Double-Stuff DVDs

September 7, 2004
By Don Labriola

Dual-layer (DL) DVD recorders are finally here, but the DL format is still a work in progress. Media remain scarce and expensive, and the first generation of DL recorders and application software currently produces discs that many DVD set-top boxes and computer drives can't read. We expect most of these issues to be resolved before the end of the year, but if you buy a dual-layer recorder today, steel yourself for an early-adopter experience.

None of these caveats dampen our enthusiasm for this new format. Unlike single-layer discs, which hold 4.7 billion bytes (or 4.37GB) of data, dual-layer recordable media store a whopping 8.5 billion bytes (7.95GB), matching the capacity of the dual-layer DVD-Video discs used to distribute Hollywood movies.

This last issue is especially important, because one of the biggest selling points for DVD rewriters has been their ability to back up movies, a task that usually requires two single-layer discs. Splitting a DVD-Video can disrupt its logic, preventing menus from locating assets, and even making some movies impossible to copy. We copied unprotected discs for our testing purposes; expect problems if you try copying protected ones.

DL recording is equally useful for authoring professionals who want to produce single-disc prototypes of dual-layer projects without being forced to recompress content. The format also nearly doubles the space for home video productions, system backups, and data-archiving applications, and may someday be used instead of DLT (Digital Linear Tape) to create dual-layer DVD masters for replication.

Format Follies, Continued

As with most innovations in the DVD-recording industry, the DVD Forum and DVD+RW Alliance plan to promote their own proprietary dual-layer recording formats. Building on research at Philips and MKM (Mitsubishi Kagaku Media), the Alliance has already launched its write-once DVD+R DL specification. Even though the industry has long used "dual layer" to describe media that contains two recording layers per side, the Alliance has selected "double layer" to describe DVD+R DL.

A similar format developed concurrently at Pioneer Electronics promises to become the basis for the DVD Forum's imminent (but as yet unnamed) dual-layer version of DVD-R. There are rumors of rewritable dual-layer formats, but no announcements are expected this year.

The Forum and Alliance offerings will have many minor technical differences and will use different mechanisms for addressing and locating data on a disc. Once the two formats mature, neither is likely to be any more compatible with third-party players. Each specification will, however, permit data to be recorded only onto its corresponding proprietary media.

From an end-user perspective, the most obvious difference between the two will likely be write speed. DVD+R DL will initially support 2.4X recording, but the Forum's dual-layer spec will probably run at 2X. 4X versions of both formats are already in development.

Blank DVD+R DL discs are only just starting to appear online, now selling for a little more than $10 each. Prices should begin dropping quickly late this year, and both Alliance and Forum media should be readily available in stores for the holidays.

How Dual-Layer DVDs Work

To understand how dual-layer recording works, you first need to know how DVD players retrieve data from mass-produced single-layer discs. Read-only DVDs store information as billions of microscopic pits stamped in a spiral groove on the upper surface of a clear polycarbonate disc. The grooved side of the disc is coated with a reflective material such as aluminum, which is then bonded to a second plastic platter that is imprinted with a label.

When a laser positioned below the disc sweeps along the groove, an optical pickup in the drive monitors the amount of light bouncing off the reflective layer behind the pitted surface. Alterations in the beam that occur as it passes across a pit allow the drive to interpret the stamped pattern as a sequence of ones and zeros.

On a recordable DVD, a blank groove coated with heat-sensitive organic dye replaces the stamped pits. A virtual "pit" is recorded by heating a pinpoint of dye with a tightly focused laser. This permanently changes the dye's physical characteristics at that one point, giving it optical properties similar to those of a stamped pit.

Dual-layer discs simply add a second recordable layer behind the first. In this case, the metallic coating behind the layer that's closer to the laser (L0 in the graphic) is translucent, which allows the beam to pass through it when focused on the deeper layer (L1).

Manufacturing a dual-layer recordable disc may sound like a straightforward task, but ensuring that both dye layers had the same optical properties as stamped grooves was a monumental feat. Even with careful tweaking of such parameters as the precise depth and shape of the recorded "pits," the thickness and chemical composition of each dye layer, and the reflectivity of the metallic coatings, first-generation DL media is still subject to constraints. Both dual-layer specifications require that data on Layer 0 be recorded before the corresponding position on Layer 1 can be burned. And the current crop of DVD+R DL drives must record both layers in their entirety before finalizing a double-layer disc.

Don't expect perfect results from dual-layer devices right now, but they are getting better every week. Experts expect a more refined and stable product by the fourth quarter of this year. But if you want to purchase a DVD drive right now, a dual-layer drive is a smart buy. The price is right, and these drives will do just as much as the 8X drives.

Leader of the Pack

The first dual-layer DVD recorder to hit the market was the Sony DRU-700A, which began shipping in May this year with a DL-compatible version of Nero, Ahead Software's digital-media suite. When we tested an early production unit, the double-layer discs it created would not work at all in single-layer set-top recorders and PC DVD rewriters, and they produced mixed results in DVD-ROM drives and console DVD players.

At the time, Sony speculated that these problems resulted from the inability of single-layer recorders and rewriters to recognize the specific media identifier codes burnt onto DVD+R DL media. Such problems could be solved only by upgrading the older drives' firmware.

It now appears that there's more to the story than that. Media recognition is certainly an issue, but it's evidently not the only one, and it may not be a problem at all for many drives. DL discs created by most models in this roundup worked just as reliably in single-layer recorders as they did in read-only players.

We also unearthed content-dependent compatibility problems that were more a function of disc-burning software than drive hardware. Double-layer disc copies that were otherwise compatible with a particular playback device sometimes failed when we chose certain menu items or when the drive attempted to switch layers. In such cases, the logic and layout of the original DVD-Video title affected compatibility at least as much as our choice of recorder did.

The manufacturers and Alliance representatives we spoke with seemed keenly aware of these issues and assured us they were working to resolve them. Firmware upgrades and software patches were repeatedly released during our testing.

DL recording will undoubtedly revolutionize the DVD industry, but the format may take a few more months to stabilize. In the meantime, we present this snapshot of the emerging dual-layer market.

Dual or Double?

The DVD industry has always used the term dual layer to describe two-layer media, but this didn't stop the DVD+RW Alliance from unilaterally coining the term double layer to describe its DVD+R DL format. Because the DVD Forum plans to retain the traditional "dual layer" nomenclature for its own two-layer specification, the Alliance's strategy will probably have the desired effect: to differentiate its format from the Forum's offering. Double layer will by definition describe only DVD+R DL drives and media, and the more generic dual layer will continue to refer to read-only DVD-ROM and DVD-Video titles, the upcoming Forum specification, and all other two-layer formats.

Editors' Choices: 8X External Hard Drive: Memorex True 8X Dual Format External DVD Recorder; 8X Internal Hard Drive: Pioneer DVR-A07XL; Dual Layer: BenQ DW830A

September 7, 2004

When buying a DVD drive, a common mistake is to consider speed but not need. As we looked at the nine different DVD recorders in this story, it wuickly became apparent that no one drive suited all situations, so we broke them down into 3 categories: external, internal, and the new dual-layer format.

The Memorex True 8X Dual Format External DVD Recorder has a great software bundle, dual interfaces, and a reasonable price. These combine to make this relatively bukley external drive a terrific choice for anyone who needs a transportable DVD rewriter that supports all the latest high-speed formats. The Pioneer DVR-A07XL is a solid performer across the board. IT combines superior application software with a raft of unique hardware features that help ensure high-quality output. And although the dual-layer format isn't quite perfect yet, we found that the BenQ DW830A was the best of the bunch. It's fast, ships with a powerful software bundle, and sells at a price that's almost too good to be true.

BenQ DW830A

September 7, 2004
By Don Labriola

Company:
Company: BenQ America Corp., www.benq.com
Price:
$129 list
Spec Data
Internal, dual-layer; 8X DVD+R speed, 2.4X DVD+R DL speed, 4X DVD+RW speed, 40X CD read speed, 24X CD-R speed, 10X CD-RW speed; ATAPI

Pros:
Blazing DVD-ripping and DVD+R recording times. Sophisticated hardware data-integrity features. Great price.
Cons:
Can't record DVD-R or DVD-RW media. Requires a $50 upgrade to rip MP3 files. VCD and DVD+R DL compatibility issues.
Bottom Line:
The DW830A can't record DVD-R or DVD-RW media and the early production model we tested suffered from a few growing pains. But it's fast, ships with a powerful software bundle, and sells at a price that's almost too good to be true.

Review:
With the lowest price of all the products we review here, the BenQ DW830A is a terrific bargain and a solid performer. But like most of the double-layer drives we tested, our evaluation unit suffered from a few growing pains. Read our full review of the BenQ DW830A.

The DW830A ripped DVDs and recorded DVD+R media faster than any other dual-8X or double-layer drive we tested, and it produced competitive results on most other performance tests. It finished last on our double-layer recording tests, but its performance was only about 11 percent behind that of the first-place Sony DRU-700A.

The drive ships with an expansive multivendor software bundle that includes InterVideo's WinDVD Creator 2 authoring system, WinDVD 4 movie player, Sonic Solutions' RecordNow! 7.1 disc-mastering application, and DLA 4.90 drag-and-drop packet-writing software. Rounding out the package are several BenQ tools that include the company's QVideo 2.0 video-capture utility.

The DW830A also incorporates Write Right Technologies, which BenQ claims reduce recording errors. These features include a disc auto-centering mechanism and the ability to adjust laser power and tilt angle continuously, to compensate for problems such as warped media and inconsistencies in a disc's recording layer.

Most of the double-layer DVDs created by our evaluation unit worked flawlessly. But when we tried to burn an 8GB dual-layer disc image that had been generated by SmartRipper, a DVD-ripping utility, the resulting DVD+R DL disc worked in only one of our test players. Ironically, that same device was the only one that could play Video CDs created by the DW830A on our DivX/VCD performance test. In both cases, we suspect that the problem lay with the application software, not with the drives themselves.

The DW830A isn't perfect. It can't record DVD Forum "dash" media, and it requires a $50 upgrade to rip audio CDs to MP3 discs. But in most other ways, it's a top-notch product that is one of the best buys on the DVD recorder market today.

LaCie d2 DVD±RW Double Layer

September 7, 2004
By Don Labriola

Company:
LaCie, www.lacie.com
Price:
$199 list
Spec Data:
External, dual-layer, dual-format, 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 2.4X DVD+R DL speed, 4X DVD+RW speed, 40X CD read speed, 32X CD-R speed, 16X CD-RW speed; USB 2.0, FireWire

Pros:
Rugged construction. Dual USB 2.0/FireWire interface. Includes both Mac & Windows applications. Most reliable double-layer output in the survey.
Cons:
Slow DVD-ripping speed. No DivX support. No MP3 encoding.
Bottom Line:
The d2 DVD±RW Double Layer wasn't the fastest model we tested, but it's a solid product with no major flaws.

Review:
One of the most affordable portable DVD rewriters we review here, LaCie's d2 DVD±RW Double Layer drive is also a ruggedly built unit that held its own on most of our performance tests and produced the most reliable double-layer output in the roundup. Click here to read our full review of the LaCie d2 DVD±RW Double Layer.

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The d2 connects to your computer through a dual-bus interface that automatically detects whether you've plugged the drive into a USB 2.0 or a FireWire port. Its chassis is made of the same tough, lightweight zamac alloy used for die-cast metal toys. It is the smallest external drive in the roundup (1.7 by 6.3 by 10.6 inches, HWD) and weighs in at a lighter-than-average 3.3 pounds. LaCie also offers several rack-mounting options, including a four-drive racking kit.

In addition to USB and FireWire cables, LaCie packages the d2 with multiple copies of Roxio's Easy Media Creator and Toast disc-creation applications, designed for various versions of the Windows and Mac operating systems. We ran our performance tests with the bundled Windows XP version of Easy Media Creator 7,

which, unlike the standard retail product, doesn't offer DivX support or MP3 encoding, but manages to cover all the other bases.

Like the other external drives we tested, the d2 took about twice as long as most internal models to rip an unencrypted DVD-Video disc to our hard drive. But it held its own on our other performance tests, scoring better than average.

The d2 also beat out all other DVD+R DL models on our compatibility tests. With one exception, every DL disc it created worked perfectly in all of our test players. One DVD set-top box refused to recognize a disc that had been burned from our most complex SmartRippergenerated source material, but no other drive in the roundup did any better on this particularly challenging test.

The d2 DVD±RW Double Layer isn't the fastest model we tested, but it's a solid product with no major flaws. If you're looking for a portable DVD rewriter that you can count on to create dependable double-layer recordings, you'll have a hard time finding a better-built unit for the price.

Lite-On SOHW-832S

September 7, 2004
By Don Labriola

Company:
Lite-On Technology Corp., www.liteon.com
Price:
$150 list
Spec Data:
Internal, dual-layer, dual-format; 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 2.4X DVD+R DL speed, 4X DVD+RW speed, 40X CD read speed, 40X CD-R speed, 24X CD-RW speed; ATAPI

Pros:
Fast MP3 ripping. DivX support. Blazing CD-R and DVD±RW burning speeds.
Cons:
Unlimited MP3 encoding requires SW upgrade.
Bottom Line:
The SOHW-832S combines superior performance with good functionality and performs especially well when burning rewritable DVDs and CD-R media. But it suffers from the same lingering compatibility problems that still plague most double-layer drives.

Review
The Lite-On SOHW-832S did as well on our testing as any of the DVD+R DL drives in the roundup. The drive exhibited some of the same compatibility problems as the other dual-layer recorders, but it also turned in some of the best performance numbers. Click here to read our full review of the Lite-On SOHW-832S

Lite-On SOHW-832S

The Lite-On SOHW-832S did as well on our testing as any of the DVD+R DL drives in the roundup. The drive exhibited some of the same compatibility problems as the other dual-layer recorders, but it also turned in some of the best performance numbers.

One reason for this could be its unique SMART-X technology, which continually adjusts the drive's rotational speed to provide optimal performance when playing or ripping audio CDs, Video CDs, and DVDs. Our evaluation unit produced outstanding CD-ripping and -recording figures, easily outpacing any other drive we tested. It also did well burning rewritable media, turning in the best DVD+RW time we measured, and falling only 4 seconds behind the first-place LaCie d2 in our DVD-RW test. On other performance tests, the SOHW-832S almost always produced at least average results.

The SOHW-832S ships with an abbreviated version of Ahead Software's Nero digital-media suite, which lacks several modules but includes key components, such as the InCD 4 packet-writing utility and the powerful Nero Vision Express 2 SE video editor. The package also provides full DivX support and 30 free MP3 encodes (an

online upgrade adds unlimited MP3 ripping), and it supports Ahead's MPEG-4–based Nero Digital file format through the Nero Express disc-mastering module. A copy of CyberLink's PowerDVD utility handles DVD-Video playback chores.

The SOHW-832S ranked just below the BenQ DW830A on our compatibility tests. It produced Video CDs that worked in two of our three test players, and its baseline double-layer discs performed perfectly across the board. But the drive failed our more advanced DVD+R DL compatibility test, producing discs that none of our playback devices could recognize.

There's a lot to like about the SOHW-832S, and once the last few glitches are resolved, we'll have no problem giving it an enthusiastic thumbs-up. We do, however, advise potential buyers to take a look at the BenQ device—our dual-layer Editors' Choice—which also did well on our tests but costs much less.

Sony DRU-700A (Updated)

September 7, 2004

Company:
Sony Electronics Inc., www.sony.com/dvdburners
Price:
$180 list
Spec Data:
Internal, dual-layer, dual-format; 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 2.4X DVD+R DL speed, 4X DVD+RW speed, 40X CD read speed, 40X CD-R speed, 24X CD-RW speed; ATAPI (IDE)

Pros:
Comprehensive software bundle. Good performance when burning single- and double-layer DVD+R media. Fast CD-R recording.
Cons:
Dual-layer compatibility problems. Requires excessive time to rip audio CDs to MP3. Slow DVD-R and DVD-RW recording speeds. Unlimited MP3 encoding and 5.1-channel playback require upgrade.
Bottom Line:
No longer the only DVD+R DL drive on the market, the DRU-700A now faces stiff competition from less-expensive offerings. But its outstanding software bundle and first-rate DVD+R performance still make it a good choice for many buyers.

Review:
It's been nearly two months since our initial peek at the Sony DRU-700A, which was then the only DVD+R DL rewriter on the market. Click here to read our full review of the Sony DRU-700A.

It's been nearly two months since our initial peek at the Sony DRU-700A, which was then the only DVD+R DL rewriter on the market. Compatibility problems and a lack of DVD+R DL media didn't stop us from giving the drive a good review, but we decided to withhold final judgment until double-layer technology had more time to mature.

When we revisited the drive for this roundup, we found that much had changed, but not enough to alter our conclusions substantially. A new firmware revision has resolved an earlier problem that prevented the DRU-700A from burning single-layer 8X DVD+R Verbatim media at top speed, and the drive's DVD+R DL output now works in a greater range of test players. But some double-layer compatibility problems remain.

None of the DL discs produced by our evaluation unit were recognized by our Pioneer DVR-A05 DVD-R/-RW rewriter, and those that contained more challenging SmartRipper-generated content worked in only half of our test players. (As we went to press, Ahead Software announced a patch to resolve some of these issues.)

In most other ways, the upgraded DRU-700A is similar to the unit we first reviewed. It led the pack in MPEG encoding and CD-R, DVD+R, and DVD+R DL recording speeds, but turned in less impressive results when burning DVD-R or DVD-RW media. And it was abysmally slow when ripping an audio CD to MP3 files.

The DRU-700A includes a version of the Nero digital-media suite, which can be upgraded at no cost to add

nearly all the capabilities of the full Nero 6.3 retail version. (The only omissions are 5.1-channel Dolby Digital playback and unlimited MP3 ripping, both of which cost extra.)

The DRU-700A is no longer a one-of-a-kind offering, but it's still a fine product. Although it may be the most expensive internal double-layer drive in the roundup, many buyers will find that its outstanding software bundle and performance justify its price.

LG GSA-4082B Triple Format Super-Multi Drive

September 7, 2004
By Don Labriola

Company:
LG Electronics, www.lgeus.com.
Price:
$200 list

Spec Data:
Internal; 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 4X DVD+RW speed, 3X DVD-RAM speed, 32X CD read speed, 24X CD-R speed, 16X CD-RW speed; ATAPI

Review:
The LG GSA-4082B Triple Format Super-Multi Drive is aptly named: As the only five-format single-layer drive in the roundup, it takes ordinary multiformat capabilities a step further. Read our full review of the LG GSA-4082B Triple Format Super-Multi Drive.

The LG GSA-4082B Triple Format Super-Multi Drive is aptly named: As the only five-format single-layer drive in the roundup, it takes ordinary multiformat capabilities a step further. In addition to the 8X DVD±R and 4X DVD±RW formats supported by most of the other models we tested, the GSA-4082B can read, write, and rewrite 3X DVD-RAM media. Although most people buy DVD rewriters to record video content, DVD-RAM's hardware defect-management features and ability to store almost 9GB of data on a single two-sided disc make it an attractive alternative for many smaller backup and archiving applications.

The drive ships with copies of CyberLink's PowerProducer 2 Gold disc-authoring system and PowerDVD 5 video player, as well as B.H.A.'s B's Recorder audio/data disc-burning application and B's CLiP packet-writing software for DVD±RW media. Also included is a remarkably stable drag-and-drop DVD-RAM driver.

The software is easy to use, but it lacks several important features. The system-backup module in B's Recorder has no disc-spanning, encryption, scheduling, or network-backup capabilities, and the program's disc-copying utility can't compress dual-layer discs onto a single piece of media. PowerProducer has only limited video-editing functionality: It even lacks the ability to add transition effects and text titles to movie clips. Worse, launching the program repeatedly muted the output of our test-bed's Creative Sound Blaster Audigy 2 ZS sound board.

The GSA-4082B's performance on our tests was uneven. It wrote 2GB of data to a DVD-RAM disc and confirmed the results in 20:43—a respectable figure for the relatively slow DVD-RAM format—and ranked first and second among single layer drivers on our DVD-RW packet-writing and DVD-ripping tests. But it finished last when recording DVD-R, DVD+R, DVD+RW, and CD-R media. Also, the bundled software's lack of DivX support rendered the device incapable of completing our VCD-creation test.

The GSA-4082B isn't the speediest or most flexible 8X drive we tested. But even if it's not our first choice for DVD-Video applications, it is worth considering if you're looking for an inexpensive way to store data on DVD-RAM.

Memorex True 8X Dual Format External DVD Recorder

September 7, 2004
By Don Labriola

Company:
Memorex Products Inc., www.memorex.com
Price:
$230 street.

Spec Data:
External; 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 4X DVD+RW speed, 40X CD read speed, 32X CD-R speed, 16X CD-RW speed; USB 2.0, FireWire; headphone jack, volume, R/L audio out, power controls

Review:
The Memorex True 8X Dual Format External DVD Recorder offers an excellent combination of performance, functionality, and value. Read our full review of the Memorex True 8X Dual Format External DVD Recorder.

The Memorex True 8X Dual Format External DVD Recorder offers an excellent combination of performance, functionality, and value. Not only does this reasonably priced drive provide both USB 2.0 and FireWire interfaces, but it also includes the most versatile and comprehensive software bundle in our roundup.

One of the greatest strengths of the True 8X drive is Ahead Software's Nero 6 software bundle, which has many of the features of the current 6.3 retail version of this popular digital-media suite. It includes the powerful Nero Express, but lacks Nero's Wave Editor, NeroMIX, and SoundTrax audio applications. And it requires upgrades to obtain unlimited MP3 encoding and 5.1-channel Dolby Digital playback. But the True 8X does support Ahead's pioneering Nero Digital MPEG-4 format (unlike the Nero-equipped Toshiba SD-R5272), as well as a huge selection of audio and data disc-creation, slide show, DVD-authoring, and data-backup features.

Memorex complements the Nero bundle with a copy of Ahead's easy-to-use NeroPhotoShow Deluxe digital-photo manager, which lets you organize images into albums, edit them with a variety of one-click tools, and use them in slide shows, e-mail messages, screensavers, and wallpaper and on Web sites and video CDs. The company also throws in a pair of USB and FireWire cables—a nice touch at this price—and a full set of printed manuals. The drive also has individual right and left line-out audio jacks.

Our evaluation unit turned in middle-of-the-road results on our recordable and rewriteable DVD-burning performance tests. By contrast, it scored first among 8X drives on our CD-burning and -ripping tests, and it was one of only two single-layer drives we tested with the DivX playback and MP3-encoding capabilities necessary to complete our entire test suite. It did poorly on our DVD-ripping tests, however, taking more than twice as long as most of the competition to copy a 4.3GB unprotected DVD-Video disc to a hard drive folder.

Factor in that it's the lowest-priced external 8X drive currently available and you can easily see why we awarded the Memorex True 8X Dual Format External DVD Recorder our Editors' Choice.

Micro Solutions Backpack DVD±R/RW

September 7, 2004
By Don Labriola

Company:
Micro Solutions Inc., www.micro-solutions.com
Price:
$249 list

Spec Data:
External; 8X DVD-R speed, 2X DVD-RW speed, 8X DVD+R speed, 4X DVD+RW speed, 40X CD read speed, 32X CD-R speed, 16X CD-RW speed; USB 2.0; headphone jack, volume, line-out controls

Review:
The latest entry in a long line of portable DVD rewriters, the Micro Solutions Backpack DVD±R/RW is 30 percent smaller and 40 percent lighter than the Memorex. Read our full review of the Micro Solutions Backpack DVD±R/RW.

The latest entry in a long line of portable DVD rewriters, the Micro Solutions Backpack DVD±R/RW is 30 percent smaller and 40 percent lighter than the Memorex. In most other ways, though, it's no match for the faster, cheaper, and more flexible Memorex offering.

Chief among the Backpack's shortcomings is an underwhelming software bundle that includes Sonic Solutions' MyDVD 4.5, an older version of this disc-production application. The program lacks the many video-editing, titling, and effects capabilities that were added to MyDVD 5 last year.

The Backpack also includes Micro Solutions' SpeedyCD premastering software, which lets you burn audio, data, and mixed-content CDs and DVDs and perform one-click disc-to-disc copying. Although capable of creating the most common types of disc formats, SpeedyCD can't compete with the enormous feature sets and streamlined interfaces of more mature programs like Nero Express.

The Backpack burns DVD+RW media at 4X speeds, but it's the only 8X drive in the roundup that doesn't support the DVD Forum's new 4X DVD-RW specification. It can rip audio CDs to WAV files, but its software doesn't supply the encoder needed to record MP3 files. The drive's lack of DivX support and packet-writing software prevented it from completing our DVD±RW and VCD-creation performance tests. And unlike the Memorex drive, the Backpack has neither a FireWire interface nor a power switch.

To its credit, the evaluation unit turned in competitive results on our DVD-R and CD-R recording tests, and it actually bested the Memorex drive by 7 seconds on our DVD+R measurement. But it was solidly in last place on our DVD-ripping performance test, requiring 19:32 to rip an unencrypted 4.3GB DVD-Video disc to our hard drive.

Though it performed poorly, the Backpack is a rugged 8X drive that can handle many applications with aplomb. The biggest problem is that less expensive models can do an even better job.

Pioneer DVR-A07XL

September 7, 2004
By Don Labriola

Company:
Pioneer North America Inc., www.pioneerelectronics.com
Price:
$190 street

Spec Data:
Internal; 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 4X DVD+RW speed, 40X CD read speed, 24X CD-R speed, 24X CD-RW speed; ATAPI

Review:
The Pioneer DVR-A07XL combines excellent performance and sophisticated hardware with a top-notch software bundle. Read our full review of the Pioneer DVR-A07XL.

The Pioneer DVR-A07XL combines excellent performance and sophisticated hardware with a top-notch software bundle. We'd rather not have to download additional codecs or upgrade the software bundle for full functionality, but anyone who can live with limited MP3 and DivX support will have a hard time finding a better performer.

The DVR-A07XL is essentially a revised version of Pioneer's DVR-A07U drive, upgraded with an attractive faceplate and multiple firmware tweaks.

The DVR-A07XL ships with Ulead's DVD MovieFactory 3 suite and VideoStudio 7 video editor, which together provide a powerful, integrated toolset for creating Video CDs, Super Video CDs, and DVD-Video discs. Other modules in the Ulead bundle let you assemble photos into slide shows, perform system backups, create audio and data discs, play audio and video files, copy CDs and DVDs, and edit, organize, and share digital images.

The DVR-A07XL has unique hardware features, such as a resonance-absorbing suspension, which stabilizes the servo system; a liquid-crystal control system, which helps ensure precise recording on uneven disc surfaces (caused by warping or variations in disc thickness); and an auto-adjusting laser mechanism, which attempts to compensate for the deterioration that occurs every time a rewritable disc is recorded or erased. The drive also offers Pioneer's trademark defect-management technology, which improves performance and helps prevent imperfections from rendering a disc unusable.

This DVD burner easily captured first place among 8X drives on the key DVD-R and DVD+R performance tests and ranked a close second on the DVD±RW packet-writing tests. It also did well on our DVD-ripping and CD-R–recording tests, but couldn't complete our VCD image–creation and audio CD–ripping tests because it lacks a DivX codec and MP3 encoder.

The Pioneer DVR-A07XL is fast, solidly built, and packed with innovative features that help guarantee the quality of the discs it burns. We recommend it without reservation for almost any type of business or home DVD-burning application.

Toshiba SD-R5272

September 7, 2004
By Don Labriola

Company:
oshiba America Information Systems Inc., www.sdd.toshiba.com
Price:
$149 direct

Spec Data:
Internal; 8X DVD-R speed, 4X DVD-RW speed, 8X DVD+R speed, 4X DVD+RW speed, 40X CD read speed, 32X CD-R speed, 10X CD-RW speed; ATAPI

Review:
The Toshiba SD-R5272 performs well and ships with a copy of Ahead Software's outstanding Nero 6 digital-media suite. Read our full review of the Toshiba SD-R5272.

The Toshiba SD-R5272 performs well and ships with a copy of Ahead Software's outstanding Nero 6 digital-media suite. But its performance test results aren't always the best, its CD-RW speed is limited to 10X, and its version of Nero isn't as comprehensive as the one bundled with the Memorex model. None of these caveats, however, is serious enough to convince us that the drive is anything but a bargain.

The SD-R5272's version of the Nero software suite includes an awesome array of audio and data disc-creation, packet-writing, media player, system-backup, label designer, disc-copying, and DVD-authoring applications. But unlike the version bundled with the Memorex drive, it lacks Ahead's new Nero Recode 2 module, which provides advanced features like MPEG-4 encoding and the ability to merge content from multiple DVDs onto a single disc. Toshiba is working to add these capabilities, but it has no plans to include an image-editing module.

The SD-R5272 was the only other 8X rewriter in the roundup to ship with the MP3 encoder and DivX support required to complete our entire performance test suite. It squeezed out first-place finishes on our DVD-ripping and DVD+RW packet-writing tests, and the drive transcoded a 30-minute DivX movie to a Video CD image nearly 4 minutes faster than the second-place Memorex drive. Although it didn't lead the pack on the other disc-burning tests, it never trailed by an unacceptable margin. The only time the drive struck out was when ripping a 65:18 audio CD to MP3 files: This task took 6:42, more than twice the time required by the first-place Memorex unit.

The Toshiba SD-R5272 may not be perfect, but it's an impressive performer for the money.

Up Next: 12X

September 7, 2004

If you're still trying to get used to the idea of double-layer recording and haven't even begun to think about 16X drives, the thought of 12X DVD+R recorders may boggle your mind. Not only are no vendors currently manufacturing 12X media, but the DVD+RW Alliance hasn't even released a formal 12X specification.

Nonetheless, this new format is real, and the first 12X drives should have already hit the shelves by the time you read this. Although there is no distinct 12X standard, last June's 16X DVD+R specification includes informal guidelines that describe in sufficient detail how to handle 12X recording. As for media, most 12X drives actually record 8X DVD+R discs at 12X. This is possible because higher-quality 8X media is often over-engineered enough to accommodate the higher rates.

Other factors, such as the details of the disc's dye formulation, can also affect its 12X performance, so almost all 12X hardware producers guarantee performance only on certain brands of media (and sometimes specific lots) that they've certified. Some, such as Plextor, even ship their drives with firmware or software tools that automatically query a disc to determine whether it's on the vendor's list of approved media.

Many drive manufacturers don't plan to release 12X recorders at all, preferring instead to leapfrog to 16X offerings a few months later. These vendors would rather not spend their time on a "short-lived" standard. But a decent selection of 12X models has been announced, the first of which began shipping just a hair too late to be included in this roundup. We've included baseline descriptions of a representative sampling in this table .

How We Test DVDs

September 7, 2004

Click here to view performance test results .

Our test-bed was configured with Windows XP Professional, an ABIT IC7-G motherboard equipped with an Intel 875P (Canterwood) chipset, 1GB of 434-MHz Kingston HyperX PC3500 DDR SDRAM, and a Hyper-Threaded 3.2-GHz Intel P4 processor; a 7,200-rpm 100GB Western Digital Caviar hard drive; and a Leadtek WinFast A250 GeForce4 Ti4600 graphics board. We tested each drive using only its bundled software and assigned an N/A to any test those applications could not complete. In all cases, we used Verbatim DVD and CD media.

Test One: Ripping a DVD-Video disc

We measured the time it took to rip a DVD-Video disc to a standard VIDEO_TS DVD folder on our hard drive. If the bundled software couldn't create a VIDEO_TS folder, we ripped to a disc-image file on the hard drive. Our source disc was DVD International's "Naxos Musical Journey: Saint-Saëns & Bizet," which fills over 98% of a 4.7GB platter with high bit-rate content. This title is not copy-protected and was used with the permission of the author and copyright owner.

Test Two: Burning single-layer recordable DVD media

We measured the time to copy a DVD-Video disc from the previously created DVD folder or image file to the fastest +R and –R media supported by the drive. We used a full 4.38GB (4.7 billion-byte) test image.

Test Three: Burning double-layer recordable DVD media

If the drive supported dual-layer recording, we measured the time to burn a 7.75GB (8.3 billion byte) VIDEO_TS folder to the fastest dual-layer recordable disc formats supported by the drive. Our baseline, dual-layer source image was ripped with the content owner's permission from the unprotected disc "Planet Earth: North America," produced by AlphaDVD.

Test Four: Burning rewritable DVD media

We used the drive's bundled packet-writing application to drag two 1GB files from the hard drive (using Windows Explorer, if necessary) to the fastest DVD-RAM, +RW, and –RW media that the drive supported. We began timing when we dropped the files onto the drive's disc icon and ended when the files were completely

written and the disc was finalized and ejected.

Test Five: MPEG encoding/transcoding speed

We recorded the time to create a VCD disc-image from a 30-minute DivX AVI video file. In addition to measuring the performance of the drive's bundled MPEG encoder, this test verifies that the drive's bundled software can transcode DivX content to VCD-compatible MPEG-1 format without loss of audio sync or significant video degradation. If the bundled software did not support DivX, we instead created a VCD image from otherwise identical MPEG-1 source material. In this case, the drive received an N/A for Test Five, and the resulting image was used as input for Test Six.

Test Six: Burning CD-R media

We recorded the time to burn the previously created image to a Video CD, using the highest-speed CD-R media supported.

Test Seven: Ripping an audio CD to MP3 files

We recorded the time to rip a 65:17 audio CD to a set of 14 128-Kbps 16-bit MP3 files on our hard drive. If the drive's bundled software did not include an MP3 encoder, it received an N/A.

Test Eight: Compatibility

We tested the integrity of the video discs created in Tests Two, Three, and Six by attempting to play them in a variety of DVD drives. If the drive being tested could record dual-layer media, we also performed an advanced compatibility test on an additional dual-layer disc, which we burned using the drive's bundled software. The source material used to create this disc was a DVD-Video folder ripped from a particularly complex dual-layer DVD-Video title using the freeware SmartRipper utility.

8X Dual-Format DVD Recorders

May 14, 2004