Performance comparison of three consumer notebook PCs with Intel and AMD processors

Intel Corporation (Intel) commissioned Principled Technologies (PT) to run a set of performance tests on the following OEM notebook systems:

- an AMD Turion 64 X2 TL-52 mobile processor-based system (OEM System A)
- an Intel Core Duo T2300E mobile processor-based system (OEM System B)
- an Intel Core Duo T2400 mobile processor-based system (OEM System C)

The goal of the testing was to gauge the performance and energy consumption that buyers would experience when performing common tasks. Intel specified the test systems and provided the tests, test procedures, and test settings. PT purchased and set up the systems and executed all tests. To keep the focus on the relative performance of the Intel and AMD processors at the core of the test systems, Intel requested we not disclose the OEM name.

We measured system performance and energy consumption with five custom tests designed to simulate tasks that users commonly perform on notebook PCs: music ripping, photo editing and video encoding. Our tests used the following applications:

- ACD Systems ACDSee 8 Photo Manager
- Adobe Photoshop Elements 4.0
- Apple iTunes 6.0.5
- InterVideo iVideoToGo for iPod 4.5
- Microsoft Windows Movie Maker 2.1

KEY FINDINGS

- The Intel Core Duo T2400 processor-based system ran from 15 to 43 percent faster than the AMD Turion 64 X2 TL-52 processor-based system on our performance tests and consumed 56 to 84 percent less energy.
- The Intel Core Duo T2300E processor-based system ran from 8 to 30 percent faster than the AMD Turion 64 X2 TL-52 processor-based system on the performance tests and consumed 44 to 72 percent less energy.

The systems with the Intel processors ran faster and used less energy on all the tests than the system with the AMD processor.

PERFORMANCE RESULTS (seconds)						TESTS	ENERGY CONSUMPTION RESULTS (watt hours)					
Score			Comparative rating				Score			Comparative rating		
OEM System A AMD Turion 64 X2 TL-52 1.6 GHz (61 nits)	OEM System B Intel Core Duo T2300E 1.66 GHz (69 nits)	OEM System C Intel Core Duo T2400 1.83 GHz (75 nits)	OEM System A AMD Turion 64 X2 TL-52 1.6 GHz (61 nits)	OEM System B Intel Core Duo T2300E 1.66 GHz (69 nits)	OEM System C Intel Core Duo T2400 1.83 GHz (75 nits)		OEM System A AMD Turion 64 X2 TL-52 1.6 GHz (61 nits)	OEM System B Intel Core Duo T2300E 1.66 GHz (69 nits)	OEM System C Intel Core Duo T2400 1.83 GHz (75 nits)	OEM System A AMD Turion 64 X2 TL-52 1.6 GHz (61 nits)	OEM System B Intel Core Duo T2300E 1.66 GHz (69 nits)	OEM System C Intel Core Duo T2400 1.83 GHz (75 nits)
220	203	191	1.00	1.08	1.15	ADC Systems ACDSee8 Photo Manager	2.65	1.84	1.70	1.00	1.44	1.56
381	293	266	1.00	1.30	1.43	Adobe Photoshop Elements 4.0	4.29	2.49	2.41	1.00	1.72	1.78
157	134	124	1.00	1.17	1.27	Apple iTunes 6.0.5	2.15	1.40	1.31	1.00	1.54	1.64
85	69	61	1.00	1.23	1.39	InterVideo iVideoToGo for iPod 4.5	1.07	0.65	0.58	1.00	1.65	1.84
106	91	85	1.00	1.16	1.25	Microsoft Windows Movie Maker 2.1	1.49	0.99	0.92	1.00	1.51	1.62

The table summarizes the performance results and energy consumption measurements of each test. Each result is the median of three runs on each system. (In the event of a tie, we chose the run with the higher energy consumption. If the energy consumption score was also tied, we then chose the first run we executed with those scores.) For these performance and energy consumption measurement tests, lower scores are better because they represent the time or the energy the system required to complete each workload.

In the three rightmost columns of each result set, we compare the median results of the systems by dividing the AMD processor-based system's score by the Intel processor-based system's score. Consequently, comparative results above 1.00 indicate tests on which the Intel processor-based system performed better or was more energy-efficient, and those below 1.00 indicate tests on which the AMD processor-based system performed better or was more energy-efficient.

For more information on these tests and to see the full test report, visit: www.principledtechnologies.com/clients/reports/Intel/ConsNotePerf0806pdf.