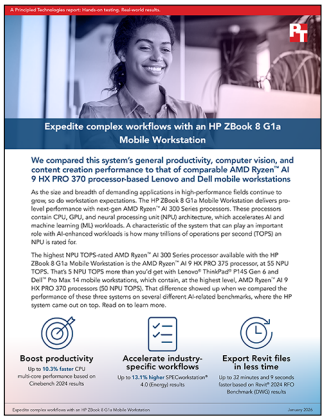

The science behind the report:

Expedite complex workflows with an HP ZBook 8 G1a Mobile Workstation

This document describes what we tested, how we tested, and what we found. To learn how these facts translate into real-world benefits, read the report ***Expedite complex workflows with an HP ZBook 8 G1a Mobile Workstation***.

We concluded our hands-on testing on October 15, 2025. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on August 21, 2025 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

To learn more about how we have calculated the wins in this report, go to ***http://facts.pt/calculating-and-highlighting-wins***. Unless we state otherwise, we have followed the rules and principles we outline in that document.

Table 1: Results of our benchmark testing. Higher benchmark scores are better and lower times (MM:SS) are better.

	HP ZBook 8 G1a	Lenovo® ThinkPad® P14s Gen 6	Dell™Pro Max 14
Cinebench 2024			
CPU multi-core score	1,142	1,035	1,134
Geekbench 6			
Single-core score	2,955	2,935	2,902
CPU multi-core score	15,386	15,185	15,231
Procyon® AI Computer Vision Benchmark			
Integer (INT8) overall score	1,809	1,770	1,794
Redshift Benchmark			
3D rendering time (MM:SS)	32:22	34:11	33:44
Revit 2024 RFO Benchmark results			
Model creation time (MM:SS)	3:02	4:07	4:15

	HP ZBook 8 G1a	Lenovo® ThinkPad® P14s Gen 6	Dell™Pro Max 14
Revit 2024 RFO Benchmark results			
Export in DWF format (MM:SS)	8:51	15:00	13:25
Export in DWG format (MM:SS)	49:38	79:09	81:47
Export in PDF format (MM:SS)	68:35	95:34	95:42
Export in PNG format (MM:SS)	11:14	14:52	15:13
Cadalyst System Benchmark for AutoCAD			
Total index scores	651	649	625
SPECworkstation® 4.0 benchmark			
AI & Machine Learning score	1.29	1.17	1.19
Energy score	1.28	1.13	1.17
Financial Services score	1.16	0.93	1.22
Life Sciences score	1.35	1.23	1.31
Media & Entertainment score	1.42	1.26	1.40
Product Design score	1.29	1.24	1.14

System configuration information

Table 2: Detailed information on the systems we tested.

System	HP ZBook 8 G1a	Lenovo ThinkPad P14s Gen 6	Dell Pro Max 14
Processor			
Vendor	AMD	AMD	AMD
Model number	AMD Ryzen™ AI 9 HX PRO 375	AMD Ryzen AI 9 HX PRO 370	AMD Ryzen AI 9 HX PRO 370
Core frequency (GHz)	2.0 – 5.1	2.0 – 5.1	2.0 – 5.1
Number of cores	12	12	12
Number of threads	24	24	24
L2 Cache (MB)	12	12	12
L3 Cache (MB)	24	24	24
AI Engine Capabilities Overall TOPS	Up to 85	Up to 80	Up to 80
AI Engine Capabilities NPU TOPS	Up to 55	Up to 50	Up to 50
Memory			
Amount (GB)	64 (2 x 32)	64 (2 x 32)	64 (2 x 32)
Type	DDR5	DDR5	DDR5
Speed (MT/s)	5,600	5,600	5,600
Graphics			
Vendor	AMD	AMD	AMD
Model number	AMD Radeon™ 890M	AMD Radeon™ 890M	AMD Radeon™ 890M
Driver	AMD v32.0.13030.5016	AMD v32.0.13040.6004	AMD v32.0.13046.12007
Storage			
Amount (TB)	1	1	1
Type	NVMe® PCIe Gen 4 x4	NVMe PCIe Gen 4 x4	NVMe PCIe Gen 4 x4
Connectivity/expansion			
Wireless internet	MediaTek® Wi-Fi 7 MT7925	MediaTek Wi-Fi 7 MT7925	MediaTek Wi-Fi 7 MT7925
Bluetooth	5.4	5.4	5.4
USB	2 x Thunderbolt™ 4 with USB Type-C® 40Gbps 1 x USB Type-A 5Gbps	2xThunderbolt 4 with USB Type-C 40Gbps 2 x USB Type-A 5Gbps	2xThunderbolt 4 with USB Type-C 40Gbps 2 x USB Type-A 5Gbps
Video	1 x HDMI 2.1	1 x HDMI 2.1	1 x HDMI 2.1
Battery			
Type	Lithium-polymer	Lithium-polymer	Lithium-polymer
Rated capacity (Whr)	62	57	72

System	HP ZBook 8 G1a	Lenovo ThinkPad P14s Gen 6	Dell Pro Max 14
Display			
Size (in.)	14	14	14
Resolution	1,920 x 1,200	1,920 x 1,200	1,920 x 1,200
Touchscreen	No	No	No
Operating system			
Vendor	Microsoft	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro	Windows 11 Pro
Build number or version	24H2 Build 26100.4946	24H2 Build 26100.4946	24H2 Build 26100.5074
BIOS			
BIOS name and version	HP X84 v01.02.01 05/23/2025	Lenovo R2XET33W (1.13) 06/03/2025	Dell 1.3.0 08/07/2025
Dimensions			
Height (in.)	0.74	0.43 – 0.64	0.58 – 0.74
Width (in.)	12.43	12.44	12.32
Depth (in.)	8.74	8.81	8.95
Weight (lbs)	3.18	3.06	3.95

How we tested

Setting up the mobile workstations

Setting up and updating the OEM image

1. Boot the system.
2. To complete installation, follow the on-screen instructions. Use the default selections when appropriate.
3. Set the Windows (plugged in) Power Mode to Best Performance.
4. Set Screen and Sleep options to Never:
    a. Right-click the desktop, and select Display settings.
    b. From the left column, select System
    c. Click Power & Battery.
    d. For all power options listed under Screen and Sleep, select Never.
5. Disable User Account Control notifications:
    a. Select Windows Start, type `UAC`, and press Enter.
    b. Move the slider control to Never notify, and click OK.
6. Run Windows Update, and install all updates available.
7. Run the HP/Lenovo/Dell Support Assistant utilities, and install all recommended BIOS and driver updates available.
8. Verify the date and time are correct and synchronize the system clock with the time server.
9. Pause Automatic Windows Updates:
    a. Click Windows Start.
    b. Type `Windows Update settings`, and press Enter.
    c. From the Pause updates drop-down menu, select Pause for 5 weeks.

Capturing an image

1. Connect an external HDD to the system.
2. Click Windows Menu button, and type `Control Panel` in the search bar. Click Control Pane l → System and Security → Backup and Restore (Windows 7) → Create a system image.
3. Verify that the external HDD is selected as the save drive, and click Next.
4. Verify that all drives are selected to back up, and click Next.
5. Click Start backup.
6. When you see the prompt to create a system repair disc, select No, and close the dialogs.

Restoring an image

1. Connect an external HDD to the system.
2. Press and hold the Shift key while restarting the system.
3. Select Troubleshoot.
4. Select Advanced options.
5. Select See more recovery options.
6. Select System image recovery.
7. Select the User account.
8. Enter the system password, and click Continue.
9. At the Restore system files and settings screen, select Next.
10. Verify that the external HDD is selected, and click Next.
11. Once the recovery has completed, click Finish.

Measuring performance with Cadalyst System Benchmark 2015

Setting up the test

1. Download the Cadalyst Benchmark vC2015_v5.5b_JULY_2018.ZIP from ***https://info.cadalyst.com/cad-benchmark-test***
2. Extract the zip file to C:\benchmark\C2015_v5.5b_updated_JULY_2018.
3. Purchase, download, and install AutoCAD 2026 from ***https://www.autodesk.com/products/autocad***.

4. Launch AutoCAD, and sign in to your Autodesk account.
5. Click New.
6. In the command terminal at the bottom of the screen, Type `OPTIONS`. If it is not available, press CTRL + 9.
7. Under the Files tab, select Support File Search Path, click Add, and enter the test folder location C:\benchmark\C2015_v5.5b_updated_JULY_2018\..
8. For trusted locations, click Add, and enter the test folder location C:\benchmark\C2015_v5.5b_updated_JULY_2018\..
9. On the System tab, click Graphics Performance.
10. Verify that Hardware Acceleration is on, and that all 3D Display Settings are enabled.
11. Close the Options menu.
12. Using the command terminal, set the following parameters:
    - Type SDI, press Enter, type `1`, and press Enter.
    - Type `STARTMODE`, press Enter, type `0`, and press Enter.
13. Close AutoCAD.
14. Right-click the desktop, and click New > Shortcut.
15. For location, enter the executable path for acad.exe, and the default location of C:\Program Files\Autodesk\AutoCAD 2026\acad.exe.
16. Click Next, and click Finish..
17. Right click the executable, and click Properties.
18. For Start in, change the location to the location that contains the benchmark files including the C2015_go.lsp file (we used ""C:\benchmark\C2015_v5.5b_updated_July_2018\), and click Apply.
19. Close all programs, and restart the system.

Running the test

1. To open AutoCAD< double-click the new desktop shortcut.
2. Maximize the AutoCAD Window.
3. In the Command terminal, type `APPLOAD`, and press Enter.
4. In the Look In dialog box, browse to the test folder located in C:\benchmark\C2015_v5.5b_updated_JULY_2018\.
5. Click the C2015_go.lsb file, and click Load.
6. Click Close.
7. Once the C2015 Benchmark menu appears, enter your system configuration.
8. Leave Test Functions as 3D/2D/Other, and Number of Test Loops as 1.
9. To start the test, click OK.
10. Record the results and close AutoCAD.
11. Wait 15 minutes and repeat steps 1 through 10 two more times.
12. Report the median result.

Measuring performance with Cinebench 2024

Setting up the test

1. Download and install Cinebench 2024 from ***https://www.maxon.net/en/downloads/cinebench-2024-downloads***
2. Launch Cinebench 2024.
3. Select File->Advanced benchmark.
4. From the Minimum Test Duration drop-down menu, select Off.

Running the test

1. Launch Cinebench 2024.
2. Click File, Run All tests.
3. Record the result.
4. Wait 10 minutes and repeat steps 1 through 3 two more times.
5. Record the median result.

Measuring performance with Geekbench 6

Setting up the test

1. Purchase a Pro license and download and install Geekbench 6 Pro from ***https://www.geekbench.com/download/***.

Running the test

1. Launch Geekbench.
2. Click Run CPU Benchmark.
3. Record the result.
4. Wait 5 minutes and repeat steps 1 through 3 two more times.
5. Record the median result.

Measuring performance with Maxon RedShift Benchmark

Setting up the test

1. Purchase, download, and install a 1 month license for Maxon Redshift from ***https://www.maxon.net/en/buy#monthly***.
2. Launch the Maxon App, and install the Redshift license onto the system under test..

Running the test

1. To open a command prompt, click the Window icon, type cmd, and press Enter.
2. Inside the command prompt, type `cd C:\ProgramData\Redshift\bin`, and press Enter.
3. To start the benchmark, type `RunBenchmark.bat`, and press Enter.
4. Record the results.
5. Wait 5 minutes and repeat steps 1 through 4 two more times.
6. Record the median result.

Measuring performance with Procyon AI Computer Vision Benchmark

Setting up the test

1. Purchase and download the Procyon AI Computer Vision benchmark from https://benchmarks.ul.com/procyon.
2. Install the Procyon benchmark.
3. Double-click the installer.
4. Click Next.
5. To agree to EULA, click Yes, and click Next.
6. Click Next.
7. Launch Procyon.
8. Select Settings and input the Procyon AI Computer Vision license key.
9. Close Procyon.

Running the test

1. Launch Procyon.
2. Select the Computer Vision test.
3. For the Float32 and Float16 tests, select the Windows ML tab.
4. Choose the NPU, and select Integer.
5. To begin the test, click Run.
6. When the test completes, record the results.
7. Wait 15 minutes and repeat steps 1 through 6 two more times.
8. Record the median result.

Measuring performance with Revit 2024 RFO Benchmark

Setting up the test

1. Purchase, download and install Revit 2025 from ***https://www.autodesk.com/products/revit/overview***.
2. Launch Revit 2025, and sign in with the account information.
3. At the Tutorial screen, click Don't show this again.
4. Close Revit 2025.
5. Download the Revit 2025 RFO Benchmark Tool from ***https://www.revitforum.org/forum/revit-all-flavors/hardware-and-infrastructure/36875-rfo-benchmark-v3-updated-for-2025***.
6. Extract the Revit 2025 RFO Benchmark Tool.

Running the test

1. Open the Extracted Revit 2025 RFO Benchmark Tool directory.
2. To launch the benchmark, click _RFO Benchmark – Full_Expanded shortcut.
3. When the benchmark finishes, record the results.
4. Wait 15 minutes and repeat steps 1 through 3 two more times.
5. Record the median result..

Measuring performance with SPECworkstation 4.0

Setting up the test

1. Go to ***https://gwpg.spec.org/benchmarks/benchmark/specworkstation-4_0/***, purchase, and download the vendor license of the benchmark.
2. To install, click the SPECworkstation-Setup-4.0.0.exe.
3. Turn off Windows Defender Firewall.
4. Click Windows Menu.
5. In the search bar, type `Firewall`.
6. Select Windows Defender Firewall.
7. In the left-hand column, select Turn Windows Defender Firewall on or off.
8. Under both Private and Public network settings, choose Turn off Windows Defender Firewall, and click OK.

Running the test

1. Launch SPECworkstation.
2. Click Run.
3. Report results and reboot the system
4. Repeat steps 1 through 3 two more times.
5. Record the median result.

Read the report ▶

This project was commissioned by HP.