License Notice

The system described in this manual, including both hardware and software is provided subject to an end-user label license as specified in a notice to end users, and may be used only in accordance with the terms of such license and notice. For a copy of this notice, please contact Affymetrix, Inc.

Trademarks

Affymetrix®, GeneChip®, EASI™, M, Flying Objective™, HuSNP®, GenFlex®, Jaguar™, MicroDB®, NetAffx™, CustomExpress™, "Tools To Take You As Far As Your Vision™", and "The Way Ahead™" are trademarks owned or used by Affymetrix, Inc.

Microsoft® is a registered trademark of Microsoft Corporation.

Patents

Scanner products may be covered by one or more of the following patents: U.S. Patent Nos. 5,578,832; 5,631,734; 5,834,758; 5,936,324; 5,981,956; 6,025,601; 6,141,096; 6,171,793; 6,185,030; 6,201,639; 6,207,960; 6,218,803; 6,225,625; 6,252,236; 6,335,824; 6,403,320; 6,407,858; 6,472,671; 6,490,533, and other U.S. or foreign patents.

Software products may be covered by one or more of the following patents: U.S. Patent Nos. 5,733,729; 5,795,716; 5,974,164; 6,066,454; 6,090,555; 6,185,561; 6,188,783; 6,223,127; 6,228,593; 6,229,911; 6,242,180; 6,308,170; 6,361,937; 6,420,108; 6,484,183; 6,505,125; 6,510,391; 6,532,462; 6,546,340; and other U.S. or foreign patents.

AutoLoaderDx products may be covered by one or more of the following patents: U.S. Patent Nos. 6,511,277; 6,604,902, and other U.S. or foreign patents.

Copyright

©2004-2005 Affymetrix, Inc. All rights reserved.

Manufactured by

Affymetrix, Inc.
Bedford, MA 01730
Contents

INTRODUCTION 5
QUICK REFERENCE GUIDE 6
SYSTEM DESCRIPTION 8
USING QC TOOLBOX 9
QC TOOLBOX FUNCTIONS 12
QC TOOLBOX TESTS 16
TROUBLESHOOTING 24
QC TOOLBOX FAQs 25
CUSTOMER SUPPORT INFORMATION 28
Chapter 1

QC Toolbox
**Introduction**

**QC Toolbox** provides an easy way to determine whether the various system components of the GCS3000 scanner are operating at specified performance levels.

*Affymetrix has developed the QC Toolbox to allow you, the user, to perform, as part of your standard lab protocol, periodic QC checks on the scanning component of your Affymetrix® GeneChip® System.*

**QC Toolbox** provides you with an instrument calibration tool to assess scanner performance according to your defined parameters/time intervals as a standard operating procedure.

**QC Toolbox** detects significant changes in instrument linearity and arc correction by using calibration chips that provide a Pass/Fail performance check on your scanner.

**QC Toolbox** also detects any change in the planned embedded code. This provides a mechanism for keeping your scanner software up to date.

Thus, **QC Toolbox** provides a convenient means to quickly rule out hardware issues from sample quality, sample prep, reagent, or array problems.

- QC Toolbox takes approximately two hours to setup, to complete the firmware upgrade (if necessary), and to run QC Toolbox with any calibration tests selected.
- Affymetrix recommends that you perform the QC Toolbox test at least once a month to gain the benefits of QC Toolbox as a tool for monitoring performance of a GeneChip® Scanner 3000.

**WHAT’S NEW IN VERSION 2**

- Version 2 supports the new 7G high resolution scanners and uses a new algorithm to perform the higher resolution tests. Thus, QC Toolbox can test scanners of various resolutions: 2.5μm, 1.5625μm, 1.09 0.7μm and 0.51μm.
- Version 2 contains a requirement to perform the Check N
Calibrate function (see Check N Calibrate on page 12) after testing the calibration (see Calibrate on page 12) of the system to ensure the system is operating within specifications.

**IMPORTANT**

Version 2 is not validated for Dx versions of the scanner and will not operate.

Quick Reference Guide

For detailed descriptions of QC Toolbox functions and test, please refer to QC Toolbox Functions on page 12 and QC Toolbox Tests on page 16.

**IMPORTANT**

Check the test chip (Marquee or Y-Linearity) to ensure that you are loading the proper chip. Ensure that the surface of the test chip window is clean and free of dust and fingerprints or other contamination.

---

**Table 1.1**

QC Toolbox quick reference guide

<table>
<thead>
<tr>
<th>If you want to:</th>
<th>Then do this:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test and calibrate the scanner for X linearity and arc correction.</td>
<td>Check either the Linearity box or the Arc Radius box (QC Toolbox performs both tests sequentially). Then click the Check n Calibrate button and load the Marquee chip (P/N 101-0011) according to the prompt.</td>
</tr>
<tr>
<td>Calibrate the scanner for X linearity and arc correction.</td>
<td>Check either the Linearity box or the Arc Radius box (QC Toolbox performs both tests sequentially). Then click the Calibrate button and load the Marquee chip (P/N 101-0011) according to the prompt. <strong>Note:</strong> you must perform the Check N Calibrate function after this test.</td>
</tr>
</tbody>
</table>
Test and calibrate the scanner for operational parameters.
Click the Operational Parameters box. Then click the Check n Calibrate button and load the Y-Linearity chip (or VC chip, P/N 101-0013) according to the prompt.

Calibrate the scanner for operational parameters.
Click the Operational Parameters box. Then click the Calibrate button and load the Y-Linearity (VC) chip according to the prompt.
**Note:** you must perform the Check N Calibrate function after this test.

Eject chip.
Click the Eject Chip button.

View the results of the tests in a report.
Click the Display Report button.

Skip the prompt for calibration: perform the test and immediately perform the recalibration routine.
Check the No Prompt for Calibration button.

Instruct QC Toolbox to automatically perform the tests at a later time (within 24 hours).
Check the Delayed Start button. When you click the Check n Calibrate or the Calibrate button, a window will open and prompt you to enter a time for the execution of the test.

Select all resolutions to test
Click the Select All Pixelations button.

Clear all resolutions
Click the Clear All Pixelations button.

---

**Table 1.1**

QC Toolbox quick reference guide

<table>
<thead>
<tr>
<th>If you want to:</th>
<th>Then do this:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test and calibrate the scanner for operational parameters.</td>
<td>Click the Operational Parameters box. Then click the Check n Calibrate button and load the Y-Linearity chip (or VC chip, P/N 101-0013) according to the prompt.</td>
</tr>
<tr>
<td>Calibrate the scanner for operational parameters.</td>
<td>Click the Operational Parameters box. Then click the Calibrate button and load the Y-Linearity (VC) chip according to the prompt. <strong>Note:</strong> you must perform the Check N Calibrate function after this test.</td>
</tr>
<tr>
<td>Eject chip.</td>
<td>Click the Eject Chip button.</td>
</tr>
<tr>
<td>View the results of the tests in a report.</td>
<td>Click the Display Report button.</td>
</tr>
<tr>
<td>Skip the prompt for calibration: perform the test and immediately perform the recalibration routine.</td>
<td>Check the No Prompt for Calibration button.</td>
</tr>
<tr>
<td>Instruct QC Toolbox to automatically perform the tests at a later time (within 24 hours).</td>
<td>Check the Delayed Start button. When you click the Check n Calibrate or the Calibrate button, a window will open and prompt you to enter a time for the execution of the test.</td>
</tr>
<tr>
<td>Select all resolutions to test</td>
<td>Click the Select All Pixelations button.</td>
</tr>
<tr>
<td>Clear all resolutions</td>
<td>Click the Clear All Pixelations button.</td>
</tr>
</tbody>
</table>
System Description

COMPONENTS

QC Toolbox contains the following components.

- A CD containing the Application
- A calibration chip storage case
- Marquee Test Chip (P/N 101-0011, this is composed of one test chip that contains patterns for two tests: the X-Linearity and Arc Correction tests.)
- Y Linearity Test Chip (or the VC Chip, P/N 101-0013)
- User’s Guide
- Quick Reference Card

TESTS

QC Toolbox conducts the following tests:

1. Arc Radius
2. X Linearity
   Selecting the Arc Radius Test automatically selects the X Linearity Test and visa versa. Both tests are completed automatically and sequentially.
   The system only allows selection of either the Arc Radius and X Linearity tests or the Operational Parameters test, but not all three simultaneously.
3. Operational Parameters (also known as Y Linearity).
4. Embedded Code
   QC Toolbox queries the scanner for the current version of the firmware embedded code, and if the code is not current, it asks if you would like to update the code.

INTENDED USE

QC Toolbox is a test application that is intended for use with the GCS 3000 scanner and scanner with AutoLoader.
Using QC Toolbox

PRELIMINARY CONSIDERATIONS

- The GSC3000 scanner must be connected and on.
- The QC Toolbox application initially connects with the GCS3000. QC Toolbox will not start if a connection cannot be established.
- If a connection is established, the QC Toolbox checks the version of the GCS3000 embedded code. QC Toolbox will not start if the code is not the proper version.
- If the GCS3000 code is not the proper version and if the embedded code is available, QC Toolbox will prompt you to upgrade your scanner to the latest version. This upgrade process includes upgrading the Autoloader Embedded code as well. Once the upgrade is complete, the QC Toolbox application prompts you to turn off and restart the GCS3000.
- The QC Toolbox then reads from the GCS3000 its current pixilation settings and uses that information to configure the main user interface with the proper test settings.
- Ensure that the calibration chips are clean and dust free since dust can affect the calibration.

INSTALLING QC TOOLBOX

1. You can install the QC Toolbox Application from the CD by selecting the “setup.exe” application located on the root directory of the CD.
2. The QC Toolbox installation process installs the software in the C:\Genechip\QCToolbox directory.
3. The QC Toolbox installation process automatically creates an icon on the target systems desktop.
4. Once installed, you can uninstall the QC Toolbox application using the normal Windows uninstall routines.
PREPARING THE GCS3000 SCANNER

1. Confirm that the GCS3000 scanner is connected, on and warmed up.
   - If you run the X linearity and arc correction tests, use the Marquee test chip (P/N 101-0011). This chip contains two patterns: one to test for x linearity and one to test for arc correction.
   - If you run the Operational Parameters test, use the Y-Linearity chip (also known as the VC chip, P/N 101-0013).

STARTING QC TOOLBOX

To open the QC Toolbox application, click on the QC Toolbox icon, or open the Windows programs menu and select QC Toolbox.

The QC Toolbox application initially connects with the GCS3000 and will not allow the application to start if it cannot establish a connection.

If QC Toolbox can establish a connection, it checks the version of the GCS3000 embedded (firmware) code.

If the embedded code is not current, QC Toolbox displays the software updater window (Figure 1.1) and asks if you want to update the scanner’s embedded firmware code. You can elect to update the code, or if your current code is still compatible with QC Toolbox, you can skip the update.

If you elect to update the firmware, the workstation displays the following window as it proceeds (Figure 1.2). During this process, the software makes a backup of all critical scanner software components before the update occurs.

Figure 1.1
The software updater window

If you elect to update the firmware, the workstation displays the following window as it proceeds (Figure 1.2). During this process, the software makes a backup of all critical scanner software components before the update occurs.
If the code is not a compatible version, QC Toolbox will not allow the application to start and will automatically exit.

If the embedded code is current, QC Toolbox immediately displays the test window (Figure 1.3).

**TEST WINDOW**

If the embedded code is compatible with QC Toolbox, the main window appears (Figure 1.3). This provides the test functions of QC Toolbox.

![Software Updater](image)

*Figure 1.2*

The software updater window

![QC Toolbox main window](image)

*Figure 1.3*

The QC Toolbox main window. Note, in this figure as an example, all available resolutions are checked for the X-Linearity and Arc Radius tests.
The main screen shows the three available tests: Linearity, Arc Radius and Operational Parameters.

**QC Toolbox Functions**

When you start any test, a window will alert you to load the proper test chip and to warn you about the importance of using clean test chips that are free of dust (Figure 1.4).

**Figure 1.4**

Before any test, an alert message will appear to inform you that you must load the proper test chip and that it must be clean and free of dust.

**CHECK N CALIBRATE**

Based on the test that you select, the Check N Calibrate function first prompts you to load the required test chip: either the Marquee chip (if you selected the X-Linearity and Arc Correction test) or the Y-Linearity (VC) chip (if you selected the Operational Parameters test).

The QC Toolbox then runs the selected tests, and if any of the tests are not green, you will be prompted to recalibrate the indicated tests.

**IMPORTANT**

For the Check N Calibrate function, if any selected item requires calibration, the system will recalibrate the selected item and will automatically run a check on this item to confirm that it is in calibration.

**CALIBRATE**

The Calibrate function first prompts you to load the required test chip based on the tests selected.
QC Toolbox then executes the calibrate function in all the test modes selected without first checking their test status.

When you start the Calibration function, you will be alerted to a message that informs you to run the Check N Calibrate function after the calibration test is complete (Figure 1.5). You must click OK.

The appearance of a green ball as a successful calibration result indicates that the system did not encounter any problems in recalibrating an item. It does not mean that the system is operational. After the calibration function has concluded successfully, the following window (Figure 1.6) will appear to alert you that you must run the Check N Calibrate function to confirm that the calibration is within specification. Click OK to close this window.

After you have run the Check N Calibrate function, a yellow or green result will confirm that the scanner has successfully completed this function.

If the Check N Calibrate fails; that is, if a red ball appears as a result, then, depending on the failed test, the system will recalibrate. If recalibration continues to fail, or in the case of an unsuccessful Operational Parameters test, call Affymetrix technical support.
NO PROMPT FOR CALIBRATION

If you have checked the No Prompt for Calibration box and execute the Check N Calibrate routine, the following window will appear (Figure 1.7).

![Alert dialog box](Figure 1.7)

Selecting No Prompt for Calibration box prompts an alert message

Then if any test is not green, the application will automatically recalibrate the failed test without prompting you.

DELAYED START

This option allows you to test the scanner automatically at a specified time without human intervention. If you check the Delay Start box, then upon selecting either the Check n Calibrate or Calibrate execution function, you will be prompted to load the required test chip and to enter the time, within the next 24 hours, when you would like to start the test process (Figure 1.8).

![Set Start Time dialog box](Figure 1.8)

Setting the delayed start. Use the pull-down box to select the times. You cannot enter values directly by typing.

Once you have selected the start time, the system displays a count down timer until the start time is reached.

Upon reaching the desired time, the system automatically executes the test selected.
EJECT CHIP

The Eject Chip function moves the chip transport mechanism into the eject position to allow you to retrieve a chip which is within the scanner.

EXIT

The Exit function allows you to exit the application.

DISPLAY REPORT

The Display Report function (Figure 1.9) allows you to browse the report directory and select and display a previously created report using Notepad as the application for display. You must browse to find your report.

![Figure 1.9](image)

Browse for the report based on date and time

Report Generation

Each time you start the QC Toolbox application, the software generates a text report whose name is the time and date of the start of the application.

The report includes

- The serial number of the scanner
- The version(s) of the scanner embedded code and, if connected, the autoloader code
- Whether an autoloader was connected
- The result of each test checked or calibrated
QC Toolbox Tests

This sections describes in detail the capabilities and the various functions of QC Toolbox.

IMPORTANT

Proper calibration is not assured unless a GREEN circle result is obtained in the QC Toolbox main window. Once having started a calibration, be sure to complete it.

Once you click either the Check n Calibrate or Calibrate buttons, QC Toolbox may be making modifications to the calibrated parameters of the GCS 3000 scanner. A properly calibrated state is not guaranteed until and unless QC Toolbox completes its work, presents a GREEN test result on its main window, and you close the application normally by clicking Exit.

IMPORTANT

Exiting abnormally from QC Toolbox, such as Ending the application via Windows Task Manager, may result in your GCS 3000 scanner being NOT properly calibrated. Image linearity, grid alignment, and data quality will be degraded by an uncalibrated scanner. To ensure proper scanner calibration, always use QC Toolbox according to the instructions contained in this guide.

THE X LINEARITY TEST

The X Linearity test checks the residual linearity error as measured using a 20μm horizontal ladder pattern by scanning the Marquee test chip (this pattern for the X Linearity test and the pattern for Arc Correction test are contained on one test chip).
When you click the Check n Calibrate button, the following window will appear accompanied by a flashing turquoise ball (Figure 1.10).

The results of the test are indicated by the following indications:

- Red—Failure: linearity test fails
- Yellow—Success: linearity test passing but marginal
- Green—Success: linearity successfully passed

**Figure 1.10**
The Linearity test at 2.5μm pixilation in progress window. The turquoise ball flashes.

**IMPORTANT**
Load the Marquee Test Chip (P/N 101-0011) for this test.
A successful test will display the following window (Figure 1.11).

Figure 1.11
The display of a green ball successfully concludes the Linearity test.

If any of the tests are not green, the software will prompt you to recalibrate the instrument. If you select to recalibrate, the system recalibrates the X linearity and automatically recalibrates the arc radius for the associated pixilation.

If you have chosen the Check N Calibrate function, the system automatically checks the calibration again.

If you cannot recalibrate the instrument, you will get a test failure message. Call Affymetrix technical support to have an instrument support engineer check your scanner. See QC Toolbox FAQs on page 25.
THE ARC RADIUS TEST

The Arc Radius Test checks the residual arc correction error for each pixilation by scanning patterns on the Marquee test chip.

IMPORTANT

Load the Marquee Test Chip (P/N 101-0011) for this test.

To begin the test, click Check N Calibrate to check the scanner, and then commence the test, or click Calibrate to commence immediately the test. The following window will appear as shown in Figure 1.12.

![The Arc Radius test at 2.5μm pixilation in progress window. The turquoise ball flashes.](image)

Figure 1.12

The Arc Radius test at 2.5μm pixilation in progress window. The turquoise ball flashes.

The results of the test are indicated by the following error indications:

- Red—Failure: linearity test fails
• Yellow—Success: linearity test passing but marginal
• Green—Success: linearity successfully passed

A successful Arc Radius tests will display the window as shown in Figure 1.13.

Figure 1.13
The display of green balls successfully concludes the Linearity and Arc Radius tests at 2.5μm pixilation

A successful conclusion of the Linearity and Arc Radius tests will display the window as shown in Figure 1.14.
If any of the tests are not green, the software will prompt you to recalibrate the instrument. If you select to recalibrate, the system recalibrates the X linearity and automatically recalibrates the arc radius for the associated pixilation.

If you have chosen the Check N Calibrate function, the system automatically checks the calibration again.

If you cannot recalibrate the instrument, you will get a test failure message. Call Affymetrix technical support to have an instrument support engineer check your scanner. See QC Toolbox FAQs on page 25.

**OPERATIONAL PARAMETERS**

The Operational Parameters test checks the Y linearity of the system as well as the galvo rotation by scanning the Y-Linearity test chip (VC chip).

**IMPORTANT**

Load the Y Linearity Test Chip (or the VC Chip, P/N 101-0013) for this test.

To begin the test, click Check N Calibrate to check the scanner, and then commence the test, or click Calibrate to commence immediately the test. The following window will appear as shown in Figure 1.15.
The results of the test are indicated by the following error indications:

- **Red**—Failure: linearity test fails
- **Yellow**—Success: linearity test passing but marginal
- **Green**—Success: linearity successfully passed

See Figure 1.16 for an example of a successful test.

If you have chosen the Check N Calibrate function, the system automatically checks the calibration again.
If the test fails, a test failure window appears (Figure 1.17). You cannot recalibrate Y linearity. Call Affymetrix technical support to have an instrument support engineer check your scanner. See QC Toolbox FAQs on page 25.

Figure 1.16
The display of the green ball successfully concludes the Operational Parameters test at 0.51μm.

If the test fails, a test failure window appears (Figure 1.17). You cannot recalibrate Y linearity. Call Affymetrix technical support to have an instrument support engineer check your scanner. See QC Toolbox FAQs on page 25.

Figure 1.17
Test failure message
Troubleshooting

When you click on the Check n Calibrate button or Calibrate button, and if the linearity or arc radius test fails because of a serious scanner problem, the following window will appear (Figure 1.18):

![Scanner error window](image1.png)

Figure 1.18
Scanner error window

Click **OK** and the following window appears (Figure 1.19). Follow the instructions stated in the window.

![Scanner error window](image2.png)

Figure 1.19
Scanner error window: follow the stated instructions to complete the available troubleshooting.

Click **OK**. QC Toolbox will quit immediately. If, after following the stated instructions, the problem persists, call Affymetrix technical support.
QC Toolbox FAQs

WHAT IS QC TOOLBOX?

The QC Toolbox application, in conjunction with the calibration chips (supplied by Affymetrix), provides GCS3000 Users with a means for

• Verifying key GCS3000 operational parameters
• Recalibrating GCS3000 operational parameters*Updating the GCS3000 Software, as new releases are available

WHY USE QC TOOLBOX?

• Users can confirm that the GCS3000 is operating within its nominal limits or determine if the system requires a Field Service Call.
• Users can recalibrate key GCS3000 operational parameters without having to wait for a Field Service Engineer thus enabling them to continue with processing their GeneChip probe arrays without interruption.
• Tool can be integrated with the Users instrument calibration cycle. These tools provide reports as to the status of the equipment.
• Users can confirm the operation status of their GCS3000 before processing their Genechip studies.
• Users can take advantage of the latest versions of GCS3000 software by upgrading their systems themselves without having to wait for a visit from a Field Service Engineer.

HOW OFTEN SHOULD I RUN QC TOOLBOX?

• As often as you would like.
• Affymetrix recommends that it be run before starting a large experiment so that you can insure the proper operation of the GCS3000
• Affymetrix suggests that it should be run if you have any question about the integrity of your collected data and want to rule out any possible issues with the GCS3000.

DOES QC TOOLBOX REPLACE THE NEED FOR ANNUAL SYSTEM MAINTENANCE AND SUPPORT?

• QC Toolbox does not replace the need for Annual System Maintenance. It
only monitors general GCS3000 operation and does not address the periodic cleaning and servicing of electrical, mechanical and optical components. These can only be done by trained Field Service Personnel.

- QC Toolbox reduces the need for onsite visits by Field Service Personnel to address simple instrument calibration issues, thus keeping your system operating with minimal interruption.

- QC Toolbox also allows you to identify potential system issues before a Field Service Engineer comes on site. This allows the Field Service Engineer to be more informed about the type of system issue.

**WHAT DOES QC TOOLBOX MEASURE?**

- X Linearity
- Y Linearity
- Arc Radius

**WHAT IS X LINEARITY?**

The GCS3000 uses an electromechanical device called a galvanometer to scan line by line the inserted GeneChip probe array. Because the system uses a mechanical scanning mechanism, the spacing of the individual pixels acquired on a line are not always equally spaced, i.e., linear.

In order to effectively grid and process GeneChip probe array data, the GCOS Software requires linear pixel information. Thus the scanner employs a correction mechanism to compensate for any non-linearities encountered during scanning.

Occasionally, due to mechanical wear, the compensation mechanism may require recalibration in order to insure optimum system performance.

The QC Toolbox uses a special calibration chip which has a series of chrome etched vertical features of known spacing and size. In test mode QC Toolbox will measure each one of these features and, based on the operational specifications of the GCS3000, will determine if the linearity correction mechanism is operating within specification.

In calibration mode, QC Toolbox will measure each one of these features to determine how to configure the GCS3000 linearity compensation mechanism.
WHAT IS ARC RADIUS?

As mentioned, the GCS3000 uses a electromechanical device called a galvanometer to scan each line of the inserted GeneChip probe array. One of the unique properties of the galvanometer is that it produces the actual scan pattern in the shape of an arc.

In order to effectively grid and process GeneChip probe array data, the GCOS Software requires that the scanned information be corrected to remove the arc component.

Occasionally, due to system wear, the arc correction mechanism may require recalibration.

QC Toolbox uses a special calibration chip which has a series of chrome etched features similar to the control probes found along the boarders of most GeneChip probe array substrates. These are the checkerboard type features found in each corner and along each edge of a GeneChip probe array.

In test mode, QC Toolbox will grid these features and determine if there is a residual arc component to the image data. In calibration mode, QC Toolbox will measure any residual arc in the image data and adjust the arc correction mechanism to compensate for it.

WHAT IS Y LINEARITY?

The GCS3000 uses an electromechanical stage to move the GeneChip cartridge in precise vertical increments. This stage incorporates an auto correction mechanism to insure precise, repeatable movements.

Occasionally, due to mechanical wear, the compensation mechanism may come out of alignment.

The QC Toolbox uses a special calibration chip which has a series of chrome etched horizontal features of known spacing and size. In test mode QC Toolbox will measure each one of these features and, based on the operational specifications of the GCS3000, will determine if the correction mechanism is operating within specification.

If the auto correction mechanism is not working properly, you must call a Field Service Engineer since this mechanism does not employ any method of returning it to a calibrated state.
Customer Support Information

When you call technical support, you must have the scanner instrument serial number, customer ID and the embedded code version.

**Affymetrix, Inc.**
3380 Central Expressway
Santa Clara, CA 95051
USA

E-mail: support@affymetrix.com
Tel: 1-888-362-2447 (1-888-DNA-CHIP)
Fax: 1-408-731-5441

**Affymetrix UK Ltd**
Voyager, Mercury Park,
Wycombe Lane, Wooburn Green,
High Wycombe HP10 0HH
United Kingdom

E-mail: supporteurope@affymetrix.com
Tel: +44 (0) 1628 552550
Fax: +44 (0) 1628 552585

**Affymetrix Japan, K. K.**
Mita NN Bldg
16 Floor, 4-1-23 Shiba,
Minato-ku, Tokyo 108-0014
Japan

Tel: (03) 5730-8200
Fax: (03) 5730-8201

[www.affymetrix.com](http://www.affymetrix.com)