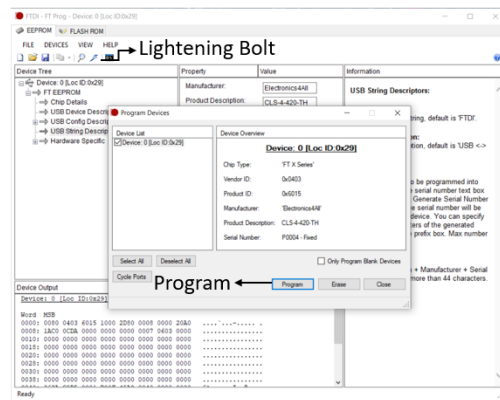
- 3 Select the search icon at the top of the window. The program should automatically locate the UUT and display default parameters.



- 4 Right Click the Device 0 ID in the tree (1), Highlight Apply Template (2), then select From File (3). Select the appropriate template file in the window dialog. The file will automatically be applied once selected.



- 5 LEFT click USB String Descriptors in the tree. A default serial number will be displayed. Change this serial number to the serial number of the UUT.



- 6 Select the lightning bolt icon at the top of the main window. A separate dialog will open. Select Program.

FINAL TEST PROCEDURE

PRECAUTION



This procedure involves the handling of ESD sensitive components. ESD protection measures should be employed.

COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Final Assembly	Electronics4All	Rev. 1.0

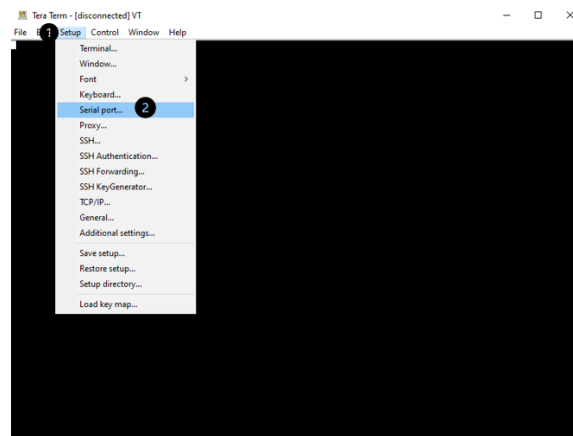
TOOLS AND MATERIAL LIST

1.	Computer
2.	X-LAB GTW-BL100 Wireless Gateway
3.	Gateway Visualizer
4.	DROK Signal Generator
5.	Tera Term Serial Terminal Software

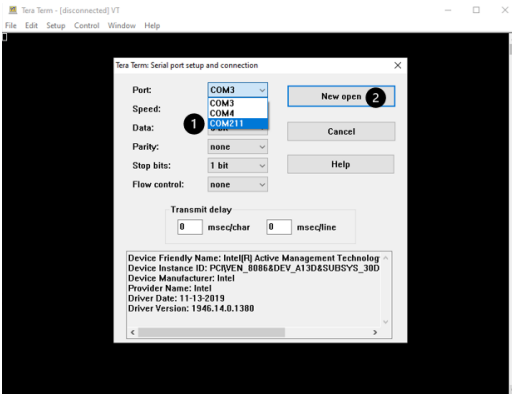
PROCEDURE



- 1 Connect a USB type-B cable to the UUT, Turn ON the device. Connect the USB cable to the computer.



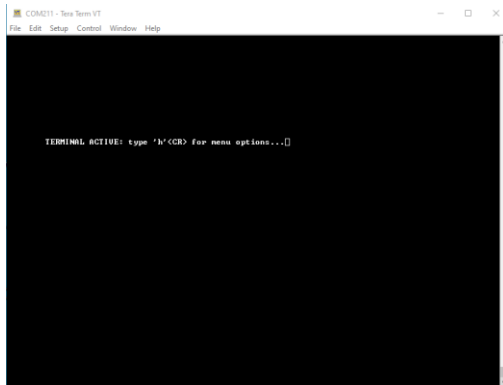
- 2 Start the Tera Term serial terminal program. Go to setup in the top menu (1). Select Serial Port (2).



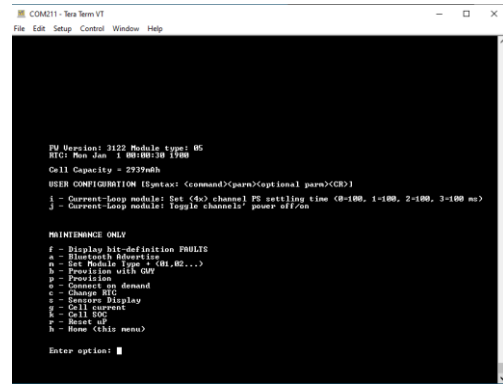
- 3 Find a Port (1), Set a speed to 115200. Select a New Open (2).



- 4 Press and hold PB1 and PB2 button together for 6 seconds, after 6 seconds let go PB2 button and hold PB1 button until the line appears on tera term terminal.



- 5 Line appears on tera term terminal. It says type 'h' for menu option.



- 6 Type 'h' and press Enter. It will give you option. In Tera Term, type the following letters: "p, g, k" to check the cell current, cell SOC, provision. After the test type 'r' to reset the device.



- 7 A X-LAB GTW-BL100 gateway is used for this test. Follow the GTW-BL100 operating manual for the set-up. The node IP address to be programmed into the gateway or provided by Electronics4all.



- 8 Press PB1 button on the gateway, it will turn ON the green COM LED.



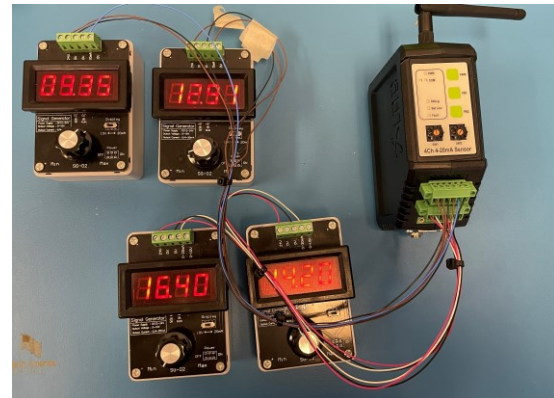
- 9 Press and Hold PB1 button until the green COM LED on the gateway turn OFF.

```
*****
Gateway ID: GTW000000-0002
Mac Address: 0xF88A5E53A0AE
TimeStampData: 2022-02-16T10:28:37
RSSI: -40 dBm
Temperature NTC: 227 (0.1°C)
Temperature CHIP: 217 (0.1°C)
Humidity: 21% Rel
Current 1: 1uA
Current 2: 0uA
Current 3: 0uA
Current 4: 2uA
Firmware Version: 0x3122
Cell SOC : 2998 mAh
Power Status: 0x0018 -----> AC adapter connected
Faults: 0x0000 -----> NONE
*****
```

- 10 CLS-4-420-TH broadcast the data packets to the gateway at 20 seconds intervals, which in turn will forward the data to electronics4all. The green COM LED both on UUT and gateway will flash one



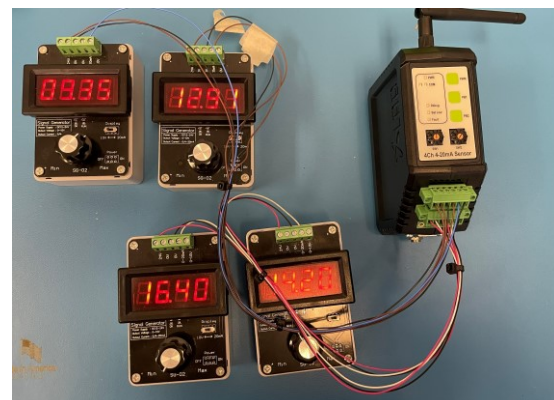
- 11 Connect DROK Signal Generator to four (4) channels of UUT.



- 12 Turn the knob of DROK Signal generator in anticlockwise direction to set the output to 4mA current.

```
*****
Gateway ID: GTW000000-0002
Mac Address: 0xF88A5E53A0AE
TimeStampData: 1969-12-31T19:19:05
RSSI: -40 dBm
Temperature NTC: 347 (0.1°C)
Temperature CHIP: 309 (0.1°C)
Humidity: 19% Rel
Current 1: 4010uA
Current 2: 4077uA
Current 3: 4107uA
Current 4: 4028uA
Firmware Version: 0x3122
Cell SOC : 1878 mAh
Power Status: 0x0000 -----> Nominal
Faults: 0x0000 -----> NONE
*****
```

- 13 The Gateway Visualizer will show 4 mA current reading on all the four (4) channels.



- 14 Turn the knob of DROK Signal generator in clockwise direction to set the output current to 20mA current.

<pre> ***** Gateway ID: GTW000000-0002 Mac Address: 0xF88A5E53A0AE TimeStampData: 1969-12-31T19:21:25 RSSI: -40 dBm Temperature NTC: 376 (0.1°C) Temperature CHIP: 316 (0.1°C) Humidity: 19% Rel Current 1: 20043uA Current 2: 20101uA Current 3: 20108uA Current 4: 20058uA Firmware Version: 0x3122 Cell SOC : 1824 mAh Power Status: 0x0000 -----> Nominal Faults: 0x0000 -----> NONE </pre>	<pre> ***** Gateway ID: GTW000000-0002 Mac Address: 0xF88A5E53A0AE TimeStampData: 1969-12-31T19:21:25 RSSI: -40 dBm Temperature NTC: 376 (0.1°C) Temperature CHIP: 316 (0.1°C) Humidity: 19% Rel Current 1: 20043uA Current 2: 20101uA Current 3: 20108uA Current 4: 20058uA Firmware Version: 0x3122 Cell SOC : 1824 mAh Power Status: 0x0000 -----> Nominal Faults: 0x0000 -----> NONE </pre>
---	---

- 15** The Gateway Visualizer will show 20 mA current reading on all the four (4) channels. Set the DROK Signal Generator to different current reading and check the gateway visualizer for results.

16 If the any of four channel is not showing current value according to DROK signal generator display, change the resistance on potentiometer until it is similar to DROK signal generator display.

FINAL TEST PASS CRITERIA

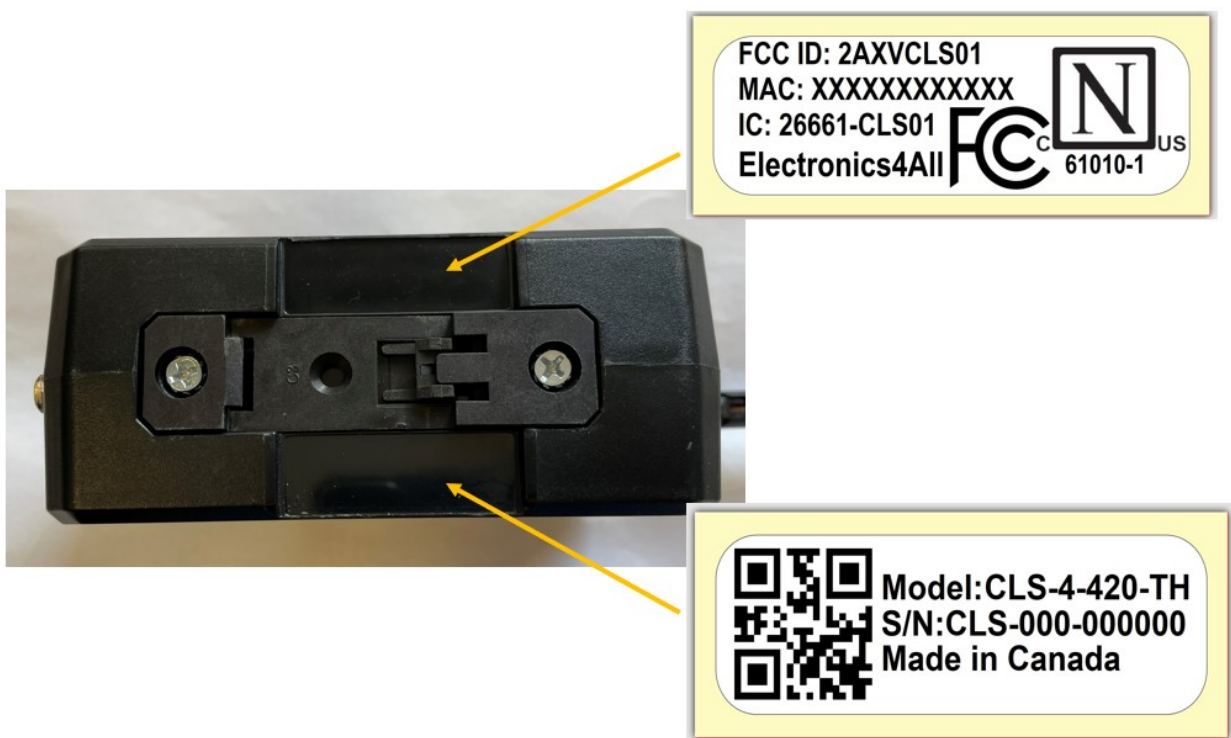
Measurement	PASS Criteria	Notes
RSSI	-20 dBm to -35 dBm	Allow for up to five (5) reports
Temperature NTC	Temperature CHIP $\pm 0.5^{\circ}\text{C}$	Measurement should mirror the Temperature CHIP report
Temperature CHIP	Ambient Temperature	Measurement is factory calibrated, so reading should fall in line with ambient conditions
Humidity	Ambient Humidity	Measurement is factory calibrated, so reading should fall in line with ambient conditions
Current 1,2,3,4	All four channels should show current reading in between 4-20mA	If any of the channel is not showing current according to DROK signal generator display adjust potentiometer resistance. Current 1 – Potentiometer R120 Current 2 – Potentiometer R121 Current 3 – Potentiometer R122 Current 4 – Potentiometer R123

LABEL APPLICATION PROCEDURE

COMPONENT LIST

Description	Manufacture	Part Number / Revision
X-Lab CLS-4-420-TH Final Assembly	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Label 1	Electronics4All	Rev. 1.0
X-Lab CLS-4-420-TH Label 2	Electronics4All	Rev. 1.0

PROCEDURE



- 1 Labels will be provided by Electronics4All once the serial number and MAC address list is received, and the gas gauge calibration file and final test data has been reviewed for the UUT. Apply the labels to the locations and orientation shown in the above guide.