



Shimadzu Scientific Instruments

7102 Riverwood Drive
Columbia, MD 21046

Toll Free: 1.800.388.6996
Fax: 410.290.9140
www.ssi.shimadzu.com

June 8, 2009

Ms. Roberta Wagner
Health and Human Resources
Environmental Chemistry Lab
4710 Chimney Drive
Charleston, WV 25302
Re: LBS90133

RECEIVED

2009 JUN 15 AM 9:30

Dear Ms. Wagner,

WV PURCHASING
DIVISION

I am writing in regards to your request for a Spectrometer or GC/MS and a Gas Chromatograph. We intend to submit two bids.

Mass

We intend to

Shimadzu Scientific Instruments (SSI) is the American subsidiary of Shimadzu Corporation, headquartered in Kyoto, Japan. Founded in 1875, Shimadzu is a \$2 billion multinational corporation with three major divisions: Medical Diagnostics, Aerospace/Industrial, and Analytical Instruments. The Analytical Division is one of the world's largest manufacturers of analytical instrumentation and environmental monitoring equipment.

In 1975, SSI corporate headquarters was established in Columbia, Maryland to provide analytical solutions to a wide range of laboratories in North, Central, and parts of South America. In the U.S., SSI has a network of more than 50 locations providing local and regional sales, service, and technical support.

It should be noted that we have free onsite training for as many days as needed for the end users to become proficient with the instrument. Our technical personnel can also be scheduled for re-trainings at no charge in the future.

Both of our bids will include a very high end Dell Data Station with a 22" flat panel monitor.

Shimadzu also offers free phone support for the lifetime of the instrument.

We take the following exceptions to the bid specifications:

BID 1: QP-2010s

Gas Chromatograph/Mass Spectrometer Specifications and Requirements Section

Item 10: The GC/MS Instrument must be capable of mass scan rates of at least 12,500 amu/sec and 65 scans/sec.

AA/ICP • Balances • Biotech/MALDI • EDX/XRF/KED • Fluorescence • FTIR • GC • GC/MS
HPLC/UPLC • LC/MS • Software • Testing Machines • Thermal • TOC/TN/TP • UV-VIS-NIR
Boston • New Jersey • Washington, DC • Raleigh/Durham • Chicago • Houston • Kansas City • San Francisco • Carlsbad • Puerto Rico

GENERAL TERMS & CONDITIONS
REQUEST FOR QUOTATION (RFQ) AND REQUEST FOR PROPOSAL (RFP)

1. Awards will be made in the best interest of the State of West Virginia.
2. The State may accept or reject in part, or in whole, any bid.
3. All quotations are governed by the *West Virginia Code* and the *Legislative Rules* of the Purchasing Division.
4. Prior to any award, the apparent successful vendor must be properly registered with the Purchasing Division and have paid the required \$125 fee.
5. All services performed or goods delivered under State Purchase Order/Contracts are to be continued for the term of the Purchase Order/Contracts, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise available for these services or goods, this Purchase Order/Contract becomes void and of no effect after June 30.
6. Payment may only be made after the delivery and acceptance of goods or services.
7. Interest may be paid for late payment in accordance with the *West Virginia Code*.
8. Vendor preference will be granted upon written request in accordance with the *West Virginia Code*.
9. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.
10. The Director of Purchasing may cancel any Purchase Order/Contract upon 30 days written notice to the seller.
11. The laws of the State of West Virginia and the *Legislative Rules* of the Purchasing Division shall govern all rights and duties under the Contract, including without limitation the validity of this Purchase Order/Contract.
12. Any reference to automatic renewal is hereby deleted. The Contract may be renewed only upon mutual written agreement of the parties.
13. **BANKRUPTCY:** In the event the vendor/contractor files for bankruptcy protection, this Contract may be deemed null and void, and terminated without further order.
14. **HIPAA BUSINESS ASSOCIATE ADDENDUM:** The West Virginia State Government HIPAA Business Associate Addendum (BAA), approved by the Attorney General, and available online at the Purchasing Division's web site (<http://www.state.wv.us/admin/purchase/vrc/hipaa.htm>) is hereby made part of the agreement. Provided that, the Agency meets the definition of a Cover Entity (45 CFR §160.103) and will be disclosing Protected Health Information (45 CFR §160.103) to the vendor.
15. **WEST VIRGINIA ALCOHOL & DRUG-FREE WORKPLACE ACT:** If this Contract constitutes a public improvement construction contract as set forth in Article 1D, Chapter 21 of the West Virginia Code ("The West Virginia Alcohol and Drug-Free Workplace Act"), then the following language shall hereby become part of this Contract: "The contractor and its subcontractors shall implement and maintain a written drug-free workplace policy in compliance with the West Virginia Alcohol and Drug-Free Workplace Act, as set forth in Article 1D, Chapter 21 of the West Virginia Code. The contractor and its subcontractors shall provide a sworn statement in writing, under the penalties of perjury, that they maintain a valid drug-free work place policy in compliance with the West Virginia and Drug-Free Workplace Act. It is understood and agreed that this Contract shall be cancelled by the awarding authority if the Contractor: 1) Fails to implement its drug-free workplace policy; 2) Fails to provide information regarding implementation of the contractor's drug-free workplace policy at the request of the public authority; or 3) Provides to the public authority false information regarding the contractor's drug-free workplace policy."

INSTRUCTIONS TO BIDDERS

1. Use the quotation forms provided by the Purchasing Division.
2. **SPECIFICATIONS:** Items offered must be in compliance with the specifications. Any deviation from the specifications must be clearly indicated by the bidder. Alternates offered by the bidder as **EQUAL** to the specifications must be clearly defined. A bidder offering an alternate should attach complete specifications and literature to the bid. The Purchasing Division may waive minor deviations to specifications.
3. Complete all sections of the quotation form.
4. Unit prices shall prevail in case of discrepancy.
5. All quotations are considered F.O.B. destination unless alternate shipping terms are clearly identified in the quotation.
6. **BID SUBMISSION:** All quotations must be delivered by the bidder to the office listed below prior to the date and time of the bid opening. Failure of the bidder to deliver the quotations on time will result in bid disqualifications: Department of Administration, Purchasing Division, 2019 Washington Street East, P.O. Box 50130, Charleston, WV 25305-0130



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Shimadzu's QP-2010s scans 10,000 amu/second and 100 scans/sec .

Item 11: The GC/MS instrument must be capable of detecting a wide mass range of at least 1.5-1050 Daltons.

The Shimadzu QP-2010s has a mass range of 1.5-900 Daltons. The VOA method specified does not have compounds with a greater mass than 300 Daltons.

Item 12: The GC/MS instrument must come equipped with a 179 L/sec turbomolecular pump or better.

Shimadzu's QP-2010s comes with a 65 L/sec turbomolecular pump. It should also be noted that Shimadzu is the only vendor that quotes the larger RV-3 roughing pump, which is easier on the turbomolecular pump.

Item 13: The GC/MS instrument must be capable of being attached to a nitrogen purge gas stream to prohibit oxygen from entering the system during venting, or provide equivalent technology to minimize contamination in case of a power outage.

As quoted, Shimadzu's QP-2010s cannot do this. This technology is harder on the turbomolecular pumps and is more prone to leaks.

Item 14: The GC/MS instrument oven must be capable of a rapid cool-down rate, from 450°C to 50 °C, in less than 2 minutes to facilitate fast analytical cycles.

Shimadzu's QP-2010s can cool from 450°C to 50 °C in less than 6 minutes. It is important to note that the bottleneck of the specified VOA method in the Purge and Trap step.

Gas Chromatograph – Electron Capture Detector Specifications and Requirements Section

Item 10: The GC-ECD instrument oven must be capable of a rapid cool-down rate, from 450°C to 50 °C, in less than 2 minutes to facilitate fast analytical cycles.

Shimadzu's GC-2010 can cool from 450°C to 50 °C in under 3 minutes.

BID 2: QP-2010 Plus

Gas Chromatograph/Mass Spectrometer Specifications and Requirements Section

Item 10: The GC/MS Instrument must be capable of mass scan rates of at least 12,500 amu/sec and 65 scans/sec.

Shimadzu's QP-2010 Plus scans 10,000 amu/second and 100 scans/sec .



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Item 13: The GC/MS instrument must be capable of being attached to a nitrogen purge gas stream to prohibit oxygen from entering the system during venting, or provide equivalent technology to minimize contamination in case of a power outage.

As quoted, Shimadzu's QP-2010 Plus cannot do this. This technology is harder on the turbomolecular pumps and is more prone to leaks.

Item 14: The GC/MS instrument oven must be capable of a rapid cool-down rate, from 450°C to 50 °C, in less than 2 minutes to facilitate fast analytical cycles.

Shimadzu's QP-2010s can cool from 450°C to 50 °C in less than 6 minutes. It is important to note that the bottleneck of the specified VOA method in the Purge and Trap step.

Gas Chromatograph – Electron Capture Detector Specifications and Requirements Section

Item 10: The GC-ECD instrument oven must be capable of a rapid cool-down rate, from 450°C to 50 °C, in less than 2 minutes to facilitate fast analytical cycles.

Shimadzu's GC-2010 can cool from 450°C to 50 °C in under 3 minutes.

Thanks again for the opportunity to earn your business.

Sincerely,

Heather Juzwa
Field Sales Engineer



SHIMADZU

QUOTATION

Number: SSI-08471-HMWN Rev. 1

QUOTE DESCRIPTION:

GC/MS for EPA 524.2 and GC for EPA 552.3. The discounted price for all MAS items includes a 0.75% Industrial Funding Fee as required by GSA. Line Items 10 and 11 are included in the GSA MAS for contract GS-24F-0031M, Contractor Modification #6, which expires March 31, 2012.

Dr. Patrick Marchio
WVDHHR Bureau of Public Health
4710 Chimney Drive
Suite G
Charleston, WV 25302
Phone: 304-965-2694
Fax:
E-mail: patrick.l.marchio@wv.gov

Effective Date	3/18/2009	Proposed Ship Date	30 Days/ARO
Expiration Date	4/17/2009	FOB	DESTINATION
Ship Method	BEST WAY	Shipping Terms	PREPAID
Inco Terms			

PLEASE SEE ATTACHED TERMS AND CONDITIONS

For questions or modifications about this quote, please contact your sales representative. If you are a tax exempt customer, please contact Customer Service and send a copy of your exemption certificate in with your order. The exemption certificate can also be faxed to 410-381-1222

Salesperson: Heather Juzwa MAT Regional Office
Phone: (800) 388-6996 Ext. 1673 7102 Riverwood Drive
E-mail: hljuzwa@SHIMADZU.com Columbia, MD 21046-2502

ADDITIONAL INFORMATION:

This quotation assumes WV Department of Health will use their existing OI Eclipse and autosampler.

THANK YOU FOR YOUR INTEREST IN SHIMADZU SCIENTIFIC INSTRUMENTS

Authorization Signature

Date: 6/10/2009

For Order Placement:

Reference Quotation Number on Purchase Order
Shimadzu Scientific Instruments
7102 Riverwood Drive
Columbia MD 21046
Toll Free: 800-477-1227
Phone: 410-381-1227
Fax: 410-381-6781
E-mail: customer.service@shimadzu.com
Int'l Fax 410-309-6130
Int'l Email icsc@shimadzu.com



SHIMADZU

QUOTATION

Number: SSI-08471-HMWN Rev. 1

Line #	Product Number	Product Name	Qty	List Price	Ext'd Price
1	220-94694-02	QP-2010 PLUS EI PKG, ADV DS 115V	1	\$79,475.00	\$79,475.00
QP-2010 Plus EI Pkg, with Advanced Data Station, 22" monitor					
This package includes a GC-2010 gas chromatograph and QP-2010 Plus quadrupole mass spectrometer with dual inlet differential vacuum system 179L/sec + 185L/sec for He. The included computer is our Advanced Data Station with GCMSolution software. The QP- 2010 Plus system has a mass range of 1.5-1090 and will accept a maximum column flow of 15ml/min. This system scans up 10000 AMU per second. The QP-2010 series software, GCMS Solutions contains many wizard driven features including: Scan/SIM acquisition (FASST), automated creation of SIM acquisition parameters (COAST), and automated retention time updating based upon retention index (AART). Front ion source access and ease of maintenance are standard on all Shimadzu GCMS Systems. This system can measure 1pg of OFN (Octafluoronaphthalene) at over 160/1 RMS in scan mode. The GC-2010 is a state-of-the-art Gas Chromatograph giving unsurpassed performance and reliability. This GC includes one Split/Splitless injection port with AFC. The AFC (Advanced Flow Control) provides control of all parameters related to the injection port including split ratio and septum purge flow. The oven supports 20 temperature programming steps. Rotary pump sold separately.					
Dimensions and Weight (GC-2010): 515x437x530mm WxHxD, Weight: 30kg (QP-2010 Plus): 345x494x390 WxHxD Weight: 45kg. All packages include configuration kit which contains 1 SHRXI 30m x 0.25 mm i.d. column, 1 high capacity carrier gas filter.					
2	220-94701-01	RV-3 PUMP KIT (FOR NEW GCMS SYSTEM ONLY)	1	\$704.00	\$704.00
Edwards RV-3 with mist filter and oil return					
This upgrade allows for faster pump down and ultimately shorter maintenance cycle times.					
This part number sold only with new GCMS systems. For pump replacement use 220-94701-02					
3	225-13290-91	NIST MASS SPECTRUM LIBRARY 2008	1	\$2,520.00	\$2,520.00
The NIST Mass Spectral Library 2008 version contains 220,435 spectra of 192,262 compounds with structures. This is 15% more than the 2005 version contained. This data base contains Kovats indices for over 42,000 compounds on both non-polar and polar columns.					
4	220-90001-07	REGULATOR W/CGA-580 ARGON/HELIUM/NITROGEN, 200 PSI DELIVERY PRESSURE FOR GC	1	\$447.00	\$379.95
Gas Regulator, 19H580 He or N2 for GC					
Gas Regulator for helium or nitrogen; includes 1/8" outlet.					
5	220-90212-00	COPPER TUBING 1/8 50 FEET	1	\$81.00	\$68.85
Copper Tubing					
Copper tubing 1/8" 50 feet.					
6	220-94678-02	4552 CABLE TO 4560/ ECLIPSE	1	\$119.00	\$101.16
Handshake cable between GC-2010 and OI 4660 P&T					
7	220-94707-01	TRANSFER LINE HEATER FOR GC-2010 OR GC-2014	1	\$324.00	\$275.40
Transfer Line Heater for GC-2010 or GC-2014					
6" heater for transfer line to GC-2010 or GC-2014. Used to prevent cold spot in transfer line when connecting purge and trap or headspace to GC. Plugs in to auxilliary heater on GC					
8	221-53393-01	ZU1, VALCO/UNION	1	\$20.00	\$20.00



SHIMADZU

QUOTATION

Number: SSI-08471-HMWN Rev. 1

Line #	Product Number	Product Name	Qty	List Price	Ext'd Price
9	220-99999-G1	Restek Catalogue 19915	1	\$560.00	\$560.00
Rtx®-VMS Cap. Column 30m, 0.25mm ID, 1.40um					
10	220-90887-00	GC-2010 DUAL ECD/DSPL2010/DAFC/AOC20 DTWR/2010 APC	1	\$41,895.00	\$35,246.26
GC-2010 Dual ECD-2010, Dual SPL-2010, Dual Tower AOC20					
<p>The GC-2010 is a state-of-the-art Gas Chromatograph giving unsurpassed performance and reliability. This GC includes two Split/Splitless injection ports with digital Advanced Flow Control modules and two capillary, low volume ECDs. The AFC (Advanced Flow Control) module provides control of all parameters related to the injection port set points. It operates in a number of modes including Constant Linear Velocity and is capable of high pressure splitless injections. The GC oven is capable of 20 temperature program ramps and hold steps. Column Oven Cooling Time: 300° C to 50° C < 6 minutes, Temp. Column oven Programming Rate: 70° C/min; Constant Linear Velocity, Pressure and flow program ramps with flow Control Range: 0 to 1200ml/min, Programming Rate: -400 to 400 ml/min. This package also contains our dual tower autosampler package: 2 AOC20i and AOC 20S.</p> <p>Column Oven Cooling Time: 300° C to 50° C < 5 minutes, Temp. Column oven Programming Rate: 70 C/min; Constant Linear Velocity, Pressure and flow program ramps with flow control, Range: 0 to 1200ml/min, Programming Rate: -400 to 400 ml/min., Atmospheric compensation.</p> <p>Includes GC-2010 with 2 ECD-2010, 2 SPL-2010, 2 AOC-20i autoinjectors, AOC-20s.</p>					
11	220-94600-00	GC SOLUTIONS SOFTWARE W/ RS232 CABLE	1	\$3,862.00	\$3,249.10
GCsolution Software with RS232 Cable					
<p>This software controls all Shimadzu GC systems. GC-2010, GC-17, GC-14 are all supported with all AFC, APC and detectors controlled as appropriate. Included are Shimadzu accessories and automatic sampling equipment. Capabilities for user administration and compliant data security, batch or single run acquisition and calibration, data review and correction, data comparison and full graphical reporting are in the standard package. This software handles up to four GC's with up to four detectors each. This software requires use of the Windows 2000 or XP operating system. When additional accessory control or additional processing capabilities are needed these units when added become an integral part of GCsolution</p> <p>Includes GCsolution. Software only, data station not included.</p>					
12	220-99999-G1	Restek Catalogue 11123	1	\$560.00	\$560.00
Rtx®-CLP Cap. Column 30m, 0.25mm ID, 0.25um					
13	220-99999-G1	Restek Catalogue 11243	1	\$570.00	\$570.00
Rtx®-OPP2 Cap. Column 30m, 0.25mm ID, 0.25um					
14	221-47749-91	COOLING UNIT,115V, GC-2010	1	\$347.00	\$294.95
Oven Cooling Fan for GC-2010, 115V					
Used to speed up oven cooling by adding ambient air to column oven during cooldown cycle. Shortens GC column oven cooldown times.					
15	I&F	INSTALLATION AND CUSTOMER FAMILIARIZATION	1	\$0.00	\$0.00
16	BALANCE_OFFER	YOU MAY ADD A SHIMADZU BALANCE TO THIS ORDER AT 50% DISCOUNT. ASK FOR DETAILS	1	\$0.00	\$0.00
17	1YW	1 YEAR WARRANTY	1	\$0.00	\$0.00



QUOTATION

Number: SSI-08471-HMWN Rev. 1

Total List Price	\$131,484.00
Total Line Item Discounts	\$7,459.33
less 220-94793-30 promotional discount minus AOC-20i/s	\$17,700.00
Subtotal	\$106,324.67
Total Amount	\$106,324.67

Options

Line #	Product Number	Product Name	Qty	List Price	Net Price
	EXT-WARRANTY	EXTENDED WARRANTY SERVICE CONTRACT	1	\$7,283.00	\$7,283.00



SHIMADZU

QUOTATION

Number: SSI-08471-HMWN Rev. 1

Terms and Conditions

GENERAL TERMS AND CONDITIONS OF SALE

Shimadzu Scientific Instruments, Inc.

PRICES

The prices set forth on the face hereof

(i) are Shimadzu Scientific Instruments, Inc.'s (hereinafter called SSI) domestic prices based upon manufacture of the quality and type ordered for shipment and end use within the United States and Canada only, all products shipped for end use outside the United States and Canada shall be subject to SSI's international prices,

(ii) are subject to revision when interruption, engineering changes or changes in quantity or quality are caused or requested by Buyer, and

(iii) unless otherwise specified, does not include warranty service or installation outside the United States and Canada. Clerical errors by Shimadzu are subject to correction.

SPECIFICATIONS

Weights and dimensions set forth in sales literature are not guaranteed unless previously certified in writing. SSI may, without affecting the obligations under this sales agreement, make what SSI regards as minor changes to the specifications of the product or products delivered under this sales agreement from those contained in sales literature.

TERMS OF PAYMENT

Subject to the credit approval by SSI, terms of payment on this sales agreement are net thirty (30) days from date of the invoice unless otherwise specifically stated on the face hereof. Invoices are payable at par on date due at any place of collection designated by SSI in funds bankable at par. Payment made beyond terms will be subject to simple interest of 1-1/2% per month on the outstanding balance. All orders are accepted subject to and the obligation of SSI to make deliveries is subject to the right of SSI to require of Buyer payment of all or any part of the purchase price in advance of delivery or to make shipment C.O.D. If Buyer fails to make advance payment when requested to do so by SSI or if Buyer is or becomes delinquent in the payment of any sum of any kind due SSI (whether or not arising out of this sales agreement) or refuses to accept C.O.D. shipments, then SSI shall have the right, in addition to any other remedy to which it may be entitled in law or in equity, to cancel this sales agreement, refuse to make further deliveries, and declare immediately due and payable all unpaid amounts of goods and services previously delivered to Buyer. Each shipment shall be considered a separate and independent transaction and payment therefore shall be made accordingly.

"Buyer must notify SSI within fifteen (15) days from the invoice date if Buyer has not received products."

SHIPMENTS

(a) The cost of packaging for domestic shipments is included in the quoted price. For international shipments or where special packaging is specified or necessary, a charge will be made to cover such expense.

(b) For shipments to and from places within the United States, all shipments—unless otherwise agreed in writing— shall be FOB point of shipment and title and risk of loss or damage shall be passed to Buyer at the shipping point. The cost of transportation and insurance (if requested by Buyer) shall be borne by Buyer.

(c) For shipments from the United States to ports and or places outside the United States all shipments are—unless otherwise agreed in writing—FOB Columbia, MD. SSI's obligation to affect shipment of the products purchased by Buyer shall be fully discharged, and beneficial ownership, legal title and all risk of loss or damage shall pass to Buyer when the products are shipped to the named place of destination in the country of importation. If shipped FOB Destination, upon arrival Buyer shall be entitled to conduct a reasonable investigation of the products purchased by it, but all claims for losses due to loss or damage to products while in transit shall be waived unless made immediately in writing by Buyer, but not more than (30) thirty days after arrival. If Buyer shall fail or refuse to accept delivery of any of the products for unverifiable claims for loss or damage to products occurring while in transit, all sums paid on deposit shall be retained by SSI as liquidated damages, provided, however, that SSI may recover in full its actual damage from Buyer in the event that actual damages exceed the amount retained as liquidated damages.

(d) All claims for damage or loss of insured shipments shall be immediately communicated, when possible, to SSI at (410) 381-1227, 7102 Riverwood Drive, Columbia, Maryland 21046-2502, Attn: Customer Service. Buyer shall immediately notify delivering carrier of loss or damage to the shipment and SSI will cooperate with Buyer in the adjustment of all claims. Buyer agrees to permit SSI or SSI's representative to inspect damaged goods.

TERMINATION

Upon any termination or cancellation of this sales agreement by Buyer, either in whole or in part, Buyer agrees to promptly pay appropriate termination or cancellation charges invoiced by SSI. If appropriate, the termination charge shall be not less than twenty percent (20%) of the total amount of this sales agreement.

RETURNED GOODS

All returns must be pre-authorized by SSI and a Return Goods Authorization (RGA) number must appear on the face of the package. Returned goods will be subject to a restocking charge. If appropriate, the restocking charge shall be not less than twenty percent (20%) of the total amount of this sales agreement.

DELIVERY

The scheduled shipping or delivery date shown on the face hereof is our best estimate of the time the order will be shipped and SSI assumes no liability for loss, general damages, or special or consequential damages due to delays.

TAXES

Federal, state and local excise, sales, or use taxes shall be paid by Buyer.

PATENTS

SSI shall defend any suit or proceeding brought against the Buyer so far as based upon an assertion that any product furnished under this sales agreement constitutes a direct infringement of any United States patent having a claim of claims covering solely the product itself, if notified promptly in writing and given authority, information and assistance (at SSI's expense) for the defense of same, and SSI shall pay all damages and costs awarded therein against Buyer. In case said product in such suit is held to constitute infringement and the use of said product is enjoined, SSI shall, at its own option and at its own expense, either (1) procure for Buyer the right to continue using said

product, (2) replace the same with a non-infringing product, (3) modify it so it becomes non-infringing, or (4) remove said product and refund the purchase price and transportation costs thereof. The foregoing obligations of SSI shall not apply to any infringement claim based upon (i) any use of any product sold hereunder in any process or in conjunction with any other product, or (ii) any product manufactured to Buyer's design or any product having a design arising out of compliance with Buyer's specifications. The foregoing states the entire liability of SSI for patent infringement by said product. If any suit or proceeding is brought against SSI based on claims that the goods manufactured by SSI in compliance with Buyer's specifications and supplied to Buyer directly infringe any fully issued United States patent, then the patent indemnity obligations herein stated with respect to SSI shall reciprocally apply with respect to Buyer.

WARRANTY

Subject to the exceptions and upon the conditions stated below, SSI warrants that the products sold under this sales agreement shall be free from defects in workmanship and materials for one year after shipment of the products to the original Buyer by SSI, and if any such products should prove to be defective within such one year period, SSI agrees, at its option, either (i) to correct by repair or, at SSI election, by replacement with equivalent product any such defective product, provided that investigation and factory inspection discloses that such defect developed under normal and proper use, or (ii) to refund the purchase price. The exceptions and conditions mentioned above are as follows:

- (a) Components or accessories manufactured by SSI which by their nature are not intended to and will not function for one year are warranted only to give reasonable service for a reasonable time; what constitutes reasonable time and reasonable service shall be determined solely by SSI. A complete list of such components and accessories is maintained at the factory;
- (b) SSI makes to warranty with respect to components or accessories not manufactured by it, in the event of defect in any such component or accessory SSI will give reasonable assistance to Buyer in obtaining from the respective manufacturer whatever adjustment is authorized by the manufacturer's own warranty;
- (c) any product claimed to be defective must, if required by SSI, be returned to the factory, transportation charges prepaid, and will be returned to Buyer with transportation charges collect unless the product is found to be defective, in which case SSI will pay all transportation charges;
- (d) If the product is a reagent or the like, it is warranted only to conform to the quantity and content and for the period (but not in excess of one year) stated on the label at the time of delivery;
- (e) SSI may from time to time produce a special printed warranty with respect to a certain product, and where applicable, such warranty shall be deemed incorporated herein by reference;
- (f) SSI shall be released from all obligations under all warranties, either expressed or implied, if any product covered hereby is repaired or modified by persons other than its own authorized service personnel unless such repair by others is made with the written consent of SSI. IT IS EXPRESSLY AGREED THAT THE ABOVE WARRANTY SHALL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND OF THE WARRANTY OF MERCHANTABILITY AND THAT SSI SHALL HAVE NO LIABILITY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR FROM ANY CAUSE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOSS OF USE, LOSS OF DATA, LOSS OF PRODUCTIVITY, LOSS OF BUSINESS, LOSS OF PROFIT, LOSS OF PLANT, EQUIPMENT OR PRODUCTION, EVEN IF SSI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, ARISING OUT OF THE MANUFACTURE, USE, SALE, HANDLING, REPAIR, MAINTENANCE OR REPLACEMENT OF ANY OF THE PRODUCTS SOLD UNDER THIS SALES AGREEMENT.

If an SSI Special Warranty (covering a designated item or items) is contained in the manual or is otherwise shipped with such designated item or items, the terms and conditions specified therein are incorporated herein by reference and shall supplement this warranty. In the event of a conflict between the terms and/or conditions specified herein and those specified in such Special Warranty, the terms and/or conditions of the Special Warranty shall control. Representations and warranties made by any person, including dealers and representatives of SSI, which are inconsistent or in conflict with the terms of this warranty, shall not be binding upon SSI unless reduced to writing and approved by an expressly authorized officer of SSI.

U.S. GOVERNMENT CONTRACTS

If the products to be furnished under this sales agreement are to be used in the performance of a U.S. Government contract or subcontract and a U.S. Government contract number shall appear on Buyer's order, those clauses of the applicable U.S. Government procurement regulation which are mandated by Federal Statute to be included in U.S. Government subcontracts shall be incorporated herein by reference including, without limitation, the Fair Labor Standards Act of 1938, as amended.

FDA REQUIREMENTS

If any product listed on the face of this sales agreement is subject to regulations of FDA as a device, then as to said product only, sale and delivery is contingent upon successful completion and processing of a 510(k) notice for such product.

APPLICABLE LAW; JURISDICTION VENUE

This sales agreement is made and entered into and shall be governed, enforced and interpreted in accordance with the laws of the State of Maryland, and Customer hereby expressly consents to jurisdiction of the courts of the State of MD on all matters relating hereto. In the event that either party commences litigation to enforce any provision hereof, said litigation shall be brought in the courts of Howard County, Maryland, and the prevailing party shall be entitled to an award to all costs and reasonable attorney's fees actually incurred.

This document contains the number of pages indicated, including all attachments. Authorized signature required on quotation pages

SSI-08471-HMWN Rev. 1

Authorization Signature



Date: 6/10/2009



SHIMADZU

QUOTATION

Number: SSI-08470-FM5R Rev. 1

QUOTE DESCRIPTION:

GC/MS for EPA 524.2 and GC for EPA 552.3. The discounted price for all MAS items includes a 0.75% Industrial Funding Fee as required by GSA. Line Item 1, 10, and 11 are included in the GSA MAS for contract GS-24F-0031M, Contractor Modification #6, which expires March 31, 2012.

Dr. Patrick Marchio
WVDHHR Bureau of Public Health
4710 Chimney Drive
Suite G
Charleston, WV 25302
Phone: 304-965-2694
Fax:
E-mail: patrick.l.marchio@wv.gov

Effective Date	3/18/2009	Proposed Ship Date	30 Days/ARO
Expiration Date	4/17/2009	FOB	DESTINATION
Ship Method	BEST WAY	Shipping Terms	PREPAID
Inco Terms			

PLEASE SEE ATTACHED TERMS AND CONDITIONS

For questions or modifications about this quote, please contact your sales representative. If you are a tax exempt customer, please contact Customer Service and send a copy of your exemption certificate in with your order. The exemption certificate can also be faxed to 410-381-1222

Salesperson: Heather Juzwa MAT Regional Office
Phone: (800) 388-6996 Ext. 1673 7102 Riverwood Drive
E-mail: hljuzwa@SHIMADZU.com Columbia, MD 21046-2502

ADDITIONAL INFORMATION:

This quotation assumes WV Department of Health will use their existing OI Eclipse and autosampler.

THANK YOU FOR YOUR INTEREST IN SHIMADZU SCIENTIFIC INSTRUMENTS

Authorization Signature

Date: 6/10/2009

For Order Placement:

Reference Quotation Number on Purchase Order
Shimadzu Scientific Instruments
7102 Riverwood Drive
Columbia MD 21046
Toll Free: 800-477-1227
Phone: 410-381-1227
Fax: 410-381-6781
E-mail: customer.service@shimadzu.com
Int'l Fax 410-309-6130
Int'l Email icsc@shimadzu.com



SHIMADZU

QUOTATION

Number: SSI-08470-FM5R Rev. 1

Line #	Product Number	Product Name	Qty	List Price	Ext'd Price
1	220-94604-20	QP-2010S EI ONLY W ADV D/S	1	\$46,814.14	\$46,814.14
QP-2010s EI, Standard Vacuum System With Advanced Data Station					
<p>This package includes a GC-2010 gas chromatograph and QP-2010S quadrupole mass spectrometer with a single 65 l/sec turbo pump, GC-2010 gas chromatograph, Advanced Data Station, and GCMSsolution software. The QP-2010S system has a mass range of 1.5-900 AMU and will accept a maximum column flow of 3 ml/min. This system scans up 10,000 AMU per second. The QP-2010 series software, GCMS Solutions contains three wizard driven features: Scan/SIM acquisition (FASST), automated creation of SIM acquisition parameters (COAST), and automated retention time updating based upon retention index (AART). Front ion source access and ease of maintenance are standard on all Shimadzu GCMS Systems. The GC-2010 includes one Split/Splitless injection port with AFC-2010 (Advanced Flow Control) that provides pressure up to 970kpa and flow up to 1200mL per minute. The SPL-2010 is suitable for columns from 0.1-.75. mm.id in split or splitless operation. The AFC provides control of all parameters related to the injection port including constant column linear velocity, split ratio, total flow, column flow, and septum purge flow. The oven supports 20 temperature programming steps. This system can measure 1pg of OFN (Octafluoronaphthalene) at over 30/1 RMS in scan mode. Includes He line filter, tools, spare consumable items.</p>					
<p>Dimensions and Weight (GC-2010): 515x437x320mm WxHxD, Weight: 35kg (QP2010s): 192x395x320 WxHxD. All QP-2010s's include configuration kit which contains 1. SHRXI-5 30m x 0.25 mm i.d. column, 1 high capacity carrier gas filter, check-out standard and</p>					
2	220-94701-01	RV-3 PUMP KIT (FOR NEW GCMS SYSTEM ONLY)	1	\$704.00	\$0.00
Edwards RV-3 with mist filter and oil return					
This upgrade allows for faster pump down and ultimately shorter maintenance cycle times.					
This part number sold only with new GCMS systems. For pump replacement use 220-94701-02					
3	225-13290-91	NIST MASS SPECTRUM LIBRARY 2008	1	\$2,520.00	\$2,268.00
The NIST Mass Spectral Library 2008 version contains 220,435 spectra of 192,262 compounds with structures. This is 15% more than the 2005 version contained. This data base contains Kovats indices for over 42,000 compounds on both non-polar and polar columns.					
4	220-90001-07	REGULATOR W/CGA-580 ARGON/HELIUM/NITROGEN, 200 PSI DELIVERY PRESSURE FOR GC	1	\$447.00	\$379.95
Gas Regulator, 19H580 He or N2 for GC					
Gas Regulator for helium or nitrogen; includes 1/8" outlet.					
5	220-90212-00	COPPER TUBING 1/8 50 FEET	1	\$81.00	\$68.85
6	220-94678-02	4552 CABLE TO 4560/ ECLIPSE	1	\$119.00	\$101.16
Handshake cable between GC-2010 and OI-4660 P&T					
7	220-94707-01	TRANSFER LINE HEATER FOR GC-2010 OR GC-2014	1	\$324.00	\$275.40
Transfer Line Heater for GC-2010 or GC-2014					
6" heater for transfer line to GC-2010 or GC-2014. Used to prevent cold spot in transfer line when connecting purge and trap or headspace to GC. Plugs in to auxiliary heater on GC					
8	221-53393-01	ZU1, VALCO/UNION	1	\$20.00	\$20.00
9	220-99999-G1	Restek Catalogue 19915	1	\$560.00	\$560.00
Rb@-VMS Cap. Column 30m, 0.25mm ID, 1.40um					



QUOTATION

Number: SSI-08470-FM5R Rev. 1

Line #	Product Number	Product Name	Qty	List Price	Ext'd Price
10	220-90887-00	GC-2010 DUAL ECD/DSPL2010/DAFC/AOC20 DTWR/2010 APC	1	\$35,246.26	\$35,246.26
GC-2010 Dual ECD-2010, Dual SPL-2010, Dual Tower AOC20					
<p>The GC-2010 is a state-of-the-art Gas Chromatograph giving unsurpassed performance and reliability. This GC includes two Split/Splitless injection ports with digital Advanced Flow Control modules and two capillary, low volume ECDs. The AFC (Advanced Flow Control) module provides control of all parameters related to the injection port set points. It operates in a number of modes including Constant Linear Velocity and is capable of high pressure splitless injections. The GC oven is capable of 20 temperature program ramps and hold steps. Column Oven Cooling Time: 300° C to 50° C < 6 minutes, Temp. Column oven Programming Rate: 70° C/min; Constant Linear Velocity, Pressure and flow program ramps with flow Control Range: 0 to 1200ml/min, Programming Rate: -400 to 400 ml/min. This package also contains our dual tower autosampler package: 2 AOC20i and AOC 20S.</p> <p>Column Oven Cooling Time: 300° C to 50° C < 5 minutes, Temp. Column oven Programming Rate: 70 C/min; Constant Linear Velocity, Pressure and flow program ramps with flow control, Range: 0 to 1200ml/min, Programming Rate: -400 to 400 ml/min., Atmospheric compensation.</p> <p>Includes GC-2010 with 2 ECD-2010, 2 SPL-2010, 2 AOC-20i autoinjectors, AOC-20s.</p>					
11	220-94600-00	GC SOLUTIONS SOFTWARE W/ RS232 CABLE	1	\$3,249.10	\$3,249.10
GCsolution Software with RS232 Cable					
<p>This software controls all Shimadzu GC systems. GC-2010, GC-17, GC-14 are all supported with all AFC, APC and detectors controlled as appropriate. Included are Shimadzu accessories and automatic sampling equipment. Capabilities for user administration and compliant data security, batch or single run acquisition and calibration, data review and correction, data comparison and full graphical reporting are in the standard package. This software handles up to four GC's with up to four detectors each. This software requires use of the Windows 2000 or XP operating system. When additional accessory control or additional processing capabilities are needed these units when added become an integral part of GCsolution</p> <p>Includes GCsolution. Software only, data station not included.</p>					
12	220-99999-G1	Restek Catalogue 11123	1	\$560.00	\$560.00
Rtx®-CLP Cap. Column 30m, 0.25mm ID, 0.25um					
13	220-99999-G1	Restek Catalogue 11243	1	\$570.00	\$570.00
Rtx®-OPP2 Cap. Column 30m, 0.25mm ID, 0.25um					
14	221-47749-91	COOLING UNIT,115V, GC-2010	2	\$347.00	\$589.90
Oven Cooling Fan for GC-2010, 115V					
Used to speed up oven cooling by adding ambient air to column oven during cooldown cycle. Shortens GC column oven cooldown times.					
15	I&F	INSTALLATION AND CUSTOMER FAMILIARIZATION	1	\$0.00	\$0.00
16	BALANCE_OFFER	YOU MAY ADD A SHIMADZU BALANCE TO THIS ORDER AT 50% DISCOUNT. ASK FOR DETAILS	1	\$0.00	\$0.00
17	1YW	1 YEAR WARRANTY	1	\$0.00	\$0.00



QUOTATION

Number: SSI-08470-FM5R Rev. 1

Total List Price	\$91,908.50
Total Line Item Discounts	\$1,205.74
Subtotal	\$90,702.76
Total Amount	\$90,702.76

Options					
Line #	Product Number	Product Name	Qty	List Price	Net Price
	EXT-WARRANTY	EXTENDED WARRANTY SERVICE CONTRACT	1	\$0.00	\$5,615.00



SHIMADZU

QUOTATION

Number: SSI-08470-FM5R Rev. 1

Terms and Conditions

GENERAL TERMS AND CONDITIONS OF SALE

Shimadzu Scientific Instruments, Inc.

PRICES

The prices set forth on the face hereof

- (i) are Shimadzu Scientific Instruments, Inc.'s (hereinafter called SSI) domestic prices based upon manufacture of the quality and type ordered for shipment and end use within the United States and Canada only, all products shipped for end use outside the United States and Canada shall be subject to SSI's international prices,
- (ii) are subject to revision when interruption, engineering changes or changes in quantity or quality are caused or requested by Buyer, and
- (iii) unless otherwise specified, does not include warranty service or installation outside the United States and Canada. Clerical errors by Shimadzu are subject to correction.

SPECIFICATIONS

Weights and dimensions set forth in sales literature are not guaranteed unless previously certified in writing. SSI may, without affecting the obligations under this sales agreement, make what SSI regards as minor changes to the specifications of the product or products delivered under this sales agreement from those contained in sales literature.

TERMS OF PAYMENT

Subject to the credit approval by SSI, terms of payment on this sales agreement are net thirty (30) days from date of the invoice unless otherwise specifically stated on the face hereof. Invoices are payable at par on date due at any place of collection designated by SSI in funds bankable at par. Payment made beyond terms will be subject to simple interest of 1-1/2% per month on the outstanding balance. All orders are accepted subject to and the obligation of SSI to make deliveries is subject to the right of SSI to require of Buyer payment of all or any part of the purchase price in advance of delivery or to make shipment C.O.D. If Buyer fails to make advance payment when requested to do so by SSI or if Buyer is or becomes delinquent in the payment of any sum of any kind due SSI (whether or not arising out of this sales agreement) or refuses to accept C.O.D. shipments, then SSI shall have the right, in addition to any other remedy to which it may be entitled in law or in equity, to cancel this sales agreement, refuse to make further deliveries, and declare immediately due and payable all unpaid amounts of goods and services previously delivered to Buyer. Each shipment shall be considered a separate and independent transaction and payment therefore shall be made accordingly.

"Buyer must notify SSI within fifteen (15) days from the invoice date if Buyer has not received products."

SHIPMENTS

- (a) The cost of packaging for domestic shipments is included in the quoted price. For international shipments or where special packaging is specified or necessary, a charge will be made to cover such expense.
- (b) For shipments to and from places within the United States, all shipments--unless otherwise agreed in writing-- shall be FOB point of shipment and title and risk of loss or damage shall be passed to Buyer at the shipping point. The cost of transportation and insurance (if requested by Buyer) shall be borne by Buyer.
- (c) For shipments from the United States to ports and or places outside the United States all shipments are--unless otherwise agreed in writing--FOB Columbia, MD. SSI's obligation to affect shipment of the products purchased by Buyer shall be fully discharged, and beneficial ownership, legal title and all risk of loss or damage shall pass to Buyer when the products are shipped to the named place of destination in the country of importation. If shipped FOB Destination, upon arrival Buyer shall be entitled to conduct a reasonable investigation of the products purchased by it, but all claims for losses due to loss or damage to products while in transit shall be waived unless made immediately in writing by Buyer, but not more than (30) thirty days after arrival. If Buyer shall fail or refuse to accept delivery of any of the products for unverifiable claims for loss or damage to products occurring while in transit, all sums paid on deposit shall be retained by SSI as liquidated damages, provided, however, that SSI may recover in full its actual damage from Buyer in the event that actual damages exceed the amount retained as liquidated damages.
- (d) All claims for damage or loss of insured shipments shall be immediately communicated, when possible, to SSI at (410) 381-1227, 7102 Riverwood Drive, Columbia, Maryland 21046-2502, Attn: Customer Service. Buyer shall immediately notify delivering carrier of loss or damage to the shipment and SSI will cooperate with Buyer in the adjustment of all claims. Buyer agrees to permit SSI or SSI's representative to inspect damaged goods.

TERMINATION

Upon any termination or cancellation of this sales agreement by Buyer, either in whole or in part, Buyer agrees to promptly pay appropriate termination or cancellation charges invoiced by SSI. If appropriate, the termination charge shall be not less than twenty percent (20%) of the total amount of this sales agreement.

RETURNED GOODS

All returns must be pre-authorized by SSI and a Return Goods Authorization (RGA) number must appear on the face of the package. Returned goods will be subject to a restocking charge. If appropriate, the restocking charge shall be not less than twenty percent (20%) of the total amount of this sales agreement.

DELIVERY

The scheduled shipping or delivery date shown on the face hereof is our best estimate of the time the order will be shipped and SSI assumes no liability for loss, general damages, or special or consequential damages due to delays.

TAXES

Federal, state and local excise, sales, or use taxes shall be paid by Buyer.

PATENTS

SSI shall defend any suit or proceeding brought against the Buyer so far as based upon an assertion that any product furnished under this sales agreement constitutes a direct infringement of any United States patent having a claim of claims covering solely the product itself, if notified promptly in writing and given authority, information and assistance (at SSI's expense) for the defense of same, and SSI shall pay all damages and costs awarded therein against Buyer. In case said product in such suit is held to constitute infringement and the use of said product in enjoined, SSI shall, at its own option and at its own expense, either (1) procure for Buyer the right to continue using said

product, (2) replace the same with a non-infringing product, (3) modify it so it becomes non-infringing, or (4) remove said product and refund the purchase price and transportation costs thereof. The foregoing obligations of SSI shall not apply to any infringement claim based upon (i) any use of any product sold hereunder in any process or in conjunction with any other product, or (ii) any product manufactured to Buyer's design or any product having a design arising out of compliance with Buyer's specifications. The foregoing states the entire liability of SSI for patent infringement by said product. If any suit or proceeding is brought against SSI based on claims that the goods manufactured by SSI in compliance with Buyer's specifications and supplied to Buyer directly infringe any fully issued United States patent, then the patent indemnity obligations herein stated with respect to SSI shall reciprocally apply with respect to Buyer.

WARRANTY

Subject to the exceptions and upon the conditions stated below, SSI warrants that the products sold under this sales agreement shall be free from defects in workmanship and materials for one year after shipment of the products to the original Buyer by SSI, and if any such products should prove to be defective within such one year period, SSI agrees, at its option, either (i) to correct by repair or, at SSI election, by replacement with equivalent product any such defective product, provided that investigation and factory inspection discloses that such defect developed under normal and proper use, or (ii) to refund the purchase price. The exceptions and conditions mentioned above are as follows:

- (a) Components or accessories manufactured by SSI which by their nature are not intended to and will not function for one year are warranted only to give reasonable service for a reasonable time; what constitutes reasonable time and reasonable service shall be determined solely by SSI. A complete list of such components and accessories is maintained at the factory;
- (b) SSI makes to warranty with respect to components or accessories not manufactured by it, in the event of defect in any such component or accessory SSI will give reasonable assistance to Buyer in obtaining from the respective manufacturer whatever adjustment is authorized by the manufacturer's own warranty;
- (c) any product claimed to be defective must, if required by SSI, be returned to the factory, transportation charges prepaid, and will be returned to Buyer with transportation charges collect unless the product is found to be defective, in which case SSI will pay all transportation charges;
- (d) If the product is a reagent or the like, it is warranted only to conform to the quantity and content and for the period (but not in excess of one year) stated on the label at the time of delivery;
- (e) SSI may from time to time produce a special printed warranty with respect to a certain product, and where applicable, such warranty shall be deemed incorporated herein by reference;
- (f) SSI shall be released from all obligations under all warranties, either expressed or implied, if any product covered hereby is repaired or modified by persons other than its own authorized service personnel unless such repair by others is made with the written consent of SSI. IT IS EXPRESSLY AGREED THAT THE ABOVE WARRANTY SHALL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND OF THE WARRANTY OF MERCHANTABILITY AND THAT SSI SHALL HAVE NO LIABILITY FOR SPECIAL OR CONSEQUENTIAL DAMAGES OF ANY KIND OR FROM ANY CAUSE WHATSOEVER, INCLUDING BUT NOT LIMITED TO LOSS OF USE, LOSS OF DATA, LOSS OF PRODUCTIVITY, LOSS OF BUSINESS, LOSS OF PROFIT, LOSS OF PLANT, EQUIPMENT OR PRODUCTION, EVEN IF SSI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, ARISING OUT OF THE MANUFACTURE, USE, SALE, HANDLING, REPAIR, MAINTENANCE OR REPLACEMENT OF ANY OF THE PRODUCTS SOLD UNDER THIS SALES AGREEMENT.

If an SSI Special Warranty (covering a designated item or items) is contained in the manual or is otherwise shipped with such designated item or items, the terms and conditions specified therein are incorporated herein by reference and shall supplement this warranty. In the event of a conflict between the terms and/or conditions specified herein and those specified in such Special Warranty, the terms and/or conditions of the Special Warranty shall control. Representations and warranties made by any person, including dealers and representatives of SSI, which are inconsistent or in conflict with the terms of this warranty, shall not be binding upon SSI unless reduced to writing and approved by an expressly authorized officer of SSI.

U.S. GOVERNMENT CONTRACTS

If the products to be furnished under this sales agreement are to be used in the performance of a U.S. Government contract or subcontract and a U.S. Government contract number shall appear on Buyer's order, those clauses of the applicable U.S. Government procurement regulation which are mandated by Federal Statute to be included in U.S. Government subcontracts shall be incorporated herein by reference including, without limitation, the Fair Labor Standards Act of 1938, as amended.

FDA REQUIREMENTS

If any product listed on the face of this sales agreement is subject to regulations of FDA as a device, then as to said product only, sale and delivery is contingent upon successful completion and processing of a 510(k) notice for such product.

APPLICABLE LAW; JURISDICTION VENUE

This sales agreement is made and entered into and shall be governed, enforced and interpreted in accordance with the laws of the State of Maryland, and Customer hereby expressly consents to jurisdiction of the courts of the State of MD on all matters relating hereto. In the event that either party commences litigation to enforce any provision hereof, said litigation shall be brought in the courts of Howard County, Maryland, and the prevailing party shall be entitled to an award to all costs and reasonable attorney's fees actually incurred.

This document contains the number of pages indicated, including all attachments. Authorized signature required on quotation pages

SSI-08470-FM5R Rev. 1

Authorization Signature



Date: 6/10/2009



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
LBS90133

PAGE
1

ADDRESS CORRESPONDENCE TO ATTENTION OF
ROBERTA WAGNER
304-558-0067

***709032209** **410-381-1227**
SHIMADZU SCIENTIFIC INSTRUMENT
7102 RIVERWOOD DRIVE

COLUMBIA MD 21046

HEALTH AND HUMAN RESOURCES
ENVIRONMENTAL CHEMISTRY LAB

4710 CHIMNEY DRIVE
CHARLESTON, WV
25302 **304-558-3530**

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
05/19/2009				

BID OPENING DATE: **06/18/2009** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0001	1	EA		490-55		
GAS CHROMATOGRAPH/MASS SPECTROMETER (GC-MS)						
TO ANALYZE FOR TRIHALOMETHANES (THMS) AND VOLATILE ORGANIC CHEMICALS (VOCs) PER THE ATTACHED SPECS.						
0002	1	EA		490-55		
GAS CHROMATOGRAPH/ELECTRON CAPTURE DETECTOR (GC-ECD)						
TO ANALYZE FOR HALOACETIC ACIDS (HAAS) IN DRINKING WATER PER THE ATTACHED SPECS.						
0003	1	EA		490-55		
ON-SITE BASIC USER TRAINING FOR GC-MS SPECTROMETER						
(1 DAY AT INSTALLATION OF EQUIPMENT.)						
0004	3	EA		490-55		
ON SITE BASIC USER TRAINING FOR GC-ECD DETECTOR						
(3 DAYS AT INSTALLATION OF EQUIPMENT.)						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>Leather Jugwa</i>	TELEPHONE 800-388-6996 X1673	DATE 6-10-09
TITLE Sales Representative	FEIN 52-1035956	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER
LBS90133

PAGE
2

ADDRESS CORRESPONDENCE TO ATTENTION OF
ROBERTA WAGNER
304-558-0067

SUPPLIER
 *709032209 410-381-1227
 SHIMADZU SCIENTIFIC INSTRUMENT
 7102 RIVERWOOD DRIVE
 COLUMBIA MD 21046

SHIP TO
 HEALTH AND HUMAN RESOURCES
 ENVIRONMENTAL CHEMISTRY LAB
 4710 CHIMNEY DRIVE
 CHARLESTON, WV
 25302 304-558-3530

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B	FREIGHT TERMS
05/19/2009				

BID OPENING DATE: **06/18/2009** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT. NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
0005	4	EA		490-55		
ADVANCED TRAINING COURSE FOR THE GC-MS SPECTROMETER (4 DAYS) THE AWARD WILL BE MADE TO THE VENDOR WITH THE LOWEST OVERALL TOTAL COST OF THE EQUIPMENT WHICH MEETS ALL REQUESTED SPECIFICATIONS AND REQUIREMENTS. PAYMENT WILL BE MADE IN ARREARS. CANCELLATION: THE DIRECTOR OF PURCHASING RESERVES THE RIGHT TO CANCEL THIS CONTRACT IMMEDIATELY UPON WRITTEN NOTICE TO THE VENDOR IF THE COMMODITIES AND/OR SERVICES SUPPLIED ARE OF AN INFERIOR QUALITY OR DO NOT CONFORM TO THE SPECIFICATIONS OF THE BID AND CONTRACT HEREIN. BANKRUPTCY: IN THE EVENT THE VENDOR/CONTRACTOR FILES FOR BANKRUPTCY PROTECTION, THIS CONTRACT IS AUTOMATICALLY NULL AND VOID, AND IS TERMINATED WITHOUT FURTHER ORDER. INQUIRIES: WRITTEN QUESTIONS SHALL BE ACCEPTED THROUGH CLOSE OF BUSINESS ON 6/2/2009. QUESTIONS MAY BE SENT VIA USPS, FAX, COURIER OR E-MAIL. IN ORDER TO ASSURE NO VENDOR RECEIVES AN UNFAIR ADVANTAGE, NO SUBSTANTIVE QUESTIONS WILL BE ANSWERED ORALLY. IF POSSIBLE, E-MAIL QUESTIONS ARE PREFERRED. ADDRESS INQUIRIES TO: ROBERTA WAGNER DEPARTMENT OF ADMINISTRATION						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>Heather J. J. [Signature]</i>	TELEPHONE 800-388-6996 X1673	DATE 6-10-09
TITLE SALES Representative	FEIN 52-1035956	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'



State of West Virginia
 Department of Administration
 Purchasing Division
 2019 Washington Street East
 Post Office Box 50130
 Charleston, WV 25305-0130

Request for Quotation

RFQ NUMBER:
LBS90133

PAGE
3

ADDRESS CORRESPONDENCE TO ATTENTION OF:
ROBERTA WAGNER
304-558-0067

VENDOR

*709032209 410-381-1227
 SHIMADZU SCIENTIFIC INSTRUMENT
 7102 RIVERWOOD DRIVE
 COLUMBIA MD 21046

SHIP TO

HEALTH AND HUMAN RESOURCES
 ENVIRONMENTAL CHEMISTRY LAB
 4710 CHIMNEY DRIVE
 CHARLESTON, WV
 25302 304-558-3530

DATE PRINTED	TERMS OF SALE	SHIP VIA	F.O.B.	FREIGHT TERMS
05/19/2009				

BID OPENING DATE: **06/18/2009** BID OPENING TIME **01:30PM**

LINE	QUANTITY	UOP	CAT NO.	ITEM NUMBER	UNIT PRICE	AMOUNT
PURCHASING DIVISION 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25311 FAX: 304-558-4115 E-MAIL: ROBERTA.A.WAGNER@WV.GOV THE MODEL/BRAND/SPECIFICATIONS NAMED HEREIN ESTABLISH THE ACCEPTABLE LEVEL OF QUALITY ONLY AND ARE NOT INTENDED TO REFLECT A PREFERENCE OR FAVOR ANY PARTICULAR BRAND OR VENDOR. VENDORS WHO ARE BIDDING ALTERNATES SHOULD SO STATE AND INCLUDE PERTINENT LITERATURE AND SPECIFICATIONS. FAILURE TO PROVIDE INFORMATION FOR ANY ALTERNATES MAY BE GROUNDS FOR REJECTION OF THE BID. THE STATE RESERVES THE RIGHT TO WAIVE MINOR IRREGULARITIES IN BIDS OR SPECIFICATIONS IN ACCORDANCE WITH SECTION 148-1-4(F) OF THE WEST VIRGINIA LEGISLATIVE RULES AND REGULATIONS. NOTICE A SIGNED BID MUST BE SUBMITTED TO: DEPARTMENT OF ADMINISTRATION PURCHASING DIVISION BUILDING 15, 2019 WASHINGTON STREET, EAST CHARLESTON, WV 25305-0130 PLEASE NOTE: A CONVENIENCE COPY WOULD BE APPRECIATED. THE BID SHOULD CONTAIN THIS INFORMATION ON THE FACE OF						

SEE REVERSE SIDE FOR TERMS AND CONDITIONS

SIGNATURE <i>Heather Jurek</i>	TELEPHONE 800-388-6996 X1673	DATE 6-10-09
TITLE Sales Representative	FERN 52-1035956	ADDRESS CHANGES TO BE NOTED ABOVE

WHEN RESPONDING TO RFQ, INSERT NAME AND ADDRESS IN SPACE ABOVE LABELED 'VENDOR'

Gas Chromatograph – Mass Spectrometer

SPECIFICATIONS AND REQUIREMENTS:

1. The Environmental Chemistry Laboratory section of the Office of Laboratory Services is requesting to purchase a Gas Chromatograph – Mass Spectrometer (GC-MS) instrument to analyze for Trihalomethanes (THMs) and Volatile Organic Chemicals (VOCs) in drinking water to fulfill requirements of United States Environmental Protection Agency (EPA) regulations for compliance monitoring of public water systems. Compliance monitoring testing is a requirement of a state's Principal State Laboratory mandated under federal code at 40 CFR 142.10(b)(4) for the state to maintain Primacy over its Drinking Water Program. The instrument will also serve the purpose of protecting public health by providing testing capabilities to private well owners. This instrument is to be installed for use by the Environmental Chemistry Laboratory located at 4710 Chimney Drive, Suite G, Charleston, WV 25302.
2. The technology of this GC-MS instrument must be compatible with and fulfill the requirements of United States Environmental Protection Agency (EPA) method 524.2 (1995, Revision 4.1) for THMs and VOCs, and the resolution and sensitivity capability must be able to meet or exceed the limits of detection and minimum reporting levels required for these regulated compounds as stipulated under the federal Safe Drinking Water Act, and the Stage 2 Disinfection Byproduct Rule.
3. The GC-MS Instrument must be fully automated for analysis with a system controller that is loaded with the necessary software which is compatible with Windows XP. System controller software must be able to export data to the existing Laboratory Information Management System (LIMS).
4. The GC-MS Instrument system controller software must be able to fulfill all of the analytical and quality control requirements stated in the EPA Method 524.2 (Rev. 4.1) as well as the pertinent requirements listed in Chapter IV of the EPA "Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth edition, January 2005", for the analysis of THMs and VOCs in drinking water.
5. GC-MS Instrument must be fully compatible with a system software controlled autosampler that is integral with a Purge and Trap concentrator sampling system manufactured by OI Analytical. The autosampler is Model 4551-A. The Purge and Trap is the Eclipse Model 4660. The OI Analytical autosampler and purge and trap have already been purchased separately.
6. The GC-MS Instrument must come with a temperature-programmable split/splitless capillary column injector compatible with a Purge and Trap sampling interface.
7. The GC-MS Instrument must come with a column for method 524.2 volatiles analysis.
8. The GC-MS Instrument must come equipped with a quadrupole mass spectrometer.
9. The GC-MS Instrument must come equipped with a pre-quad filter, or fully equivalent technology, to protect the quadrupole from contamination.

10. The GC-MS Instrument must be capable of mass scan rates of at least 12,500 amu/sec and 65 scans/sec.
11. The GC-MS Instrument must be capable of detecting a wide mass range of at least 1.5-1050 u (Daltons).
12. The GC-MS Instrument must come equipped with a 179 L/sec turbomolecular pump or better.
13. The GC-MS Instrument must be capable of being attached to a nitrogen purge gas stream to prohibit oxygen from entering the system during venting, or provide equivalent technology, to minimize contamination in case of a power outage.
14. The GC-MS Instrument oven must be capable of a rapid cool-down rate, from 450°C to 50°C, in less than 2 minutes to facilitate fast analytical cycles.
15. The GC-MS Instrument must come equipped with a programmable pneumatic control system that controls and monitors all injector, detector, and auxiliary gases electronically, or fully equivalent technology.
16. The GC-MS Instrument system must operate on 110-120 V AC.

Installation Requirements:

1. Vendor must install the GC-MS Instrument system in the Environmental Chemistry Laboratory in the Elk Office Center building at 4710 Chimney Drive, Suite G, Charleston, WV 25302 .
2. Vendor must provide to the Environmental Chemistry Laboratory (ECL) Program Manager all relevant information concerning the installation in a documented form at least 2 weeks prior to the scheduled installation.
3. At the time of the GC-MS Instrument installation, Vendor must provide to the ECL Program Manager: All relevant system manuals for hardware components; system and application software documentation; a parts, supplies, accessories catalog.
4. Vendor must include all necessary cables and fittings and other costs for installation in the submitted bid price.
5. Installation and on-site training must be completed within 90 days of delivery date.

Training Requirements:

1. Vendor must provide, upon completion of installation, basic on-site training for Environmental Chemistry Laboratory personnel on the operation and user maintenance requirements of the GC-MS Instrument system.
2. On-site training provided by Vendor must last for at least 1 day, following GC-MS Instrument system installation.
3. All costs incurred by the Vendor including travel, lodging, and living expenses necessary to provide this basic training shall be included in the bid price.
4. Vendor must also provide an advanced and complete training course that includes the theory of GC-MS, workshops demonstrating all aspects of the proprietary software

capabilities, and hands-on lab work. This course must last at least 4 days. Vendor must include the cost of this course in the bid price.

Warranty Requirements:

1. Vendor must include in the total price of the equipment at least 1-year factory warranty covering all system components.
2. Software support must be included as part of one-year warranty. Vendor must agree to provide software support for any subsequent service agreements that may follow the original one-year standard warranty.
3. Warranty must include on-site service including labor, travel time, and expenses with a 24-hour on-site response time at no extra cost to maintain the specifications listed in this bid and the Vendor's product specifications.
4. Vendor must include all warranty information including terms and conditions upon delivery.
5. Warranty must begin upon completion of installation.
6. Service provided under warranty must be provided directly by an employee of the Vendor's company exclusive of contracted third parties.
7. Vendor must agree to offer the first one year extended service warranty after the initial 1 year warranty expires at a cost indicated on the bid response page.
8. For a period of ten years commencing with the end of the one year warranty period following installation, the Vendor must make available a one-year service period for preventive maintenance and emergency service on both system hardware and software on a reoccurring annual basis.

Delivery Requirements:

1. The GC-MS Instrument and its components must be shipped for "inside delivery" by freight delivery company.
2. The GC-MS Instrument and its components must be shipped "F.O.B. Destination" unless otherwise stated in quote by Vendor. Any shipping and handling requirements must be stated in Vendor's quote.
3. Delivery must be within 90 days after receipt of order.

Conformance Requirements:

1. The GC-MS Instrument system shall be operated for a period of 30 days following installation and must be found to conform to the herein listed specifications.
2. Vendor must agree to accept the return of the GC-MS Instrument system should the GC-MS Instrument system fail to conform to any required specification within this 30 day period.

3. Should the GC-MS Instrument system be returned to the Vendor, the Vendor must agree to provide a full refund of the bid price of the GC-MS Instrument system to the State of West Virginia.

Gas Chromatograph – Electron Capture Detector

SPECIFICATIONS AND REQUIREMENTS:

1. The Environmental Chemistry Laboratory section of the Office of Laboratory Services is requesting for purchase a Gas Chromatograph – Electron Capture Detector (GC-ECD) instrument to analyze for Haloacetic Acids (HAA5) in drinking water to fulfill requirements of United States Environmental Protection Agency (EPA) regulations for compliance monitoring of public water systems. Compliance monitoring testing is a requirement of a state's Principal State Laboratory mandated under federal code at 40 CFR 142.10(b)(4) for the state to maintain Primacy over its Drinking Water Program. The instrument will also serve the purpose of protecting public health by providing testing capabilities to private well owners. This instrument is to be installed for use by the Environmental Chemistry Laboratory at 4710 Chimney Drive, Suite G, Charleston, WV 25302.
2. The technology of this GC-ECD instrument must be compatible with and fulfill the requirements of United States Environmental Protection Agency (EPA) method 552.3 (2003, Revision 1.0) for Haloacetic Acids (HAA5) and the resolution and sensitivity capability must be able to meet or exceed the limits of detection and minimum reporting levels required for these regulated compounds as stipulated under the federal Safe Drinking Water Act, and the Stage 2 Disinfection Byproduct Rule.
3. The GC-ECD Instrument must be fully automated for analysis with a system controller that is loaded with the necessary software which is compatible with Windows XP. System controller software must be able to export data to the existing Laboratory Information Management System (LIMS).
4. The GC-ECD Instrument system controller software must be able to fulfill all of the analytical and quality control requirements stated in the EPA Method 552.3 (Rev. 1.0) as well as the pertinent requirements listed in Chapter IV of the EPA "Manual for the Certification of Laboratories Analyzing Drinking Water, Fifth edition, January 2005", for the analysis of HAA5 in drinking water.
5. Instrument must be equipped with a system software controlled autosampler.
6. The GC-ECD Instrument must come with a temperature-programmable split / splitless capillary column injector.
7. The GC-ECD Instrument must come equipped with a Primary GC Column for method 552.3 volatiles analysis. This is a DB-1701, 30-meter length, 0.25-mm i.d., 0.25- μ m film, fused silica capillary with chemically bonded (14% cyanopropylphenyl-methylpolysiloxane), or equivalent bonded, fused silica column.

8. The GC-ECD Instrument must come equipped with a Secondary Confirmation GC Column. This is a DB-5.625, 30-meter length, 0.25-mm i.d., 0.25- μ m film, fused silica capillary with chemically bonded ("equivalent to" 5% phenylmethylpolysiloxane), or equivalent bonded, fused silica column.
9. The GC-ECD Instrument must come equipped with a low volume, micro, Electron Capture Detector for each of the Primary and Secondary Confirmation columns.
10. The GC-ECD Instrument oven must be capable of a rapid cool-down rate from 450 °C to 50 °C in less than 2 minutes to facilitate fast analytical cycle times.
11. The GC-ECD Instrument must come equipped with a programmable pneumatic control system, or fully equivalent technology, that controls and monitors all injector, detector, and auxiliary gases electronically.
12. The GC-ECD Instrument system must operate on 110-120 V AC.

Installation Requirements:

1. Vendor must install the GC-ECD Instrument system in the Environmental Chemistry Laboratory in the Elk Office Center building at 4710 Chimney Drive, Suite G, Charleston, WV 25302 .
2. Vendor must provide to the Environmental Chemistry Laboratory (ECL) Program Manager all relevant information concerning the installation in a documented form at least 2 weeks prior to the scheduled installation.
3. At the time of the GC-ECD Instrument installation, Vendor must provide to the ECL Program Manager: All relevant system manuals for hardware components; system and application software documentation; a parts, supplies, accessories catalog.
4. Vendor must include all necessary cables and fittings and other costs for installation in the submitted bid price.
5. Installation and on-site training must be completed within 90 days of delivery date.

Training Requirements:

1. Vendor must provide on-site training for Environmental Chemistry Laboratory personnel on the operation and user maintenance requirements of the GC-ECD, following completion of installation.
2. Vendor must provide on-site training relevant to the acceptable performance of the EPA method 552.3.
3. On-site training provided by Vendor must be for a minimum of 3 days following Instrument system installation.
4. All costs incurred by the Vendor including travel, lodging, and living expenses necessary to provide this training shall be included in the bid price.

Warranty Requirements:

1. Vendor must include in the total price of the equipment at least 1-year factory warranty covering all system components.

2. Software support must be included as part of one-year warranty. Vendor must agree to provide software support for any subsequent service agreements that may follow the original one-year standard warranty.
3. Warranty must include on-site service including labor, travel time, and expenses with a 24-hour on-site response time at no extra cost to maintain the specifications listed in this bid and the Vendor's product specifications.
4. Vendor must include all warranty information including terms and conditions upon delivery.
5. Warranty to begin upon completion of installation.
6. Service provided under warranty must be provided directly by an employee of the Vendor's company exclusive of contracted third parties.
7. Vendor must agree to offer the first one year extended service warranty after the initial 1 year warranty expires at a cost indicated on the bid response page.
8. For a period of ten years commencing with the end of the one year warranty period following installation, the Vendor must make available a one-year service period for preventive maintenance and emergency service on both system hardware and software on a reoccurring annual basis.

Delivery Requirements:

1. The GC-ECD Instrument and its components must be shipped for "inside delivery" by freight delivery company.
2. The GC-ECD Instrument and its components are to be shipped "F.O.B. Destination" unless otherwise stated in quote by Vendor. Any shipping and handling requirements must be stated in Vendor's quote.
3. Delivery must be within 90 days after receipt of order.

Conformance Requirements:

1. The GC-ECD system must be operated for a period of 30 days following installation and must be found to conform to the herein listed specifications.
2. Vendor must agree to accept the return of the GC-ECD system should the GC-ECD system fail to conform to any required specification within this 30 day period.
3. Should the GC-ECD system be returned to the Vendor, the Vendor must agree to provide a full refund of the bid price of the GC-ECD system to the State of West Virginia.

RFQ COST SHEET

Bidders shall provide a cost for the following:

Gas Chromatograph – Mass Spectrometer (GC-MS) \$ _____

On-site Basic User Training (1 day at installation of equipment) \$ _____

Advanced Training Course (4 days) \$ _____

Gas Chromatograph – Electron Capture Detector (GC-ECD) \$ _____

On-site Basic User Training (3 days at installation of equipment) \$ _____

Total Cost \$ See ATTACHED
QUOTATIONS

The award will be made to the vendor with the lowest overall total cost of the equipment which meets all requested specifications and requirements. Payment will be made in arrears.

Heather Jensen
Vendor Signature

6-10-09
Date

AGREEMENT ADDENDUM

WV-96
Rev. 10/07

In the event of conflict between this addendum and the agreement, this addendum shall control:

1. **DISPUTES** - Any references in the agreement to arbitration or to the jurisdiction of any court are hereby deleted. Disputes arising out of the agreement shall be presented to the West Virginia Court of Claims.
2. **HOLD HARMLESS** - Any clause requiring the Agency to indemnify or hold harmless any party is hereby deleted in its entirety.
3. **GOVERNING LAW** - The agreement shall be governed by the laws of the State of West Virginia. This provision replaces any references to any other State's governing law.
4. **TAXES** - Provisions in the agreement requiring the Agency to pay taxes are deleted. As a State entity, the Agency is exempt from Federal, State, and local taxes and will not pay taxes for any Vendor including individuals, nor will the Agency file any tax returns or reports on behalf of Vendor or any other party.
5. **PAYMENT** - Any references to prepayment are deleted. Payment will be in arrears.
6. **INTEREST** - Should the agreement include a provision for interest on late payments, the Agency agrees to pay the maximum legal rate under West Virginia law. All other references to interest or late charges are deleted.
7. **RECOUPMENT** - Any language in the agreement waiving the Agency's right to set-off, counterclaim, recoupment, or other defense is hereby deleted.
8. **FISCAL YEAR FUNDING** - Service performed under the agreement may be continued in succeeding fiscal years for the term of the agreement, contingent upon funds being appropriated by the Legislature or otherwise being available for this service. In the event funds are not appropriated or otherwise available for this service, the agreement shall terminate without penalty on June 30. After that date, the agreement becomes of no effect and is null and void. However, the Agency agrees to use its best efforts to have the amounts contemplated under the agreement included in its budget. Non-appropriation or non-funding shall not be considered an event of default.
9. **STATUTE OF LIMITATION** - Any clauses limiting the time in which the Agency may bring suit against the Vendor, lessor, individual, or any other party are deleted.
10. **SIMILAR SERVICES** - Any provisions limiting the Agency's right to obtain similar services or equipment in the event of default or non-funding during the term of the agreement are hereby deleted.
11. **ATTORNEY FEES** - The Agency recognizes an obligation to pay attorney's fees or costs only when assessed by a court of competent jurisdiction. Any other provision is invalid and considered null and void.
12. **ASSIGNMENT** - Notwithstanding any clause to the contrary, the Agency reserves the right to assign the agreement to another State of West Virginia agency, board or commission upon thirty (30) days written notice to the Vendor and Vendor shall obtain the written consent of Agency prior to assigning the agreement.
13. **LIMITATION OF LIABILITY** - The Agency, as a State entity, cannot agree to assume the potential liability of a Vendor. Accordingly, any provision limiting the Vendor's liability for direct damages to a certain dollar amount or to the amount of the agreement is hereby deleted. Limitations on special, incidental or consequential damages are acceptable. In addition, any limitation is null and void to the extent that it precludes any action for injury to persons or for damages to personal property.
14. **RIGHT TO TERMINATE** - Agency shall have the right to terminate the agreement upon thirty (30) days written notice to Vendor. Agency agrees to pay Vendor for services rendered or goods received prior to the effective date of termination.
15. **TERMINATION CHARGES** - Any provision requiring the Agency to pay a fixed amount or liquidated damages upon termination of the agreement is hereby deleted. The Agency may only agree to reimburse a Vendor for actual costs incurred or losses sustained during the current fiscal year due to wrongful termination by the Agency prior to the end of any current agreement term.
16. **RENEWAL** - Any reference to automatic renewal is hereby deleted. The agreement may be renewed only upon mutual written agreement of the parties.
17. **INSURANCE** - Any provision requiring the Agency to insure equipment or property of any kind and name the Vendor as beneficiary or as an additional insured is hereby deleted.
18. **RIGHT TO NOTICE** - Any provision for repossession of equipment without notice is hereby deleted. However, the Agency does recognize a right of repossession with notice.
19. **ACCELERATION** - Any reference to acceleration of payments in the event of default or non-funding is hereby deleted.
20. **CONFIDENTIALITY**: -Any provision regarding confidentiality of the terms and conditions of the agreement is hereby deleted. State contracts are public records under the West Virginia Freedom of Information Act.
21. **AMENDMENTS** - All amendments, modifications, alterations or changes to the agreement shall be in writing and signed by both parties. No amendment, modification, alteration or change may be made to this addendum without the express written approval of the Purchasing Division and the Attorney General.

ACCEPTED BY:

STATE OF WEST VIRGINIA

Spending Unit: _____

Signed: _____

Title: _____

Date: _____

VENDOR

Company Name: Shimadzu Scientific Instruments Inc.

Signed: Jackie Pusman

Title: Sales Administrator

Date: 6-10-09

ATTACHMENT
P.O.# LBS90133

This agreement constitutes the entire agreement between the parties, and there are no other terms and conditions applicable to the licenses granted hereunder.

Agreed

Jackie Rosemore 6-10-09
Signature Date

Sales Administrator
Title

Meredith Scientific Instruments
Company Name

Signature Date

Title

Agency/Division

STATE OF WEST VIRGINIA
Purchasing Division

PURCHASING AFFIDAVIT

VENDOR OWING A DEBT TO THE STATE:

West Virginia Code §5A-3-10a provides that: No contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and the debt owed is an amount greater than one thousand dollars in the aggregate.

PUBLIC IMPROVEMENT CONTRACTS & DRUG-FREE WORKPLACE ACT:

If this is a solicitation for a public improvement construction contract, the vendor, by its signature below, affirms that it has a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the **West Virginia Code**. The vendor **must** make said affirmation with its bid submission. Further, public improvement construction contract may not be awarded to a vendor who does not have a written plan for a drug-free workplace policy in compliance with Article 1D, Chapter 21 of the **West Virginia Code** and who has not submitted that plan to the appropriate contracting authority in timely fashion. For a vendor who is a subcontractor, compliance with Section 5, Article 1D, Chapter 21 of the **West Virginia Code** may take place before their work on the public improvement is begun.

ANTITRUST:

In submitting a bid to any agency for the state of West Virginia, the bidder offers and agrees that if the bid is accepted the bidder will convey, sell, assign or transfer to the state of West Virginia all rights, title and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the state of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the state of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to the bidder.

I certify that this bid is made without prior understanding, agreement, or connection with any corporation, firm, limited liability company, partnership or person or entity submitting a bid for the same materials, supplies, equipment or services and is in all respects fair and without collusion or fraud. I further certify that I am authorized to sign the certification on behalf of the bidder or this bid.

LICENSING:

Vendors must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agencies or political subdivision. Furthermore, the vendor must provide all necessary releases to obtain information to enable the Director or spending unit to verify that the vendor is licensed and in good standing with the above entities.

CONFIDENTIALITY:

The vendor agrees that he or she will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the agency's policies, procedures and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in <http://www.state.wv.us/admin/purchase/privacy/noticeConfidentiality.pdf>.

Under penalty of law for false swearing (**West Virginia Code §61-5-3**), it is hereby certified that the vendor affirms and acknowledges the information in this affidavit and is in compliance with the requirements as stated.

Vendor's Name: Sumady Scientific Instruments Inc
Authorized Signature: Jackie Rushton Date: 6-10-09

State of West Virginia

VENDOR PREFERENCE CERTIFICATE

Certification and application* is hereby made for Preference in accordance with West Virginia Code, §5A-3-37. (Does not apply to construction contracts). West Virginia Code, §5A-3-37, provides an opportunity for qualifying vendors to request (at the time of bid) preference for their residency status. Such preference is an evaluation method only and will be applied only to the cost bid in accordance with the West Virginia Code. This certificate for application is to be used to request such preference. The Purchasing Division will make the determination of the Resident Vendor Preference, if applicable.

1. Application is made for 2.5% resident vendor preference for the reason checked:

- Bidder is an individual resident vendor and has resided continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
Bidder is a partnership, association or corporation resident vendor and has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or 80% of the ownership interest of Bidder is held by another individual, partnership, association or corporation resident vendor who has maintained its headquarters or principal place of business continuously in West Virginia for four (4) years immediately preceding the date of this certification; or,
Bidder is a nonresident vendor which has an affiliate or subsidiary which employs a minimum of one hundred state residents and which has maintained its headquarters or principal place of business within West Virginia continuously for the four (4) years immediately preceding the date of this certification; or,

2. Application is made for 2.5% resident vendor preference for the reason checked:

Bidder is a resident vendor who certifies that, during the life of the contract, on average at least 75% of the employees working on the project being bid are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,

3. Application is made for 2.5% resident vendor preference for the reason checked:

Bidder is a nonresident vendor employing a minimum of one hundred state residents or is a nonresident vendor with an affiliate or subsidiary which maintains its headquarters or principal place of business within West Virginia employing a minimum of one hundred state residents who certifies that, during the life of the contract, on average at least 75% of the employees or Bidder's affiliate's or subsidiary's employees are residents of West Virginia who have resided in the state continuously for the two years immediately preceding submission of this bid; or,

4. Application is made for 5% resident vendor preference for the reason checked:

Bidder meets either the requirement of both subdivisions (1) and (2) or subdivision (1) and (3) as stated above; or,

5. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:

Bidder is an individual resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard and has resided in West Virginia continuously for the four years immediately preceding the date on which the bid is submitted; or,

6. Application is made for 3.5% resident vendor preference who is a veteran for the reason checked:

Bidder is a resident vendor who is a veteran of the United States armed forces, the reserves or the National Guard, if, for purposes of producing or distributing the commodities or completing the project which is the subject of the vendor's bid and continuously over the entire term of the project, on average at least seventy-five percent of the vendor's employees are residents of West Virginia who have resided in the state continuously for the two immediately preceding years.

Bidder understands if the Secretary of Revenue determines that a Bidder receiving preference has failed to continue to meet the requirements for such preference, the Secretary may order the Director of Purchasing to: (a) reject the bid; or (b) assess a penalty against such Bidder in an amount not to exceed 5% of the bid amount and that such penalty will be paid to the contracting agency or deducted from any unpaid balance on the contract or purchase order.

By submission of this certificate, Bidder agrees to disclose any reasonably requested information to the Purchasing Division and authorizes the Department of Revenue to disclose to the Director of Purchasing appropriate information verifying that Bidder has paid the required business taxes, provided that such information does not contain the amounts of taxes paid nor any other information deemed by the Tax Commissioner to be confidential.

Under penalty of law for false swearing (West Virginia Code, §61-5-3), Bidder hereby certifies that this certificate is true and accurate in all respects; and that if a contract is issued to Bidder and if anything contained within this certificate changes during the term of the contract, Bidder will notify the Purchasing Division in writing immediately.

Bidder: Shimady Scientific Instrument Signed: Jack A. Harrison
Date: 10-10-09 Title: Sales Administrator

*Check any combination of preference consideration(s) indicated above, which you are entitled to receive.

N/A

Fast, Sensitive Analysis of Volatile Organics by EPA Method 8260 with Extended Dynamic Range

EPA Method 8260 is widely employed by numerous environmental laboratories for analysis of volatile organic compounds (VOC's). This method is generally applied to multi-media matrices with wide variation in analyte concentrations. At the same time, many programs (groundwater monitoring, for example) have very low detection limit requirements that approach drinking water standards. To accommodate the requirements of multiple programs, it is a distinct advantage to demonstrate a wide dynamic range that delivers the sensitivity required for low detection limit programs and linearity at higher concentrations to minimize required dilution analyses for highly contaminated samples.

The excellent sensitivity and dynamic range of the Shimadzu QP2010 series GCMS instruments provides the ability to calibrate over the concentration ranges typically used for both EPA Methods 8260 and 524. The patented water management features and accelerated cycle time of the OI 4660 Eclipse Purge and Trap Concentrator complement the GCMS system ideally for this application. In this study, linear calibration was demonstrated over the range of 0.2-200 µg/L for over sixty five target compounds, using the conditions outlined in EPA Method 8260 with a run time of 12.5min and a purge volume of 5ml. This procedure is suitable for identification and quantitation of volatile organics at low levels in aqueous matrices. The Environmental Protection Agency requires that this analysis be performed in compliance with the method-specified procedures and acceptance criteria, and this procedure is not intended to replace these criteria in any way.

Experimental - Equipment and Instrument Conditions

This analysis was performed using a Shimadzu GCMS-QP2010s Gas Chromatograph/Mass-Spectrometer (GCMS) and an OI 4660 "Eclipse" Purge and Trap Concentrator with an OI 4551A Autosampler. These results were obtained using a 30m X 0.25mm X 1.4µ RTX-VMS fused silica capillary column (Restek Corporation).

A temperature profile of 35-220°C was utilized, and the advanced flow control (AFC) was programmed to provide a constant linear velocity of 35cm/sec. A total analysis time of 12.5 minutes gives a GC cycle time that corresponds approximately to the cycle time of the purge and trap concentrator. The mass spectrometer was scanned in the full-scan mode from m/z 36 to 260 in 0.5sec scan intervals. The GCMS conditions are shown in figures 1A and 1B and the purge and trap conditions are shown in figure 1C.

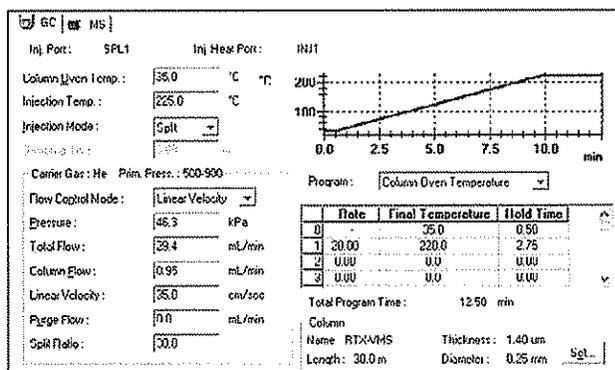


Figure 1A: GC Conditions

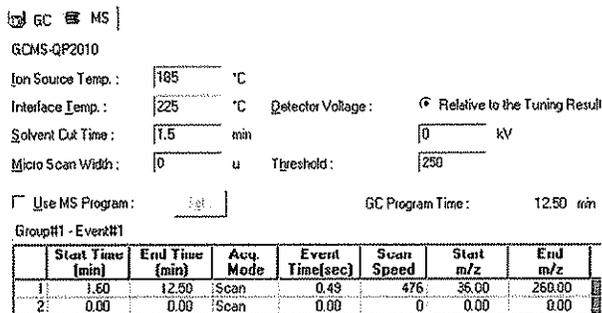


Figure 1B: MS Conditions

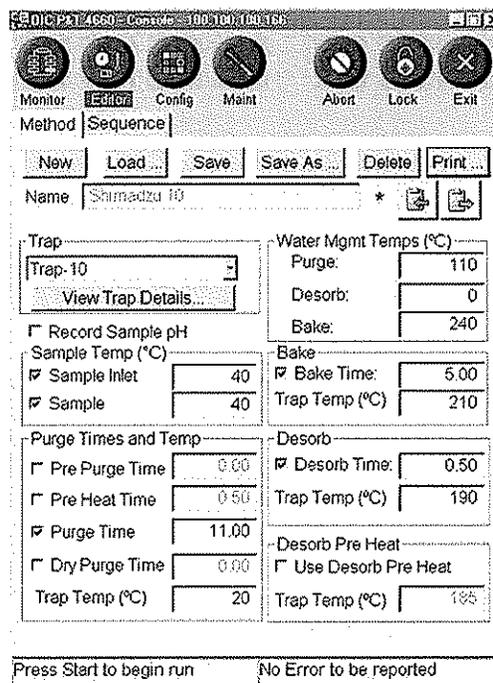


Figure 1C: Purge and Trap Conditions





BFB Tuning

The GCMS-QP2010s was first tuned using the Shimadzu GCMSsolution automatic tuning function; the tuning standard of 25ng 4-Bromofluorobenzene (BFB) was used to verify the tuning requirements specified in EPA Method 8260. Tuning results for BFB are shown below in Figures 2A and 2B.

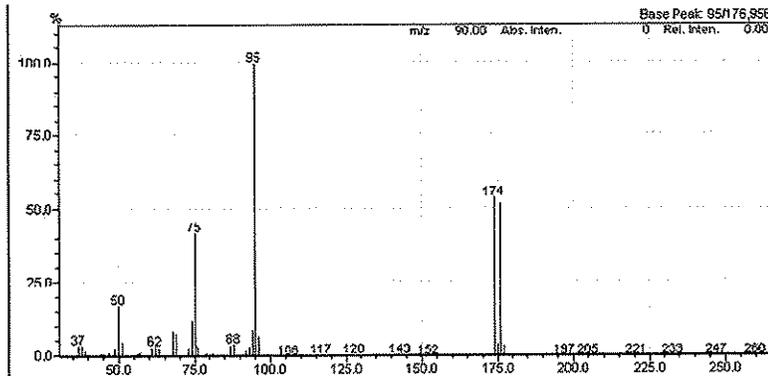


Figure 2A: BFB Mass Spectrum

4-Bromofluorobenzene

m/z	Spectrum Check Criteria	Result	Status
50	15 to 40% of mass 95	17.042655	Pass
75	30 to 60% of mass 95	42.027397	Pass
95	Base Peak, 100% Relative Abundance	100.000000	Pass
96	5 to 9% of mass 95	6.618029	Pass
173	< 2% of mass 174	0.463098	Pass
174	> 50% of mass 95	54.058636	Pass
175	5 to 9% of mass 174	7.166005	Pass
176	> 95% but < 101% of mass 174	96.487560	Pass
177	5 to 9% of mass 176	6.543879	Pass

Figure 2B: BFB Spectrum Check

Calibration

Calibration standards were prepared over the calibration range of 0.2-200µg/L and transferred to 40mL vials for sampling and analysis. Internal standards were held constant at 25µg/L, and were added automatically using the Standards Addition Module (SAM) with the OI 4551A Autosampler. The initial calibration standards were acquired using 5ml aliquots with the instrument conditions outlined above. The detector (electron multiplier) was adjusted to give adequate response at the lowest calibration level and avoid saturation at the highest calibration level. Figure 3A shows the mass chromatograms of the early-eluting compounds in the 1µg/L standard, and 3B shows the total ion chromatogram of a 10µg/L standard.

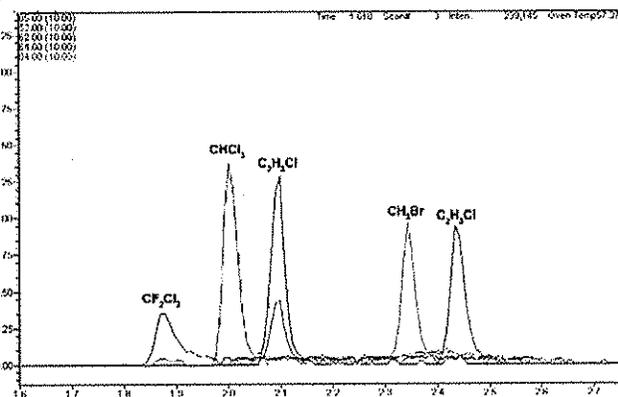


Figure 3A: Mass Chromatograms of Early-eluting Compounds 1µg/L Calibration Standard

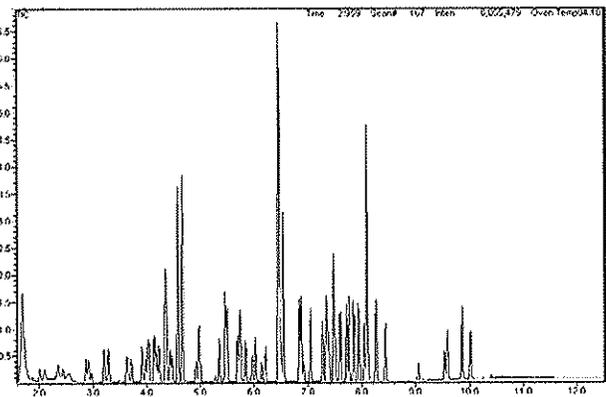


Figure 3B: Total Ion Chromatogram of 10µg/L Calibration Standard

The data for the initial calibration were processed using GCMSsolution software. The calibration data were evaluated both by examination of the %RSD of the relative response factors and by the linearity (correlation coefficient) of the calibration curves for all of the target analytes.

For most of the target compounds, the %RSD of the relative response factors was 10-15% over the entire 0.2-200µg/L calibration range, showing consistent relative response over the entire calibration range. For those target compounds, with %RSD >15%, the correlation coefficient for the calibration was greater than 0.99, demonstrating linear response for all of the target compounds. The calibration data satisfied the relevant EPA Method 8260 acceptance criteria. Calibration results are summarized in Table 1.





Compound Name	RF1	RF2	RF3	RF4	RF5	RF6	RF7	RF8	RF9	RF10	Mean RF	%RSD
1,4-Difluorobenzene (IS)	Internal Standard											
Chlorobenzene d5 (IS)	Internal Standard											
1,4-Dichlorobenzene d4 (IS)	Internal Standard											
Fluorobenzene (Ref)	Reference											
1,2-Dichloroethane d4 (SURF)	0.073	0.072	0.078	0.092	0.090	0.081	0.077	0.079	0.076	0.084	0.080	8.3
Dibromofluoromethane (SUR)	0.215	0.224	0.253	0.297	0.289	0.255	0.241	0.248	0.230	0.235	0.249	10.7
Toluene-d8 (SURR)	0.804	0.757	0.926	1.097	1.053	0.900	0.813	0.906	0.831	0.775	0.886	13.0
4-Bromofluorobenzene (SUR)	0.542	0.432	0.467	0.539	0.511	0.449	0.422	0.460	0.448	0.480	0.475	8.9
Dichlorodifluoromethane	0.113	0.114	0.144	0.112	0.112	0.137	0.160	0.142	0.126	0.109	0.127	14.0
Chloromethane	0.346	0.305	0.316	0.248	0.270	0.307	0.346	0.306	0.267	0.248	0.296	12.2
Vinyl Chloride	0.241	0.227	0.274	0.247	0.258	0.300	0.313	0.273	0.234	0.220	0.259	12.0
Bromomethane	0.163	0.154	0.171	0.149	0.169	0.194	0.200	0.164	--	--	0.171	10.5
Chloroethane	0.160	0.200	0.225	0.184	0.191	0.224	0.222	0.196	--	--	0.200	11.5
Trichlorofluoromethane	0.160	0.182	0.237	0.217	0.225	0.271	0.270	0.228	--	--	0.224	17.3
1,1-Dichloroethene	0.130	0.153	0.191	0.162	0.174	0.207	0.204	0.189	0.186	0.195	0.179	13.6
Acetone	--	--	0.330	0.242	0.255	0.254	0.252	0.224	0.219	0.218	0.249	14.5
Iodomethane	0.136	0.181	0.216	0.190	0.214	0.236	0.247	0.231	0.219	0.220	0.209	15.5
Carbon Disulfide	0.814	0.617	0.690	0.588	0.645	0.751	0.767	0.711	0.672	0.671	0.693	10.1
Dichloromethane	0.204	0.233	0.261	0.225	0.249	0.288	0.285	0.270	0.265	0.267	0.255	10.6
trans-1,2-Dichloroethene	0.182	0.194	0.226	0.196	0.213	0.250	0.248	0.230	0.227	0.241	0.221	10.7
cis-1,2-Dichloroethene	0.215	0.214	0.260	0.226	0.250	0.288	0.286	0.265	0.263	0.279	0.255	10.9
Vinyl Acetate	0.617	0.623	0.742	0.635	0.698	0.821	0.806	0.746	0.744	0.718	0.715	10.1
2-Butanone (MEK)	--	0.390	0.380	0.286	0.298	0.332	0.326	0.300	0.300	0.307	0.324	11.5
1,1-Dichloroethane	0.333	0.372	0.442	0.400	0.428	0.505	0.492	0.460	0.445	0.454	0.433	12.1
2,2-Dichloropropane	0.454	0.273	0.357	0.307	0.328	0.387	0.370	0.322	0.289	0.278	0.337	16.8
Bromochloromethane	0.105	0.106	0.122	0.112	0.123	0.142	0.142	0.130	0.128	0.136	0.125	10.9
Chloroform	0.374	0.384	0.457	0.398	0.433	0.500	0.490	0.432	0.394	0.386	0.425	10.7
Carbon tetrachloride	0.320	0.286	0.334	0.285	0.296	0.354	0.351	0.297	0.270	0.256	0.305	11.0
1,1,1-Trichloroethane	0.234	0.253	0.325	0.293	0.316	0.373	0.361	0.309	0.284	0.279	0.303	14.5
2,3-Dichloropropene	0.215	0.258	0.318	0.293	0.315	0.379	0.370	0.327	0.311	0.309	0.309	15.5
1,1-Dichloropropane	0.427	0.291	0.343	0.312	0.331	0.388	0.371	0.322	0.289	0.278	0.335	14.3
Benzene	0.909	0.879	1.021	0.910	0.993	1.150	1.145	1.038	0.912	0.830	0.979	11.2
1,2-Dichloroethane	0.330	0.342	0.413	0.358	0.395	0.454	0.437	0.374	0.340	0.326	0.377	12.2
Trichloroethene	0.190	0.199	0.237	0.208	0.223	0.264	0.265	0.240	0.233	0.240	0.230	11.0
1,2-Dichloropropane	0.201	0.217	0.245	0.228	0.245	0.288	0.290	0.277	0.281	0.296	0.257	13.3
Dibromomethane	0.139	0.147	0.168	0.146	0.160	0.187	0.185	0.168	0.164	0.172	0.164	9.8
Bromodichloromethane	0.333	0.329	0.388	0.334	0.366	0.431	0.425	0.372	0.343	0.339	0.366	10.3
cis-1,3-Dichloropropene	0.280	0.296	0.327	0.299	0.315	0.379	0.370	0.328	0.311	0.309	0.322	9.8
trans-1,3-Dichloropropene	0.405	0.396	0.482	0.425	0.460	0.508	0.471	0.456	0.447	0.451	0.450	7.6
4-Methyl-2-pentanone (MIBK)	0.250	0.214	0.243	0.206	0.227	0.259	0.269	0.249	0.245	0.254	0.242	8.2
2-Hexanone	0.249	0.246	0.267	0.235	0.252	0.282	0.281	0.280	0.286	0.296	0.267	7.7
Toluene	0.587	0.567	0.637	0.584	0.600	0.676	0.650	0.651	0.646	0.642	0.620	6.7
1,1,2-Trichloroethane	0.212	0.197	0.241	0.202	0.217	0.243	0.236	0.231	0.233	0.238	0.225	7.4
Tetrachloroethene	0.110	0.123	0.147	0.134	0.142	0.169	0.166	0.160	0.157	0.163	0.147	13.4
1,3-Dichloropropane	0.462	0.451	0.533	0.462	0.505	0.560	0.528	0.503	0.494	0.505	0.500	6.9
Dibromochloromethane	0.218	0.237	0.271	0.240	0.271	0.299	0.286	0.269	0.263	0.271	0.263	9.2
1,2-Dibromoethane (EDB)	0.257	0.258	0.300	0.263	0.288	0.322	0.308	0.294	0.290	0.294	0.287	7.5
Chlorobenzene	0.592	0.621	0.735	0.647	0.697	0.793	0.774	0.734	0.688	0.646	0.693	9.6
1,1,1,2-Tetrachloroethane	0.178	0.191	0.228	0.199	0.215	0.237	0.234	0.218	0.212	0.218	0.213	8.8
Ethylbenzene	0.345	0.338	0.402	0.363	0.384	0.438	0.423	0.400	0.381	0.380	0.385	8.3
m,p-Xylene	0.394	0.409	0.490	0.441	0.469	0.544	0.523	0.485	0.419	0.373	0.455	12.5
o-Xylene	0.401	0.407	0.472	0.420	0.457	0.520	0.512	0.483	0.463	0.472	0.461	8.9
Styrene	0.660	0.702	0.797	0.716	0.790	0.912	0.893	0.830	0.768	0.719	0.779	10.6
Bromoform	0.135	0.144	0.164	0.149	0.166	0.187	0.190	0.179	0.176	0.181	0.167	11.5
1,1,2,2-Tetrachloroethane	0.414	0.365	0.425	0.379	0.410	0.473	0.479	0.456	0.447	0.457	0.431	9.0
Isopropylbenzene	0.216	0.224	0.257	0.227	0.252	0.293	0.297	0.288	0.281	0.290	0.262	12.0
n-Propylbenzene	0.240	0.257	0.304	0.273	0.292	0.347	0.355	0.340	0.334	0.346	0.309	13.5
Bromobenzene	0.164	0.185	0.230	0.204	0.225	0.262	0.265	0.248	0.243	0.252	0.228	14.9
1,2,3-Trichloropropane	0.135	0.129	0.153	0.133	0.144	0.162	0.158	0.146	0.140	0.140	0.144	7.6
4-Chlorotoluene	0.206	0.229	0.271	0.242	0.264	0.309	0.317	0.298	0.288	0.294	0.272	13.4
2-Chlorotoluene	0.229	0.243	0.279	0.251	0.268	0.315	0.322	0.305	0.302	0.318	0.283	12.0
1,3,5-Trimethylbenzene	0.946	0.984	1.156	1.014	1.095	1.315	1.331	1.281	1.219	1.185	1.152	12.1
1,2,4-Trimethylbenzene	0.965	0.923	1.112	0.933	1.014	1.224	1.243	1.188	1.168	1.139	1.091	11.2
tert-Butylbenzene	0.419	0.456	0.479	0.430	0.450	0.535	0.530	0.500	0.491	0.489	0.478	8.2
sec-Butylbenzene	0.456	0.459	0.579	0.503	0.525	0.634	0.632	0.594	0.573	0.576	0.553	11.7
p-Isopropyltoluene	0.526	0.487	0.587	0.536	0.573	0.688	0.691	0.643	0.618	0.617	0.597	11.4
n-Butylbenzene	0.575	0.482	0.598	0.520	0.548	0.673	0.674	0.625	0.610	0.609	0.591	10.5
1,3-Dichlorobenzene	0.907	0.947	1.118	0.962	1.054	1.236	1.247	1.165	1.135	1.115	1.089	10.9
1,4-Dichlorobenzene	1.182	1.073	1.256	1.030	1.114	1.294	1.315	1.201	1.170	1.150	1.179	7.8
1,2-Dichlorobenzene	0.821	0.916	1.057	0.911	1.011	1.196	1.215	1.146	1.102	1.092	1.047	12.5
1,2-Dibromo-3-chloro-propan	0.235	0.235	0.297	0.245	0.276	0.300	0.282	0.270	0.250	0.244	0.263	9.4
Hexachlorobutadiene	0.287	0.276	0.339	0.314	0.315	0.393	0.391	0.368	0.349	0.351	0.338	11.9
Naphthalene	2.967	2.716	3.096	2.692	2.979	3.506	3.399	3.290	2.546	--	3.021	11.0

Table 1: Calibration Results

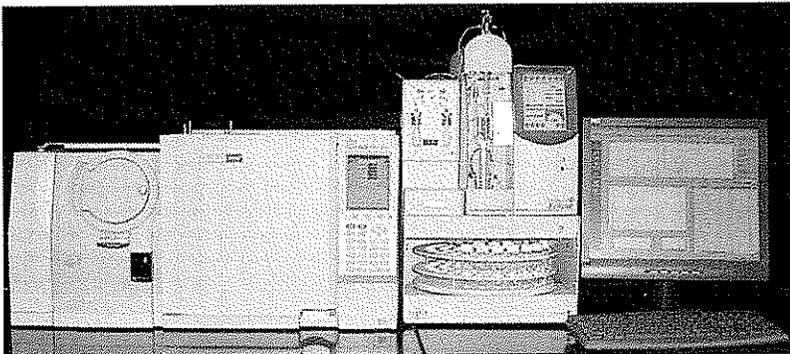


**Determination of Method Detection Limits (MDL's)**

A detection limit study was performed following the method procedure. Seven aliquots of 0.5µg/L standards were analyzed, the data were compiled, and the method detection limit was determined statistically according to the procedure referenced in EPA Method 8260. Statistically-derived method detection limits (MDL's) for most of the compounds were slightly below 0.1µg/L, which satisfies most project requirements for Method 8260. Detection limit results are presented in Table 2 below.

Compound	MDL (µg/L)	Compound	MDL (µg/L)	Compound	MDL (µg/L)
1,2-Dichloroethane d ₄ (SURR)	0.060	1,1,1-Trichloroethane	0.068	Styrene	0.046
Dibromofluoromethane (SURR)	0.050	2,3-Dichloropropene	0.112	Bromoform	0.059
Toluene-d ₈ (SURR)	0.046	1,1-Dichloropropane	0.138	1,1,2,2-Tetrachloroethane	0.062
4-Bromofluorobenzene (SURR)	0.044	Benzene	0.059	Isopropylbenzene	0.077
Dichlorodifluoromethane	0.139	1,2-Dichloroethane	0.022	n-Propylbenzene	0.081
Chloromethane	0.098	Trichloroethene	0.063	Bromobenzene	0.083
Vinyl Chloride	0.106	1,2-Dichloropropane	0.095	1,2,3-Trichloropropane	0.090
Bromomethane	0.081	Dibromomethane	0.047	4-Chlorotoluene	0.087
Chloroethane	0.102	Bromodichloromethane	0.060	2-Chlorotoluene	0.053
Trichlorofluoromethane	0.107	cis-1,3-Dichloropropene	0.108	1,3,5-Trimethylbenzene	0.065
1,1-Dichloroethene	0.083	trans-1,3-Dichloropropene	0.063	1,2,4-Trimethylbenzene	0.065
Acetone	0.405	4-Methyl-2-pentanone (MIBK)	0.088	tert-Butylbenzene	0.080
Iodomethane	0.085	2-Hexanone	0.052	sec-Butylbenzene	0.080
Carbon Disulfide	0.117	Toluene	0.058	p-Isopropyltoluene	0.084
Dichloromethane	0.097	1,1,2-Trichloroethane	0.067	n-Butylbenzene	0.127
trans-1,2-Dichloroethene	0.061	Tetrachloroethene	0.102	1,3-Dichlorobenzene	0.077
cis-1,2-Dichloroethene	0.108	1,3-Dichloropropane	0.029	1,4-Dichlorobenzene	0.052
Vinyl Acetate	0.034	Dibromochloromethane	0.054	1,2-Dichlorobenzene	0.054
2-Butanone (MEK)	0.160	1,2-Dibromoethane (EDB)	0.049	1,2-Dibromo-3-chloro-propane	0.152
1,1-Dichloroethane	0.077	Chlorobenzene	0.063	Hexachlorobutadiene	0.114
2,2-Dichloropropane	0.136	1,1,1,2-Tetrachloroethane	0.058	Naphthalene	0.047
Bromochloromethane	0.057	Ethylbenzene	0.068	1,2,4-Trichlorobenzene	0.061
Chloroform	0.047	m,p-Xylene	0.103	1,2,3-Trichlorobenzene	0.100
Carbon tetrachloride	0.115	o-Xylene	0.066		

Table 2: Statistically Determined Method Detection Limits (MDL's)



Shimadzu GCMS-QP2010S and OI 4660 "Eclipse" Purge and Trap Concentrator with an OI 4551A Autosampler.

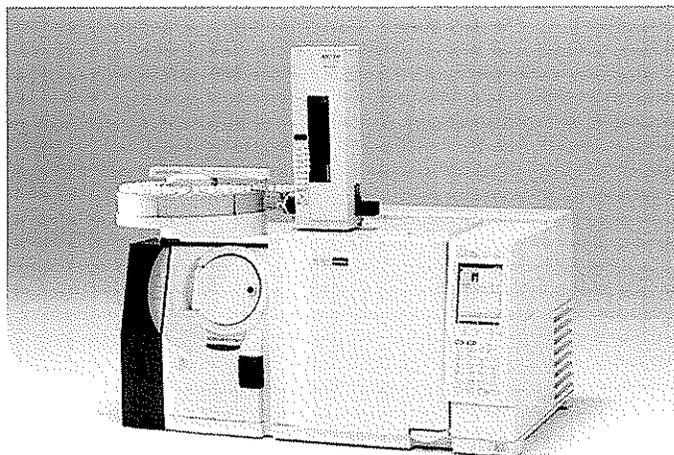
Conclusion

A procedure was demonstrated for a rapid analysis of volatile organics utilizing EPA Method 8260 with a wide dynamic range. The detection limits and calibration ranges for EPA Methods 8260 and 524 overlap, but the superior sensitivity and dynamic range of the Shimadzu GCMS-QP2010s provides the ability to calibrate over the concentration ranges typically used for both EPA Methods 8260 and 524. Linear calibration was demonstrated over the range of 0.2-200 µg/L for over sixty target compounds. QC requirements are presented for Method 8260 in this application note. Extensive report features of the Shimadzu GCMSsolution software provide flexible, customized reporting for a variety of specific project requirements.

Many laboratories face significant production pressures and equipment limitations. The ability of the analytical instrumentation to simultaneously satisfy requirements of multiple methods provides a distinct advantage for the production-oriented laboratory.



GCMS-QP2010 Plus



The GCMS-QP2010 Plus is our most advanced class of gas chromatograph mass spectrometer, upgraded in performance and usability from the GCMS-QP2010.

The higher sensitivity of the GCMS-QP2010 Plus, attained by refinement of the ionization system, makes a more significant contribution to trace analysis.

Newly added FASST (Fast Automated Scan/SIM Type) permits highly sensitive analysis with higher accuracy by making use of both the excellent ability of Scan in identification and the effectiveness of SIM in high sensitivity quantitation.

AART, making updates of retention time data easy, helps to shorten the start-up time after changing analysis conditions, such as when changing a column in any way.

Performance

Mass Range: m/z 1.5 to 1090
 Mass Resolution: R>2M
 Sensitivity (EI)*: Scan, 1pg octafluoronaphthalene
 m/z 272 S/N > 160 (RMS)
 m/z 272 S/N > 200 (+/-0.05u MC, RMS)
 SIM, 100fg octafluoronaphthalene
 m/z 272 S/N > 160 (RMS)
 Sensitivity (PCI)*: Scan, 100pg benzophenone
 m/z 183 S/N > 150 (RMS)
 SIM, 10pg benzophenone
 m/z 183 S/N > 150 (RMS)

Sensitivity (NCI)*: Scan, 100fg octafluoronaphthalene
 m/z 272 S/N > 300 (RMS)
 SIM, 10fg octafluoronaphthalene
 m/z 272 S/N > 300 (RMS)
 Max. Scan Rate: 10,000 u/sec (Single Scan), allows
 measurement with 0.1 sec scan interval for
 0.1u step from m/z 50 to 950(900u)
 Min. Scan Interval: 20ms(allows max. 50 scans/sec)

* Column: Rtx-5ms 0.25mm x 30m x 0.25 μm

Instrument

GC Model: Shimadzu GC-2010 Column Oven Temp: Up to 450 °C
 Injector Port Temp: Up to 450 °C High power oven with fast heat-up rate compatible with
 AFC Pressure Range: 0 to 970kPa fast GC/MS (230VAC)

MS --- GCMS Interface ---
 Type: Direct Connection with capillary column
 Temperature: Up to 350 °C

--- Ion Source ---
 Mode: EI (Standard), PCI (Option),
 EI, PCI and NCI with NCI source(Option)
 Ion Source Temperature: 100 to 300 °C
 Filament: Dual (Automatic Switching)
 Electron Energy: 0 to 200 eV
 Emission Current: 5 to 250 μA
 Front Access Structure for easy maintenance.

--- Mass Analyzer and Detector ---
 Mass Analyzer: Metal quadrupole mass filter with pre-rod
 Mass Stability: +/- 0.1u /48 hrs (constant temp.)
 Detector: Electron multiplier with the patented over-drive
 lens system for noise reduction
 Dynamic Range: 8 x10⁶ (Electronic)

--- Vacuum System ---
 Main Pump: Differential pumping system with dual Inlet
 turbomolecular pump (179/185L/s for He)
 Fore-Pump: 30L/min (60Hz) Rotary Pump
 Column Flow: Up to 15 mL/min (He)

DI (Option) Temp. Setting: Room Temp. to 500 °C Usable without removing the GC column.

GCMS-QP2010 Plus

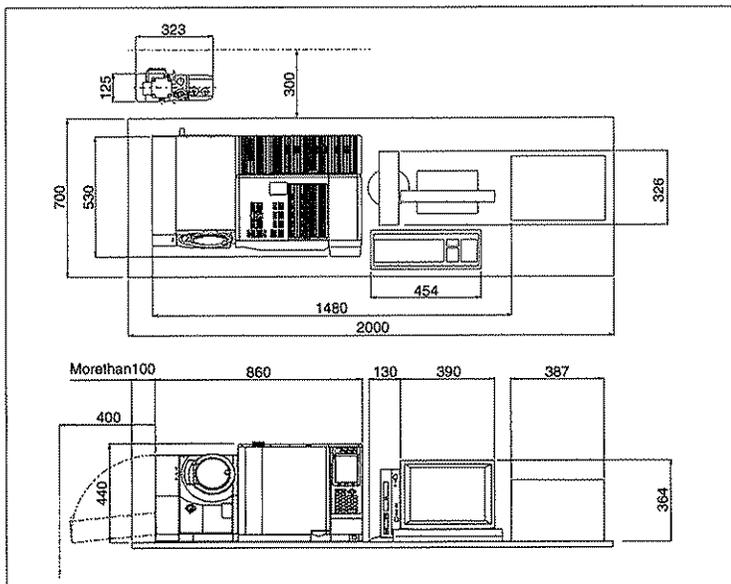
Software

GCMSsolution Ver.2.5

Mode: Scan, SIM, FASST(Fast Automated Scan/SIM Type).
SIM: 64 channels x 128 groups.
Method Creation: COAST (Creation of Automatic Scan/SIM Table),
AART(Automatic Adjustment of Retention Time), Wizard for creation of analysis method and compound table.
Library Search: Similarity search, Similarity search with retention index, Index search.
Instrument Tuning: Autotuning for all ionization modes (EI,PCI and NCI) and all reagent gases (methane, iso-butane and ammonia).
Mass Spectrum Library (Option): NIST, Wiley, Pesticide Library,FFNSC Library (Flavors and Fragrances), Drug Library.

Option Relating to Application: Method Package (Residual Pesticide in Foods, EPA524, EPA525), Compound Composer, EPA Option Software.
Various Management Functions: QA/QC Function for accuracy management, System Check for Instrument management, Security function for user management.
File Format: Compound Structure Format best suited for GLP.
Maintenance Support: MSNAVIGATOR.
Report: Highly flexible report creation.
21CFR Compliance: Available in combination with optional software Class Agent.

Installation Example



Power Requirements

Frequency: 50/60Hz
GC: 1800VA (115VAC) / *2600VA(230VAC)
*High power oven
MS: 1000VA (100 - 230VAC)

Environment

Temperature: Constant temperature between 18 to 28 °C
Humidity : 40 to 70 % (No Condensation)

Weight

GC and MS: 75kg
Rotary Pump: 10kg

Size and weight of PC/Printer vary according to models.

Appearance and Specifications are subject to change without notation for modification.

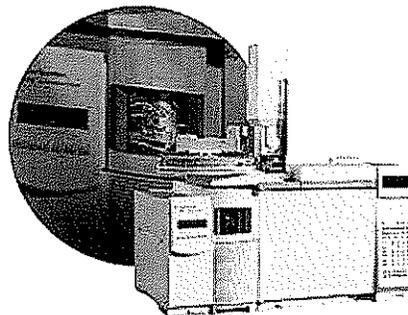
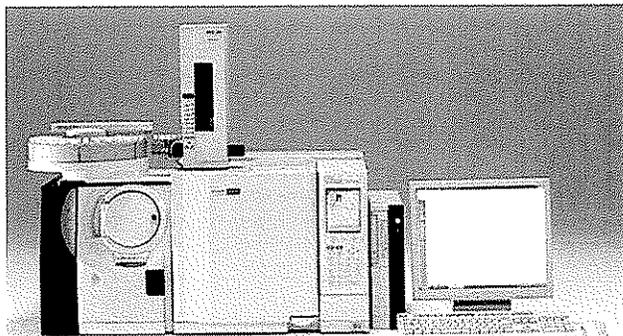


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Making Sense of Nonsense: Separating Matters from Mythology in Manufacturer's S/N Specifications for GC/MS



Instrument specifications should provide the analytical instrument shopper with the information needed to make an informed decision regarding the suitability of a particular instrument for accurate and reliable measurement of samples likely to be encountered in a real lab, in the real world. Instrument manufacturers quite naturally want to publicize impressive performance specifications in order to convince shoppers to purchase their product. This curious Minuet has manufacturers constantly vying to outdo each other in publishing the highest "X" or the lowest "Y" for their models while the analytical instrument consumer is faced with not only comparing different models, but decoding "Market-Speak" in order to determine whether the information supplied by the manufacturer is relevant to the purchase decision.

Specifications should assist the consumer in making an appropriate selection of a GCMS. From the standpoint of the consumer, it can be argued that, at the very least, instrument specifications should allow one to answer these three "Eternal Queries":

1. How accurate will my measurement be?
2. How repeatable will my measurements be?
3. What is the smallest mass or concentration of analyte that can be accurately and reliably measured?

On the surface, it would appear that answering the three questions posed above would require no specialized information other than simple statements and explanations. For example, measurement accuracy can be stated as a comparison between measured and reference data of a certified reference standard. Measurement repeatability can be easily stated as the standard deviation or relative standard deviation of measurements made on a certified reference standard. While there is the potential for obfuscation of these instrument specifications, the most problematic is the third. The reality is that very often, the first and only question a customer has in mind when selecting a GCMS is: "How sensitive is it?" We would all like a quick, easy, and truthful answer to that most basic of analytical instrument questions: "How sensitive is it?"

Unfortunately, unlike the responses to the first two questions, the issue of minimum analyte detectability does not lend itself to a quick and easy answer. Equally unfortunate is the tendency of manufacturers to use this specification as the platform from which to tout their "Best of the best and better than the rest." Most of the time, minimum analyte detectability is specified as "Signal to Noise Ratio" or S/N. It would be nice if this numerical value were a truthful indicator of the minimum detectable analyte that an instrument can measure and be a useful comparator of instrument performance. Such values alone cannot



do this. There is much more information that is needed, particularly in the details as to how signal and noise are measured. We have all heard the expression that “The devil is in the details”. In no case is this truer than in interpretation of S/N values. Exact definitions and measurement conditions for both signal and noise are required in order to give meaning to the numerical S/N value.

For hyphenated chromatography instruments such as GC/MS, there is the added influence of chromatographic conditions on the final result. So in order to make sense of the S/N specification for a particular model of GC/MS we need to know:

1. The models of GC and MS used
2. The chromatographic conditions employed
3. The MS conditions used
4. The identity and source of the analyte
5. The definition of signal
6. The definition of noise

	Agilent 5975i	GCMS-QP2010 Plus
GC parameter		
Inj Temperature	250	250
I/F Temperature	250	250
Column Temperature	45 (2.25min)	50(1min)
(All values in °C)	250(0 min) @ 40/min	200 @ (40/min) 280 for (15/min)
High pressure mode	172 kPa	250 kPa
	0.50 min	1.00 min
Sampling Time	1.00 min	1.00 min
Flow control mode	Constant flow	Pressure
Linear Velocity	(39.5 cm/sec)	120 kPa 42.1 cm/sec (170)
MS parameter		
Solvent cut	3.75 min	3.00 min
Interval	0.34 s	0.20 s
mass range (m/z)	50 - 300	200 - 300
Scan speed	769 amu/sec	526 amu/sec
Signal position	About 5.6 min	About 4 min
noise position	(R.T.-0.6) -(R.T.-0.1) min	(R.T.+1) -(R.T.+ 2) min

Chromatographic and MS conditions for S/N calculation for the Shimadzu GCMS-QP2010 Plus and the Agilent 5975i are shown in the table above. In both cases, the target analyte was octafluoronaphthalene (OFN), a 1µL injection of a solution containing 1pg/µL OFN.



Chromatographic and MS conditions, analyte identity and amount are objective parameters, but the definition of both signal and noise is left up to the writer of the specification and is often the venue for marketing creativity. The nineteenth century British Prime Minister and author Benjamin Disraeli (shown at the left) described the matter eloquently and succinctly:



“There are three kinds of lies: lies, damned lies, and statistics.”

Mr. Disraeli may have been overly critical of descriptive statistics, but when it comes to comparing S/N specifications for instruments, separating the meaningful from the nonsensical is no small task. First, there’s the definition of “Signal”. It should be a simple matter, right? Signal is the measured response of the instrument attributable to a defined analyte of a defined amount or concentration, under defined conditions. So far, so good. But as we know, for GCMS operated in the scan mode, each point in the scan represents an average of repeated measurements over time, as indicated in Figure 1.

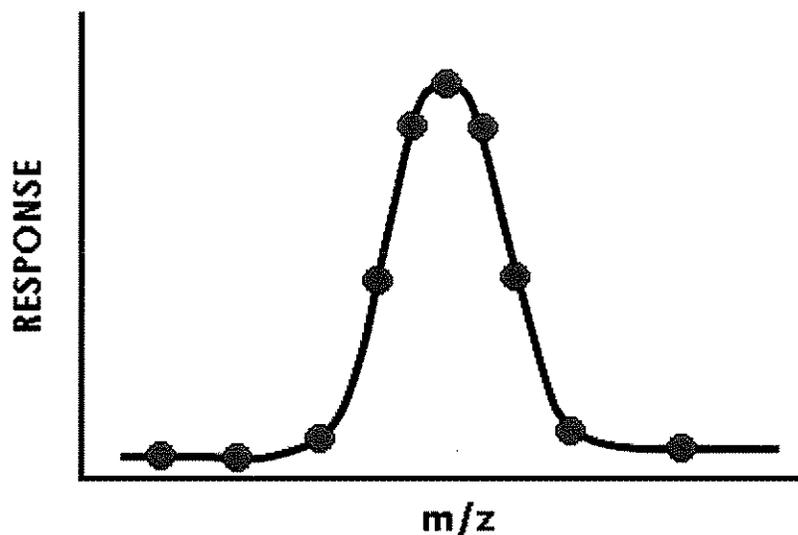


Figure 1: Schematic Diagram of signal measurement in an MS scan

The data in Figure 1 represents an idealized signal response of a mass spectrometer. The data follow a normal or Gaussian distribution described by the expression:

$$(1) \quad Y = \frac{e^{-\frac{x^2}{2}}}{\sqrt{2\pi}}$$



Although the output in our software appears to be a continuous curve, the data is really a series of discrete responses.

So the question then becomes how we are to specify “signal”. Is it the maximum response value of a known quantity of a specified analyte measured under defined conditions? Will we use peak area or the sum of the discrete responses over a defined analyte peak? And where shall we specify the response to be used as “noise”? These are important considerations when trying to compare instrument “sensitivity”.

In its literature, Agilent describes S/N specifications for the 5975i and 5975B which apply only at the installation check. That should be enough in itself to give us pause. The information below is extracted directly from Agilent literature.

5975i

Installation Checkout Specifications

El scan sensitivity	1- μ L injection of a 1-pg/ μ L OFN standard scanning from 50–300 u will give 100:1 S/N at nominal m/z 272 ion.
PCI scan sensitivity	1- μ L injection of a 100-pg/ μ L BZP standard scanning from 80–230 u will give 125:1 S/N at nominal m/z 183 ion.
NCI scan sensitivity	2- μ L injection of a 100-fg/ μ L OFN standard scanning from 50–300 u will give 300:1 S/N at nominal m/z 272 ion

5975B

Installation Checkout Specifications

El scan sensitivity	1- μ L injection of a 1-pg/ μ L OFN standard scanning from 50–300 u will give 175:1 S/N at nominal m/z 272 ion
PCI scan sensitivity	1- μ L injection of a 100-pg/ μ L BZP standard scanning from 80–230 u will give 125:1 S/N at nominal m/z 183 ion
NCI scan sensitivity	2- μ L injection of a 100-fg/ μ L OFN standard scanning from 50–300 u will give 300:1 S/N at nominal m/z 272 ion



The explanation for the difference in EI S/N is not given, but when performing the installation checkout on the Agilent 5975i and 5975B, it is observed that a "S/N Calculator" macro program is used to obtain the published S/N values. The conditions under which this calculation is performed at checkout are not the same as conditions used during normal analyses. In contrast, the Shimadzu GCMS-QP2010 Plus uses the same conditions for S/N calculation that are used for all other analyses. These data are shown in the table below:

INSTRUMENT	AGILENT 5975i "S/N CALCULATOR"	AGILENT 5975i "NORMAL OPERATION"	SHIMADZU QP2010 Plus <i>ALL MEASUREMENTS</i>
ANALYTE	OFN	OFN	OFN
CONCENTRATION	1pg/ μ L	1pg/ μ L	1pg/ μ L
INJECTION VOLUME	1 μ L	1 μ L	1 μ L
MASS RANGE	50-300	50-300	50-300
RETENTION TIME (RT)	~5	~5	~4
INTERVAL TIME (sec)	0.34	0.34	0.34
SCAN SPEED (u/sec)	769	769	769
NOMINAL m/z	272.0	272.0	272.0
m/z WINDOW	272.0-272.1	271.7-272.3	271.6-272.55
(\pm NOMINAL m/z)	± 0.05	± 0.3	± 0.48
NOISE WINDOW (min)	(RT-0.6) - (RT- 0.1)	(RT-0.6) - (RT- 0.1)	(RT+1) - (RT+2)
NOISE INTERVAL (min)	0.5	0.5	1.0

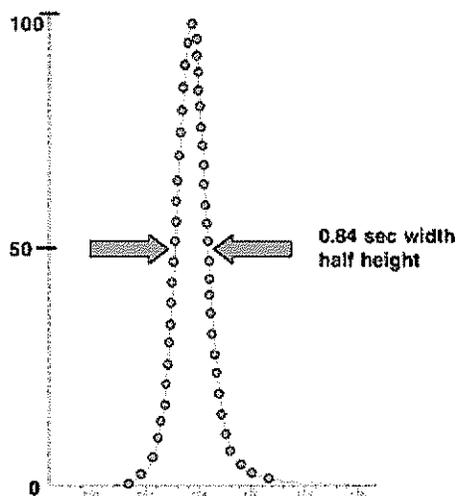
The mass window of 272 $\pm 0.05 \mu$ is only when S/N is determined at installations of 5975inert. Mass windows of $\pm 0.3 \mu$ are used for normal analyses. Shimadzu uses mass windows from -0.4 to 0.55 for all analysis including S/N determination for OFN.

The use of such a narrow mass window can only be for cosmetic purposes to achieve a "better looking" S/N value. It certainly is not justified based on mass resolution, which is defined as full peak width at half maximum peak height (FWHM). Such a mass window would imply that the unit is capable of mass resolution of 0.1 μ . Typical quadrupole instruments are identified as having "unit mass resolution" which means that they can resolve the differences in mass between ions that differ by 1 mass unit. Because of this 1 dalton resolution, the mass assignment for a specific ion may vary from scan-to-scan slightly, by $\pm 0.05 - 0.15 \mu$. Within the concept of unit mass resolution, this variance is minor and does not lead to misidentification of the ion, as long as the mass window is large enough to encompass this potential variance. To accommodate this variance, the instrument is tuned to a defined FWHM, typically in the range of 0.5 - 0.8 μ , depending on the application.

In looking at a specific extracted ion channel, the baseline noise would be seen as a random event that would only sporadically show up in such a narrow window. However, when an analyte is being detected, the chances of having the mass assignment fall within the window would be much greater. The result of setting the mass window to $\pm 0.05 \mu$ is that you might lose a little of the signal intensity of the OFN peak, but you would be cutting out much of the random noise in the baseline. This would improve the "apparent" signal-to-noise ratio. This type of data processing treatment works well with OFN because it is made up of only carbon and fluorine atoms; the nominal mass and exact mass are very similar. Other, more typical, molecules may not fare as well due to the greater diversity of the atoms comprising the molecule.



The example shown below is taken from Agilent’s own literature and clearly demonstrates more confusing “market speak”.



More data points: 50 full-scan data points across 0.84-sec peak (measured at half height). Data acquired at 10,000 amu/sec across a mass range of 450 amu.

Consider that in the example above, the scan speed was 10,000 μ /s across a peak of 0.84 second in width in order to obtain 50 data points. Since the peak width is measured at the half-height point, the baseline-to-baseline width is considerably larger. The data shows 50 data points from baseline-to-baseline, so the 0.84 second width is misleading. At a scan rate of 10,000 μ /s over a range of 450 μ , the peak would need to be 2.25 seconds wide at the base to result in 50 data points being acquired. This is just another example of marketing “bait and switch”.

The published S/N values for the Shimadzu GCMS-QP2010 Plus and Agilent 5975i and 5975B are given in the table below (BZP stands for Benzophenone). In only one case is the S/N for an Agilent instrument higher than that of the GCMS-QP2010 Plus and in this instance there is no obvious reason why two instruments, i.e. the 5975i and the 5975B, whose S/N are identical for CI and NCI, should differ in S/N for EI. It should also be noted that these values for the Agilent models were obtained using the “Installation Only” conditions. In addition, the Agilent NCI S/N is for 200fg OFN while the S/N of the GCMS-QP2010 Plus was obtained using only 100fg OFN.

COMPARISON OF PUBLISHED S/N

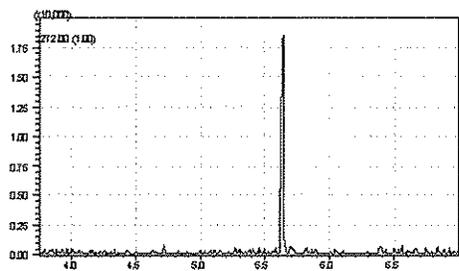
GCMS-QP2010 Plus	Guaranteed S/N
EI 1pg OFN	≥ 160
CI 100pg BZP	≥ 150
NCI 100fg OFN	≥ 300
5975i	Installation S/N
EI 1pg OFN	S/N = 100
CI 100pg BZP	S/N = 125
NCI 200fg OFN	S/N = 300
5975B	Installation S/N
EI 1pg OFN	S/N = 175
CI 100pg BZP	S/N = 125
NCI 200fg OFN	S/N = 300

But we should compare the response of the instruments under identical conditions in order to truly assess their capabilities. The figure below shows the TIC for 1pg of OFN and the calculated S/N using the Shimadzu and Agilent mass windows. Simply by reducing the mass window for the signal to an unrealistic span of 0.1 μ can increase the calculated S/N by a factor of 1.56 from 162.98 to 254.41. But an even better approach would be to compare results from the different models using the same samples under normal operating conditions.

IDENTICAL DATA

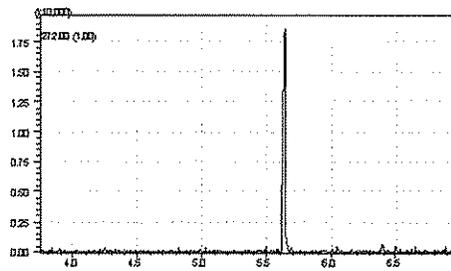
ONLY CHANGING MASS WINDOW FOR S/N CALCULATION

SHIMADZU MASS WINDOW 271.6-272.55



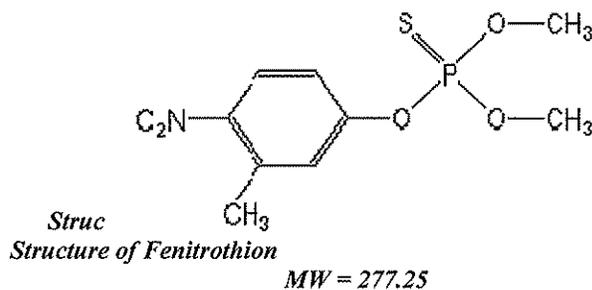
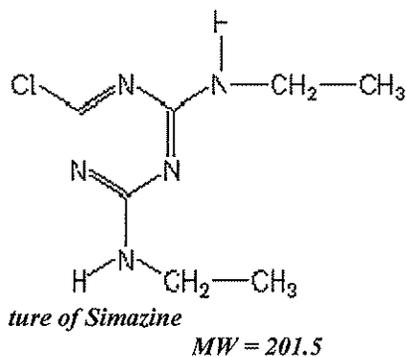
S/N = 162.98

AGILENT MASS WINDOW 271.95-272.05



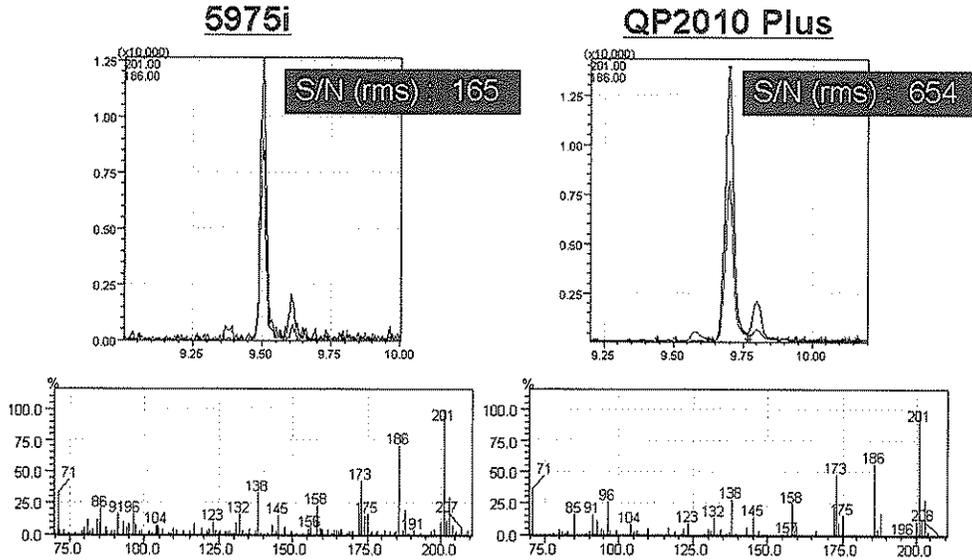
S/N = 254.41

An herbicide, Simazine, and an insecticide, Fenitrothion (structures shown below), were measured using the Agilent 5975i and the Shimadzu GCMS-QP2010 Plus. Identical chromatographic and MS conditions were used for all samples. Deactivated glass liners were used in both instruments. HP-5ms and Rtx-5MS columns were used for the evaluation.

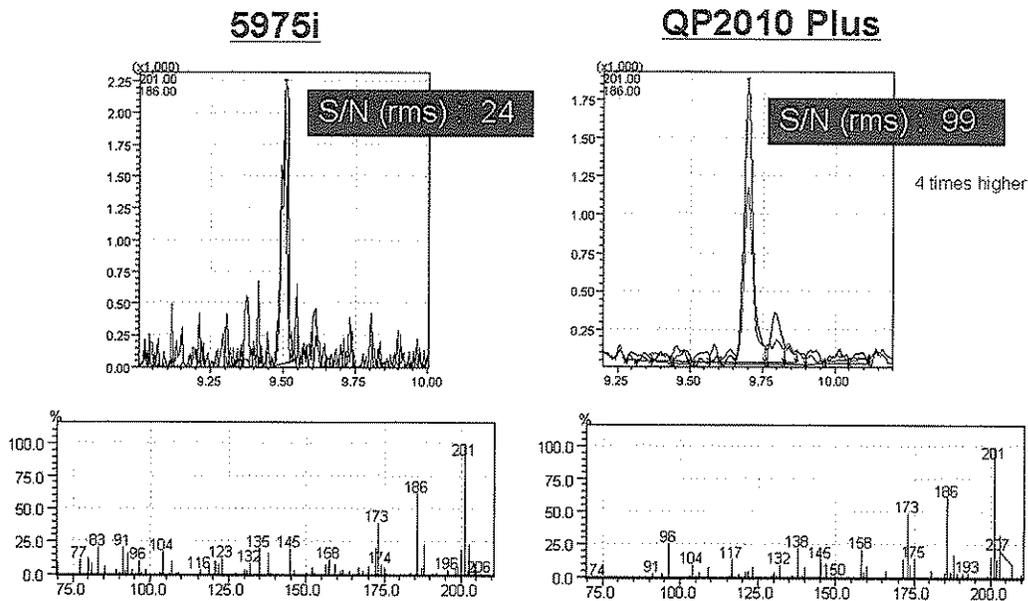


The results (EI) for 50 and 10ppb Simazine are shown in the following two figures.

Simazine 50ppb Scan



Simazine 10ppb Scan



Similar data were obtained for 50 and 10ppb Fenitrothion. The results for all of the samples are shown in the following table.

S/N values	5975i	5975B	QP2010Plus
SIMAZINE	measured	estimated	measured
50ppb	165	229	654
10ppb	24	42	99
FENITROTHION			
50ppb	38	67	168
10ppb	21	37	92

The values for the 5975i and GCMS-QP2010 Plus were measured while the values listed for the 5975B were estimated from their published ratio (1.75) of the S/N for the 5975B to the S/N for the 5975i. In all cases, the S/N for real samples, run under real-world conditions, were significantly higher for the Shimadzu GCMS-QP2010 Plus.

Scenarios can be contrived to make any instrument specification cosmetically appealing. The essential question is whether the conditions used for the specification can be used under normal operating conditions. With the Shimadzu GCMS-QP2010 Plus, you can rest assured that the conditions used for the published specifications are representative of conditions you will employ in day-to-day operations.



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Request for Quotation

RFQ NUMBER
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1

ADDRESS CORRESPONDENCE TO ATTENTION OF
ROBERTA WAGNER
304-558-0067

VENDOR

*709032209 410-381-1227
SHIMADZU SCIENTIFIC INSTRUMENT
7102 RIVERWOOD DRIVE

COLUMBIA MD 21046

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25302 304-558-3530

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5201-2009-3045-099-072-15384

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Vendor: _____ P.O. Date: _____

Item No.	Quantity	Description	Unit Price	Amount
		<p>VENDOR QUESTION #1:</p> <p>I am trying to work on the quote for the training portion and I have a question.</p> <p>Line 0005 pages 1 & 22</p> <p>Advanced training course for the GCMS (4 days)</p> <p>How many students would participate for this class?</p> <p>RESPONSE:</p> <p>Only 1 person will attend this advanced training course.</p> <p>VENDOR QUESTION #2:</p> <p>I had a couple of questions on the bid package LBS90133. There are 2 instruments listed for the bid so does that mean that only 1 vendor will be picked for both instruments?</p> <p>RESPONSE:</p> <p>We are willing to accept a split award.</p> <p>VENDOR QUESTION #3:</p> <p>Also, I had previous conversations with the end user who referenced that they are eligible for GSA pricing. Can you confirm this?</p> <p>RESPONSE:</p> <p>No, we are not eligible for GSA Pricing. We are requesting competitive bids.</p>		