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README - Agilent TapeStation software

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## 1 Introduction

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This document provides last minute information and installation advice corresponding to the Agilent TapeStation software.

### 1.1 New Features with TapeStation software revision 4.1.1 (SR1)

- TapeStation Analysis software and Controller software
  - Important fix of an issue in support package content creation for remote support.
  - Neither instrument control nor data analysis is changed in comparison to revision 4.1.

### 1.2 New Features with TapeStation software revision 4.1

- Support for new 4200 TapeStation instrument G2991B
  - TapeStation Controller software for instrument operation allows control of instrument models G2991A (4200), G2991B (4200) and G2992A (4150)
  - 4200 TapeStation instruments G2991B require revision 4.1 or higher
  - Model G2991B (4200) can be operated with 3rd party PCs (alike 4150 TapeStation instrument)
- TapeStation Controller software
  - 4200 TapeStation system G2991B allows software assisted electrode cartridge change by users as part of preventive maintenance
  - Automated change of ScreenTapes from the rack repository is now supported for analysis from tube strips as well as from 96 well-plates for 4200 TapeStation instruments
  - Barcode read stability and resilience for suboptimal prints was increased
  - Camera driver revision check at system start implemented preventing externally introduced issues
  - Tip strip process with improved resilience against electrostatic charge effects
  - Adjusted dialogue for transportation preparation considering new packaging material for G2991B.
  - Failing early in runs yields a file named "StoppedRun\_" with information for optional troubleshooting by support experts
- TapeStation Analysis software
  - Data recorded with different instrument models G2991A, G2991B and G2992A and the same ScreenTape assay are enabled now for comparison context tasks such as overlay and merge into one composite file
  - Run lanes with no electrical current flow detected are labelled in observations
  - Option for export of electropherogram data to .csv files

- introduced
- New demo files introduced
- All data files show upon opening the electropherogram and gel image by default

#### System Diagnosis

- Barcode read test adopted to a new reading algorithm. Test reports one result for the most relevant default reading type.
  - Filter test extended to include an extensive movement test
  - Tip detection test was simplified
  - Camera movement test capabilities extended
  - Log file information extended for support experts
  - The Region and Language Setting test passes only if region format, decimal separator and list separator are correct.
  - Software revision 4.1 is prepared to work with the next upcoming Automated Compliance Engine (ACE) for Compliance Service delivery on the models G2991A, G2991B and G2992A.
- General and Support functionality
    - Updated Agilent Information Center with information reflecting all three TapeStation models G2991A, G2991B and G2992A.
    - Updated User manuals and kit Quick Guides within Agilent Information Center and Help (F1)
    - Updated Help (F1) reflecting all models G2991A, G2991B and G2992A

### **1.3 New Features with TapeStation software revision 3.2**

- Support of TapeStation IQ/OQ compliance services (4200 and 4150 TapeStation systems)
  - Ready for Support of an analytical instrument qualification process with Agilent "Automated Compliance Engine (ACE)" in conjunction with tests built into the TapeStation Controller software.
- Support of the new Cell-free DNA assay
  - Controller Software enables cell-free DNA ScreenTape device recognition and cell-free DNA samples analysis
  - TapeStation Analysis software handles cell-free DNA data files including new features like %cfDNA results and respective %cfDNA region handling
- TapeStation Controller software
  - General usability enhancements
  - Switch between row- and column-wise sample processing
  - Improved report functions: Condensed peak and region table now included. Report exported file: last save-to-location is stored

- Improved sample description import in TapeStation Controller software: recognition of cell descriptors from .csv files
  - Improved barcode read algorithm implemented
  - Improved safety during data saving implemented
- TapeStation Analysis software
  - Assay options includes settings section for new cell-free DNA assay.
  - Region manager improvements: option single-sample-regions, region indicator colour adjustment option, creation of regions beyond sizing limit for genomic DNA and cell-free DNA assay.
  - Switch between row- and column-wise sample review
  - Enable the visualization per tape for RNA assays
  - Increased compatibility with high resolution displays
- General and Support functionality
  - PC-Instrument Communication: Improved connection behaviour of TapeStation systems and USB3-only PCs
  - Save to location for diagnostic test results raw data (\*.lrs files) changed to data folder
  - Improved error handling during needle change: recalibration option provided.
  - Improved user guidance for failing data file creation with recovery from intermediate raw data files (\*.901r).

#### **1.4 New Features with TapeStation software revision 3.1.1**

- General usability enhancements
  - Increased robustness when analysing samples from tube strip holder with two partial ScreenTape devices. This fixes an undesired software termination for 4150 and 4200 TapeStation systems.
  - Increased robustness of automated handling of ScreenTape devices. This mitigates blockages which might happen during unloading of ScreenTape devices in 4200 TapeStation systems.
- Enhanced System Diagnostic functionality
  - The barcode read test for 4150 TapeStation systems was adopted to test only features relevant for its functionality. This avoids a false-fail result for the configuration "blue LED and blue filter" which is not used in applications.
  - The intensity calibration test for 4200 TapeStation systems is adopted to avoid false-fail results coming from a mismatching test procedure.
- Support of future hardware variants
  - TapeStation software revision 3.1.1 provides compatibility to certain future electronic components of 4200 TapeStation instruments.

## 1.5 New Features with TapeStation software revision 3.1

TapeStation software revision 3.1 provides the following enhancements:

- Support for new 4150 TapeStation system
  - TapeStation Controller software for instrument operation
  - TapeStation Controller software is also supported with 3<sup>rd</sup> party PCs for the 4150 TapeStation system, see 2.1.3.
- User Documentation/Agilent Information Center
  - New and updated content
    - Operating instructions for the 4150 TapeStation system
    - Hardware troubleshooting on 4150 TapeStation system
    - Improved 4200 TapeStation system troubleshooting
    - Improved application troubleshooting and good measurement practices
  - Release 4150 TapeStation System Manual
  - Improved 4200 TapeStation System Manual with updated content
  - Updated and improved Quick Guides for TapeStation assay portfolio
- TapeStation Analysis software
  - New export option to include Reagent and ScreenTape LOT number in .csv, .xml and .pdf format
  - Improved error message information
  - Resolution for software crashes upon moving 'Compressed Reporting' within a report.
  - Minor bug fixes and improvements
- TapeStation Controller software
  - 4200 TapeStation Controller software
    - Feature added: runs with two partially used ScreenTape devices for a maximum of 16 samples from tube strip holder with manual feed of the ScreenTape nest (alike 4150 TapeStation instrument).
    - New and improved hardware diagnostic tests
      - Electrode Cartridge Change History
      - Needle Cartridge Change History
      - Electrophoresis Cartridge Connectivity
      - Teach Tapenest-Skew
    - ScreenTape device gripping processes robustness improved
    - Minor bug fixes and improvements

**Note:** The nomenclature for revision identification changed in such way that only major and minor revision are used. Leading letters or leading zeros are skipped from now on.

## **1.6 New Features with A.02.02 SR1**

A.02.02 (SR1) release provides the following enhancements:

- 4200 TapeStation Controller software
  - Minor bug fix in Diagnostic test
  - Minor bug fix in gDNA data evaluation
- TapeStation Analysis software
  - Minor bug fix in reporting

## **1.7 New Features with A.02.02**

A.02.02 release provides the following enhancements:

- 4200 TapeStation software
  - Agilent Information Center with updated content and How-To videos
  - Improved 4200 TapeStation System Manual with updated content
  - Support for Windows 10
- TapeStation Analysis software
  - Compressed Reporting
  - Enhanced robustness of marker peak detection for gDNA assay
  - Enhanced robustness of ladder peak detection for RNA and High Sensitivity RNA assay
  - Improved RNA quantification
  - Minor bug fixes
- 4200 TapeStation Controller software
  - Firmware update is now done within the 4200 TapeStation Controller software. Instrument firmware is automatically detected and updated to the revision required to control the instrument
  - Agilent 4200 TapeStation System Diagnostics as improved Hardware diagnostic tool replaces LabAdvisor
  - Improved Error message information
  - Enhanced robustness of ScreenTape device gripping processes
  - Minor bug fixes and improvements

## 1.8 New features with A.02.01 (SR1)

A.02.01 (SR1) release provides the following enhancements:

- Bug fixes in TapeStation Analysis software
  - Issue in which base pair values on electropherogram scale disappear when an electronic ladder is inserted has been resolved
  - Issue in which an incorrect software version number was displayed in the .docx report has been resolved.
- 4200 TapeStation Controller software
  - Includes new Firmware update tool. Instrument firmware is automatically detected and updated to the revision required to control the instrument
  - ScreenTape device gripping processes robustness improved
  - Transportation lock behaviour improved
  - Error messages improved
- Bug fix in Lab Advisor test suites
  - Intermittent bar code read issues and falsely failed filter tests are addressed
  - Tape handling test was improved

## 1.9 Instrument firmware

The firmware is a program that is loaded onto an electrically erasable programmable read-only memory (EEPROM), thus becoming a permanent part of an instrument. Instrument firmware also known as main firmware provides for example the instrument's robotics functionality. Resident firmware is identical across many Agilent devices and modules and provides very basic communication and memory capabilities as well as limited hardware control. It provides secure main firmware load capability and supportive and safety functions in case the main firmware crashes.

- The latest 4200 and 4150 TapeStation instrument firmware provides various crucial improvements. Executing the instrument firmware update on a TapeStation system is mandatory to operate the instrument with the TapeStation software revision 4.1.1. It is carried out by the TapeStation Controller software automatically if required. It is described in section 4.2 of this document.
- The TapeStation software revision 4.1 was the first revision which updates the resident firmware version for older instruments to the latest and common level.

4200 TapeStation (G2991A) firmware revisions:

Software revision	Instrument Firmware revision
A.02.01	D.01.01 [0064], D.01.02 [0070]
A.02.01 SR1	D.01.03 [0075]
A.02.02	D.02.01 [0080]
A.02.02 SR1	D.02.01 [0080], D.02.01 [0081]
3.1	D.03.01 [0028]
3.1.1	D.03.01 [1031]
3.2	D.03.02 [0002]
4.1, 4.1.1	D.04.01 [0013]

4200 TapeStation (G2991B) firmware revisions:

Software revision	Instrument Firmware revision
4.1, 4.1.1	D.04.01 [0013]

4150 TapeStation (G2992A) firmware revisions:

Software revision	Instrument Firmware revision
3.1	D.03.01 [0028]
3.1.1	D.03.01 [1031]
3.2	D.03.02 [0002]
4.1, 4.1.1	D.04.01 [0013]

Common TapeStation resident firmware (G2991A, G2991B, G2992A)

Software revision	Resident Firmware revision
4.1, 4.1.1	D.07.30 [0005]



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## 2 System configurations

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### 2.1 System Requirements

#### 2.1.1 PC Hardware (minimum requirements)

Laptop or PC configurations only support one single TapeStation instrument to be connected at a time.

The TapeStation software revision 4.1.1 tested requirements are as follows:

Processor:	2.4 GHz or higher
RAM:	Physical: 8 GB, Virtual: 1 GB
Ports:	2 USB ports (USB-2 or higher)
LAN:	One LAN adapter must be present and enabled
Display:	Min resolution of 1024*768 pixels
Hard disk:	80 GB recommended, min. >20 GB of free space

The Agilent TapeStation software was successfully tested to run on the current bundled model HP ProBook 650 G8 (i5-1135G7 (11th gen) processor, a 512GB SSD HDD, 8GB RAM and 15.6" diagonal FHD display (1920 x 1080, slim frame) with Windows 10 Pro 64, 20H2 Version 19042).

The Agilent TapeStation software Rev 4.1 was successfully tested to run on the previous bundled laptops, namely the model HP ProBook 650 G4, G5 and HP ProBook 650 G2. Software Rev 4.1.1 and 4.1 perform exactly the same way in terms of compatibility, hence results are still valid.

#### 2.1.2 Operating System requirements

The TapeStation software revision 4.1.1 has been fully tested and is supported to run on

- Microsoft © Windows 10 Professional 64 bit with **English (US)** language settings

The TapeStation software revision 4.1.1 tested requirements are as follows:

Operating system:	Microsoft © Windows 10 Pro 64 bit Version 20H2 or later
Operating system language:	English (US)
Operating system region settings:	English(US) in default configuration
Microsoft .NET:	4.6.2 or higher
Adobe Acrobat DC:	DC 20.013.20074 (English US) or higher required for reporting
Power Plan settings:	High Performance

For the current HP Probook 650 G8 (Win10Pro Version 20H2) and three previous bundle laptops HP Probook 650 G4 (Win10 Pro 1803), G5 (Win10 Pro, 64 bit, build 1909) and G2. (language settings) the TapeStation software revision 4.1.1 has been subjected to testing without issues.

Microsoft © Windows 7 Professional 64 bit SP1 with **English (US)** language settings, such as for previous bundle laptops HP Probook 650 G1 (4 GB RAM) is not supported any longer. An update of the operating system is required.

No other version of Windows 10 besides the professional edition was tested. The use of Windows 10 education or Windows 10 home is not supported.

English (US) language settings are mandatory. The TapeStation Software requires decimal symbol to be a dot ".", the digit grouping symbol to be a comma "," and the list separator to be a comma "," too. Else malfunction during operation with loss of data is likely. The region parameter "English (United States)" of the operating system Windows 10 has these settings by default. Verify under customized format of numbers the settings.

For test purposes a Windows 10 operating system (Chinese), representing an unsupported non-English (US) operating system, was used to operate TapeStation instruments while having English language packs imported and while changed regional and language settings were active. This scenario yielded an operational system without obvious errors but was not subjected to full validation and renders there for unsupported.

The reporting function in the TapeStation Analysis software requires Adobe Acrobat DC Reader version DC 20.013.20074 or later to be able to view and generate reports. All laptops supplied by Agilent Technologies will have this pre-installed. Reporting to .pdf format is the default, .docx format is supported as well. Those reports must first be saved, then opened in either Microsoft Word or Word Viewer (not provided).

**Note:** Review section "6. Known Problems or Limitations" carefully for any deviation from the default conditions on bundled laptops supplied by Agilent Technologies. Pay attention as well to later changes and additions to established operating systems.

### **2.1.3 Checking System Suitability**

A check of the suitability is required if control of the 4150 TapeStation instrument (G2992A) or 4200 TapeStation instrument (G2991B) with a 3<sup>rd</sup> party computer is desired the following steps should be executed prior to arranging Installation and Familiarization of the system through a service engineer.

1. Install the Agilent TapeStation software Rev 4.1.1 on the respective 3<sup>rd</sup> party computer to check the suitability. See section 3.1.
2. Start the TapeStation Controller software.
3. Select under 'Tools' (cog wheel) the item 'System Diagnostics' and then 'Run Tests'.
4. In the 'System Diagnostic' select the 'Software Installation verification'.
5. Keep test 'Computer Specifications' and 'Software Environment' selected and click the 'Start' button.
6. Review test results.

In case all tests are passed your computer is fulfilling core requirements. There is high probability the computer can be used to operate the 4150 TapeStation instrument (G2992A) or 4200 TapeStation instrument (G2991B) successfully through the TapeStation Controller software. It remains possible that despite of passing the 'Computer Specifications' and 'Software Environment' tests control of the TapeStation instrument is not possible with the respective 3rd party computer. This might become visible only after connection to an instrument.

In case tests failed you might correct respective conditions such as the Adobe Reader. Please also review 2.1.1 and 2.1.2 and the section 6 on 'Known Problems or Limitations' again. If known problems and limitations cannot be overcome or if the computer does not fulfil the minimal required specifications use a different laptop or order P/N G2999AA, a dedicated model tested and fully supported by Agilent.

## 2.2 Compatibility

The TapeStation software revision 4.1.1 contains the Controller software for the 4150 and 4200 TapeStation instruments (G2992A, G2991A and G2991B) as well as the TapeStation Analysis software suitable to analyze data acquired with 2200, 4150 and 4200 TapeStation instruments.

	Instrument			
	4200 TapeStation G2991A	4200 TapeStation G2991B	4150 TapeStation G2992A	2200 TapeStation (all)
TapeStation Controller software	Yes, bundle laptop (P/N G2999AA)	Yes	Yes	No, only TapeStation software A.02.02 SR1 or older
TapeStation Analysis software	Yes	Yes	Yes	Yes
Instrument control with third party PC	Not supported, use bundle laptop (P/N G2999AA)	Yes, see 2.1.3 for System Suitability	Yes, see 2.1.3 for System Suitability	Not supported, use bundle laptop (P/N G2999AA)

### 2.2.1 4200 TapeStation systems

The TapeStation Controller and Analysis software parts of the TapeStation software revision 4.1.1 are compatible with the 4200 TapeStation system G2991A, G2991B.

Operation of a 4200 TapeStation instrument G2991A with the TapeStation Controller software is only supported on bundled laptops (P/N G2999AA) provided by Agilent Technologies with the 4200 TapeStation system.

Operation of a 4200 TapeStation instrument G2991B with the TapeStation

Controller software and execution of the TapeStation Analysis software is supported on bundled laptops (P/N G2999AA) provided by Agilent Technologies with the 4200 TapeStation system as well as on third party computers, which meet requirements described in 2.1. For checking suitability of 3<sup>rd</sup> party computers see 2.1.3.

Optionally the TapeStation Analysis software can be installed without the TapeStation Controller software on third party computers for data review (as outlined in 3.1). Third party PCs must meet requirements described in 2.1.

### **2.2.2 4150 TapeStation system**

The TapeStation Controller and Analysis software parts of the TapeStation software revision 4.1.1 are compatible with the 4150 TapeStation system. Operation of a 4150 TapeStation instrument with the TapeStation Controller software and execution of the TapeStation Analysis software is supported on bundled laptops (P/N G2999AA) provided by Agilent Technologies with the 4150 TapeStation system as well as on third party computers, which meet requirements described in 2.1. For checking suitability of 3<sup>rd</sup> party computers see 2.1.3. In any case TapeStation Analysis software can be installed (as outlined in 3.1) optionally without the TapeStation Controller software on third party computers. Third party PCs must meet requirements described in 2.1.

#### **IMPORTANT:**

Users of both the 4200/4150 TapeStation instruments on the one hand and 2200 TapeStation instruments on the other hand, must operate and control instruments from separate laptops.

If any of the three instrument types, the 4200 and 4150 TapeStation instrument (G2991A, G2991B, G2992A), are alternately connected to a laptop ensure that only one instrument is connected at a time. When swapping two instruments give 1 minute time prior to connecting alternative one.

### **2.2.3 2200 TapeStation system**

The TapeStation software revision 4.1.1 does not provide a compatible controller software for operating the 2200 TapeStation instrument. If TapeStation software Rev 4.1.1 was installed accidentally, please uninstall and downgrade it as outlined in sections 3.2 and 3.3. Install the latest software revision for operating the 2200 TapeStation instrument A.02.02 SR1. It can be downloaded from the Agilent Technologies website:

<https://www.agilent.com/en/promotions/2200tapestation-sw>

Please refer to the respective ReadMe.pdf for further installation information.

The TapeStation Analysis software delivered with the TapeStation software revision 4.1.1 supports data analysis of files created with a 2200 TapeStation instrument. It can be installed optionally without the TapeStation Controller software on third party computers (as outlined in 3.1). Third party PCs must meet requirements described in 2.1.

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### 3 Software Installation and Setup

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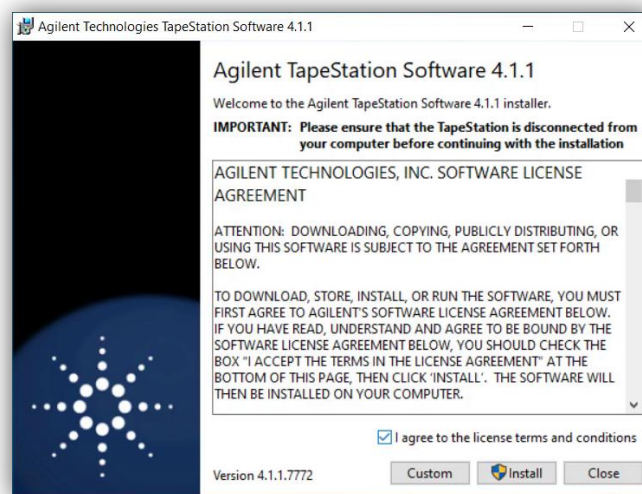
#### 3.1 Installation Instructions

The TapeStation software installation program 'Setup.exe' is a Microsoft Windows application. You must have Windows 10 Pro 64 bit including latest updates installed prior to installing the TapeStation software.

To install the TapeStation software, perform the following steps:

**IMPORTANT:** Ensure that the TapeStation instrument is **NOT** connected to the laptop for installation.

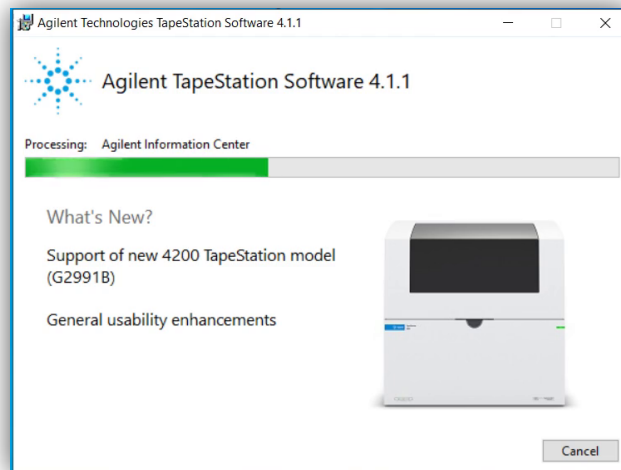
1. Start Windows.
2. Before installing please make sure you have administrative rights to install the software on your computer. You need to have an account with **administrative rights** to successfully install all required components. The default account for bundled laptops is "admin" the password is "3000hanover".
3. Close all running programs, including all instances of any TapeStation software subprogram.
4. Insert the installation USB flash drive (original item shipped with the system) into your PC or download the installation program from the following link:  
<https://www.agilent.com/en/promotions/tapestation-sw>
5. Select the installer file for TapeStation software 'Setup.exe'.
6. If a Windows security message appears, select 'Yes', to allow the program to make changes on the computer.
7. When the following window appears select 'I agree to the license terms and conditions' then click 'Install'.



**Note:** Select 'Custom' in case you wish to install only the TapeStation Analysis software, i.e. without the TapeStation Controller software, to an additional PC. Please see 2.2 for further compatibility details.

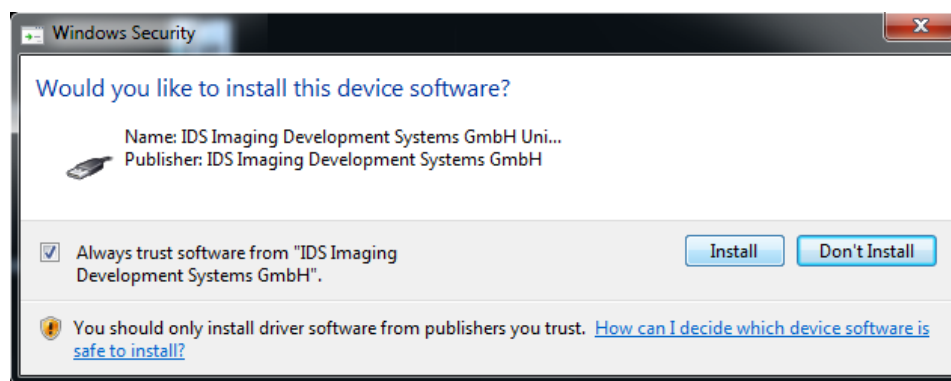
**Note:** Installation of the TapeStation software revision 4.1.1 is only possible to drive C:\. Installation to any other drive is not supported. Hence no options are given.

Allow the TapeStation software installer to install all required components:

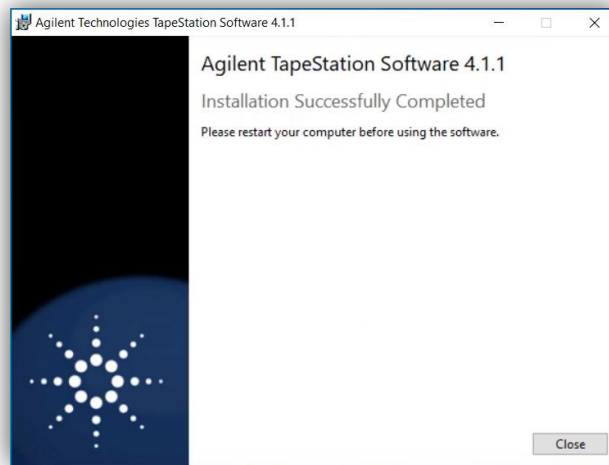


**Note:** If installing Windows components such as .NET framework for the first time, the TapeStation software installation may take some time.

8. Windows may display a security message asking if the user wants to install specific device software. Select install to continue.



9. Once the TapeStation software has been successfully installed, you will see the following window. Click 'Close' to finish the installation.



10. Adobe Acrobat DC 20.013.20074 (English US) or higher needs to be installed. It is required for reporting. Please start this software once and make it default viewer for pdfs.

11. Re-start the laptop to ensure successful software installation.

12. After restarting the laptop start the three parts by double clicking the desktop icon of Controller and Data Analysis. This first start finalizes the software registration from the operation system point of view.

**Note:** Perform a reboot the laptop and start Controller and Data Analysis software of prior to the first use in experimental runs in order to apply all system parameter.

Please check section 3.6 Integrity verification of the setup file, 3.5 Support Installers and 6 Known Problems or Limitations if you encounter problems during installation.

### 3.2 Uninstall Instructions

If after installing the TapeStation software, you find it necessary to remove the software from your computer, perform the following steps:

Uninstall instructions for Windows 10:

1. Click the Windows Start Icon and got to "Settings"
2. Under Windows Settings select "Apps"
3. Under "Apps&features" highlight the TapeStation software
4. Click on the 'Uninstall' button to uninstall the TapeStation software.

Recorded data files and hardware diagnostic files are not deleted during an uninstallation.

Further files which are often not directly accessible to the user are left untouched in folders like local AppData, ProgramData and Program Files (x86) when uninstalling the TapeStation Software. This maintains certain information for next installations.

If you encounter problems whilst upgrading the TapeStation software, please remove the existing TapeStation software installations. If this does not resolve the installation issues, please use the tool contained in the link below or set up the laptop with recovery media.

<http://support.microsoft.com/mats/Program Install and Uninstall/>

### 3.3 Downgrade Instructions

It is recommended to operate the TapeStation systems with the latest software and firmware revision. A downgrade is not recommended.

**Note:** It is not possible to open files which were created or modified with the TapeStation software revision 4.1.1 with any older version of the software.

To compare older and the newer versions of the TapeStation software install them to separate PCs.

In order to return to a previous version of the TapeStation software, perform the following steps:

1. Un-install the existing TapeStation software revision as instructed in Section 4.1.1.
2. Reboot the system when instructed.
3. Install the older TapeStation software revision.

**Note:** Typically, an older TapeStation software revision operates the instrument with older main firmware which will be subsequently downloaded when the next connection to the instrument is established. Dialogues similar to '4.2 Updating Firmware on the TapeStation systems' will appear during such downgrade. The resident FW will not be downgraded.

### 3.4 Reimage of Operating System

**Note:** If you are re-installing from the provided bundle image CD or USB flash drive, please ensure that Windows Updates are checked for and up-to-date.

Prior to reimaging you should save your recorded data files to another location. The default location for recorded data files is:

C:\Users\admin\Documents\Agilent\TapeStation Data

Prior to reimaging you should save diagnostic data from your system. See chapter "Collecting Troubleshooting Information" in the system manual. It is highly recommended to generate a set of internal log files, diagnostic information and



result files from the past Instrument Diagnostic for any further support processing.

**Note:** With reimaging your system loses any customization in the SW you might have done. Any ScreenTape device information is erased with the internal database. Subsequently any partially used ScreenTape device cannot be used properly on the system. Please discard them to avoid confusion. In case reimaging of the operating system is required, please use the bundle image CD or USB flash drive provided with your laptop shipment.

1. While the laptop is turned off:
  - insert the USB flash drive (HP Probook G4, G5 or G8)
  - insert the CD (HP Probook G2) to the drive or
2. Turn the laptop on and press the 'Esc' key repeatedly until the HP Startup Menu appears.
3. In the Boot Menu (F9) choose:
  - for HP Probook G4 / G5 / G8 <UEFI ... USB Disk ... > to continue booting from the USB flash drive.
  - for HP Probook G2 < UEFI ... DVDRW ... > to continue booting from the CD.
4. Save new settings and continue booting from the media.
5. The reimaging procedure takes time and will take place
  - with a Windows command prompt screen with Agilent recovery media information for HP Probook G4/G5/G8. Type "ApplyImage" and press 'Enter' upon request. Agree to create a recovery partition. Depending on the individual hardware you are requested to enter "SSD" and "1" or "2" to create two partitions (C:\ and D:\ (default)) or one (C:\ )  
Close the reimaging dialog after its finalization by typing "exit" to reboot.
  - with Norton Ghost for HP Probook G2. Please type 'Full' and press 'Enter' upon request. Close the reimaging dialog after its finalization by typing "wpeutil reboot".
6. To fully set up the operating system you will have to create an user account with password. The default user account for Agilent provided laptops is "Admin" with Password "3000hanover".
  - For HP Probook G4/G5/G8 you might use the Agilent default user account "Admin" with password "3000hanover".
  - For HP Probook G2 you will have to create a different user such as "Admin2" temporarily as "Admin" is already with in the reimaging.

After the successful re-image you will need to perform the following actions:

1. Apply any Windows 10 updates available. It is recommended to install all security updates available. Ensure virus protection is up to date prior to downloading other items.
2. If using a HP ProBook 650 G1 and Recovery Disc G1030-61014 at least update "KB3033929 - SHA-2 signing and verification functionality" must be installed. The Security update can be downloaded from the Microsoft webpage <https://www.microsoft.com/en-us/download/details.aspx?id=46148>
3. Turn off instrument or physically disconnect the USB cable between Instrument and PC.
4. Install the current version of the Agilent TapeStation software, which can either be installed from the USB flash drive provided with the shipment (instructions see 3.1) or downloaded at: <https://www.agilent.com/en/promotions/tapestation-sw>

**Note:** The laptop and the TapeStation instrument need to be disconnected during software installation.

5. Adobe Acrobat DC 20.013.20074 or higher needs to be installed. It is required for reporting. Please start this software once and make it default viewer for pdfs.
6. Perform a reboot the of laptop. Please start the TapeStation controller and Data Analysis software once prior to the first use in experimental runs in order to apply all system parameters and to finalize the installation successfully.

### **3.5 Support Installers**

While installing and bringing the TapeStation software into service, it might become necessary to update co-installed software components of your laptop such as:

1. Adobe Reader DC 20.013.20074 (Report printing)
2. .NET Framework 4.6.2 (Fundamental software functionality)
3. Microsoft SQL Server Compact 4.0 (Database functionality)
4. FTDI Virtual Com Port Drivers VCD 2.12.28 (USB serial converter)

You will find relevant off-line installer on the installation medium in the "Support Installer" folder.

A bundled laptop purchased with a TapeStation system, the tested and fully supported by Agilent standalone laptop (P/N G2999AA) or a laptop connected to the web which underlies automated updating typically does not require manual installation/updating of these components.

### 3.6 Integrity verification of the setup file

Compare published and generated hash checksums to verify the downloaded file is unmodified and intact on your laptop. Check the TapeStation software download page of [Agilent.com](http://Agilent.com) for developer provided SHA1 or MD5 hash checksums. Under Windows 10 the command-line program "Certutil" is installed as part of Certificate Services. It allows to generate the cryptographic hash over the downloaded .zip file which includes the setup file, e.g. residing in C:\Temp by the following steps:

1. Open the command prompt.
2. Type "certutil -hashfile C:\Temp\TapeStation\_Software\_4.1.1.zip MD5".
3. Press enter and compare values.

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## 4 Getting Started

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### 4.1 Connecting your TapeStation instrument

Start working with your system after the following steps:

1. Turn on the laptop. Have the TapeStation software (Controller and Analysis) installed (section 3.1) but not open.
2. Physically connect the TapeStation instrument and the laptop using the supplied USB cable.

**Note:** Only use the supplied USB cable. Using third party USB cables might cause communication problems.

3. Turn on the TapeStation instrument and allow system to initialize.
4. Start the TapeStation Controller software. It will detect if either a 4150 or a 4200 TapeStation instrument is connected and a connection establishes automatically.

**Note:** If the software does not connect to the instrument,

- Please power cycle the instrument and the laptop, wait until both is booted or started and finally re-start the TapeStation controller software.
- If necessary, change physical USB port connections. Please allow sufficient time between connections for the drivers to be re-installed, this can take up to a minute. Windows will notify you once the drivers are successfully installed for a port which wasn't used before.
- Please read in the Agilent Information Center about Troubleshooting

Instrument Communication. Especially sections on Instrument and Laptop, USB connection and the Windows Device Manager are of interest.

Whilst connected to the instrument, please avoid making any changes to the laptop configuration or any settings available through the control or settings panel. This can interrupt the run and affect results.

For users of both, the 4200 and 4150 TapeStation instruments, ensure that only one instrument is connected at a time to a laptop.

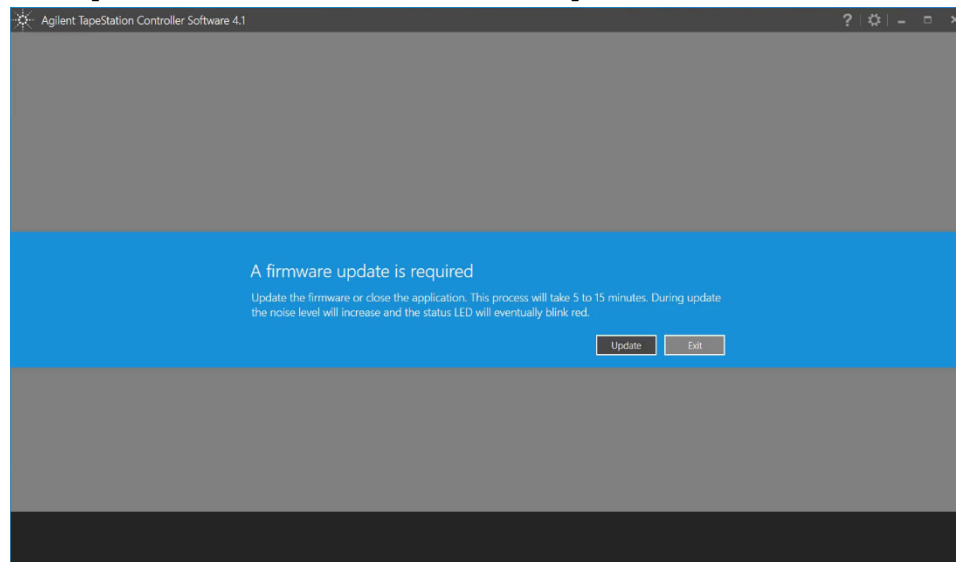
## 4.2 Updating Firmware on the TapeStation systems

At the next connection after updating the TapeStation Controller software from revisions older than Rev 4.1.1 the TapeStation Controller user interface will notify you about outdated firmware residing on the instrument and offers to start the firmware update process. See below exemplary images for an update of a 4200 TapeStation instrument.

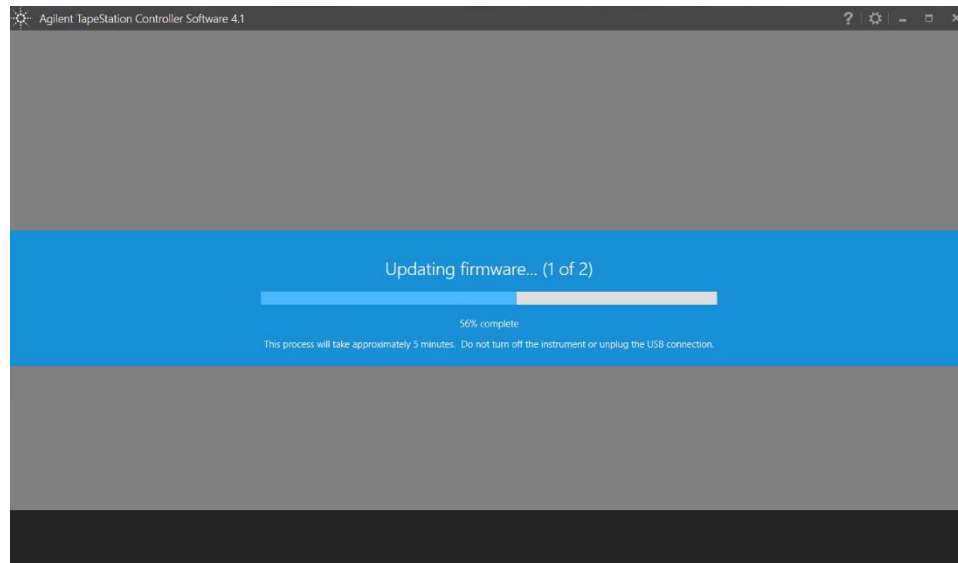
Typically, two parts, first the resident firmware (1 of 2, 5 min duration) and second the main firmware (2 of 2, 10 min duration), are loaded to the instrument. In case the resident firmware was already updated earlier it is not reloaded and dialogs will differ slightly.

**Note:** The TapeStation Controller software will not be able to communicate with this TapeStation instrument until the entire firmware update has been completed.

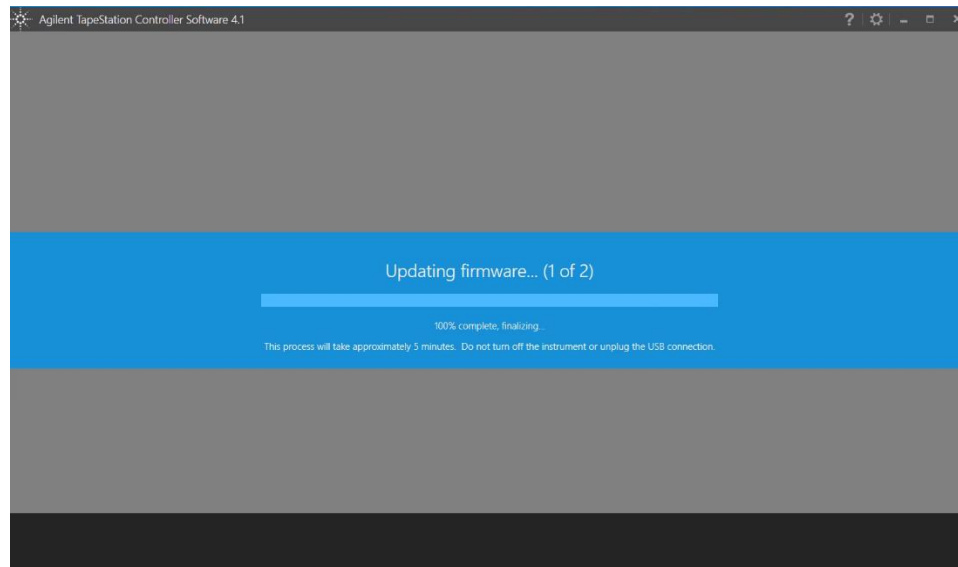
1. Click on 'Update' to start the firmware update



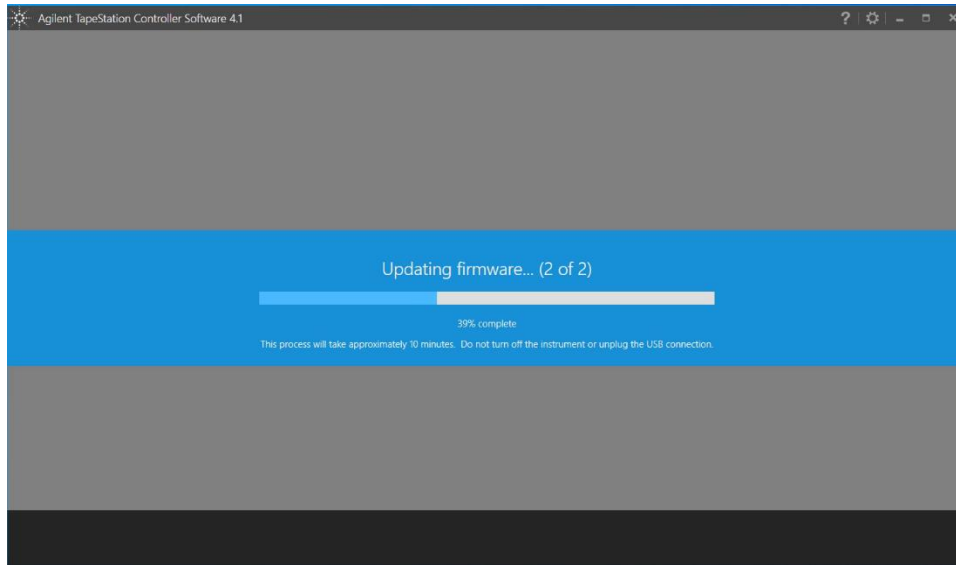
- The instrument will start to have a higher sound emission from the fan as the connection is established and the resident firmware which is part 1 of 2 items is loaded.



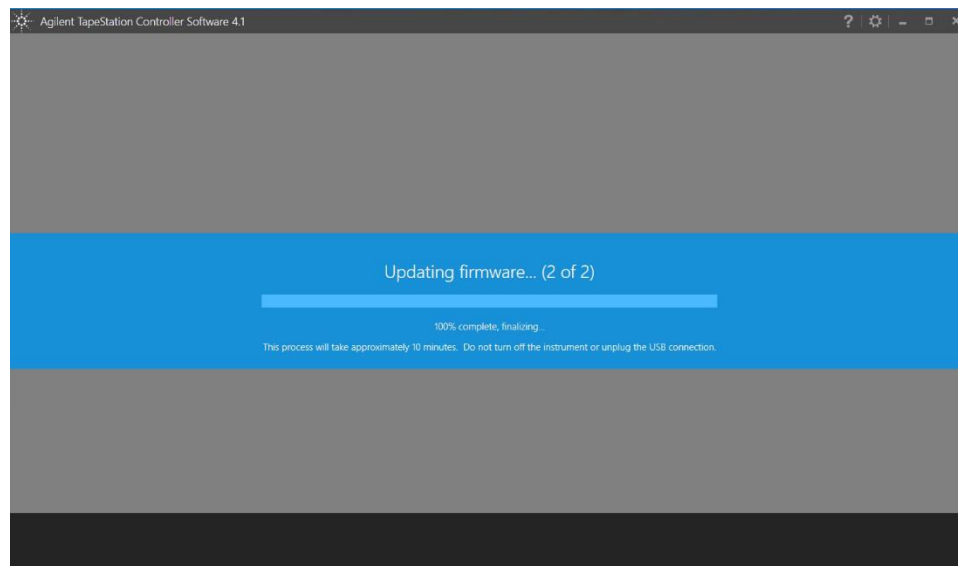
- Completion of the resident firmware download is indicated



- Next the main firmware will be loaded to the instrument. The fan continues to emit sound and the status LED starts blinking red as the part 2 of 2 is transferred.



5. Do not disturb the download process as the instrument will not be operable until this is finalized



6. Allow the firmware download to finalize. The standard TapeStation Controller software User interface will become accessible automatically

**Note:** Relevant for the 4200 TapeStation instrument only: After a firmware upgrade from revision 'A.02.01' to Rev 4.1.1 a subsequent needle change with a new needle cartridge (P/N 5067-5783) is required to ensure full performance. Upgrading from other revisions does not require this needle change procedure.

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## 5 Getting Help

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### 5.1 Using Offline Help

The Agilent Information Center (AIC) with full information on instrument and software functionality along with user documentation and troubleshooting advice is accessible from the shortcut on the desktop, from links within the F1 help or from links within the TapeStation software. It can be found in the AIC by clicking on the button labelled 'Agilent Information Center' in the TapeStation Analysis Help menu (found in the 'File' menu), or from the 'Tools' (cog wheel) drop down in the TapeStation Controller software.

In addition, the Agilent TapeStation software's online Help system is compatible with the Windows Help subsystems. To access the Online Help press 'F1', or click on the question mark on any TapeStation Analysis software screen. Help can also be accessed from the TapeStation Analysis software 'File' menu, by selecting 'Help'.

**Note:** Tailor the AIC to display content for the 4150 (G2992A) and/or 4200 (G2991A/G2991B) TapeStation instrument by clicking on 'Instruments/Products' tab and check the desired box. Additionally, needed to operate and maintain the instrument can be displayed in local language. This selected content. Change the language by clicking on 'Settings' (cog wheel). Select in the General tab your desired content language and click 'OK'.

### 5.2 Getting Support

Agilent Technologies is committed to provide a reliable, high-quality product that is easy to use.

#### *Documentation:*

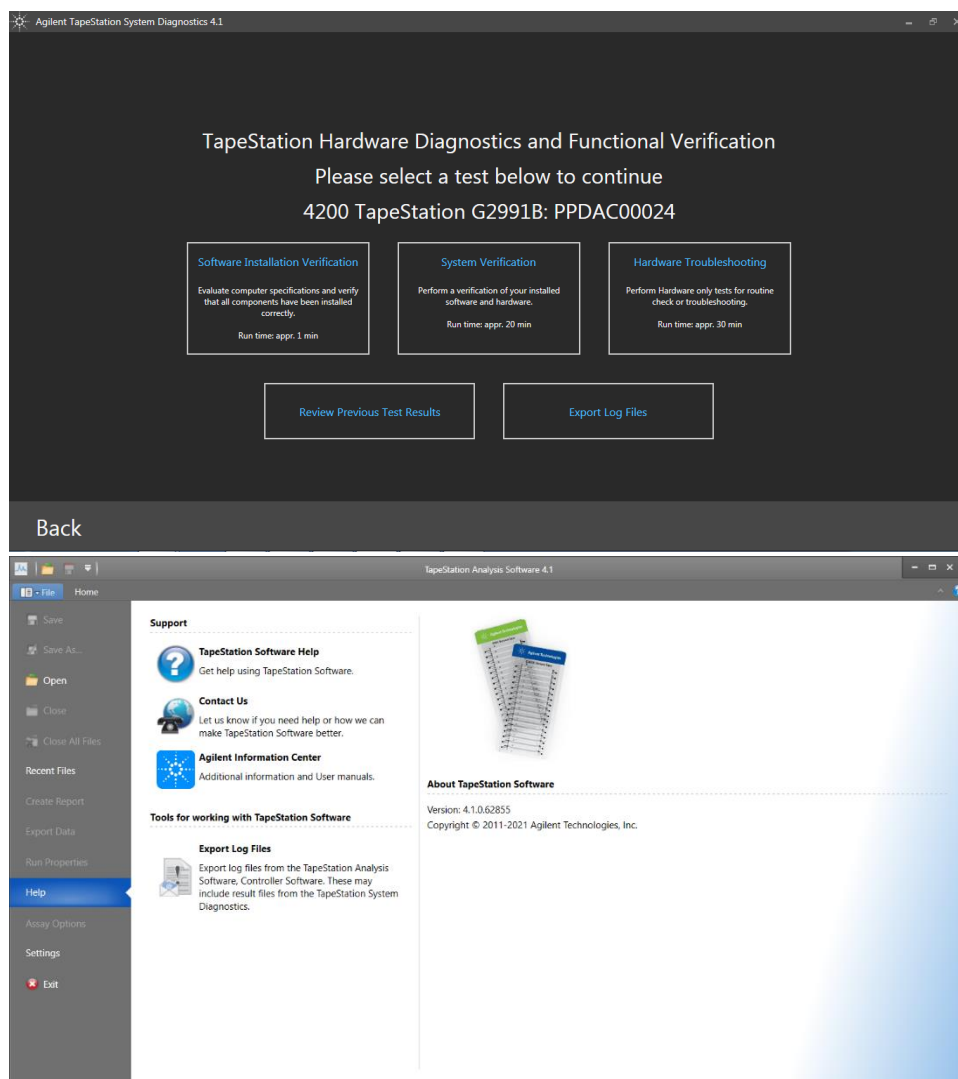
For in-depth Agilent TapeStation system information, refer to the Agilent Information Center or the respective System Manual supplied electronically with your TapeStation software package and available online through [www.agilent.com/genomics/tapestation](http://www.agilent.com/genomics/tapestation).

#### *Customer Support Team:*

Please contact your local Agilent Technologies Customer Care Center to get support on Agilent TapeStation questions. For contact details please visit the following web page: [www.agilent.com/chem/contactus](http://www.agilent.com/chem/contactus).

In any communication with the Agilent TapeStation support team regarding a problem with the Agilent TapeStation system, please clearly state the following:

1. Your name, address, e-mail address and telephone number
2. The product name and version number and the serial number of your instrument.
3. Assumed hardware issues: run the System Verification from the System Diagnostics. Results of tests will be automatically included in a Log File, see below.
4. Assumed application issues: For samples describe source, preparation and expected result. Send the data file and reagent lot information. This is best supplemented by the Log File.



Generation of diagnostic information for remote support with the System Diagnostics tests suits from the Agilent TapeStation Controller > Cog wheel >



System Diagnostics > "System Verification". With "Export Log Files" from within the Diagnosis dialog or alternatively from the help menu of the TapeStation Data Analysis software you can collect log files. See also "Collecting troubleshooting information" in the user documentation.

Log files contain internal communication log files generated by your TapeStation system, diagnostic information and result files from System Diagnostics. This set is provided as a .zip file on the desktop to be sent out to Agilent technical support experts. Be aware that this package does not include data files, experimental information or sample information. To describe an application issue completely, you need to collect and compile this information in addition.

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## 6. Known Problems or Limitations

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1. Known problems in the software product are listed in a Software Status Bulletin (SSB) document which is available on Agilent.com. The SSB is derived from known problem reports which result from user problems that have been classified as documentation problems or software defects.
2. TapeStation installer can be downloaded from the Agilent web site and are of comparably large size. Occasionally truncated downloads were reported. Please see the file size information noted on the download page and confirm the size of an actual download. Optionally verify the integrity of the setup file by comparing the SHA1 or MD5 hash checksums (see section 3.6).
3. 4200 TapeStation instruments with a Serial number greater than DEDAA03000 require a TapeStation software revision 3.1.1 or higher for technical reasons. With lower software revisions a permanent camera connection error will happen (camera driver). Older 4200 TapeStation instruments with a Serial number below DEDAA03000 might come with documentation or are labelled to also require revision 3.1.1 or higher for the same reason.
4. In case the new pierce needle was transferred to the instrument, but the automated calibration fails, the system shows dialogs which help to correct this. This series of messages and corrective action cannot be bypassed but need to be addressed prior to next analysis.
5. For computers that do not have an original US English Operating system (the base language) the test item System Default Language might fail. This happens although the US-English language pack is installed, and number formatting is set to the correct status. The failure indicates an untested condition with regards to the anticipated setup conditions under which the product was verified and validated to meet their functional and performance specifications and release criteria before release to shipment. See 2.1.2 for comments on non-US English operating systems.
6. No file or only a partial file was created for some TapeStation systems with wrong language and number format settings on laptop. Please see section 2.1.2 Operating System requirements for mandatory settings for decimal symbol, the digit grouping symbol and the list separator.

8. Opening hardware diagnostic files (\*.lrs, residing in ... \Documents\Agilent \TapeStation Data\Diagnostic Files) by double clicking to open them might be hampered when using the TapeStation software for the first time after its installation. Please start each part of the software once after installation. This step finalizes the installation from the operating system and enables all functionalities.
9. Agilent Technologies recommends users to not install additional software applications onto laptops containing the TapeStation Controller software. The standard 2100 Expert software is supported for co-existence on the same PC for data analysis but not supported for co-execution of data acquisition. Co-installation of TapeStation software A.02.02 SR1 or earlier for 2200 instrument control is not possible.
10. A specific malfunction during the start of the TapeStation Controller or Analysis software occurs. Eventually Microsoft .NET component was corrupted in the course of installation or uninstallation of Agilent 2100 Expert Software.  
E.g. The 2100 Expert software with security pack installed is generally not supported for co-existence on the same PC. In such case even uninstallation of the security pack is not sufficient. If a PC with this software is rededicated to be used with TapeStation software a reimaging of the system is entire system is required.  
For administrators and IT experts the following work-around might be applied:
  - 1.) Copy the "machine.config" from the first directory [C:\Windows\Microsoft.NET\Framework64\v4.0.30319\Config]
  - 2.) Remove and backup elsewhere the "machine.config" file from the second directory [C:\Windows\Microsoft.NET\Framework\v4.0.30319\Config]
  - 3.) Replace the "machine.config" in the second folder by a copy from the first directory.
11. The use of other USB devices whilst using the TapeStation instrument is limited to devices of the class 03h (Human interface device (HID)), such as printers, keyboards or mice. Any other USB devices should not be plugged into the laptop while the TapeStation instrument is running. The imaging module in the TapeStation system is a high-resolution device that can utilize the entire bandwidth of the USB link whilst imaging. Use of other USB devices at the same time can cause timing issues with the imaging module that will lead to failed data acquisition or loss of camera connection.
12. The use of USB hubs, docking stations or converters from USB Type C or any micro-USB type to USB B is not supported and is partially known to cause instrument communication issues.

14. It is recommended to occasionally turn off the TapeStation instrument and reboot the laptop as a general precaution to prevent unexpected behaviour. Beyond clearing the laptops RAM and buffers a full shutdown of the system during prolonged idle time slows the wear of components, like the cooling fan and hard disk.
15. The built-in anti-virus capabilities of Windows 10 and Symantec Endpoint Detection do not affect the TapeStation software functionality to best of our knowledge. Any TapeStation executable comes with a trusted code signing certificate to prevent false positive detection by antivirus software. Sporadically, users report certain Antivirus software (e.g. Avast Antivirus) are triggered by the TapeStation Controller or Analysis software. As a consequence, the TapeStation Analysis software might be unable to launch automatically after a run, the data file and run data might be lost.
16. Installation of the IDS software suites like uEye Cockpit studio or IDS Camera Manager is known to cause issues.
17. During the start of the software, the presence of the correct camera driver of a specific revision is checked. A relevant error with instructions is given by the TapeStation Controller software. Re-install the TapeStation Software and ensure that the instrument and any other external camera is disconnected. This error message and its corrective action cannot be bypassed.
18. Matrix42 package management tool is not supported. It creates compatibility issues with the TapeStation software when deploying shared components, namely Adobe Acrobat.
19. Software package management tools can cause compatibility issues. They are supported on best effort base only.
20. The installation of TapeStation software to virtual machines or emulated operating systems is not supported.
21. The use of remote desktop application is not supported. For certain applications issues were reported.
22. Do leave at least one LAN adapter enabled on the laptop otherwise the TapeStation Controller software stops runs prematurely. LAN associated MAC values are required for internal references.
23. For highest safety ensure that all data files are stored to a local folder. Network connection can be lost or fluctuating during file export resulting in data loss. Saving data to cloud storage locations is not supported.
24. Avoid switching users or logging off the user account in Windows while the TapeStation software is turned on. Logging off will terminate the application and cause potential data loss. It is recommended to either use a single universal account for the analysis or always log off after running the TapeStation software.

25. Laptops with operating system Windows 7 might have outdated .NET framework versions which prevents the Software from starting. The required version is requested though a popup window. Please update online or download an offline installer for this component, see section 3.5. Note: Windows 7 is not supported any longer.
26. If you encounter problems whilst installing or upgrading the TapeStation software package, please remove existing TapeStation software installations. If this does not resolve the installation issues, please use the tool contained in the link below:  
<http://support.microsoft.com/mats/Program Install and Uninstall/>
27. The TapeStation software is tested with a screen DPI of 100% to 200%. If the screen DPI is set any higher, problems with images can arise. For example, problems are assumed to manifest in the report printing.
28. Running the TapeStation software with power saving settings enabled can negatively affect the communication of instrument and the connected laptop. It is recommended to use Power Plan settings: High Performance which are enabled by default in bundled laptops.
29. Running the software Installation Verification tests within the Agilent System Diagnostics while the laptop is running on battery can cause the 'CPU Information' test to fail. Re-executing this test with a power cable plugged in will yield a passed test.
30. Eventually the TapeStation Controller software shows errors at its start-up and while connecting to the 4200 TapeStation instrument. These errors are often related to USB connection issues of the camera inside the instrument to the USB-system of the laptop. Revert USB-ports to be exclusively of "legacy type" (USB 2) in the BIOS of HP Probook G1 laptops. Other laptop bios, such as the HP Probook G2, lack this option.
31. Support for older TapeStation software products are not available. Users of the 2200 TapeStation instruments must ensure a separate laptop is used for instrument control with its specific TapeStation software A.02.02 SR1. 4200 TapeStation systems and 4150 TapeStation systems can both be operated with the same TapeStation software Rev 4.1.1.

33. Agilent Information Center: Wrong proxy configuration disables printing and blocks content from being displayed. The AIC uses local IP addresses for dissolving hyperlinks and for printing content. If your Operation System is setup to use a proxy, and if this proxy is used for local addresses, you will not see any content. Also, printing of content will not work.

Suggested Workaround:

1. Search Windows for "Configure Proxy server"
  2. In the appearing window, click on the button "LAN settings".
- In the appearing window, check if you are using a proxy server.

If you are in any doubt please contact your system administrator now. If you do and you use Win10, enable the checkbox "Don't use the proxy server for local (intranet) addresses".

If you do and you use Win7, enable the checkbox "Bypass proxy server for local addresses".

If you do not want to enable the checkbox, then add a proxy server exception for 127.0.0.1:8008.

34. Adobe might report a fatal error 'Acrobat failed to connect to a DDE server.' The Agilent TapeStation software makes use of the Acrobat Reader but is not affected by this error. Please make Adobe Acrobat your default viewer for pdfs and restart it after installation. Allow eventually updates through an internet connection.

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**End of Readme**

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