

# Modification Recommended Service Note

Supersedes:  
E5080B-23

## E5080B ENA Series Network Analyzer

Serial Numbers: MY59300001-MY59399999, SG59300001-SG59399999  
Manufacturing ID Number: NA

Acoustic sound from PSU

### Parts Required:

Refer to [Table 1-1](#)

#### ADMINISTRATIVE INFORMATION

ACTION	<input type="checkbox"/> ON SPECIFIED FAILURE	STANDARDS		
CATEGORY:	<input checked="" type="checkbox"/> AGREEABLE TIME	LABOR:	1.3 Hours	
LOCATION	<input checked="" type="checkbox"/> SERVICE CENTER	SERVICE:	<input type="checkbox"/> RETURN	USED <input checked="" type="checkbox"/> RETURN
CATEGORY:	<input type="checkbox"/> ON-SITE (active On-site contract required)	INVENTORY:	<input type="checkbox"/> SCRAP	PARTS: <input type="checkbox"/> SCRAP
	<input type="checkbox"/> CHANNEL PARTNERS		<input type="checkbox"/> SEE TEXT	<input type="checkbox"/> SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	NO CHARGE AVAILABLE UNTIL:	1-Dec-2024	
	<input checked="" type="checkbox"/> Calibration Required	PRODUCT LINE:	WN	
	<input type="checkbox"/> Calibration NOT Required	AUTHOR:	ls	

ADDITIONAL INFORMATION:

## Situation:

E5080B ENA units with serial number range beginning with MY593xxxxx may produce acoustic sound when they are powered on or during operation. It is crucial to note that this sound does not impact performance, quality, reliability, or functionality.

This phenomenon results from the combination of the Gen 2 CPU with the power supply unit. Replacing the CPU with Gen 1 CPU resolves the acoustic sound.

Identifying the acoustic sound which is described in this service note:

1. Boot up E5080B.
2. Launch firmware.
3. Under preset conditions, set the IFBW to 2kHz.
4. If the sound level becomes louder after setting the IFBW frequency, the unit can be used as normal. It is related to described acoustic sound symptom resulting from the combination of Gen 2 CPU with power supply unit. [This is the typical phenomenon of the acoustic sound from the combination of the Gen2 CPU with the power supply unit]
  - 4.1. If user would like to achieve a quiet environment with reduced acoustic sound level, perform [solution 1](#) - BIOS settings modification.
  - 4.2. If user continues to have concerns about the acoustic sound despite applying solution1, it is recommended to contact local Keysight service center or Keysight contact center team for further assistance on CPU replacement. Keysight service center will convert your E5080B MY593xxxxx CPU from Gen 2 to Gen 1 ([solution 2](#)).
5. If the sound level does not change and E5080B user concerns about the other acoustic sound, contact local Keysight service center or Keysight contact center team for assistance.

**Note to Keysight service center:** Return the original Gen 2 CPU to factory.

Solution/Action:

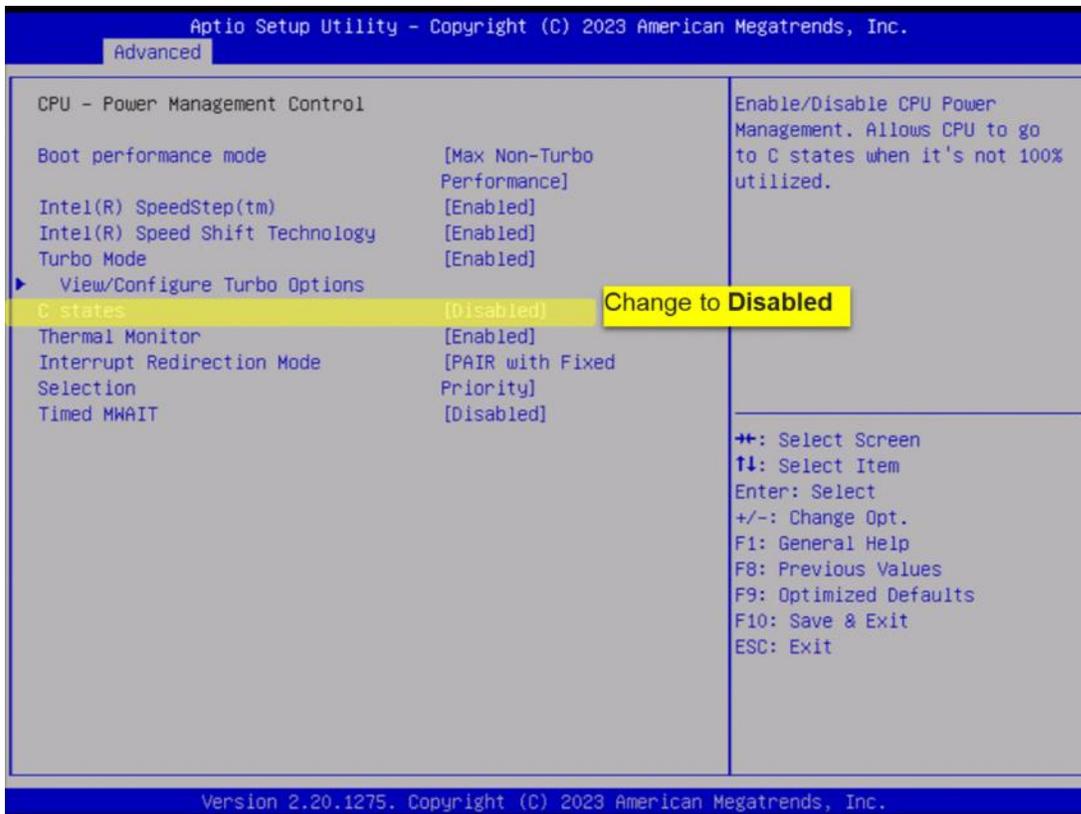
Solution 1: BIOS settings modification – Perform this first.

(To be performed by: End user)

BIOS settings change will result in a lower acoustic sound level.

To modify the BIOS settings,

1. Connect a USB keyboard to E5080B.
2. Power on the ENA.
3. Press ESC/ DEL key repeatedly to enter BIOS setting page.
4. Select Advanced > Power & Performance > CPU – Power Management Control > C states > **Disabled**. Set the C states value from Enabled to Disabled.
5. Press ESC key twice
6. Select Save & Exit > Save Changes & Exit
7. Select Yes at Save Configuration & Exit?
8. Reboot the system.
9. Monitor if the acoustic/ tickling sound reduces to user acceptable level.



**Solution 2: Convert CPU from gen2 to gen1.**

Note: Apply solution 2 if end user remains concerned about the tickling sound, even with solution 1 applied.

(To be performed by: Keysight Technologies service center only)

Shown is the digital hardware conversion procedure in converting a MY593/ SG593 (Gen2 CPU generation digital hardware) ENA into a MY592/ SG592 (Gen1 CPU generation digital hardware) ENA. Purchase the parts through SLSC (SPO) individually.

Table 1-1

Item	Gen1 CPU sn MY591/2	Gen2 CPU sn MY593	Description	Remarks	Part list section	Additional notes to service center on part
1	E5081-87012	E5080-87043	Label, Gen1 CPU-PCIO	E5080-87043 IO cut out are slightly shifted up compared to E5080-87019 and E5081-87012	Outer cover	
2	E5080-00606	E5080-00619	Panel Cover Bottom	E5080-00606 is meant for MY591/2 generation only. It is not compatible with MY593/SG593 and newer.  E5080-00619 is fitted with a larger cut-out to suit MY593 CPU PCIe cable. It is a backward compatible replacement to E5080-00606 and will work on MY591/2, SG591/2 generation.	Inner casing	Reuse E5080-00619
3	N5240-80040	-	Label, key main	E5081-87011 is fitted with updated USB logo. For MY591/2, SG591/2 s/n prefix originally fitted with N5240-80040, perform the front label repair using E5081-87011.	Front assembly	Reuse E5081-87011
	E5081-87011	E5081-87011		For MY593,SG593 s/n prefix, use E5081-87011 only.		
4	E5080-61609	E5080-61617	Cable Assembly 12V Power	E5080-61609 and E5080-61617 are not backward compatible.	Distribution board	
				E5080-61609 and E5080-61617 are not backward compatible. Gen2 CPU (MY593) motherboard 12V power supply uses a different connector compared to Gen1 CPU (MY591/2)	Digital chassis	
				E5080-61609 and E5080-61617 are not backward compatible.	Backplane assembly	
5	E5080-68100	E5080-68120	ENA rear IO panel (digital motherboard).	The IO panel is part of the CPU assembly. No standalone part for IO panel is made available.	Digital chassis	Included in #6
6	E5080-68100	E5080-68120	i5 CPU board, tested	Main CPU module	CPU Assembly	
7	0515-0430 (Qty.4)	0515-0430 (Qty. 6)	Screw-Machine W/Crest-Cup-Con-Washer Pan-HD Torx-T10 M3X0.5 6mm-LG SST-300 Passivated	Standoffs (item 3) are not required for MY593 CPU motherboard. Replaced with screws.	CPU Assembly	
8	0380-1897 (Qty.2)	Not applicable.	Standoff-HEX Male-Female M3X0.5 6mm-A/F 13mm-LG Br ZN-CCC	Not required for MY593.	CPU Assembly	
9	E5080-01205	Not applicable.	Bracket DIMM Holder	Not required for MY593.	CPU Assembly	
10	0515-0430 (Qty.2)	Not applicable.	Screw-Machine W/Crest-Cup-Con-Washer Pan-HD Torx-T10 M3X0.5 6mm-LG SST-300 Passivated	For MY593,SG593, the two screws are included in item 7.	CPU Assembly	
11	1400-1051 (Qty.2)	Not applicable.	Saddle-Wire	Not required for MY593 since there is no DIMM holder bracket.	CPU Assembly	
12	E5080-01204	Not applicable.	Bracket DIMM Pusher	Not required for MY593 since there is no DIMM holder bracket.	CPU Assembly	
13	0515-0430 (Qty.2)	Not applicable.	Screw-Machine W/Crest-Cup-Con-Washer Pan-HD Torx-T10 M3X0.5 6mm-LG SST-300 Passivated	Not required for MY593 since there is no DIMM holder bracket.	CPU Assembly	
14	E5080-82203	E5080-82205	SSD Installed, Win10 (1809)		Removable SSD assembly	
15	E5080-87252	E5080-87253	SSD label	Part of E5080-82203/ E5080-82205	Removable SSD assembly	Included in #14

The above listed part numbers are the unique hardware of Gen1 CPU (MY591/2) and Gen2 CPU (MY593) generations. The other parts that are not explicitly listed in table 1-1 are common and reusable.

In summary,  
Reused items.

- Everything except listed below.

New items/ Items to be replaced

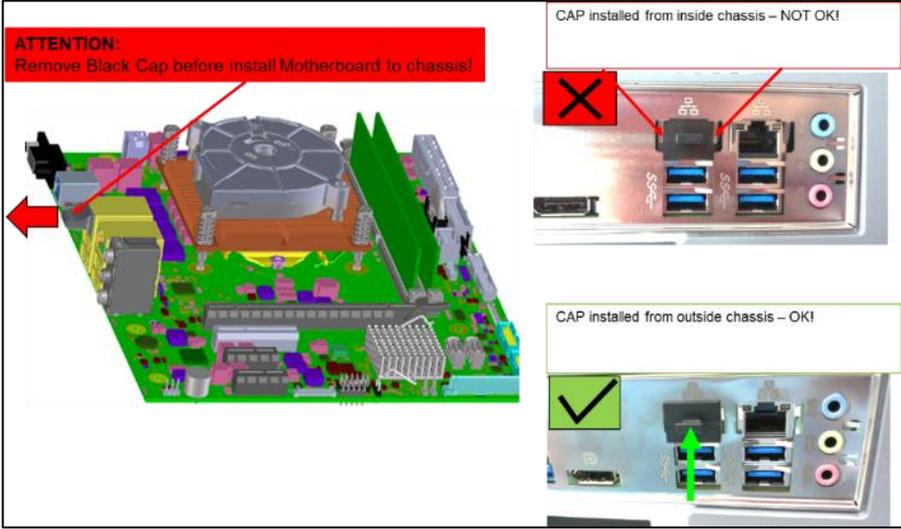
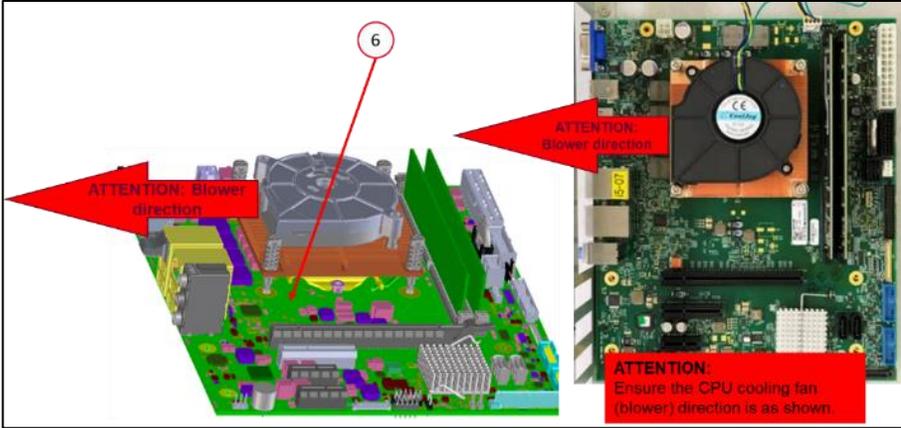
- CPU module assembly (digital motherboard)
- PCIO label
- Power supply cable assembly
- Solid state drive.

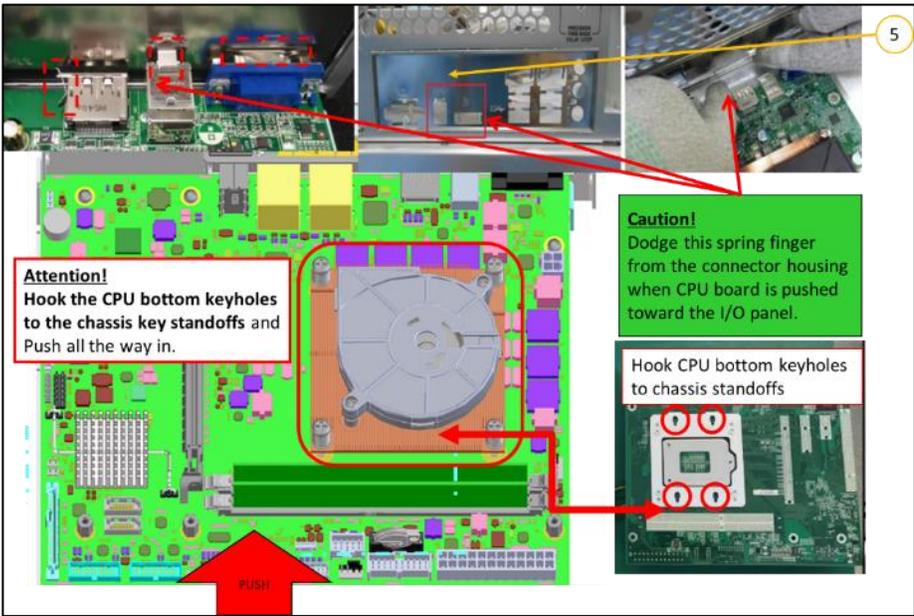
- I. Hardware upgrade
  1. Dis-assembly procedure
  2. Assembly procedure
- II. Power on unit
- III. Firmware update
- IV. License files check
- V. Restoration of syscalls (Adjustment)
- VI. Calibration of touch screen
- VII. Execute diagnostic test (Operator check)
- VIII. Performance tests.

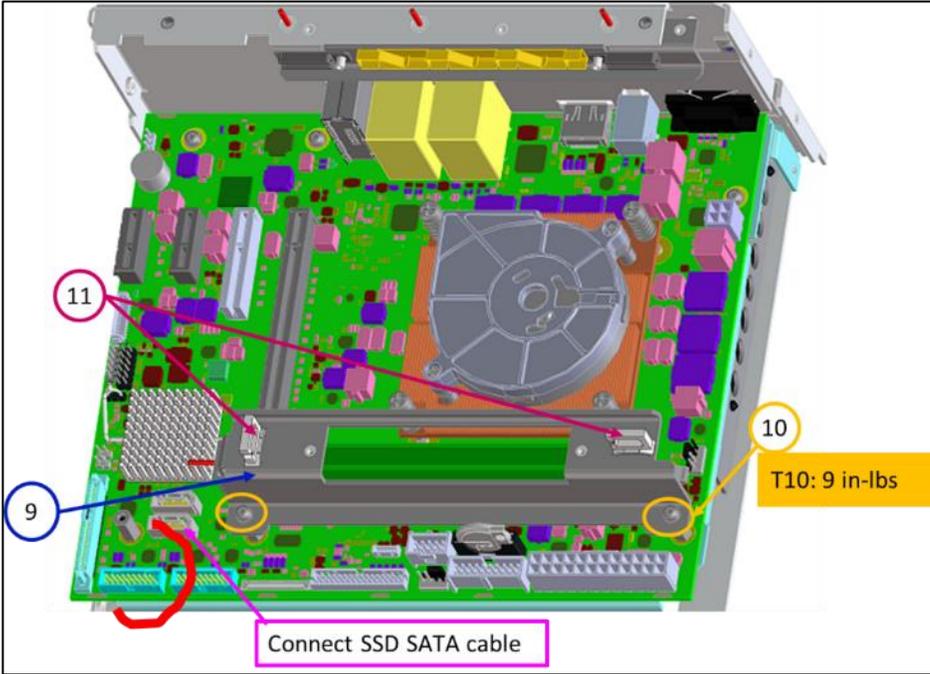
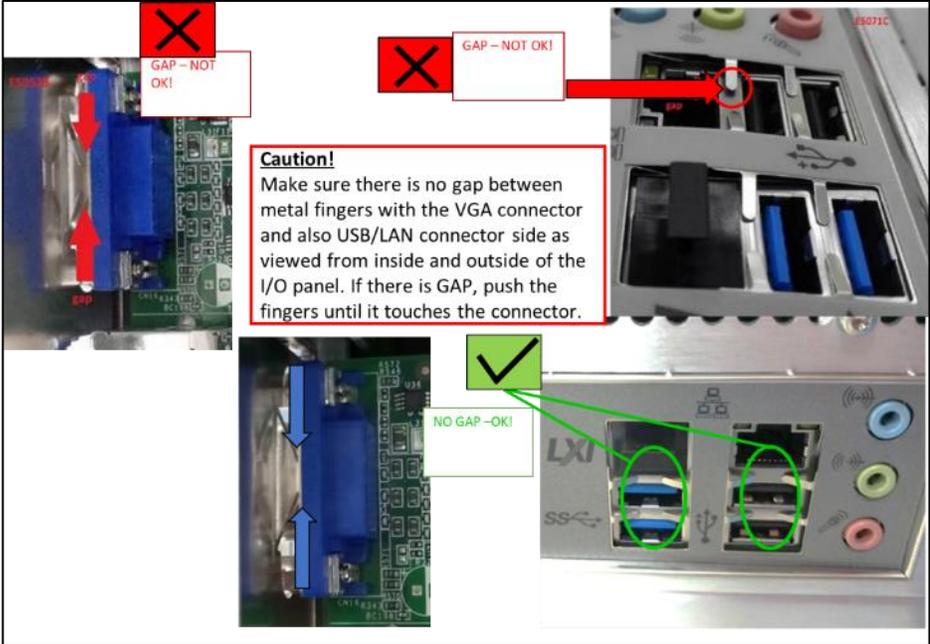
- I. Hardware upgrade
  1. Dis-assembly procedure  
Refer to the E5080B Dis-assembly procedure reference in SIP(Keysight Intranet access).  
<http://emg.communications.keysight.com/SIP/ProductInformation.aspx?strSearch=E5080B>

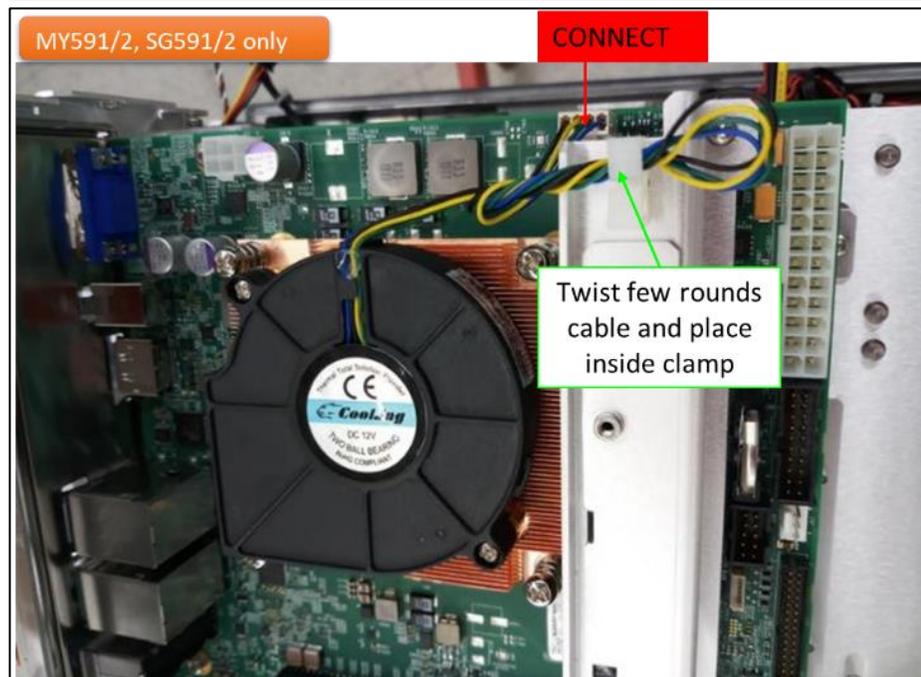
1.Remove SSD, outer cover, bottom cover and plate, rear panel Bias-T panel, rear panel AUX assembly, CPU module.

2. Assembly procedure
  - 1.CPU module installation.
    - 1.1 Shown is the CPU module installation procedure.

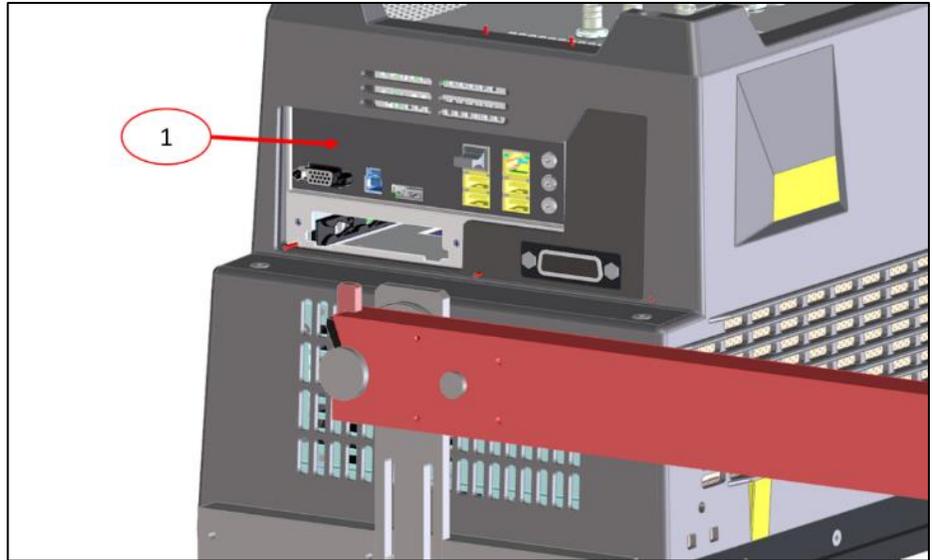






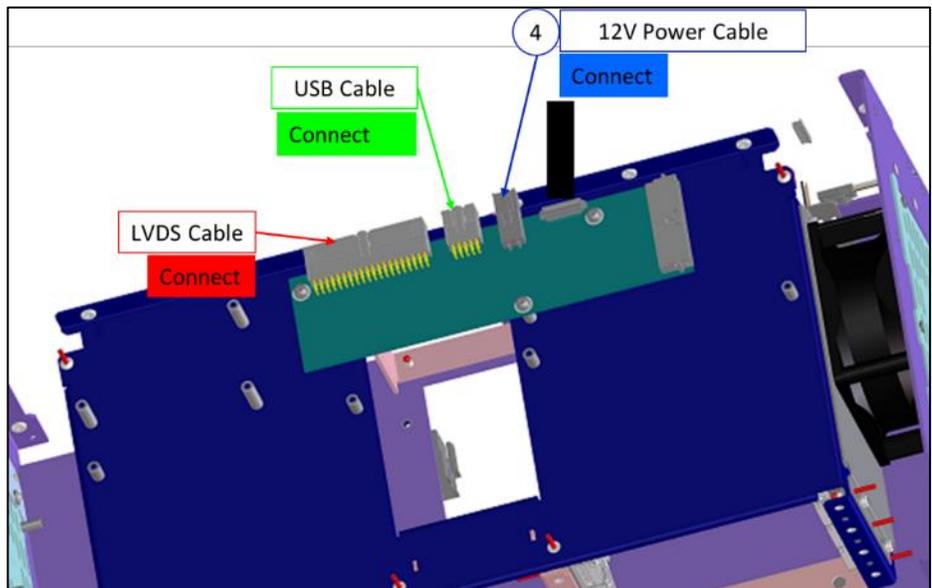
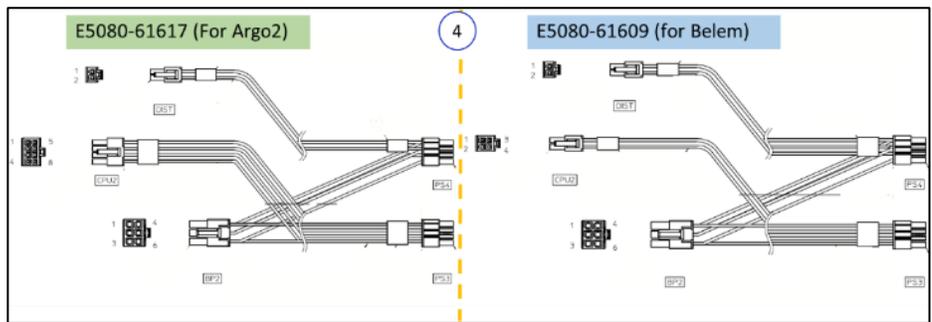


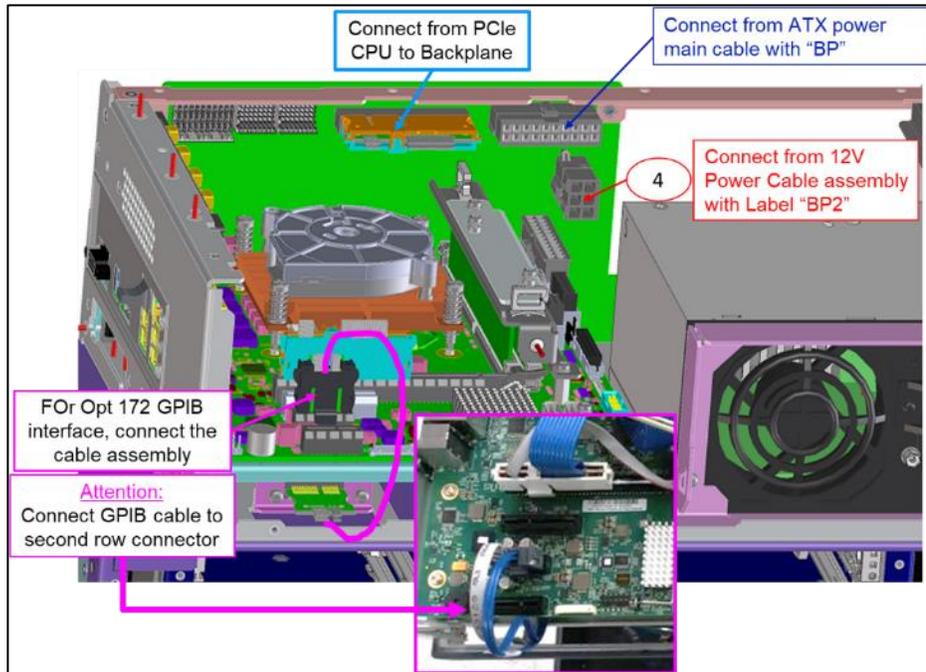
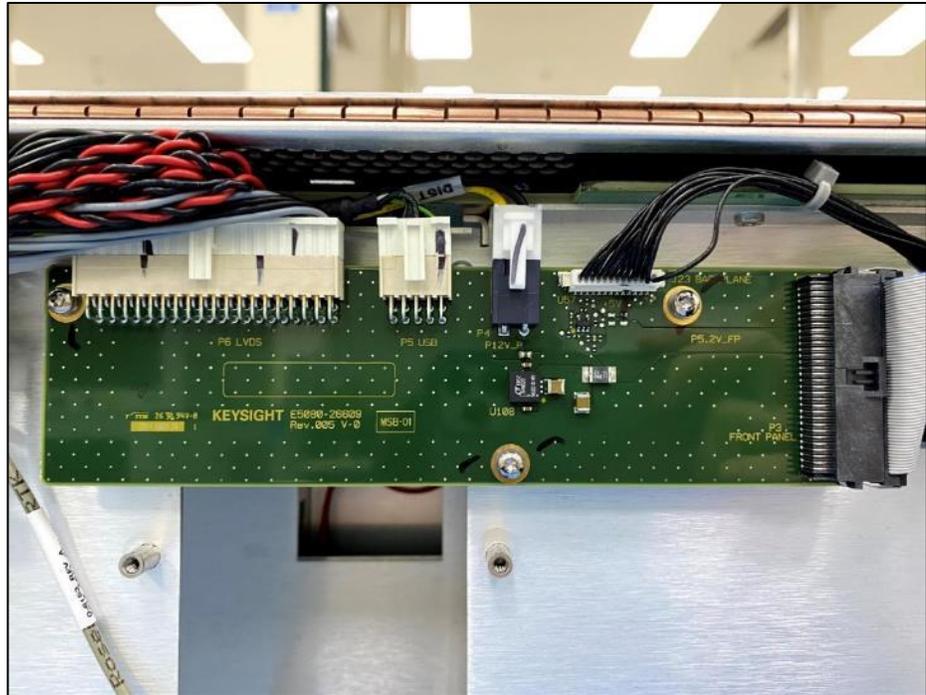
1.2 After the CPU module is installed, remember to replace the PCIO overlay as shown. The PCIO overlay cut-outs (X-Y position) for Gen2 CPU (MY593) are slightly shifted to fit Gen2 CPU and it is not 100% compatible with Gen1 CPU generation CPU. Replacement with Gen1 CPU PCIO overlay is required.



2. Power supply unit cable assembly replacement

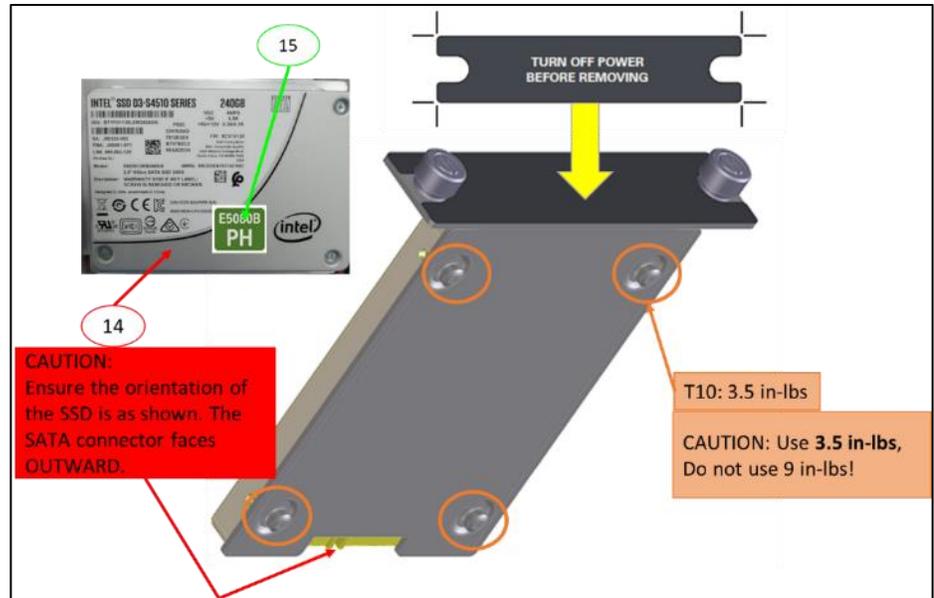
2.1 Shown is the comparison of the 12V power supply cable assembly.  
Perform the replacement as shown using E5080-61609.





### 3. Solid State Drive replacement

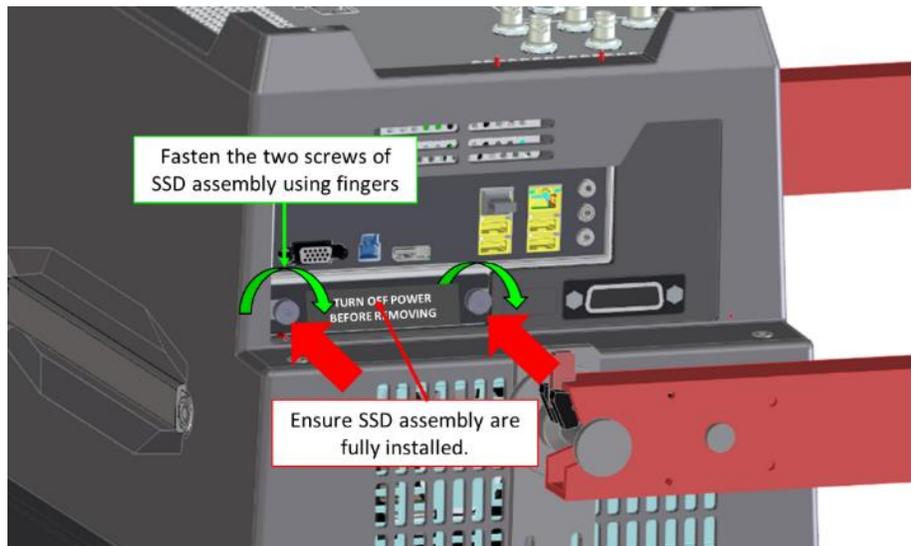
- 3.1 Replace the Gen2 CPU solid state drive (SSD) with SSD meant for Gen1 CPU. Reuse the removable SSD bracket and tray.



#### 4. Restoration of hardware

4.1 Reinstall rear panel AUX assembly, Bias-T panel, bottom cover and plate, outer bucket cover accordingly to the reversal of disassembly procedure. Ensure every single cable, connectors and screws are properly installed and fastened.

#### 5. Installation of removable solid state drive

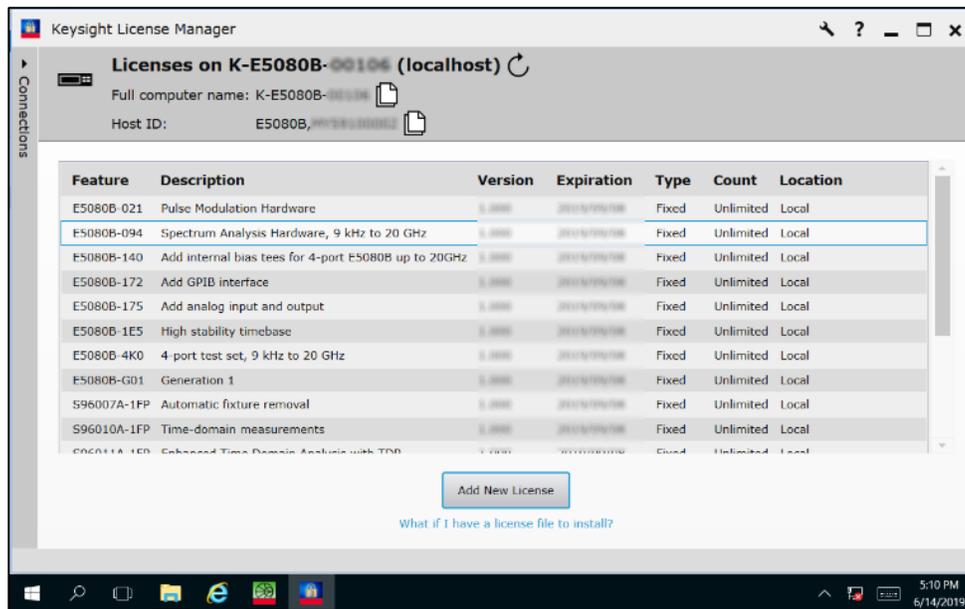


- II. Power on unit
  1. Power on the E5080B. Ensures E5080B loads into Windows correctly. Confirm on Windows time and date.
- III. Firmware update
  1. Check for the latest firmware from Keysight.com product support page.
  2. It is highly recommended to have the latest FW installed in the event where newer FW releases are made available online.
- IV. License files update
  1. Ensure that the E5080B serial number and option information are correct.

Keysight Software Manager (KSM)

<http://ksmwebp.cos.is.keysight.com/asm/internal/ui/Authenticate.aspx>

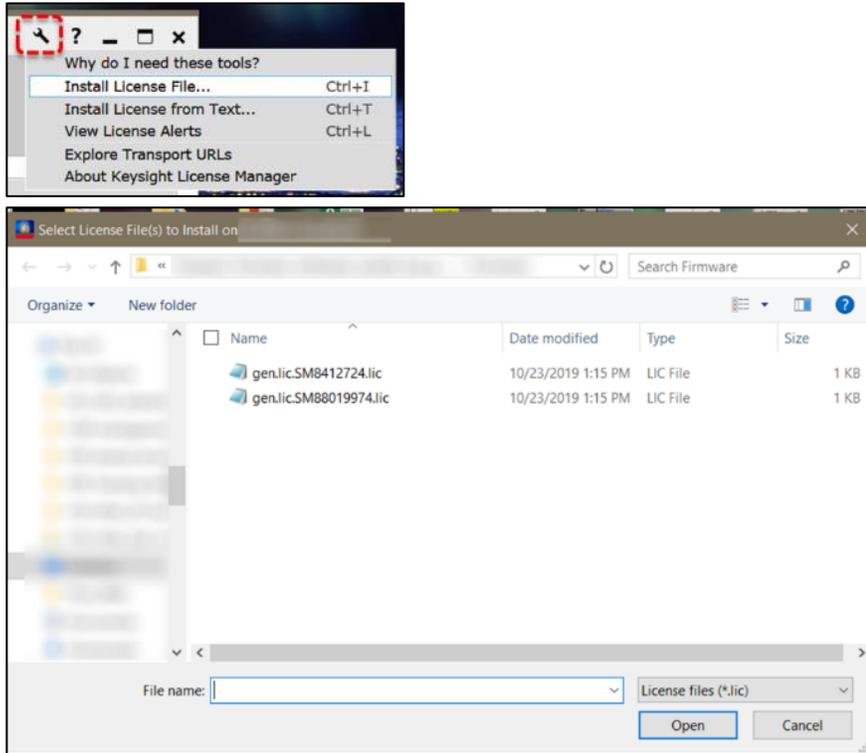
2. In E5080B, launch Keysight License Manager Utility.  
 <Start> → Search for “Keysight License Manager”. Shown is the sample KLM window for an opt-4K0 E5080B.



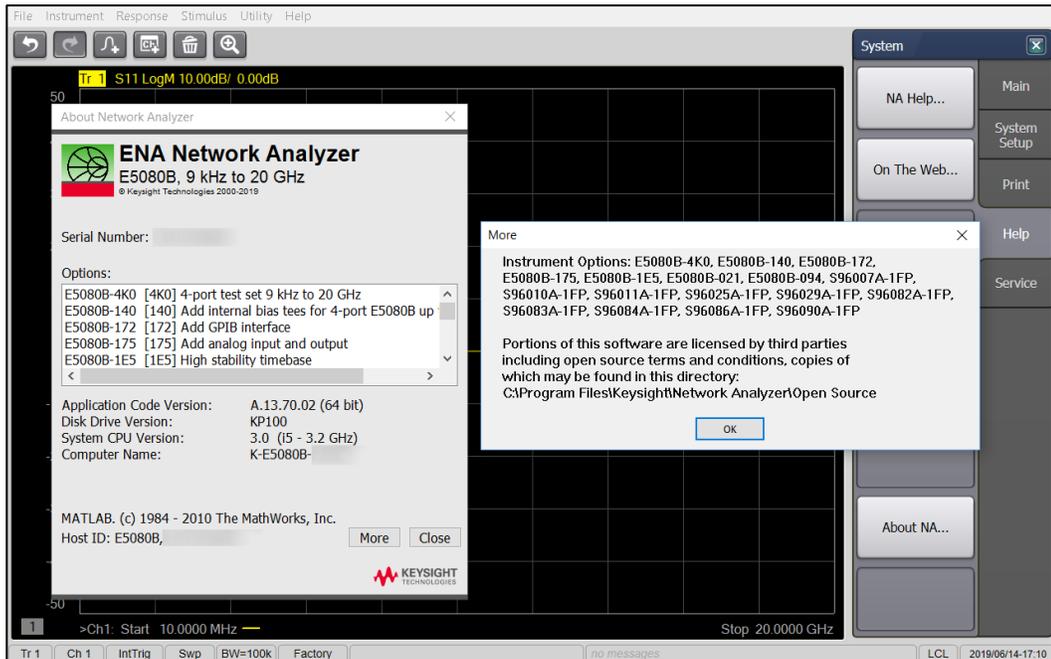
3. (Backup): In case there are missing licenses  
 To add new license file, click on the wrench icon, select “Install License File”. A Window will be prompted. Select the intended license file. Click “Open”.

Alternatively, if user copies the license files to USB flash drive, the E5080B would attempt to search the USB flash drive for the appropriate license file (if any) and

automatically install the license(s) if they match with the unit serial number.



4. Reboot the E5080B firmware and Navigate to <System>→Help →About NA to ensure the new option is correctly recognized. Shown is the example of E5080B Firmware Info.



V. Restoration of syscalls (Adjustment)

1. Perform **ALL Adjustments** with the latest E5080B Gondor FSE Adjustment Software. Follow the step-by-step procedure as instructed by Adjustment Software.

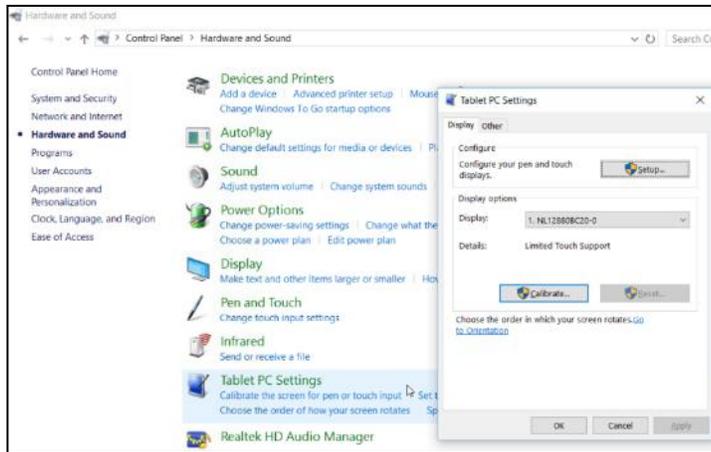
VI. Calibration of the touch screen

Note: This step is optional.

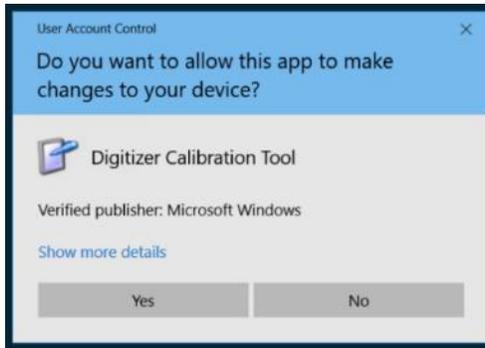
The default Windows touch screen calibration setting will be accurate. Only perform if user would like to customize the touch screen to their requirement.

Refer to the procedure described below to calibrate the touch-screen.

1. In Windows operating system, navigate to Control Panel → Hardware and Sound → Tablet PC Settings. Click “Calibrate”.



2. Windows UAC (User Account control) will be prompted. Press “Yes”.



3. Touch the + crosshair according to the sequence on screen.



VII. Execute diagnostic test (Operator check)

1. In E5080B firmware, navigate to <System> →Service →Operator's Check.
2. User will be prompted with dialog box, click "OK" to proceed with the operator check.
3. At the end of the test, for a good unit, PASS will be displayed. Keep an eye for anomaly or failure message.

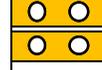
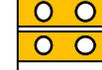
VIII. Performance tests

1. Execute ALL Tests with the latest E5080B Gondor ETMS performance verification program. Ensure the E5080B passes full performance test and well within specification. Refer to the on-screen instructions of the performance verification software for step-by-step procedure.

~ End~

## Appendix

Installed in	Spark plug adapter	P/N	Description
PXIe & USB-streamlined VNA <b>M980xA, P500xA, P502xA, P50xxB, P93xxB</b> (Up to 20GHz)	3.5 mm	1250-4329	Adapter-Coaxial Straight Spark-Plug Female-APC-3.5 50-Ohm 26.5GHz
Benchtop VNA <b>E5080B</b> For serial prefix MY591/2/3 (4.5G-20GHz) For serial prefix MY594++ (6.5G-20GHz)	3.5 mm	1250-3893	Adapter-Coaxial straight Plug APC 3.5 50Ohm 26.5GHz
Benchtop VNA <b>E5080B</b> For serial prefix MY594++ (Up to 4.5GHz)	NA	NA	Spark plug adapter is removed in keeping cost low.
PXIe, USB-Streamlined & Benchtop VNA (Above 20GHz)	3.5 mm	1250-4078	Adapter-Coaxial Straight Spark-Plug Female-APC-3.5 50-Ohm 26.5GHz
	2.4 mm	1250-4323	Adapter-Coaxial Straight Spark-Plug Jack-2.4mm 50-Ohm 50GHz-MAX
	1.85 mm	1250-4434	Adapter-Coaxial Straight Spark-Plug Jack-1.85mm 50-Ohm 65GHz-MAX
All variants	Nut	1250-3895	Connector-RF Nut-Spanner 0.32-in-OD 0.07-in-THK Brass Au-plated

port source	module configuration								
	20 GHz			50 GHz					
	2	4		2	4				
	1	1	2	1	1	2			
	Diva20 2p x1	Diva20 4p x1	Diva20 2p x2	Diva50 2p	Diva50 2p x2	Diva50 2p x2			
									
Opt	Freq Range	Bias Tees	Connector Type						
x4x	4.5 GHz	available	Type-N	✓	✓	✓	NA	NA	NA
x6x	6.5 GHz	available	Type-N	✓	✓	✓	NA	NA	NA
x9x	9 GHz	available	Type-N	✓	✓	✓	NA	NA	NA
xDx	14 GHz	available	3.5 mm (Type-N)	✓	✓	✓	NA	NA	NA
xHx	18 GHz	available	3.5 mm (Type-N)	✓	✓	✓	NA	NA	NA
xKx	20 GHz	available	3.5 mm	✓	✓	✓	NA	NA	NA
xLx	26.5 GHz	not available	3.5 mm	NA	NA	NA	✓	✓	✓
xMx	32 GHz	not available	2.4 mm	NA	NA	NA	✓	✓	✓
xNx	44 GHz	not available	2.4 mm	NA	NA	NA	✓	✓	✓
xPx	53 GHz	not available	1.85 mm	NA	NA	NA	✓	✓	✓

## Revision History:

Date	Service Note Revision	Author	Reason for Change
07-Dec-2023	E5080B-23	ls	As Published
13-Dec-2023	E5080B-23A	ls	Included BIOS settings change as the first solution (Solution 1).