

COMPARING TABLETS IN WEB-BROWSING PERFORMANCE AND BATTERY LIFE



When it comes to choosing a tablet, Web-browsing performance and long battery life are paramount. In the Principled Technologies labs, we measured Web browsing performance using the WebXPRT 2013 benchmark, and battery life using a custom battery rundown test on a range of currently available tablets.

We found that the ways in which different vendors designed and configured tablets had a great effect on these measures of performance, even when using similar processors. The Fujitsu STYLISTIC Q702 tablet had the highest WebXPRT score, at 1,079, while the Samsung ATIV Tab 3 had the longest battery life, at 10 hours 25 minutes.



THE TABLETS WE PUT TO THE TEST

We tested the following tablets:

- Apple iPad (4th generation)
- Coby Kyros
- Dell XPS 10
- Fujitsu STYLISTIC Q702
- Google Nexus 10
- HP ElitePad
- Microsoft Surface RT
- Samsung ATIV Tab 3
- Samsung Galaxy Tab 3 10.1
- Sony VAIO Duo 11 Ultrabook Convertible
- Sony Xperia Tablet Z

We ran each test three times and report the median of the runs. For detailed tablet configuration information, see [Appendix A](#). For detailed testing steps, see [Appendix B](#).

Assessing Web-browsing performance

Figure 1 shows the overall WebXPRT 2013 score that the tablets achieved. Higher scores indicate faster Web performance. For detailed WebXPRT results, see the [Detailed results](#) section.

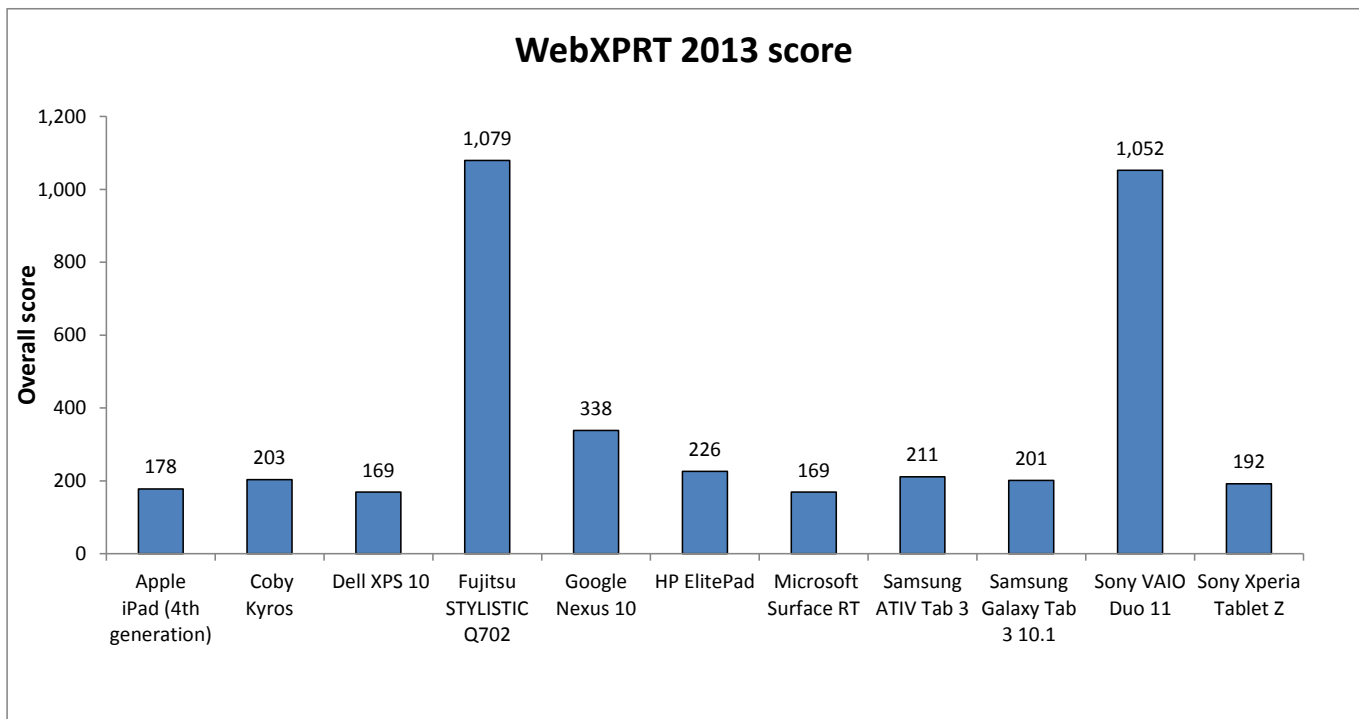


Figure 1: Overall Scores for WebXPRT 2013 for the tablets we tested.

Assessing battery life

Figure 2 shows the battery life for each tablet we tested. Longer battery life makes it easier to stay on-the-go.

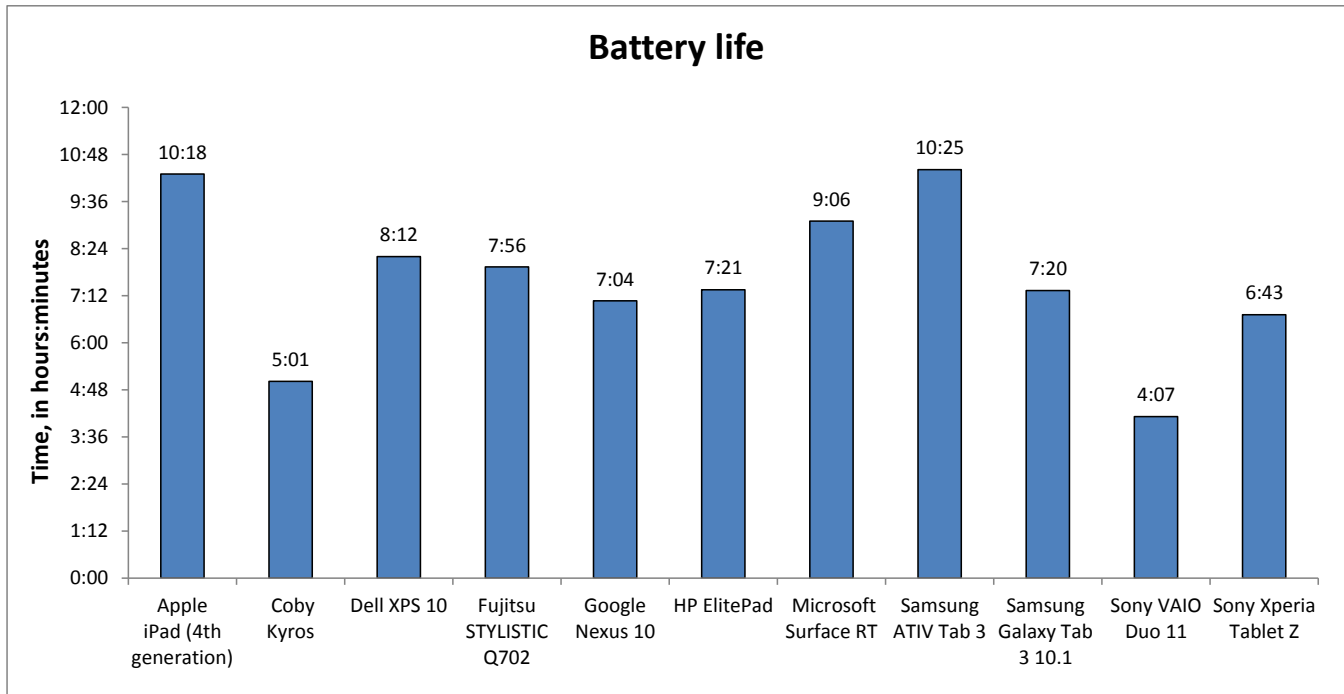


Figure 2: Battery life scores for the tablets we tested.

DETAILED RESULTS

Figure 3 details the results of our median WebXPRT 2013 test. From the four tests, the benchmark creates an overall score for easy comparison.

	Photo Effects	Face Detection	Stocks Dashboard	Offline Notes	Overall Score
Apple iPad (4 th generation)	4,384.4	4,343.4	796.0	1,955.1	178
Coby Kyros	2,114.6	3,566.3	1,387.9	1,665.3	203
Dell XPS 10	2,561.2	3,347.3	1,878.0	2,275.9	169
Fujitsu STYLISTIC Q702	479.7	515.6	233.9	379.3	1,079
Google Nexus 10	1,372.1	1,769.3	945.5	994.9	338
HP ElitePad	2,390.8	2490.1	1,062.5	1,799.6	226
Microsoft Surface RT	2,755.0	3,401.7	1,701.0	2,279.2	169
Samsung ATIV Tab 3	2,489.0	2,569.0	1,276.0	1,847.0	211
Samsung Galaxy Tab 3 10.1	1,945.4	3,854.6	1,464.9	1,657.7	201
Sony VAIO Duo 11 Ultrabook Convertible	420.1	525.9	267.0	410.9	1,052
Sony Xperia Tablet Z	1,463.9	4,471.8	1,824.9	1,827.0	192

Figure 3: Detailed results from our WebXPRT 2013 tests. Lower individual test scores are better, and higher overall scores are better.

WHAT WE TESTED

About WebXPRT 2013

WebXPRT 2013 uses scenarios created to mirror the tasks you do every day to compare the performance of almost any Web-enabled device. It contains four HTML5- and JavaScript-based workloads: Photo Effects, Face Detect, Stocks Dashboard, and Offline Notes. From these workloads, the benchmark calculates a composite Overall Score for easy comparison.

WebXPRT runs on a wide variety of devices and operating systems—from iPad tablets to Android phones to Windows computers. WebXPRT is available to the public and runs right from your browser. For more information about WebXPRT, visit <http://www.principledtechnologies.com/benchmarkxpert/webxpert/>.

About battery life testing

We used a custom battery life test to assess the capabilities of the tablets. The test consisted of looping a high-definition video on each tablet and timing how long it took the battery to run down. See [Appendix B](#) for details.

IN CONCLUSION

Tablets vary widely in the Web-browsing performance and battery life that they offer, as our test results show. In our tests, WebXPRT 2013 scores ranged from 169 to 1,079, with the Fujitsu STLYISTIC Q702 tablet outperforming the rest. Battery life of the tablets we tested ranged from 4:07 to 10:25, with the Samsung ATIV Tab 3 achieving the longest battery life.

APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figures 4 and 5 provide detailed configuration information for the devices we tested. Intel and Principled Technologies both provided tablets for testing.

	Apple iPad (4th generation)	Coby Kyros	Dell XPS 10	Fujitsu STYLISTIC Q702	Google Nexus 10	HP ElitePad
Display resolution	2,048 x 1,536	1,280 x 800	1,366 x 768	1,366 x 768	2,560 x 1600	1,280 x 800
CPU	Apple A6X SoC	Intel® Atom™ Z2460	Qualcomm® Snapdragon S4	Intel Core™ i5-3427U	ARM Cortex-A15	Intel Atom Z2760
CPU frequency	1.40 GHz	1.60 GHz	1.50 GHz	1.80 GHz Turbo Boost 2.80 GHz	1.70 GHz	1.80 GHz
Number of cores	2	1	2	2	2	2
OS	iOS 6.1.3	Android 4.0.4	Windows® RT	Windows 8 Pro 64-bit	Android 4.3	Windows 8 32-bit
Memory (GB)	1	1	2	4	2	2
Storage (GB)	64	8	32	128	16	32
Battery capacity	42.5 Whr	5150 mAh	28 Whr	Tablet battery: 3150 mAh 34 Whr: Keyboard battery: 3150 mAh 45 Whr	9,000 mAh	25 Whr
GPU	PowerVR SGX 554	PowerVR SGX 540	Adreno 225	Intel HD Graphics 4000	ARM Mali-T604	Intel Graphics Media Accelerator

Figure 4: Configuration information for five of the devices we tested.

	Microsoft Surface RT	Samsung ATIV Tab 3	Samsung Galaxy Tab 3 10.1	Sony VAIO Duo 11	Sony Xperia Tablet Z
Display resolution	1,366 x 768	1,366 x 768	1,280 x 800	1,920 x 1,080	1,920 x 1200
CPU	NVIDIA® Tegra® 3	Intel Atom Z2760	Intel Atom Z2560	Intel Core i5-3317U	Qualcomm Snapdragon S4 Pro APQ8064
CPU frequency	1.30 GHz	1.80 GHz	1.60 GHz	1.70 GHz Turbo Boost 2.60 GHz	1.50 GHz
Number of cores	4	2	2	2	4
OS	Windows RT	Windows 8 32-bit	Android 4.2.2	Windows 8 64-bit	Android 4.2.2
Memory (GB)	2	2	1	6	2
Storage (GB)	32	64	16	128	16
Battery capacity	31.5 Whr	30 Whr	6,800 mAh	4,960 mAh	6,000 mAh
GPU	ULP GeForce	Intel Graphics Media Accelerator	PowerVR SXG 544	Intel HD Graphics 4000	Adreno 320

Figure 5: Configuration information for the remaining devices we tested.

APPENDIX B - HOW WE TESTED

Measuring system performance with WebXPRT 2013

Running the test

1. Open the default Web browser, and go to <http://www.principledtechnologies.com/benchmarkxpert/webxpert/>.
2. Click Run WebXPRT 2013.
3. At the following pop-up, click Continue.
4. Make sure all tests are selected (Photo Effects, Face Detect, Stocks Dashboard, and Offline Notes).
5. Click Start.
6. Record the results when completed.
7. Repeat steps 1 through 6 twice.

Measuring battery life time while playing a movie

This test requires a timer and a video camera to capture the time each device runs out of power.

Setting up the test

1. Download The Big Buck Bunny 1,280 x 720 video from <http://www.bigbuckbunny.org/index.php/download/>.
2. Open the default Web browser, and type `about:blank` to open a plain white webpage.
3. Using a Gossen Mavolux 5032C luminance reader, set the screen brightness on each device as close to 150 nits without going under. Close the webpage.
4. Set the sound volume level on each device to 50.
5. If possible, set the video playback app to repeat/loop the Big Buck Bunny movie.

Running the Video playback battery life test

1. Start playing the Big Buck Bunny on each device.
2. Start the video camera.
3. Simultaneously start the timer and unplug all the devices.
4. When all devices have discharged their battery and have stopped playing the movie, stop the video camera.
5. Record the battery life times of each device.
6. Repeat steps 1 through 5 twice.

ABOUT PRINCIPLED TECHNOLOGIES



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