Agilent 7890GC

Firmware Bulletin

Revision B.02.04.2 and A.01.16

External use only

Agilent Technologies

About this Document

This document provides the firmware changes used for the following GC Systems

- 7890B (G3440B)
- 7890A (G3440A)

Where To Get Latest Information.

The latest versions can be downloaded externally at
http://intranet.chem.agilent.com/_layouts/agilent/downloadFirmware.aspx?whid=50307

Document History

The table below lists all changes that have been made to this document.

Date	Version	Description
3rd Feb 2015	Rev 1.00	Initial release
1st Sep 2015	Rev 1.01	Added Waters info
6th Nov 2015	Rev 1.02	Updated to B.02.04.1
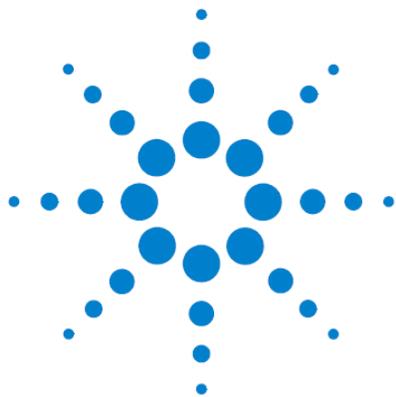
Compatibility Information

- **Agilent 7890 GC Firmware Support Information.**
- **Notes for Agilent 7890 controlled by non-Agilent Chromatography Data Systems (CDS).**
- **OQ/PV - Validation Information.**
- **Data Handling Compatibilities.**

Agilent 7890 GC Firmware Support Information

- Agilent recommends using always the latest firmware revision of a firmware in order to avoid interoperability issues.
- Generally, Agilent recommends keeping the GC instrument firmware always current.

Notes for Agilent 7890 controlled by non-Agilent Chromatography Data Systems (CDS)

- The 3rd-party CDS software vendor is responsible for compatibility testing with the respective CDS revision.
- The 3rd-party CDS software vendor defines the minimum firmware revision required for CDS compatibility.
- The 3rd-party CDS release notes issued by the respective CDS vendor may use different terminology for the firmware requirements such as "tested firmware", "supported firmware", "firmware requirements", "minimum tested firmware", etc.

Waters

Waters have recently released their latest Agilent 7890 driver, instrument control software (ICS) Version 2.6.

The primary benefits of ICS 2.6 over ICS 2.5 is the official support of the 7890B and support of the G3520A.

The G3520A is the 7697 headspace transfer line.

As a reminder, ICS 2.5 would not connect to the 7890 if the G3520A was installed in the 7890.

Officially, 7890B firmware B.02.02 is supported.

We know 7890B firmware B.02.00 and B.02.01 work with ICS 2.5

We also know 7890B, B.02.03, B.02.03.1 and B.02.03.2 work with ICS 2.5

While not officially mentioned by Waters, these revisions are expected to work with ICS 2.6.

OQ/PV - Validation Information

- If a firmware upgrade has been performed, normally no revalidation of the module/system is required. This is stated in the released Service Note applicable to the release.
- In addition this information is stated further on in this document.

Data Handling Compatibilities.

Below is a list of minimum 7890 Firmware requirements to support Agilent Open Lab CDS Chemstation (rev C.01.06 and C.01.07) and Open Lab EZChrom (rev A.04.06 and A.04.07)

Instrument	Model	Supported Firmware Version (minimum)	Notes
7890A	G3440A G3445A	A.01.15	
7890B	G3440B G3445B	B.02.00	GC ALS Controller Card must be A.02.13 to support EMF
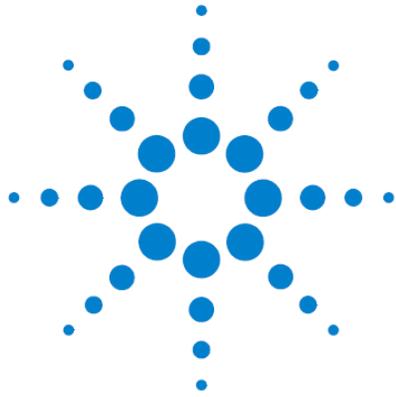
Firmware History

- **Current Version Changes.**
- **Previous Firmware Changes.**

Current Version Changes.

The current firmware for the 7890B (G3440B) is B.02.04.2.

Released March 2016

Updating to this firmware does not require instrument revalidation.

Changes made since the last version. (B.02.04.1)

TT24271 - Key sequences cause GC to reboot. (Fixed)

TT22435 - Two Aux EPC modules cause Mass Hunter 7.04 to crash.

TT24279 - Fixed PTV EMF values.

TT23993 - Resolved Problem with PCM/AUX configuration.

TT23022 - Oven Temp Standby Info incorrect.

TT24410 - Allow BackCryo and Chiller Bath to be configured.

The current firmware for the 7890A (G3440A) is A.01.16

Released March 2014

Updating to this firmware does not require instrument revalidation.

Changes made since the last version. (A.01.15.2)

Incorrect flows displayed in the MMI diagnostic screens in direct mode.

TT 19692 - LTM column modules can now be "hot swapped" without damage. Parameter added to "Turn off LTM Module".

TT 19465 - G4513A does not recognise unplugging the tower.

TT 18949 - Allow septum purge setpoint to go sub ambient preventing shutdown at inlet pressure less than 0.25psi.

TT 19859 - Add a second line to the detector fault status display.

TT 19837 - LTM setpoint resets when method is downloaded during a run.

TT 19837 - NPD H2 off resets to on prior to the runtime entered in the time table.

TT 19837 - PCOC setpoint resets during run.

TT 19681 - Extend column config strings from 30 characters to 37 characters

TT 19692 - Disable LTM Modules added to Service Mode key.

TT 19939 - LTM Tag readiness test set to Actual Less than Setpoint+10 and Greater than Setpoint-3 in Run Idle.

TT 18542 - 7890B error (FW B 0201) if 7683ALS installed at back tower

TT 18540 - 7890B - B.02.01 - mounting injector on parking post the 7890B will go "Not Ready" and can't make a manual Injection.

Previous Firmware Versions. (7890B only).

This section details previous versions of 7890B firmware giving release notes.

B.02.04.1 7890B GC Firmware

Full compatibility for the Agilent XCD.

Full compatibility for the 5977B MS.

TT23872 - If a numeric entry was inputted as a column configuration exit, the GC will reboot.

TT23776 - Front detector heating too slowly.

Fix QQQ_BF pressure programming bug with the Collision Cell backflush ready EPC Module

TT 23721 Fix Vent Done message PopUp

TT23661 - QQQ_BF only configurable with const or ramped flow.

TT23699 - Add High Energy Source to 5977B & 7010

TT19466 - Set inlet leak test pressure limits based on column and connection.

TT20498 - Fix COC Septum Purge Regulator AutoZero.

TT22938 - CP_DET is allowed to have column + fuel = constant.

TT22287 - Improve cryo timeout info.

TT23533 Cannot configure instrument with FPD+ with older versions of Chemstation.

Added "Reboot Request" when MSD IP config change is accepted.

TT20914 Have 7697 headspace synchronize clock when connecting.

Add FPGA version to Instrument Status.

Allow access to GC setpoints during vent processing.

TT23086 - Fixed FPD+ Emission block On/Off.

TT22436 - Fix MMI & SS purge flow when column flow is negative

TT 020066 - H2 sensor configuration freezes the keyboard.

TT 19845 - Improper manufacturing date on H2 sensor.

TT 19939 - Reset LTM tag readiness to +12 to -3 degrees during run Idle.

TT 19692 - Fix updating column LTM tag info.

In addition to the above changes a modification has been made to the FPGA to help resolve an issue that we are seeing resulting in detector baseline noise and oscillation.

The download of the FPGA is done as part of the firmware download.

Status not ready if Fpga version < 1.1b *This version of FPGA must be installed with B.02.04.1*

B.02.03.2 7890B GC Firmware

Fix diagnostic thermal duty cycle signals.

Duty cycle signals from the PPIP heater now available.

Keyboard information for QQQ backflush fixed.

The EPC Channel does not set Ignore Ready to TRUE.

Set Ignore Ready to TRUE for the Backflush EPC Channel. The channel still shows Not Ready - Fixed

Info for Collision cell gas type.

Corrected info screen on collision cell gas type

Gas Type Configuration for QQQ backflush.

Fixed problem with configuring carrier gas type.

Column Compensation in Analog Out.

Fixed inability to run column comp in Analog out.

Added MS7010A to Mass Spec Type.

<u>**B.02.03.1 7890B GC Firmware.**</u>

Released June 2014

Added QQQ II Aux diag panel

Stop display of pressure program for QQQ modules.

Fix event log message for QQQ BF Shutdown.

Add QQQ II Aux pressure diagnostic signals.

Add QQQ II module for Backflush

Fix Detector Zone heating too slowly.

<u>**B.02.03 7890B GC Firmware**</u>

Released March 2014

Improper manufacturing date on H2 sensor.

The factory calibration date for H2 sensor can now be read from the GC.

Reset LTM transfer module (tag) readiness to +12 to -3 degrees during run Idle.

The GC oven temperature affects the LTM II transfer line readiness delaying the start of the next run. Readiness band widened to +12 deg to -3 deg.

Fix updating column LTM tag info.

LTM II modules not allowing hot swap - customer changes without powering off the GC, damages components and wrong info written to the chip. Turn off LTM Module added in Service Mode.

Do not modify setpoints if in OvenTrack.

The PCOC oven track temperature jumps to a high temperature during the early part of a run and then resets itself to the setpoint. Problem caused "sampler method" being loaded when ALS finishes post washes.

Do not reset LTM to initial values after method loading.

LTM Temp Ramp drops mid run and then recovers. Problem caused "sampler method" being loaded when ALS finishes post washes.

NPD H2 Off resets.

The 7890 NPD H2 off value resets during run. Problem caused "sampler method" being loaded when ALS finishes post washes.

Reset signal display filter when delta is > 100000
FID signal displays incorrectly.
QQQ Argon flow incorrectly reported.
QQQ Collision Cell displays Ar Collision Gas Actual as higher than setpoint and GC Actual.
MMI Cryo Fast Cool Down
In B.02.01 firmware, if a MMI is the front inlet and cryo fast cool down is being used, the GC would automatically reboot.
Stop Key Pressed reported late.
Manually pressing STOP during a run on the 7890B in not executed immediately on the Open Lab Data Handling systems. The 7890A STOP is handled correctly.
Fix timeout on ALS.
With the Data System connected but not in a sequence or run method resolution occurs saying that an injector is missing when the injector is still physically connected. There have been periodic loss of the injector in the configuration. This has occurred sporadically. It will also happen during runs.
This has happened over several revs of the 7890A firmware also.
Change default method to Oven ON @ 30C
Default Method changed to 30 degC and ON.
Fix field width for MMI split ratio
MMI Split Ratio field on the GC Display has too many characters
Fix MSshutdown for flow programmed columns
Start MS Shutdown loads inlet as 'Sleep mode', pressure 0 when non-H2 gas; LTM configuration hides Aux EPC inlet setting.

B.02.02 7890B GC Firmware
Released August 2013
Firmware Support for GC/MS Triple Quad 7000 Direct Communication
It is possible to enable Direct Communication with the 7890B GC and GC/MS Triple Quad.
Strange Characters are Displayed in Chinese Mode
In Chinese mode, strange characters were displayed intermittently after power on.
Updated TCD Error Messages
When an error is created, the Not Ready light will blink and the Status key will say X Detector Fault, where X is the position of the TCD. The error will either say TCD Open Filament when it is open or TCD Bridge Voltage when there is a short.
Split Vent Test Default Total Flow Value are Changed
The default value is dependent on gas type; it is 150 for Nitrogen and 400 for any other gas type.
INFO Key Text is Available for Gas ID Voltage
Gas ID Voltage can be used to identify if there is a mismatch in gas configuration and the actual gas coming into the instrument. When viewing the Gas ID Voltage, press the INFO key to determine what the voltage should be for different gas types.
7697A Headspace Information is Displayed on the GC
7697A Headspace configuration and actuals can be viewed on the 7890B GC when Direct Communication is enabled.

Error When 7683 ALS is Installed on the Back Injection Port
Sample Error 133 would appear when the 7683 ALS was installed on the back injection port.
This is resolved in B.02.02 firmware.

Injector Ready Behavior
When the Injector is off of the post, the GC status is ready (Status will read ALS not mounted).
The ALS status is Fault. When the injector door is open, the GC status is not ready (Status will
read Front/Back Inj Door Open). The ALS Status is Fault.

MMI Cryo Fast Cool Down
In B.02.01 firmware, if a MMI is the front inlet and cryo fast cool down is being used, the GC
would automatically reboot.

Cool on Column EPC Auto Zero Septum Purge
In previous versions of firmware, the Cool on Column EPC Auto Zero Septum Purge was OFF by
default. The default is now ON.

Bar Coding Events
In previous versions of firmware, bar coding events were not passed to the software, which
caused issues when a bar code reader was used with the 7890B GC connected to software
versions prior to A.01.05 OpenLAB CDS and B.07.00 GCMS MassHunter.

Updates to INFO key text and Terminology for SLEEP and WAKE Scheduling

Behavior of Selecting Vent then Pump-down on a System with Direct Communication Enabled
In previous versions of firmware, if a user had Direct Communication enabled between their
7890B GC and 5977A MSD and decided to vent the system and changed their mind to pump
down the system instead, the mass spec would go into pump down and became ready as
expected but the GC continued to load the setpoints for the Vent Method. In B.02.02 firmware,
pump down will exit the GC from the shutdown and/or fast vent.

Default 7890 Model when New 7890B Logic Board is Installed in 7890B GC
In previous versions of firmware, when a new 7890B logic board was installed in a 7890B GC,
the default view in status showed that the GC was a 7890A+. After entering the serial number
and power cycling the GC, the view showed that it was a 7890B GC. The default view in status
has been changed to a 7890B GC.

GC Will Not Exit SLEEP Status if GC Cannot Communicate with ALS Controller Board
In previous versions of firmware, if the GC could not communicate with the ALS controller
board and a SLEEP method was loaded, the GC would not exit SLEEP status.

The MS Will Not Wake Up When the GC Goes Into Conditioning Run
In previous versions of firmware, if a conditioning run was selected to run before the GC loads
the WAKE method, the MS would stay in SLEEP status until after the conditioning run was
complete. In B.02.02, the MS will WAKE up when the Conditioning Method is loaded on the GC.

GC will Turn Off Hydrogen Gas if in Shut Down State
If the Air source is no longer sufficient, the detector Air Flow and Hydrogen Flow will be turned
off.

B.02.01 7890B GC Firmware.
Released April 2013
Oven Standby Configuration Mode

An oven standby configuration mode is now available in B.02.01 7890B GC firmware. This standby mode will allow for a high oven temperature when a user has not injected a sample for a period of time.

GC x GC Valve Parameter
GC x GC valve name has been changed from Sample Time to Inject Time.

Removed Serial Number from Syringe Barcode Configuration
Changed Serial Number to Lot Number for Syringes

Added 5977A MSD Status to 7890B Status Parameters
Added MS status and MS Transfer Line status to the 7890B Status

Changed Sleep/Wake INST Schedule text to Schedule

LTM Maintenance Column Length Threshold Limits
In B.02.00 Firmware the LTM column length range was invalid.

Added Status Message for Bar Code Scanning
Added "waiting for info from data system" status message after scanning Syringes or Liners from the GC. After the syringe or liner has been read, the installation date will be recorded as verification that the action was logged by the instrument.

EMF for Bead On Time Changed to Hours

Cryo On/Off Determines the Use of Cryo for the Cyro Focus Zone

Scanning Column, Liner or Syringe and Entry to Maintenance Log
When a column, liner or syringe is scanned by a bar code reader, this event will be logged in the maintenance log.

7890B GC Error Message Handling with MS Goes into Shutdown
When the MS goes into shutdown, the GC goes into a shut-down state. It is not possible to change set points until the MS Shutdown state is cleared from the DET key.

Hyperion 1300g Scanner
The Hyperion 1300g scanner stops decoding when left idle for 13 days. A clock table event has been added to the GC to power cycle the scanner so that it does not go idle.

5977 MSD Parameters are Not Translated
In B.02.00 Firmware, some items were not translated in Chinese. In B.02.01 Firmware all translated text is available.

Volatiles Inlet and Cool on Column Maintenance Feedback
In B.02.00 Firmware, the Volatiles Inlet and Cool on Column Inlet showed a maintenance counter for a liner which is invalid. The liner has been removed in B.02.01 Firmware.

Volatiles Inlet Bar Code Scanning
In B.02.00 Firmware, the Volatiles Inlet allowed for a liner to be scanned with a bar code reader which is invalid. The liner scanning has been removed in B.02.01 Firmware.

Liners and Syringes Display Install Date
In B.02.00 Firmware, when a liner or syringe was scanned with the bar code reader, the installation date was not recorded. It is recorded starting with B.02.01 Firmware.

"EMV at Last Tune" Maintenance Counter
In B.02.00 Firmware, the "EMV at Last Tune" counter displayed a value with 3 digits to the right of the decimal. The software shows these values in whole numbers and the B.02.01 Firmware was updated to match the software.

Manufacturer information added for Syringes and Liners

**When a Headspace or CTC is Connected, Inlet Counters are Not Incremented**

In B.02.00 Firmware, the column, detector and instrument run counts would increment but the inlet counters would not increment. This is fixed in B.02.01 Firmware.

Corrected Chinese Translation for Column Configuration Parameters

In B.02.00 Firmware, the Config Column Install Date and "waiting for info" text was not translated. It is translated in B.02.01 Firmware.

Added AUX #2 Temperature Info Range

In B.02.00 Firmware, the Aux #2 Temperature range is 0 to 0 degrees C or OFF.
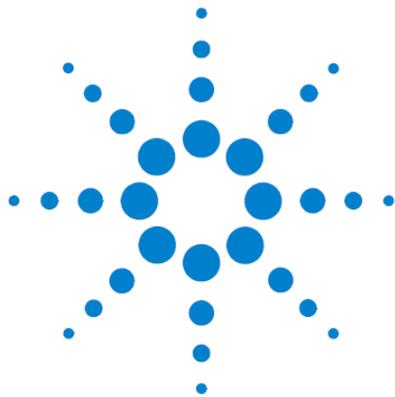
Firmware Update Program.

Firmware Update Program.

The GC firmware update program is supplied as part of the Agilent GC and GC/MS User Manuals and Tools DVDs.

After the program has been loaded and executed the following screen appears.

This enables the user to select which instrument type needs to have its firmware downloaded. In this case we select the GC and ALS.
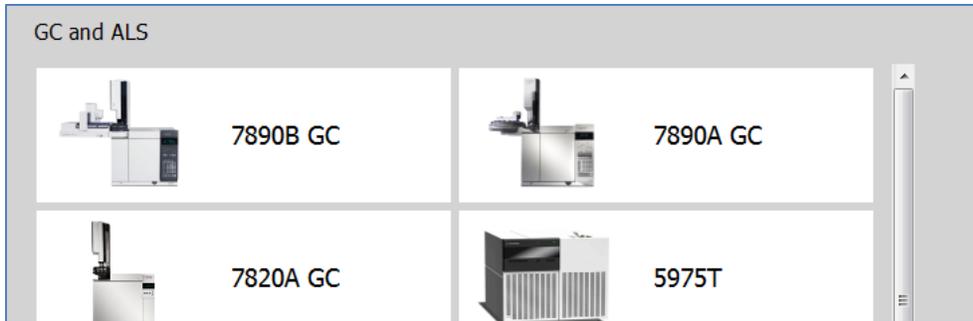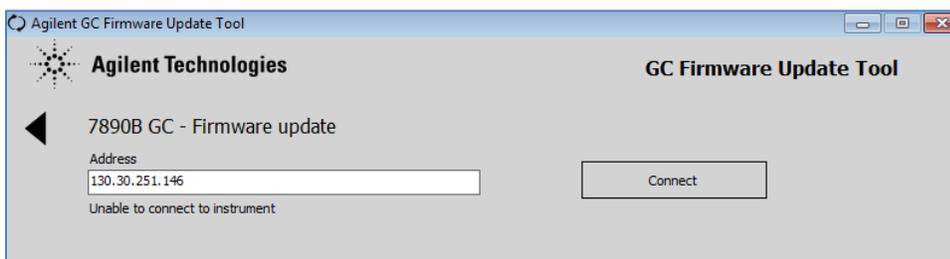
The 7890B is chosen from the Product menu.

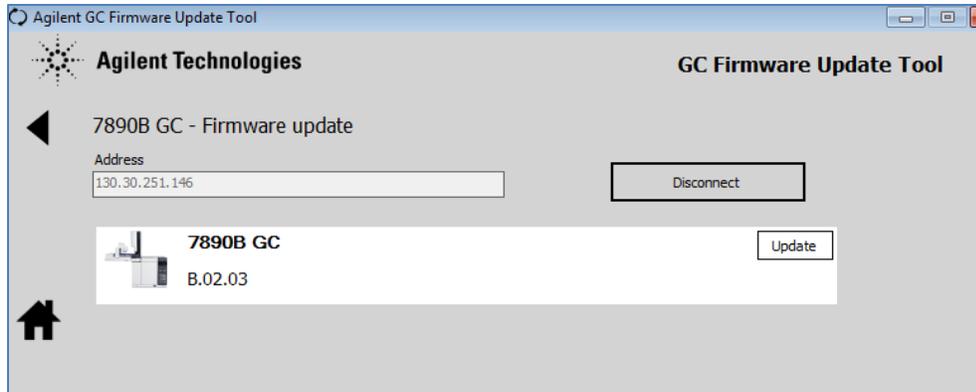The next screen allows us to either modify firmware or PID values for the EPC modules.

Firmware update is selected.
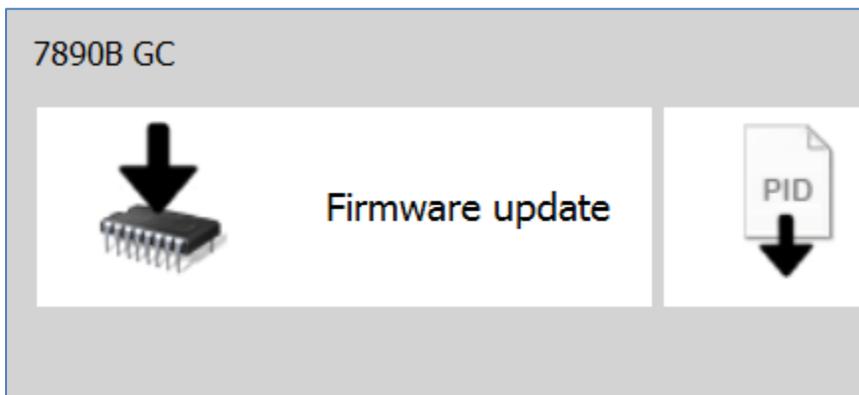
After choosing to update firmware, you must then enter the IP address of the 7890B that you wish to connect to and then press Connect.

Information such as current installed firmware will then be displayed.

Press Update.

A Windows Explorer directory will then appear and you must select the firmware revision that needs to be downloaded.
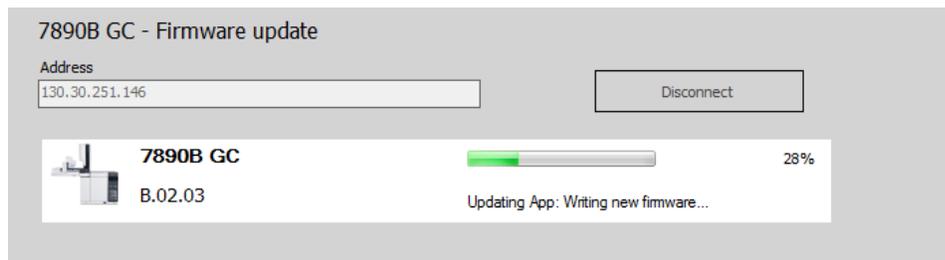
If the required firmware version is not displayed then you can "browse" your harddrive to find it.

As mentioned earlier firmware files (.bin format) can be download from the Support Portal or via the Agilent.com site.
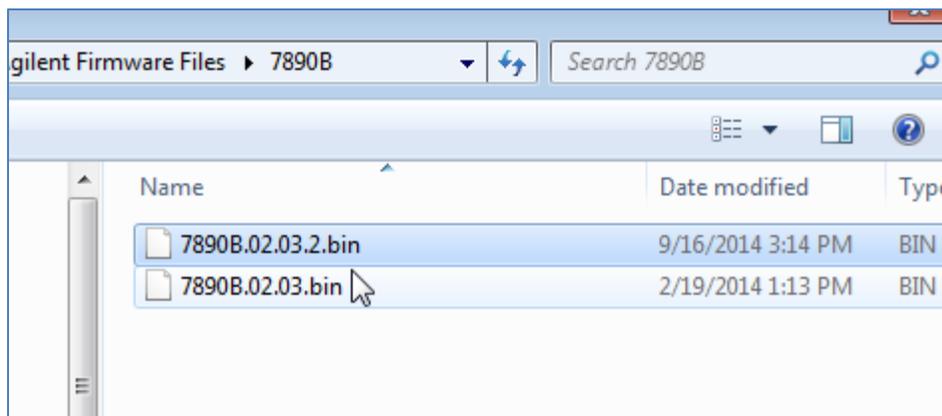
After you have selected the correct file the firmware will automatically be downloaded.
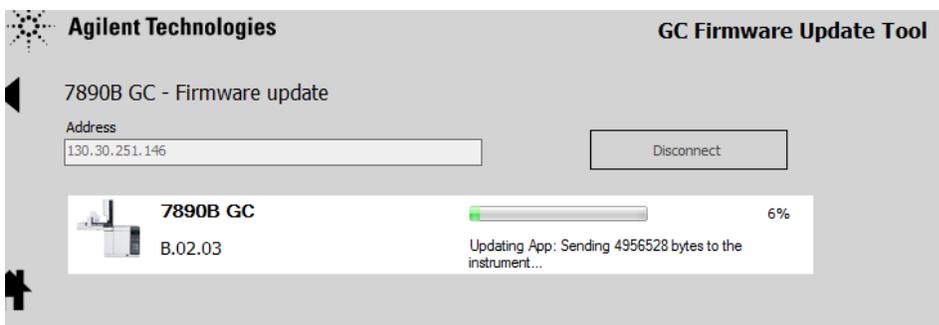
After the download is finished the GC will reboot and the firmware update is complete.

Depending on how old the original 7890B firmware prior to update was you may have to download some of the chromatographic parameters.