



The science behind the report:

# Help skilled workers succeed with Dell Latitude 7030 and 7230 Rugged Extreme Tablets

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 [Help skilled workers succeed with Dell Latitude 7030 and 7230 Rugged Extreme Tablets](#).

We concluded our hands-on testing on May 7, 2024. 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 April 16, 2024 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.

## Temperature testing

Table 1: Results of our Geekbench 6 testing on the 10-inch tablets at room, hot, and cold temperatures. Higher scores are better.

	Dell™	Apple®	Samsung™
10-in tablets	Latitude™ 7030 Rugged Extreme Tablet	iPad Pro® 11-inch with a rugged case	Galaxy Tab™ S9 with a rugged case
<b>Baseline temperature (75°F/23.9°C)</b>			
Geekbench 6 CPU performance scores (single-core)	2,107	2,621	2,054
Geekbench 6 CPU performance scores (multi-core)	7,675	10,060	5,624
<b>Hot temperature (122°F/50.0°C)</b>			
Geekbench 6 CPU performance scores (single-core)	2,140	258	827
Geekbench 6 CPU performance scores (multi-core)	7,461	860	2,583
<b>Cold temperature (-20°F/-28.9°C)</b>			
Geekbench 6 CPU performance scores (single-core)	1,798	N/A	2,194
Geekbench 6 CPU performance scores (multi-core)	5,361	N/A	5,814

Table 2: Results of our Geekbench 6 testing on the 12-inch tablets at room, hot, and cold temperatures. Higher scores are better.

	Dell	Apple	Samsung
12-in tablets	Latitude 7230 Rugged Extreme Tablet	iPad Pro 12.9-inch with a rugged case	Galaxy Tab S9+ with a rugged case
<b>Baseline temperature (75°F/23.9°C)</b>			
Geekbench 6 CPU performance scores (single-core)	2,125	2,616	2,097
Geekbench 6 CPU performance scores (multi-core)	7,554	10,099	5,731
<b>Hot temperature (122°F/50.0°C)</b>			
Geekbench 6 CPU performance scores (single-core)	2,126	N/A	833
Geekbench 6 CPU performance scores (multi-core)	7,455	N/A	2,600
<b>Cold temperature (-20°F/-28.9°C)</b>			
Geekbench 6 CPU performance scores (single-core)	2,108	N/A	1,468
Geekbench 6 CPU performance scores (multi-core)	6,703	N/A	4,364

## Rain testing

Table 3: Results of rain testing of 10-inch tablets after 10 minutes under a heavy spray of water. Source: Principled Technologies.

	Dell	Apple	Samsung
10-in tablets	Latitude 7030 Rugged Extreme Tablet	iPad Pro 11-inch with a rugged case	Galaxy Tab S9 with a rugged case
Remained powered on	Yes	No Shut down after 2 minutes	Yes
Functional after 20 minutes in dry conditions	Yes	No Would not power on	Yes
Free from visible signs of water damage	Yes	Yes	Yes However, water was trapped under the rugged case's screen protector

Table 4: Results of rain testing of 12-inch tablets after 10 minutes under a heavy spray of water. Source: Principled Technologies.

	Dell	Apple	Samsung
12-in tablets	Latitude 7230 Rugged Extreme Tablet	iPad Pro 12.9-inch with a rugged case	Galaxy Tab S9+ with a rugged case
Remained powered on	Yes	Yes	Yes
Functional after 20 minutes in dry conditions	Yes	No Would not power on	Yes
Free from visible signs of water damage	Yes	Yes	Yes However, water was trapped under the rugged case's screen protector

## Drop testing

Table 5: Results of our drop testing with the 10-inch tablets.

10-in tablets		Dell	Apple	Samsung
Drop	Drop surface	Latitude 7030 Rugged Extreme Tablet	iPad Pro 11-inch with a rugged case	Galaxy Tab S9 with a rugged case
1	Bottom			
2	Top			
3	Front			We observed a crack along bottom edge of the screen going all the way to the right edge. Touch screen not functional with finger, but still works with S Pen. System sometimes gets phantom touch screen inputs.
4	Left side			
5	Back			
6	Right side			
7	Front left edge			
8	Back left edge			
9	Back right edge			
10	Front right edge			
11	Bottom front edge			
12	Bottom left edge			
13	Bottom back edge			
14	Bottom right edge			
15	Top front edge			
16	Top left edge			
17	Top back edge			
18	Top right edge			We observed additional cracking on top right corner of screen
19	Bottom front left corner			We observed additional cracking along top of screen
20	Bottom back left corner			
21	Bottom back right corner			
22	Bottom front right corner			
23	Top front left corner			
24	Top back left corner			
25	Top back right corner			
26	Top front right corner	No damage. System still fully functional. Light scuffing on rubberized corners and sides.	No damage. System still fully functional. Only some light scuffing on case.	System still functional with S Pen, but touch screen does not work with fingers. After 24 hours, we checked the system again and the screen had deteriorated because of the previous cracking. System unusable.

Table 6: Results of our drop testing with the 12-inch tablets.

12-in tablets		Dell	Apple	Samsung
Drop	Drop Surface	Latitude 7230 Rugged Extreme Tablet	iPad Pro 12.9-inch with a rugged case	Galaxy Tab S9+ with a rugged case
1	Bottom			Slight bending of bottom left speaker opening on case. We observed no other damage.
2	Top			
3	Front			
4	Left side			
5	Back			
6	Right side			
7	Front left edge			
8	Back left edge			Clips on left edge of case broke off. Left side of case screen protector can not snap into place.
9	Back right edge			
10	Front right edge			
11	Bottom front edge			
12	Bottom left edge			
13	Bottom back edge			
14	Bottom right edge			
15	Top front edge			Plastic pieces broken on interior of case. Bending of top right speaker opening on case. We observed no other damage.
16	Top left edge			
17	Top back edge			Additional bending observed on top right speaker opening on case. We observed no other damage.
18	Top right edge			
19	Bottom front left corner			
20	Bottom back left corner			
21	Bottom back right corner			We observed additional breakage of interior plastic shell of case. We observed no other damage.
22	Bottom front right corner			
23	Top front left corner			Additional clips for case screen protector broke off.
24	Top back left corner			
25	Top back right corner			
26	Top front right corner	System still fully functional. Light scuffing on rubberized corners and sides.	System still fully functional. Only some light scuffing on case	System still fully functional. All damage was to case. Case barely usable after drop testing.

## Screen brightness

Table 7: Results of screen brightness testing on the 10-inch tablets. Higher is better.

	Dell	Apple	Samsung
10-in tablets	Latitude 7030 Rugged Extreme Tablet	iPad Pro 11-inch with a rugged case	Galaxy Tab S9 with a rugged case
Brightness (nits)	1,030	411	343

Table 8: Results of screen brightness testing on the 12-inch tablets. Higher is better.

	Dell	Apple	Samsung
12-in tablets	Latitude 7230 Rugged Extreme Tablet	iPad Pro 12.9-inch with a rugged case	Galaxy Tab S9+ with a rugged case
Brightness (nits)	1,080	430	320

# System configuration information

## 10-inch tablets

Table 9: Detailed information on the 10-inch tablets we tested.

System configuration information	Dell Latitude 7030 Rugged Extreme Tablet	Apple iPad Pro 11-inch 4 <sup>th</sup> Gen	Samsung Galaxy Tab S9
Processor			
Vendor	Intel®	Apple	Qualcomm®
Model number	i5-1240U	M2	Snapdragon 8 Gen 2
Core frequency (GHz)	1.1-4.4	2.42-3.49	2.0-3.2
Number of cores	10	8	8
Memory			
Amount (Gb)	16	8	12
Graphics			
Vendor	Intel	Apple	Qualcomm
Model number	Iris® Xe graphics	Integrated graphics	Adreno
Storage controller			
Amount (GB)	256	256	256
Connectivity/expansion			
Wireless internet	Intel Wi-Fi 6E AX211	Wi-Fi 6E	Wi-Fi 6E
Ports	2 x USB-C® 3.2 Gen2 ports with Power Delivery 1 x USB-A 3.2 Gen1 port with PowerShare	1 x USB-C with USB 4.0/Thunderbolt™ 4	1 x USB-C 3.2 port
Battery			
Rated capacity	36 Whr	28.65 Whr	8,400 mAh
Display			
Size (in.)	10.1	11	11
Resolution	1,920 x 1,200	2,388 x 1,668	2,560 x 1,600
Operating system			
Vendor	Microsoft	Apple	Google™
Name	Windows 11 Pro	iPadOS®	Android™
Version	23H2	17.4.1	14.0
Dimensions			
Height (in.)	7.4	7.02	6.53
Width (in.)	10.34	9.74	10.01
Depth (in.)	1.0	0.23	0.23
Weight (lbs.)	2.83	1.03	1.10

## Rugged cases for the 10-inch tablets

Table 10: Details on the protective covers we used for the 10-inch tablets.

	Dell	Apple	Samsung
10-in tablets	Latitude 7030 Rugged Extreme Tablet*	iPad Pro 11-inch with a rugged case**	Galaxy Tab S9 with a rugged case**
Brand and model	N/A (built-in protective design)	OtterBox™ Defender Series Pro	SaharaCase™ Raider Series Hard Shell Case (SKU: TB00328)
Compliant standards	<ul style="list-style-type: none"> <li>MIL-STD-810H</li> <li>IEC 60529 ingress protection: IP-65 (dust-tight, protected against pressurized water)</li> <li>Hazardous locations certification: ANSI/ISA.12.12.01 certification (Class I, Division 2, Groups A, B, C,D)</li> <li>Electromagnetic interference: MILSTD-461G</li> </ul>	<ul style="list-style-type: none"> <li>MIL-STD-810G 516.6</li> </ul>	<ul style="list-style-type: none"> <li>None listed</li> </ul>
Rugged	Yes	Yes	Yes

\* <https://www.delltechnologies.com/asset/en-us/products/laptops-and-2-in-1s/technical-support/latitude-7030-rugged-extreme-spec-sheet.pdf>

\*\* <https://saharacase.com/products/raider-series-hardshell-case-for-samsung-galaxy-tab-s9-plus-black>

\*\*\* <https://www.otterbox.com/en-us/protective-ipad-pro-11-inch-4th-gen-3rd-gen-2nd-gen-1st-gen-case-black/77-82262.html>

## 12-inch tablets

Table 11: Detailed information on the 12-inch tablets we tested.

System configuration information	Dell Latitude 7230 Rugged Extreme Tablet	Apple iPad Pro 12.9-inch 6 <sup>th</sup> Gen	Samsung Galaxy Tab S9+
Processor			
Vendor	Intel	Apple	Qualcomm
Model number	i5-1240U	M2	Snapdragon 8 Gen 2
Core frequency (GHz)	1.1-4.4	2.42-3.49	2.0-3.2
Number of cores	10	8	8
Memory			
Amount (Gb)	16	8	12
Graphics			
Vendor	Intel	Apple	Qualcomm
Model number	Iris Xe Graphics	Integrated Graphics	Adreno
Storage controller			
Amount (GB)	256	256	256
Connectivity/expansion			
Wireless internet	Intel Wi-Fi 6E AX211	Wi-Fi 6E	Wi-Fi 6E
Ports	2 x USB-C 3.2 Gen2 ports with Power Delivery 1 x USB-A 3.2 Gen1 port with PowerShare	1 x USB-C with USB 4.0/Thunderbolt 4	1 x USB-C 3.2 port

System configuration information	Dell Latitude 7230 Rugged Extreme Tablet	Apple iPad Pro 12.9-inch 6 <sup>th</sup> Gen	Samsung Galaxy Tab S9+
Battery			
Rated capacity	2x 35.6 Whr	40.88 Whr	10,090 mAh
Display			
Size (in.)	12	12.9	12.4
Resolution	1,920 x 1,200	2,732 x 2,048	2,800 x 1,752
Operating system			
Vendor	Microsoft	Apple	Google
Name	Windows 11 Pro	iPadOS	Android
Version	23H2	17.4.1	14.0
Dimensions			
Height (in.)	7.99	8.46	7.30
Width (in.)	11.65	11.04	11.23
Depth (in.)	0.94	0.25	0.22
Weight (.)	3.49	1.5	1.29

## Rugged cases for the 12-inch tablets

Table 12: Details on the protective covers we used for the 12-inch tablets.

	Dell	Apple	Samsung
12-in tablets	Latitude 7230 Rugged Extreme Tablet*	iPad Pro 12.9-inch with a rugged case**	Galaxy Tab S9+ with a rugged case***
Brand and model	N/A (built-in protective design)	OtterBox Defender Series Pro	SaharaCase Raider Series Hard Shell Case (SKU: TB00334)
Compliant standards	<ul style="list-style-type: none"> <li>MIL-STD-810H</li> <li>IEC 60529 ingress protection: IP-65 (dust-tight, protected against pressurized water)</li> <li>Hazardous locations certification: ANSI/ISA.12.12.01 certification (Class I, Division 2, Groups A, B, C,D)</li> <li>Electromagnetic interference: MILSTD-461F</li> </ul>	<ul style="list-style-type: none"> <li>MIL-STD-810G 516.6</li> </ul>	<ul style="list-style-type: none"> <li>None listed</li> </ul>
Rugged	Yes	Yes	Yes

\* <https://www.delltechnologies.com/asset/en-us/products/laptops-and-2-in-1s/technical-support/latitude-7230-rugged-extreme-product-guide-spec-sheet.pdf>

\*\* <https://www.otterbox.com/en-us/protective-ipad-pro-12.9-inch-6th-gen-5th-gen-4th-gen-3rd-gen-case-black/77-82269.html>

\*\*\* <https://saharacase.com/products/raider-series-hardshell-case-for-samsung-galaxy-tab-s9-plus-black>



## Cost details

### 10-inch tablet cost details

PT purchased these tablets on March 22, 2024.

Table 13: Cost details on the devices we tested. These are the per-line U.S. dollar amounts listed on our purchase order confirmations. These prices do not include shipping or taxes.

	Dell	Apple	Samsung
10-in tablets	Latitude 7030 Rugged Extreme Tablet	iPad Pro 11-inch with a rugged case	Galaxy Tab S9 with a rugged case
<b>Tablet</b>	\$2,552.04	\$899.00	\$799.99
<b>Protective cover</b> <i>We used protective covers in every test</i>	N/A (built-in protective design)	OtterBox Defender Series Pro*	SaharaCase Defense Protection Case**
	\$0	\$89.95	\$69.95
<b>Total</b>	<b>\$2,552.04</b>	<b>\$989.95</b>	<b>\$869.94</b>

\*PT purchased this case on March 23, 2024

\*\*PT purchased this case on March 25, 2024

### 12-inch tablet cost details

PT purchased these tablets on March 22, 2024.

Table 14: Cost details on the devices we tested. These are the per-line U.S. dollar amounts listed on our purchase order confirmations. These prices do not include shipping or taxes.

	Dell	Apple	Samsung
12-in tablets	Latitude 7230 Rugged Extreme Tablet	iPad Pro 12.9-inch with a rugged case	Galaxy Tab S9+ with a rugged case
<b>Tablet</b>	\$3,030.31	\$1,199.00	\$899.99
<b>Protective cover</b> <i>We used protective covers in every test</i>	N/A (built-in protective design)	OtterBox Defender Series Pro*	SaharaCase Defense Protection Case**
	\$0	\$129.95	\$69.95
<b>Total</b>	<b>\$3,030.31</b>	<b>\$1,328.95</b>	<b>\$969.94</b>

\*PT purchased this case on March 23, 2024

\*\*PT purchased this case on March 25, 2024

# How we tested

## Performance testing

### Running the Geekbench 6 benchmark for room temperature testing

1. Power on the devices, and log in.
2. Download Geekbench 6 onto the devices.
3. With the Climate Control Chamber at roughly 75 degrees Fahrenheit (23.9 degrees Celsius), place the device, powered-on to its home screen, in the Climate Control Chamber, and plug in the power cable.
4. Launch Geekbench 6.
5. Click Run CPU Benchmark, and close the Climate Control Chamber door.
6. When the test completes, open the Climate Control Chamber door, and record the score.
7. Repeat steps 1 through 6 two more times.
8. Report the median score.

### Running the Geekbench 6 benchmark for extreme cold temperature testing

1. Power on the device, and log in.
2. With the Climate Control Chamber at roughly 75 degrees Fahrenheit (23.9 degrees Celsius), place the device, powered-on to its home screen, in the Climate Control Chamber, and plug in the power cable.
3. Close the chamber, and cool the device to -20 degrees Fahrenheit (-28.9 degrees Celsius). Once the chamber reaches -20 degrees Fahrenheit, continue to cool the device for an additional 30 minutes.
4. After 30 minutes, open the chamber, start the CPU benchmark in Geekbench 6, and close the chamber.
5. When the CPU benchmark is complete, open the chamber, record the score, and restart the system.
6. Allow the tablet to return to temperature by leaving it out at room temperature for an hour.
7. Repeat steps 1 through 6 two more times.
8. Record the median score.

### Running the Geekbench 6 benchmark for extreme heat temperature testing

1. Power on the device, and log in.
2. With the Climate Control Chamber at roughly 75 degrees Fahrenheit (23.9 degrees Celsius), place the device, powered-on to its home screen, in the Climate Control Chamber, and plug in the power cable.
3. Close the chamber, and heat the device to 122 degrees Fahrenheit (50 degrees Celsius). Once the chamber reaches 122 degrees Fahrenheit, continue to heat the device for an additional 30 minutes.
4. After 30 minutes, open the chamber, start the CPU benchmark in Geekbench 6, and close the chamber.
5. When the CPU benchmark is complete, open the chamber, record the score, and restart the system.
6. Allow the tablet to return to temperature by leaving it out at room temperature for an hour.
7. Repeat steps 1 through 6 two more times.
8. Record the median score.

## Durability testing

### Measuring multiple drop resistance

We fitted each consumer-grade device with its corresponding rugged case before testing. We executed 26 drops from a four-foot height with different orientations (angles) for each drop. We tested each device in the same drop order.

The 26 orientations were as follows: 1. Bottom; 2. Top; 3. Front; 4. Left side; 5. Back; 6. Right side; 7. Front left edge; 8. Back left edge; 9. Back right edge; 10. Front right edge; 11. Bottom front edge; 12. Bottom left edge; 13. Bottom back edge; 14. Bottom right edge; 15. Top front edge; 16. Top left edge; 17. Top back edge; 18. Top right edge; 19. Bottom front left corner; 20. Bottom back left corner; 21. Bottom back right corner; 22. Bottom front right corner; 23. Top front left corner; 24. Top back left corner; 25. Top back right corner; 26. Top front right corner.

1. Set the height of the platen on the Lansmont Precision Drop Tester to 48 inches above the drop surface.
2. Place the device on the platen of the drop tester in the first orientation.
3. Drop the device onto the drop surface.
4. Wait until the device is completely still.
5. Observe the device for any visible damage or functionality issues.
6. Note any damage or functionality issues.
7. Continue dropping the device in each of the remaining orientations in order, noting any damage or functionality issues along the way.
8. If a device experiences a critical failure before you complete all 26 drops, record this data, and stop testing.

## Measuring heavy rain resistance

We fitted each consumer-grade device with its corresponding rugged case before testing. To simulate heavy rain-like conditions, we placed each device under a shower for 10 minutes.

1. Position the device in portrait orientation under the shower.
2. Leave it there for 5 minutes.
3. During this time, test functionality (including touch screen usage), observe any damage, and note damage where applicable.
4. If a device experiences a critical failure before 5 minutes have elapsed, record this data, and stop testing.
5. Reposition the device to landscape orientation.
6. Leave it under the shower for 5 minutes.
7. During this time, test functionality (including touch screen usage), observe any damage, and note damage where applicable.
8. Remove device from the shower.
9. Allow device to sit in dry conditions for at least 20 minutes.
10. Note any damage or functionality issues.

## Measuring readability in bright sunlight

Before testing, we turned off all automatic brightness adjustment settings and set the brightness of each display to 100 percent.

1. To bring up a white screen, open a web browser, and type about:blank in the address bar.
2. Using the luminance meter, measure the screen brightness of the display while the device is unplugged.
3. Record the screen brightness for each device.

Read the report at <https://facts.pt/8OM4TTI>



This project was commissioned by Dell.



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