Spirolab Plus ESI

The evolution of desktop spirometry

ESI NEW | Wi-Fi NEW | Work List NEW | Wireless printing NEW

RFID Turbine NEW | EMR Integration | Oximetry OPTIONAL

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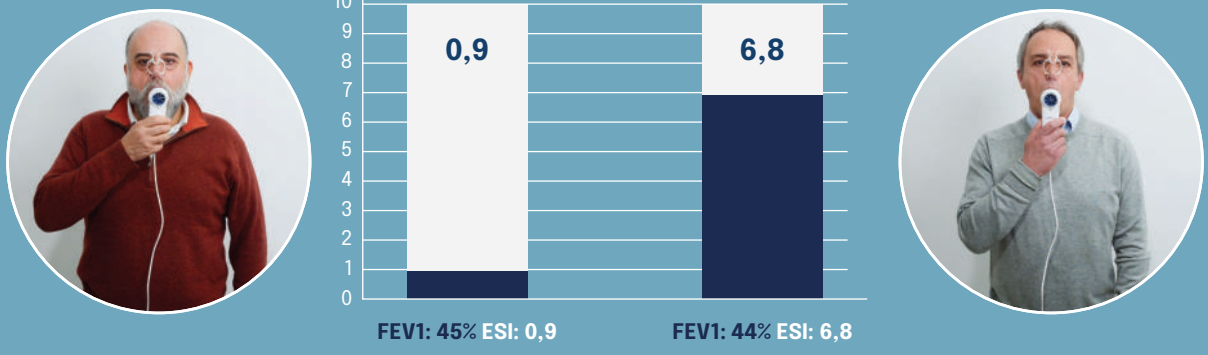
ESI - **E**mphysema **S**everity **I**ndex

ESI is the outcome of clinical research aimed to evaluate the relative contribution of emphysema to the airflow obstruction measured by standard spirometry.

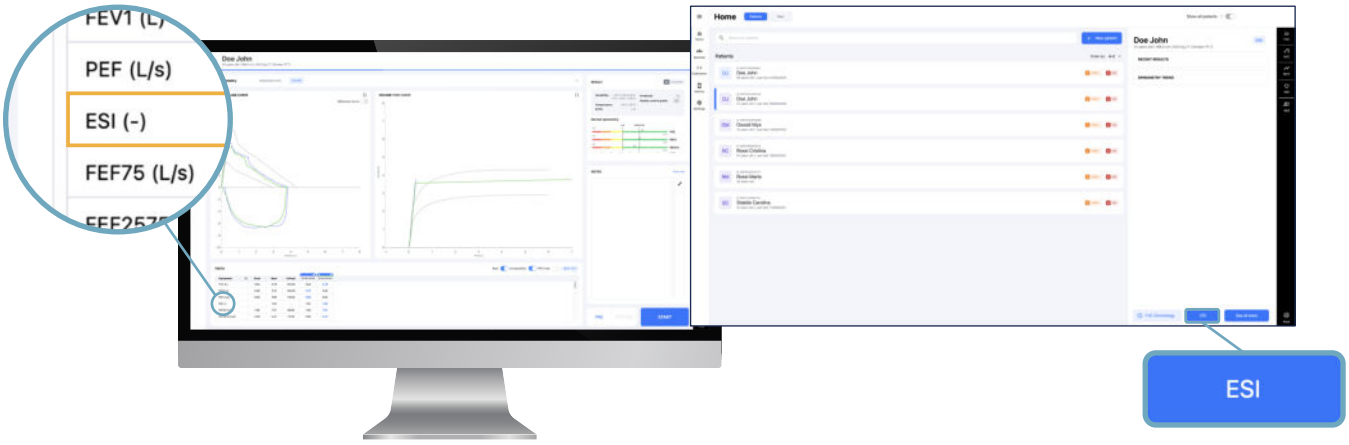
Identifying the cause of airway obstruction is crucial in the **diagnosis** and **treatment** of Chronic Obstructive Pulmonary Disease (COPD).

Preventive Precise Predictive Personalized

Very similar **FEV₁** % values can reflect very different underlying conditions



ESI makes this difference visible, supporting **targeted therapeutic strategies**



How it works

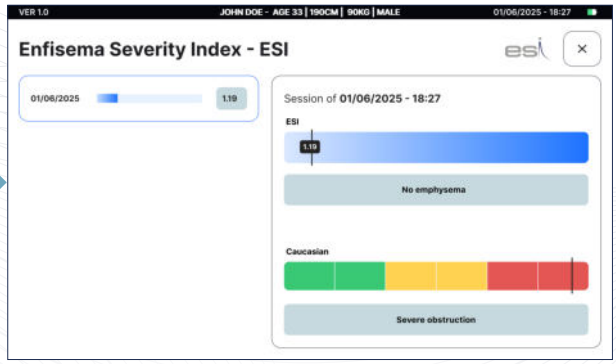
The mathematical model permits to evaluate the contribute of emphysema to the measured obstruction using as input variables: Peak Expiratory Flow (**PEF**), Forced Vital Capacity (**FVC**) and the Forced Expiratory Flows (**FEF**) at **25%**, **50%** e **75%** of **FVC**.

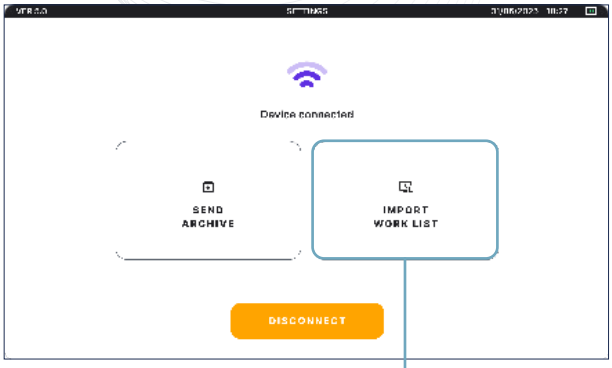
Discover more

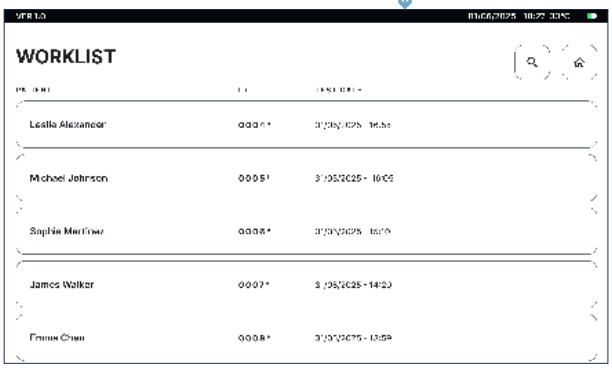
Distinctive features

ESI - **E**mphysema **S**everity **I**ndex NEW

Assess the presence and the severity of Emphysema through standard spirometry







Wi-Fi Connectivity NEW

- Connect with MIR Spiro software and EMR systems
- Import worklist
- Send test results back to MIR Spiro software (single test, completed session, or full device archive)
- Print reports directly via paired printers

Work List Management NEW

Import patient lists from MIR Spiro Software or EMR systems via Wi-Fi, Bluetooth, or USB

Embedded Thermal Printer

Integrated thermal printer for instant, detailed, and customizable test reports

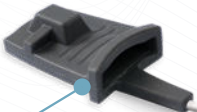
Up to 80–120 prints per roll for continuous workflow. Paper size: 112 mm. Paper weight: 56 g ± 4 g/m². Use of non-original MIR paper rolls or paper with a higher grammage than specified may permanently damage the printer

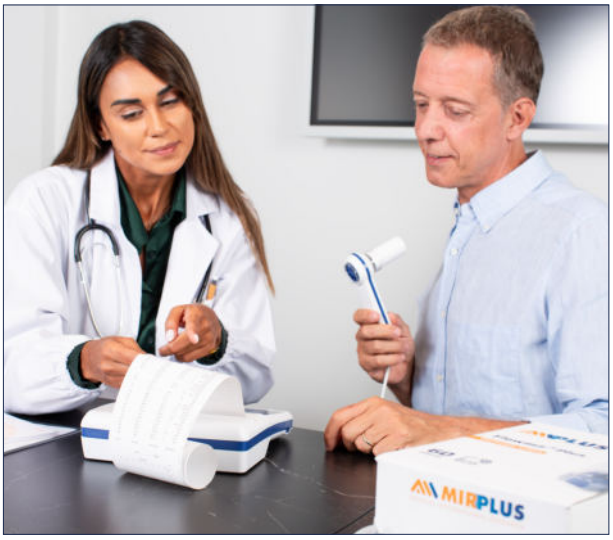
On-Device Calibration

Executable directly on device, with calibration report printable by the instrument

SpO2% Sensor OPTIONAL

Oximetry module for measuring blood oxygen saturation





Touchscreen Display

High-resolution (1024 × 600 px) display for enhanced data readability

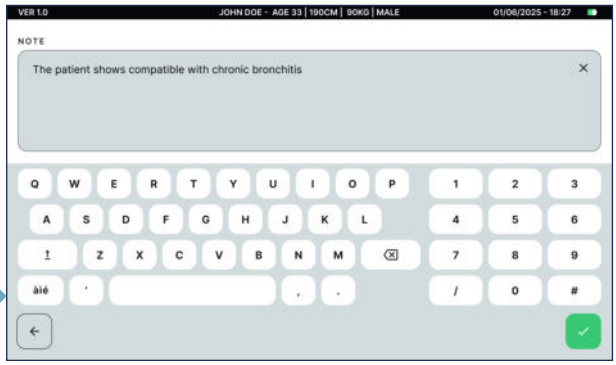
Other features

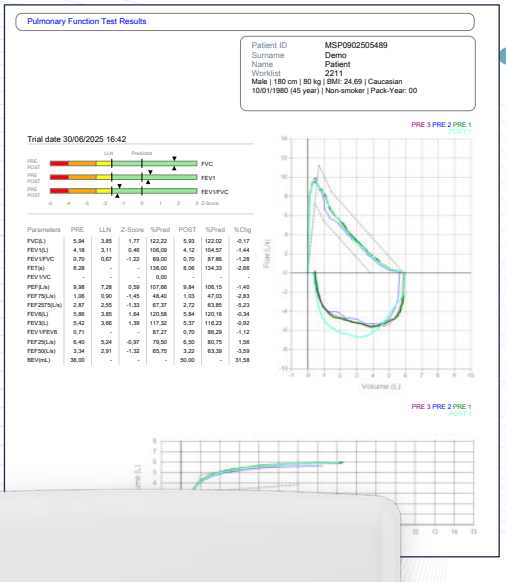
Interpretation Flexibility NEW

Supports **ATS/ERS 2019** and **ATS/ERS 2021** interpretative criteria, allowing physicians to switch according to their needs

Direct Test Annotations NEW

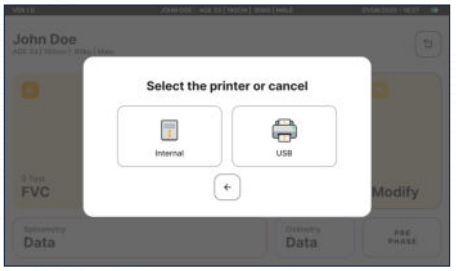
Add **clinical notes** to patient tests from the device





External Printing

Print reports directly via compatible PostScript printers using Wi-Fi or USB



EMR/EHR Integration

Integrates with EMR/EHR systems throug MIR Spiro Sofware using HL7, GDT, FHIR, and Exchange Protocol

Pediatric Incentive

Real-time animation on device display to improve patient cooperation during testing

Traffic Light System

Immediate visual feedback to support test quality and interpretation

Larger internal memory

Store up to **15,000** spirometry **tests** or **750 hours** of oximetry recordings

Predicted Values

Wide selection of predicted values, including GLI and ATS/ERS reference sets, available directly on the device and PC

Long-Lasting Rechargeable Battery

Extended autonomy in stand-alone mode

Integrated Temperature Sensor

Automatic BTPS conversion for accurate and standardized measurements

Supported tests

Spirometry: FVC, SVC, MVV, PRE/POST bronchodilator comparison

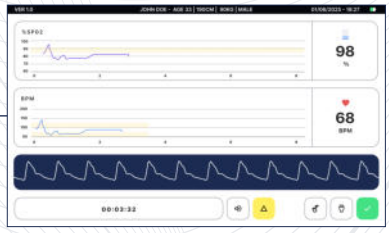
Oximetry (optional): Spot test (SpO2%, BPM)

Spirometry

FVC PRE Phase

FVC POST Phase

Oximetry



	Test Modules	Description	Parameters (From device in Stand Alone mode)	Parameters (From MIR Spiro software)	Onscreen Graphs
Spirometry	**FVC** (Forced Vital Capacity) + **PRE/POST** Bronchodilator	The total volume of air that can be exhaled during a maximal forced expiration effort.	FVC, FEV1, FEV1/FVC, *FVC, *PEF, *FEV1, FEV1/VC, PEF, ESI, FEF75, FEF2575, FEV6, FET, PEF Time, FEV0.5, FEV0.5/FVC, FEV0.75, FEV0.75/FVC, FEV2, FEV2/FVC, FEV3, FEV3/FVC, FEV1/FEV6, BEV, FIV1, PIF, FIF25, FIF50, FIF75, FEF25, ELA, MVV, FEV1/PEF, FEV1/FEV0.5, FIVC, FIV1/FIVC, EVC, FEF50, FEF50/FIF50, FEF75-85	FVC, FEV1, FEV1/FVC, PEF, ESI, FEF75, FEF2575, FET, FEV6, FEV3, FEV1/FEV6, FEF25, FEF50, FIVC, FIV1, FIV1/FIVC, PIF, FEV1/VC, , FEV3/FVC, ELA, PEF Time, FEV0.5, FEV0.5/FVC, FEV0.75, FEV0.75/FVC, FEV2, FEV2/FVC, FEF75-85, FIF25, FIF50, FIF75, R50, FEV1/PEF (EI), FEV1/FEV0.5 (RFEV), RFEV, BEV(mL), BEV/FVC	Flow / Volume Volume / Time
Spirometry	**SVC** (Slow Vital Capacity)	The total volume of air that can be exhaled during a normal expiration effort.	*VC, VC, IVC, IC, ERV, IRV,VE, RR, TV, TV/tI, tI, tE, tI/tTOT	EVC, IVC, IC, VC, ERV, TV, VE, RR, tI, tE, TV/tI, tI/tTOT, IRV, TE/Ti, MV	Volume / Time
Spirometry	**MVV** (Maximum Voluntary Ventilation)	Measures the greatest volume of air that can be inhaled and exhaled within one minute, assessing the overall capacity and endurance of the respiratory muscles.	MVV (measured), MVV (calculated)	MVV (measured), MVV (calculated)	Volume / Time
Oximetry	**SpO_2%, BPM**	Monitors the oxygen saturation level (SpO_2) and pulse rate, providing essential data on a patient's oxygenation status during rest or activity.	SpO2% [Baseline, Min, Max, Mean], Wrist Rate [Baseline, Min, Max, Mean], T90, T89, T88, T5, Index [12s], SpO2% Events, Wrist Rate Events [bradycardia, tachycardia], Tot Time, Measured Time	SpO2% [Baseline, Min, Max, Mean], Wrist Rate [Baseline, Min, Max, Mean], T90, T89, T88, T5, Index [12s], SpO2% Events, Wrist Rate Events [bradycardia, tachycardia], Tot Time, Measured Time	Plethysmographic curve

*Best Values

Compliance with guidelines and standards

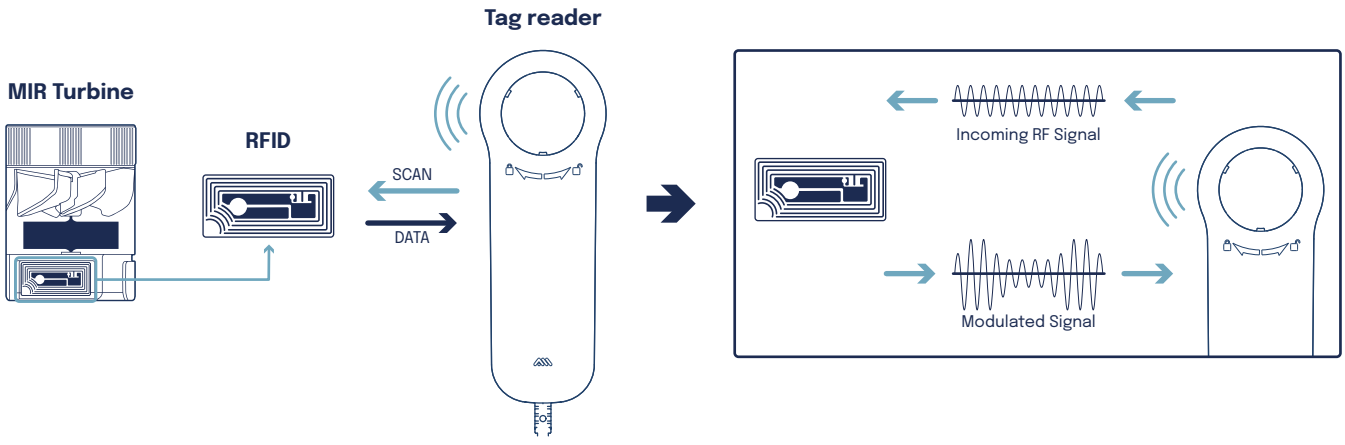
Spirometry: ATS/ERS 2019-2021; ISO 23747: 2015; ISO 26782: 2009
Oximetry: ISO 80601-2-61:2017

New Smart Technology

MIR Plus turbines feature **RFID technology** for automatic turbine identification on compatible Plus devices. The built-in **tag reader recognizes** the **turbine type** and read the **calibration data**, configuring the device accordingly and eliminating the need for manual selection.

This helps **reduce setup errors**, **streamline daily testing procedures**, and **support consistent performance** across measurements.

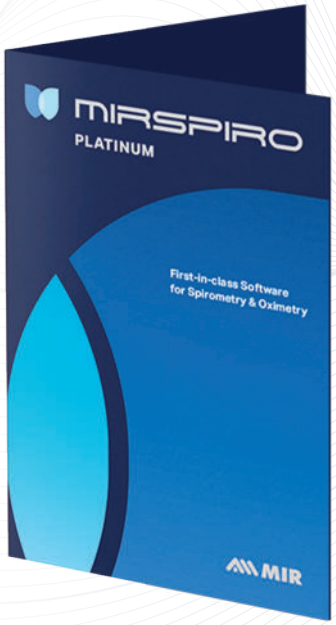
RFID: How it works



MIR Spiro Platinum

Comprehensive Software for Spirometry and Oximetry

1-year license always included with your purchase



Data Delivery Service

Exchange data without limits between MIR Spiro and external platforms such as Electronic Medical Records (EMRs) and clinical study environments

MIR Spiro Net

One single database, multiple devices. A shared database for all workstations on the same local network, designed for clinics, medical centers, and healthcare facilities

Evaluation support

Move beyond the data. For every spirometry session, MIR Spiro provides intelligent evaluation support, explaining the clinical reasoning behind each interpretation

Unlimited access to extra content and updates

Be amazed by innovation. Keep up with the latest trends

Discover more on our website

Comparison Matrix

Spirolab Plus ESI *Plus ESI Line*	**Spirolab Plus** *Plus Line*	**Spirolab** *Standard Line*
Display 7'' Touch 1024x600 pixels	**Display** 7'' Touch 1024x600 pixels	**Display** 7'' Touch 800x480 pixels
Wi-Fi connection • Import a patient worklist • Send test results back to the software • Print reports directly from a connected printer	**Wi-Fi connection** • Import a patient worklist • Send test results back to the software • Print reports directly from a connected printer	**Wi-Fi connection** No
EMR/EHR Integration Directly from device via Wi-Fi or through MIR Spiro Software	**EMR/EHR Integration** Directly from device via Wi-Fi or through MIR Spiro Software	**EMR/EHR Integration** From MIR Spiro Software
Data Delivery Service Service for data delivery from the device database to EMR/EHR	**Data Delivery Service** Service for data delivery from the device database to EMR/EHR	–
Bluetooth Bluetooth 5.0	**Bluetooth** Bluetooth 5.0	**Bluetooth** Bluetooth 4.0
Work List **Import** a **list of patients** created from **MIR Spiro Software** or from **EMRs** directly to the device and return test results	**Work List** **Import** a **list of patients** created from **MIR Spiro Software** or from **EMRs** directly to the device and return test results	–
Observations Ability to add comments to the patient's test	**Observations** Ability to add comments to the patient's test	–
Internal Storage 15K tests or 750 hours of oximetry	**Internal Storage** 15K tests or 750 hours of oximetry	**Internal Storage** 10K tests or 500 hours of oximetry
ESI Index Assessment of the presence and severity of pulmonary emphysema	–	–
Tag Reader Reading and identification of data from the RFID Tag	**Tag Reader** Reading and identification of data from the RFID Tag	–
Flowmir Plus RFID: • Automatic turbine type recognition • Calibration stored on RFID • Turbine traceability	**Flowmir Plus** RFID: • Automatic turbine type recognition • Calibration stored on RFID • Turbine traceability	**Flowmir**

Datasheet

cod. 914034 (spiro) cod. 914036 (spiro+oxy)

Size	212 x 241 x 85 mm
Weight	1450 g (battery pack included)
Sensors	·Miniflowmeter ESI (code 904028) for reusable and disposable turbine dimension (Ø 30 mm, 42 mm) ·Reusable soft, adult, MIR sensor for oximetry tests (code 919034_INV) only for Spirolab PLUS ESI with oximetry option
Power supply	Rechargeable battery and mains power Li-Ion, 4 elements
Battery capacity	5200 mAh
Consumption	In normal operation average 1.0µA
Batteries charger	Output voltage=12 V, current=2A, compliant with EN 60601-1
Autonomy	~8 hours
Connectivity	USB, Bluetooth® 5.1, Wi-Fi
Display	7 inch colour touch screen LCD Display with 1024*600 resolution
Keyboard	Absent, touchscreen
Mouthpiece	Ø 30 mm (1.18 inches)
Type of electrical protection	Internally powered Class II while charging battery
Safety level for shock hazard	Type BF Apparatus
Conditions of use	Apparatus for continuous use
Storage conditions	Temp: MIN -20°C, MAX+60°C Humidity: MIN 10% RH; MAX 95%RH
Transport conditions	Temp: MIN -20°C, MAX +60°C Humidity: MIN 10% RH; MAX 95%RH
Operating conditions	Temp: MIN +10°C, MAX +40°C Humidity: MIN 10% RH, MAX 95%RH
Degree of protection against water penetration	IPX2 appliance protected against water leaks

Spirometry

Flow sensor	bi-directional digital turbine
Volume rate	10 L
Flow range	±16L/s
Volume accuracy	±3% or 50mL
Flow accuracy	±5% or 200 mL/s
Volume resolution	0.01 L
Flow resolution	0.01 L/s
Dynamic resistance	<0.5 cm H2O/L/s
Temperature sensor	semiconductor (0-45°C)
Test available	FVC, VC, MVV, PRE-POST
Measured parameters	*FVC, *FEV1, *PEF, FVC, FEV1, FEV1/FVC, FEV1/VC, PEF, FEF25, FEF50, FEF75, FEF2575, FEF7585, ELA, BEV, FET, PEF Time, FEV0.5, FEV0.5/FVC, FEV0.75, FEV0.75/FVC, FEV2, FEV2/FVC, FEV3, FEV3/FVC, FEV6, FEV1/FEV6, FEV1/PEF, FEV1/FEV0.5, FIVC, FIV1, FIV1/FIVC, PIF, FIF25, FIF50, FIF75, FEF50/FIF50, MVVcalc, VC*, EVC, IVC, IC, ERV, IRV, SIT, SET, VE, RR, TV, TV/tI, tI, tE, tI/tTOT, MVV, ESI

Memory capacity	Up to 10000 tests

Oximetry
(on request)

Measurement method	Red and infrared absorption
SpO2% range	0-99%
SpO2% accuracy	± 2% between 70-99% SpO2%
Average number of heart beats for the SpO2% calculation	8 beats
Pulse Rate range	18-300 BPM
Pulse Rate accuracy	± 2BPM or 2% whichever is greater
Average interval for the calculation of cardiac pulse	8 seconds
Signal quality indication	0 - 8 segments on display
Test available	Spot
Measured parameters	SpO2% min, max, average BPM min, max, average Recording Time Analysis Time % Bradycardia Duration <40 BPM (T40) % Tachycardia Duration >120 BPM (T120) % of Time with SpO2 ≤ 90% (T90) % of Time with SpO2 ≤ 89% (T89) % of Time with SpO2 ≤ 5% of the mean value (T5)
Memory capacity	about 500 hours of oximetry

Datasheet

cod. 914030x (spiro) cod. 914032x (spiro+oxy)

Certificates and registrations

CE 2460	MDR 2017/745
FDA 510 (k)	K122334
EMDN liv.4	Z121501
CND Code	Z12150102 (spiro) Z1203020408 (spiro + oxy)
GMDN Code	46906 (spiro), 45607 (spiro + oxy)
Applied standards, guidelines and regulations	Regulation EU 2017/745 guidelines Directive 2011/65/UE ROHS II and regulations Directive 2015/863/UE ROHS III Directive 2014/53/UE RED Directive 2014/30/EU IEC 60601-1:2005+A1:2012+A2:2020 (Electrical Safety) IEC 60601-1-2:2014+AMD1:2020 (EMC) ATS/ERS Guidelines: 2005, 2019, 2021 update ISO 26782: 2009 ISO 23747: 2015 ISO 80601-2-61: 2017 EN ISO 14971:2019/A11:2021 ISO 10993-1: 2018 ISO 10993-5:2009 ISO 10993-10:2021 EN ISO 10993-23:2021 IEC 60601-1-9:2007+AMD1:2013+AMD2:2020 EN ISO 15223-1:2021 IEC 60601-1-6:2010+AMD1:2013+AMD2:2020 IEC 62366-1:2015 IEC 60601-1-8:2006+AMD1:2012+AMD2:2020 IEC 62304:2006+AMD1:2015 IEC 62311:2019