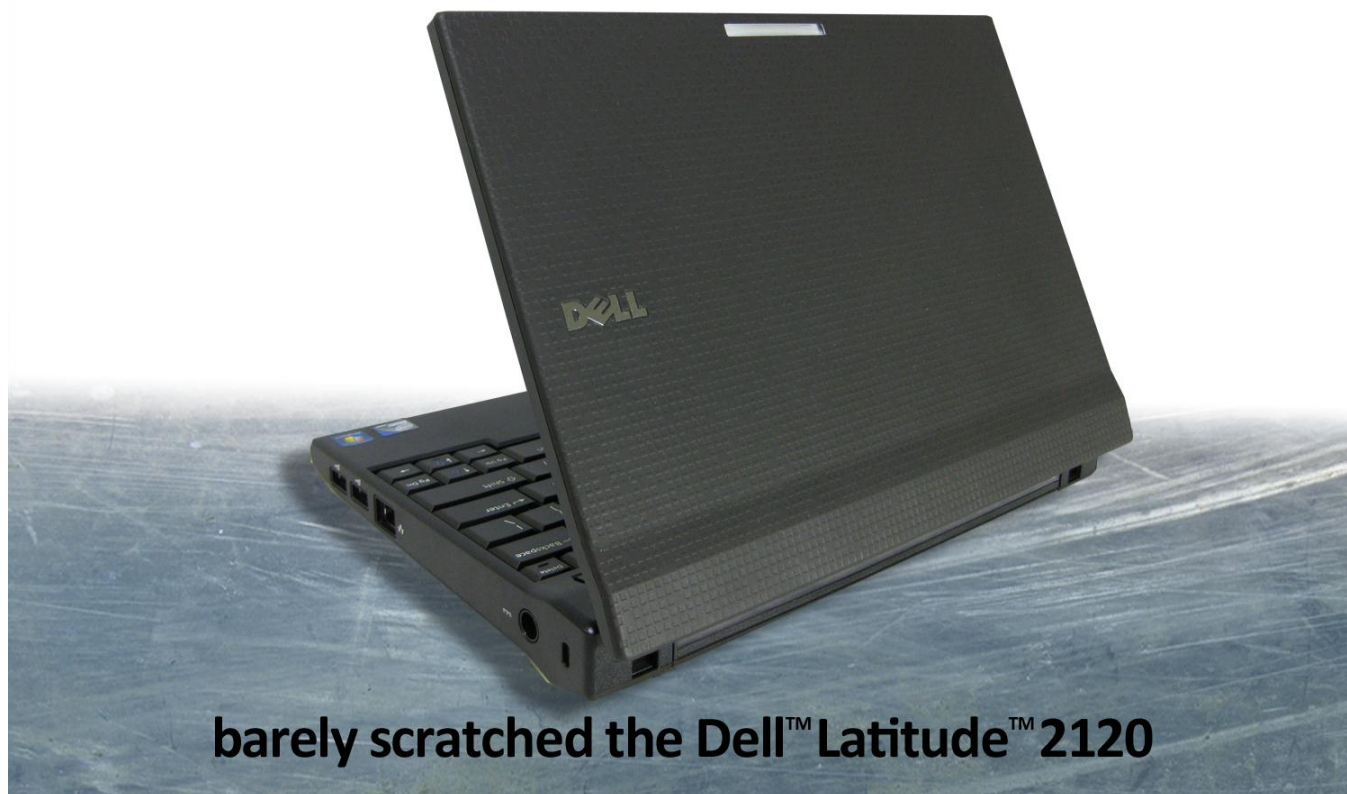


Scuffing that scarred other netbooks



INTRODUCTION

As technological advances make educational information easier to access electronically, school systems strive to provide students with the most appropriate and effective tools to use both in the classroom and at home. Netbooks are an ideal choice: they are easy to transport, they build on the familiarity many students have with PCs, and, most importantly, they provide these benefits at a fraction of the cost of a traditional notebook PC.

With so many netbooks on the market, how does an educational institution decide which to buy? Because students will be transporting them and using them in all kinds of settings, sometimes carelessly, durability is essential; the systems must continue to look good throughout their lifespan. In the labs at Principled Technologies, we tested the ability of 14 leading netbook systems to resist abrasion. Of the netbooks we tested, the Dell Latitude 2120 proved the most durable, with its lid showing almost no cosmetic damage after we dragged it across a floor.

PROJECT OVERVIEW

Students who use school-provided netbooks do not always handle these systems with appropriate care. A student transporting his or her netbook day after day is likely to accidentally cause the netbook to slide across a rough surface. To see how well they withstood the abrasion from such an accident, we tested the following netbooks from leading vendors:

- Acer® Aspire® One 532h*
- Acer Aspire One 533
- Acer Aspire One 721
- Acer Aspire One D255
- ASUS Eee PC™ 1015 PEM
- ASUS Eee PC 1016P
- ASUS Eee PC 1215N
- Dell Latitude 2120
- Equus® NOBi Convertible*
- HP Mini 100e
- HP Mini 2102*
- HP Mini 5103
- Lenovo® IdeaPad® S10-3t*
- Lenovo ThinkPad® X100e*

To test the exterior scratch resistance of the netbooks, we dragged each across a commercial-grade ceramic tile floor. We completed three runs, and had a panel of three judges make their assessments after each run. Judges assigned a score of 1 to 5 for least to most scratches, which we then averaged for each test run. Because each netbook sustained increasing damage with each subsequent run, we then had the judges assign an overall ranking at the end of the three test runs for the 14 netbooks, with 1 being the least damaged, and 14 being the most damaged. We then averaged the scores of the three judges to assign an overall average ranking for the netbooks.

WHAT WE FOUND

We tested the scratch resistance of the netbooks by dragging each closed netbook across a commercial-grade ceramic tile floor. Thanks to the design of its lid, the Dell Latitude 2120 performed best during the three abrasion test runs, suffering only a slight discolored scratch on one corner. See the How we tested section for the steps we followed for testing.

Figure 1 shows the key to the abrasion test results in Figure 2, which presents detailed results for the three runs of the abrasion test for the netbooks. We present the systems in order of the overall average

* Please note that PT tested the systems marked with an asterisk in June 2010. In this report, we compare the systems we tested in February 2011 to these previously published results, which we reproduce here and are available at http://www.principledtechnologies.com/clients/reports/Dell/Latitude2110_scratch_solvent0610.pdf.

ranking for the three test runs, with 1 being the most scratch resistant, and 14 being the least scratch resistant, with a description of the damage we recorded for each netbook.










































Key to abrasion-resistance test results				
				
No damage	Slight damage	Moderate damage	Above moderate damage	Heavy damage

Figure 1: Key to abrasion-resistance test results.

Overall ranking	Netbook system	Test 1	Test 2	Test 3	Notes
1	Dell Latitude 2120				The lid's design allowed only two small strips of surface to touch the ground, and the only damage was some slight wear on a corner with a faint, slightly discolored scratch.
2	Acer Aspire One 721				The texture of the lid withstood scratching fairly well; only two slightly discolored scratches were observed.
3	HP Mini 5103				The lid received long scratches (which weren't discolored) on the front and near the hinge.
4	ASUS Eee PC 1015PEM				This notebook has a white finish, and sustained two shallow scratches.
5	HP Mini 100e				Surface showed several minor scratches and scuffs, particularly around the logo.
6	ASUS Eee PC 1016P				Surface showed multiple minor scratches, some of which were disguised at first glance due to the brushed finish.
7	Equus NOBi Convertible*				The lid's rounded edges allowed only small sections of the lid to touch the ground, resulting in only minor damage . In later runs, the lid picked up dirt marks as well.
8	Lenovo ThinkPad X100e*				The first run scuffed the center of the lid. The following runs only produced minimal further scratching.
9	HP Mini 2102*				For the first run, damage occurred only to the center of the surface of the lid. Each run thereafter only slightly added to the damage.
10	ASUS Eee PC 1215N				Surface had many deep scratches, particularly near the edge of the netbook lid.
11	Acer Aspire One 532h*				Surface showed deep gouges and scuffs, which got slightly worse with each consecutive run.
12	Acer Aspire One 533				The lid had a mirror-like finish, which resulted in numerous long, deep scratches across the entire surface.







Overall ranking	Netbook system	Test 1	Test 2	Test 3	Notes
13	Acer Aspire One D255				The lid had a mirror-like finish, which resulted in many long, deep, scratches across the entire surface, along with several scuff marks.
14	Lenovo IdeaPad S10-3t*				Surface showed several deep gouges after the first run, and picked up more gouges with each subsequent run.

Figure 2: Abrasion-resistance test results for the netbook systems.

HOW WE TESTED

Measuring resistance to abrasion

Johnny Smith is sitting at the table in his parents' ceramic-tiled kitchen. He unplugs his netbook to carry it into the living room, but trips over his cord, sending his netbook flying. The netbook slides on the tile for about 6 feet, scraping the surface of the netbook. What will the damage be to Johnny's netbook from such abrasion?

The portability of netbook computers lends itself to mishaps, such as dropping the netbook onto a hard floor. Sliding on such surfaces may cause scratches or abrasions to the exterior of the netbook. Abrasion to a netbook lid may also occur in other day-to-day uses, including simply removing a netbook from its case, or moving it from place to place. Because this is not a drop test, but an abrasion test, we tested these netbook computers' resistance to abrasion by dragging them across a commercial-grade ceramic tile floor to gauge which netbook best withstood exterior abrasion.

To measure the effects of abrasion on the surface of a netbook, we performed the following steps:

1. Insert the card stock device between the display and the keyboard.
2. Place the netbook on the floor, lid side down.
3. Pull the netbook across the floor with a mechanized device at a constant velocity of 3.3 inches per second for 5 feet.
4. Repeat this process with the remaining netbook computers.
5. Evaluate each lid on a scale from 1 to 5, with 1 being equal to lightly scratched and 5 being equal to heavily scratched.
6. Repeat steps 1 through 5 twice more.

Figure 3 shows our method for pulling a netbook across a flat surface for the abrasion test.

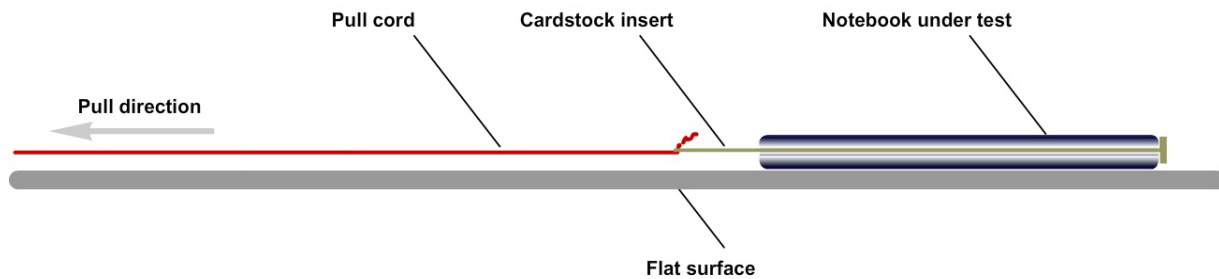


Figure 3: Demonstration of method for pulling a netbook across a flat surface for the abrasion test.

IN CONCLUSION



One of the most important factors an educational institution can consider when selecting netbooks to purchase for students is system durability. Budgets do not allow for poor purchasing decisions that require schools to replace netbooks that appear old and damaged before the end of a typical lifecycle.

In our hands-on tests, the lid of the Dell Latitude 2120 displayed almost no cosmetic damage when we dragged it across a floor, making it an excellent netbook for schools to offer their students.

APPENDIX A – SYSTEM CONFIGURATION INFORMATION

Figures 4 through 6 present the system configuration information for the test systems. System configuration information for the systems we tested previously is available at

http://www.principledtechnologies.com/clients/reports/Dell/Latitude2110_scratch_solvent0610.pdf.




System	Acer Aspire One 533	Acer Aspire One 721	Acer Aspire One D255
			
General			
Number of processor packages	1	1	1
Number of cores per processor	1	1	1
Number of hardware threads per core	2	1	2
System power management policy	Balanced	Balanced	Balanced
Processor power-saving option	Enhanced Intel SpeedStep® Technology	AMD Cool'n'Quiet™ Technology	Enhanced Intel SpeedStep Technology
System dimensions (length x width x height)	10" x 7-1/2" x 1-3/4"	11-1/4" x 8" x 1-1/4"	10-1/8" x 7-1/4" x 1-1/4"
System weight	2 lbs. 10 oz.	2 lbs. 14 oz.	2 lbs. 8 oz.
CPU			
Vendor	Intel®	AMD	Intel
Name	Atom™	Athlon™ II Neo	Atom
Model number	N475	K125	N450
Stepping	B0	DA-C3	B0
Socket type and number of pins	Socket 437 FCBGA8	Socket ASB2	Socket 437 FCBGA8
Core frequency (GHz)	1.83	1.70	1.66
Bus frequency	667 MHz	2,000 MHz	667 MHz
L1 cache	24 KB + 32 KB	64 KB + 64 KB	24 KB + 32 KB
L2 cache	512 KB	1 MB	512 KB
L3 cache	N/A	N/A	N/A
Platform			
Vendor	Acer	Acer	Acer
Motherboard model number	AO533	Aspire One 721	JE02_PT
Motherboard chipset	Intel NM10	AMD 785GX	Intel NM10

System	Acer Aspire One 533	Acer Aspire One 721	Acer Aspire One D255
BIOS name and version	Acer v1.02 (05/07/2010)	Phoenix Technologies V1.15 (09/06/2010)	Acer V3.09(DDR2) (11/03/2010)
Memory module(s)			
Vendor and model number	Samsung M471B2873FHS-CH9	Elpida EBJ21UE8BDS0-DJ-F	Kingston ACR128X64D2S800C6
Type	PC3-10600	PC3-10600	PC2-6400
Speed (MHz)	1,333	1,333	800
Speed running in the system (MHz)	667	800	667
Timing/Latency (tCL-tRCD-tRP-tRASmin)	5-5-5-12	6-6-6-15	5-5-5-15
Size (MB)	1,024	2,048	1,024
Number of memory module(s)	1	1	1
Chip organization (single-sided/double-sided)	Double-sided	Double-sided	Double-sided
Channel (single/dual)	Single	Single	Single
Hard disk			
Vendor and model number	Hitachi HTS545025B9A300	Western Digital WD2500BEVT-22A23T0	Toshiba MK1665GSX
Number of disks in system	1	1	1
Size (GB)	250	250	160
Buffer size (MB)	8	8	8
RPM	5,400	5,400	5,400
Type	SATA 3.0 Gb/s	SATA 3.0 Gb/s	SATA 3.0 Gb/s
Controller	Intel NM10	AMD SB850	Intel NM10
Driver	Intel 8.9.0.1023 (06/04/2009)	Microsoft 6.1.7600.16385 (06/21/2006)	Intel 9.6.4.1002 (06/08/2010)
Operating system			
Name	Windows® 7 Starter 32-bit	Windows 7 Home Premium 64-bit	Windows 7 Starter 32-bit
Build number	7600	7600	7600
Service Pack	N/A	N/A	N/A
File system	NTFS	NTFS	NTFS
Kernel	ACPI x86-based PC	ACPI x64-based PC	ACPI x86-based PC
Language	English	English	English
Microsoft® DirectX® version	DirectX 11	DirectX 11	DirectX 11

System	Acer Aspire One 533	Acer Aspire One 721	Acer Aspire One D255
Graphics			
Vendor and model number	Intel GMA 3150	ATI Mobility Radeon HD 4225	Intel GMA 3150
Type	Integrated	Discrete	Integrated
Chipset	Intel Graphics Media Accelerator 3150	ATI display adapter	Intel Graphics Media Accelerator 3150
BIOS version	1818.0	BK-ATI-VER010.094.001.045.035 928	2001.0
Total available graphics memory (MB)	250	1,023	250
Dedicated video memory (MB)	0	384	0
System video memory (MB)	64	0	64
Shared system memory (MB)	186	639	186
Resolution	1,024 x 600	1,366 x 768	1,024 x 600
Driver	Intel 8.14.10.2117 (04/19/2010)	ATI 8.692.1.0 (01/22/2010)	Intel 8.14.10.2117 (04/19/2010)
Sound card/subsystem			
Vendor and model number	Realtek High Definition Audio	Realtek High Definition Audio	Realtek High Definition Audio
Driver	Realtek 6.0.1.6066 (03/22/2010)	Realtek 6.0.1.6043 (02/08/2010)	Realtek 6.0.1.6171 (08/03/2010)
Ethernet			
Vendor and model number	Atheros® AR8152 PCI-E Fast Ethernet Controller	Atheros AR8151 PCI-E Gigabit Ethernet Controller	Atheros AR8152 PCI-E Father Ethernet Controller
Driver	Atheros 1.0.0.29 (04/21/2010)	Atheros 1.0.0.26 (02/22/2010)	Atheros 1.0.0.35 (08/24/2010)
Wireless			
Vendor and model number	Broadcom® 802.11n Network Adapter	Broadcom 802.11n Network Adapter	Broadcom 802.11n Network Adapter
Driver	Broadcom 5.60.350.6 (03/22/2010)	Broadcom 5.60.350.6 (03/22/2010)	Broadcom 5.100.249.2 (06/03/2010)
Modem			
Vendor and model number	N/A	N/A	N/A
Driver	N/A	N/A	N/A

System	Acer Aspire One 533	Acer Aspire One 721	Acer Aspire One D255
USB ports			
Number	3	3	3
Type	2.0	2.0	2.0
Other	Multimedia card reader	Multimedia card reader	Media card reader
Monitor			
LCD type	WSVGA	WSVGA	WSVGA
Screen size	10.1"	11.6"	10.1"
Refresh rate (Hz)	60	60	60
Battery			
Type	Acer UM09H51 Lithium-ion	Acer AL10C31 Lithium-ion	Acer AL10B31 Lithium-ion
Size (length x width x height)	8" x 2" x 1-1/4"	8" x 1-3/4" x 3/4"	8" x 2-1/8" x 1"
Rated capacity	4,400mAh / 10.8V (48Wh)	4,400mAh / 11.1V (49Wh)	4,240mAh / 11.1V (47Wh)
Weight (oz.)	10 oz.	9 oz.	10 oz.

Figure 4: System configuration information for the Acer netbooks.



System	ASUS Eee PC 1015PEM	ASUS Eee PC 1016P	ASUS Eee PC 1215N
			
General			
Number of processor packages	1	1	1
Number of cores per processor	2	1	2
Number of hardware threads per core	2	2	2
System power management policy	Balanced	Balanced	Balanced
Processor power-saving option	Enhanced Intel SpeedStep Technology	Enhanced Intel SpeedStep Technology	Enhanced Intel SpeedStep Technology
System dimensions (length x width x height)	10-1/4" x 7" x 7/8"	10-1/3" x 7" x 1-1/3"	11-5/8" x 8" x 1-1/8"
System weight	2 lbs. 13 oz.	2 lbs. 13 oz.	3 lbs. 6 oz.
CPU			
Vendor	Intel	Intel	Intel
Name	Atom	Atom	Atom

System	ASUS Eee PC 1015PEM	ASUS Eee PC 1016P	ASUS Eee PC 1215N
Model number	N550	N455	D525
Stepping	B0	B0	B0
Socket type and number of pins	Socket 437 FCBGA8	Socket 437 FCBGA8	Socket 437 FCBGA8
Core frequency (GHz)	1.50	1.66	1.83
Bus frequency	667	667 MHz	800 MHz
L1 cache	24 KB + 32 KB (per core)	24 KB + 32 KB	24 KB + 32 KB (per core)
L2 cache	1 MB (512 KB per core)	512 KB	1 MB (512 KB per core)
L3 cache	N/A	N/A	N/A
Platform			
Vendor	ASUSTek	ASUSTek	ASUSTeK
Motherboard model number	1015PE	1015PE	1215N
Motherboard chipset	Intel NM10	Intel NM10	Intel NM10
BIOS name and version	American Megatrends Inc. 0801 (10/06/2010)	American Megatrends Inc. 0801 (10/06/2010)	American Megatrends Inc. 0503 (09/07/2010)
Memory module(s)			
Vendor and model number	Hynix HMT112S6TFR8C-H9	Hynix HMT325S6BFR8C-H9	Hynix HM112S6TFR8C-H9
Type	PC3-10600	PC3-10600	PC3-10600
Speed (MHz)	1,333	1,333	1,333
Speed running in the system (MHz)	667	667	800
Timing/Latency (tCL-tRCD-tRP-tRASmin)	5-5-5-12	5-5-5-12	6-6-6-15
Size (MB)	1,024	2,048	1,024
Number of memory module(s)	1	1	2
Chip organization (single-sided/double-sided)	Double-sided	Double-sided	Double-sided
Channel (single/dual)	Single	Single	Single
Hard disk			
Vendor and model number	Seagate ST9250315AS	Seagate ST9320325AS	Seagate ST9250315AS
Number of disks in system	1	1	1
Size (GB)	250	320	250
Buffer size (MB)	8	8	8
RPM	5,400	5,400	5,400
Type	SATA 3.0 Gb/s	SATA 3.0 Gb/s	SATA 3.0 Gb/s

System	ASUS Eee PC 1015PEM	ASUS Eee PC 1016P	ASUS Eee PC 1215N
Controller	Intel NM10	Intel NM10	Intel NM10
Driver	Intel 8.9.0.1023 (06/04/1023)	Intel 8.9.0. 1023 (06/04/2009)	Intel 8.9.0.1023 (06/04/2009)
Operating system			
Name	Windows 7 Starter 32-bit	Windows 7 Professional 32-bit	Windows 7 Home Premium 32-bit
Build number	7600	7600	7600
Service Pack	N/A	N/A	N/A
File system	NTFS	NTFS	NTFS
Kernel	ACPI x86-based PC	ACPI x86-based PC	ACPI x86-based PC
Language	English	English	English
Microsoft DirectX version	DirectX 11	DirectX 11	DirectX 11
Graphics card #1			
Vendor and model number	Intel GMA 3150	Intel GMA 3150	Intel GMA 3150
Type	Integrated	Integrated	Integrated
Chipset	Intel Graphics Media Accelerator 3150	Intel Graphics Media Accelerator 3150	Intel Graphics Media Accelerator 3150
BIOS version	1933.0	1933.0	2001.0
Total available graphics memory (MB)	251	256	256
Dedicated video memory (MB)	0	0	0
System video memory (MB)	64	64	64
Shared system memory (MB)	187	192	192
Resolution	1,024 x 600	1,024 x 600	1,366 x 768
Driver	Intel Corporation 8.14.10.2117 (04/19/2010)	Intel 8.14.10.2117 (04/19/2010)	Intel 8.14.10.2117 (04/19/2010)
Graphics card #2			
Vendor and model number	N/A	N/A	NVIDIA® ION automatic switchable graphics
Type	N/A	N/A	Discrete
Chipset	N/A	N/A	NVIDIA ION
Resolution	N/A	N/A	1,366 x 768
Sound card/subsystem			
Vendor and model number	Realtek High Definition Audio	Realtek High Definition Audio	Realtek High Definition Audio

System	ASUS Eee PC 1015PEM	ASUS Eee PC 1016P	ASUS Eee PC 1215N
Driver	Realtek 6.0.1.6066 (03/13/2010)	Realtek 6.0.1.6066 (03/13/2010)	Realtek 6.0.1.6186 (08/24/2010)
Ethernet			
Vendor and model number	Atheros AR8132 PCI-E Fast Ethernet Controller	Atheros AR8131 PCI-E Gigabit Ethernet Controller	Atheros AR8152 PCI-E Fast Ethernet Controller
Driver	Atheros 1.0.0.29 (04/21/2010)	Atheros 1.0.0.29 (04/21/2010)	Atheros 1.0.0.34 (07/29/2010)
Wireless			
Vendor and model number	Broadcom 802.11n Network Adapter	Broadcom 802.11n Network Adapter	Atheros AR9285 Wireless Network Adapter
Driver	Broadcom 5.60.350.11 (05/07/2010)	Broadcom 5.60.350.11 (05/07/2010)	Atheros 8.0.0.238 (10/05/2009)
Modem			
Vendor and model number	N/A	N/A	N/A
Driver	N/A	N/A	N/A
USB ports			
Number	3	3	3
Type	2.0	2.0	2.0
Other	Multimedia card reader	Multimedia card reader	Multimedia card reader
Monitor			
Type	WSVGA	WSVGA	WXGA
Screen size	10.1"	10.1"	12.1"
Refresh rate (Hz)	60	60	60
Battery			
Type	ASUS A32-1015 Lithium-ion	ASUS A32-1015 Lithium-ion	ASUS A32-1015 Lithium-ion
Size (length x width x height)	8" x 1-7/8" x 3/4"	8" x 1-7/8" x 3/4"	8" x 1-7/8" x 3/4"
Rated capacity	5,600mAh / 11.25V (63Wh)	5,600mAh / 11.25V (63Wh)	5,200mAh / 10.95V (56Wh)
Weight	11 oz.	11 oz.	11 oz.

Figure 5: System configuration information for the ASUS netbooks.

System	Dell Latitude 2120	HP Mini 100e	HP Mini 5103
			
General			
Number of processor packages	1	1	1
Number of cores per processor	1	1	1
Number of hardware threads per core	2	2	2
System power management policy	Dell	Balanced	HP Optimized
Processor power-saving option	Enhanced Intel SpeedStep Technology	Enhanced Intel SpeedStep Technology	Enhanced Intel SpeedStep Technology
System dimensions (length x width x height)	10-1/4" x 7-1/4" x 1-1/2"	10-5/8" x 9-3/4" x 1-3/8"	10-1/4" x 7" x 1"
System weight	2 lbs. 14 oz.	3 lbs. 7 oz.	2 lbs. 12 oz.
CPU			
Vendor	Intel	Intel	Intel
Name	Atom	Atom	Atom
Model number	N455	N455	N455
Stepping	B0	B0	B0
Socket type and number of pins	Socket 437 FCBGA8	Socket 437 FCBGA8	Socket 437 FCBGA8
Core frequency (GHz)	1.66	1.66	1.66
Bus frequency	667 MHz	667 MHz	667 MHz
L1 cache	24 KB + 32 KB	24 KB + 32 KB	24 KB + 32 KB
L2 cache	512 KB	512 KB	512 KB
L3 cache	N/A	N/A	N/A
Platform			
Vendor	Dell	Foxconn	Hewlett-Packard
Motherboard model number	OYY3FH	1586	1608
Motherboard chipset	Intel NM10	Intel NM10	Intel NM10
BIOS name and version	Dell A00 (10/27/2010)	Hewlett-Packard F.02 (07/29/2010)	Hewlett-Packard 68PGP Ver. F.02 (10/20/2010)
Memory module(s)			
Vendor and model number	Micron® 4JSF12864HZ-1G4D1	Samsung M471B2873FHS-CH9	Kingston HP594907-HR1-ELD
Type	PC3-10600	PC3-10600	PC3-10600

System	Dell Latitude 2120	HP Mini 100e	HP Mini 5103
Speed (MHz)	1,333	1,333	1,333
Speed running in the system (MHz)	667	667	667
Timing/Latency (tCL-tRCD-tRP-tRASmin)	5-5-5-12	5-5-5-12	5-5-5-12
Size (MB)	1,024	1,024	1,024
Number of memory module(s)	1	1	1
Chip organization (single-sided/double-sided)	Double-sided	Double-sided	Double-sided
Channel (single/dual)	Single	Single	Single
Hard disk			
Vendor and model number	Western Digital WD2500BEVT-75A23T0	Western Digital WD1600BEVT-22A23T0	Toshiba MK2556GSY
Number of disks in system	1	1	1
Size (GB)	250	160	250
Buffer size (MB)	8	8	16
RPM	5,400	5,400	7,200
Type	SATA 3.0 Gb/s	SATA 3.0 Gb/s	SATA 3.0 Gb/s
Controller	Intel NM10	Intel NM10	Intel NM10
Driver	Intel 8.9.4.1004 (10/13/2009)	Intel 8.9.4.1004 (10/13/2009)	Intel 8.9.8.1005 (04/05/2010)
Operating system			
Name	Windows 7 Home Premium 32-bit	Windows 7 Starter 32-bit	Windows 7 Starter 32-bit
Build number	7600	7600	7600
Service Pack	N/A	N/A	N/A
File system	NTFS	NTFS	NTFS
Kernel	ACPI x86-based PC	ACPI x86-based PC	ACPI x86-based PC
Language	English	English	English
Microsoft DirectX version	DirectX 11	DirectX 11	DirectX 11
Graphics			
Vendor and model number	Intel GMA 3150	Intel GMA 3150	Intel GMA 3150
Type	Integrated	Integrated	Integrated
Chipset	Intel Graphics Media Accelerator 3150	Intel Graphics Media Accelerator 3150	Intel Graphics Media Accelerator 3150
BIOS version	1933.2	2001.0	2001.0

System	Dell Latitude 2120	HP Mini 100e	HP Mini 5103
Total available graphics memory (MB)	250	250	246
Dedicated video memory (MB)	0	0	0
System video memory (MB)	64	64	64
Shared system memory (MB)	186	186	182
Resolution	1,024 x 600	1,024 x 600	1,024 x 600
Driver	Intel 8.14.10.2117 (04/19/2010)	Intel 8.14.10.2117 (04/19/2010)	Intel 8.14.10.2117 (04/19/2010)
Sound card/subsystem			
Vendor and model number	Realtek High Definition Audio	Realtek High Definition Audio	IDT High Definition Audio
Driver	Realtek 6.0.1.6201 (09/14/2010)	Realtek 6.0.1.6088 (04/13/2010)	IDT 6.10.6289.0 (06/17/2010)
Ethernet			
Vendor and model number	Broadcom NetXtreme® Gigabit Ethernet	Realtek PCIe FE Family Controller	Marvell Yukon 88E8059 PCI-E Gigabit Ethernet Controller
Driver	Broadcom 14.2.0.5 (05/21/2010)	Realtek 7.17.304.2010 (03/04/2010)	Marvell 11.25.3.3 (04/26/2010)
Wireless			
Vendor and model number	DW1501 Wireless –N WLAN	Realtek RTL8191SE	Broadcom 4313 802.11b/g/n
Driver	Broadcom 5.60.48.35 (01/21/2010)	Realtek 2011.0.204.2010 (02/04/2010)	Broadcom 5.60.350.11 (05/07/2010)
Modem			
Vendor and model number	N/A	LSI HDA Modem	N/A
Driver	N/A	LSI 2.2.99.0 (12/03/2009)	N/A
USB ports			
Number	3	2	3
Type	2.0	USB 2.0	2.0
Other	Multimedia card reader	Multimedia card reader	Multimedia card reader
Monitor			
LCD type	WSVGA	WSVGA	WSVGA
Screen size	10.1"	10.1"	10.1"
Refresh rate (Hz)	60	60	60

System	Dell Latitude 2120	HP Mini 100e	HP Mini 5103
Battery			
Type	Dell F079N Lithium-ion	HP HSTNN-LB1W Lithium-ion	HP HSTNN-DB1R Lithium-ion
Size (length x width x height)	8" x 1-1/2" x 3/4"	10-1/4" x 2-3/4" x 3/4"	8-1/8" x 1-7/8" x 15/16"
Rated capacity	2,500mAh / 11.1V (28Wh)	4,400mAh / 10.8V (47Wh)	5,900mAh / 11.1V (66Wh)
Weight	6 oz.	11 oz.	11 oz.

Figure 6: System configuration information for the Dell Latitude 2120 and HP netbooks.

APPENDIX B - ABRASION TEST SCORING SHEET

Abrasion Test

System Name: _____

System Inventory ID: _____

Test 1

Judge 1 score: ____

Judge 2 score: ____

Judge 3 score: ____

Average score: ____

Test 2

Judge 1 score: ____

Judge 2 score: ____

Judge 3 score: ____

Average score: ____

Test 3

Judge 1 score: ____

Judge 2 score: ____

Judge 3 score: ____

Average score: ____

ABOUT PRINCIPLED TECHNOLOGIES



Principled Technologies, Inc.
1007 Slater Road, Suite 300
Durham, NC, 27703
www.principledtechnologies.com

We provide industry-leading technology assessment and fact-based marketing services. We bring to every assignment extensive experience with and expertise in all aspects of technology testing and analysis, from researching new technologies, to developing new methodologies, to testing with existing and new tools.

When the assessment is complete, we know how to present the results to a broad range of target audiences. We provide our clients with the materials they need, from market-focused data to use in their own collateral to custom sales aids, such as test reports, performance assessments, and white papers. Every document reflects the results of our trusted independent analysis.

We provide customized services that focus on our clients' individual requirements. Whether the technology involves hardware, software, Web sites, or services, we offer the experience, expertise, and tools to help our clients assess how it will fare against its competition, its performance, its market readiness, and its quality and reliability.

Our founders, Mark L. Van Name and Bill Catchings, have worked together in technology assessment for over 20 years. As journalists, they published over a thousand articles on a wide array of technology subjects. They created and led the Ziff-Davis Benchmark Operation, which developed such industry-standard benchmarks as Ziff Davis Media's Winstone and WebBench. They founded and led eTesting Labs, and after the acquisition of that company by Lionbridge Technologies were the head and CTO of VeriTest.

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