



Agilent G5761A SureScan Dx Microarray Scanner System



Instructions for Use, USA

October 2017

For In Vitro Diagnostic Use

Rx only



Agilent Technologies

Notices

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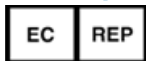
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This guide applies to the Microarray Scan Control Software 9.1.5 or higher until superseded.

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CAUTION

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WARNING

A **WARNING** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a **WARNING** notice until the indicated conditions are fully understood and met.

SureScan Dx Microarray Scanner System

Intended Use:

The SureScan Dx Microarray Scanner system, consisting of SureScan Dx Microarray Scanner with autoloader and Agilent Microarray Scan Control software, is intended to measure fluorescence signals of labeled DNA and RNA target hybridized to microarrays.

Indications for Use:

The SureScan Dx Microarray Scanner system is indicated for use in a clinical laboratory environment when measuring fluorescence signals of labeled DNA and RNA target hybridized to microarrays used as part of a validated diagnostic assay.

Special Condition for Use:

For use with separately cleared microarray assays.

Limitations for Use:

The SureScan Dx Microarray Scanner system has been validated for use with Agilent G3 Gene Expression and Cytogenetic microarrays.

Intended User:

The SureScan Dx Microarray Scanner is intended for use by trained laboratory professionals working in a clinical laboratory environment.

Notice:

This manual is intended as a resource guide only. Each laboratory must establish their own operational protocols and procedures in accordance with local regulations and the requirements of the validated diagnostic assays they intend to perform.

Software Security:

The SureScan Dx Microarray Scanner System is an in vitro diagnostic medical device.









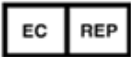

The SureScan Dx Microarray Scanner System is intended for use in an environment in which system access is controlled by persons who are responsible for the content of electronic records that are on the system.

The Health Care Organization (HCO) where the SureScan Dx Microarray Scanner System is installed is responsible for maintaining system security on computer systems used with the SureScan Dx Microarray Scanner and Scan Control software.

The SureScan Dx Microarray Scanner and Scan Control software are clinical laboratory tools appropriate for use with computers and networks that meet all relevant security requirements for Electronic Protected Health Information (EPHI). Applicable administrative, physical, and technical safeguards must be in place prior to the installation and use of the CytoDx application.

- Computer systems must be physically and electronically protected
- HCO policies must be in place allowing only authorized users access to these systems
- An endpoint security solution must be installed on these systems that includes Virus, Spyware, Proactive, and Network threat protection
- Systems must be set to automatically secure themselves after periods of inactivity
- System and application security logs and audit trails must be monitored and evaluated against potential threats

SYMBOLS LEGEND

	Catalog / code number		Temperature limitation
	Manufacturer		Consult Instructions for Use
	Use by		In Vitro Diagnostic Medical Device
	For IVD performance evaluation only		Contains sufficient for <N> tests
	Authorized representative in the European Community		Caution
<p>Rx only</p>	Federal law restricts this device to sale by or on the order of a licensed healthcare provider		

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This chapter provides a general introduction to the SureScan Dx system.



Microarray Analysis

The SureScan Dx Microarray Scanner is part of the SureScan Dx Microarray Scanner system solution from Agilent Technologies. The SureScan Dx Microarray Scanner is a laser-induced fluorescence scanner designed to read microarrays printed on Agilent slides.

The SureScan Dx scanner measures the fluorescence intensity of labeled sample nucleic acid (DNA and RNA) bound to microarrays. Its ability to measure fluorescence from two dyes simultaneously facilitates two-color microarray studies. This technology provides for rapid, automated scanning of microarrays.



Figure 1 SureScan Dx Microarray Scanner

Each slide is scanned in minutes, and the files are prepared for data analysis.

System Description

In this section you find listings of hardware and software features, parts, and computer requirements. A physical description of the SureScan Dx scanner and information on site preparation and safety are also provided.

Hardware and software features

The SureScan Dx scanner provides the following features:

- Dynamic autofocus
- Single and dual color scanning
- Automatic photomultiplier tube (PMT) gain calibration before each scan
- 2-, 3-, 5-, or 10-micron pixel size
- Dynamic range of $>10^4$ for a single scan in 16-bit scan mode, $>10^5$ for a single scan in 20-bit scan mode, and $>10^6$ for a dual scan in 16-bit scan mode (XDR)
- Uniformity specification of $<5\%$ CV (Coefficient of Variation)
- TIFF image file compression
- Flip and rotate images
- Internal and external barcode reading

The Agilent Dx Microarray Scan Control program allows you to select the dye (fluorescence) channels, scan regions, resolution, dynamic range, PMT gain, and output folders for each of the slides in the cassette. You can load these settings automatically from saved application-specific protocols, or set them manually in the slot table.

Parts list

The G5761A SureScan Dx microarray scanner system consists of the following components:

- SureScan Dx Microarray Scanner with integral 24-slide cassette

- 24 slide holders
- Computer workstation with recovery software on CD
- Power cords and network cable
- Agilent Microarray Scan Control Software installed
- Agilent Installation Qualification Tool Software installed
- Envelope containing Declaration of Conformity and other product documentation

Computer system requirements

The SureScan Dx system comes with a computer that meets or exceeds the following configuration. Agilent Technologies supports only the computer provided with the SureScan Dx system.

Software

- Windows 7 64-bit Professional or Windows 10 64-bit operating system

Hardware

- Intel Core 2 Duo E8500 3.16 GHz or equivalent
- 8 GB RAM
- Minimum 250-GB hard disk. (Proper disk maintenance is required to ensure that you always have available disk space for data generation. See [Table 17](#) for estimated sizes of scanned images.)

Scanner physical description

Scanner front view

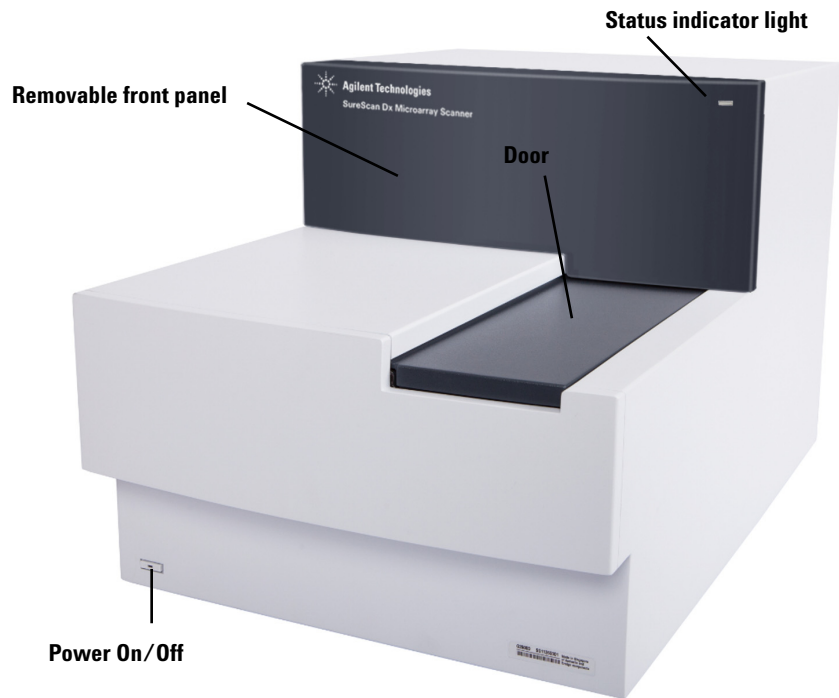


Figure 2 SureScan Dx Microarray Scanner, front view

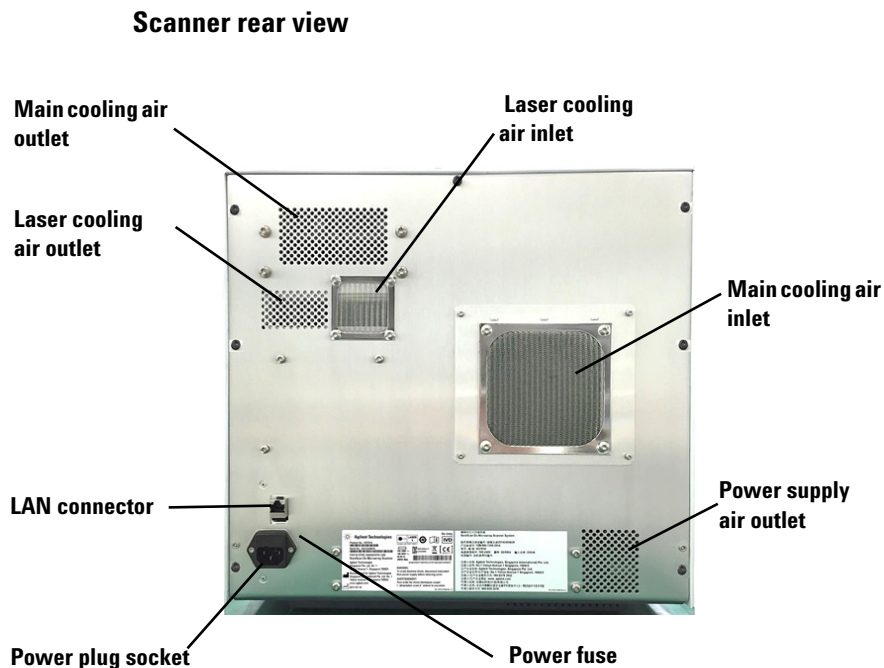


Figure 3 SureScan Dx Microarray Scanner, rear view

Site preparation

Make sure that the environment meets the “[SureScan Dx Scanner Specifications](#)” on page 23 of Chapter 6. If you have any questions, contact your local Agilent sales and support center or www.genomics.agilent.com.

Installation Procedures and Requirements

The scanner must be installed by an Agilent authorized representative in an environment that meets the conditions for temperature, humidity, and altitude listed in [Table 1](#).



CAUTION

In order to minimize vibration due to the rapid scanning of the laser excitation across the microarray, install the scanner on a sturdy lab bench or table. Do not install the scanner in proximity to other lab equipment that might cause vibration.

Table 1 Environmental requirements for scanner installation

Temperature	Operating: 15 ° to 30 °C Storage: -40 ° to +50 °C
Humidity	Operating: 15% to 85% RH at 30 °C Potentially sensitive to condensing humidity conditions. Follow precautions stated in “Tips to avoid damage to the scanner” on page 77. Always allow 12 hours thermal equilibration time on site before opening the shipping box.
Altitude	Operating maximum: 4,600 m (15,000 ft) Storage maximum: 9,200 m (30,000 ft) at -40 °C

Principles of Operation

This section describes the operating features of the SureScan Dx Microarray Scanner.

The SureScan Dx Microarray Scanner is a two-color, confocal, laser-induced-fluorescence, scanning microscope utilizing PMTs for detection, optimized for measuring fluorescence intensity from Agilent SurePrint G3 oligonucleotide microarrays.

The scanner is a bench top instrument capable of scanning a cassette of up to 24, 1" by 3", Agilent SurePrint microarray slides containing 1 or more microarrays each. It is controlled by a dedicated PC running the Agilent Scan Control software package. This software package provides instrument control in order to scan microarray slides and produce the TIFF image output.

Slide positioning

The SureScan Dx scanner holds up to 24 slides in a nonremovable cassette. During scanning, the slides are sequentially transported into scanning position, scanned, and then returned to the cassette. Slides can be added to and removed from the scanner queue dynamically without stopping the scanner.

Laser excitation

The SureScan Dx Microarray Scanner uses two lasers; a green diode-pumped solid-state laser (532 nm) and a red diode laser (640 nm). The lasers excite Cyanine-3 (Cy-3) and Cyanine-5 (Cy-5) labeled RNA or DNA to measure fluorescence after hybridization of the target nucleic acid to the microarray probes.

Scanning

The laser excitation is scanned rapidly back and forth across the microarray. The dynamic autofocus ensures that the microarray is always positioned in the focal plane of the scan lens, resulting in a uniform and calibrated-intensity scan.

Fluorescence detection

Fluorescence from the labeled samples is converted to an electrical signal by a high-performance PMT. Amplifiers and digital integrators process the PMT signal into a digital measurement that is recorded in the TIFF file.

Programs Installed on the Computer Workstation

The computer that is included with your SureScan Dx system has the following software programs preinstalled.

Agilent Microarray Scan Control program – used to set up and operate the scanner.

Agilent Feature Extraction program – used to extract feature data from the scanner-generated TIFF image.

Agilent Installation Qualification Tool program – verifies that the Scan Control program was installed correctly and was not corrupted after installation. Produces an Installation Qualification Report for your records.

SureScan Dx Scanner Specifications

Approximate dimensions	Height: 42 cm (16.5 in) Width: 43 cm (17 in) Depth: 67 cm (26 in)
Weight	56.8 kg (125 lbs)
Power input	100–240 VAC, 50–60 Hz, 250 VA max.
Fuses	Two power supply fuses: T4A, 250 VAC (part# 2110-1491)
Temperature range	Operating: 15° to 30° C Storage: –40° to +50° C
Humidity	Operating: 15% to 85% RH at 30 °C Potentially sensitive to condensing humidity conditions. Follow precautions stated in “Tips to avoid damage to the scanner” on page 77. Always allow 12 hours thermal equilibration time on site before opening the shipping box.
Altitude	Operating maximum: 2,300 m (7,500 ft) Storage maximum: 9,200 m (30,000 ft) at –40 °C
Usage	Indoor use
Laser information	Wavelengths: Green solid-state laser, 532 nm; Red solid-state laser, 640 nm Power: 20mW at 532 and 640 nm, both controlled to 13 mW
Maximum scan window	71 mm × 21.6 mm
Suggested microarray print region	1 mm smaller than scan region on the right, 2 mm on the left, and 0.6 mm on the top and bottom.
Dyes supported	Cyanine-3 (Cy-3) and cyanine-5 (Cy-5) and dyes similar to Cy-3 and Cy-5 and Alexa 647, 555, and 660 dyes
Resolution (pixel size)	2, 3, 5 or 10 microns
Pixel placement error	1 pixel at 5-micron resolution

1 Introduction

Fluorescence detection

Uniformity Average Global non-uniformity: $\leq 5\%$ using $100 \mu\text{m}^2$ features
 Average Local non-uniformity: $\leq 2\%$ using $100 \mu\text{m}^2$ features*

PMT adjustment Automatic PMT gain calibration before each run; allows adjustment of signal levels from 100% (default) to 1%

Detection limit 0.01 chromophores per square micron

Glass dimensions supported Width: 24.95 mm to 26.1 mm
 Length: 74.8 mm to 76.45 mm
 Thickness: 0.9 mm to 1.1 mm

Scan time **Table 2** Scan Time for Single and Double Pass Scans for Agilent HD Scan Region 61×21.6 mm

Resolution	Scan Time, min.
2-micron single pass	24
3-micron single pass	16
5-micron single pass	10
10-micron single pass	10
2-micron double pass	46
3-micron double pass	31
5-micron double pass	19
2-micron high-sensitivity	36
3-micron high-sensitivity	24
5-micron high-sensitivity	15
10-micron high-sensitivity	15

* Typical average Local non-uniformity is $\leq 1\%$ using $100 \mu\text{m}^2$ features

Dynamic AutoFocus Continually adjusts scanner's focus to keep features in focus

Dynamic range $>10^4$, 16-bit data format
 $>10^5$, 20-bit data format
 $>10^6$, with extended dynamic range (XDR) scanning

Autoloader 24-slide cassette

Integrated Barcode Reader Reads code 128 (A,B,C), Code 39, Code 93, and CODABAR

Precision/Reproducibility: Non-clinical bench testing was performed to validate the suitability of the SureScan Dx Microarray Scanner to measure fluorescence signals of labeled DNA and RNA target hybridized to microarrays. Testing was performed on a representative cohort of microarrays across multiple operators and multiple instruments.

Two classes of biological microarrays were run as part of the representative cohort, Gene Expression Microarrays (RNA) and CGH+SNP Microarrays (DNA). Testing was performed across 24 discrete sampling points using two operators and three instruments.

Data was collected from each scan of the cohort yielding 96 CHG+SNP microarray measurements and 192 GE microarray measurements.

For the GE cohort, the total precision of the signal intensity was estimated using a general nested analysis of variance.

A subset of the 10 × 35 E1A spike-in control probes (in vitro synthesized, polyadenylated transcripts) that were detectable in all the scans were used in the gene expression microarray analysis of the signal intensity.

With 10 probes being used, the number of results expected was 134,400 (2 slides × 10 probes × 35 replicates × 8 arrays × 4 days × 6 times).

The acceptance criteria were that the upper bound of the 1-sided 95% confidence interval on the coefficient of variation using the total standard deviation from the model must be less than 15%.

Table 3 Gene expression analysis of the signal intensity

GE Signals	N	Mean	Upper bound of 1-sided 95% CI of CV using McKay's Procedure
gBG Sub Signal	134,400	3.19	4.32
rBG Sub Signal	134,400	3.09	4.82

For the CGH+SNP cohort, the components of variance that pertain to multiple operators, scanners, slides, days, arrays and probes, were assessed using a general nested analysis of variance on the data.

The six-hundred (600) probes that are replicated were used in the CGH+SNP microarray analysis of the log-ratios. The number of results expected was 576,000 (2 slides × 600 probes × 5 replicates × 4 arrays × 4 days × 6 times).

The acceptance criterion was set that the upper bound of a 1-sided 95% confidence interval of the sum of the standard deviations from the model associated with the scanner, operator and day components must be less than 0.06.

Table 4 CGH+SNP microarray analysis of the log-ratios

Component	Variance Component Estimate	Std Dev	df ¹	1-sided 95% CI ²
Day	1.896e-6	0.00138	3	
Scanner	2.037e-7	0.00045	2	
Operator	0	0	1	
Day × Scanner	1.267e-7	0.00036	6	
Day × Operator	2.844e-9	0.00005	3	
Scanner × Operator	1.789e-9	0.00004	2	
Residual	0.000819	0.0286	570,007	
<i>Sum of Day, Operator, and Scanner</i>	2.10e-6	0.00145	4	0.0042
<i>Sum of Day, Operator, and Scanner, and Residual</i>	0.000821	0.0287	281,446	0.03

¹ Degrees of freedom are estimated using Welch-Satterthwaite's equation for combining independent sample variances.

² Upper bound of a 1-sided 95% confidence interval of the standard deviation using a Chi-square procedure.

Instrument Uniformity was assessed across a population of 106 instruments using a chemically coated uniformity chip. The chip was divided into a set of O(145,000) virtual features. Each virtual feature was 100 μm². Both local and global uniformity were assessed.

Each virtual feature was assigned an independent red and green signal level value, based upon the mean signal level of the 400 pixels that comprise the virtual feature.

The signal level values of each virtual feature were stored as arrays of positional data, and used to compute the global and local uniformity metrics for the scanner under test.

Table 5 Instrument uniformity analysis (across 106 instruments)

Performance Specification	Spec	Min	Max	Mean	Median	STDEV
Red Global Uniformity Ratio (%)	≤ 5%	1.60%	4.20%	2.95%	2.90%	0.0056
Red Local Uniformity Ratio (%)	≤ 2%	0.40%	1.50%	0.85%	0.70%	0.0026
Green Global Uniformity Ratio (%)	≤ 5%	1.90%	4.90%	3.43%	3.40%	0.0069
Green Local Uniformity Ratio (%)	≤ 2%	0.30%	1.70%	0.73%	0.50%	0.0044

Slide Specifications

Scan dimensions

The scan region for a standard Agilent microarray is specified in Figure 4. All dimensions are in millimeters and the reference point is the lower right side of the glass.

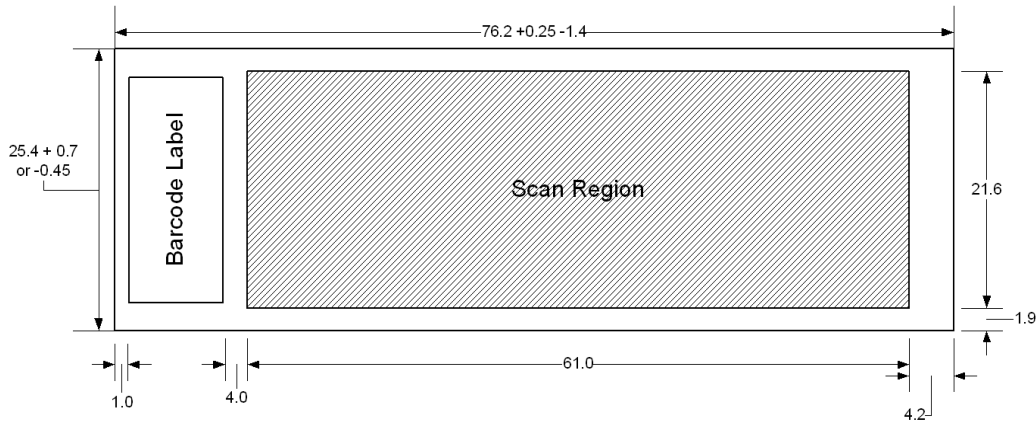


Figure 4 Default scan region for G5761A scanner

Glass specifications

The SureScan Dx Microarray Scanner uses slide holders to move the microarrays in and out of the cassette. These slide holders are designed to accept a 25.4 mm × 76.2 mm nominal piece of glass.

The detailed specifications of the glass are as follows:

- 25.4 mm (−0.45 mm, or +0.7 mm)
- 76.2 mm (+0.25 mm, or −1.4 mm)
- 1 mm thick (+/- 0.1 mm)
- No mirrored slides
- High quality with low intrinsic fluorescence
- Index of refraction from 1.510 to 1.515

Barcode and barcode label specifications

Barcode specifications for Agilent slides

The G5761A scanner reads barcodes placed on the active side of the slide.

For backwards compatibility with the G2565AA model scanners, Agilent microarrays continue to have barcodes on both sides. The label with the text “Agilent” denotes the active side; the label with the numeric value is the inactive side.

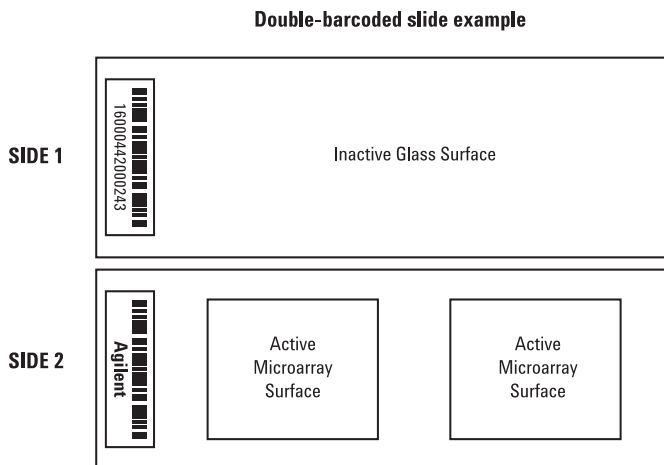


Figure 5 Agilent slide barcode orientation vs. microarray surface

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Barcode and barcode label specifications



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This chapter describes how to operate the scanner, including how to set up and scan your slides quickly and easily.

If you have any problems, see [Chapter 5](#) for troubleshooting information.



2 Getting Started

Step 1. Turn on the SureScan Dx Microarray Scanner and start the Scan Control program

Operating the Scanner

The following steps explain how to operate the scanner. For more information on how to use the Scan Control program, see [Chapter 3](#), “Using the Scan Control Program”.

Step 1. Turn on the SureScan Dx Microarray Scanner and start the Scan Control program

- 1 Turn on the SureScan Dx scanner using the power switch on the front of the instrument. The SureScan Dx scanner loads and initializes its firmware.

When the scanner is ready (about two minutes), the status indicator light turns off.

To learn how to set up the lasers to turn on and off automatically, see “To set the laser saver delay” on page 70.

- 2 Turn on the computer workstation and wait for it to boot up.
- 3 Double-click the **Agilent Microarray Scan Control** icon to start the Scan Control program.

Or

Select **Start > All Programs > Agilent > Agilent Microarray Scan Control**.



Figure 6 Agilent Microarray Scan Control icon

When the program starts, the Agilent Microarray Scan Control program main window opens and the scanner performs its initialization sequence.

- The Scan Control program communicates with the scanner via the LAN cable, sending commands and parameters, and receiving status and data.
- The lasers turn on and start to warm up.

Step 1. Turn on the SureScan Dx Microarray Scanner and start the Scan Control program

- The autoloader initializes and performs a slide eject cycle (to make sure that no slide is loaded).

NOTE

If the scanner has 24 slides loaded when you turn it on, the initialization will fail because it cannot perform the slide eject cycle.

- The scanning system is initialized and the data acquisition system is calibrated.

After the initialization sequence finishes, the Open Door button is enabled and you can load slides.

2 Getting Started

Step 1. Turn on the SureScan Dx Microarray Scanner and start the Scan Control program

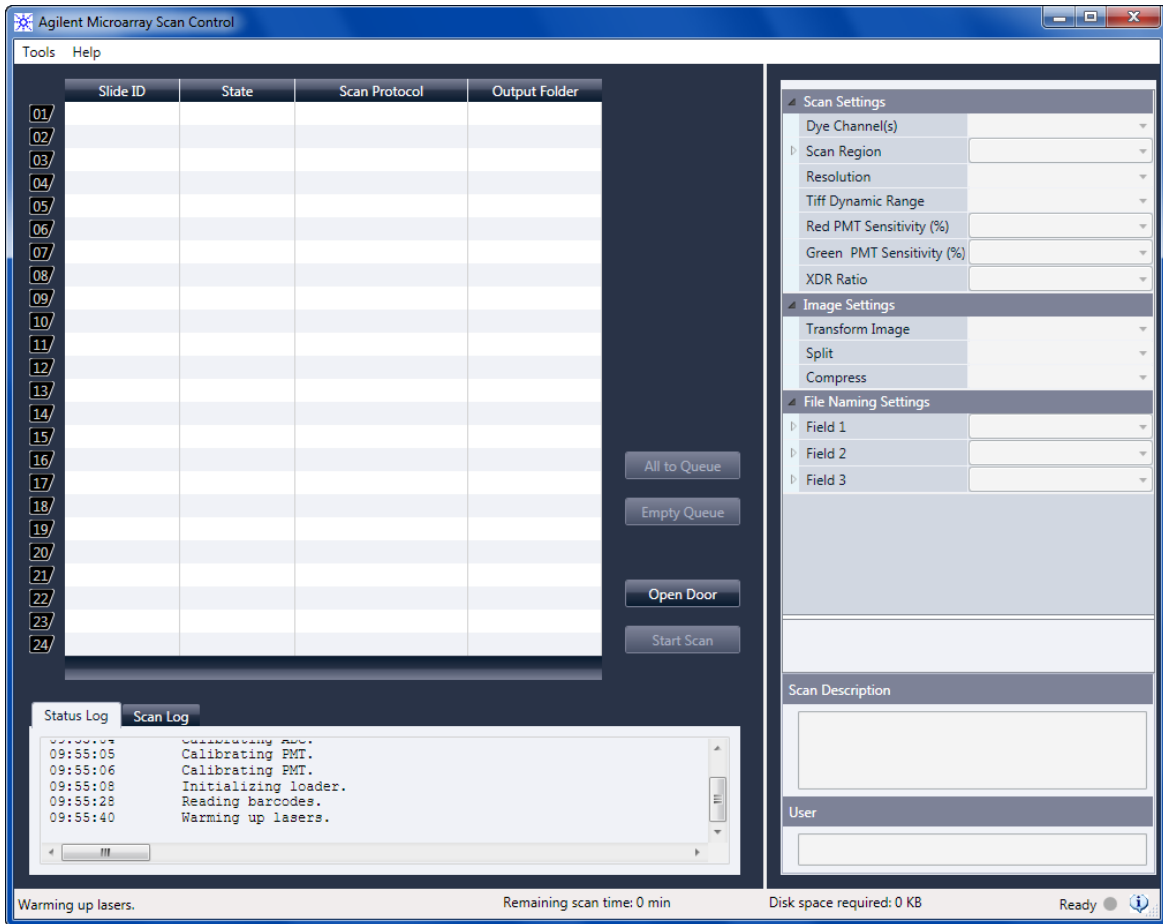


Figure 7 Agilent Microarray Scan Control program window – ready to add slides

The status of the scanner is indicated at the lower right corner of the Scan Control window, in the status bar.

Initialize

The scanner is initializing. When the initialization is finished, the Open Door button is enabled, and the lasers continue to warm up.

WarmUp	The lasers take up to 5 minutes to warm up. During warm-up, you can load slides, set protocols, and add slides to the queue. Once the lasers are warmed up, you can start scanning.
LasersOff	Indicates that the lasers are turned off.
Ready	You can load slides or begin a scan.
Error	Indicates that the scanner has encountered an error. Close the Scan Control program then shut off the scanner. Restart the scanner and the Scan Control program. If the error continues, contact Agilent technical support.

NOTE

You cannot start scanning until both lasers are warmed up, at least one slide is in the queue, and the scanner status is **Ready**.

Step 2. Insert slides into slide holders

A slide is inserted into a slide holder before loading it into the scanner.

Fingerprints cause errors in the fluorescence detection. For accurate readings, touch only the edges of the slide and always use gloves when handling slides.

Do not write on the slides with markers or place any labels on the slide other than an appropriate barcode in the appropriate slide location.

- 1 Before you insert the slide, place the slide holder on a flat surface, with the clear cover facing up, and the tab on the right. This helps to ensure that you have the slide aligned properly when you insert it into the slide holder.
- 2 Gently push in and pull up on the tabbed end of the clear plastic cover to open it.

Do not push on the tab in a sideways direction (relative to the base) as this can make the cover difficult to open.

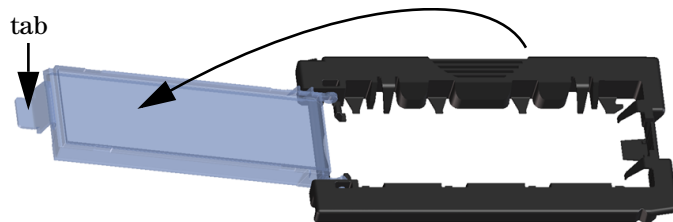


Figure 8 Opening the slide holder

2 Getting Started

Step 2. Insert slides into slide holders



CAUTION

Do not push in the tab any further than is needed to unlatch the cover. Doing so may damage the slide holder and prevent proper latching. Do not use damaged slide holders as they may get stuck inside the scanner.

3 Insert the slide into the holder, as follows:

- a Hold the slide at the barcode end.
- b Make sure that the active microarray surface faces up, toward the slide cover, with the barcode on the left.
- c Carefully place the end of the slide without the barcode label onto the slide ledge. See [Figure 9](#).
- d Gently lower the slide into the slide holder. See [Figure 10](#).
- e Close the plastic slide cover, pushing down on the tab until you hear it “click”. This moves the slide into position in the holder.
- f Gently push in and pull up on the tabbed end of the clear plastic cover to open it again and verify that the slide is correctly positioned.

Once inserted, the slide lies flat and matches up with the alignment points on the slide holder.

- g Close the plastic slide cover, pushing down on the tab until you hear it “click”. See [Figure 11](#).



CAUTION

If the tab on the plastic slide cover is over-stretched, it may not properly “click” into place. Dispose of slide holders that no longer click when you close them.



CAUTION

When properly closed, the top of the tab is flush with the surface of the base or below the surface of the base. If it is not, do not use the slide holder as the tab may be damaged.

Step 2. Insert slides into slide holders

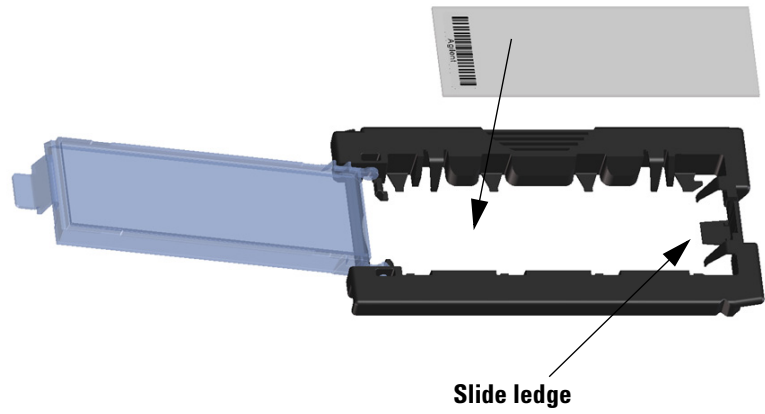


Figure 9 Inserting slide into the slide holder

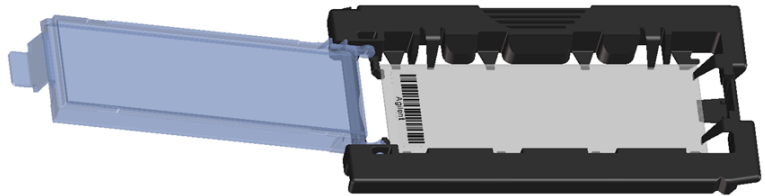


Figure 10 Slide inserted in slide holder

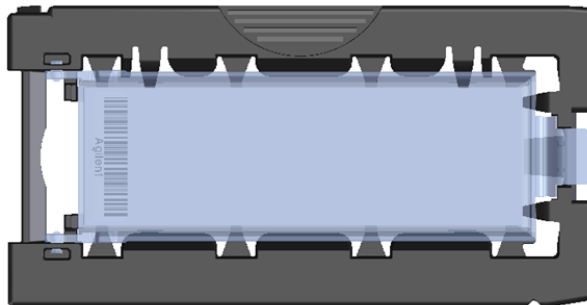


Figure 11 Slide holder – closed with slide

For instructions on removing the slides, see “[Step 7. Remove the slides](#)” on page 43.

2 Getting Started

Step 3. Load the slide holders into the cassette

Agilent slides have two barcodes, one on each side of the glass. See [Figure 12](#). Place the active microarray side of the slide facing toward the slide holder cover.

See [“Barcode and barcode label specifications”](#) on page 29 to apply a second readable barcode.

If you have a slide whose active surface is on the side opposite to the barcode, the scanner cannot read the barcode.



CAUTION

An improperly inserted slide can damage the SureScan Dx scanner. A damaged slider holder or improperly closed slide holder can get stuck in the scanner.

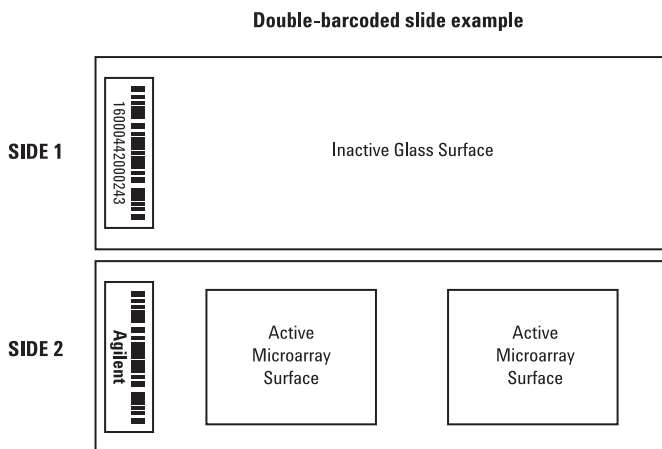


Figure 12 Slide orientation

Step 3. Load the slide holders into the cassette

When the slides are properly inserted in the slide holders, you can load the slide holders into the cassette. The cassette and slide holders are designed to ensure that the slide holders are inserted correctly.

NOTE

Do not load slide holders that do not contain slides into the SureScan Dx Microarray Scanner.

Step 3. Load the slide holders into the cassette

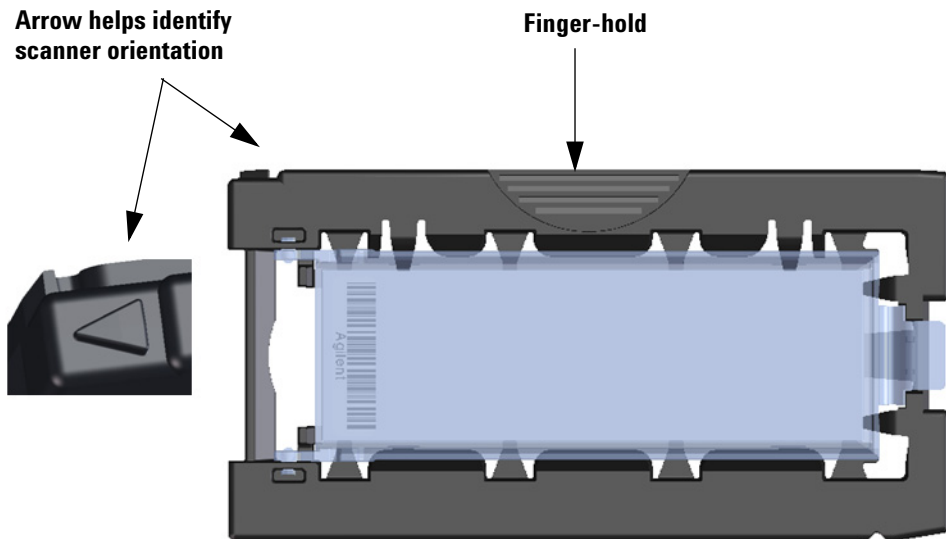


Figure 13 Slide holder helps you to insert slides correctly

- 1 In the Scan Control program window, click **Open Door** to open the scanner door.



CAUTION

The correct way to open the scanner door is using the Open Door button in the Scan Control program. Do not attempt to open the door manually.

- 2 Pick up the slide holder using the finger hold. The arrow on top of the slide holder points to the left when you pick up the slide holder correctly. See [Figure 13](#).

Insert a slide holder into any open slot. The slot numbers are clearly labeled on the slide cassette. Do not force the slide holder into the cassette; it inserts easily if properly aligned with the finger-hold on top and the arrow facing to the left.

The SureScan Dx Microarray Scanner scans slides in the order set in the scan queue. The scanner skips over any empty slots. See "To add a slide to the scan queue" on page 50.

2 Getting Started

Step 3. Load the slide holders into the cassette



CAUTION

If there is resistance placing the slide holder into the cassette, the slider holder may not be properly closed or it may be damaged. Check the slide holder and close or replace it as needed.

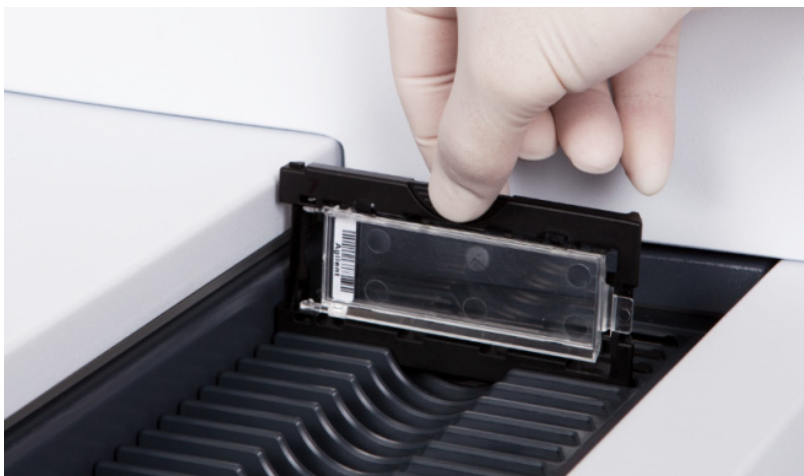


Figure 14 Inserting slide holder into cassette

- 3 Make sure that the slide holder is seated in the bottom of the cassette slot.

The slot number for the loaded slide blinks blue.

- 4 Repeat steps 2 through 3 until all slide holders are loaded in the cassette.

The slide numbers next to the cassette and in the slot table of the Scan Control program window change color to indicate the state of the slot. For more information, see [Table 14](#) on page 104.



CAUTION

Improper placement of the slide holder in the cassette can result in severe damage to the SureScan Dx Microarray Scanner.

- 5** In the Scan Control program, click **Close Door**. The following events happen:
- The scanner door closes.
 - The scanner reads the barcode for each slide.
 - The barcode is displayed under Slide ID in the Scan Control software slot table.
 - Default output folder is applied.
 - For slides that have a scan protocol mapped to their design, the scan protocol is assigned in the Slot Table, and the slot State changes to “Ready for queue.”

For information on how to map scan protocols to slide designs, see “To map a scan protocol to a slide design” on page 71.

For slides that do not have a scan protocol mapped to their design, the scan protocol remains empty and the slot State remains “Present”. Assign a scan protocol, as described in “Step 4. Set or change protocol scan settings”. For more information on the Scan Control program main window, see “Scan Control Program Window Reference” on page 98.

NOTE

You can add slides to the cassette while a scan is in process. See “About Adding Slides” on page 130.

Step 4. Set or change protocol scan settings

The current scan protocol settings are displayed for each selected slide in the right pane of the Scan Control software main window. For more information on these settings, see “Scan Control Program Window Reference” on page 98.

The first time you set up to scan a slide, select a scan protocol to use. See “About Scan Protocols” on page 44. Once the slide is scanned, the program remembers that scan protocol and assigns it to all slides with the same microarray design. You can change these assignments later. You can also manually set scan settings for a selected slide.

- 1** For each slide in the slot table, click the Scan Protocol and select a scan protocol to use for scanning the slide. See “About Scan Protocols” on page 44 and “To set or change the scan protocol” on page 49.
- 2** (Optional) For a selected slide, in the scan settings pane, change one or more scan settings to use for scanning only that slide. See “Changing Slide Scan Settings” on page 53.

2 Getting Started

Step 5. Add slides to the scan queue

Step 5. Add slides to the scan queue

Once you add a slide to the scan queue, you cannot change its scan settings. To change the scan settings, remove the slide from the queue.

To add a slide to the scan queue, its State must be "Ready for queue."

- 1 In the Scan Control main window, click **All to Queue** to add all slides in the slot table with a State of "Ready for queue" to the scan queue.

A confirmation dialog box appears. Click **Yes** to add the slides to the queue.

OR

In the Scan Control slot table, click the **State** cell for the first slide to scan and click **Add to Queue**.

- 2 For each additional slide you want to scan,
 - Click the **State** cell and select **Add to queue first** to add the slide to the top of the scan queue.

OR

- Click the **State** cell and select **Add to queue last** to add the slide to the bottom of the scan queue.

As each slide is added to the queue, its **State** indicates that it is in the queue and the order in which the slide is scanned. (In queue 1, In queue 2, for example.) The status indicator light changes to solid blue.

Step 6. Scan your slides

- 1 If necessary, in the Scan Control main window, click **Close Door**.

Wait until the door closes and the **Start Scan** button is enabled.

- 2 In the Scan Control main window, click **Start Scan** to begin scanning the slides that were added to the queue. The scanner scans the slides in their order in the scan queue. See "[Step 5. Add slides to the scan queue](#)" on page 42.

During a scan, you see the following:

- The slot status indicator light for the current slide blinks green during the scan process, and the scan progress (for example, Scanning 50%) is displayed in the slot State.

- The remaining scan time and required disk space are displayed at the bottom of the Scan Control main window. See “[Scan Control Program Window Reference](#)” on page 98.
- Events during the scan are logged in the Scan Log and Status Log. See “[Log tabs](#)” on page 109.

Step 7. Remove the slides

When the Open Door button is enabled, you can unload the slide holders from the cassette and then remove the slides from the slide holders.

*If the **Open Door** button is not available, you cannot open the door. Check to make sure that the scanning process is finished.*

- 1** In the Scan Control main window, click **Open Door** to open the scanner door.
- 2** Remove the slide holders from the cassette.
- 3** Remove the slides from the slide holders, as follows:
 - a** Hold the slide holder on the sides with the Agilent logo facing up.
 - b** Gently push in and pull up on the tabbed end of the clear plastic cover to open it.
 - c** Push up on the barcode end of the slide from underneath the slide holder to avoid fingerprints on the sample area.
 - d** Grasp the slide from the sides and remove from the slide holder.

About Scan Protocols

A scan protocol is a collection of scan and image settings that, when selected, is applied to the slide as it is scanned.

Agilent supplies eight preloaded protocols for your selection and use with Agilent high density (HD) microarrays and Agilent G3 microarrays.

AgilentHD_GX_2Color	Agilent HD 2-color gene expression microarrays
AgilentHD_GX_1Color	Agilent HD 1-color gene expression microarrays
AgilentG3_GX_2Color	Agilent G3 2-color gene expression microarrays
AgilentG3_GX_1Color	Agilent G3 1-color gene expression microarrays
AgilentHD_CGH	Agilent HD CGH/CGH+SNP/CNV/ChIP microarrays
AgilentG3_CGH	Agilent G3 CGH/CGH+SNP/CNV/ChIP microarrays
AgilentHD_miRNA	Agilent HD miRNA microarrays
AgilentG3_miRNA	Agilent G3 miRNA microarrays

Select the predefined protocol that applies to your type of Agilent microarray.

Agilent may provide additional assay-specific protocols as part of an in vitro diagnostic test.

Offline Mode

If no instrument is available, the Scan Control program runs in “offline mode”. In this mode, you can create, import, and export scan protocols and scan regions. You can also open log files, display recent errors, set general settings, and map scan protocols to design IDs.

Turning Off the SureScan Dx Scanner

- 1 In the Scan Control program window, make sure that the SureScan Dx Microarray Scanner is not scanning, ejecting, or loading a slide.
- 2 Click **Open Door** to open the scanner door.
- 3 Remove the slide holders from the scanner cassette.
- 4 Remove the slides from the slide holders.
- 5 Click **Close Door**.



CAUTION

You cannot open the scanner door manually. Use the Open Door/Close Door button in the Scan Control program to open and close the door.

- 6 In the Scan Control main window, click the red X at the upper right corner to close the program. The lasers are turned off automatically when you close the program.
- 7 Turn off the power switch on the front of the SureScan Dx Microarray Scanner.



3 Using the Scan Control Program

Using the Slot Table 48

Changing Slide Scan Settings 53

The Scan Control program is used to control all features of the SureScan Dx Microarray Scanner, including setting and changing scan settings and protocols, starting and stopping scans, reviewing scan status, and troubleshooting.

This chapter describes how you use the Scan Control program to set up and run the scanner.



Using the Slot Table

The slot table provides a display of the cassette and its contents. Once you load slides into the cassette and close the door, the Scan Control program reads the barcode for each slide and shows it as the Slide ID in the slot table. The numbers to the left of the table correspond to the slots in the scanner cassette. The color of the number indicates the status of the slot. For details on the Scan Control main window, see “[Scan Control Program Window Reference](#)” on page 98.

The topics in this section describe how to use the Scan Control slot table to prepare for scanning slides.

To change a Slide ID

The Slide ID is used in the image file name. By default, it is the slide barcode read by the scanner. See “[Barcode and barcode label specifications](#)” on page 29 for information on barcodes.

Typically, the scanner automatically reads the barcode for a slide and displays it as the Slide ID in the slot table. To add or change the Slide ID in the table,

- 1 In the slot table, click the Slide ID cell for the slide you want to add or change. Cell editing is enabled only when the slot has a slide loaded and is not yet in the queue.
- 2 Type the new slide ID.

NOTE

After you change the Slide ID, move your mouse cursor over the Slide ID cell in the scan table to see the barcode for the slide. The barcode appears in a tooltip.

To set or change the scan protocol

A scan protocol is a predefined set of scan settings. Several default scan protocols are provided with the software. See “[About Scan Protocols](#)” on page 44.

If no scan protocol is selected for a slide, or if you want to change the scan protocol,


- 1 In the slot table, click the **Scan Protocol** cell for the selected slide and then click again to show the list of available scan protocols.
- 2 Click a scan protocol from the drop-down list.

NOTE

You cannot change scan protocols for slides in the queue.

To change the output folder for a scan

The output folder is where the scanned image files for a slide are saved. By default, the output folder is D:\ScanData.

- 1 In the slot table, click the **Output Folder** cell for a slide.
- 2 Click the browse icon.  The Browse For Folder dialog box opens.
- 3 Browse to the location where you want to save the scanned image files for this slide, and click **OK**.

To apply a selection to multiple slides

Within the slot table, you can select more than one slide and then make a selection for Scan Protocol and Output Folder.

- 1 In the slot table, click to highlight the first slide.
- 2 To select multiple contiguous slides, hold down the **Shift** key and then select a second slide.

All slides between and including the selected slides are highlighted in the slot table.

OR

To select a series of noncontiguous slides, hold down the **Ctrl** key and then click additional slides you want to select. Selected slides are highlighted in the slot table.

- 3 Within the last selected slide, select the Scan Protocol or Output Folder cell.

The selection is applied to all highlighted slides.

3 Using the Scan Control Program

To add a slide to the scan queue

NOTE

You cannot make changes to slides in the queue.

To add a slide to the scan queue

- 1 In the slot table, click the **State** cell for the slide you want to add to the queue.
- 2 Click **Add to queue** (if no other slides are in the queue).
OR
Click **Add to queue first** to add the slide to the beginning of the queue.
OR
Click **Add to queue last** to add the slide to the end of the queue.

To add all slides to the queue

- 1 In the Scan Control main window, click **All to Queue**.
A confirmation dialog box appears.
- 2 Click **Yes**.
All slides in the slot table with a State of “Ready for queue” are added to the queue, in the order they appear in the slot table.

To move a slide in the queue

- 1 In the slot table, click the **State** cell for the slide you want to move.
- 2 Click again to show selections for the slide.
- 3 Click one of the following possible options to move the slide position in the queue:
 - Move to first** – Move the slide to the first position
 - Move to last** – Move the slide to the last position
 - Move up** – Move the slide up one position
 - Move down** – Move the slide down one position

To remove a slide from the scan queue

- 1 In the slot table, click the **State** cell for the slide you want to remove from the queue.
- 2 Click again to show selections for the slide.
- 3 Click **Remove from queue**.

The slide is removed from the queue and its State changes to “Ready for queue.”

To remove all slides from the scan queue

- 1 In the Scan Control main window, click **Empty Queue**.
A confirmation dialog box appears.
- 2 Click **Yes**.

All queued slides are removed from the queue, and the State changes to “Ready for queue.”

To open the scanner door

You must use the Scan Control program to open the scanner door.

You cannot open the door while the scanner is loading or ejecting a slide.

- In the Scan Control main window, click **Open Door**.

3 Using the Scan Control Program

To close the scanner door

To close the scanner door

You must close the door before you can start a scan. After the scan begins, you can open the door and add or remove slides.

You must use the Scan Control program to close the scanner door.

- In the Scan Control main window, click **Close Door**.

To start a scan

- In the Scan Control main window, click **Start Scan**.

The slot status indicator light blinks green during the scan process. The scan progress (for example, Scanning 50%) is displayed in the slot **State** cell.

Changing Slide Scan Settings

When you select a slide in the slot table of the Scan Control main window, the scan settings for that slide are shown in the Settings Pane on the right side of the window. See “[Scan Control Program Window Reference](#)” on page 98. The values displayed are defined in the selected Scan Protocol for that slide.

There are two ways to change scan settings:

- Make one-time changes to the scan settings for a slide before it is added to the queue. These instructions are shown in the following sections.
- Select a different scan protocol or create a new one. See “[To create a scan protocol](#)” on page 58.

You can also apply setting changes to multiple slides. For information, see “[To apply a selection to multiple slides](#)” on page 49.

To change settings for a single slide

You can only change the scan settings for a slide when it is not in the scan queue. See “[To remove a slide from the scan queue](#)” on page 51.

- 1 In the scan table, select the slide whose settings you want to change.
- 2 In the Scan Settings area, click the arrow next to the setting you want to change, and then select the new setting.

When you manually change a setting, the Scan Protocol for the slide changes to <Customized>.

- 3 When you are finished changing the settings, click the **State** cell and add the slide to the queue. See “[To add a slide to the scan queue](#)” on page 50.

For more information on all the settings, see [Chapter 6](#), “Reference”.

3 Using the Scan Control Program

To change settings for multiple slides

To change settings for multiple slides

You can only change the scan settings for a slide when it is not in the scan queue. See “To remove a slide from the scan queue” on page 51.

- 1 In the scan table, click to select the first slide whose settings you want to change.
- 2 Hold down the **Ctrl** key and then click to select other slides.
OR
To select a contiguous block of slides, click to select the first slide, and then hold down the **Shift** key and then click the last slide.
- 3 In the Scan Settings area, click the arrow next to the setting you want to change, and then select the new setting.
When you manually change a setting, the Scan Protocol for the selected slides changes to <Customized>.
- 4 When you are finished changing the settings, add the slides to the queue. See “To add a slide to the scan queue” on page 50 or “To add all slides to the queue” on page 50.

To add a description for the slide

You can only change the slide scan description for a slide when it is not in the scan queue. See “To remove a slide from the scan queue” on page 51.

- 1 In the slot table, select the slide whose settings you want to change.
- 2 In the Scan Description area, type information about the slide and scan, as desired.
- 3 When you are finished typing the description, click the **State** cell and add the slide to the queue. (See “To add a slide to the scan queue” on page 50.)

To add a user name

You can only change the user name for a slide when it is not in the scan queue. See “To remove a slide from the scan queue” on page 51.

- 1 In the slot table, select the slide whose settings you want to change.
- 2 In the User area, type user information.

- 3 When you are finished typing the user, click the **State** cell and add the slide to the queue. (See [“To add a slide to the scan queue”](#) on page 50.)

3 Using the Scan Control Program

To add a user name



4 Using Scan Control Tools

Creating and Changing Scan Protocols	58
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Mapping Scan Protocols to Designs	71

The Tools menu in the Scan Control program provides general settings and functions that help with troubleshooting. Scan control tools let you

- Create or change scanner protocols
- Change the scanning region for slides
- Input barcodes
- Switch on and off lasers
- Display recent errors and log files
- Create a “snapshot” file of the current scanner state
- Reset calibration warnings
- Perform a self test
- Set general scanner settings
- Map protocols to slide designs

This chapter describes how to use the tools available in the Scan Control program.



Creating and Changing Scan Protocols

The Scan Control program comes with a default set of scan protocols that are designed to work with typical Agilent microarray slide designs. See “[About Scan Protocols](#)” on page 44. You cannot change these default scan protocols. However, you can create a scan protocol by saving an existing protocol using a different name. You can then change the new scan protocol.

To create a scan protocol

You cannot modify a scan protocol that is currently assigned to a slide in the slot table.

You can create a protocol from any existing protocol by saving the existing protocol with a new name.

- 1 Select **Tools > Scan Protocol Editor**.
- 2 Select an existing protocol that is similar to the scan protocol you want to create.
- 3 Click **Save As** to save the existing protocol with a new name.

The Save As New Name dialog box appears.

- 4 Type a new name for the protocol, and then click **Save**.
The scan protocol settings become active.
- 5 Change the scan and image settings as desired. For information on the available settings, see “[Scan Protocol Editor dialog box](#)” on page 116.
- 6 When you are finished, click **Save**.

To change an existing scan protocol

You cannot change the default scan protocols provided with the scanner. To change one of these scan protocols, save it with a different name first.

- 1 Select **Tools > Scan Protocol Editor**.
- 2 Select an existing protocol you want to change.
- 3 In the Scan Protocol Editor dialog box, change one or more settings.
- 4 Click **Save**.

To export a scan protocol

You can export one or more scan protocols to a file on your hard disk, as a backup, or to import on another SureScan Dx system.

1 Select **Tools > Scan Protocol Editor**.

The Scan Protocol Editor dialog box opens.

2 Click **Export**.

The Export Scan Protocol dialog box opens. A list of scan protocols in the program is displayed.

3 Click to select a scan protocol to export.

OR

To select a series of contiguous protocols to export, click to select a scan protocol, and then hold down the **Shift** key and click another scan protocol.

OR

Click to select a scan protocol, and then hold down the **Ctrl** key and select additional noncontiguous protocols to export.

4 Click **Export**.

The Save As dialog box appears.

5 Browse to the location where you want to save the exported protocol file.

6 Type a name for the exported protocol file, and click **Save**.

To import a scan protocol

If a scan protocol in the file has the same name as an existing scan protocol, the program does not import it.

1 Select **Tools > Scan Protocol Editor**.

The Scan Protocol Editor dialog box opens.

2 Click **Import**.

The Open dialog box appears.

3 Browse to where the exported scan protocol file you want to import is located. Exported scan protocol files have .exp extensions.

4 Using Scan Control Tools

To remove a scan protocol

- 4 Click to select the scan protocol file, and click **Open**.
The scan protocols in the file are imported.

To remove a scan protocol

You cannot remove any of the default scan protocols or any scan protocols that are currently assigned to a slide in the slot table.

- 1 Select **Tools > Scan Protocol Editor**.
The Scan Protocol Editor dialog box opens.
- 2 In the Scan Protocol list, select a scan protocol to remove.
- 3 Click **Remove**.

Creating and Changing Scan Regions

The *scan region* determines the area of the slide that is scanned. The larger the region, the longer the scan time.

You can create or change a user-defined custom scan region up to the maximum scan region of 71 mm x 21.6 mm. The new region appears as a selection in the slot table and in the Protocol Editor.

To create a user-defined custom scan region

Make sure that the scan region is at least 4 mm away from the barcode label and does not overlap any other opaque or translucent areas of the slide.

- 1 In the Scan Control program menu bar, click **Tools > Scan Region Editor**.

The Scan Region Editor opens.

- 2 Use an existing scan region as a template.

- a In the list next to Scan Region, select one of the available scan regions.

- b Select **Save As**.

The Save As New Name dialog box appears.

- c Type the name for the new scan region, and then click **OK**.

The scan region settings become active.

- 3 Under **Scan Region**, type the dimensions (in mm) for the region. If you type an invalid value, a red box appears around the dimension.

The red box at the top of the dialog box shows the scan region currently defined.

- 4 Click **Save**.

If no errors are found, the Scan Region Editor appears with the new region listed in the Scan Region Editor.

To change an existing user-defined custom scan region

You can only change the user-defined custom scan regions that you created. You cannot change or remove the regions provided by Agilent.

4 Using Scan Control Tools

To export a scan region

When creating a scan region or using existing scan regions, make sure that the scan region is at least 4 mm away from the barcode label.

- 1 In the Scan Control program menu bar, click **Tools > Scan Region Editor**.

The Scan Region Editor opens.

- 2 In the list next to **Scan Region**, select the scan region you want to modify.
- 3 Change the dimensions for the region, as desired. For more information on the settings available, see “[Scan Region Editor dialog box](#)” on page 123.
- 4 Click **Save** to save the changes for the selected scan region.

If the defined region is used in one or more protocols, the Save button is grayed out. In this case, click **Save As** and save with a new name.

To export a scan region

- 1 In the Scan Control program menu bar, click **Tools > Scan Region Editor**.

The Scan Region Editor opens.

- 2 Click **Export**.

The Export Scan Region dialog box opens.

- 3 Click to select the scan region you want to export.

OR

To select noncontiguous scan regions to export, hold down the **Ctrl** key and then click additional scan regions.

OR

To select a contiguous set of scan regions to export, click to select the first scan region, and then hold down the **Shift** key and then click to select the last scan region to export.

- 4 Click **Export**.
- 5 The Save As dialog appears.

- 6 Browse to the location where you want to save the exported scan region file.
- 7 In File name, type the name for the exported scan region file.
- 8 Click **Save**.

To import a scan region

If a scan region in the file has the same name as an existing scan region, the program does not import it.

- 1 In the Scan Control program menu bar, click **Tools > Scan Region Editor**.
The Scan Region Editor opens.
- 2 Click **Import**.
The Open dialog box appears.
- 3 Browse to where the exported scan regions file you want to import is located. Exported scan regions files have .exp extensions.
- 4 Click to select the scan regions file, and click **Open**.

To remove a scan region

You cannot remove any of the default scan regions or any scan region that is currently used in a scan protocol.

- 1 Select **Tools > Scan Region Editor**.
The Scan Region Editor dialog box opens.
- 2 In the Scan Region list, select a scan region to remove.
- 3 Click **Remove**.

Adding a Barcode

Barcodes are the means by which microarray slides are identified, both physically and within the Scan Control program. In addition, the barcode is saved in the metadata of the TIFF image, and is displayed in Feature Extraction reports.

NOTE

By default, the scanner reads the barcode of a slide and displays it as the Slide ID in the Scan Control program Scan Table. If you change the Slide ID, you can still see the barcode of the slide by moving the mouse cursor over its Slide ID. The barcode appears in a tooltip.

To add a barcode

To add a barcode, you can use an external barcode reader or your keyboard to type the barcode.

If, for some reason, the barcode of a microarray slide is not readable by the scanner, you can add it manually. To add a barcode manually, at least one slot of the cassette must be available.

- 1 If the scanner door is not open, in the Scan Control program main window, click **Open Door**, and wait for the door to open.
- 2 (Optional) If the barcode for a slide already in a slot is unreadable, remove the slide holder that contains the slide from the cassette.
- 3 In the Scan Control main window, click **Tools > Input Barcode**.
The Input Barcode dialog box appears.
- 4 Use an external barcode reader or in the Barcode text box, type the barcode.
- 5 Insert the slide holder that contains the slide into the designated slot of the cassette.
- 6 Click **Set**.

In the Scan Table, the barcode is displayed in the Slide ID for that slot. The slot State changes to “Present.”

- 7 If desired, follow [step 3](#) through [step 6](#) to add another barcode.
- 8 When finished, click **Close**.

Turning on Lasers Manually

The lasers are turned on automatically when you start the Scan Control program, or when you add slides to the queue. They turn off automatically, based on the Laser Saver Delay settings. See “[To set the laser saver delay](#)” on page 70. This section describes how to turn on the lasers manually.

NOTE

Once the lasers are turned on, it takes up to 5 minutes for them to warm up before the instrument is ready to scan.

To turn on lasers

- In the Scan Control program window, click **Tools > Switch on Lasers**.

The lasers are turned on. The Status Log displays “Warming up lasers” and the status bar displays “Warming up.”

When the lasers are warmed up, the status bar displays “Ready.”

Troubleshooting Tools

To help with troubleshooting, you can display recent errors, or open log files that were generated for the scanner. You can also create a file that contains a “snapshot” of the current state of the instrument.

NOTE

The troubleshooting tools described in this section are typically used when you are working with an Agilent technical support specialist.

To display recent errors

- In the Scan Control program menu bar, click **Tools > Show Recent Errors**.

The LogMessages.txt file opens in Notepad (or your default text editor program).

To display log files

- 1 In the Scan Control program menu bar, click **Tools > Log Files**.

The C:\ProgramData\Agilent\MicroArrayScanner\Logs folder opens with a list of log files:

ScanLog.csv – contains information about scan activity

SysLog- <datestamp>- <timestamp>.csv – contains information about system activity

ExceptionLog.txt – contains information about special conditions that affect the software execution

- 2 Double-click to select and open a log file.

Files with the .csv (comma-separated variable) extension are opened by default with an available spreadsheet program. These are read-only files. Files with the .txt extension are opened by default with an available text editor.

To create a snapshot of the instrument state

- In the Scan Control program menu bar, click **Tools > State Snapshot**.

A file is created in the C:\ProgramData\Agilent\MicroArrayScanner\Snapshots\StateSnapshots folder.

To reset calibration warnings

During typical operation, the SureScan Dx Microarray Scanner calibrates the PMTs before every scan. It also calibrates the lasers during system initialization. If the calibration is unsuccessful, or if the calibration changes significantly since the previous time it was performed, the scanner software records this information, and generates warnings in the Scan Log.

The PMT calibration warning is set when the PMT gain changes by more than 20% from the previous calibration value.

The laser calibration warnings are set when the lasers cannot achieve their specified power within the warm-up period. If this problem occurs, the system sets the warning, and recalibrates the lasers at 80% of their specified power. The Scan Control program scales the TIFF file to compensate for the lower laser power.

If the next calibration is again unsuccessful, and the warnings reappear, contact your local Agilent sales and support center.

To reset calibration warnings,

- In the Scan Control menu bar, click **Tools > Reset Calibration Warnings**.

To run a self test

To run a self test, remove all slide holders from the scanner. The Self Test command is enabled when the scanner is "Ready" and the door is closed. In order for the scanner to be ready, the lasers must be on and warmed up, which may require turning them on from the Tool/Switch on Lasers menu and then waiting for them to warm up.

The self-test does not test all subsystems or specifications. For a full retest, contact Agilent service for a preventative maintenance and scanner check.

- 1 In the Scan Control menu bar, click **Tools > Self Test**.
The Self Test dialog box opens.
- 2 Click **Start**.

The self test examines various scanner subsystems to check for out-of-specification behavior. After the self test is finished, a summary of the results is opened in your internet browser.

Setting up Scanner Defaults

To set the default scan data folder

By default, the scan data output folder is D:\ScanData.

This location is the default output folder where the image files generated by the scanner are deposited. This file is shown by default as the Output Folder in the slot table. You can change the output folder manually for a scan before it is added to the queue.

- 1 In the Scan Control program menu bar, click **Tools > Settings**.

The Settings dialog box appears.

- 2 Next to Default Scan Data Folder, type the path for the folder where you want to save the scan images.

OR

Click **Browse** and browse to the location where you want to save the scan images, and then click **OK**.

- 3 Click **Save**.

Changes to the scan data folder setting are not applied to slides with barcodes already read by the scanner. To change the default setting for slides already in the slot table, open and then close the scanner door so that the scanner reads the barcodes again.

To set the laser saver delay

The lasers turn on automatically when you start the Scan Control program, and after you add scans to a queue. You can also turn them on manually. See “Turning on Lasers Manually” on page 66.

The laser saver delay is designed to turn off the lasers automatically when not in use, to maximize the lifetime of the lasers.

- 1 In the Scan Control program menu bar, click **Tools > Settings**.

The Settings dialog box appears.

- 2 Next to **Laser Saver Delay**, select a value for the number of minutes (from 1 to 100) that the scanner waits after the last scan before it turns off the lasers.

- 3 Click **Save**.

Mapping Scan Protocols to Designs

The first time you scan a microarray of a given design, the Scan Control program assigns, or “maps” the selected protocol to that design. After that, any time the Scan Control program recognizes a slide with the same design, the Scan Control program automatically fills in that scan protocol for the slide in the slot table. You can also assign scan protocols to slide designs manually.

To map a scan protocol to a slide design

- 1 In the Scan Control program menu bar, click **Tools > Settings**.

The Settings dialog box appears.

- 2 Click the **Design to Protocol Mapping** tab.
- 3 Under Design ID, type the Design ID number for the design you want to assign to the scan protocol. The Design ID is determined from an Agilent slide barcode. All barcodes start with 25. The following five digits are the Design ID. For example, the Design ID for barcode 251727810298 is 17278.
- 4 Under Scan Protocol, select a scan protocol to use for slides for the selected design.
- 5 (Optional) Under Description, type information about the protocol or design, as desired.
- 6 Click **Save**.

Whenever you add a slide that was manufactured with the mapped design, the program automatically uses the selected scan protocol in the slot table.

4 Using Scan Control Tools

To map a scan protocol to a slide design



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This chapter provides maintenance and troubleshooting information for the SureScan Dx system.



Calibrating Your System

Calibration needs to be performed by an Agilent authorized representative.

Safety Guidelines

The SureScan Dx scanner is designed for safety and ease of use. Be sure that you understand and observe all the warnings and cautions before operating the SureScan Dx scanner.

**WARNING**

Do not attempt to repair or gain access to SureScan Dx scanner internal components. You risk exposure to high voltage and harmful laser radiation. Removing the main cover voids the warranty.

**WARNING**

Connect the SureScan Dx scanner to a grounded power outlet. It relies on a protective earth ground for safety.

**CAUTION**

In order to minimize vibration due to the rapid scanning of the laser excitation across the microarray, install the scanner on a sturdy lab bench or table. Do not install the scanner in proximity to other lab equipment that might cause vibration.

**CAUTION**

The SureScan Dx scanner is sensitive to condensing humidity conditions. Follow precautions stated in product documentation. See [“Preventative maintenance for the instrument”](#) on page 76 and the relative humidity specifications on [page 23](#).

Maintaining Your System

Scheduled maintenance activities for hardware/software

Perform the maintenance activities in [Table 6](#) according to the recommended frequency to help maintain the performance of your computer workstation and operating system.

Table 6 Scheduled maintenance for system software and hardware

Component	Maintenance activity	Frequency
Software	Check the disk space and archive data as needed.	Weekly
Software	Delete any temporary files (*.mp, *.tmp files) from the C:\Temp folder.	Weekly
Software	If sluggish performance is observed, defragment the hard disk using defragmentation software.	As needed
Hardware	Check all vents to ensure that they are not blocked by dust, debris, furniture, or other instrumentation.	Weekly

Preventative maintenance for the instrument

On-going preventative maintenance checks (PM) must be performed by Agilent-trained service personnel in order to assure optimal performance of the instrument. Contact Agilent technical support to schedule PM services.

Visit www.agilent.com/genomics/contactus to find worldwide contact information for Agilent technical support.

Tips to prevent problems

Follow these tips to help you maintain the SureScan Dx Microarray Scanner and its performance.

Tips to avoid data loss

- Avoid running software programs that cause high CPU workload, that can affect the acquisition of data during scanning.

Tips to avoid damage to the scanner

- Keep liquids and vapors away from the SureScan Dx scanner.
- Never place anything on the SureScan Dx scanner or on the scanner door.
- Minimize and control temperature fluctuations.

Do not place the SureScan Dx scanner in direct sunlight. Do not locate the SureScan Dx scanner near windows even if they have blinds or window coverings. The hot sun can heat up the SureScan Dx scanner housing in a nonuniform fashion, which can cause problems with the alignment of the optics.

Scan only when the laboratory temperature is consistent with the operating temperature specifications for the SureScan Dx scanner. To assure optimal SureScan Dx scanner performance, operate the scanner only in the specified temperature ranges. (See “[SureScan Dx Scanner Specifications](#)” on page 23.)

- Control the humidity.

The SureScan Dx scanner is sensitive to condensing humidity conditions. To ensure optimal performance, operate the SureScan Dx scanner only in the specified humidity ranges. (See “[SureScan Dx Scanner Specifications](#)” on page 23.) Always allow 12 hours thermal equilibration time on site before opening the shipping box.

5 Maintaining and Troubleshooting Your System

Tips to prevent problems

- If the power cord needs to be replaced, use a power cord that is appropriately rated.

Tips to maintain hardware performance

- Avoid moving the SureScan Dx scanner.

If you must move the SureScan Dx scanner, there is a chance for adverse affects on performance. Call your local Agilent sales and support center for assistance in moving the SureScan Dx scanner.

- Place the SureScan Dx scanner on a sturdy lab bench or table.
- Avoid leaning on the SureScan Dx scanner.
- To extend the life of the lasers, set up your lasers to turn on and off automatically. See [“To set the laser saver delay”](#) on page 70.
- After turn-on, allow time for laser warm-up and stabilization. Typical warm-up time is less than five minutes.
- Do not use acetone or other solvents for cleaning.



WARNING

Do not remove the main cover. Do not attempt to repair or gain access to internal components. You risk exposure to high voltage and harmful laser radiation.

Troubleshooting Your System

The SureScan Dx Microarray Scanner was designed for low maintenance and high ease of use. If you cannot resolve a problem with the system, read this chapter. If the problem still exists, contact your local Agilent sales and support center.

Technical Support

Technical support is available for the SureScan Dx system. Read the rest of this chapter before calling your local Agilent sales and support center.

SureScan Dx Microarray Scanner support

If you have a problem with your SureScan Dx scanner that requires assistance from your local Agilent sales and support center, be prepared to provide the latest diagnostic log files created by the Scan Control program. To open the folder that contains the log files, in the Scan Control program main window, click **Tools > Log Files**. Log files are located in the folder C:\ProgramData\Agilent\MicroArrayScanner\Logs.

Each SureScan Dx scanner has a unique 10-character serial number. The serial number is located on the front of the instrument at the lower right and on the rear of the instrument.

When corresponding with your local Agilent sales and support center about your SureScan Dx scanner, be sure to include the model number and 10-character serial number.

Make a note of the serial number of your SureScan Dx scanner, the software version # and the installation date in the spaces shown (if you print this page) or on a sheet of paper that you keep close to your scanner.

Scanner information

Model #: _____

Serial #: _____

Installation Date:_____

Software Version#: _____

Software Update Version#/Date: _____

Software Update Version#/Date: _____

Find the version information for scanner software

- 1** Select **Help > About** from the menu bar to find version information.
- 2** To close the program, click **OK**.

Frequently Asked Questions (FAQs)

The following are frequently asked questions (FAQs) that can help you operate and maintain the SureScan Dx system and troubleshoot issues that occur.

Table 7 FAQs

FAQ	Answer
I want to move the SureScan Dx Microarray Scanner to another area.	The move can adversely affect scanner performance. Call your local Agilent sales and support center for assistance in moving the scanner and assuring proper operation afterward.
Can I save files over the network while scanning?	Agilent recommends that you save your data files directly to the local hard disk. You can also save data files to a network folder. If a network access problem is experienced during the scan, data is saved to a temporary local folder, and a warning is included in the scan log.
Where do I find support information, such as drivers, guides, and troubleshooting solutions, for my computer workstation?	If you have a problem with your computer workstation, see the documentation that came with the computer. If you are still unable to resolve the problem, contact your local Agilent sales and support center.
Can I open the door to the scanner manually?	No. You must use the Open Door/Close Door button in the Scan Control program to open or close the scanner door.
The SureScan Dx Microarray Scanner is turned on and the Scan Control program is open, but the scanner does not scan.	<ol style="list-style-type: none"> 1 Close and then restart the Scan Control program. You must turn on the SureScan Dx Microarray Scanner before starting the Scan Control program. If you started the Scan Control program first, the connection is not made when the scanner is turned on. 2 Contact your local Agilent sales and support center.
I want to remove a slide from the scanner, but the Scan Control program will not let me open the door.	The Scan Control program prevents you from opening the door while it is loading or ejecting a slide. Wait until the Open Door button is available to open the door. If you continue to have problems, check the Status Log and contact Agilent technical support.

Hardware Troubleshooting

Except for the power fuse, the SureScan Dx Microarray Scanner has no user-serviceable parts. The status indicator light on the front of the scanner indicates possible problems. You can also replace the fuses that protect the system. For any other problems, including jams, contact your local Agilent sales and support center.

Troubleshooting with the status indicator light

The front panel has an indicator light that shows the status of the SureScan Dx Microarray Scanner.



Figure 15 Location of the status indicator light

Table 8 describes the possible states of the indicator light.

Table 8 Scanner status indicator light states

Light state	Meaning/action required
Yellow	Scanner is initializing. The yellow light appears after you turn on the scanner, and also when the Scan Control program connects and initializes communication with the scanner.
Off	Scanner is fully initialized
Green	Scanning is in process.
Red	An error has occurred. Check the Scan Control Status log, Scan log, and list of recent errors, and then contact Agilent technical support.

Checking and replacing scanner fuses

The SureScan Dx Microarray Scanner has two fuses for the power supply, on the rear of the SureScan Dx Microarray Scanner. The power supply fuses are directly above the power cord plug.

The fuses are ordered directly from Agilent Technologies.



WARNING

Always disconnect the power cord before checking or replacing the fuses.

Checking and replacing the power supply fuses If you cannot turn on the SureScan Dx Microarray Scanner, even though the power outlet is active when tested, check, and replace the fuses if needed.

- 1 Disconnect the power cord.
- 2 Use a small flat-edge screwdriver to pry up the small plastic tab on the bottom edge of the fuse holder until it releases.
- 3 Pull out the fuse holder, and check the fuse integrity.

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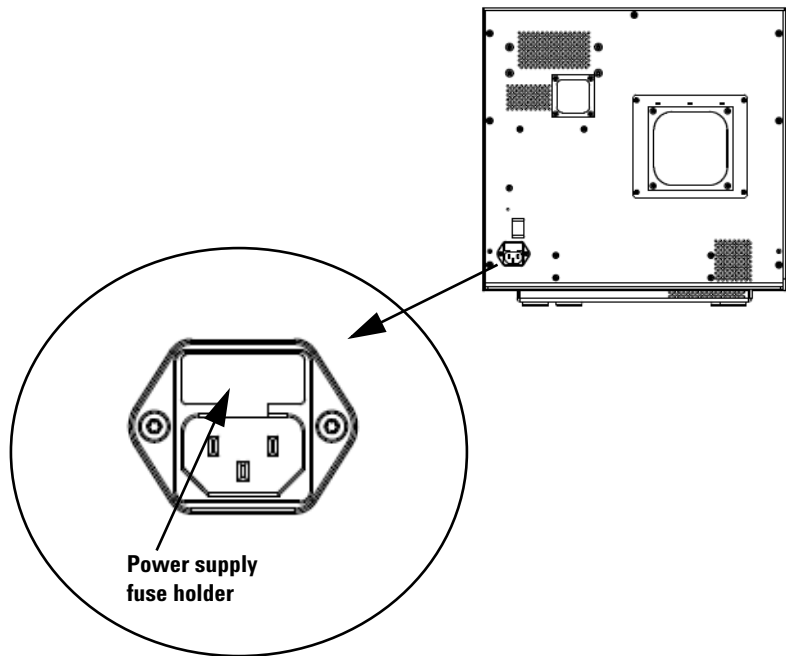
Software Troubleshooting

- 4 If a fuse is blown, replace the fuse with a T4A, 250 VAC rated fuse (part number 2110-1491).
- 5 Push the fuse holder back in until it clicks into place.
- 6 Plug in the power cord.



CAUTION

Replace the fuses with only the same or equivalent rated fuses. If you are unsure about the fuses, contact your local Agilent sales and support center before installing.



Software Troubleshooting

In case you experience a computer failure or you want to reload the hard drive image that Agilent ships with the computer, Agilent supplies a recovery CD that lets you re-image the hard drive.

File locations

The SureScan Dx system uses the following folders:

Scan Control program files (installation folder)

C:\Program Files (x86)\Agilent\ScanControl

Log files

C:\ProgramData\Agilent\MicroarrayScanner\Logs

Scanned image files (default – otherwise as set in Scan Control Settings)

D:\ScanData

Scanned image files (in case of failure to find a network storage location)

If the Default Scan Data Folder set in **Tools > Settings** is not available, the program performs the following actions:

- Posts an error message in the Status Log
- Clears the Default Scan Data Folder set in **Tools > Settings**
- Sets the Output Folder in the Slot Table to
C:\ProgramData\Agilent\MicroArrayScanner\Temp

SureScan Dx system error messages

This section explains how to use error messages and error logs generated by the system.

Hardware monitoring

The SureScan Dx Microarray Scanner continuously monitors internal temperatures and fan speeds, as well as fault conditions on many subsystems.

- If the monitored parameters reach warning levels, a message is displayed in the status log, and the instrument goes into a “scanning suspended” state. In this state, the currently running scan finishes, but no new scan starts.
- If the monitored parameters reach alarm levels, the instrument immediately stops scanning, and reduces its power consumption as much as possible.

To display details of the fault that shut down the instrument, in the Scan Control program, click **Tools > Show Recent Errors**.

Where scanner error messages can appear

Error messages appear in the following places:

- Error messages appear in the Status Log in the Scan Control program main window. If the error can result in compromised data, it also appears in the Scan Log.
- Errors are also captured in greater detail in the system log file. System log files are saved as comma separated value files, with extension .csv. They can be opened with a text editor program (such as Notepad) or with Microsoft Excel. To open the folder where system log files are located, click **Tools > Log Files**.
- To display the most recent errors, click **Tools > Show Recent Errors**. The recent errors are opened in Notepad.

Troubleshooting with error messages

The SureScan Dx system creates error messages to help you solve issues that arise. Many of the error messages include a solution within the text box; follow those instructions.

The following table contains some of the error messages that appear in popup dialog boxes, along with descriptions and suggested actions. If a problem continues after you try the suggested action, contact Agilent technical support.

Table 9 Error messages in popup dialog boxes

Error message	Description and suggested action
A slide has been placed in the active slot (Slot number {*}). Remove the slide to allow scanning to continue.	A slide is currently in the active slot and the scanner cannot return the scanned slide to its slot in the cassette. No additional scans can take place, and Close Door is disabled. Remove the slide from the active slot.
Cannot connect to instrument: Firmware version is more recent than host software version. Firmware version: {*} Host software version: {*} Contact Agilent product support.	Instrument firmware does not match the Scan Control program version. Contact Agilent technical support.
Cannot connect to instrument: Verify firmware failed. {*} Contact Agilent product support.	Scan Control cannot communicate with the scanner due to a firmware problem and goes into offline mode. Contact Agilent technical support.
Check disk space failed: {*}	Occurs when you try to add a scan to the queue but there is not enough disk space for the scan to complete. Clean up your hard disk to provide adequate space for storage of scan files.
Configuration items are missing from config files. Cannot save.	Reinstall the Scan Control program.
Configuration items missing.	Reinstall the Scan Control program.
Error during shutdown: {*}	An error occurred when closing the Scan Control program. Restart the Scan Control program and try again.

5 Maintaining and Troubleshooting Your System

SureScan Dx system error messages

Table 9 Error messages in popup dialog boxes (continued)

Error message	Description and suggested action
Find log files failed: {*}	Close the Scan Control program and restart it. If the problem continues, reinstall the Scan Control program.
Find recent errors failed: {*}	Close the Scan Control program and restart it. If the problem continues, reinstall the Scan Control program.
Get 'About' information failed: {*}	Close the Scan Control program and restart it. If the problem continues, reinstall the Scan Control program.
Initialize logger failed: {*}	Log file is open in another application. Close the log file and restart the Scan Control program.
Instrument is busy: Please wait for the instrument to become idle.	Occurs when you attempt a command that cannot be completed while the instrument is busy. Wait and try the action again.
Instrument self test failed: {*}	Re-run the self test and if it fails again, contact Agilent technical support.
Load application configuration failed: {*}	Scan Control program installation is corrupt. Reinstall the Scan Control program.
Load instrument configuration failed: {*}	Scan Control program installation is corrupt. Reinstall the Scan Control program.
Load scan configurations failed: {*}	Scan Control program installation is corrupt. Reinstall the Scan Control program.
Load test script set failed: {*}	Reinstall the Scan Control program.
Open Online Support website failed: {*}	Web page is currently unavailable. Check your internet connection. Try again later.
Open Scanner Home Page website failed: {*}	Web page is currently unavailable. Check your internet connection. Try again later.
Open Users Guide '{*}' failed: {*}	Close the Scan Control program and restart it. If the problem continues, reinstall the Scan Control program.
Recovering door jam failed: {*}	An error occurred when the instrument tried to recover from a door jam. Close the Scan Control software, restart the scanner, and then restart the Scan Control program.
Save instrument state failed: {*}	Close the Scan Control program first. Then, after the window closes, shut off the scanner. Restart the scanner and the Scan Control program. If the problem continues, reinstall the Scan Control program.

Table 9 Error messages in popup dialog boxes (continued)

Error message	Description and suggested action
Show 'About' information failed: {*}	Close the Scan Control program and restart it. If the problem continues, reinstall the Scan Control program.
Update firmware failed: {*}	Update of the instrument firmware failed. The scanner must be on when the firmware is updated. Make sure the scanner is on then retry the firmware update. If the problem persists, contact Agilent technical support.

* Detail added when the message is generated

The following table shows error messages that appear in the Status Log or Scan Log. When an error occurs, to display additional information, click **Tools > Show Recent Errors**.

Table 10 Error message in logs

Error message	Description and suggested action
{*} State Machine unknown error during state '{*}': {*}.	Multiple possible causes. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Activity EjectSlide failed.	Multiple possible causes. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Activity InitLoader failed	Multiple possible causes. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Activity InitStages failed	Multiple possible causes. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Activity LaserWarmup completed with warnings	Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Activity LaserWarmup failed.	Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Activity LoadSlide failed	Multiple possible causes. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
AutoFocus hold percentage is more than warning limit	Inspect slide and slide holder. Clean and/or re-seat slide as needed. Replace slide holder if slide cannot be properly held in place.
Data system calibration completed with warnings	Indicates data system calibration failure. If the problem persists, contact Agilent technical support.

5 Maintaining and Troubleshooting Your System

SureScan Dx system error messages

Table 10 Error message in logs (continued)

Error message	Description and suggested action
Data system calibration failed	Indicates data system calibration failure. If the problem persists, contact Agilent technical support.
Default scan data folder verification '{*}' failed: {*}	The default folder has been removed or cannot be accessed. Recreate it or fix the network connection.
Eject failed: unable to move slide into cassette.	Restart the scanner and Scan Control program to attempt to clear fault.
Fanspeed error detected: Instrument operation halted	Hardware problem — contact Agilent technical support.
Fanspeed warning cleared: Instrument operation resuming	Hardware problem — contact Agilent technical support.
Fanspeed warning detected: Instrument operation suspended.	Hardware problem — contact Agilent technical support.
Find focus failed	Multiple possible causes. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
General communication failure.	Check the LAN cable. Restart the scanner and the Scan Control program.
Green Laser power is not set to calibrated value	Laser power has been reduced. Compensation was applied to the output TIFF. The green laser may fail soon. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Green PMT calibration completed with warnings	Indicates PMT calibration completed successfully, but some of the values it calculated are not good. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Hardware error detected in subsystem '{*}':Instrument operation halted	Low-level error. Restart scanner and Scan Control program. Contact Agilent technical support.
Hardware warning detected in subsystem '{*}':Instrument operation suspended	Low-level error. Check recent errors and contact Agilent technical support.
High temperature error detected: Instrument operation halted	Check ventilation slots.
High temperature warning cleared: Instrument operation resuming	Check ventilation slots.
High temperature warning detected: Instrument operation suspended	Check ventilation slots.

Table 10 Error message in logs (continued)

Error message	Description and suggested action
PMT calibration failed	Indicates PMT calibration failure. If the problem persists, contact Agilent technical support.
Red Laser power is not set to calibrated value	Laser power has been reduced. Compensation was applied to the output TIFF. The red laser may fail soon. Try restarting the scanner and Scan Control program. If the problem persists, contact Agilent technical support.
Red PMT calibration completed with warnings	Indicates PMT calibration issues. If the problem persists, contact Agilent technical support.
Scan slide failed	Multiple possible causes. Click Tools > Show Recent Errors for more information. Try restarting the scanner and the Scan Control program. If the problem persists, contact Agilent technical support.
State machine failure {*}	Low-level software error. Contact Agilent technical support.
Status communication failure	Check connection to instrument.
Suspending autoloader operation due to autoloader errors	Click Tools > Show Recent Errors for more information.
Unable to access folder \"{*}\": Saving output file in folder \"{*}\"	Destination folder was not available during the scan.
Watchdog communication failure: {*}	Low-level error. If the problem recurs, call Agilent technical support.

** Detail added when the message is generated*

If an error message does not appear in the table

This table does not list all the possible error messages. If you have an error message that is not listed and you are unable to resolve the problem, do the following:

- 1** Write down the error message.
- 2** Restart the Scan Control program.

5 Maintaining and Troubleshooting Your System

SureScan Dx system error messages

- 3** If step 2 does not solve the problem, do the following:
 - a** Close the Scan Control program.
 - a** Restart the computer workstation.
 - b** Turn off the SureScan Dx Microarray Scanner, and then back on.
 - c** Restart the Scan Control program.
- 4** If step 3 does not solve the problem, contact your local Agilent sales and support center.

Using the Diagnostic Display

The SureScan Dx Microarray Scanner diagnostic display is used for advanced troubleshooting tasks. This display is located on the front of the instrument, behind the upper front cover. To open the cover, grasp the finger holds on the sides of the cover, and pull forward. You see the diagnostic display and a 4-way control switch.

NOTE

Use the diagnostic display switch only when requested by Agilent technical support.

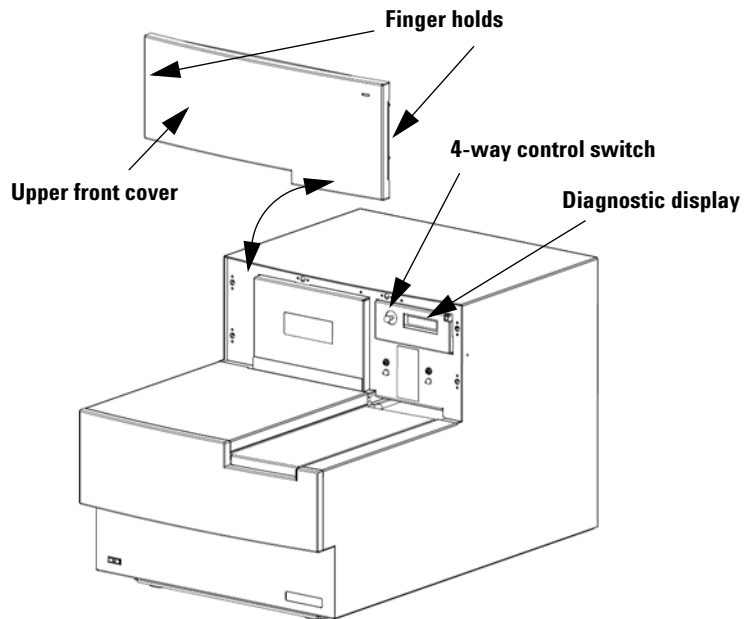


Figure 16 Diagnostic display location

5 Maintaining and Troubleshooting Your System

SureScan Dx system error messages

The diagnostic display control switch has the following capabilities:

- Before Scan Control connects to the instrument, the display shows the IP address of the scanner. If the IP address is not displayed, the firmware is not running.
- Toggle the switch Up to cycle through a menu, with the following choices:
 - The first item lets you reset the IP address to factory default (10.0.0.2).
 - The second item lets you reboot the firmware. (The firmware is also reset by power cycling the instrument.)
- To perform the selected operation, move the switch to the right (to the Select position).
- Once the Scan Control program connects to the instrument, the display reads “Client Connected”.

Updating the Scanner Firmware and Scan Control Program

Agilent Technologies occasionally makes software updates available. Firmware updates (if necessary) are included with the Scan Control program update. This section describes how to update the scanner program and firmware.

NOTE

Updating of the scanner firmware or the Scan Control program may require revalidation of your in-house operational protocols and procedures. Refer to your laboratory operational policies for guidance.

To update the Scan Control program and firmware

- 1 From the Scan Control main window, click **Help > Scanner Home Page**.
The Agilent Technologies Genomics – SureScan Microarray Scanner Overview web page opens.
- 2 In the web page, click **Download Software**.
- 3 Follow the instructions to read the Release Notes and Installation Notes
- 4 Click **Download Software** to download the software installer and save it to your computer.
- 5 Start the software installer and follow the prompts to install the software. Accept the defaults. It is not necessary to remove the previous version of the software.

NOTE

Software updates do not overwrite scan regions, protocols, or the calibration of the instrument.

- 6 When the software installation is finished, start the Scan Control program.
- 7 If a firmware update is needed, a message appears, and the Scan Control program changes to Offline Mode.
- 8 Close the Scan Control program.
- 9 Turn off the power to the scanner.

5 Maintaining and Troubleshooting Your System

To verify the software installation

10 Wait 10 seconds, and then turn on the scanner power.

11 Start the Scan Control program.

The Scan Control program and scanner firmware are now updated. If you have problems, contact Agilent technical support.

To verify the software installation

The SureScan Dx system workstation includes an installation qualification tool (IQT). Use this program after updating your software to verify that the update installed correctly.

1 Click **Start > All Programs > Agilent Technologies > Installation Qualification Tool**.

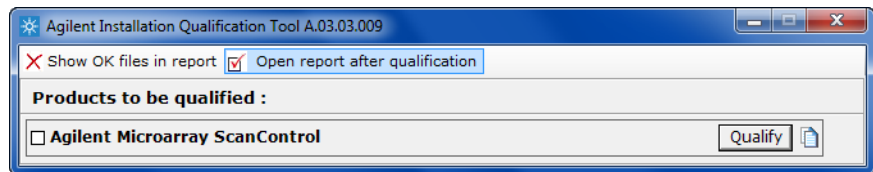


Figure 17 Agilent Installation Qualification Tool dialog box

2 Select the box next to **Agilent Microarray Scan Control**.

3 Under Products to be qualified, click **Qualify**.

The installation is verified, and an installation qualification report is generated. If you selected **Open report after qualification**, the installation qualification report opens in your internet browser.

4 When finished, click the close button in the upper right corner of the program dialog box.



6 Reference

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This chapter includes descriptions of the Microarray Scan Control program windows and dialog boxes. It also contains specifications and regulatory information.



Scan Control Program Window Reference

This section describes the main window of the Microarray Scan Control program and its contents.

Scan Control main window

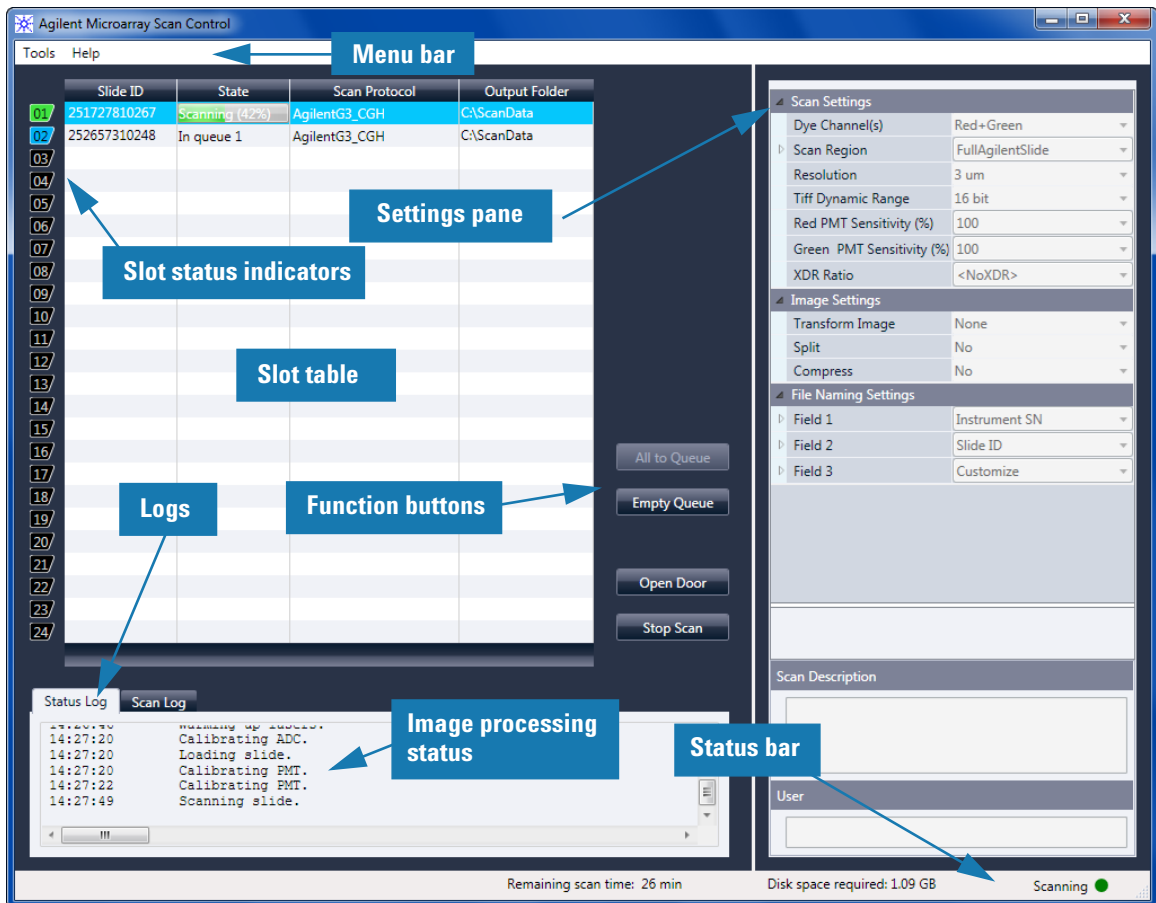


Figure 18 Agilent Microarray Scan Control main window

The Microarray Scan Control window appears when you start the Microarray Scan Control Program. It has the following features:

Table 11 Scan Control window features

Feature	Description
Menu bar	Open tools menu and help.
Slot table	Display status, scan protocols, and output folders for microarray slides currently in the scanner.
Settings pane	Display settings for selected slide. For slides not in the queue, you can change settings from here.
Slot status indicators	Indicates the status of the slot. Matches the slot indicator lights on the cassette.
Function buttons	<ul style="list-style-type: none"> • Add and remove slides from the scan queue • Open and close the scanner door • Start and stop a scan
Logs	Display instrument and scan status logs.
Status bar	Show status of scanner, remaining scan time, and disk space required for the scan.

Tools menu

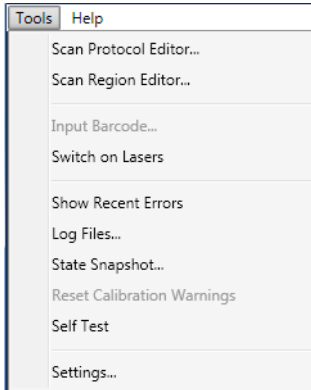


Figure 19 Tools menu

The following functions are available on the Tools menu:

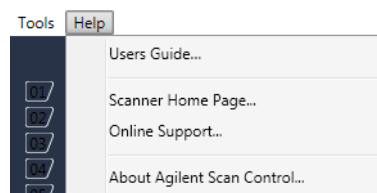
Table 12 Scan Control Tools commands

Tool	Description
Scan Protocol Editor	Opens the Scan Protocol Editor dialog box, where you can create, change, or remove scan protocols.
Scan Region Editor	Opens the Scan Region Editor dialog box, where you can create, change, or remove custom slide scan regions.
Input Barcode	Lets you use the keyboard or a “keyboard emulation” barcode reader to enter a barcode for a slide that does not have a barcode, or a when the scanner cannot read a barcode.
Switch on Lasers	If the lasers are off, use this command to turn on the scanner lasers.
Show Recent Errors	Opens notepad (or your default text editor) and displays details of the most recent errors.

Table 12 Scan Control Tools commands

Tool	Description
Log Files	Opens the Logs folder, where you can open any of the logs created by the program.
State Snapshot	Creates a file that contains the status of the scanner at the time the snapshot was created. This file is helpful in troubleshooting.
Reset Calibration Warnings	Laser calibration warnings are set when the lasers cannot achieve their specified power within the warm-up period. If this problem occurs, the system sets the warning, and recalibrates the lasers at 80% of their specified power. Use this function to reset the warnings to default settings.
Self Test	The self test examines various scanner subsystems to check for out-of-specification behavior. After the self test is finished, a summary of the results is opened in your internet browser.
Settings	Opens the Settings dialog box, where you can set defaults and map scan protocols to microarray designs.

Help menu

**Figure 20** Scan Control Help menu

The following commands are available in the Help menu:

Table 13 Scan Control Help commands

Item	Description
Users Guide*	Opens this guide in Adobe Reader.
Scanner Home Page	Opens the Agilent Technologies website for the SureScan Microarray Scanner in your internet browser. Click the SureScan Dx Microarray Scanner tab to view information on the Dx version of the scanner.
Online support	Opens the Agilent Technologies Technical Support web page, where you can find support information for your scanner.
About Agilent Scan Control	Displays version information for the Scan Control program and the serial number and model of your scanner.

* The first time you open the Scan Control software, you are prompted to select your preferred version of the User Guide. Until the preferred version is selected, the User Guide option on the Help menu is unavailable for selection. You can change the selected User Guide at any time from the Settings dialog box (see [“Settings dialog box – General Settings”](#) on page 126).

Slot table

	Slide ID	State	Scan Protocol	Output Folder
01	251727810267	Scanning (10%)	AgilentG3_CGH	CA\ScanData
02	252657310248	In queue 1	AgilentHD_CGH	CA\ScanData
03	251727810212	In queue 2	AgilentG3_CGH	CA\ScanData
04	251727810296	In queue 3	AgilentG3_CGH	CA\ScanData
05	252657310211	In queue 4	AgilentHD_CGH	CA\ScanData
06	251727810231	In queue 5	AgilentG3_CGH	CA\ScanData
07	252657310233	In queue 6	AgilentHD_CGH	CA\ScanData
08	251727810236	In queue 7	AgilentG3_CGH	CA\ScanData
09	251727810298	In queue 8	AgilentG3_CGH	CA\ScanData
10	251727810268	In queue 9	AgilentG3_CGH	CA\ScanData
11	252657310249	In queue 10	AgilentHD_CGH	CA\ScanData
12	251727810213	In queue 11	AgilentG3_CGH	CA\ScanData
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

Figure 21 Scan Control program slot table

The slot table is a virtual representation of the contents of your scanner cassette. It is used to set up, start/stop, and monitor the progress of scans.

Slot Status Indicator Numbers to the left of the slot table are identical to the slot status indicator lights on the cassette. The color of the number changes to indicate the status of the slot and scan, as described in [Table 14](#) on page 104.

Slide ID The Slide ID used to name the scanned image file. After you load slides into the scanner cassette and close the scanner door, the program reads the barcode label for each slide in the cassette and displays it in this column. You can change

the Slide ID to any text acceptable in a file name. The barcode for the slide is retained, and is shown when you move the mouse over its Slide ID in the Scan Table.

State Displays the current state of the slot. Possible states and the color of the slot status indicator are shown in the following table.

Table 14 Slot states and indicators

Slot status indicator	State	Meaning
Off	Empty	No slide is present in the cassette.
Blinks blue	Present	Slide is present in the cassette slot. When barcode is read successfully, it appears in Slide ID. Slide is not ready to add to a queue because it has no scan protocol assigned yet.
Blinks blue	Ready for queue	The slide is ready to add to a scan queue.
Solid blue	In queue x	Slide is in the scan queue, in position x, where x indicates the order in which the slides are scanned.
Blinks green	Scanning (x%)	Slide is in the process of scanning, where x% indicates the percent of completion for the scan.
Solid green	Complete	Scan finished successfully.
Yellow	Warning	A warning was generated during the scan.
Red	Error	An error occurred during the scan.

Table 14 Slot states and indicators (continued)

Slot status indicator	State	Meaning
Blinks yellow	Removed	A slide that was "Ready" or "In Queue" was removed from the cassette.
Blinks yellow	Replaced	<p>A slide was placed into a slot whose state was "Removed."</p> <ul style="list-style-type: none"> • If the barcode matches the original slide that was removed, the State is changed back to "Ready for queue" or "In Queue." • If the barcode does not match the slide that was removed, the Status changes to "Ready for queue" if a protocol is mapped to the slide Design ID. It changes to "Present" if no protocol is mapped to the slide Design ID.

Menu selections for State

For slides that are not scanning, commands are available that let you add or remove a slide from the queue. The selections available for a particular slide vary depending on the location of the slide in the queue, or if the slide is ready to add to the queue.

Table 15 Menu selections for State

Selection	Description
Move to First	Moves the slide to the first position in the queue.
Move to Last	Moves the slide to the last position in the queue.
Move up	Moves the slide one place up in the scan queue.

Table 15 Menu selections for State (continued)

Selection	Description
Move down	Moves the slide one place down in the slide queue.
Remove from queue	Removes the slide from the scan queue and sets the State to Ready for Queue.
Add to queue	Available if no slides are in the scan queue. Adds the selected slide to the scan queue.
Add to queue first	Adds slide to the first position in the queue. If a scan is already in process, the slide becomes the first slide to scan after completion of the current scan.
Add to queue last	Adds the slide to the last position in the queue.

Scan Protocol Displays the scan protocol to use for scanning the selected slide. Available scan protocols include the default Agilent-supplied scan protocols and any scan protocols that were created or imported. See “[About Scan Protocols](#)” on page 44.

Output Folder Displays the folder where image files created by the scanner are saved. By default, this location is D:\ScanData. You can change the default output folder in **Tools > Settings**. You can change the output folder for a slide before it is added to the queue. The Browse button lets you select a folder to store the data from each scan. Agilent recommends that the data be acquired to a local folder on a secondary hard drive. You can also select a network folder. If a network access problem is experienced during the scan, data is saved to a temporary local folder, and a warning is included in the scan log.

Function buttons

Buttons next to the slot table are available depending on the instrument status.

All to Queue Adds all slides not currently in the slide queue to the slide queue. Slides are added to the queue in the order they appear in the slot table.

Empty Queue Removes all slides from the queue, except those currently scanning.

Open Door/Close Door Opens or closes the door on the scanner.

Start Scan/Stop Scan Starts or stops the scan. Slides are scanned in the order they appear in the scan queue.

Settings pane

The screenshot shows a settings pane with three main sections: Scan Settings, Image Settings, and File Naming Settings. Each section contains a list of settings with their current values and dropdown arrows. Below these sections are two text input fields labeled 'Scan Description' and 'User'.

Scan Settings	
Dye Channel(s)	Red+Green
Scan Region	FullAgilentSlide
Resolution	3 um
Tiff Dynamic Range	16 bit
Red PMT Sensitivity (%)	100
Green PMT Sensitivity (%)	100
XDR Ratio	<NoXDR>

Image Settings	
Transform Image	None
Split	No
Compress	No

File Naming Settings	
Field 1	Instrument SN
Field 2	Slide ID
Field 3	Customize

Scan Description

User

Figure 22 Scan Control – settings pane

The settings pane lets you change individual settings for a selected slide. To change settings, the slide must not be in the scan queue. For more information on the settings available in this table, see “[Scan Protocol Editor dialog box](#)” on page 116.

Scan Settings	Displays scan settings from the assigned scan protocol. To change a setting, click next to the setting name and select a new value from the list. For more information, see “ Scan Settings ” on page 117.
Image Settings	Some data analysis programs have specific requirements for the images. This section lets you change how the image is created from the scan. For more information, see “ Image Settings ” on page 120.
File Naming Settings	Shows selections for how the program names scan files. For more information, see “ File Naming Settings ” on page 120.
Scan Description	In this area, you can type information about the microarray slide or scan.
User	In this area, you can type information about the operator who set up and performed the microarray scans.

Log tabs

The software documents instrument and scan status in log files that are saved in the C:\ProgramData\Agilent\MicroArrayScanner\Logs folder. These logs are also displayed in the Log tabs at the bottom of the Scan Control program window.

Status Log tab

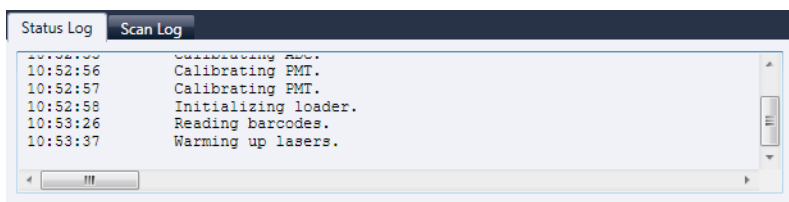


Figure 23 Status Log tab

Displays information about the status of the instrument.

Scan Log tab

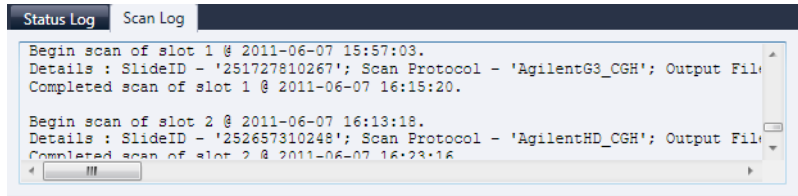


Figure 24 Scan Log tab

Displays information about the scans. When you start the Scan Control program, the Scan Log displays the scans from the previous 30 days.

Right-click in one of the log tabs to open a shortcut menu with the following options:

Table 16 Shortcut menu options for log tabs

Menu command	Description
Clear	Clears the contents of the tab. The contents of the log file is not affected.
Copy	Active after you hold down the mouse button and drag to select a portion of the log. Copies the selected region to the Clipboard. You can paste the selection into a text editor or program of your choice.

Table 16 Shortcut menu options for log tabs

Menu command	Description
Select all	Selects all of contents of the log tab.
Auto Scroll	Turns auto scrolling within the log on or off. If autoscroll is on, when a new message appears, the program automatically scrolls to the bottom of the log so you can see it easily. If autoscroll is off, the pane does not scroll when new messages appear. Turning off autoscroll is useful if you want to review the log while the scanner is active.

Scan Control Program Dialog Box Reference

This section contains descriptions of the parameters available in the dialog boxes that appear when you use the Scan Control program. The dialog box descriptions appear in alphabetical order.

Agilent Installation Qualification Tool

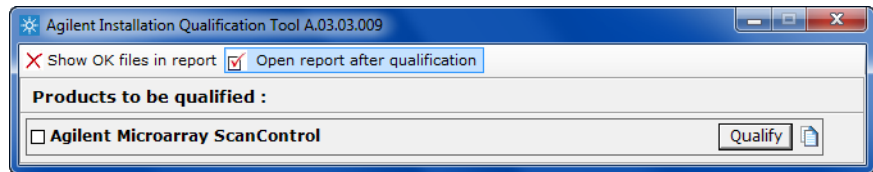


Figure 25 Installation Qualification Tool dialog box

Purpose: Verifies that the Scan Control program was installed correctly and generates an Installation Qualification report.

To open: In the Windows Start menu, click **All Programs > Agilent Technologies > Installation Qualification Tool**.

- | | |
|--|---|
| Show OK files in report | When selected, the qualification report includes a list of all files verified as OK. (Default is not selected. Invalid files are always shown.) |
| Open report after qualification | When selected, the qualification report opens in your web browser, after the installation qualification is finished. |
| Products to be qualified | Displays a list of Agilent software products that you can qualify with the tool. |
| Qualify | Starts the installation qualification for the selected product. |
| Re-Qualify | Appears after installation qualification. Lets you requalify the installation. Requalify after you correct any problems, to generate a new installation qualification report. |

Report saved at Appears after installation qualification is finished. Displays a link to the location of the qualification report. Click the link to open the report in your web browser.



Opens the IQT reports folder.

Export Scan Protocol dialog box

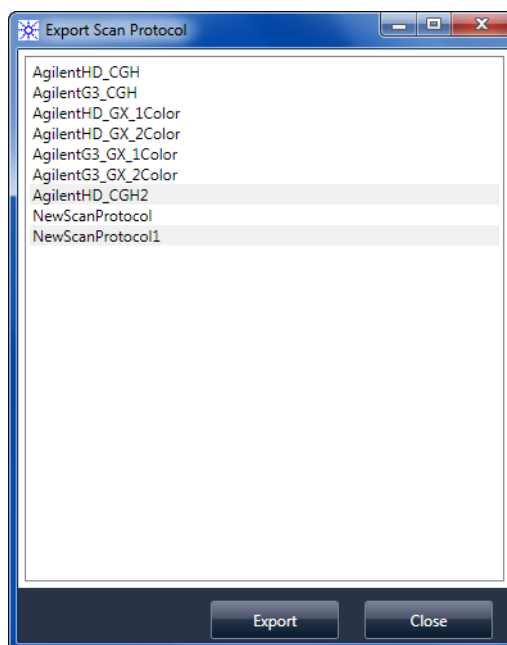


Figure 26 Export Scan Protocol dialog box

Purpose: Lets you select available scan protocols to export.

To open: In the Scan Protocol Editor dialog box, click **Export**.

6 Reference

Export Scan Region dialog box

Export When one or more scan protocols are selected, this command opens the Save As dialog box, where you select a location and file name for the exported protocols file.

Close Closes the dialog box.

Export Scan Region dialog box

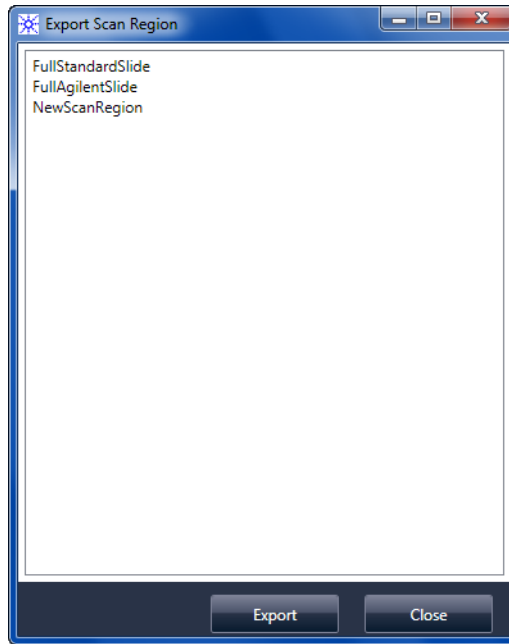


Figure 27 Export Scan Region dialog box

Purpose: Displays available scan regions that you can select to export.

To open: In the Scan Regions Editor dialog box, click **Export**.

- Export** When one or more scan regions are selected, this command opens the Save As dialog box, where you select a location and file name for the exported scan regions file.
- Close** Closes the dialog box.

Input Barcode dialog box

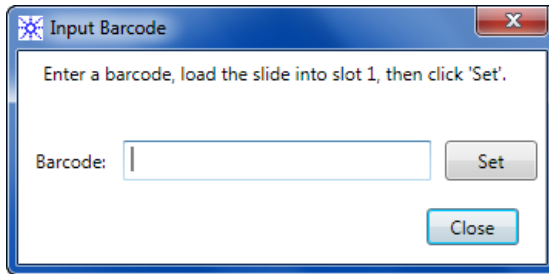


Figure 28 Input Barcode dialog box

Purpose: Used to type or enter a barcode for a slide without a barcode or whose barcode is unreadable by the scanner.

To Open: In the Scan Control program, click **Tools > Input Barcode**.

- Barcode** The barcode you enter using an external barcode reader or your keyboard.
- Set** After the barcode is entered and the slide is loaded into slot 1 of the scanner, this button is used to assign the barcode to the slide in slot 1.
- Close** Used to close the dialog box.

Scan Protocol Editor dialog box

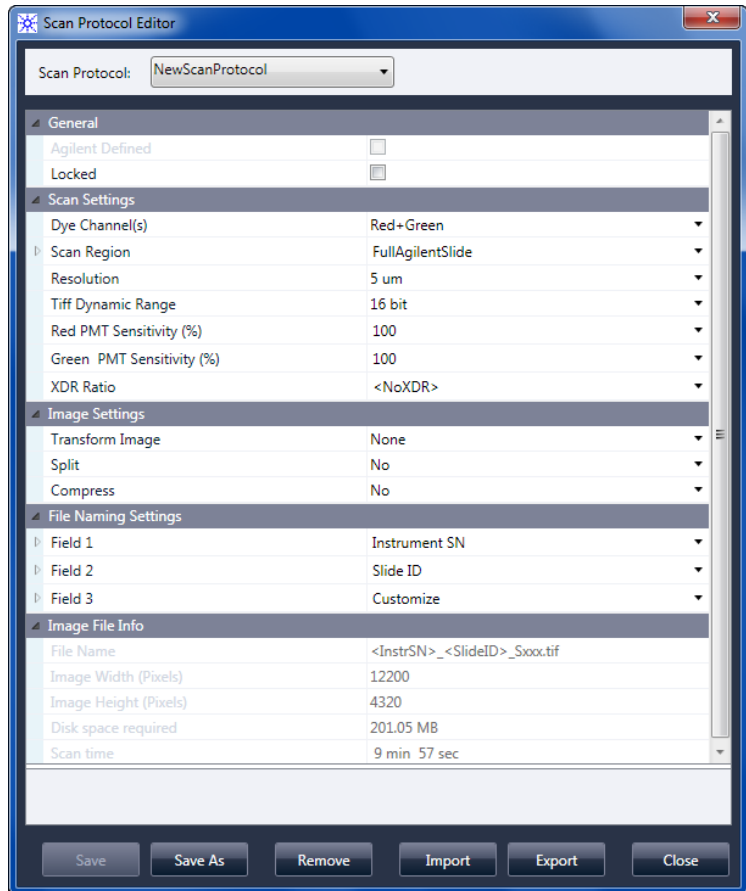


Figure 29 Scan Protocol Editor dialog box

Purpose: Used to create or change scan protocols.

To open: In the Scan Control program window, click **Tools > Scan Protocol Editor**.

Scan Protocol Displays a list of available scan protocols. The settings for the selected scan protocol are displayed in the Scan Protocol Editor dialog box.

General

- Agilent Defined** A protocol provided by Agilent.
- Locked** When a protocol is locked, it cannot be changed.

Scan Settings

- Dye channel** Determines whether only red (for example, Cy-5 dye), only green (for example, Cy-3 dye), or both dye channel information is gathered. The selection has no effect on the scan time, but selecting only one dye channel does reduce file size up to a factor of 2.
- Scan region** The *scan region* determines the area of the slide that is scanned. It must be large enough to capture the entire print region of the microarray. It must be small enough to avoid scanning too close to the barcode or other nontransparent border areas of the slide and affecting the ability of the scanner to auto focus properly. Minimizing the scan region also reduces scan time and save storage space.
- Agilent provides a scan region suitable for all Agilent High Density and G3 slides, and another suitable for scanning full 25.4 mm × 76.2 mm slides without barcode labels.
- Resolution** Sets the scan resolution (pixel size) to 2, 3, 5 or 10 microns. In addition to setting the pixel size, the **Resolution** pull-down menu offers other specifications for the scanning process that impact image resolution. Specifically, these options are:
- **Double** – This option refers to double-scanning mode, and it is offered as a selection for 2-, 3-, and 5-micron scans (10-micron scans are always performed in double-scanning mode). In double-scanning, each row of pixels in the TIFF image represents the average of two scan lines, one acquired in each direction. This process reduces the noise floor and provides increased sensitivity for low-intensity signals, but it doubles the scan time. When double-scanning is not selected, the scanner acquires only a single scan line for each image row.

- **High sensitivity** – The high-sensitivity scan mode is available at all scan resolutions. The high-sensitivity mode reduces the noise floor by reducing scan speed and increasing the samples per pixel, which provides increased sensitivity for low-intensity signals. The sensitivity is comparable to the double-pass mode but with scan times reduced by 25%.

TIFF Dynamic Range

Sets the dynamic range to 16-bit or 20-bit. The G5761A scanner has extended the dynamic range of the PMT and signal processing electronics. When you select the 20-bit TIFF file option, you can access this extended range, enabling quantitation of high and low signal features in a single scan. This allows scanning of higher intensity features without saturating the measurement. The resulting file size is larger, but the scan time is unaffected.

NOTE

If 20-bit option is selected, no XDR option is allowed; if an XDR option is selected already, it is reset automatically.

Table 17 shows the storage space and scan time for single and double pass scans for each resolution selected, for either a 16-bit TIFF dynamic range or a 20-bit range. The Scan Region is 61 X 21.6 mm.

The status bar at the bottom of the Scan Control main window shows an estimate of the storage space and run time required for the current queue of slides.

Table 17 Storage space and scan time

Resolution	Storage Space, Mb, 16-bit	Storage Space, Mb, 20-bit	Scan Time, min.
2-micron single pass	1300	1600	24
3-micron single pass	620	760	16
5-micron single pass	200	300	10
10-micron single pass	52	115	10
2-micron double pass	1300	1600	46

Table 17 Storage space and scan time (continued)

Resolution	Storage Space, Mb, 16-bit	Storage Space, Mb, 20-bit	Scan Time, min.
3-micron double pass	620	760	31
5-micron double pass	200	300	19
2-micron high-sensitivity	1300	1600	36
3-micron high-sensitivity	620	760	24
5-micron high-sensitivity	200	300	15
10-micron high-sensitivity	52	115	15

Double pass scans do not require more storage space than single pass scans, but they take twice as long to finish.

Red PMT Sensitivity (%) and Green PMT Sensitivity (%)

Sets the sensitivity level of the red channel and green channel PMTs. The PMT detects fluorescence emitted by the microarray.

The default output level (100%) sets the gain to the factory-calibrated level; this setting is recommended for Agilent microarrays. You can reduce each color channel setting independently to as low as 1%.

If a microarray is so bright that the upper end of the output signal is saturated, the PMT sensitivity level can be lowered to a sensitivity range that allows all the information to be read.

XDR Ratio

Before 20-bit TIFF file dynamic range was available, the eXtended Dynamic Range function was used to capture all the data scanned between very low signal features and very high signal features. Now, instead of using XDR, you can select the 20-bit TIFF file dynamic range to capture the wide dynamic range of data. With the XDR function, the scanner scans the slide twice to extend the dynamic range, taking longer to complete the scan. The 20-bit TIFF function extends the dynamic range with a single scan, making it the faster option.

NOTE

If 20-bit option is selected, no XDR option is allowed.

Image Settings

Transform Image

Some analysis programs require data from one-color images rotated 90 degrees. If you select **Flip/Rotate**, the image is transformed as shown in [Figure 30](#).

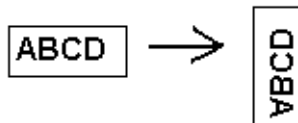


Figure 30 Image with **Flip/Rotate** option set

Split

When you select **Yes**, the color file is split into two color files. The split files now have the names of *FileName_green* and *FileName_red*, where *FileName* is the name that was automatically assigned to the file before it was split.

This option is available only for 16-bit TIFF dynamic range scans.

NOTE

If a single dye channel, 20-bit scan, or any XDR option is selected, no Split option is allowed; if the Split option is selected already, it is reset automatically.

Compress

When you select **Yes**, the program reduces the final amount of storage space occupied by scan images by compressing the TIFF files. The compression algorithm used, LZW, reduces the storage space by 20 to 70 percent.

File Naming Settings

Field 1, Field 2, and Field 3

Displays the settings used for naming TIFF image files created by the scanner. Choices are shown in [Table 18](#).

Table 18 Choices for file naming fields

Choice	Description
<none>	The field is not included in the image file name.
Instrument SN	Includes the serial number of the scanner in the image file name.
Slide ID	Includes the slide identification number (barcode) in the image file name.
Scan DateTime	Includes the date and time of the scan in the image file name.
Customize	Lets you type custom information to include in the image file name. After you select Customize , double-click Field X . (Where X = the field number 1, 2, or 3.) In the adjacent box, type the custom information to include in the file name.

Scan files are named using the following rules.

For *standard scans*, the Scan Control program uses up to three user-defined name prefixes to compose the file name. These prefixes are defined in the scan protocol.

Field1_Field2_Field3_ScanNumber.tif

For *XDR scans*, an additional segment (either *_H* or *_L*) is added to the file name to distinguish the XDR Hi image from the XDR Lo image:

Field1_Field2_Field3_ScanNumber_H.tif
Field1_Field2_Field3_ScanNumber_L.tif

The Scan Control program automatically assigns the *Scan Number*.

The program compares the file name of a new scan with file names in the selected data folder.

6 Reference

Scan Protocol Editor dialog box

If Field1_Field2_Field3 is unique, the scan number is set to S01.

If a match is found, the scan number is increased until the file name is unique.

Example

US4510PP02_251485023883_S03.tif

- Instrument Serial # = US4510PP02
- Slide ID = 251485023883
- ScanNumber = S03. Indicates the third scan file in the folder with the same Instrument Serial # and Slide ID.

Image File Info

This section is a read-only area that displays information about the image file name, geometry of the slide, disk space required for the file, and estimated time to finish the scan.

Scan Region Editor dialog box

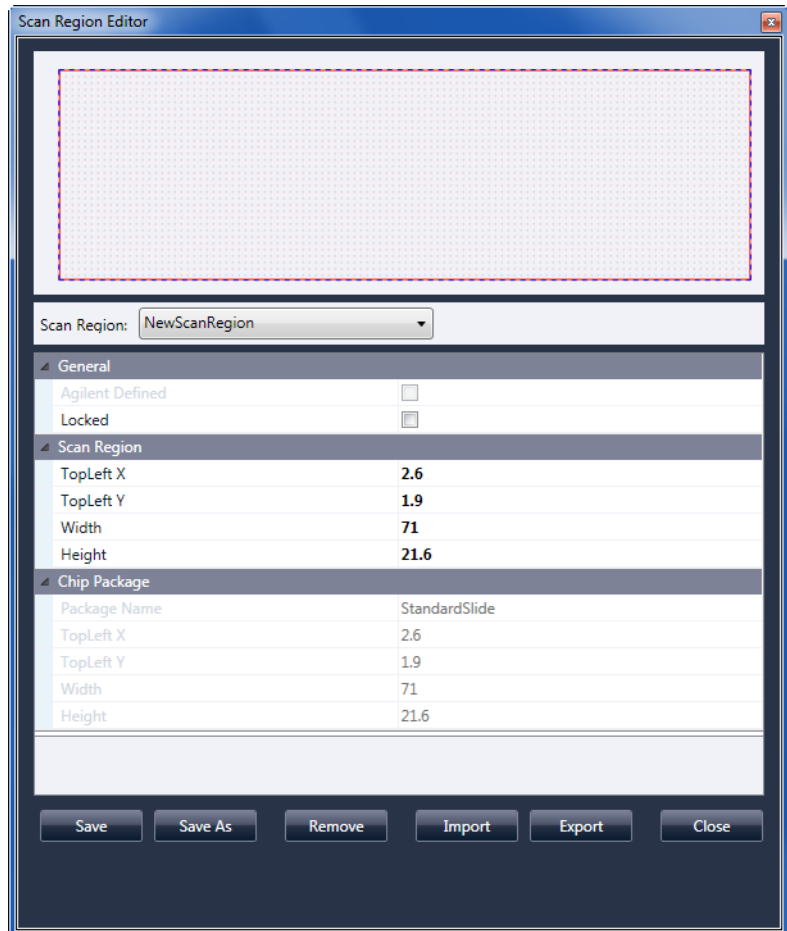


Figure 31 Scan Region Editor dialog box

Purpose: Lets you adjust or define the area of the slide that is scanned.

To open: In the Scan Control program menu bar, click **Tools** > **Scan Region Editor**.

General

- Agilent Defined** A protocol provided by Agilent.
- Locked** When a protocol is locked, it cannot be changed.

Scan Region

- TopLeft X** X-axis dimension for the upper left corner. Type this dimension and that of the Y-axis in mm to position the region on the slide.
- TopLeft Y** Y-axis dimension for the upper left corner.
- Width** Width of the scan region measured from the end of the x-axis dimension in the upper left corner.
- Height** Height of the scan region measured from the end of the Y-axis dimension in the upper left corner.

Chip Package

A chip package describes the maximum size of the scan region for slides of a designated type. This read-only area displays the default scan region for the selected chip package. There are two types of chip packages; Full Agilent for Agilent slides with barcode labels, and Full Standard for slides without barcode labels.

- Save** Saves the current scan region values in the current slide scan region. This button is unavailable if the scan region is an Agilent defined scan region or if it is used in an existing scan protocol.
- Save As** Opens the Save As New Name dialog box, where you can save the current scan region with a new name.
- Remove** Removes the selected scan region. This button is unavailable if the scan region is an Agilent defined scan region or if it is used in an existing scan protocol.
- Import** Opens the Open dialog box, where you select an exported scan region file to import to the program.
- Export** Opens the Export Scan Region dialog box, where you select one or more scan regions to export.

Close Closes the dialog box.

Self Test dialog box

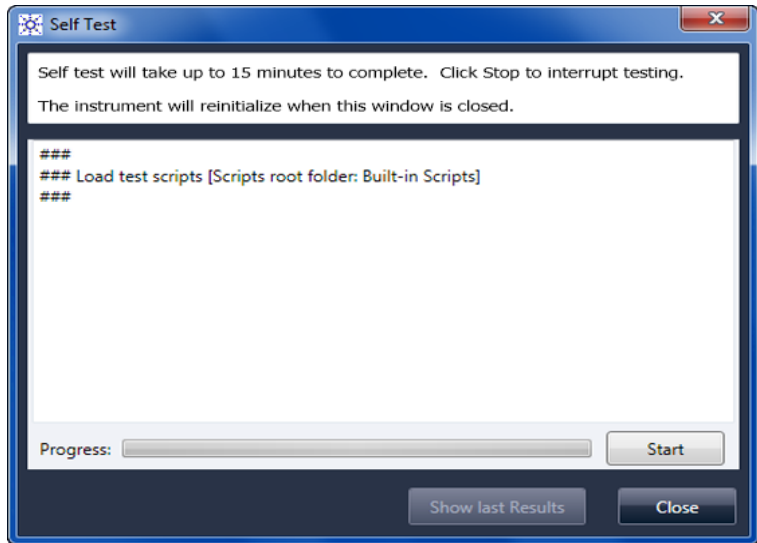


Figure 32 Self Test dialog box

Purpose: Examines various scanner subsystems to check for out-of-specification behavior. After the self test is finished, a summary of the results is opened in your internet browser. The test results are also saved in the C:\ProgramData\Agilent\MicroArrayScanner\SelfTestReport folder.

To open:

Start/Stop Starts or stops the self-test.

Show Last Results If more than one self test was run without closing this dialog box, this command opens your internet browser with the results.

Close Closes the Self Test dialog box and reinitializes the scanner.

Settings dialog box – General Settings

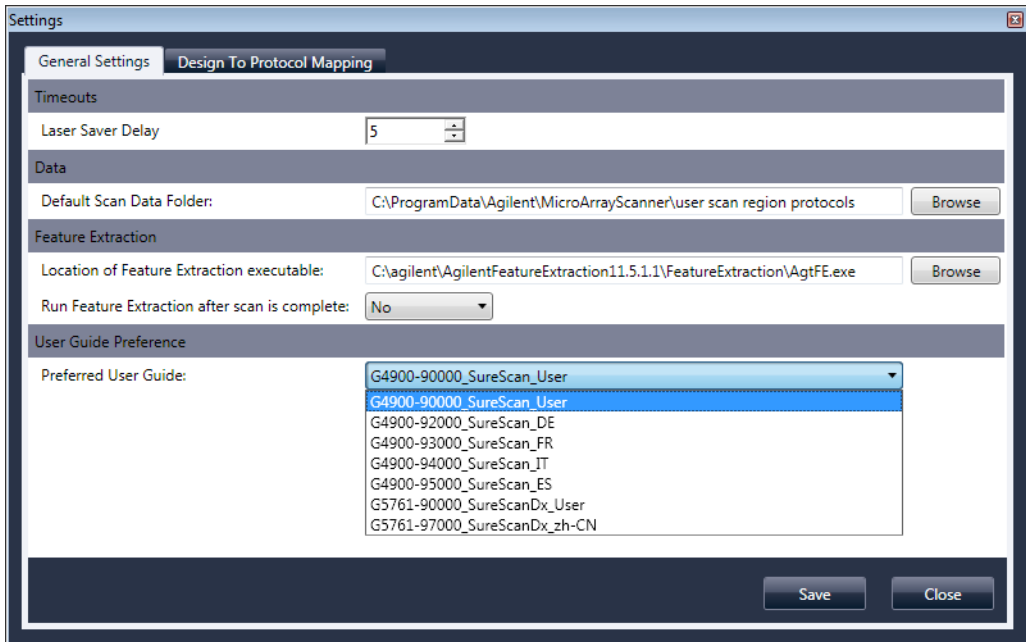


Figure 33 Settings dialog box – General Settings tab

Browse For settings that require a folder location, lets you browse to the folder and select it, rather than typing the path.

Save Saves the settings. If you change settings and want to save them, select this button before you close the dialog box.

Close Closes the dialog box without saving changes.

Timeouts

Laser Saver Delay When no scan or scan queue is running, the lasers automatically turn off after this amount of time (1 to 100 minutes).

Data

Default Scan Data Folder Displays the folder where images created by the scanner are stored by default. You can change this folder for a scan in the Scan Table.

Feature Extraction Location of Feature Extraction executable

The folder where the Feature Extraction software is installed.

Run Feature Extraction after scan is complete

When set to **No**, the Feature Extraction software does not automatically initiate after a scan is complete. Change to **Yes** if you want each scan to be automatically processed.

User Guide Preference Preferred User Guide

Select the user guide that you want to open when accessed from the Help menu in the Scan Control program.

Settings dialog box – Design To Protocol Mapping

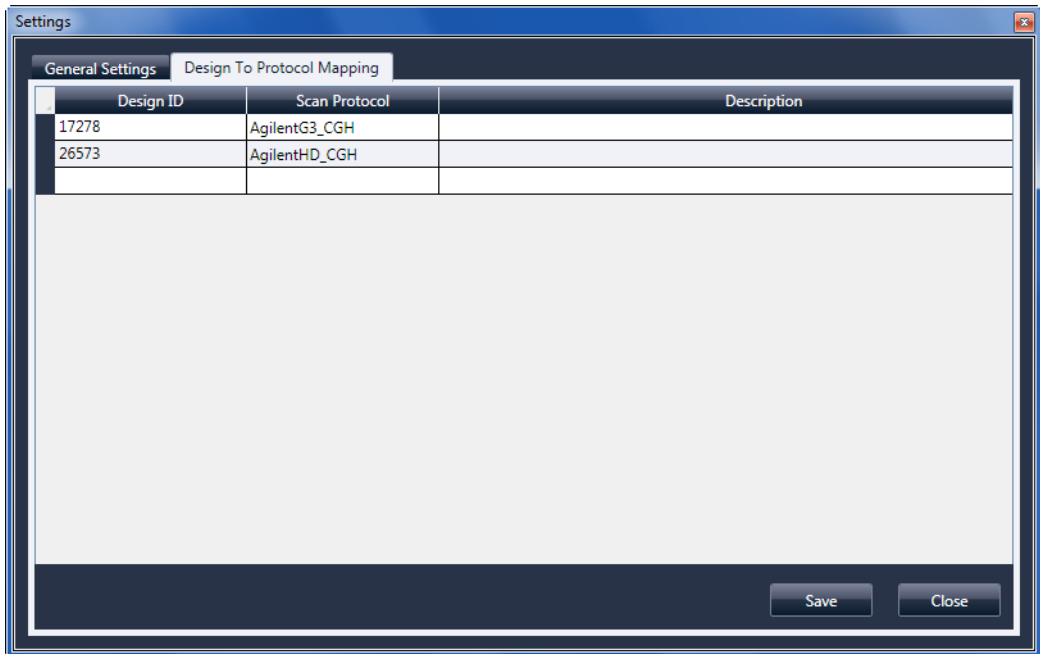


Figure 34 Settings dialog box - Design To Protocol Mapping tab

Purpose: Used to assign default scan protocols to microarray slide Design IDs. Whenever the scanner recognizes a slide that has a scan protocol mapped to its design, the program automatically fills in the mapped scan protocol in the Slot Table.

To open: In the Scan Control program menu bar, click **Tools > Settings** and then click **Design To Protocol Mapping**.

Design ID For Agilent microarray slides, you can determine the Design ID from the barcode. All barcodes start with 25; the next five digits represent the Design ID. For example, the Design ID for barcode 251727810298 is 17278.

Settings dialog box – Design To Protocol Mapping

Scan Protocol	The scan protocol that is assigned to the Design ID. This scan protocol is automatically assigned in the Slot Table whenever the scanner recognizes a slide with the associated Design ID.
Description	An area where you can type information about the mapped scan protocol.

About Adding Slides

You can add slides to the SureScan Dx Microarray Scanner even when it is scanning. Use the following guidelines when adding slides to the scanner.

- You can add slides (in slide holders) to the cassette even when scanning is in process. If a slide is actively loading or unloading, you cannot open the door. Wait approximately 30 seconds for the loading or unloading process to finish.
- When the door is open, the scanner waits to eject a slide that is currently scanning.
- If the door is left open with no activity for 5 minutes after the current scan completes, a message appears to warn you that the door is about to close, and then the door closes automatically.
- If you place a slide into the slot for a slide that is currently scanning (as indicated by the flashing green slot status indicator), the slot status indicator turns red, and a message appears instructing you to remove the slide.
- If the door jams while closing (due to an incorrectly inserted slide holder, for example) a dialog is displayed that asks you to clear the jam and then click OK to try again.

Regulatory Information

This section lists regulatory information for the SureScan Dx system, which includes the G5761A SureScan Dx microarray scanner, computer workstation, and control software.

Acoustic noise information

Manufacturer's Declaration:

- | | |
|----------------|---|
| English | This statement is provided to comply with the requirements of the German Sound Emission Directive, from 18 January 1991. Sound Pressure $L_p < 70$ dB(A), at operator's position, normal operation, according to EN 27779/ISO 7779 (Type Test). |
| Deutsch | Die folgende Information wird in Übereinstimmung mit den Anforderungen der Maschinenlärminformationsverordnung vom 18. Januar 1991 erteilt. Schalldruckpegel am Arbeitsplatz bei normalem Betrieb, $L_p < 70$ dB(A), nach EN 27779/ISO 7779 (Typprüfung). |

Recycling and disposal

Contact Agilent Technologies for more information on recycling and disposal.

This device is designed to accommodate recycling at the end of its useful life. Please dispose of this device in accordance with local regulations.

Electromagnetic interference

The scanner is intended for use with shielded cables only.

- | | |
|------------------|---|
| Emissions | Complies with the emissions limits for Class A, Group 1 equipment specified in CISPR 11/EN5011 as required in IEC 61326-1 for Class A equipment. This equipment is not intended for use in residential areas. |
| Immunity | This device complies with the immunity levels required in IEC 61326-2-6 for a non-controlled, electromagnetic environment. This equipment is not intended for use in residential or industrial environment. See accompanying Declaration of Conformity for specific levels. |

Canada This ISM (Industrial-Scientific-Medical) device complies with Canadian ICES-001.

Cet appareil ISM est conforme a la norme NMB-001 du Canada.

Australia/New Zealand This ISM (Industrial-Scientific-Medical) device complies with AS/NZS CISPR 11.

Safety information

CAUTION

If the SureScan Dx system is used in a manner not specified by Agilent, the protection provided by the equipment may be impaired.

This scanner complies with the following safety standards:

CAN/CSA-. C22.2 No. 61010-1 - 04	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements
UL Std No. 61010-1 (2nd Edition)	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use: Part 1: General Requirements
IEC 61010-1:2001	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use, Part 1: General Requirements
IEC 61010-2-101:2002	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 2-101: Particular Requirements for In Vitro Diagnostic (IVD) Medical Equipment
EN 61010-1:2001	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements
EN 61010-2-101:2002	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 2-101: Particular Requirements for In Vitro Diagnostic (IVD) Medical Equipment
IEC 60825-1:2007	Safety of laser products Part 1: Equipment classification and requirements

Settings dialog box – Design To Protocol Mapping

EN60825-1:2007	Safety of Laser Product – Part 1: Equipment Classification and Requirements
RoHS Directive 2011/65/EU	—
EN 50581:2012	Technical Documentation for the Assessment of Electrical and Electronic Products With Respect to the Restriction of Hazardous Substances

- Pollution Degree: 2
- Installation Category: II
- Class I Equipment; requires a grounding system
- Class 1 Laser Product
- CSA and NRTL Certified Product

Bibliography

Not applicable.

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