Agilent Preventive Maintenance provides factory recommended service for your analytical systems to assure reliable operation and the accuracy of your results. Delivered by highly-trained and certified service engineers using genuine Agilent parts and supplies, Agilent Preventive Maintenance provides everything you need to reduce unplanned downtime and keep your systems operating at their peak.

For more information about Agilent Technologies services please visit our web site using the following URL
http://www.chem.agilent.com/en-us/products/services/pages/default.aspx

Customer Information

- Customers should provide all necessary operating supplies upon request of the engineer.
- A customer representative should be available to the engineer while performing the preventive maintenance procedures.
- Any parts, not included in the Parts Lists section of this document, are not part of the recommended Preventive Maintenance service, nor are they included in the price of this service.
- If a system requires the use of additional or special procedures and/or parts for the instrument service, then these must be ordered separately and charged as a repair, which may incur additional costs.

Service Engineer's Responsibilities

- Only complete/printout pages that relate to the system or module being serviced.
- Complete empty fields with the relevant information.
- Complete the relevant checkboxes in the checklist using a "X" or tick mark "✓" in the checkbox.
- Complete 'Not Applicable' check boxes to indicate services not delivered, as needed.
- Add handwritten additional details in the 'Service Engineer Comments' section, if required.
- Complete the PM service in the order of the tasks listed.
- Complete the Service Review section together with the customer.

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System Information

Guidance

- ❑ Check this box if an instrument configuration report is attached instead of completing the table.

Instrument name and ID:	**Instrument site and location:**
List system component product numbers	**List the serial numbers of each component**
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Specification Description	**Minimum**	**Recommended (if applicable)**	**Requirement met (Yes/No)**
Computer model and CPU			
Operating System (OS)			
Software compatibility with OS			

Preparation

- ❑ Discuss any specific issues with the customer prior to starting.
- ❑ Review the instrument logbook.
- ❑ Save instrument control settings before starting the procedure.
- ❑ Perform general inspection of system for cleanliness
- ❑ Check for proper installation of safety-related parts, assemblies, sensors etc.

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Preliminary measurements and checks

- ❑ Computer meets minimum requirements.
- ❑ Operating system is compatible with software version.
- ❑ Check logbook for replacement dates for Desiccant, Laser & Source (if applicable).
- ❑ Advise the customer if any date has lapsed and replace the below items, if required:
    - Desiccant Cartridge
    - Mid-IR Source Element (not included in standard PM procedure)
    - Engine and /or accessory KBr or ZnSe windows (not included in standard PM procedure)
    - Check the laser energy. Advise customer of suggested laser replacement if the installation/last laser replacement was over 3 years ago (not included in standard PM procedure)
- ❑ Visual inspection of instrument:
    - ☐ Visually inspect all mirrors and optics, with particular attention to hygroscopic components. Advise the customer of any problems and replace if required.
    - ☐ Check the correct movement of ATR Clamp, if applicable
- ❑ Measure or observe the following site requirements:
    - ☐ Instrument located on a bench with no perceptible vibration.
    - ☐ Instrument located in an area away from acoustic noise sources such as public address systems, HVAC systems, and radios.

Checks and Replacement

- ❑ The system is in good operating condition (no physical damage).
- ❑ There are no apparent instrumental or environmental safety concerns.
- ❑ The System completes initialization and flashing light changes to solid ‘Steady State’ green
- ❑ Check and replace (if necessary) the Desiccant Cartridge
- ❑ Check and replace (if necessary) the KBr/ZnSe window on the Engine
- ❑ Check and replace (if necessary) the KBr/ZnSe window on the Accessory/s
    - ❑ If replacing the KBr/ZnSe engine window, purge the instrument before starting the tests
- ❑ Check Microlab software revision and update if necessary
- ❑ Check the current engine Diagnostics Settings and record these in the Diagnostics Record table
- ❑ Check laser calibration (in MicroLab>Advanced Features); reset if necessary*

  *laser calibration should be done prior to running the System Performance check. This is done by deselecting the ‘Check Value only’ box and setting the laser correction value at the conclusion of the Laser Frequency Calibration Check.

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Validate Accessory Functionality

- ❑ Validate Accessory Functionality, for all available accessories
  - ❑ Record results in Diagnostics Check -Accessory table

Guidance

If the PM service is performed prior to a qualification service, then use the qualification procedure as a guide for final instrument set-up and checkout.

Validate System Performance

- ❑ Select one accessory only (the PRIMARY accessory) to perform the system check.
  The preferred choices for the system check are listed in order from most (1) to least (5) recommended:

  1 - Transmission Module
  2 - DialPath Module
  3 - TumblIR Module
  4 - 1-Bounce Diamond ATR Module
  5 - 1-Bounce Germanium ATR Module

- ❑ Allow the FTIR system to reach thermal equilibrium (approximately 2 hours)
- ❑ Using MicroLab, select [Advanced Features] → [System Check] and select, then run, the following tests only
  - ❑ Performance (Signal-to-Noise) Test - 15 spectra
  - ❑ Baseline Stability Test – 30 minutes
  - ❑ Laser Frequency Test (Wavelength Accuracy) – 5 Scans – select 'Check value only'
- ❑ Print the report and attach it to this checklist.

Restore Instrument

- ❑ Return instrument to initial conditions.
- ❑ Check that the cover is correctly sealed, cables secured, instrument purge and optics clean.
- ❑ Re-check the current engine Diagnostics Settings against those recorded in the Diagnostics Record table

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Results:

Engine Diagnostics Record

Instrument Status		
Energy		V
Source		Ratio
Laser		Counts
Gain adjust >Current Gain Value		
Temperatures		
Detector		°C
CPU		°C
IR Board		°C
Power		°C
Block		°C
Version Information	**Value**	
(Software) Version		
DLL version		
Firmware Version		
Instrument Serial Number displayed		

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Diagnostics Check - Accessory

Accessory	Test	Result		
Transmission Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
DialPath Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
TumbIIR Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
1B Diamond ATR Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
1B Ge ATR Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
1B ZnSe ATR Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
Diffuse Reflectance Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
5B Zinc Selenide ATR Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
10° Specular Reflectance Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A
45° Specular Reflectance Module	The accessory is correctly recognized and all diagnostics values are within limits and appear green within the diagnostics screen	❑ Yes	❑ No	❑ N/A

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System Performance

- ❑ Section Not Applicable. Please refer to Qualification documentation for final instrument set-up and checkout.

- ❑ Section Completed. Primary Accessory tested:
  - ❑ Transmission Module
  - ❑ DialPath Module
  - ❑ TumblIR Module
  - ❑ 1B Di ATR Module
  - ❑ 1B Ge ATR Module

  Engine Optics:
  - ❑ ZnSe
  - ❑ KBr

  Primary Accessory Optics:
  - ❑ ZnSe
  - ❑ KBr
  - ❑ Not Applicable

Performance (Signal-to-noise) Test Specification (Accessory Dependent)	**Result**	**Pass / Fail**
Mean SNR @ Region 1 (1142-1042 cm^{-1}):		

Stability Test Specification	**Result**	**Pass / Fail**
Stability Point 1 @ 1000 cm^{-1}:	Minimum: Maximum:	
Stability Point 2 @ 3000 cm^{-1}:	Minimum: Maximum:	

Laser Frequency Calibration Check– Polystyrene Specification (Accessory Dependent) NIST SRM 1921a Frequency (cm^{-1})	**Result Measured Value (cm^{-1})**	**Difference**	**Pass / Fail**
Wavelength 1:			
Wavelength 2:			
Wavelength 3:			
Wavelength 4: (Transmission, DialPath TumblIR only):			

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Cary 630 FTIR Preventative Maintenance Parts List

Part Description	Part Number	Quantity Consumed
Desiccant Cartridge (with purge fitting)	G8043-67401	
MIR Source Assembly*	G8043-67505	
Single KBr Window with Removal Tool*	G8043-67402	
Single ZnSe Window with Removal Tool*	G8043-67403	
Laser Diode Assembly*	G8043-67507	

** part not included in Standard PM procedure.*

Service Review

- ❑ Attach available reports/printouts of all tests to this documentation
- ❑ Record the PM service activity in the customer's instrument records/logbook
- ❑ Affix the PM sticker to the system or instrument logbook based on the customer's request
- ❑ Complete the Service Engineer Comments box below if there are additional comments
- ❑ Review the service and any test results with the customer.
- ❑ If the Instrument software was updated, record the details of the change in the Service Engineer Comments box below or, if necessary, in the customer's OQ records.

Service Engineer Comments (optional)

If there are any specific points you wish to note as part of performing the PM or other items of interest for the customer, please write in this box.

Other Important Customer Web Links

- ❑ How to get information on your product: Literature Library – http://www.agilent.com/chem/library
- ❑ Need to know more? – www.agilent.com/chem/education
- ❑ Need technical support, FAQs? – www.agilent.com/chem/techsupp
- ❑ Need supplies? - www.agilent.com/chem/supplies

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Service completion

Service request number _____ Date service completed _____

Agilent signature _____ Customer signature _____

Total number of pages for this document _____

Document part number: 5971-6949

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