



Agilent Technologies

Innovating the HP Way

Flat or Unresponsive Baseline Problems

Applies to 5971A MSD

Possible cases of the problem:

There are several possible causes of a non-responsive or dead baseline. Typically when the baseline goes dead during the run (especially if it seems to stop during a peak eluting) the most common cause is a blown filament in the Mass Specs source. Even though a blown filament is one of the most common problems to cause a flat or unresponsive baseline, there still exist the possibility of other hardware or electronics problems.

WHAT TO DO:

- 1) Go into manual tune and perform a spectrum scan:

NOTE: If the spectrum scan is successful, then the Mass Spec is most likely okay and the problem may be sample introduction related, i.e. Auto-sampler or syringe. The cause may also be a clogged or possibly broken column, column flow or lack thereof, or column installation. These are but a few problems that can cause a dead or flat baseline that do not involve direct problems with the Mass Spec.

- 2) If hardware or electronic problems exist, most will generate and display an error. The following errors could appear:
 - a) NO EMISSION CURRENT
 - b) EXCESSIVE SIGNAL LEVEL
 - c) EXCESSIVE SOURCE PRESSURE
 - d) DIFFICULTY OF MASS FILTER ELECTRONICS

This document is believed to be accurate and up-to-date. However, Agilent Technologies, Inc. cannot assume responsibility for the use of this material. The information contained herein is intended for use by informed individuals who can and must determine its fitness for their purpose.

NOTE: This is just a few of the errors that could appear, if your error does not appear in this list refer to your hardware manual or call Agilent Technologies technical support for clarification of your particular error.

If you're getting the error...

No Emission Current

Typically this error points to a simple blown filament. 5971's have 2 filaments in the source. If the Mass Spec has blown a filament, the user can change to the alternate filament through the Mass Spec software, by selecting [MANUAL TUNE] then [ADJUST PARAMS] followed by, [EDIT MS PARAMS]. Once in this screen you can proceed to the FILAMENT SELECT BOX, (which could have either FILAMENT 1 or 2 selected). Select the opposite filament, then attempt a Spectrum scan or Profile scan from this screen by using the buttons at the bottom of the screen labeled, "[Scan] or [Prof]", respectively.

If it performs the scan successfully, then exit this screen, but before exiting [MANUAL TUNE], select [FILE], then [SAVE TUNE VALUES]. The box that pops up should already have, "ATUNE.U", selected, press [OKAY] to save to tune file, or select the appropriate tune file in use, then press [OKAY] to save.

If the problem is corrected, then the filament that was in use at the time of the error is bad and should be replaced at the time of next scheduled maintenance.

If the problem still exists then Agilent Technologies technical support or on-site service is recommended!

Excessive Signal Level

This error typically is a result of an excessive ELECTRON MULTIPLIER VOLTAGE, but can be the result of cleaning the source, too much sample/solvent injected, a highly concentrated sample, or an electronics problem.

If the problem occurred after the source was cleaned, the resultant higher multiplier voltage, required by the dirty source, could cause an excessive signal level when the Mass Spec is initially tuned or scanned after a clean source is installed. To correct this problem, lower the multiplier voltage to approximately 1000 volts in manual tune and save this value to the TUNE

PARAMETERS. Then re-tune the Mass Spec. If the Mass Spec passes the tune, more than likely the MS is okay.

If the problem still exists during the analytical run, make a blank run to determine if the MS will complete the run without generating an error. If the Mass Spec will complete the blank run, the error could be result of too much or too concentrated sample or of a solvent delay time that's not long enough to allow the solvent peak to elute before the MS filament is turned on. Also don't forget to check the vacuum manifold pressure, as read from the gauge controller (if available) or from the [VACUUM DIAG] screen in the Chemstation software.

If the error is generated under all of the above conditions, reset the electron multiplier voltage to zero, (in Manual Tune), then save to the TUNE PARAMETERS. Retry performing a scan or start a blank run; if the error still exists, Agilent Technologies technical support or on-site service is recommended!

Excessive Source Pressure

Excessive source pressure error is frequently caused by excessive pressure, as measured in the source. Also, foreline pressure and vacuum manifold pressure should be checked to insure they're within operational parameters. However, on the 5971A, excessive source pressure can be, and more commonly is caused by a dirty source. This typically can be confirmed by executing a [STANDARD SPECTRUM] autotune. After obtaining the Autotune print out, evaluate the tune, paying particular attention to the ENTOFF (entrance lens offset) parameter. Under most normal operating conditions, assuming a good clean source, good vacuum and normal background levels, the ENTOFF parameter should be around 4.0 to 4.5. If the value is considerably higher or lower than those value's (+/- 2 to 3 volts), there's a good possibility that cleaning the source will correct the problem.

If there is any doubt, clean the source anyway and re-check to determine if the problem has been corrected.

NOTE: When cleaning the ion source, **do not** bake out the parts in an oven to dry, as this could oxidize and degrade source performance before ever being used in the Mass Spec.

Other things to check are: column flow rate (being too high) and if operating in the CI mode be careful that the CI reagent gas flow is not too high also. If system will complete scan make sure that an air leak does not exist. Verify

that foreline pressure is below 300 mtorr and that the vacuum manifold pressure is okay.

If the problem still exists, there is a possibility of some other hardware or electronics problem and Agilent Technologies technical support or onsite service is recommended.

Difficulty In Mass Filter Electronics

Difficulty in Mass Filter Electronics simply means that for some reason the Mass Spec has lost control of the **mass filter**, otherwise known as the **quads** or **quadropole**. This can be the result of a mechanical problem, (quad or quad contacts), or an electronics problem, or even possibly improper vacuum.

Verify that the vacuum is good in the vacuum manifold.

Following the vent procedure, vent the MS and remove the analyzer and place it on the counter top just as if you were going to perform a source cleaning. Locate the quad contacts in the center of the radiator, (square box that contains the quadrupole). The quad contacts are the two brown button-looking objects that have a single wire coming from the center and attached to a pin on the top plate of the analyzer. The quad contacts can be removed by disconnecting the wire connections from the pins on the top plate and unscrewing the quad contacts from the radiator.

After removing the Quad contacts they can be cleaned with a cotton swab and methanol. Make sure that any lent from the swab tip is removed, (without touching the contacts with your fingers). Replace the quad contacts by screwing them into the radiator, then reconnect the single wire from each quad contact to the appropriate pins on the top plate. Examine visually the condition of the quad as best you can before replacing the analyzer into the vacuum manifold. Pump system down and allow enough time for the system to pump down properly, then execute a scan or tune to determine if the problem has been corrected.

If the problem still occurs, the possibility of a hardware or electronics problem exists and Agilent Technologies technical support or on-site service is recommended.