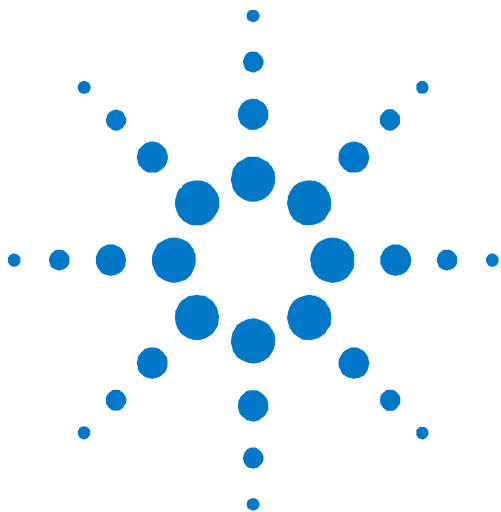




Agilent 6100 Series

Single Quad LC/MS Systems

G2735L Agilent Jet Stream on G6130B Upgrade Kit Installation Instructions

G2735L Upgrade Kit Installation Instructions

Follow the steps below to install the G2735L Upgrade Kit to upgrade a G6130B LC/MS to be compatible with Agilent Jet Stream technology.

The Upgrade Kit includes the following items:

(Note: not all parts listed below are available as replacement parts.)

G1960-60620	Upgrade kit: AJS on G6130B
G1958-20050	AJS Spray Shield
G1960-60192	AJS Supply Gas Tubing Assembly
G1960-60885	Cable, Fan Expansion
G1960-60873	Cable, MultiMode Board Power/Data
G1960-61115	MultiMode/DE High Voltage PCA
G1958-61001	Fuse Board
G1960-87022	Instrument Serial Number Label
G1960-90059	Instruction Sheet - AJS Compatibility Kit
0515-0372	Screw, Machine M3 x 0.5 8 MM (quantity: 2)
G1960-60858	Cable, MultiMode Board High Voltage
RMSN-4	Big Universal Trap, Nitrogen (quantity: 2)
0100-0088	1/4" SwageLok® tee (quantity: 2)
G1946-80078	1/4" Teflon tubing (500 cm)
5183-0392	1/4" Nut and Ferrule Set, Brass 5Pk
G1946-85004	ES/APCI Positive Ion Performance Std.
G2453-85060	Formic Acid-Reagent Grade 5ml (5cc)
G1969-85000	ESI-L Calibrant (100 mL)
9300-2576	CDS Bottle (125 mL)
G1969-86001	Label, ESI-TOF (Low concentration) calibrant
9300-2575	CDS Bottle Cap
G1958-60136	Nebulizer (Needle Replacement)
G1958B	Agilent Jet Stream
G1958-65538	Agilent Jet Stream
G1958-60098	AJS Nebulizer

Also required: LC/MS Firmware 3.02.42 or newer (on ChemStation disc – *not included with Upgrade Kit!*)

Required Tools (not supplied in the upgrade kit!):

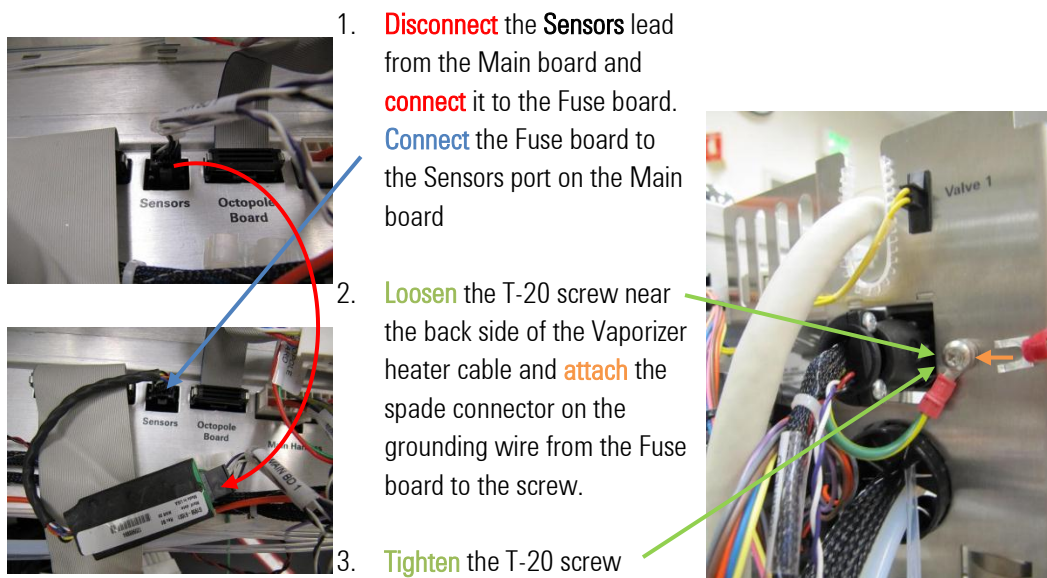
T-10 Torx driver	1/2" x 9/16" Wrench (2)
T-20 Torx driver	Utility Knife/Blade
Voltmeter	11/16" Wrench

Printing Tune Report and Backing up Tune files

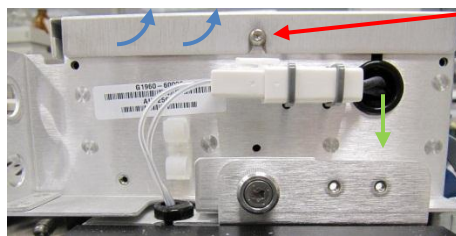
1. With the LC/MS still running and the online LC/MS ChemStation session open, make a printout of the current positive and negative mode tunes using the **Print Tune Report** selection from the **File** menu in **MSD Tune** view.
2. On the ChemStation command line type **ReadNVR** <enter> and then **ShowNVR** <enter>. Print out the nonvolatile RAM parameters that are displayed in the MSDNVRAM.txt file on screen. Use the printout to verify that the NVR parameters have not changed after the upgrade.

Install the Agilent Jet Stream components

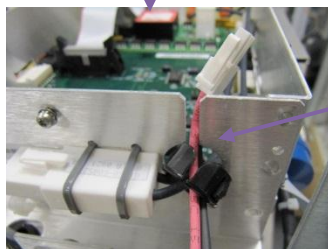
3. Initiate a system **vent** from the ChemStation software. When the vent has completed, close the ChemStation and switch the LC/MS off. As an alternative to venting, a vacuum keep-alive device may be used if the listed procedures can be completed within 45 minutes.
4. With the LC/MS front power switch off, remove the top and left side panels of the LC/MS system (secured by T-20 screws).
5. Install the Fuse board (p/n G1958-61001): Disconnect the temperature Sensors lead from the Main board. Install this lead into the open port Fuse Board and connect the free lead from the Fuse board to the Main board Sensors connection. Loosen the T-20 screw by the back side of the Vaporizer Heater cable on the instrument chassis and attach the spade connector on the grounding wire from the Fuse board to the screw and re-tighten the screw:



6. Install the Multimode High Voltage Board (p/n G1960-61115): (**Note:** if the system is already equipped with a Multimode enablement kit, this step may not be necessary. Remove the Multimode High Voltage board as specified below and verify that the part number is G1960-61115. If it is not, replace the existing Multimode High Voltage board with the new part provided in the Upgrade Kit.). Remove the Auxiliary Module top cover by loosening the T-10 screw. Disconnect the ribbon cable and Vcap/Vchamber wires from the Vcap/Vchamber power supply. Install the Multimode High Voltage board on the standoffs and secure with 2 T-10 screws (p/n 0515-0372) provided in the Upgrade Kit. Install the Multimode High Voltage board ribbon cable (p/n G1960-60873) between the Multimode High Voltage board connector J3 and Valve board connector P11. Remove the grommet from the front of the Auxiliary Module and route the Multimode HV cable (p/n G1960-60858) through the Auxiliary Module & grommet. Connect the Multimode HV cable to the Multimode High Voltage board connector J1 and install the free end of the cable to the upper (Multimode) port on the front of the Auxiliary Module using an 11/16" wrench. Reconnect any cables that were disconnected and reinstall the Auxiliary Module cover:



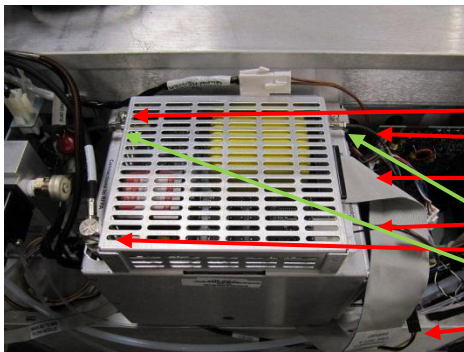
1. **Loosen** the T-10 screw
2. **Remove** the Auxiliary Module cover.
3. **Press** the grommet towards the front of the Auxiliary Module from the inside to remove.
4. **Prepare** the Auxiliary Module
5. **Install** the Multimode High Voltage board with ribbon cable and secure using 2 T-10 screws



6. **Route and install** the Multimode cable



7. Remove the Quad Driver: Loosen the 2 T-20 retaining screws, disconnect the ribbon cable, the shroud cable, the RF clock cable, the RF signal output cable, the RF signal input cable, and the Quad Driver fan connector. Carefully pull the Quad Driver Assembly away from the instrument:



Disconnect all 6 cables attached to the Quad Driver Assembly:

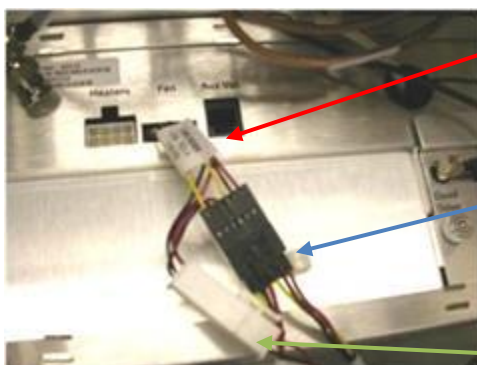
- RF output cable to RFPA
- RF clock cable to Main board
- Ribbon Cable
- Shroud Cable
- RF input cable from RFPA
- Quad Driver fan connector

Loosen the 2 T-20 retaining screws

8. Install the Fan Expansion Cable (p/n G1960-60885): Disconnect the Quad Driver & External Fan cable from the Fan connection on the AC Board at the rear of the Electronics Module (E-Mod). Plug the Fan Expansion Cable into the Fan connection on the AC Board. Plug the Quad Driver & External Fan cable into the matching connector on the Fan Expansion Cable. Plug the 24V Fan cable from the Main Harness into the matching connector on the Fan Expansion Cable.

IMPORTANT!

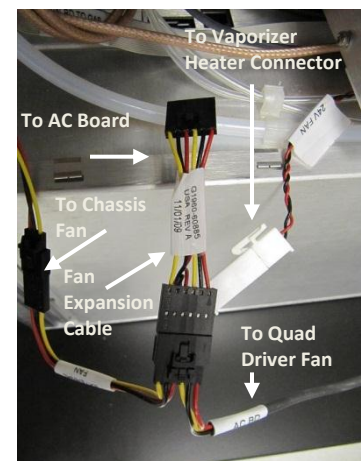
Do not misconnect the HED ground connector (green wire) and 24V Fan cable (red and black wires), as they are the same connector type and are located near each other inside the instrument:



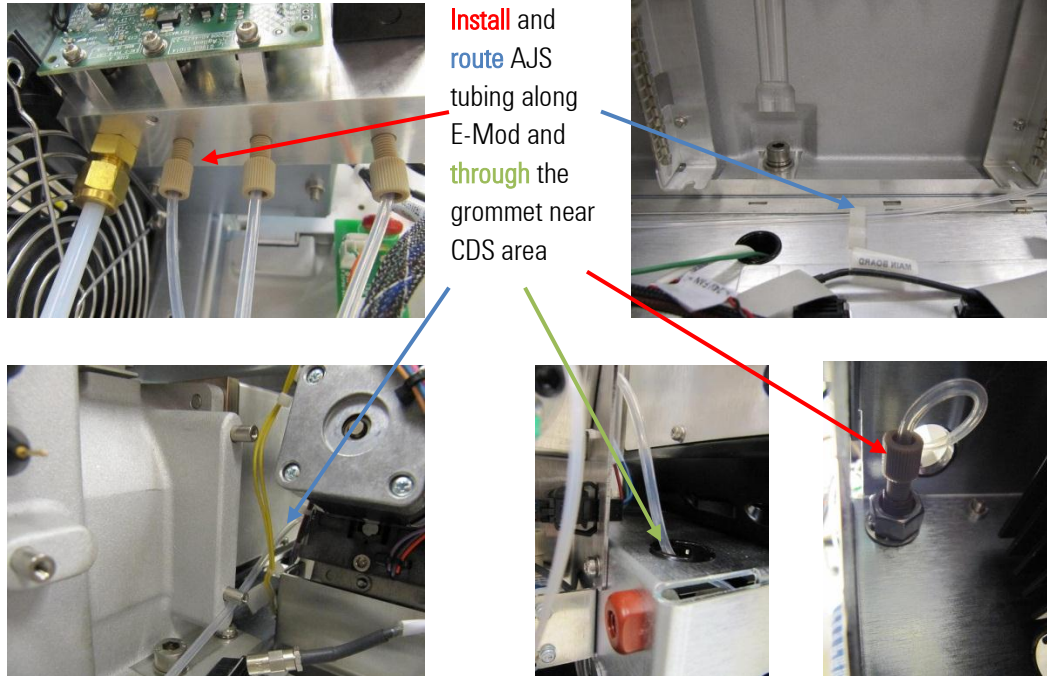
Install the Fan Expansion Cable into the Fan port on the AC Board

Plug the existing Quad Driver & External Fan Cable into the Fan Expansion cable

Plug the 24V Fan cable from the Main Harness into the Fan Expansion Cable



9. Install AJS Tubing Assembly (p/n G1960-60192): Connect one end of the AJS Tubing Assembly to the 1/8" port on the Gas Flow Control Module between the 1/4" drying gas port and the 1/8" nebulizer port. Route the AJS Tubing along the top of the Electronics Module, securing it beneath the plastic clip on the Electronics Module. Route the AJS tubing through the front of the instrument chassis and through the grommet on the front of the instrument beneath the desolvation assembly. Attach the free end of the AJS Tubing assembly to the Bulkhead Union fitting from the behind (below the grommet):



10. Reinstall the Quad Driver and system covers as a reversal of removal.

Install the new Nitrogen Filters

Quad Driver and External Fans Cable

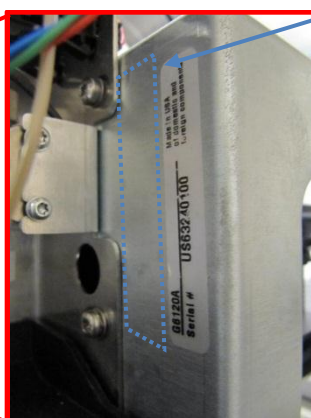
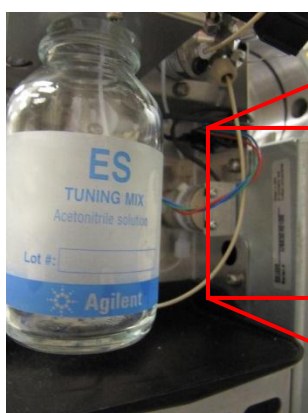
11. Turn off the Nitrogen gas at the source. Plumb the two RMSN-4 nitrogen filters in parallel using the provided 1/4" SwageLok® tees (p/n 0100-0088) and 1/4" Teflon tubing (p/n G1946-80078):



Plumb the RMSN-4 gas traps downstream from the nitrogen source and purge according to the directions provided with the gas traps. After purging, connect the RMSN-4 gas traps to the LC/MS; ensure the nitrogen source pressure is set to 80 – 100 PSI and mount the gas traps in a vertical orientation.

Install the new Serial Number

12. Place the new serial number sticker supplied in the Upgrade Kit in the space above the old serial number sticker on the left side panel near the Calibrant Delivery System. The serial number sticker identifies that the G6130B LC/MS instrument has been upgraded to G6130B with AJS functionality.



Place the new serial number sticker

13. Reinstall all system covers as a reversal of removal. Power on the system to initiate the pumpdown process.
14. After the LC/MS SmartCard has finished initializing, start the Online ChemStation.

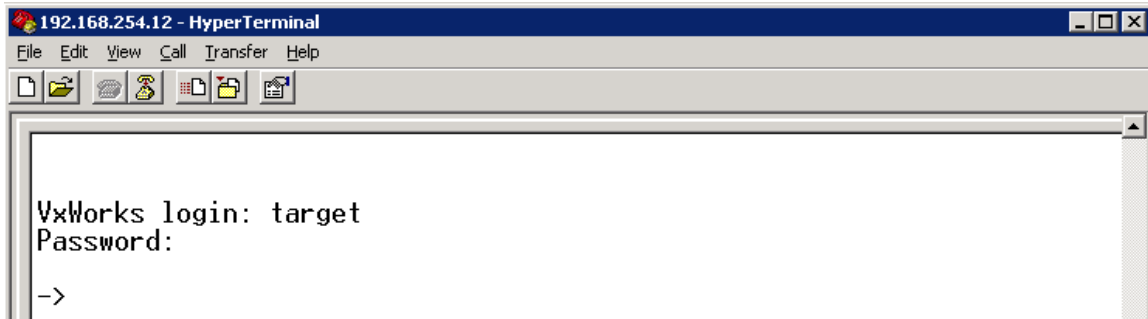
Updating LC/MS Firmware

1. Update the LC/MS firmware to revision **3.02.42** (or newer). The minimum required firmware is available on the acquisition PC running LC/MS ChemStation C.01.03 or newer.
2. Agilent Jet Stream Technology optimally heats using 95% input line voltage duty cycle. At installation, the measured country line voltage must be written to the SmartCard Non-Volatile RAM (NVR) parameters through Hyperterminal/Telnet. To set the line voltage, complete the following:

Login to the G6130B with telnet or Hyperterminal

login: **target**

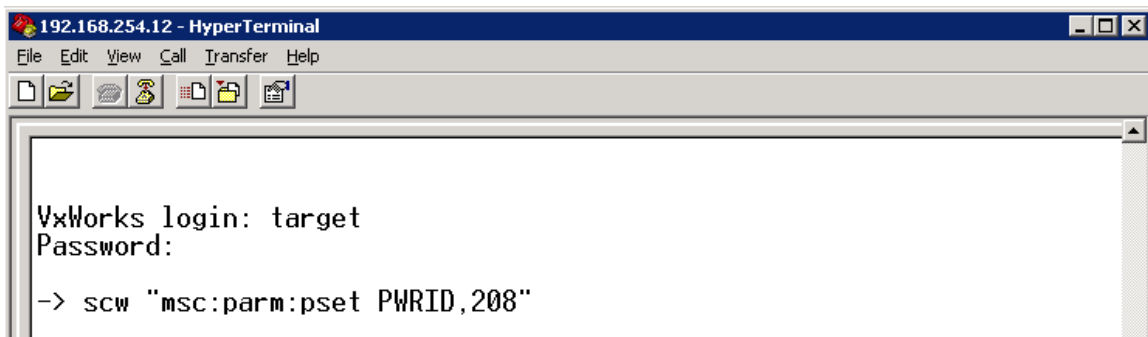
password: **password**



Enter the following string at the command prompt:

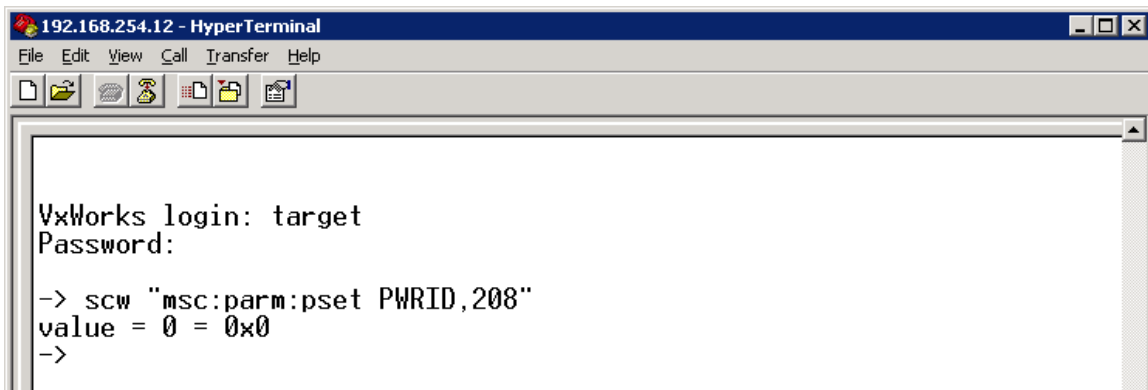
scw "msc:parm:pset PWRID,XXX"

Where XXX = measured site line voltage (208 for U.S.A., etc.)



The G6130B should reply with

value = 0 = 0x0

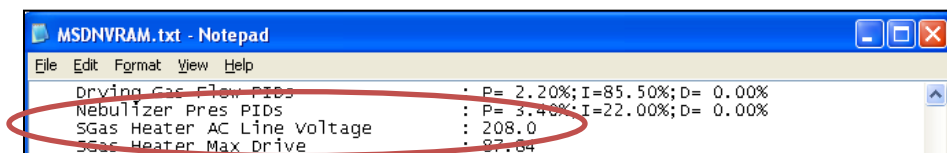


Confirm the line voltage by opening ChemStation and entering the following into the command line:

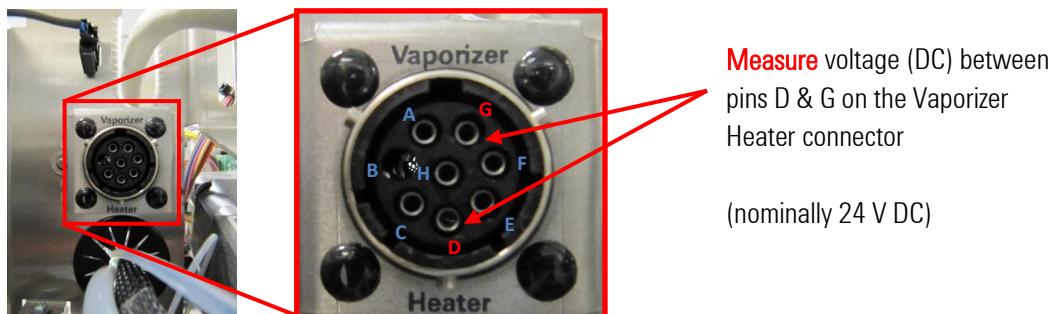
readnvr <enter>

shownvr <enter>

Verify the entry for "SGas Heater AC Line Voltage" in MSDNVRAM.txt as the line voltage just entered:



3. Verify 24 VDC is present between pins D & G on the Vaporizer Heater connector:



Tuning the Instrument and Performing the Signal-to-Noise Checkout

4. After the LC/MS SmartCard has finished initializing, start the Online ChemStation. Install the Agilent Jet Stream. Ensure the correct Spray Shield (p/n G1958-20050) and ESI-Low calibrant are installed. A new CDS Bottle (p/n 9300-2576) and ESI-Low label (p/n G1969-86001) are provided in the upgrade kit. The previous calibrant bottle may be capped with CDS Bottle Cap p/n 9300-2575 from the upgrade kit and stored as appropriate.
5. After equilibration, perform an Autotune (dual polarity) with the Agilent Jet Stream.
6. After the Autotune has successfully completed, follow the instructions in the *Agilent 6100 Series LC/MS System Installation Manual* (p/n G1960-90081) to perform a positive mode Scan and SIM signal-to-noise checkout. To successfully complete the upgrade, the system must successfully pass both the Scan and SIM signal-to-noise checkout specification with Agilent Jet Stream. If the system cannot pass signal-to-noise due to high background levels, the HPLC may require cleaning under a separate service call.

Note:

1. The G6130B signal-to-noise checkout uses 70:30 acetonitrile:water with 0.1% formic acid as solvent. Ammonium formate or formic acid and the checkout standard are supplied in the upgrade kit as appropriate. The checkout sample is run through a SB-C18 column, which is supplied in the Instrument ship kit. Solvents and lab ware are to be provided by the customer.
2. The parts that were replaced as part of the upgrade do not need to be returned, and should be disposed of properly.

G6130B LC/MS Performance Verification Summary

	AJS G1958B Positive SIM Mode	AJS G1958B Positive Scan Mode
Sample	Reserpine, 5 ng/μl	Reserpine, 5 ng/μl
Concentration after dilution	1 pg/μl	10 pg/μl
Injection volume	1 μl	5 μl
Total sample amount injected	1 pg	50 pg
Sample order number (customer)	G2423A	G2423A
Sample part number (service)	G1946-85004	G1946-85004
Solvent	70:30 acetonitrile:water with 0.1% formic acid	70:30 acetonitrile:water with 0.1% formic acid
Method name	6130BSIMAJ.S.M	6130BSCNAJS.M
Performance Specification	100: 1 pk-pk 500: 1 rms	100: 1 pk-pk 500: 1 rms

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