



PERRY JOHNSON LABORATORY ACCREDITATION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

ELETTRA S.r.l.

*Via F. Matteucci, 10, 50041 Calenzano (FI), Italy
Via Meucci, 93, 50041 Calenzano (FI), Italy*

*(Hereinafter called the Organization) and hereby declares that Organization is accredited
in accordance with the recognized International Standard:*

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the
operation of a laboratory quality management system
(as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Electrical Testing *(As detailed in the supplement)*

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen
President/Operations Manager

Initial Accreditation Date:

April 14, 2020

Issue Date:

April 14, 2020

Expiration Date:

June 30, 2022

Accreditation No.:

106573

Certificate No.:

L20-252

Perry Johnson Laboratory
Accreditation, Inc. (PJLA)
755 W. Big Beaver, Suite 1325
Troy, Michigan 48084

*The validity of this certificate is maintained through ongoing assessments based on a
continuous accreditation cycle. The validity of this certificate should be
confirmed through the PJLA website: www.pjilabs.com*



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Accreditation is granted to the facility to perform the following testing:

FIELD OF TEST	ITEMS, MATERIALS OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	RANGE (WHERE APPROPRIATE) AND DETECTION LIMIT
Electrical	Medical electrical equipment – Particular requirements for the basic safety and essential performance of nerve and muscle stimulators	General requirements (par. 201.4); General requirements for testing ME equipment (par. 201.5); Classification of ME equipment and ME systems (par. 201.6); ME equipment identification, marking and documents (par. 201.7); 201.12.4); Accuracy of controls and instruments and protection against hazardous outputs (par. 201.12)	IEC 60601–2–10:2012/A1:2016 EN 60601–2–10:2015/A1:2016	Voltage up to 1 000 V Currents up to 20 mA Frequency up to 10 MHz



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Electrical	Medical electrical equipment Part 2: Particular requirements for the basic safety and essential performance of high frequency surgical equipment and high frequency surgical accessories	201.4 General requirements 201.5 General requirements for testing of ME EQUIPMENT 201.6 Classification 201.7 ME EQUIPMENT identification, marking and documents 201.8 Protection against electrical HAZARDS from ME EQUIPMENT 201.9 Protection against MECHANICAL HAZARDS of ME EQUIPMENT and ME SYSTEMS 201.10 Protection against unwanted and excessive radiation HAZARDS 201.11 Protection against excessive temperatures and other HAZARDS 201.12 Accuracy of controls and instruments and protection against hazardous outputs 201.13 HAZARDOUS SITUATIONS and fault conditions for ME EQUIPMENT 201.15 Construction of ME EQUIPMENT 201.16 ME SYSTEMS	IEC 60601-2-2:2019/ EN 60601-2-2:218	Measurements with 500 V for Insulation resistance 1 MΩ up to 199 MΩ Defibrillator discharge test up to 2 kV High frequency leakage current up to 300 mA with frequency up to 10 MHz High frequency dielectric test with frequency 400 kHz and voltage up to 7 000 V peak Flexing test with angle ±45° High frequency output power up to 500 W frequency up to 10 MHz Continuity test with current up to 5 A



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Electrical tests	<p>Medical electrical equipment – Medical electrical equipment Part 2: Particular requirements for basic safety and essential performance of electrocardiographs</p> <p>Particular requirements for the basic safety and essential performance of electrocardiographic monitoring equipment</p> <p>Particular requirements for the basic safety and essential performance of ambulatory electrocardiographic systems</p>	<p>201.4 General requirements 201.5 General requirements for testing of ME EQUIPMENT . 201.6 Classification of ME EQUIPMENT and ME SYSTEMS 201.7 ME EQUIPMENT identification, marking and documents 201.8 Protection against electrical HAZARDS from ME EQUIPMENT 201.9 Protection against MECHANICAL HAZARDS of ME EQUIPMENT and ME SYSTEMS 201.10 Protection against unwanted and excessive radiation HAZARDS 201.11 Protection against excessive temperatures and other HAZARDS 201.12 Accuracy of controls and instruments and protection against hazardous outputs 201.13 HAZARDOUS SITUATIONS and fault conditions 201.14 PROGRAMMABLE ELECTRICAL MEDICAL SYSTEMS (PEMS) 201.15 Construction of ME EQUIPMENT</p>	<p>IEC 60601–2–25:2015 EN 60601–2–25:2015 IEC 60601–2–27:2011, EN 60601–2–27:2014 IEC 60601–2–47:2012/A1:2015; EN 60601–2–47:2015</p>	<p>Defibrillator discharge test up to 5 kV</p> <p>Accuracy tests with voltage AC from 0.5 mV to 1 V and DC from 0 V to 5 V</p>



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Electrical and Acoustic	Medical electrical equipment – General requirements for safety – Collateral standard: General requirements, tests and guidance for alarm systems in medical electrical equipment and medical electrical systems	4 General requirements 5 ME EQUIPMENT identification marking and documents 6 ALARM SYSTEMS 6.1 ALARM CONDITION 6.2 Disclosures for INTELLIGENT ALARM SYSTEM 6.3 Generation of ALARM SIGNALS 6.4 Disclosure of delays 6.5 ALARM PRESETS 6.6 ALARM LIMIT 6.7 ALARM SYSTEM security 6.8 ALARM SIGNAL inactivation states 6.9 ALARM RESET 6.10 NON-LATCHING and LATCHING ALARM SIGNALS 6.11 DISTRIBUTED ALARM SYSTEM 6.12 ALARM CONDITION logging	IEC 60601-1-8:2003 / A1:2006/A1:2012 EN 60601-1-8:2004 / A1:2006/A1:2013/ A11:2017	Acoustic noise up to 140 dBA Time interval 10 ms to 10 s



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Electrical and Mechanical	Medical electrical equipment – General requirements for basic safety and essential performance – Collateral standard: Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment	4 general requirements 4.1 additional requirements for supply mains 4.2 environmental conditions 5 general requirements for testing 6 classification 7 me equipment identification, marking and documents 8 protection against excessive temperatures and other hazards 8.5 additional requirements for an internal electrical power source 9 accuracy of controls and instruments and protection against hazardous outputs 10 construction of me equipment 10.1 additional requirements for mechanical strength 10.1.1 general requirements for mechanical strength 10.1.2 requirements for mechanical strength for non-transit-operable me equipment 10.1.3 requirements for mechanical strength for transit-operable me equipment 10.2 additional requirements for actuating parts of controls of me equipment 11 protection against strangulation or asphyxiation 12 additional requirements for electromagnetic emissions of me equipment and me systems 13 additional requirements for alarm systems of me equipment and me systems	IEC 60601-1-11:2010, IEC 60601-1-11:2015, EN 60601-1-11:2010, EN 60601-1-11:2015	Max acceleration 30 g Max sinusoidal force 6 670 N pk Max random force 5 340 N rms Mx Shock 50,8 mm.p.p. Max Speed 1.8 m/s pk Static load 160 Kg Climatic chamber: -50 °C to 70 °C Data Relative humidity from 10% to 95% IP grade IPX1 and IPX2 Power/current absorption up to 63 A 35 kW



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Electrical, Thermodynamic, Mechanical and Acoustic	Safety requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements Part 2-032: Particular requirements for hand-held and hand-manipulated current sensor for electrical test and measurement Part2-040: Particular requirements for sterilizers and washer-disinfectors used to treat medical materials Part2-051: Particular requirements for laboratory equipment for mixing and stirring Part2-101: Particular requirements for in vitro diagnostic (IVD) medical equipment Part2-033: Particular requirements for hand-held multimeters and other hand-held meters, for domestic and professional use, capable of measuring mains voltage Part 2-030:	4.4 Testing in SINGLE FAULT CONDITION 5 Marking and documentation 6 Protection against electric shock 7 Protection against mechanical HAZARDS . 8. Resistance to mechanical stresses 9 Protection against the spread of fire 10 Equipment temperature limits and resistance to heat 11 Protection against HAZARDS from fluids 12 Protection against radiation, including laser sources, and against sonic and 13 Protection against liberated gases and substances, explosion and implosion 14 Components and subassemblies 15 Protection by interlocks 16 HAZARDS resulting from	IEC 61010-1:2010/A1:2016 EN 61010-1:2010/A1:2019 IEC 61010-2-032:2012 EN 61010-2-032:2012 IEC 61010-2-040:2015; EN 61010-2-040:2015 IEC 61010-2-051:2015; IEC 61010-2-051:2018 EN 61010-2-051:2015 IEC 61010-2-101:2002; IEC 61010-2-101:2015 EN 61010-2-101:2002; EN 61010-2-101:2017; IEC 61010-2-101:2018 IEC 61010-2-033:2012; EN 61010-2-033:2012 IEC 61010-2-030:2010; IEC 61010-2-030/Ed1:2011 EN 61010-2-030:2010 IEC 61010-2-030:2017 IEC 61010-2-81:2015 EN 61010-2-81:2015; IEC 61010-2-081:2019	Visual examination Power/current absorption up to 63 A 35 kW Grounding and bonding Up to 12 V, current up to 60A; 0.01 Ω to 0.5 Ω Leakage current 2μ ÷ 5 000 mA Up to 95% of relative humidity Dielectric strength test: 500 V ÷ 30 kV/50 Hz-50 Hz Clearance, creepage 0.01 mm to 1 m Speed 0.1 m/s to 1 m/s Angle: 5° to 10° Force up to 250 N Acoustic noise up to 140 dBA Climatic chamber: -70 °C to 150 °C Data Recorder: -50 °C to 400 °C Fault condition up to 63 A Pull force up to 100 N; Torque 0.35 Nm Up to 1 J Drop up to 1m Pressure test up to 100 bar



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Electrical, Thermodynamic, Mechanical and Acoustic	Particular requirements for testing and measuring circuits Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes Part 2-020: Particular requirements for laboratory centrifuges Part 2-010: Particular requirements for laboratory equipment for the heating of materials	4.4 Testing in SINGLE FAULT CONDITION 5 Marking and documentation 6 Protection against electric shock 7 Protection against mechanical HAZARDS . 8. Resistance to mechanical stresses 9 Protection against the spread of fire 10 Equipment temperature limits and resistance to heat 11 Protection against HAZARDS from fluids 12 Protection against radiation, including laser sources, and against sonic and 13 Protection against liberated gases and substances, explosion and implosion 14 Components and subassemblies 15 Protection by interlocks 16 HAZARDS resulting from	IEC 61010-2-020:2006; EN 61010-2-020:2006 IEC 61010-2-020:2016; EN 61010-2-020:2016 IEC 61010-2-010:2014; EN 61010-2-010:2014	Visual examination Power/current absorption up to 63 A 35 kW Grounding and bonding Up to 12 V, current up to 60 A; 0.01 Ω to 0.5 Ω Leakage current 2μ ÷ 5 000 mA Up to 95% of relative humidity Dielectric strength test: 500 V ÷ 30 kV/50 Hz-50 Hz Clearance, creepage 0.01 mm to 1 m Speed 0.1 m/s to 1 m/s Angle: 5°to 10° Force up to 250 N Acoustic noise up to 140 dBA Climatic chamber: -70 °C to 150 °C Data Recorder: -50 °C to 400 °C Fault condition up to 63 A Pull force up to 100 N; Torque 0.35 Nm Up to 1 J Drop up to 1m Pressure test up to 100 bar



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Electrical, Thermodynamic, Mechanical and Acoustic	Audio/Video, information and communication technology equipment Part 1: safety requirements	4. General requirements 5 Electrically-caused injury 6 Electrically-caused fire 7 Injury caused by hazardous substances 8 Mechanically-caused injury 9 Thermal burn injury 10 Radiation	IEC 62368-1:2014/COR1:2015 EN 62368-1:2014/EC:2015 EN 62368-1/A11:2017-01; EN 62368-1/AC:2017-03.	Visual examination Power/current absorption up to 63 A 35 kW Grounding and bonding up to 12 V, current up to 60A; 0.01 Ω to 0.5 Ω Leakage current 2 μ ÷ 5 000 mA Up to 95% of relative humidity
	Medical electrical equipment – General requirements for basic safety and essential performance Particular requirements for basic safety and essential performance of medical beds	General requirements (par. 4); General requirements for testing ME equipment (par. 5); Classification of ME equipment and ME systems (par. 6); ME equipment identification, marking and documents (par. 201.7); Protection against electrical hazards from ME equipment (par.8) ; Protection against mechanical hazards of me equipment and me systems (par. 9); Excessive temperatures (par. 11); Accuracy of controls and instruments and protection against hazardous outputs (par. 12) Hazardous situations and fault conditions (par. 13); Construction of me equipment (par. 15); ME systems (par. 16)	IEC 60601–1:2005 / A1:2012, EN 60601–1:2006 / A11:2011 / A1:2013 / AC:2014/A12:2014 IEC 80601–2–60:2012; EN 80601–2–60:2015 IEC 60601–2–52:2009; EN 60601–2–52:2010	Dielectric strength test: 500V ÷ 30 kV/50 Hz–50 Hz Clearance, creepage 0.01 mm to 1 m Speed 0.1 m/s to 1m/s Angle: 5° to 10° Force up to 250 N Acoustic noise up to 140 dBA Climatic chamber: –70 °C to 150 °C Data Recorder: –50 °C to 400 °C Fault condition up to 63 A Pull force up to 100 N; Torque 0.35 Nm Up to 1 J Drop up to 1 m



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Electrical	Electrical lighting and similar equipment	Immunity tests to radiofrequency electromagnetic field; magnetic fields at mains frequency; injected currents; bursts, surge, dips, esd	IEC 61547:1995 / A1:2000, IEC 61547:2009, EN 61547:1995 / A1:2000, EN 61547:2009	Electromagnetic fields from 80 up to 2 700 MHz field 3 V/m Magnetic field at 50/60 Hz with level 3 A/m Rf currents from 150 kHz to 80 MHz with level 3 V
	Household appliances, electric tools and similar apparatus	Immunity tests to radiated em fields, conducted rf currents, burst, surge, ESD and dips Conducted emission tests	CISPR 14-2:1997 / A1:2001 / A2:2008; CISPR 14-2:2015; EN 55014-2:1997 + EC:1997 / A1:2001 + IS1:2007 / A2:2008; EN 55014-2:2015	Electromagnetic fields from 80 up to 1 000MHz field 3 V/m Rf currents from 150 kHz to 230 MHz with level up to 3 V Burst and fast transient up to 4 KV Surge up to 4 KV Esd up to 30 KV Conducted emissions in the frequency range 150 kHz-30 MHz Immunity to dips and voltage variations from 10 ms to 5 s



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Electrical	Electrical equipment for measurement, control and laboratory use	Immunity to electromagnetic radiated fields, injected rf currents, magnetic fields at mains frequency, burst, surge, ESD and dips Conducted emission tests	IEC 61326-1:2005, IEC 61326-1:2012, EN 61326-1:2006, EN 61326-1:2013	Electromagnetic fields from 80 up to 2 700 MHz field up to 10 V/m Rf currents from 150 kHz to 80 MHz with level up to 10 V Magnetic field at 50/60 Hz with level up to 30 A/m Burst and fast transient up to 4 KV Surge up to 4 KV Esd up to 30 KV Conducted emissions in the frequency range 150 kHz-30 MHz Immunity to dips and voltage variations from 10 ms to 5 s



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Electrical	Medical electrical equipment	Identification, marking and documents (5); Measurements of harmonic and flicker emissions and immunity tests to electromagnetic radiated fields, injected rf currents, magnetic fields at mains frequency, burst, surge, ESD and dips Conducted emission tests	IEC 60601-1-2:2001 / A1:2004, IEC 60601-1-2:2007, IEC 60601-1-2:2014, EN 60601-1-2:2001 / A1:2006, EN 60601-1-2:2007, EN 60601-1-2:2015	Electromagnetic fields from 80 MHz to 6 000 MHz field up to 28 V/m Rf currents from 150 kHz to 80 MHz with level up to 10 V Magnetic field at 50/60 Hz with level up to 30 A/m Burst and fast transient up to 4 KV Surge up to 4 KV Esd up to 30 KV Conducted emissions in the frequency range 150 kHz to 30 MHz Immunity to dips and voltage variations from 10 ms to 5 s



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Electromagnetic compatibility tests	Electrosensitive protective equipment	immunity tests to electromagnetic radiated fields, injected rf currents, magnetic fields at mains frequency, burst, surge, ESD and dips	IEC 61496-1:2004 / A1:2007, IEC 61496-1:2012, EN 61496-1:2004 / A1:2008, EN 61496-1:2013/AC:2015	Rf currents from 150 kHz to 80 MHz with level up to 20 V Magnetic field at 50/60 Hz with level up to 100 A/m Burst and fast transient up to 4 KV Surge up to 4 KV ESD up to 30 KV Conducted emissions in the frequency range 150 kHz to 30 MHz Immunity to dips and voltage variations from 10 ms to 5 s



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Electrical	Railway applications – Electromagnetic compatibility Part 4: Emission and immunity of the signaling and telecommunications apparatus	Immunity to electromagnetic fields (2.1, 2.2) Immunity to magnetic fields at line frequency (2.3); Immunity to radiofrequency common mode currents (3.1; 4.1; 5.1; 6.1) Immunity to burst, surge, ESD and dips Conducted emission test	EN 50121-4:2006, EN 50121-4:2015; EN 50121-4:2016	Electromagnetic fields from 80 MHz to 6 000 MHz field up to 20 V/m Rf currents from 150 kHz to 80 MHz with level up to 10 V Magnetic field at 0/15 Hz, 7/50 Hz with level up to 300 A/m Burst and fast transient up to 4 KV
	Appliances for railway applications – Fixed power supply installations and apparatus	Immunity tests to electromagnetic fields Immunity to magnetic fields at line frequency;	EN 50121-5:2006, EN 50121-5:2015, EN 50121-5:2017	Surge up to 4 KV ESD up to 30 KV
	Railway applications – Electromagnetic compatibility Part 3-2: Rolling stock – Apparatus	Immunity to radiofrequency common mode currents Immunity to burst, surge, ESD and dips Conducted emission test	EN 50121-3-2:2006; EN 50121-3-2:2015; EN 50121-3-2:2016	Conducted emissions in the frequency range 150 kHz to 30 MHz
	Electric and electronic equipment for industrial environments		IEC 61000-6-2:2005/:2017 EN 61000-6-2:2007 /EC:2005/2019	Immunity to dips and voltage variations from 10 ms to 5 s
	Electric and electronic equipment for residential, commercial and light-industrial environments		IEC 61000-6-1:2005, EN 61000-6-1:2007	



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Electrical	Apertures multimedia/Multimedia equipment	Immunity tests to continuous rf disturbances; Power frequency magnetic fields; broadband impulsive conducted disturbances; Immunity to burst, surge, ESD and dips	CISPR35:2016; EN 55035:2017	Electromagnetic fields from 80 MHz to 6 000 MHz field up to 3 V/m Rf currents from 150 kHz to 80 MHz with level up to 3 V Magnetic field at 50/60 Hz with level up to 3 A/m Burst and fast transient up to 4 KV Surge up to 4 KV Esd up to 8 KV Immunity to dips and voltage variations from 10 ms to 5 s
	Adjustable speed electrical power drive system		IEC 61800-3:2004+A1:2011; IEC 61800-3:2017 EN 61800-3:2004+A1:2012	Electromagnetic fields from 80 MHz to 1 000 MHz field up to 10 V/m Rf currents from 150 kHz to 80 MHz with level up to 10 V Magnetic field at 50/60 Hz with level up to 30 A/m Burst and fast transient up to 4 KV Surge up to 4 KV ESD up to 8 KV Immunity to dips and voltage variations from 10 ms to 5 s Conducted emissions in the frequency range 150 kHz to 30 MHz



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Electrical	Programmable controllers	Immunity tests to electromagnetic fields, rf injected currents, magnetic fields Immunity to burst, surge, ESD and dips Conducted emission test	IEC 61131-2:2007, EN 61131-2:2007 IEC 61131-2:2017	Electromagnetic fields 80 MHz to 2 700 MHz field up to 10 V/m Rf currents 150 kHz to 80 MHz with level up to 10 V Burst and fast transient up to 4 KV Surge up to 4 KV Esd up to 8 KV Immunity to dips and voltage variations 10 ms to 5 s Conducted emissions in the frequency range 150 kHz to 30 MHz
	Road traffic signal systems	Immunity tests to electromagnetic fields, rf injected currents, magnetic fields Immunity to burst, surge, ESD and dips	EN 50293:2000, EN 50293:2012	Electromagnetic fields 80 MHz to 2 700 MHz field up to 10 V/m Rf currents 150 kHz to 80 MHz with level up to 10 V Magnetic field at 50/60 Hz with level up to 30 A/m
	Alarm systems, components of fire, intruder and social alarm systems	Immunity tests to electromagnetic fields, rf injected currents Immunity to burst, surge, ESD and dips	EN 50130-4:1995 / A1:1998 / A2:2003, EN 50130-4:2011 / A1:2014	Burst and fast transient up to 4 KV Surge up to 4 KV ESD up to 8 KV Immunity to dips and voltage variations 10 ms to 5 s



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Electrical	Uninterruptible power systems (UPS) Part 2: Electromagnetic compatibility (EMC) requirements	Immunity tests to electromagnetic fields, rf injected currents, magnetic fields	IEC 62040-2:2005;	Electromagnetic fields 80 MHz to 2 700 MHz field up to 10 V/m Rf currents 150 kHz to 80 MHz with level up to 10 V Magnetic field at 50/60 Hz with level up to 30 A/m Burst and fast transient up to 4 KV Surge up to 4 KV ESD up to 8 KV Immunity to dips and voltage variations 10 ms to 5 s Conducted emission tests in the frequency range 150 30 MHz to 30MHz			
			EN 62040-2:2006				
			Electromedical equipment, industrial equipment, information technology, lighting equipment, household appliances		Immunity to the electromagnetic field radiated with radiofrence	EN 61000-4-3:2006/A1:2009/A2:2010 IEC 61000-4-3:2006/A1:2007/A2:2010	Electromagnetic fields 80 MHz to 6 GHz 20 Vm max
			household appliances		Immunity to rf current	EN 61000-4-6:2014/AC:2015 IEC 61000-4-6:2013	Rf currents from 15 0kHz to 80 MHz Voltage level up to 30 V
					Immunity to ESD	EN 61000-4-2:2009/ IEC 61000-4-2:2008	Electrostatic discharge test in air and contact from 1 kV to 15 kV
		Immunity to Burts/fast transient	IEC 61000-4-4:2012, EN 61000-4-4:2012	Immunity to burst/fast transients up to 4 kV, 100 kHz			



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Accreditation is granted to the facility to perform the following testing:

FIELD OF TEST	ITEMS, MATERIALS OR PRODUCTS TESTED	SPECIFIC TESTS OR PROPERTIES MEASURED	SPECIFICATION, STANDARD METHOD OR TECHNIQUE USED	RANGE (WHERE APPROPRIATE) AND DETECTION LIMIT
Electrical	Electromedical equipment, industrial equipment, information technology, lighting equipment, household appliances	Immunity to Surge	IEC 61000-4-5:2014/A1:2017, EN 61000-4-5:2014/A1:2017	Immunity to surge up to 4 kV
		Immunity to dips and voltage variations	IEC 61000-4-11:2004 / A1:2017 EN 61000-4-11:2004 / A1:2007	n/a
		Harmonic current emissions	EN 61000-3-2:2019 IEC 61000-3-2:2018	Max current 16A
		Flicker measurement (parameters pst, plt, dt, dc, dmax)	EN 61000-3-3:2013/A1:2019 IEC 61000-3-3:2013/A1:2017	
		Immunity to magnetic fields	EN 61000-4-8:2010 IEC 61000-4-8:2009	100 A/m
	Luminaries and associated products Household appliances, electric tools and similar apparatus Electronic appliances Industrial, scientific and medical appliances	Conducted emission tests	CISPR 15:2013/A1:2015; EN 55015:2013/A1:2015	Voltage disturbances in the frequency range 9 kHz to 30 MHz
			CISPR 14-1:2016; EN 55014:2016	
			CISPR 32:2015; EN 55032:2015/AC:2016	
			CISPR 11:2015/EN 55011:2016	



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Electrical	Electric and electronic equipment for residential, commercial and light-industrial environments	Conducted emission tests Harmonics Flicker	IEC 61000-6-3:2006/A1:2010 EN 61000-6-3:2007/A1:2011+A1:2011/EC:2012 IEC 61000-6-4:2009, IEC 61000-6-4:2018 EN 61000-6-4:2007/A1:2011; EN 61000-6-4:2019	Conducted emissions in the frequency range 150kHz to 30MHz Harmonics on power line Flicker on power line
	Radio equipment: Short Range Devices Wideband transmission Systems	Radio tests: Conducted power: Spectrum analyzer method Power meter method Radiated power: Anechoic chamber + Spectrum analyzer method	ETSI 300 328 V.2.1.1 V.2.2.1 ETSI 300 220 V.3.1.1	Frequency range: 9 kHz to 30 GHz
	Control panels and machine electrical equipment	Dielectric strength test Insulation Residual voltage Temperature Grounding and bonding	IEC 61439-1:2011/EN 61439-1:2011/AC:2013 IEC 61439-2:2011; EN 61439-2:2011 IEC 60204-1:2016/EN 60204-1:2019	Dielectric strength up to 30 kV Grounding and bonding up to 60 A Insulation resistance up to 1 000 V Residual voltage on supply and internal capacitive circuits Temperature test up to 300°C



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Electrical and Mechanical	Medical electrical equipment Part 2: Particular requirements for basic safety and essential performance of surgical, cosmetic, therapeutic and diagnostic laser equipment	201.4 Prescrizioni generali 201.5 Prescrizioni generali per le prove 201.6 Classificazione 201.7 Identificazione, dati di targa e documentazione 201.8 Protezione contro i PERICOLI elettrici 201.9 Protezione contro i PERICOLI MECCANICI 201.10 Protezione contro i PERICOLI da radiazioni indesiderate ed eccessive 201.11 Protezione dalle temperature eccessive e altri PERICOLI 201.12 Precisione dei comandi e degli strumenti e protezione contro le emissioni pericolose 201.13 SITUAZIONI DI PERICOLO e condizioni di guasto 201.14 SISTEMI ELETTRONICI PROGRAMMABILI (PEMS) 201.15 Costruzione 201.16 SISTEMI EM	IEC/60601-2-22:2007/A1:2012 IEC 60601-2-22:2019 EN 60601-2-22:2013	Force up to 200 N Laser power measurements up to 30 W



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Electrical	UPS; Power electronic converter	Dielectric strength test Insulation Residual voltage Temperature Grounding and bonding Leakage test	IEC 62040-1 :2017 EN 62040-1 :2019/AC :2019 EN 62477-1 : 2012/ A11 : 2014/ A1 : 2017	Dielectric strength up to 6 kV Grounding and bonding up to 60 A Insulation resistance up to 1 000 V Residual voltage on supply and internal capacitive circuits Temperature test up to 300 °C Leakage current from 0.1 mA to 1 000 mA

Via F. Meucci 93, 50041 Calenzano (FI), Italy

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Mechanical testing of vibrations and shocks	Electrical and electronic equipment and components	Prove di vibrazione sinusoidali Sinusoidal vibration tests Prove di vibrazioni random Random vibration tests Prove di urto Impact tests	IEC 60068-1:2013 EN 60068-1: 2014 IEC 60068-2-27:2008/ EN 60068-2-27:2009 IEC 60068-2-64:2007/ A1:2019 EN 60068-2-64: 2008 IEC 60068-2-6: 2007/ EN 60068-2-6:2008 IEC 60068-2-47:2004 EN 60068-2-47:2005 EN 50155:2007 IEC 61373 2010 EN 61373:1999 EN 61373:2010 EN 50125-3 IS 402:2000	Max acceleration 30 g Max sinusoidal force 6 670 N pk Max random force 5 340 N rms Max Shock 51 mm.p.p. Max Speed 1.8 m/s pk Static load 160 Kg



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Verification tests of the degree of protection of enclosures	Equipment enclosures and electrical components	Grado IP/IP Grade 1X, 2X, 3X, 4X, 5X, 6X, X1, X2, X3, X4;X5; X6; X7	IEC 60529:1989/A1:1999/A2:2013 EN 60529:1991/A1:2000/A2:2013	Water flow from 1 mm/min to 100 l/min Probes diameter from 50 mm to 1 mm Depression of enclosures 20 mbar

1. The presence of a superscript F means that the laboratory performs testing of the indicated parameter at its fixed location. Example: Outside Micrometer^F would mean that the laboratory performs this testing at its fixed location.
2. The presence of a superscript O means that the laboratory performs testing of the indicated parameter onsite at customer locations. Example: Outside Micrometer^O would mean that the laboratory performs this testing onsite at the customer's location.
3. The presence of a superscript FO means that the laboratory performs testing of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this testing at its fixed location and onsite at customer locations.