2008 SPIROMETRY BUYERS GUIDE

Compiled by Colleen Mullarkey

Boehringer Laboratories LLC
500 E. Washington St.
Norristown, PA 19404
(610) 278-0900; (800) 642-4945
Fax: (610) 278-0907
Email: rstadler@boehringerlabs.com
Website: www.boehringerlabs.com
Product line: Model 8800 adult handheld spirometer
Customer support: In-services available; toll-free support

Futuremed
15700 Devonshire St.
Granada Hills, CA 91344
(818) 830-2500; (800) 222-6780
Fax: (818) 891-4755
Email: info@futuremedamerica.com
Website: www.futuremedamerica.com
Product line: Portable and PC-based spirometers
Company description: For nearly 30 years, Futuremed has equipped health care professionals with spirometers, EKGs, and fluid warmers. The company also offers cost-effective filters, noseclips, mouthpieces, electrodes, and related supplies.

Jones Medical Instrument Co.
200 Windsor Dr.
Oak Brook, IL 60523
(630) 571-1980; (800) 323-7336
Fax: (630) 571-2023
Email: info@jonesmedical.com
Website: www.jonesmedical.com
Product line: Satellite, Satellite/Base Station, Satellite Plus, Flow-Volume calibrator
Customer support: On-site training and installation included; direct access to toll-free customer service; online 24/7 product training video.
Company description: Jones Medical has more than 90 years of spirometry design and manufacturing experience.

Medical Graphics Corp.
350 Oak Grove Pkwy.
St. Paul, MN 55127
(651) 484-4874; (800) 950-5597
Fax: (651) 484-8941
Website: www.medgraphics.com
Product line: CPFS/D USB spirometers
Customer support: CD-based training; training manual; quickstart guide; operator manual; phone support

Company description: Medical Graphics Corp. designs, manufactures, and distributes noninvasive cardio-respiratory diagnostic systems for medical and fitness management. Its patented technology is sold globally to hospitals, clinics, and physician offices.

Micro Direct Inc.
803 Webster St.
Lewiston, ME 04240
(207) 786-7808; (800) 588-3381
Fax: (207) 786-7280
Email: sales@micro-direct.com
Website: www.micro-direct.com
Product line: MicroLab, MicroLoop, SpiroUSB, MicroDL, MicroGP, MicroPlus, Micro spirometers plus a full line of disposable mouthpieces, viral/bacterial filters, and printer paper
Customer support: On-site in-service is available if necessary; telephone support from a staff with more than 100 years of spirometry experience
Company description: Micro Direct offers total spirometry solutions with seven different models, priced from $395 to $2,395, all designed to meet your specific needs.

ndd Medical Technologies Inc.
2 Dundee Park
Andover, MA 01810
(978) 470-0923; (877) 904-0090
Fax: (978) 470-0924
Email: salessupport@nddmed.com
Website: www.nddmed.com
Product line: Spirometry
Company description: ndd strives to set new standards in pulmonary function testing and to offer easy-to-use products with excellent customer service.

nSpire Health Inc.
1830 Lefthand Circle
Longmont, CO 80501
(303) 666-5555; (800) 574-7374
Fax: (303) 666-5588
Email: sales@nspirehealth.com
Website: www.nspirehealth.com
Product line: KoKo spirometers, HDpft 1000, ZAN100
Company description: nSpire Health develops and manufactures respiratory care products and provides related services. It is focused on cardiopulmonary diagnostics, respiratory core lab services, and disease management solutions.

QRS Diagnostic
14755 27th Ave. N.
Plymouth, MN 55447
(763) 559-8492; (800) 465-8408
Fax: (763) 559-2961
Email: info@qrsdiagnostic.com
Website: www.qrsdiagnostic.com
Product line: SpiroCard PC-based spirometer; SpirOxCard PC-based spirometer/pulseoximeter; Sensaire handheld spirometer
Customer support: One year free technical support; software upgrades and training
Company description: QRS manufactures and resells PC-based medical devices. Its product line includes PC-based EKG, spirometry, pulse oximetry, blood pressure, and ultrasound and vitals.

SDI Diagnostics Inc.
10 Hampden Dr.
Easton, MA 02375
(508) 238-7033; (800) 678-5782
Fax: (508) 230-8497
Email: sales@sdidiagnostics.com
Website: www.sdidiagnostics.com
Product line: Astra100, Astra200, Astra300, Spirolab II spirometers; Pulmoguard line of PFT barrier filters; FloSense pneumotachs for P-B spirometers; Filtrette filters for ndd spirometers
Customer support: Phone in-service from factory technicians; online and phone guidance and support available 8 a.m. – 6 p.m. M-F; manufacturer representatives available in many parts of the U.S.
Company description: SDI Diagnostics manufactures and distributes spirometers and consumable products used in respiratory care.

Smiths Medical PM Inc.
N7W22025 Johnson Dr.
Waukesha, WI 53186
(262) 542-3100; (800) 558-2345
Fax: (262) 542-0718
Email: info.pm@smiths-medical.com
Website: www.smiths-medical.com/bci
Product line: spirobank G, spirobank II, spirotel, spirolab III, MiniSpir, winspiroPRO software
Customer support: Training/CD; CE programs; clinical/technical support; online software upgrades; product support materials

Company description: Smiths Medical designs, manufactures, and distributes the BCI® brand of patient monitoring equipment, and distributes a line of easy-to-operate, patient-friendly spirometers.

Vitalograph Inc.
13310 W. 99th St.
Lenexa, KS 66215
(913) 888-4221; (800) 255-6626
Fax: (913) 888-4259
Email: vitcs@vitalograph.com
Website: www.vitalograph.com
Product line: Spirometers, peak flow meters, consumables
Company description: Vitalograph has more than 40 years experience designing, manufacturing, and selling spirometry, asthma management, and smoking cessation equipment and accessories.

Hans Rudolph Inc.
8325 Cole Pkwy.
Shawnee, KS 66227
(913) 422-7788; (800) 456-6695
Fax: (913) 422-3337
Email: hri@rudolphkc.com
Website: www.rudolphkc.com
Product line: Respiratory and sleep products; volume calibration syringes
Company description: Hans Rudolph manufactures spirometry accessories, respiratory masks, valves for CPAP, bilevel, NIV, PFT, HBO₂T, and offers new full face, silicone, rubber V2 masks.

MVAP Medical Supplies Inc.
1415 Lawrence Dr.
Newbury Park, CA 91320
(805) 376-8100; (877) 735-6827
Fax: (877) 735-7213
Email: info@mvapmed.com
Website: www.mvapmed.com
Product line: Respiratory and sleep products; disposables
Customer support: Phone and online support — 8 a.m. to 5 p.m. (PST) Monday to Friday
Company description: MVAP Medical Supplies Inc. offers a complete line of respiratory and sleep supplies.

Company name	Boehringer Laboratories	Futuremed			Jones Medical Instrument Co.			Medical Graphics Corp.	Micro Direct Inc.
Spirometer model/name	Model 8800	Discovery-2	P8000-PowerComboECG-Spirometer	SpiroVision-3+	Satellite	Satellite/Base Station	Satellite Plus	CPFS/D USB	MicroDL
Handheld, desktop, or laptop	Handheld	Desktop, laptop	Desktop	Handheld, desktop, laptop	Handheld	Handheld, desktop	Handheld	Desktop, laptop	Handheld
Warranty/cost	One year/$1,285.90	Two years	Two years	One year	Three years parts and labor/$1,495	Three years parts and labor/$1,995	Three years parts and labor/$1,595	One year/$1,256	Three years parts and labor/$995
Dimensions (H x W x D) in inches	3.25 x 2.25 x 1.5	7.8 x 9.4 x 3	15 x 13 x 3.9	6 x 2 x 1.8	7.5 x 3.75 x 2	3 x 10 x 9	7.5 x 3.75 x 2	3 x 3 x 6	2 x 2.5 x 6.5
Weight (computer excluded)	12 oz.	2.6 lb.	8.8 lb.	2.8 oz.	1 lb.	4 lb.	1 lb.	1.25 lb.	8 oz.
Display	Analog	Backlit color LCD	Backlit LCD	Real time, on VGA or laptop monitor	LCD	LCD	LCD	Computer monitor	0.5" x 2" LCD
Power source(s)	n/a	AC/DC, rechargeable NiMh battery	AC/DC (rechargeable lead acid)	Powered through PC	Rechargeable batteries	Rechargeable batteries for handheld; 110V for base station	Rechargeable batteries	USB port	9V battery
Measurement method	Turbine (rotating vane)	Turbine (rotating vane)	Fleisch	Turbine (rotating vane)	Multi-stage fixed orifice	Multi-stage fixed orifice	Multi-stage fixed orifice	Pitot tube	Turbine (rotating vane)
Calibration syringe (3.0 L)/cost	No	Yes	Yes	Yes	No	No	No	Yes/$464	No
Incentive monitor	n/a	Bubbles pediatric cartoon		Bubbles pediatric incentive				Four selectable graphs	
Flow sensors									
Permanent	X	X						X	X
Disposable/cost for box of 100			$300		$129	$129	$129	Can be reused or used with a filter	
Reference values									
Predicted normals		NHANES III, ITS, Knudson, Morris, Bass, ERS, LAM, Cutierrez, Zapletal, and more	Crapo, Morris, Polgar, Knudson76, ERS, and more	Knudson, NHANES III, ITS, ECCS83 (ERS93), and other predicted sets	Morris, Crapo, Knudson, Polgar, NHANES III	Morris, Crapo, Knudson, Polgar, NHANES III	Morris, Crapo, Knudson, Polgar, NHANES III	User-selectable-28 spirometry authors	Knudson, ECCS
Default value, adults					NHANES III	NHANES III	NHANES III	NHANES III	Knudson
Default value, pediatrics					NHANES III	NHANES III	NHANES III	Knudson/Zapletal	Knudson
Parameters measured									
FVC	X	X	X	X	X	X	X	X	X
FEV$_1$/FEV$_6$ with NHANES LLN		X		X	X	X	X	X	X
FIVC		X	X	X	X	X	X	X	
Can FIVC be performed separately from FVC?		Yes	Yes	Yes	No	No	No		Yes
Slow VC (SVC, TV, and IC, up to 30 secs.)	X	X	X	X				X	
MCT (inhalation challenges)		X	X	X				X	
MVV (15 seconds)		X	X	X				X	
Post-BD comparisons (bronchodilator response)	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
FVC quality checks									
BEV		X	X	X	X	X	X	X	
PEFT		X	X	X	X	X	X	X	
Cough		X	X	X	X	X	X	X	X
FET		X	X	X	X	X	X	X	X
EOTV		X	X	X	X	X	X	X	X
dFEV$_1$		X	X	X	X	X	X	X	X
dFVC		X	X	X	X	X	X	X	X
dPEF		X	X	X	X	X	X	X	
Features									
Graphs	Volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time
Storage capacity	1	200-plus with ability to store more on PC	40	Thousands using PC hard drive	25	25	25	Unlimited	500
Database format	n/a	Microsoft Access		Proprietary; can be exported to other formats	Proprietary	Proprietary	Proprietary	Microsoft Access, SQL	Microsoft Access, SQL
Interface/output	n/a	USB and serial to PC	Interface for external printer or VGA monitor	USB				USB	RS232
Printer type/printout width	n/a	External; integrated-thermal/4.5 in.	External; integrated - thermal/8.5 x 11 in.	External	External	Integrated - thermal/8.5 x 11 in.	External	External	External
Other features	Guaranteed for FVC maneuvers; turbine can be sterilized; interchangeable counter and turbine reduce cost; no mercury seals	Real-time, side-by-side display of F/V and T/V graphs; alphanumeric keyboard; software included for file archiving and/or performing tests directly on PC in real time; optional pulse ox and airway resistance		Operator can add predicted normals sets or modify existing ones; customizable reports, trend graphs, and network compatibility	Inexpensive disposable sensors; lifetime software upgrades; made in the U.S.	Inexpensive disposable sensors minimize cost; fast print and test speed; lifetime software upgrades; made in the U.S.	Inexpensive disposable sensors; lifetime software upgrades; made in the U.S.	Meets or exceeds ATS/ERS standards; real-time F/V and V/T graphs; HIPAA security; networking; database queries; bronchial provocation; pulmonary consults; trend and disability reports	Spida 5 PC software and hard plastic carry case included; choice of disposable mouthpieces or filters

	Micro Direct Inc.					ndd Medical Technologies	nSpire Health Inc.		
Spirometer model/name	MicroGP	MicroLab	MicroLoop	MicroPlus	SpiroUSB	EasyOne	KoKo PFT	KoKo Legend	KoKo Trek
Handheld, desktop, or laptop	Handheld	Desktop	Handheld	Handheld	Laptop	Handheld	Laptop	Desktop	Laptop
Warranty/cost	Three years parts and labor/$795	Three years parts and labor/$2,395	Three years parts and labor/$1,995	Three years parts and labor/$595	Three years parts and labor/$1,595	Three years/$1,890	One year parts and labor/$2,495	One year parts and labor/$1,995	One year parts and labor/$1,795
Dimensions (H x W x D) in inches	2 x 2.5 x 6.5	1.37 x 4.72 x 10	4.5 x 3 x 1	2 x 2.5 x 6.5	1.9 x 2.3 x 3.5	3.3 x 6.2 x 1.7	7.1 x 3.9 x 2	9.25 x 10 x 2.75	7.1 x 3.9 x 2
Weight (computer excluded)	8 oz.	1.5 lb.	6.75 oz.	8 oz.	4 oz. (flow head only)	9 oz.	0.7 lb.	3.6 lb.	0.7 lb.
Display	0.5" x 2" LCD	Color touchscreen	Color touchscreen	0.5" x 2" LCD	Laptop or computer screen	64 x 160	Computer	Touchscreen high-resolution color LCD 320 x 240 pixels	Computer
Power source(s)	9V battery	AC, rechargeable NiMH battery	AC, rechargeable lithium polymer battery	9V battery	Laptop or computer	Two AA batteries	Computer, USB	Rechargeable battery/AC	Computer USB
Measurement method	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Ultrasonic	Fleisch	Variable orifice	Fleisch
Calibration syringe (3.0 L)/cost	No	No	No	No	No	Yes/$325	Yes/$290	Yes/$350	Yes/$290
Incentive monitor						Yes	Four graphic incentives (candles, three pigs, brick wall, sailboat)	Sailboat, candles	Four graphic incentives (candles, three pigs, brick wall, sailboat)
Flow sensors									
Permanent	X	X	X	X	X		X	X	X
Disposable/cost for box of 100						$185			
Reference values									
Predicted normals	Knudson, ECCS	User-selectable, 16 authors	User-selectable, 16 authors		User-selectable, 16 authors	NHANES III, Knudson, Crapo, Morris, Cherniak, ERS (ECCS), ROCA, Austria, Zapletal, Dockery, Hsu, Polgar	28 sets, including NHANES III, Wang, Polgar, Crapo, Knudson, ECSC	14 sets, including NHANES III, Wang, Crapo, ECSC/ERS	28 sets, including NHANES III, Wang, Polgar, Crapo, Knudson, ECSC
Default value, adults	Knudson	NHANES III	NHANES III			NHANES III	NHANES III	NHANES III	NHANES III
Default value, pediatrics	Knudson	NHANES III	NHANES III			None	Wang	Wang	Wang
Parameters measured									
FVC	X	X	X	X	X	X	FVC	X	X
FEV_1/FEV_6 with NHANES LLN	X	X	X	X	X	X	X	X	X
FIVC		X	X		X	X	FIVC	X	X
Can FIVC be performed separately from FVC?		No	No		No		No	No	No
Slow VC (SVC, TV, and IC, up to 30 seconds)		X	X		X	X	Slow VC	X	
MCT (inhalation challenges)							X		
MVV (15 seconds)						X	MVV		
Post-BD comparisons (bronchodilator response)	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
FVC quality checks									
BEV		X	X		X	X	X	X	X
PEFT						X	X	X	X
Cough		X	X		X	X	X	X	X
FET		X	X		X	X	FET	X	X
EOTV						X	EOTV	X	X
$dFEV_1$						X	dX	X	X
dFVC						X	dX	X	X
dPEF						X	dX	X	X
Features									
Graphs	Flow-volume	Flow-volume, volume-time	Flow-volume, volume-time		Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time
Storage capacity		200	2,000		Unlimited (based on PC)	8	8	8	8
Database format		Microsoft Access, SQL	Microsoft Access, SQL		Microsoft Access, SQL	Microsoft Access	Proprietary, MS-SQL if transmitted to centralized Raptor database	Proprietary	Proprietary
Interface/output	RS232	USB	USB	RS232	USB	USB	USB	USB	USB
Printer type/printout width	External	External; integrated - thermal/4.25 in.	External		External	External	External	External; integrated - thermal/4.5 in.	External
Other features	Hard plastic carry case included; optional PC software; choice of disposable mouthpieces or filters	Spida 5 PC software and hard plastic carry case included; meets 2005 ATS/ERS standards; choice of disposable mouthpieces or filters	Spida 5 PC software and hard plastic carry case included; meets 2005 ATS/ERS standards; choice of disposable mouthpieces or filters	Can measure PEF and FEF_{25-75}; hard plastic carry case and predicted normals slide rule included; choice of disposable mouthpieces or filters	Comes with hard plastic carry case, desk stand for flow sensor head, and choice of disposable mouthpieces or filters	Pediatric incentives	Interfaces to EMR via HL7; allows comparison to best historical test; trend reports; report designer	Can automatically send tests to KoKo PFT software; internal software screens in 11 languages	iTrend reports

Company name	nSpire Health Inc.	QRS Diagnostic			SDI Diagnostics Inc.				Smiths Medical PM Inc.
Spirometer model/name	HDpft1000	Sensaire	SpiroCard	SpirOxCard	Astra100	Astra200	Astra300 Touchscreen	Spirolab II Multifunction	spirobank™ G
Handheld, desktop, or laptop	Laptop	Handheld	Laptop	Laptop	Handheld	Handheld	Handheld	Desktop	Handheld
Warranty/cost	One year parts and labor/$2,495	Three years/$1,995	Three years/$1,495	Three years/$1,995	Two years/$995	Two years/$1,459	Two years/$1,795	One year/$2,429	One year/$1,386
Dimensions (H x W x D) in inches	7.1 x 3.9 x 2	7 x 3.25 x 1.6	0.63 x 2.2 x 5.5	1 x 2.2 x 5.5	3.25 x 5.75 x 1.75	3.25 x 5.75 x 1.75	3.25 x 5.75 x 1.75	2.63 x 12 x 7.75	1.3 x 1.9 x 6.4
Weight (computer excluded)	0.7 lb.	0.79 lb.	0.12 lb.	0.19 lb.	9 oz.	9 oz.	9 oz.	4 lb.	6.3 oz. with battery
Display	CRT	LCD	PC monitor	PC monitor	LCD	LCD	Alphanumeric LCD	FSTN LED 240 x 320	Graphic LCD, 120 x 32 pixel
Power source(s)	USB	Rechargeable battery	PC	PC	Two AA alkaline or NiMH batteries	Two AA alkaline or NiMH batteries	Two AA alkaline or NiMH batteries	120VAC, rechargeable NiMH battery	9V, DC (PP3 battery)
Measurement method	Fleisch	Pneumotach	Pnuemotach	Pnuemotach	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)
Calibration syringe (3.0 L)/cost	Yes/$350	Yes/$345	Yes/$345	Yes/$345	Yes/$345	Yes/$345	Yes/$345	Yes/$345	No
Incentive monitor	None	Adult, pediatric	Adult, pediatric	Adult, pediatric			Incentive in AstraPro software	Incentive in winspiroPro software	
Flow sensors									
Permanent	X				X	X	X	X	Turbines
Disposable/cost for box of 100		$195	$195	$195					Turbines/$260
Reference values									
Predicted normals	28 sets, including NHANES III, Wang, Polgar, Crapo, Knudson, ECSC	Crapo, Cherniack, Morris, Knudson 1983, Polgar, Hsu, Roberts, Warwick, ECCS/ERS	Crapo, Cherniack, Morris, Knudson, Polgar, Hsu, Roberts, Warwick, ECCS/ERS, NHANES III, Zapletal, Quanjer, Wang	Crapo, Cherniack, Morris, Knudson, Polgar, Hsu, Roberts, Warwick, ECCS/ERS, Zapletal, NHANES III, Quanjer, Wang	NHANES III	14 selectable, including Crapo, NHANES III, Knudson	14 selectable, including Crapo, NHANES III, Knudson	Five selectable, including Knudson, Morris, Crapo	
Default value, adults	NHANES III	Crapo	NHANES III	NHANES III	NHANES III	Selectable	Selectable	Selectable	Knudson, ERS, Crapo, Bass, Morris
Default value, pediatrics	Wang		NHANES III and Wang	NHANES III and Wang	Polgar	Polgar	Selectable	Selectable	Knudson
Parameters measured									
FVC	X	X	X	X	X	X	X	X	X
FEV$_1$/FEV$_6$ with NHANES LLN	X	X	X	X	X	X	X	X	
FIVC	X	X	X	X		X	X	X	
Can FIVC be performed separately from FVC?	Yes					No	No	No	
Slow VC (SVC, TV, and IC, up to 30 seconds)	X	X	X	X		X	X	X	X
MCT (inhalation challenges)	X					X	X	X	X
MVV (15 seconds)	X	X	X	X		X	X	X	X
Post-BD comparisons (bronchodilator response)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
FVC quality checks									
BEV	X		X		X	X	X	X	X
PEFT	X		X		X	X	X	X	X
Cough	X				X	X	X	X	X
FET	X		X	X	X	X	X	X	X
EOTV	X		X	X	X	X	X	X	X
dFEV$_1$	X				X	X	X	X	
dFVC	X		X	X	X	X	X	X	
dPEF	X		X	X	X	X	X	X	
Features									
Graphs	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume; flow-volume and volume-time with software
Storage capacity	8	300	Unlimited	Unlimited	1	5	5	8	100
Database format	MS-SQL	Proprietary	SQL	SQL		Proprietary	Proprietary	Microsoft Access, proprietary	Propriety, can be converted to MS Access
Interface/output	HL7, XML				USB2	USB2 to printer/PC, Bluetooth® to PC optional	USB2 to printer/PC, Bluetooth® to PC optional	Serial to PC	RS232 to USB
Printer type/printout width	External	External	External	External	External	External	External	External; integrated-thermal/4.25in.	External
Other features	Interfaces to EMR via HL7; allows comparison to best historical test; trend reports; report designer	Patented pre-calibrated mouthpiece; 25-plus parameters; plain paper reports	ATS/ERS 2005; pre-calibrated mouthpiece; lung age; 25-plus parameters; 12-plus predicted norms; plain paper reports; integrates with EMRs; connects via PC card or USB port	ATS/ERS 2005; pre-calibrated mouthpiece; 25-plus parameters; 12-plus predicted norms; plain paper reports; integrates with EMRs; connects via PC card or USB port; records SpO$_2$	Entry-level spirometry using NLHEP guidelines; AccuFlo digital turbine virtually elimates the need for calibration	Allows user to configure the spirometer based on facility's needs; all Astras feature tidal breathing prior to testing	Offers a high degree of configuration; touchscreen allows easy navigation; features tidal breathing prior to testing	Offers large-screen viewing and an alphanumeric keyboard; tidal breathing before testing designed for easy patient cooperation; portable	Software and cable included with device; automatic BTPS conversion

Company name	Smiths Medical PM Inc.				Vitalograph Inc.				
Spirometer model/name	spirobank II™	spirotel®	Spirolab® III	MiniSpir™	2120 Recording Spirometer	ALPHA Screening Spirometer	Micro Handheld	Spirotrac 6800 PC Spirometry System	Vitalograph Compact
Handheld, desktop, or laptop	Handheld	Handheld	Desktop	Laptop	Handheld, desktop	Desktop	Desktop	Laptop	Desktop
Warranty/cost	One year/$1,819	One year/$856	One year/$2,488	One year/$1,177	One year - renewable to five years/$2,142	One year - renewable to five years/$1,950	Five years/$579	One year - renewable to five years/$2,116	One year - renewable to five years/$2,950
Dimensions (H x W x D) in inches	1.2 x 2.4 x 5.8	1.2 x 3.1 x 2.8	2.6 x 8.7 x 2.2	1 x 2 x 5	10.62 x 9.75 x 6.75	12 x 10 x 4.75	6 x 3 x 1.5	6.5 x 6.5 x 6.5	19.75 x 11.5 x 4.75
Weight (computer excluded)	6.35 oz.	3.53 oz. with battery	4.2 lb.	2.12 oz.	4 lb. (with cradle)	4 lb. 7 oz.	5.8 oz.	1 lb. 6 oz. (flow head)	5 lb.
Display	STW graphic, 128 x 64 pixel	STW LCD, 2 lines x 16 alphanumeric characters	FSTW graphic, 320 x 240 pixel		LCD	Color LCD	LCD	PC monitor	Color LCD
Power source(s)	4 x 1.5 V, AAA battery	3V lithium battery CR123A	Rechargeable battery and main power	Line-powered from USB port	110V mains power	110V mains power and rechargeable battery	9V battery	110V mains power	110V mains power
Measurement method	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Turbine (rotating vane)	Fleisch	Fleisch	Fleisch	Fleisch	Fleisch
Calibration syringe (3.0 L)/cost	No	No	No	No	Yes/$509	Yes/$509	Yes/$509	Yes/$509	Yes/$509
Incentive monitor				Pediatric incentive animations				Several available	Several available
Flow sensors									
Permanent	Turbines	X	Turbines	Turbines	X	X	X	X	X
Disposable/cost for box of 100	Turbines/$260		Turbines/$260	Turbines/$260					
Reference values									
Predicted normals					Several available	Several available	n/a	Several available	Several available
Default value, adults	Knudson, ERS, MC-Barcelona, NHANES		Knudson, ERS, MC-Barcelona		Several available	Several available	n/a	Several available	Several available
Default value, pediatrics	Knudson, Zapletal		Knudson, Zapletal		Several available	Several available	n/a	Several available	Several available
Parameters measured									
FVC	X	X	X	X	X	X	X	X	X
FEV_1/FEV_6 with NHANES LLN	X	X			X	X		X	X
FIVC					X	X		X	X
Can FIVC be performed separately from FVC?					No	No	No	No	No
Slow VC (SVC, TV, and IC, up to 30 seconds)	X		X	X					
MCT (inhalation challenges)	X	X	X	X	X			X	X
MVV (15 seconds)	X	X	X	X	X			X	X
Post-BD comparisons (bronchodilator response)	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
FVC quality checks									
BEV	X	X	X	X	X	X	X	X	X
PEFT	X	X	X	X	X	X	X	X	X
Cough	X	X	X	X	X	X	X	X	X
FET	X		X	X	X	X	X	X	X
EOTV	X		X	X	X	X	X	X	X
$dFEV_1$					X	X	X	X	X
dFVC					X	X	X	X	X
dPEF					X	X	X	X	X
Features									
Graphs	Flow-volume; flow-volume and volume-time with software		Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time	Flow-volume, volume-time		Flow-volume, volume-time	Flow-volume, volume-time
Storage capacity	6,000 tests; 1,000 hours oximeter option	100	6,000 tests; 1,000 hours oximeter data	Based on computer memory	160	9		Database, hard-drive dependent	Thousands
Database format	Propriety, can be converted to MS Access/Excel	Propriety, can be converted to MS Access/Excel	Propriety, can be converted to MS Access/Excel	Propriety, can be converted to MS Access/Excel				Paradox	
Interface/output	USB	RS232	USB	USB	USB	USB		USB	USB
Printer type/printout width	External	External	External (Bluetooth®, PC app); integrated - thermal/4.41 in.	External	External	Integrated - thermal	Integrated - thermal	External	External; integrated-thermal
Other features	Automatic BTPS conversion; Bluetooth® printing; acoustic data transmission; patient name/ID; software; optional oximeter (6-minute walk oximetry analysis; overnight sleep screening analysis); USB cable	Optional SpO₂; automatic BTPS conversion; acoustic data transmission; up to five symptom questions; remote server transfer option; RS 232 to USB cables; software optional	Optional oximeter automatic BTPS conversion; software; USB cable; Bluetooth® printing; pediatric incentive animations; integration and electronic medical record	Automatic BTPS conversion; software; USB cable; integration and EMR; data and graphs export to email; automatic interpretations; no batteries	Patient ID and demographics stored; optional Spirotrac IV software provides interface with PC computer	Automatically selects best test; portable real-time curve visualization; durable carrying case; rechargeable battery for off-site testing	Conforms to all spirometry standards; rapid bedside and office screening	Stand-alone or network systems; built-in ATS criteria and waveforms; customizable reports; data export to spreadsheet; database or word processor application	Loaded with memory; on-screen introductory tutorial; portable