## This is DrivewAtch™

Applus+ is pleased to introduce DrivewAtch™, a comprehensive solution for electronically scoring, recording, storing, and reporting all elements of the driver's practical examination. Fully equipped to capture audio, video, GPS, OBD, test score, examiner, and applicant data, the portable Tablet PC provides an objective, impartial record of all events, interactions, and vehicle characteristics from the start of the test or pre-test walkthrough through completion.

## The Applus+ DrivewAtch™ Unit ...

**(1) Provides high digital and audio quality;**

DrivewAtch™ captures video up to 640x480 pixels at a rate of 30 frames per second. Using a multidirectional array microphone design, audio capture automatically switches between two of the unit's three microphones (based on screen orientation) for optimal sound acquisition. A video sample on CD-ROM is provided as part of this response.

**(2) Captures the environment inside the vehicle (driver and drive test examiner) and outside the vehicle (streets, traffic, pedestrians, etc., as they relate to the drive test);**

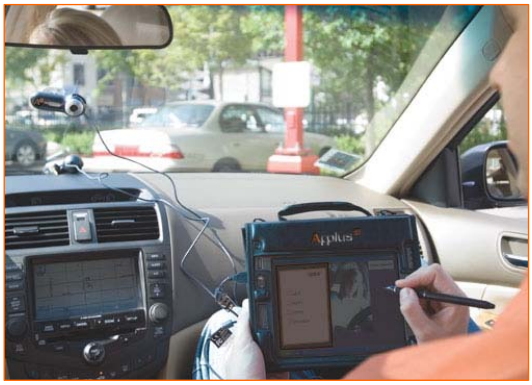
Each DrivewAtch™ unit is supplied with two digital cameras. Using suction cups attached to the cameras, the examiner adheres one to the vehicle's windshield (facing out) to capture the driver's field of view, the other is positioned facing inside the vehicle to record the interaction between the applicant and examiner. Video samples of both views are included on the CD-ROM provided as part of this response.

**(3) Allows test records to be viewed immediately upon conclusion of the drive test;**

DrivewAtch™ stores all its files to a local SQL Server 2005 Express database, so video test records can be selected and played back upon conclusion of a test. DrivewAtch™'s local database can be custom-configured.

**(4) Sends test records electronically;**

Upon completion of each test, DrivewAtch™ electronically transmits the test record to the state's database via wireless LAN or WWAN broadband. The enclosed CD-ROMs include video demonstrating the process of uploading records to the main database.



The Applus+ DrivewAtch™ unit in use. Dual cameras attach to the windshield to record video of the driver's view as well as the vehicle's interior.

A wireless OBD connection transmits data from the vehicle to the DrivewAtch™ portable Tablet PC.


DrivewAtch™ records video, audio, and vehicle conditions (speed, acceleration, etc.) during the driver's exam, providing an objective, indisputable account of the test process.

**(5) Stores test records in a secure location for an extended period of time, accessible only by users with the proper security credentials;**

Although the device generally is configured to send each test record to the central database upon completion of an exam (eliminating the need for local storage unless the transmission fails), the DrivewAtch™ unit's standard SQL Server 2005 Express database can store up to 30 GB of data (upgradeable to 60 GB) to meet the client's local data retention needs.

User authentication fingerprint and/or password-protected login (username + password) is required for access to all DrivewAtch™ records as well as to the test application. Permissions are typically role-based and configured according to client specifications.

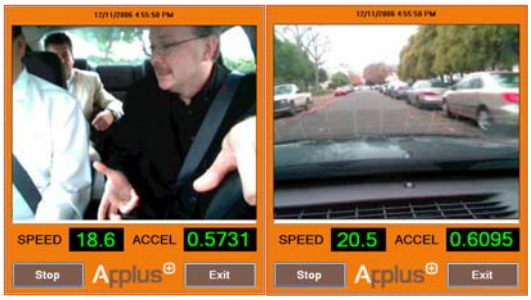
With the Applus+ DrivewAtch™ Reporting Application, proper permissions, and any web-enabled computer, program administrators can use any number of parameters (e.g., by examiner, testing station, applicant name) to search, access, compile, review, print, and export DrivewAtch™'s uploaded, centrally stored test records.

**(6) Provides records that can be authenticated in the event they are produced for litigation purposes;**

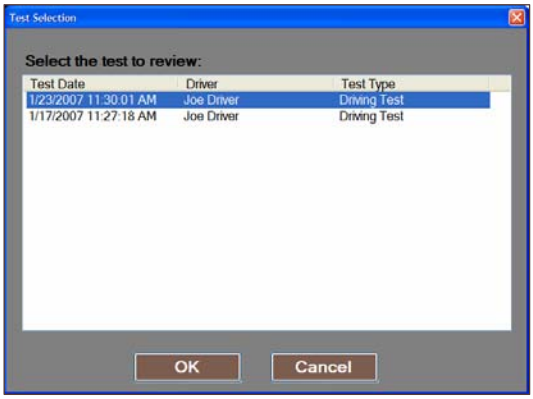
An internal clock captures the date and time for each test record; individual DrivewAtch™ components also apply their built-in date and time coding features to their portions of the test record. For example, DrivewAtch™'s global positioning system (GPS) applies an unalterable date and time code to the GPS portion of the test record, and all captured video will bear a date and time stamp. Examiner information, time-stamped and authenticated by fingerprint scan and/or password-protected login, also becomes part of the test record.

**(7) Prohibits files from being deleted or edited in any manner, providing true and factual records of the drive tests;**

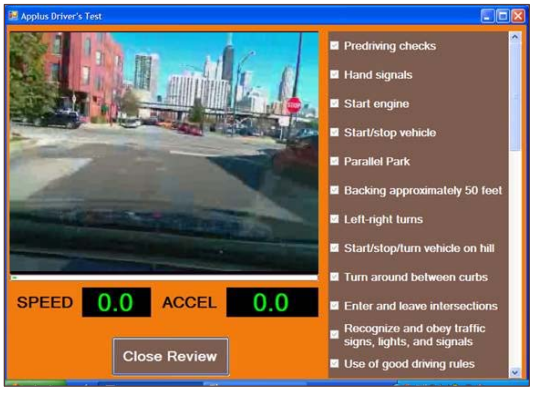
The DrivewAtch™ Tablet PCs can be supplied with a closed operating system to limit end-user access to files. The system boots directly to the DrivewAtch™ application, bypassing direct entry into the operating system and protecting against unauthorized access to files. Windows Plug-and-Play features are restricted and specific key sequences are disabled, thereby only allowing entry into the operating system (and the accompanying ability to alter or delete files) via proper login and access to the Administrative Menu.




Synced with data collected from the OBD connector, video of both the driver (above left) and his view of the road (above right) provides an indisputable record of events.




Reviewing locally stored test records is as easy as "point and click." Simply select the completed test for review from the DrivewAtch™ unit's menu of test records ...




... and DrivewAtch™ displays the completed test, including video, audio, and OBD data, for review.

As an additional authentication method and check against file tampering, checksum may be automatically performed and recorded for each test element and test record. With this solution, a script examines the data for each test element, generating a unique checksum value for each (e.g., audio, video, applicant information, examiner identification); another value is created to summarize the overall test record at the end of the test. Every time a record is accessed, check values are created. If a record has been altered, check values will differ from those tied to the original record, and an alert (via email or browser-based instant messaging) will be sent to notify administrators of record tampering, along with the login information of the user who altered or removed the record.

## References

Although electronic scoring of driver's practical skills exams is a new area of development, the following parties have worked with Applus+ or her sister company Applus+ AutoLogic (developer and manufacturer of DrivewAtch™) on projects using similar technology.

| **Ontario Government – Drive Clean Program** | |
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| **Contact Information** | Jeff Taylor<br>Ontario Drive Clean Program<br>40 St. Clair Avenue West, 4th Floor • Toronto, ON M4V 1M2 • Canada<br>(416) 314 1307 • jeff.taylor@ontario.ca |
| **Description of interactive, enterprise-class mobile application developed and implemented** | Applus+ AutoLogic provided Ontario with a Windows-based application that collects emissions data, stores it locally, and transmits it to a centralized database. Applus+ AutoLogic was responsible for software development, government approvals, documentation, central database communications, and software and product maintenance. The Ontario program includes several hundred cabinet-mounted mobile computers used in garages. Applus+ AutoLogic managed analyzer-modem communications, design printouts, software installation, remote software updates and methods, and troubleshooting. |
| **Snap-On, Inc.** | |
| **Contact Information** | Bob Davis<br>Snap-On, Inc.<br>420 Barclay Boulevard • Lincolnshire, IL 60069-3608 • USA<br>(847) 478 7271 • robert.davis@snap-on.com |
| **Description of interactive, enterprise-class mobile application developed and implemented** | Applus+ AutoLogic designed and created a mobile emissions analyzer for Snap-On, Inc., designing both the hardware and software for this high-volume product. Applus+ AutoLogic was responsible for all engineering and manufacturing of the portable emissions analyzer, which is used in automotive garages around the U.S.<br>The product can be controlled by a PC application that can store data locally or on a corporate network; a Pocket PC product with a local database designed and coded by Applus+ AutoLogic; or MODIS, a mobile diagnostics device running Windows CE.<br>Applus+ AutoLogic has extensive experience writing mobile software applications across platforms and has provided and supported hardware used in the harsh conditions of the automotive garage environment for this Snap-On project as well as many others. |

| Cartek, Inc. | |
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| **Contact Information** | Emilio Banchs<br>Cartek, Inc.<br>6950 East North Ave. • Kalamazoo, MI 49048 • USA<br>(269) 382 5080 • emiliob@cartek.com |
| **Description of interactive, enterprise-class mobile application developed and implemented** | Applus+ AutoLogic designed and implemented software and hardware for emissions testing across South America in partnership with Cartek (Cartek handles sales and service; Applus+ all engineering and development of software and some peripherals). Used for testing and inspecting vehicles in Puerto Rico, Guatemala, Colombia, Ecuador, Chile, and other South American countries, the software has to run on all versions of Windows, as well as on both handheld units and PCs, and accommodate language translation; extensive customer and vehicle inputs; and user interfaces and reporting formats that vary by country. The software also makes extensive use of databases for record storage on both PCs and corporate centralized vehicle inspection networks. More than 500 PC inspection machines operate on this software.<br>Applus+ AutoLogic has managed software design, modifications, releases, installation, and version tracking for the past nine years and is responsible for all aspects of the program, including software development and complete security design for protection against viruses and inspection tampering. Millions of vehicles have been inspected using this software. |

Also of note, Applus+ recently executed a contract with the **New York State Department of Motor Vehicles** (DMV) to develop and implement DrivewAtch™ for use by the state's 170 DMV examiners for 550,000 annual driver's skills tests. Application customization is already underway.

## Contact Information

As an ISO 9001:2000 registered company, Applus+ is committed to client care and constant improvement. With its company-wide Quality Management System, Applus+ strives to not only meet but exceed client requirements by providing excellent customer service, conceptualizing and creating innovative technological solutions, and developing highly qualified personnel through training.

Should California DMV require additional information on the DrivewAtch™ solution, please contact the Applus+ DrivewAtch™ representative:

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# DrivewAtch™

## Applus' Portable Solution for Electronic Driver's Test Recording

### Relevant Technical Specifications

| | |
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| **Form Factor …** | Tablet PC – polycarbonate and magnesium alloy chassis<br>(handheld-PC version also available) |
| **Size …** | 11.65 x 9.64 x 0.74-0.87 inches<br>4.2 pounds (+ 1 pound for cameras) |
| **Processor …** | Intel Core 2 Duo LV L7400 |
| **Operating System …** | Windows XP Tablet PC with Motion Pak - US |
| **Software Architecture …** | Microsoft.NET 2.0 framework;<br>local SQL Server 2005 Express database |
| **Interface …** | Active digitizer pen (no battery required) and touchscreen |
| **Display …** | 12.1-inch SXGA+ High Resolution |
| **System Memory …** | 1GB (2x512MB) 667MHz DDR2 (upgradeable to 4GB) |
| **System Storage …** | 60GB, 1.8" HDD |
| **Integrated Wireless …** | Wireless LAN (802.11a/b/g)<br>WWAN broadband<br>Bluetooth |
| **Power Supply …** | Battery-operated (up to 6 hours per charge)<br>50W universal 3-pin jack AC adapter (100-240V 1.5a, 50-60Hz) |
| **Video Capture …** | Dual digital cameras<br>Up to 640 x 480 pixels at up to 30 frames/second |
| **Audio …** | Multi-directional array microphone design (three microphones) |
| **OBD Connector …** | Wireless |
| **OBD Support …** | All protocols (CAN, VPW, PWM, ISO, KEYWORD, etc.) |
| **GPS Mapping …** | Bluetooth Satellite GPS |
| **Ports …** | 2 USB, DC power in |
| **Security …** | Integrated Fingerprint Reader<br>TCG Trusted Platform Module<br>Universal lock slot<br>ComputraceComplete<br>Motion DataGuard |
| **Safety …** | UL, CUL, TUV (EN/IEC 60950-1 A11/2004) |