



The science behind the report:

Elevate performance while preserving battery life with the Dell Latitude 7340 Ultralight Laptop

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 [Elevate performance while preserving battery life with the Dell Latitude 7340 Ultralight Laptop](#).

We concluded our hands-on testing on August 15, 2023. 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 July 19, 2023 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

Our results

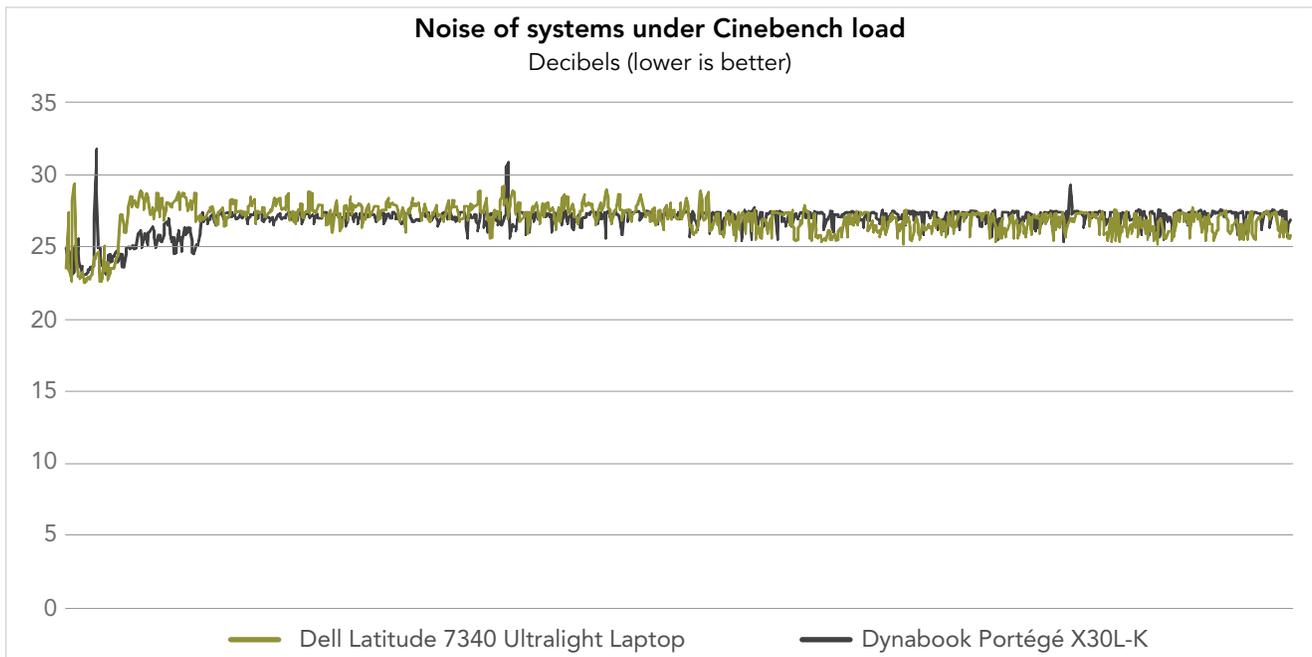
To learn more about how we have calculated the wins in this report, go to <http://facts.pt/calculating-and-highlighting-wins>. Unless we state otherwise, we have followed the rules and principles we outline in that document.

Table 1: Results of our testing.

	Dell Latitude 7340 Ultralight Laptop	Dynabook Portégé X30L-K
Performance benchmarks		
CrossMark (higher is better)		
Overall score	1,167	1,073
Battery drained (average percent)	97.7	Did not drain battery
WebXPRT (higher is better)		
Overall score	178	168
Battery drained (average percent)	97.7	97.7
Procyon Office Productivity (higher is better)		
Score	4,190	3,788
Battery drained (average percent)	92.0	90.7

	Dell Latitude 7340 Ultralight Laptop	Dynabook Portégé X30L-K
Cinebench R23 (higher is better)		
Single-core score	1,288	1,143
Battery drained single-core (average percent)	95.7	95.0
Multi-core score	6,991	5,954
Battery drained multi-core (average percent)	97.3	97.3
MobileMark 25 battery life (higher is better)		
Score (hh:mm)	11:45	9:20
Thermal performance under a sustained Cinebench R23 workload (lower is better)		
Top hot spot temperature (°F)	109.5	129.2
Top hot spot temperature (°C)	43.0	54.0
Bottom hot spot (°F)	123.5	121.6
Bottom hot spot (°C)	50.9	49.8
Battery drained (average percent)	70.0	60.0

Figure 1: The sound levels, in decibels, that each system emitted under a Cinebench workload over the course of 20 minutes. Note that the baseline for the room noise without either system running was 23.6 decibels. Lower is better. Source: Principled Technologies.



System configuration information

Table 2: Detailed information on the systems we tested.

System configuration information	Dell Latitude 7340 Ultralight Laptop	Dynabook Portégé X30L-K
Processor		
Vendor	Intel®	Intel
Name	Core™ i7-1365U	Core i7-1265U
Core frequency (GHz)	1.8 – 5.2	1.8 – 4.8
Number of cores	10	10
Logical processors	12	12
Memory		
Amount (GB)	16 (Integrated)	16 (Integrated)
Type	LPDDR5-4800	LPDDR5-4800
Graphics		
Vendor	Intel	Intel
Model number	Intel Iris® Xe Graphics	Intel Iris Xe Graphics
Storage		
Model Number	KIOXIA KBG50ZNS512G	Samsung MZVLQ256HBJD
Amount (GB)	512	256
Type	NVMe® SSD	NVMe SSD
Connectivity/expansion		
Wireless internet	Intel Wi-Fi 6E AX211	Intel Wi-Fi 6 AX211
Bluetooth	5.1	5.2
USB	1x USB 3.2 Gen 1 Type-A port with PowerShare 2x USB Type-C Thunderbolt 4.0 with Power Delivery & DisplayPort 1.4	2x USB 3.2 Type-C Thunderbolt 4.0 with Power Delivery and DisplayPort 2x USB 3.2 Type-A (1x Sleep & Charge)
Battery		
Type	Integrated lithium-ion	Integrated lithium-polymer
Display		
Size (in.)	13.3	13.3
Resolution	1,920 x 1,200	1,920 x 1,080
Touchscreen	Yes	No
Operating system		
Vendor	Microsoft	Microsoft
Name	Windows 11 Pro	Windows 11 Pro
Build number or version	22H2 Build 22621.1992	22H2 Build 22621.1992

System configuration information	Dell Latitude 7340 Ultralight Laptop	Dynabook Portégé X30L-K
BIOS		
BIOS name and version	Dell Inc. 1.5.0	Dynabook v7.10
Dimensions		
Height (in)	0.65 – 0.70	0.70
Width (in)	11.77	12.04
Depth (in)	8.39	8.26
Weight (lb.)	2.44	2.04

How we tested

We ran each test unplugged. Before each test, we verified that the battery was charged to 100 percent. At the end of each test, we noted what the battery percentage was.

Setting up the systems

Creating and updating the OEM Windows 11 Pro Image

1. Boot the system.
2. Follow the on-screen instructions to complete installation, using the default selections when appropriate.
3. Set DPI scaling to 100%, and set Screen and Sleep options to Never:
 - Right-click the desktop, and select Display settings.
 - Under the Scale and layout section, for the Change the size of text, apps, and other items option, select 100%.
 - From the left column, select Power & Sleep.
 - For all power options listed under Screen and Sleep, select Never.
4. Disable User Account Control notifications:
 - Select Windows Start, type `UAC`, and press the Enter key.
 - Move the slider control to Never notify, and click OK.
5. Run Windows Update, and install all updates available.
6. Update any drivers or BIOS files:
 - For Dell, run the Dell Command Update utility.
 - For Dynabook, navigate to <https://support.dynabook.com/>, and download the latest available drivers.
7. Verify the date and time are correct, and synchronize the system clock with the time server.
8. Pause Automatic Windows Updates:
 - Click the Windows Start button.
 - Type `Windows Update settings`, and press the Enter key.
 - From the Pause updates drop-down menu, select Pause for 5 weeks.
9. To condition the battery, fully charge and discharge the battery three times before performing any testing.

Capturing an image

1. Connect an external HDD to the system.
2. Open Control Panel, and click the arrow to select All Control Panel Items.
3. Click Backup and Restore.
4. Click Create a system image.
5. Verify that the external HDD is selected as the save drive, and click Next.
6. Verify that all drives are selected to back up, and click Next.
7. Click Start backup.
8. At Do you want 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. At the Restore system files and settings screen, select Next.
8. Verify that the external HDD is selected, and click Next.
9. Once the recovery has completed, click Finish.

Measuring performance with CrossMark

Setting up the test

1. Download and install CrossMark from the Microsoft Store using the registered Microsoft Store account.
2. Launch CrossMark.
3. At the license agreement screen, click Accept.
4. Click Settings.
5. Click Restore Purchase.
6. At the Success screen, click OK, and close CrossMark.
7. Follow the instruction found inside the [BAPCo CrossMark user guide](#), and make the following system configuration changes:
 - a. Disable User Account Control (UAC)
 - i. Click the Windows start icon, and in the search field, type `regedit`. To open the Registry Editor, press Enter.
 - ii. Navigate to HKEY_LOCAL_MACHINE→SOFTWARE→Microsoft→Windows→CurrentVersion→Policies→System.
 - iii. Double-click EnableLUA, and in the value data field, type 0. Click OK.
 - iv. Double-click ConsentPromptBehaviorAdmin, and in the value data field, type 0. Click OK.
 - b. Set Power Plan Type to "High Performance"
 - i. Press the Windows key + X, and select Windows PowerShell (Admin).
 - ii. Type `powercfg.exe -SETACTIVEINDEX SCHEME_CURRENT SUB_NONE 245d8541-3943-4422-b025-13a784f679b7 1`, and press Enter.
 - iii. Close Windows PowerShell.
 - c. Disable WinSAT service
 - i. Click the Windows start icon, and in the search field, type `task scheduler`. To open the Task Scheduler, press Enter.
 - ii. Navigate to Task Scheduler Library→Microsoft→Windows→Maintenance, right-click WinSAT, and select Disable.
 - d. Disable Windows Update
 - i. Click the Windows start icon, and select Settings→Update & Security→Windows Update.
 - ii. Select Advanced Options, and turn off the following:
 - ◆ Receive updates for other Microsoft products when you update Windows
 - ◆ Download updates over metered connections
 - ◆ Restart this device as soon as possible when a restart is required to install an update
 - ◆ Show a notification when your PC requires a restart to finish updating.
 - e. Disable Windows Search, Diagnostic policy service, and SysMain service.
 - i. Click the Windows start icon, and in the search field, type `services`. Press Enter.
 - ii. Right-click Diagnostic policy service, and select Stop.
 - iii. Double-click Diagnostic policy service, and from the Startup type drop-down menu, select Disabled. Click Apply and Ok.
 - iv. Right-click Windows Search service, and select Stop.
 - v. Double-click Windows Search service, and from the Startup type drop-down menu, select Disabled. Click Apply and Ok.
 - vi. Right-click SysMain service, and select Stop.
 - vii. Double-click SysMain service, and from the Startup type drop-down menu, select Disabled. Click Apply and Ok.
 - f. Disable Windows Security Center
 - i. Click the Windows start icon, and in the search field, type `regedit`. To open the Registry Editor, press Enter.
 - ii. Navigate to HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Services→SecurityHealthService.
 - iii. Double-click Start, and in the value data field, type 4. Click OK.
 - iv. Navigate to HKEY_LOCAL_MACHINE→SYSTEM→CurrentControlSet→Services→wscsvc.
 - v. Double-click Start, and in the value data field, type 4. Click OK.
 - g. Disable Tamper protection
 - i. Click the Windows start icon, and select Settings→Update & Security→Windows Security.
 - ii. Under Virus & Threat Protection settings, click Manage settings.
 - iii. Turn off Tamper protection.

- h. Disable Windows Defender
 - i. Click the Windows start icon, and in the search field, type `regedit`. To open the Registry Editor, press Enter.
 - ii. Navigate to HKEY_LOCAL_MACHINE→SOFTWARE→Policies→Microsoft→Windows Defender.
 - iii. Right-click Windows Defender, and select New→Key→DWORD (32-bit) Value.
 - iv. Type `DisableAntiSpyware`, and press Enter.
 - v. Double-click the `DisableAntiSpyware`, and in the value data field, type 1. Click Ok.
8. Reboot the system for the changes to take effect.

Running the test

1. Boot the system.
2. Select Windows Start.
3. Type `cmd`, and press Ctrl+Shift+Enter.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Launch CrossMark.
7. Verify that the battery is charged to 100%, and unplug the system.
8. Click Run Benchmark.
9. Record the result, and note the battery percentage.
10. Wait for the battery to charge to 100% before rerunning.
11. Repeat steps 1 through 10 twice more, and record the median result.

Measuring performance with WebXPRT 4

Running the test

1. Boot the system.
2. Select Windows Start.
3. Type `cmd`, and press Ctrl+Shift+Enter.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Open the Edge browser, and navigate to <https://www.principledtechnologies.com/benchmarkxpert/webxpert/>.
7. Click Run WebXPRT 4.
8. At the Ready to test your browser screen, click Continue.
9. Verify that the battery is charged to 100%, and unplug the system.
10. Click Start.
11. When the test completes, record the results, and note the battery percentage.
12. Wait for the battery to charge to 100% before rerunning.
13. To rerun WebXPRT, click Run Again, and click Start.
14. Record the results.
15. Repeat steps 1 through 14 two more times.

Measuring performance with Procyon Office Productivity

Setting up the test

1. Download and install Procyon.
2. Open Procyon.
3. Click Office Productivity Benchmark.
4. Click Register.
5. Enter the license key for the Office Productivity Benchmark, and click Register.
6. Before running the benchmark, install a licensed version of Microsoft 365.

Running the test

1. Boot the system.
2. Select Windows Start.

3. Type `cmd`, and press `Ctrl+Shift+Enter`.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Launch Procyon.
7. Click Office Productivity Benchmark.
8. Verify that the battery is charged to 100%, and unplug the system.
9. Click Run.
10. When the benchmark is complete, record the results, and note the battery percentage.
11. Wait for the battery to charge to 100% before rerunning.
12. Shut down the system.
13. Repeat steps 1 through 12 twice more, and record the median results.

Measuring performance with Cinebench R23

Setting up the test

1. Download and install Cinebench from <https://www.maxon.net/en/downloads/cinebench-r23-downloads>.

Running the test

1. Boot the system.
2. Select Windows Start.
3. Type `cmd`, and press `Ctrl+Shift+Enter`.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Launch Cinebench.
7. Select `File`→`Advanced benchmark`.
8. Set the Minimum Test Duration to `Off`.
9. Select either `CPU (Multi Core)` or `CPU (Single Core)`, and click `Start`.
10. Record the result, and note the battery percentage.
11. Wait for the battery to charge to 100% before rerunning the test.
12. Repeat steps 7 through 11 twice more, and record the median result.

Measuring performance with MobileMark 25

This test requires an X-Rite - i1Display Plus colorimeter.

Avoiding antivirus software conflicts

MobileMark 25 is not compatible with any virus-scanning software, so we uninstalled any such software present on the systems before we installed the benchmark.

Avoiding pre-installed software conflicts

MobileMark 25 installs the following applications, which its test scripts employ:

Productivity

- Adobe Acrobat Pro DC
- Audacity
- Corel WinZip 24.0 Enterprise
- Google Chrome
- Microsoft Excel 2019 Professional Plus VL
- Microsoft Outlook 2019 Professional Plus VL
- Microsoft PowerPoint 2019 Professional Plus VL

- Microsoft Word 2019 Professional Plus VL
- Shotcut

Creativity

- Adobe Photoshop CC
- Adobe Lightroom Classic CC
- Adobe Premiere Pro CC

If any of these applications already exist on the system under test, they could cause problems with the benchmark due to software conflicts. To avoid any such issues, we uninstalled all conflicting pre-installed software applications—including different versions of any of the programs MobileMark 25 uses—before we installed the benchmark.

Using the MobileMark built-in configuration tool

This tool supports three levels of configuration:

1. Only makes changes that are **REQUIRED** for the benchmark to run.
2. Additionally, makes changes that are **RECOMMENDED** for repeatable results.
3. Additionally, makes **OPTIONAL** changes that help ensure best results.

The configuration tool makes the following configuration changes at each of the three levels:

Level 1 - Required

- Disables User Account Control (UAC)
- Set DPI Scaling to 100%
- Disables Low Battery Actions
- Disables Network Proxies
- Disables System Sleep and Hibernate
- Disables Windows Update
- Enables Windows Search
- Disables WinSAT

Level 2 - Recommended

- Create BAPCo power scheme
- Set Power Plan Type to Balanced
- Set CPU Adaptive Mode
- Disables Battery Saver Dimming
- Verifies Battery Saver Threshold
- Disables Disk Defrag
- Disables Windows Error Reporting
- Disables Windows Lock Screen
- Disables Screen Saver and Monitor Timeout
- Disables Windows Security Center
- Set Font Smoothing

Level 3 - Optional

- Disables Hard Disk Timeout
- Disables System Restore
- Ignores Laptop Lid Close
- Enables Dark Mode
- No Wait for OpenMP Threads

We chose the official BAPCo “Run Benchmark” default as outlined in the BAPCo MobileMark25 User Guide (https://bapco.com/wp-content/uploads/2021/09/bapco_mobilemark25_user_guide_v1.1.pdf), which runs the benchmark using the Required and Recommended options.

Setting up the performance-qualified battery life test

1. On a separate system, install the i1Profiler software from <https://www.xrite.com/categories/formulation-and-quality-assurance-software/i1profiler>, and connect the X-Rite - i1Display Plus colorimeter to that system.
2. On the system under test, verify that the wireless adapter is enabled and connected to a wireless router that is not connected to the internet.
3. On the system under test, verify that the Lower screen brightness when using battery saver is turned off:
 - a. Select Windows Start, type `Battery saver`, and press the Enter key.
 - b. Next to Turns on at 20%, click the down arrow. Next to Lower screen brightness when using battery saver, toggle the button to Off.
4. On the system under test, verify that the volume is set to 50%.
5. On the system under test, install MobileMark 25 with the default options.
6. On the system under test, disable Windows Defender Antivirus:
 - a. Select Windows Start, type `Group Policy`, and press the Enter key.
 - b. Select Computer Configuration → Administrative Templates → Windows Components → Microsoft Defender Antivirus.
 - c. Double-click Turn off Microsoft Defender Antivirus.
 - d. Select Enabled, and click Apply and OK.
 - e. Reboot the system for the changes to take effect.

Running the performance-qualified battery life test

1. Boot the system.
2. Select Windows Start.
3. Type `cmd`, and press Ctrl+Shift+Enter.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Launch MobileMark 25.
7. Click Run Benchmark.

8. Click the Brightness Profiler button.
 - Allow the white screen to warm up for 30 minutes. After 30 minutes, click Skip.
 - At the Panel Dark Luminance pop-up, select Yes, to use the value that is queried from the display.
 - Place the X-Rite - i1Display Plus colorimeter in the outlined spot on the screen.
 - On the system under test, to turn off the test overlay, toggle the F1 button.
 - On the colorimeter system, start the i1Profiler program, and select Advanced.
 - Click Display, and click Profiling.
 - Next to Luminance, click the drop-down menu, and select Measure.
 - In the drop-down menu that appears below, select Paper in booth.
 - In the box with the image that says "Place your paper in the light booth," scroll down so that you can click the Measure button.
 - On the system under test, adjust the slider until the Target White luminance is met on the colorimeter system.
 - Once the correct Target White luminance is met on the system under test, click Done.
9. Click Continue.
10. The test will begin immediately. When prompted, unplug the AC power adapter.

The benchmark is complete when the PC has fully depleted its battery and is no longer operational when running on battery power.

We executed the MobileMark 25 benchmark three times on the system and took the median battery life score run as the representative performance result for that test.

Testing thermals under a sustained Cinebench R23 workload

A FLIR E6xt Infrared Camera is necessary for taking top and bottom skin temperatures.

Setting up the test

1. Download and install Cinebench from <https://www.maxon.net/en/downloads/cinebench-r23-downloads>.

Running the test

1. Boot the system.
2. Select Windows Start.
3. Type `cmd`, and press Ctrl+Shift+Enter.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Launch Cinebench.
7. Select File→Advanced benchmark.
8. Verify that the Minimum Test Duration is set to the default 10 minutes (Test Throttling).
9. Verify that the battery is charged to 100%, and unplug the system.
10. Select CPU (Multi Core), and click Start.
11. Record the performance results for the next five back-to-back 10-minute iterations. At the end of each run, note the ambient room temperature, and take a skin temperature photo with the FLIR E6xt Infrared Camera of the top and bottom. Report the hottest spots.
12. Note the battery percentage.

Measuring acoustic output

These tests require the following items:

- Extech SDL600 Sound Level Meter/Datalogger with SD card
- Cinebench R23

Setting up the test

1. Place the system under test in a sound-proofed professional sound booth.
2. Set the Extech SDL600 on a tripod so that it is 30 centimeters in front of and 40 centimeters above the system under test.

Measuring acoustics while idle

1. Boot the laptop.
2. Select Windows Start.
3. Type `cmd`, and press Ctrl+Shift+Enter.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the laptop until the command completes.

5. After the command completes, wait 5 minutes before running the test.
6. Start the Extech SDL600 Sound Level Meter/Datalogger, and allow the laptop to run at idle for 10 minutes.
7. At the end of the 10 minutes, stop the Extech SDL600, and record the average sound level (dB) while idle.
8. Shut down the laptop.
9. Repeat steps 1 through 8 two more times.

Measuring acoustics while running Cinebench R23

1. Boot the laptop.
2. Select Windows Start.
3. Type `cmd`, and press Ctrl+Shift+Enter.
4. Type `Cmd.exe /c start /wait Rundll32.exe advapi32.dll,ProcessIdleTasks`. Do not interact with the system until the command completes.
5. After the command completes, wait 5 minutes before running the test.
6. Launch Cinebench R23.
7. Simultaneously start the Extech SDL600 Sound Level Meter/Datalogger and click CPU (Multi Core) Start.
8. At the end of the Cinebench R23 run, stop the Extech SDL600, and record the average sound level (dBA) while running Cinebench R23.
9. Shut down the laptop for 40 minutes, and let it return to room temperature.
10. Repeat steps 1 through 10 two more times.

Read the report at <https://facts.pt/Y3fUaZC> ►

This project was commissioned by Dell Technologies.



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