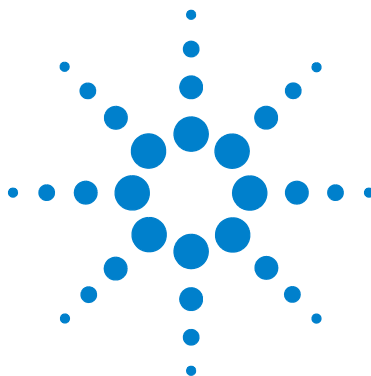




Agilent 6100 Series Quadrupole LC/MS Systems

Installation Guide



Agilent Technologies

Notices

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This guide is valid for the C.01.03 or later revision of the Agilent LC/MS software for the Agilent 6100 Series Quadrupole LC/MS Systems, until superseded.

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In This Guide...

This guide contains information to install the Agilent 6100 Series Quadrupole LC/MS Systems.

1 Instrument Installation

This chapter describes the steps that are required to install the Quadrupole LC/MS Systems instrument.

2 Computer and Software Installation

This chapter describes the steps that are required to install the LC/MS Chemstation software.

3 Installation Completion and System Verification

In this chapter, you finish the system set-up.

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Instrument Installation

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- Step 6. Install the LC 20

This chapter describes the steps that are required to install the 6100 Series LC/MS instrument.



Step 1. Prepare to install the system

NOTE

Do not open the shipping containers until an Agilent representative is present to verify the contents of each carton. Warranty claims for missing items are honored only if an Agilent representative is on site to verify the contents of each shipping container as it is unpacked.

Checkout and tuning samples are shipped separately to comply with safety regulations and to ensure prompt delivery. Make sure these samples have been stored correctly, per the instructions in the box.

- 1 Carefully examine all containers for external signs of damage.
- 2 If damage is discovered, immediately contact the carrier and the Agilent Service District Manager (DM).
- 3 Retain shipping containers and material until contents are checked for completeness and instrument performance is verified.
- 4 Check off each item on the packing list, and verify the serial numbers. The serial numbers are located in two places: in the rear, close to the big fan area, and in the CDS area. Record the serial numbers in the installation documentation.



Figure 1 Location of serial numbers

- 5 Check that site preparation is complete, which includes power and gas supplies and chemical supplies required for installation and performance verification.
- 6 Report any discrepancies to the supplying division.

Step 1. Prepare to install the system

- 7 Verify the proper line voltage and outlet ratings according to the instructions given in the *Agilent 6100 Series Single Quad LC/MS Site Preparation Guide*.

Step 2. Unpack and set up the system

Before you begin, check that you have the following:

- Utility knife and needle nose pliers

- 1 Unpack the instrument.
 - a Cut the tie wraps around the package.
 - b Remove the shipping box container to display the instrument.



Figure 2 Unpacking the instrument.

NOTE

Save the shipping container in you case you need to move the instrument from one location to another.

- 2 Use two people to lift the instrument onto a stable bench or table.
 - Use the two hand-holds on the instrument, which are located at the front, near the instrument bottom chassis, and at the rear instrument bottom chassis.
 - Be careful not to pop out the instrument's covers when you reach for the front hand-holds. The cover panel is attached to the instrument. If needed, remove the front cover for easy accessing to the front handle.

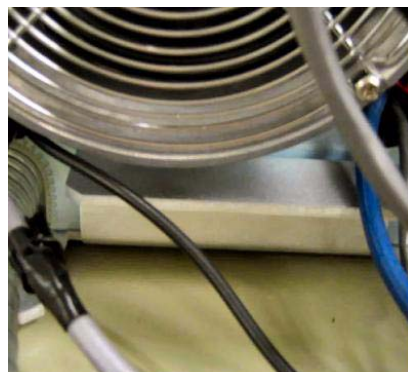


Figure 3 Front Hand-Hold (left) and Rear Hand-Hold (right).

WARNING

Do not lift the instrument without assistance. The instrument weighs around 45 kg (100 lbs). Lift with your knees, not with your back. Keep your back straight while you bend the knees.

Step 3. Set up the foreline pump and its accessories

Varian MS40+ Pump

- 1 Unpack the exhaust hose and stainless steel pump oil drip pan from the shipping kit.
- 2 Remove the foreline pump from its shipping container.
- 3 Set the pump into the pump oil-drip pan.

The pan is used to catch any small amounts of oil that may seep out of the pump. The pan can also hold all of the oil in the pump in case there is a catastrophic seal failure.



- 4 Cut an appropriate length of the 3/4-inch OD Tygon exhaust tubing. Connect one end of the tubing to the adapter at the pump exhaust, and connect the other end of the tubing to the lab exhaust connection.
- 5 Add the SW60 pump oil to the foreline pump.
- 6 Attach the foreline pump power cord to the LC/MS, making sure the foreline pump power switch is in the ON position.

CAUTION

The pump is shipped dry. Oil must be used for proper operation. Failure to add oil before you pump down the system will damage the rough pump.

Edwards G1998A Pump

- If you ordered the G1998A Edwards pump, refer to *G1998A Scroll Pump Installation Guide*, which is included in the Scroll Pump ship kit.

Step 4. Connect the 6100 Series LC/MS Instrument

- 1 Connect the foreline hose from the instrument to the KF-25 inlet adapter on the foreline pump.
- 2 Use the supplied hook/loop fastener tape to secure the drain bottle into a secondary containment tub.
- 3 Connect the spray chamber drain tube to the 1-inch fitting on the drain bottle.
- 4 Attach the calibrant delivery system (CDS)/inlet module waste tubing from the solvent selection valve on the LC/MS instrument to the 1/4-inch fitting on the drain bottle.
- 5 Connect an appropriate length of the 3/4-inch OD Tygon tubing to the exhaust fitting on the drain bottle, then connect the other end of the tubing to a vent connection that is separate from the vent used for the foreline pump.

CAUTION

The drain bottle vent must be located away from the foreline pump vent to prevent the foreline pump exhaust from contaminating the LC/MS spray chamber.

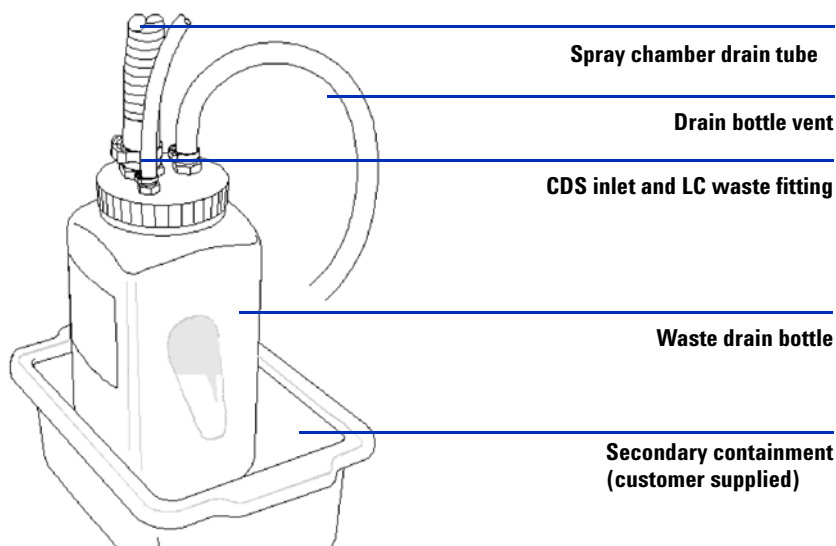


Figure 4 Drain bottle

1 Instrument Installation

Step 4. Connect the 6100 Series LC/MS Instrument

6 Install the gas filter(s):

For 6100 Series LC/MS systems without Agilent Jet Stream Technology

- a Connect an appropriate length of the 1/4-inch teflon gas tubing (G1946-80078) to the nitrogen gas source. Use the supplied nut and ferrule kit (p/n 5183-0392). Keep some tubing for [step c](#).
- b Attach the other end of the of the tubing (from the nitrogen gas source) to the RMSN-4 gas filter. Use nuts and ferrule supplied with the RMSN-4 gas filter.
- c Connect a new length of 1/4-inch teflon gas tubing to the other end of the RMSN-4 gas filter. Use the last nut and ferrule supplied with the RMSN-4 gas filter.
- d Connect the gas tubing from the RMSN-4 gas filter (from [step c](#)) to the nitrogen gas fitting on the back of the LC/MS system. Use the supplied nut and ferrule kit (p/n 5183-0392).
- e Secure the gas filter in a vertical position with tie wraps.

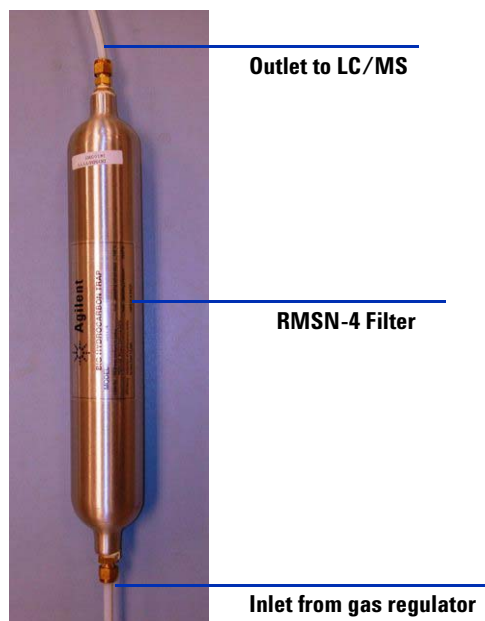


Figure 5 Gas filter connected in series

This configures the filter in series with the supply tubing. See [Figure 5](#) as an example for assembling the gas trap in the correct configuration.

For 6100 Series LC/MS systems with Agilent Jet Stream Technology

- a Locate the 2 1/4-inch brass T-unions (0100-0088) and loosen the brass nuts on the T-unions.
- b Use an appropriate length of the 1/4-inch teflon gas tubing (G1946-80078) to connect the nitrogen gas source to the center connector of one T-union.
- c Connect two 10-cm lengths of 1/4-inch teflon gas tubing to each side of the T-union. Use the nuts and ferrules supplied with the T-union.
- d Attach the other end of the 10-cm lengths of 1/4-inch teflon gas tubings (from [step c](#)) to the two BMT-4 gas filters. Use the nuts and ferrules supplied with the BMT-4 gas filters.
- e Attach the other end of each RMSN-4 gas filter to a 10-cm length of 1/4-inch teflon gas tubing. Use the nuts and ferrules supplied with the RMSN-4 gas filters.
- f Connect the other end of each 10-cm length of gas tubing (from [step e](#)) to the ends of the remaining T-union. Use the nuts and ferrules supplied with the T-union.
- g Connect the gas tubing from the T-union (from [step f](#)) to the nitrogen gas fitting on the back of the LC/MS system. Use the supplied nut and ferrule kit (p/n 5183-0393).
- h Secure the gas filters in a vertical position with tie wraps.



Figure 6 Gas filter connected in parallel.

See [Figure 6](#) as an example for assembling the gas traps in the correct configuration.

WARNING

Use only nitrogen as the drying and nebulizing gas. Air, oxygen, or other gases, when combined with solvents and high voltages in the spray chamber, can cause an explosion.

- 7 Set the pressure on the nitrogen supply regulator at 80 to 100 psi (550 to 690 kPa).

1 Instrument Installation

Step 4. Connect the 6100 Series LC/MS Instrument

- 8 Turn on the nitrogen gas for a few minutes to purge the tubing and gas conditioner(s) before connecting the nitrogen gas supply to the LC/MS. Regulator pressures above 110 psi (760 kPa) cause nitrogen waste due to release from the bleed valve on the flow-control module.
- 9 Connect the remote start cable to its connector on the LC/MS.
The other end of this cable will be attached to the LC later.
- 10 Connect the foreline pump power cord into the foreline pump connector on the back of the LC/MS.
- 11 Verify that the front power switch is in the Off position.
- 12 Plug the LC/MS power cord into the LC/MS power connector on the back of the LC/MS, and then plug the other end of the LC/MS power cord into the wall outlet.

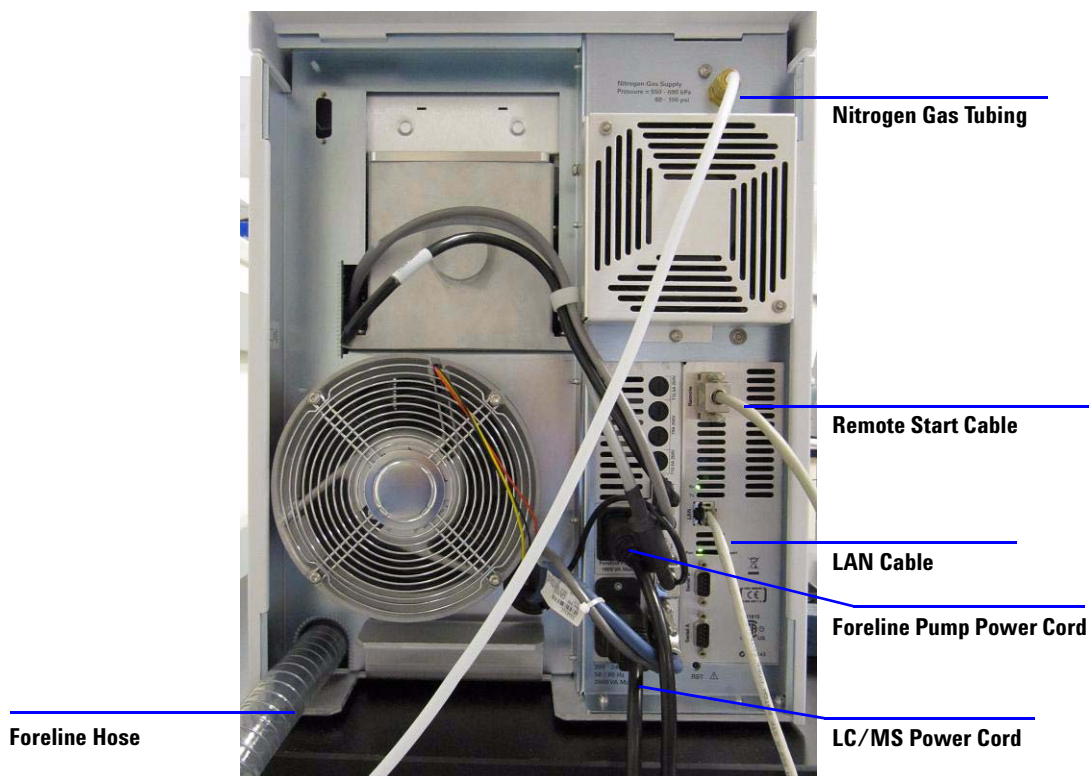


Figure 7 Rear side of the LC/MS instrument

Step 5. Install the electrospray chamber and start the instrument

Before you begin, check that you have the following:

- Source (verify the source types that are shipped with your instrument):
 - Agilent G1947B APCI Interface
 - Agilent G1948B Electrospray Interface
 - Agilent G1978B Multimode Interface
 - Agilent ESI with Agilent Jet Stream Technology
- Calibrant - see [Table 1](#).

Table 1 Calibrants

Model	Source	Calibrant
6120, 6130	ESI	ESI Tuning Mix (p/n G2421)
6120, 6130	APCI, APPI, MM	APCI/APPI Calibrant Solution (p/n G2432A)
6150	ESI, MM	ESI-L Tuning Mix (p/n G1969-85000)
6150	APCI	APCI-L Tune Mix (p/n G1969-85010)
6150	APPI	APCI/APPI Calibrant Solution (p/n G2432A)
6130, 6150	ESI with Agilent Jet Stream Technology	ESI-L Tuning Mix (p/n G1969-85000)

If multiple interfaces were ordered with the LC/MS system, install and verify the performance of the system with the G1948B Electrospray interface first.

- 1 Remove the foil that covers the spray chamber mount, and remove the shipping cover from the Electrospray spray chamber.
- 2 Install the nebulizer spacer as follows:
 - a Use a flat-bladed screwdriver to remove the two nebulizer shoulder screws from the top of the spray chamber.
 - b Use the two m3x8 Torx T10 screws to install the nebulizer spacer onto the top of the spray chamber.

1 Instrument Installation

Step 5. Install the electrospray chamber and start the instrument

- c Install the two nebulizer shoulder screws into the top of the nebulizer spacer.

NOTE

Do not install the nebulizer spacer on the APCI, APPI, Multimode or Agilent Jet Stream spray chambers.

- 3 Place the nebulizer in the nebulizer adjustment fixture supplied in the shipping kit and check that the nebulizer needle is properly adjusted. Make sure that the needle is even with the end of the nebulizer nozzle.
- 4 Install the nebulizer in the spray chamber.
- 5 Install the spray chamber on the spray chamber mount.
- 6 Connect the 1/8-inch nebulizing gas tubing from the LC/MS mainframe to the nebulizer gas fitting.
- 7 Connect the LC/MS sample tubing to the nebulizer zero dead volume fitting.
- 8 Rinse the calibrant bottle with acetonitrile.
- 9 Add the appropriate calibrant to the calibrant bottle.

CAUTION

Never use aliphatic, aromatic or halogenated hydrocarbons in the CDS. These solvents are not compatible with the O-ring in the CDS.

NOTE

All 6100 Series LC/MS have only one calibrant bottle on the system. If a different source is used, then an appropriate calibrant should be installed.

Be aware that the restriction in the CDS is designed for use with Agilent standard LC/MS calibrants.

- 10 For the G1978B Multimode interface or G1947B APCI interface, install the appropriate Enablement Kit(s) for the source.

The Enablement Kit(s) must be installed before you operate the source. If the G1978B and the G1947B are ordered at the same time, the APCI High Voltage Power Supply is included in each Enablement Kit.

Step 5. Install the electrospray chamber and start the instrument

- 11** For ESI with Agilent Jet Stream Technology, install the appropriate Enablement Kit for the source, if applicable.

The Enable Kit must be installed before you operate the source. If the ESI with Agilent Jet Stream Enablement Kit and the G1978B are ordered at the same time, the MultiMode High Voltage Board is included in each Enablement Kit.

- 12** Turn on the LC/MS power switch in front to start the pump-down of the LC/MS instrument. The foreline pump will become quieter within a few seconds.

Step 6. Install the LC

Before you begin for all LC models, check that you have the following:

- HPLC grade or better methanol, isopropanol or acetonitrile (methanol preferred)
- HPLC grade water, or better

CAUTION

Use solvents that are at a minimum HPLC grade. Solvents that are acceptable for most LC applications may contain high levels of background that are detectable by the more sensitive LC/MS. LC solvents used with the LC/MS should be rated for both HPLC and pesticide, environmental, or GC/MS analyses. Use the highest purity solvents you can obtain. Acceptability of solvents must be empirically determined.

- 1 Install the Agilent Compact LC, 1100/1200 Series LC or 1260/1290 Infinity LC system following its installation documents.

Other LCs are not supported.

WARNING

The LC/MS can handle maximum of three (3) LC modules. Do not stack all Agilent LC modules or any liquid bottle on top of the LC/MS. This arrangement is unstable and dangerous.

- 2 Connect the remote start cable from the LC/MS to a Remote Start connector on the LC.
- 3 If required, install an Agilent G1369 LAN Interface card into the LC detector module. If a detector module is not present, install the Agilent G1369 LAN Interface card into the pump module. Prior to installing the LAN Interface card, set switches 5 and 6 to the ON position. This will force the Agilent LAN Interface Card to use its default IP address and subnet mask.

The default IP address is 192.168.254.11 and the default subnet mask is 255.255.255.0.

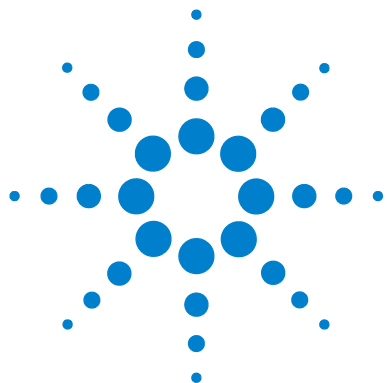
NOTE

For a G1315C DAD SL and others the LAN interface is built into the module main board.

To set the G1315C to the proper IP address, set switch positions 7 and 8 to the ON or UP position. By default, switch positions 7 and 8 are in the down position. Refer to the *G1315C DAD SL User's Guide* (part number G1315-90010) for more information.

1 Instrument Installation

Step 6. Install the LC



2 Computer and Software Installation

- Step 1. Connect the computer [24](#)
- Step 2. Install the Agilent LC/MS ChemStation software [25](#)
- Step 3. Update the LAN/MS control card firmware (if required) [26](#)
- Step 4. Verify the ChemStation software installation (optional) [27](#)
- Step 5. Finish the software installation [28](#)
- To remove the ChemStation software [28](#)

This chapter describes the steps that are required to install the LC/MS software.



Step 1. Connect the computer

- 1 Set up the computer:
 - a Verify that the line voltage is correct.
 - b Unpack the computer and accessories.
 - c Put the computer on the bench top.
 - d Connect the computer and monitor.
- 2 Verify that an Ethernet connection is available in the computer and install the network hub:
 - a Put the hub on the table next to the computer.
 - b Plug the power supply into the hub.
 - c Connect the power supply to an electrical outlet.
 - d Connect a Category 5, Shielded Twisted Pair (STP) cable from the 10 BT LAN connections to any of the connectors 1-7 on the hub.

Do not connect to port 8 on the hub.
 - e Connect a second Category 5 STP LAN cable from one of the open connectors 1-8 on the hub to the Agilent LAN communication card in one of the LC modules.
 - f Connect a third Category 5 STP LAN cable from one of the open connectors 1-8 on the hub to the LAN connection on the LAN/MS control card in the LC/MS instrument.

NOTE

At this point, do *not* connect the hub to the site LAN.

- 3 Install the printer. See the installation documentation supplied with the printer.
- 4 Turn on the printer, hub, monitor, and computer, in that order.

Step 2. Install the Agilent LC/MS ChemStation software

The 6100 bundle LC/MS is shipped with preloaded ChemStation software on its computer.

- If the software is not already installed on your computer, refer to the *Agilent OpenLAB CDS ChemStation Edition Instrument Configuration Guide* to install the software.
- To add and configure instruments to a ChemStation system, refer to *Agilent OpenLAB CDS ChemStation Edition Instrument Configuration Guide*.

Step 3. Update the LAN/MS control card firmware (if required)

- 1 Start up the LC/MS ChemStation online session and confirm that you can communicate with the LC and the LC/MS.
- 2 If the message “MS interface has an older firmware version x.xx.xx. Please update firmware to y.yy.yy or later.” appears at the end of the ChemStation startup, continue to step 2 to update the MS Interface firmware. Otherwise, no action is required.
- 3 Manually update the LAN/MS Control card firmware if required:
 - a Close the ChemStation software.
 - b In Windows Explorer, double-click on **msupdate.exe** in the **\chem32\ms\firmware** directory.
 - c When prompted, type the IP address of the LC/MS, and then press **Enter** to proceed.
 - d You are warned not to disrupt power to the LC/MS instrument during the update. Type **Y** to proceed. It may take several minutes to download the firmware.
 - e When prompted to power cycle the instrument, press the reset (**RST**) button located below the Serial A connection on the LAN/MS Control card in the LC/MS.

When the firmware update is complete, the update window automatically closes.

Step 4. Verify the ChemStation software installation (optional)

The Agilent ChemStation IQ Report utility uses factory-delivered installation reference files to verify the existence, correctness, and integrity of the required Agilent ChemStation system files (executable program files, binary register files, macro files, initialization files, and help files).

To verify ChemStation installation

- 1 Make sure the Agilent ChemStation is closed.
- 2 Click **Start > All Programs > Agilent ChemStation > IQT Report**.

The verification program runs automatically. If your installation was correct, the utility indicates that Installation Verification was successful.

To verify ChemStation performance

- 1 In the **Data Analysis View** within the ChemStation program, click **View > Verification > Run Test**.
- 2 Run the verification test procedure called **default.val**.

The system verification test runs automatically.

Step 5. Finish the software installation

- 1** Save the license numbers in a safe place.

These license numbers are required if you need to reinstall the software and for future upgrades.

- 2** Create a system recovery disk of your installed system.

Follow the instructions provided with the Backup Solution Bundle (G1030-64002) provided with the 6100 Series Single Quad LC/MS system bundle.

To remove the ChemStation software

Use this procedure if you ever want to completely remove the LC/MS ChemStation software from your computer.

- 1** Select **Settings > Control Panel** from the Windows Start menu.
- 2** Open the **Add or Remove Programs** window from the Control Panel.
- 3** Click the **Change/Remove** button for the Agilent ChemStation software.
- 4** When the ChemStation Installation program opens, select the **Remove** option and click **Next**.



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Sensitivity Verification for ESI with Agilent Jet Stream Technology 58

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive SIM Mode 58

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive Scan Mode 61

This chapter contains the steps necessary to complete the hardware setup and verify the performance specifications of the installed system.

Table 2 summarizes signal-to-noise ratio for the supported instrument configurations.



3 Installation Completion and System Verification

Table 2 Signal-to-Noise Summary

6100 Series Model	Spray Chamber	Acquisition Mode	Method	Reserpine concentration (pg/ μ L)	Injection Volume (μ L)	Reserpine on-column (pg)	Signal-To-Noise Specification (peak-to-peak)
G6150B	ESI - G1948B	SIM	6150BSIMES.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6130B	ESI - G1948B	SIM	6130BSIMES.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6120B	ESI - G1948B	SIM	6120BSIMES.M	2 pg/ μ L	5 μ L	10 pg	50:1
G6150B	ESI - G1948B	Scan	6150BSCNES.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6130B	ESI - G1948B	Scan	6130BSCNES.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6120B	ESI - G1948B	Scan	N/A	-	-	-	-
G6150B	APCI - G1947B	SIM	6150BSIMCI.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6130B	APCI - G1947B	SIM	6130BSIMCI.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6120B	APCI - G1947B	SIM	6120BSIMCI.M	2 pg/ μ L	5 μ L	10 pg	20:1
G6150B	APCI - G1947B	Scan	6150BSCNCI.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6130B	APCI - G1947B	Scan	6130BSCNCI.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6120B	APCI - G1947B	Scan	N/A	-	-	-	-
G6150B	APPI - G1971B	SIM	6150BSIMPI.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6130B	APPI - G1971B	SIM	6130BSIMPI.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6120B	APPI - G1971B	SIM	6120BSIMPI.M	2 pg/ μ L	5 μ L	10 pg	20:1

Table 2 Signal-to-Noise Summary

6100 Series Model	Spray Chamber	Acquisition Mode	Method	Reserpine concentration (pg/ μ L)	Injection Volume (μ L)	Reserpine on-column (pg)	Signal-To-Noise Specification (peak-to-peak)
G6150B	APPI - G1971B	Scan	6150BSCNPI.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6130B	APPI - G1971B	Scan	6130BSCNPI.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6120B	APPI - G1971B	Scan	N/A	-	-	-	-
G6150B	MM - G1978B	SIM ES	6150BSIMES_MM.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6130B	MM - G1978B	SIM ES	6130BSIMES_MM.M	1 pg/ μ L	1 μ L	1 pg	20:1
G6120B	MM - G1978B	SIM ES	6120BSIMES_MM.M	2 pg/ μ L	5 μ L	10 pg	20:1
G6150B	MM - G1978B	Scan ES	6150BSCNES_MM.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6130B	MM - G1978B	Scan ES	6130BSCNES_MM.M	10 pg/ μ L	5 μ L	50 pg	20:1
G6120B	MM - G1978B	Scan ES	N/A	-	-	-	-
G6150B	MM - G1978B	SIM APCI	6150BSIMCI_MM.M	1 pg/ μ L	1 μ L	1 pg	10:1
G6130B	MM - G1978B	SIM APCI	6130BSIMCI_MM.M	1 pg/ μ L	1 μ L	1 pg	10:1
G6120B	MM - G1978B	SIM APCI	6120BSIMCI_MM.M	2 pg/ μ L	5 μ L	10 pg	10:1
G6150B	MM - G1978B	Scan APCI	6150BSCNCI_MM.M	10 pg/ μ L	5 μ L	50 pg	10:1
G6130B	MM - G1978B	Scan APCI	6130BSCNCI_MM.M	10 pg/ μ L	5 μ L	50 pg	10:1
G6120B	MM - G1978B	Scan APCI	N/A	-	-	-	-

3 Installation Completion and System Verification

Table 2 Signal-to-Noise Summary

6100 Series Model	Spray Chamber	Acquisition Mode	Method	Reserpine concentration (pg/ μ L)	Injection Volume (μ L)	Reserpine on-column (pg)	Signal-To-Noise Specification (peak-to-peak)
G6150B	AJS - G1958B	SIM	6150BSIMAJ.S.M	1 pg/ μ L	1 μ L	1 pg	100:1
G6130B	AJS - G1958B	SIM	6130BSIMAJ.S.M	1 pg/ μ L	1 μ L	1 pg	100:1
G6120B	AJS - G1958B	SIM	N/A	-	-	-	-
G6150B	AJS - G1958B	Scan	6150BSCNAJS.M	10 pg/ μ L	5 μ L	50 pg	100:1
G6130B	AJS - G1958B	Scan	6130BSCNAJS.M	10 pg/ μ L	5 μ L	50 pg	100:1
G6120B	AJS - G1958B	Scan	N/A	-	-	-	-

Preparation

Before you can run a system verification, you need to:

- Condition the 1100/1200/1260/1290.
- Prepare the performance evaluation sample.

Step 1. Condition the LC

Before you begin, be sure that you have the following:

- High-purity HPLC grade isopropanol (supplied by customer)
 - Premixed Flushing Solvent (p/n G1969-85026) (included with all 6100 Series Single Quad LC/MS instruments)
 - High Purity Water (p/n 8500-2236). The High Purity Water is included with the shipment.
 - High Purity Methanol (p/n 8500-1867). The High Purity Methanol is included with the shipment.
 - High Purity Acetonitrile (p/n G2453-85050). The High Purity Acetonitrile is included with the shipment.
 - Formic Acid - Reagent Grade (p/n G2453-85060). The Formic Acid is included with the shipment.
 - For Agilent Jet Stream equipped systems: Set sheath gas temperature to 350°C.
 - For Agilent Jet Stream equipped systems: Set sheath gas flow to 10 L/minute.
- 1** Start up the Agilent LC/MS ChemStation software.
 - 2** Condition the LC as specified in its installation document.
 - 3** Disconnect any column(s) that may be installed.
 - 4** Rinse the LC solvent bottles three times with deionized water, then rise them three times with methanol.
 - 5** Add the 500 mL of flushing solvent (p/n G1969-85026) to a clean solvent bottle and connect it to channel A.

3 Installation Completion and System Verification

Step 1. Condition the LC

- 6 Set up the pump module to deliver the flushing solvent for 15 minutes at 3 mL/minute. Set up the method for LC only acquisition. Do 5 injections with the flushing solvent to clean the injector path and sample loop.
- 7 Flush out system overnight with the flushing solvent.
 - a Set up the pump module for 0.5 mL/minute flow with the flushing solvent.
 - b Set the drying gas flow to 10 L/minute for the Electrospray spray chamber.
 - c Set the nebulizer pressure to 40 psi.
 - d Set the drying gas temperature to 350°C.
 - e Switch the LC flow to the Quad spray chamber.
 - f Flush the system overnight with the flushing solvent.
- 8 After flushing overnight with the flushing solvent, put 100% isopropyl alcohol in a clean solvent bottle and connect it to channel A. Prime the channel, and then flush for 30 minutes at 1 mL/minute with the 100% isopropyl alcohol to remove the flushing solvent.
- 9 Prepare 250 mL of 50:50 methanol:water solution and put the solvent in a clean solvent bottle and connect it to channel A. Prime the channel, then flush for another 30 minutes at 1 mL/minute with the 50:50 methanol:water solution.
- 10 Put 250 mL of 100% methanol in a clean solvent bottle and connect it to channel A. Prime the channel.
- 11 Install the 2.1 x 50 mm x sub 2 micron SB-C18 Rapid Resolution column supplied with the instrument. Flush the column out with 100% methanol for 1 hour at 1 mL/minute. If the system upper pressure limit is exceeded at 1 mL/minute, increase the Column Compartment temperature (if applicable) and decrease the flow rate to prevent the pressure from exceeding the upper limit.
- 12 Prepare 1 liter of checkout solvents:
 - Mix 70:30 acetonitrile/water with 0.1% formic acid. Use the high purity solvents that are shipped with the system: Acetonitrile (p/n G2453-85050); Water (p/n 8500-2236); Formic Acid (p/n G2453-85060). Add 1mL of the formic acid solution to 1 liter of the solvent for a final concentration of 0.1% formic acid.

- 13** Connect the 1 liter of checkout solvent to channel A and flush the system for 1 hour at 1 mL/minute. If the system upper pressure limit is exceeded at 1 mL/minute, increase the Column Compartment temperature (if applicable) and decrease the flow rate to prevent the pressure from exceeding the upper limit. Be sure to flush through the Rapid Resolution checkout column. Make sure that the solvent stream is going into the spray chamber.

Step 2. Prepare the performance evaluation samples

Before you begin, be sure that you have the following:

- 1 mL graduated pipette (p/n 9301-1423)
- 50 mL volumetric flask (p/n 9301-1424)
- 100 mL volumetric flask (p/n 9301-1344)
- Positive-mode performance evaluation sample, Agilent G2423A
- Plastic bottle for storing first dilution (p/n 9301-1433)

Solvents

The supplied performance evaluation samples must be diluted to concentrations required for the system checkout. Use the following solvent mix you prepared for the LC installation:

- 70:30 acetonitrile/water with 0.1% formic acid as the checkout solvent

Please note

- Use solvents that are at a minimum HPLC grade. Solvents that are acceptable for most LC applications may contain high levels of background that are detectable by the more sensitive Quad instrument. LC solvents used with the Quad instruments should be rated for both HPLC and pesticide, environmental, or GC/MS analyses. Use the highest purity solvents you can obtain. Acceptability of solvents must be empirically determined.
- Use the diluted samples within a day of dilution. Refrigerate the intermediate (first) dilution in the supplied bottles.
- Always rinse the graduated pipettes and volumetric flasks thoroughly with deionized water before and between each use.
- Use polypropylene labware for preparing performance evaluation samples, since glass vessels introduce unacceptable levels of sodium.
- Always rinse the autosampler vials and caps with the solvent mix used for sample dilution before filling them with the performance verification samples. This minimizes any background that can be contributed by the vials and caps. The vials may be run uncapped if the septa are found to be a source of background contamination.

Sensitivity Verification for ESI and APCI

To verify sensitivity on 6120B - G1948B ESI, G1947B APCI, and G1971B APPI Positive SIM Mode

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (p/n G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 1 mL of the first dilution to a second 50 mL volumetric flask.
- 4 Dilute to the 50 mL mark with 70:30 acetonitrile:water.

This provides the final 2 pg/μL reserpine concentration required for performance verification.

- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 3 6120B Performance Verification Summary, SIM Mode

	ES G1948B Positive SIM Mode	APCI G1947B Positive SIM Mode	APPI G1971B Positive SIM Mode
Sample	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL
Concentration after dilution	2 pg/μL	2 pg/μL	2 pg/μL
Injection volume	5 μL	5 μL	5 μL
Total sample amount injected	10 pg	10 pg	10 pg
Sample order number	G2423A	G2423A	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid	70:29:1 acetonitrile:water:acetone with 0.1% formic acid
Method name	6120BSIMES.M (6120B)	6120BSIMCI.M (6120B)	6120BSIMPI.M (6120B)
Performance Specification	50:1 pk-pk 250:1 rms	20:1 pk-pk 100:1 rms	20:1 pk-pk 100:1 rms

3 Installation Completion and System Verification

To verify sensitivity on 6120B - G1948B ESI, G1947B APCI, and G1971B APPI Positive SIM Mode

Sensitivity Verification for G1948B ESI, Positive SIM Mode

- 1 Start the LC/MS ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune has completed, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

NOTE

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 3 Change the view to **Method and Run Control**, and load the method **6120BSIMES.M** (for 6120B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Do an autotune.
- 6 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (2 pg/μL)
- 7 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 8 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 50:1 peak-to-peak (250:1 RMS).

Sensitivity Verification for G1947B APCI, Positive SIM Mode

- 1 Start the LC/MS ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune has completed, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method 6120BSIMCL.M (6120B model).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (2 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

3 Installation Completion and System Verification

To verify sensitivity on 6120B - G1948B ESI, G1947B APCI, and G1971B APPI Positive SIM Mode

Sensitivity Verification for G1971B APPI, Positive SIM Mode

- 1 Start the LC/MS ChemStation software.
- 2 Change the view to MSD Tune, and start an Autotune.

After the autotune has completed, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to Method and Run Control, and load the method 6120BSIMPL.M (6120B model).
- 4 Edit the method to ensure that 70:29:1 acetonitrile:water:acetone with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (2 pg/ μ L)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

To verify sensitivity for 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive SIM Modes

To verify sensitivity for 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive SIM Modes

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (Agilent G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 1 mL of the first dilution to a 100 mL volumetric flask. Use a clean graduated pipette.
- 4 Dilute to the 100 mL mark with 70:30 acetonitrile:water.

This provides the final 1 pg/μL reserpine concentration required for performance verification.

- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 4 6130B and 6150B Performance Verification Summary, SIM Mode

	ES G1948B Positive SIM Mode	APCI G1947B Positive SIM Mode	APCI G1971B Positive SIM Mode
Sample	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL
Concentration after dilution	1 pg/μL	1 pg/μL	1 pg/μL
Injection volume	1 μL	1 μL	1 μL
Total sample amount injected	1 pg	1 pg	1 pg
Sample order number	G2423A	G2423A	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid	70:29:1 acetonitrile:water:acetone with 0.1% formic acid
Method name	6130BSIMES.M (6130B)	6130BSIMCI.M (6130B)	6130BSIMPI.M (6130B)
	6150BSIMES.M (6150B)	6150BSIMCI.M (6150B)	6150BSIMPI.M (6150B)
Performance Specification	20:1 pk-pk 100:1 rms	20:1 pk-pk 100:1 rms	20:1 pk-pk 100:1 rms

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive SIM Modes

Sensitivity Verification for G1948B ESI, Positive SIM Mode

- 1 Start the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSIMES.M** (6130B) and **6150BSIMES.M** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (1 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

Sensitivity Verification for G1947B APCI, Positive SIM Mode

- 1 Start the LC/MS ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSIMCL.M** (6130B) and **6150BSIMCL.M** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (1 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

- 7 You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.
- 8 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive SIM Modes

Sensitivity Verification for G1971B APPI, Positive SIM Mode

- 1 Start the LC/MS ChemStation software.
- 2 Change the view to MSD Tune, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.
- 3 Change the view to Method and Run Control, and load the method 6130BSIMPL.M (6130B) and 6150BSIMPL.M (6150B).
- 4 Edit the method to ensure that 70:29:1 acetonitrile:water:acetone with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (1 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

To verify sensitivity on 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive Scan Modes

To verify sensitivity on 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive Scan Modes

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (Agilent G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 5 mL of the first dilution to a 50 mL volumetric flask. Use a clean graduated pipette.
- 4 Dilute to the 50 mL mark with 70:30 acetonitrile:water.

This provides the final 10 pg/μL reserpine concentration required for performance verification.

- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 5 6130B and 6150B Performance Verification Summary, Scan Mode

	ESI1948B Positive Scan Mode	APCI G1947B Positive Scan Mode	APPI G1971B Positive Scan Mode
Sample	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL
Concentration after dilution	10 pg/μL	10 pg/μL	10 pg/μL
Injection volume	5 μL	5 μL	5 μL
Total sample amount injected	50 pg	50 pg	50 pg
Sample order number	G2423A	G2423A	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid	70:29:1 acetonitrile:water:acetone with 0.1% formic acid
Method name	6130BSCNES.M (6130B)	6130BSCNCI.M (6130B)	6130BSCNPI.M (6130B)
	6150BSCNES.M (6150B)	6150BSCNCI.M (6150B)	6150BSCNPI.M (6150B)
Performance Specification	20:1 pk-pk 100:1 rms	20:1 pk-pk 100:1 rms	20:1 pk-pk 100:1 rms

3 Installation Completion and System Verification

To verify sensitivity on 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive Scan Modes

Sensitivity Verification for G1948B ESI, Positive Scan Mode

- 1 Start the LC/MS ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune has completed, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSCNES.M** (6130B) and **6150BSCNES.M** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (10 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

Sensitivity Verification for G1947B APCI Interface, Positive Scan Mode

- 1 Start up the LC/MS ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSCNCLM** (6130B) or **6150BSCNCLM** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (10 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

3 Installation Completion and System Verification

To verify sensitivity on 6130B and 6150B - G1948B ESI, G1947B APCI, and G1971B APPI, Positive Scan Modes

Sensitivity Verification for G1971B APPI Interface, Positive Scan Mode

- 1 Start up the LC/MS ChemStation software.
- 2 Change the view to MSD Tune, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.
- 3 Change the view to Method and Run Control, and load the method 6130BSCNPLM (6130B) or 6150BSCNPLM (6150B).
- 4 Edit the method to ensure that 70:29:1 acetonitrile:water:acetone with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (10 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

Sensitivity Verification for Multimode

To verify sensitivity for 6120B - G1978B Multimode, Positive SIM Modes

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (p/n G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 1 mL of the first dilution to a second 50 mL volumetric flask.
- 4 Dilute to the 50 mL mark with 70:30 acetonitrile:water.

This provides the final 2 pg/μL reserpine concentration required for performance verification.

- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 6 6120B Performance Verification Summary Table

	MM G1978B ES Positive SIM Mode	MM G1978B APCI Positive SIM Mode
Sample	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL
Concentration after dilution	2 pg/μL	2 pg/μL
Injection volume	5 μL	5 μL
Total sample amount injected	10 pg	10 pg
Sample order number	G2423A	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid
Method name	6120BSIMES_MM.M (6120B)	6120BSIMCI_MM.M (6120B)
Performance Specification	20:1 pk-pk 100:1 rms	10:1 pk-pk 50:1 rms

3 Installation Completion and System Verification

To verify sensitivity for 6120B - G1978B Multimode, Positive SIM Modes

Sensitivity Verification for Multimode in ESI Positive SIM Mode

- 1 Start up the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.
- 3 Change the view to **Method and Run Control**, and load the method **6120BSIMES_MM.M** (for ESI).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (2 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS) for ES mode.

Sensitivity Verification for Multimode in APCI Positive SIM Mode

- 1 Start up the ChemStation software.
- 2 Change the view to MSD Tune, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the LC/MS. This minimizes any background signal resulting from the calibrant.
- 3 Change the view to Method and Run Control, and load the method **6120BSIMCI_MM.M** (for APCI).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (2 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

- 7 Review the results.

When the method is finished, a report prints showing the signal- to- noise ratio for the five blank and five sample peaks, and a blank- subtracted average of the sample peaks. The blank- subtracted average signal- to- noise value must be greater than or equal to 10:1 peak- to- peak (50:1 RMS).

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B - G1978B Multimode, Positive SIM Modes

To verify sensitivity for 6130B and 6150B - G1978B Multimode, Positive SIM Modes

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (Agilent G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 1 mL of the first dilution to a 100 mL volumetric flask. Use a clean graduated pipette.
- 4 Dilute to the 100 mL mark with 70:30 acetonitrile:water.
This provides the final 1 pg/μL reserpine concentration required for performance verification.
- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 7 6130B and 6150B Quad Performance Verification Summary, SIM Mode

	MM G1978B ES Positive SIM Mode	MM G1978B APCI Positive SIM Mode
Sample	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL
Concentration after dilution	1 pg/μL	1 pg/μL
Injection volume	1 μL	1 μL
Total sample amount injected	1 pg	1 pg
Sample order number	G2423A	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid
Method name	6130BSIMES_MM.M (6130B)	6130BSIMCI_MM.M (6130B)
	6150BSIMES_MM.M (6150B)	6150BSIMCI_MM.M (6150B)
Performance Specification	20:1 pk-pk 100:1 rms	10:1 pk-pk 50:1 rms

Sensitivity Verification for Multimode in ESI, Positive SIM Mode

- 1 Start up the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSIMES_MM.M** (6130B) or **6150BSIMES_MM.M** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (1 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B - G1978B Multimode, Positive SIM Modes

Sensitivity Verification for Multimode in APCI, Positive SIM Mode

- 1 Start the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes before you continue, to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSIMCI_MM.M** (6130B) or **6150BSIMCI_MM.M** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (1 pg/μL)
- 6 Run the method.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 10:1 peak-to-peak (50:1 RMS).

To verify sensitivity for 6130B and 6150B - G1978B Multimode, Positive Scan Modes

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (Agilent G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 5 mL of the first dilution to a 50 mL volumetric flask. Use a clean graduated pipette.
- 4 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
This provides the final 10 pg/μL reserpine concentration required for performance verification.
- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 8 6130B and 6150B Performance Verification Summary, Scan Mode

	MM G1978B ES Positive Scan Mode	MM G1978B APCI Positive Scan Mode
Sample	Reserpine, 5 ng/μL	Reserpine, 5 ng/μL
Concentration after dilution	10 pg/μL	10 pg/μL
Injection volume	5 μL	5 μL
Total sample amount injected	50 pg	50 pg
Sample order number	G2423A	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid
Method name	6130BSCNES_MM.M (6130B)	6130BSCNCI_MM.M (6130B)
	6150BSCNES_MM.M (6150B)	6150BSCNCI_MM.M (6150B)
Performance Specification	20:1 pk-pk 100:1 rms	10:1 pk-pk 50:1 rms

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B - G1978B Multimode, Positive Scan Modes

Sensitivity Verification for Multimode in ESI, Positive Scan Mode

- 1 Start the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.
- 3 Change the view to **Method and Run Control**, and load the method **6130BSCNES_MM.M** (for 6130B) or **6150BSCNES_MM.M** (for 6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (10 pg/μL)
- 6 Run the method.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.
- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 20:1 peak-to-peak (100:1 RMS).

Sensitivity Verification for Multimode in APCI, Positive Scan Mode

- 1 Start the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.
- 3 Change the view to **Method and Run Control**, and load the method **6130BSCNCL_MM.M** (6130B) or **6150BSCNCL_MM.M** (6150B).
- 4 Edit the method to ensure that 70:30 acetonitrile:water with 0.1% formic acid is selected as the LC solvent.
- 5 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (10 pg/μL)
- 6 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity

- 7 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 10:1 peak-to-peak (50:1 RMS).

Sensitivity Verification for ESI with Agilent Jet Stream Technology

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive SIM Mode

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (Agilent G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water with 0.1% formic acid.
- 3 Transfer 1mL of the first dilution to a 100 mL volumetric flask. Use a clean graduated pipette.
- 4 Dilute to the 100 mL mark with 70:30 acetonitrile:water with 0.1% formic acid.

This provides the final 1 pg/μL reserpine concentration required for performance verification.

- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 9 6130B and 6150B Performance Verification Summary, SIM Mode

	Agilent Jet Stream Technology ES Positive SIM Mode
Sample	Reserpine, 5 ng/μL
Concentration after dilution	1 pg/μL
Injection volume	1 μL
Total sample amount injected	1 pg
Sample order number	G2423A
Solvent	70:30 acetonitrile:water with 0.1% formic acid

Table 9 6130B and 6150B Performance Verification Summary, SIM Mode

	Agilent Jet Stream Technology ES Positive SIM Mode
Method name	6130BSIMAJ.S.M (6130B) 6150BSIMAJ.S.M (6150B)
Performance Specification	100:1 pk-pk 500:1 rms

Sensitivity Verification for Positive SIM Mode

- 1 Start up the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSIMAJ.S.M** (for 6130B) or **6150BSIMAJ.S.M** (for 6150B).

The checkout method includes these acquisition parameters:

- Column: 827700-902 SB-C18 2.1x50mm, 1.8 µm
- Mobile Phase: 70:30 (Acetonitrile + 0.1% Formic):(Water + 0.1% Formic)
- Flow: 0.4 mL/minute
- Column Temp: 30°C (if TCC is available)
- FIA interval: 1.5 minutes
- Nebulizer Pressure: 30 psi
- Drying Gas Flow: 7 L/minute
- Drying Gas Temp: 350°C
- Sheath Gas Flow: 12 L/minute
- Sheath Gas Temp: 360°C
- Capillary Voltage: 4000V
- Nozzle Voltage: 0V

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive SIM Mode

- Fragmentor: 200V

- Multiplier Gain: 3

4 Place the vials into the LC autosampler.

- Position #1: empty, uncapped vial
- Position #2: vial of the solvent used for dilution (solvent blank)
- Position #3: vial with the reserpine sample (1 pg/ μ L)

5 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity

6 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 100:1 peak-to-peak (500:1 rms).

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive Scan Mode

Preparation

- 1 Transfer 1 mL of 5 ng/μL reserpine (Agilent G2423A) to a 50 mL volumetric flask. Use a clean graduated pipette.
- 2 Dilute to the 50 mL mark with 70:30 acetonitrile:water.
- 3 Transfer 5 mL of the first dilution to a 50 mL volumetric flask. Use a clean graduated pipette.
- 4 Dilute to the 50 mL mark with 70:30 acetonitrile:water.

This provides the final 10 pg/μL reserpine concentration required for performance verification.

- 5 Transfer approximately 1 mL of the second dilution to an autosampler vial.

Table 10 6130B and 6150B Performance Verification Summary, Scan Mode

	Agilent Jet Stream Technology ES Positive Scan Mode
Sample	Reserpine, 5 ng/μL
Concentration after dilution	10 pg/μL
Injection volume	5 μL
Total sample amount injected	50 pg
Sample order number	G2423A
Solvent	70:30 acetonitrile:water
Method name	6130BSCNAJS.M (6130B)
	6150BSCNAJS.M (6150B)
Performance Specification	100:1 pk-pk 500:1 rms

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive Scan Mode

Sensitivity Verification for Positive Scan Mode

- 1 Start up the ChemStation software.
- 2 Change the view to **MSD Tune**, and start an Autotune.

After the autotune completes, you may need to wait up to 30 minutes to allow for the calibrant solution to be pumped out of the Quad instrument. This minimizes any background signal resulting from the calibrant.

- 3 Change the view to **Method and Run Control**, and load the method **6130BSCNAJS.M** (for 6130B) and **6150BSCNAJS.M** (for 6150B).

The checkout method includes these acquisition parameters:

- Column: 827700-902 SB-C18 2.1x50mm, 1.8 µm
- Mobile Phase: 70:30 (Acetonitrile + 0.1% Formic):(Water + 0.1% Formic)
- Flow: 0.4 mL/minute
- Column Temp: 30°C (if TCC is available)
- FIA interval: 1.5 minutes
- Nebulizer Pressure: 30 psi
- Drying Gas Flow: 7 L/minute
- Drying Gas Temp: 350°C
- Sheath Gas Flow: 12 L/minute
- Sheath Gas Temp: 360°C
- Capillary Voltage: 4000V
- Nozzle Voltage: 0V
- Fragmentor: 200V
- Multiplier Gain: 3

- 4 Place the vials into the LC autosampler.
 - Position #1: empty, uncapped vial
 - Position #2: vial of the solvent used for dilution (solvent blank)
 - Position #3: vial with the reserpine sample (10 pg/µL)

5 Run the method.

The method performs an FIA run with one injection of the empty vial, five injections of the solvent blank, and five injections of the reserpine sample.

You may need to further optimize the nebulizer pressure by running FIA experiments to achieve maximum instrument sensitivity

6 Review the results.

When the method is finished, a report prints showing the signal-to-noise ratio for the five blank and five sample peaks, and a blank-subtracted average of the sample peaks. The blank-subtracted average signal-to-noise value must be greater than or equal to 100:1 peak-to-peak (500:1 rms).

3 Installation Completion and System Verification

To verify sensitivity for 6130B and 6150B with Agilent Jet Stream Technology, Positive Scan Mode

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In This Book

This book contains
installation, configuration,
verification, and start-up
tasks to operate your Agilent
6100 Series Quadrupole
LC/MS Systems.

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