



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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ELECTRICAL

Valid To: July 31, 2023

Certificate Number: 5376.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following Electromagnetic Compatibility (EMC), Telecommunication, Exposure and SAR , and Electrical Safety Tests:

Test Technology:

Test Method(s)^{1,3}:

Emissions

Conducted and Radiated

CFR 47 FCC Part 15B (using ANSI C63.4-2014);
CFR 47 FCC Part 18 (using FCC OST/MP-5);
EN 55011; EN 55014-1; EN 55032; EN 55015; EN IEC 55015;
EN 61326-1;
CISPR 11; CISPR 15; CISPR 32; CISPR 14-1; CISPRJ 32;
CISPRJ 15; AS/NZS CISPR 11; AS/NZS CISPR 14.1;
AS/NZS CISPR 32; AS/NZS CISPR 15;
ICES-001; ICES-003; ICES-005; J55014-1;
IEC/EN 61000-6-3; IEC/EN 61000-6-4; EN IEC 61000-6-4;
IEC/EN 60601-1-2;
IEC/EN 60730-1; IEC/EN 60730-2-9; EN IEC 60730-2-9;
IEC/EN 60669-2-1; IEC/EN 60669-1;
IEC 61000-3-2; EN 61000-3-2; EN IEC 61000-3-2

Current Harmonics

Voltage Fluctuations & Flicker

IEC 61000-3-3; EN 61000-3-3

Immunity

Electrostatic Discharge (ESD)

IEC/EN 61000-4-2

Radiated Immunity (up to 6 GHz,
10V/m)

IEC/EN 61000-4-3

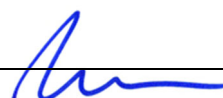
Electrical Fast Transient/Burst

IEC/EN 61000-4-4

| <u>Test Technology:</u> | <u>Test Method(s)^{1,3:}</u> |
|--|---|
| Surge | IEC/EN 61000-4-5 |
| Conducted Immunity | IEC/EN 61000-4-6 |
| Power Frequency Magnetic Field | IEC/EN 61000-4-8 |
| 301 489-1 Voltage Dips, Short Interruptions Line Voltage Variations | IEC/EN 61000-4-11; EN IEC 61000-4-11 |
| Generic Standards | IEC/EN 61000-6-1; EN IEC 61000-6-1; IEC/EN 61000-6-2; EN IEC 61000-6-2; IEC/EN 61000-6-3; IEC/EN 61000-4-4 |
| Product Family Standards and Industry Standards | CISPR 24; EN 55024; CISPR 35; EN 55035; CISPR 20; EN 55020; EN 55103-2; IEC/EN 61547; IEC/EN 61326-1; CISPR 14-2; EN 55014-2; IEC/EN 60601-1-2; IEC/EN 60730-1; IEC/EN 60730-2-9; EN IEC 60730-2-9; IEC/EN 60669-1; IEC/EN 60669-2-1 |
| <i>Telecommunication Standards</i> | ETSI EN 301 489-1; ETSI EN 301 489-3; ETSI EN 301 489-7; ETSI EN 301 489-17; ETSI EN 301 489-34; ETSI EN 300 386 |
| <i>RF Exposure (MPE calculation only)</i> | AUSTRALIAN COMMUNICATIONS AND MEDIA AUTHORITY Radiocommunications (Electromagnetic Radiation — Human Exposure) Standard 2014; IEC/EN 62479; EN 50663; EN 50385; IEC/EN 62311; RSS-102 |
| <i>Radio Frequency Test</i> Unlicensed Radio – FCC | CFR 47 FCC Part 15; Subpart C (using ANSI C63.10); CFR 47 FCC Part 15; Subpart E (using ANSI C63.10, FCC KDB 905462); KDB Publication 789033, 558074, 662911 |
| Canada | RSS-210; RSS-213; RSS-247; RSS-GEN |
| European Union (EU) | ETSI EN 300 220-1; ETSI EN 300 220-2; ETSI EN 300 330; ETSI EN 300 440; ETSI EN 300 328; ETSI EN 301 893; ETSI EN 303 417; ETSI EN 301 357; ETSI EN 303 340 |
| Australia | Radio Communications (Short Range Devices) Standards AS/NZS 4268 |

Electrical Safety Testing

| <u>Test Technology:</u> | <u>Test Method(s)³:</u> |
|--|-------------------------------------|
| <i>Household Appliance</i> | |
| Household and similar electrical appliances – Safety – Part 1: General Requirements | IEC/EN 60335-1/AS/NZS 60335.1 |
| Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances | IEC/EN 60335-2-2/AS NZS 60335.2.2 |
| Part 2-3: Particular requirements for electric irons | IEC/EN 60335-2-3/AS NZS 60335.2.3 |
| Part 2-8: Particular requirements for shavers, hair clippers and similar appliances | IEC/EN 60335-2-8/AS/NZS 60335.2.8 |
| Part 2-9: Particular requirements for grills, toasters, and similar portable cooking appliances | IEC/EN 60335-2-9/AS NZS 60335.2.9 |
| Part 2-10: Particular requirements for floor treatment machines and wet scrubbing machines | IEC/EN 60335-2-10/AS NZS 60335.2.10 |
| Part 2-12: Particular requirements for warming plates and similar appliances | IEC/EN 60335-2-12/AS/NZS 60335.2.12 |
| Part 2-13: Particular requirements for deep fat fryers, frying pans and similar appliances | IEC/EN 60335-2-13/AS NZS 60335.2.13 |
| Part 2-14: Particular requirements for kitchen machines | IEC/EN 60335-2-14/AS/NZS 60335.2.14 |
| Part 2-15: Particular requirements for appliances for heating liquids | IEC/EN 60335-2-15/AS/NZS 60335.2.15 |
| Part 2-23: Particular requirements for appliances for skin or hair care | IEC/EN 60335-2-23/AS/NZS 60335.2.23 |
| Part 2-24: Particular requirements for refrigerating appliances, ice-cream appliances and ice-makers | IEC/EN 60335-2-24/AS/NZS 60335.2.24 |
| Part 2-26: Particular requirements for clocks | IEC/EN 60335-2-26/AS/NZS 60335.2.26 |
| Part 2-27: Particular requirements for appliances for skin exposure to optical radiation | IEC/EN 60335-2-27/AS/NZS 60335.2.27 |



| <u>Test Technology:</u> | <u>Test Method(s)³:</u> |
|---|---|
| Part 2-28: Particular requirements for sewing machines | IEC/EN 60335-2-28/AS/NZS 60335.2.28 |
| Part 2-29: Particular requirements for battery chargers | IEC/EN 60335-2-29/AS/NZS 60335.2.29 |
| Part 2-30: Particular requirements for room heaters | IEC/EN 60335-2-30/AS/NZS 60335.2.30 |
| Part 2-41: Particular requirements for pumps | IEC/EN 60335-2-41/AS/NZS 60335.2.41 |
| Part 2-43: Particular clothes dryers and towel rails | IEC/EN 60335-2-43/AS/NZS 60335.2.43 |
| Part 2-45: Particular requirements for portable heating tools and similar appliances | IEC/EN 60335-2-45/AS/NZS 60335.2.45 |
| Part 2-52: Particular requirements for oral hygiene appliances | IEC/EN 60335-2-52/AS/NZS 60335.2.52 |
| Part 2-54: Particular requirements for surface-cleaning appliances for household use employing liquids or steam | IEC/EN 60335-2-54/AS/NZS 60335.2.54 |
| Part 2-59: Particular requirements for insect killers | IEC/EN 60335-2-59/AS/NZS 60335.2.59 |
| Part 2-65: Particular requirements for air-cleaning appliances | IEC/EN 60335-2-65/AS/NZS 60335.2.65 |
| Part 2-75: Particular requirements for commercial dispensing appliances and vending machines | IEC/EN 60335-2-75/AS/NZS 60335.2.75 |
| Part 2-80: Particular requirements for fans | IEC/EN 60335-2-80/AS/NZS 60335.2.80 |
| Part 2-85: Particular requirements for fabric steamers | IEC/EN 60335-2-85/AS/NZS 60335.2.85 |
| Part 2-97: Particular requirements for drives for shutters, awnings, blinds and similar equipment | IEC/EN 60335-2-97/AS/NZS 60335.2.97 |
| Part 2-98: Particular requirements for humidifiers | IEC/EN 60335-2-98/AS/NZS 60335.2.98 |
| Part 2-101: Particular requirements for vaporizers | IEC/EN 60335-2-101/AS/NZS 60335.2.101 |

| <u>Test Technology:</u> | <u>Test Method(s)³:</u> |
|---|---|
| Part 2-114: Particular requirements for self-balancing personal transport devices for use with batteries containing alkaline or other non-acid electrolytes | IEC 60335-2-114/AS/NZS 60335.2.114 |
| <i>Luminaries and Related Products</i> | |
| Luminaries - Part 1: General requirements and tests | IEC/EN 60598-1/AS/NZS 60598.1 |
| Part 2-1: Particular requirements - Fixed general purpose luminaries | IEC/EN 60598-2-1/AS/NZS 60598.2.1 |
| Part 2-2: Particular requirements - Recessed luminaires | IEC/EN 60598-2-2/AS/NZS 60598.2.2 |
| Part 2-3: Particular requirements - Luminaires for road and street lighting | IEC/EN 60598-2-3/AS/NZS 60598.2.3 |
| Part 2-4: Particular requirements - Portable general purpose luminaries | IEC/EN 60598-2-4/AS/NZS 60598.2.4 |
| Part 2-5: Particular requirements - Floodlights | IEC/EN 60598-2-5/AS/NZS 60598.2.5 |
| Part 2-17: Particular requirements - Luminaires for stage lighting, television and film studios (outdoor and indoor) | IEC/EN IEC 60598-2-17/AS NZS 60598.2.17 |
| Part 2-20: Particular requirements - Lighting chains | IEC/EN 60598-2-20/AS/NZS 60598.2.20 |
| Self-ballasted LED-lamps for general lighting services by voltage >50 V - Safety specifications | IEC/EN 62560/AS/NZS 62560 |
| Lamp Control gear- Part 1: General and safety requirements | IEC/EN 61347-1/AS/NZS 61347.1 |
| Lamp controlgear - Part 2-11: Particular requirements for miscellaneous electronic circuits used with luminaires | IEC/EN 61347-2-11/AS/NZS 61347.2.11 |
| Part 2-13: Particular requirements for DC or AC supplied electronic control gear for LED modules | IEC/EN 61347-2-13/AS 61347.2.13 |
| LED modules for general lighting - Safety specifications | IEC/EN 62031 |

| <u>Test Technology:</u> | <u>Test Method(s)³:</u> |
|--|--|
| Photobiological safety of lamps and lamp systems | IEC/EN 62471 |
| Application of IEC 62471 for the assessment of blue light hazard to light sources and luminaires | IEC TR 62778 |
| <i>Audio/Video Equipment Safety</i> | |
| Audio, video and similar electronic apparatus - Safety requirements | IEC/EN 60065/AS/NZS 60065 |
| Audio/video, information and communication technology equipment - Part 1: Safety requirements | IEC/EN 62368-1/AS/NZS 62368.1/UL 62368-1/CSA C22.2 NO. 62368-1 |
| <i>ITE Equipment Safety</i> | |
| Information technology equipment - Safety - Part I: General Requirements | IEC/EN 60950-1/AS/NZS 60950.1 |
| <i>SAFE appliance</i> | |
| Safety of power transformers, power supply units and similar —Part 1: General requirements | IEC/EN 61558-1/AS/NZS 61558.1 |
| Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers | IEC/EN 61558-2-6/AS/NZS 61558.2.6 |
| Part 2-7: Particular requirements and tests for transformers and power supplies for toys | IEC/EN 61558-2-7/AS/NZS 61558.2.7 |
| Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units | IEC/EN 61558-2-16/AS/NZS 61558.2.16 |
| <i>MEAS equipment</i> | |
| Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements | IEC/EN 61010-1/AS 61010.1 |
| Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes | IEC/EN 61010-2-081 |

On the following types of materials and products: Household Appliance, Lighting, Audio/Video Equipment, Information Technology Equipment (ITE), SAFE appliance, MEAS equipment

Testing Activities Performed in Support of FCC Certification in Accordance with 47 Code of Federal Regulations and FCC KDB 974614, Appendix A, Table A.1:²

| Rule Subpart/Technology | Test Method | Maximum Frequency |
|---|--|-------------------|
| Unintentional Radiators Part 15B | ANSI C63.4-2014 | 40000 MHz |
| Industrial, Scientific, and Medical Equipment Part 18 | FCC MP-5 (February 1986) | 40000 MHz |
| Intentional Radiators Part 15C | ANSI C63.10-2013 | 40000 MHz |
| U-NII without DFS Intentional Radiators Part 15E | ANSI C63.10-2013 | 40000 MHz |
| U-NII with DFS Intentional Radiators Part 15E | FCC KDB Publication 905462 D02 U-NII DFS Compliance Procedures New Rules v02 (April 8, 2016) | 40000 MHz |

¹ When the date, edition, version, etc. is not identified in the scope of accreditation, laboratories may use the version that immediately precedes the current version for a period of one year from the date of publication of the standard measurement method, per part C., Section 1 of A2LA R101 - *General Requirements- Accreditation of ISO-IEC 17025 Laboratories*.

² Accreditation does not imply acceptance to the FCC equipment authorization program. Please see the FCC website (<https://apps.fcc.gov/oetcf/eas/>) for a listing of FCC approved laboratories.

³ Exclusions Tables

| Standard | Clause | Test/Remarks |
|------------------|--|---|
| IEC/EN 61000-4-6 | 6.2.3.2 | Current clamp |
| IEC/EN/ 60950-1 | 1.5.9 | Surge suppressors Humidity conditioning (dimensions exceed 1m×1m×1m sample) |
| | 2.10.3.9 | Measurement of transient levels |
| | 4.2.8 | Cathode ray tubes |
| | 4.2.9 | High pressure lamps |
| | 4.2.12 | Flammable liquids |
| | 4.2.13.2 | Ionizing radiation |
| IEC/EN/ 60950-1 | 4.3.13.3 | Effect of UV radiation on materials |
| | 4.3.13.4 | Human exposure to UV radiation |
| | 4.3.13.5.1 | Laser (including laser diodes) |
| | 4.5 | Three phase voltage supply systems |
| | 4.6.2 | Bottom of fire enclosure (Distillate fuel oil as described in Annex A.3.2) |
| | 6.2.2.1 | Impulse Test (Test generator reference 1 of table N.1) |
| | 7.4.2 | Voltage surge test (Test generator reference 3 of table N.1) |
| 7.4.3 | Impulse test (Test generator reference 1 of table N.1) | |



| Standard | Clause | Test/Remarks |
|---|---|---|
| IEC/EN/ 60950-1 (cont.) | Annex A.3 | Hot flaming oil test |
| | Annex G | Alternative method for determining minimum clearance |
| | Annex H | Ionizing radiation |
| | Annex M | Criteria for telephone ringing signals; |
| | Annex N | Impulse test generators |
| | Annex Q | Voltage dependent resistors (VDRs) |
| | Annex T | Guidance on protection against ingress of water |
| | Annex Y | Ultraviolet light conditioning test |
| | Annex CC | Evaluation of integrated circuit (IC) current limiters; |
| Annex Zx | Protection against excessive sound pressure from personal music players | |
| IEC/EN 60065 | 6.1 | Ionizing Radiation |
| | 6.2 | Laser radiation |
| | 7 | Three phase voltage supply system |
| | 8.17 | Endurance test for wound components |
| | 13.3.4 | Transient voltages [Test generator according to Annex K (1.2 /50 us and 10/700 us)] |
| | 14.2 | Resistors (Discharge Test. Surge Test Apparatus acc. Fig 5a. Measurement device for resistance. Test according to IEC 60068-2-78) |
| | 14.3 | Capacitor and RC-units (Test according to IEC 60384-1, sub clause 4.38 and IEC 60384-14) |
| | 16.3 | Flexible cords |
| | 18 | Mechanical strength of picture tubes and protection against the effects of Implosion |
| | Annex H | Insulating winding wires (Test equipment according to IEC 60851-3, IEC 60851-5 and IEC 60851-6) |
| | Annex Zx | Protection against excessive sound pressure from personal music players |
| IEC/EN 62368-1/ AS/NZS 62368.1/UL 62368-1/CSA 62368-1 | -- | Three phase equipment; |
| | 8.5.5.2 | High pressure lamps |
| | 10 | Radiation |
| | Annex C | Ultra-violet radiation |
| | Annex G | Components |
| | Annex H | Criteria for telephone ringing signals |
| | Annex I | Overvoltage categories |
| | Annex K | Safety interlocks |
| | Annex S.3.2 | Hot flaming oil test |
| Annex U | Cathode ray tubes | |
| IEC/EN 60598-1 | 4.28 | Fixing of thermal sensing controls |
| | 4.20 | Rough service luminaires – Vibration requirements |
| IEC/EN 61347-1 | 13 | Thermal endurance test for windings of ballasts |
| IEC/EN 60335 | 14 | Transient overvoltages |
| | 22.32 | Oxygen bomb test for Rubber |
| | 22.46 & Annex R | Software evaluation |
| | Annex J | Coated printed circuit boards |
| | Annex T | UV-C radiation effect on non-metallic materials |

| Standard | Clause | Test/Remarks |
|-------------------|----------|---|
| IEC/EN 60335-2-2 | 21.101 | Crush test for current-carrying hose |
| | 21.102 | Abrasion test for current-carrying hose |
| | 21.103 | Flexing test for current-carrying hose |
| | 21.104 | Torsion test for current-carrying hose |
| | 21.105 | Bent test in cold condition |
| IEC/EN 60335-2-24 | 21.101 | Vibration test for camping or similar use appliance |
| | 22.107 | Refrigerant leakage test |
| | 22.108 | Refrigerant leakage test |
| | 22.109 | Refrigerant leakage test |
| EN 60335-2-52 | Annex CC | Non-sparking "n" electrical apparatus |
| | 22.Z103 | Chemical corrosive test |
| IEC/EN 60335-2-54 | Annex AA | Aging test for elastomeric parts |
| | 21.101 | Crush test for current-carrying hose |
| IEC/EN 60335-2-59 | 21.102 | Abrasion test for current-carrying hose |
| | 21.103 | Flexing test for current-carrying hose |
| | 21.104 | Torsion test for current-carrying hose |
| | 32 | UV radiation |
| IEC/EN 60335-2-65 | 32.101 | Ozone concentration |
| | 32.102 | UV radiation |
| | Annex AA | UV radiation conditioning |
| IEC/EN 60335-2-75 | Annex AA | Aging test for elastomeric parts |
| IEC/EN 61558-1 | 14.3.3 | Vibration test |
| | 16.5 | Appliance used in vehicles and railway applications |
| | 20.8 | Tests for thermal cut-outs |
| | 20.9 | Test for thermal-links |
| | Annex K | Insulated winding wires |
| IEC/EN 61558-2-6 | 6.103 | Only for appliance with rated supply frequency of 50-60Hz |
| IEC/EN 61558-2-7 | 6.103 | Only for appliance with rated supply frequency of 50-60Hz |
| IEC/EN 61558-2-16 | 6.103 | Only for appliance with rated supply frequency of 50-60Hz |
| | 18.102 | Insulation above working voltage 750 V peak |
| | Annex K | Insulated winding wires |
| IEC/EN 61010-1 | 10.5.3 | Insulating materials -Vicat (ISO 306 method A) |
| | 12.2.1 | Ionizing radiation |
| | 12.3 | UV Radiation |
| | 12.5.1 | Sound pressure level |
| | 12.5.2 | Ultrasonic pressure |
| | 12.6 | Laser sources |
| | 13.2.3 | High vacuum devices |
| | Annex H | Qualification of conformal coating for protection against pollution |
| | General | 3 phase power supply |



Accredited Laboratory

A2LA has accredited

EUROFINS ELECTRICAL TESTING SERVICE (SHENZHEN) CO., LTD.

Shenzhen City, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).

Presented this 10th day of June 2021.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 5376.01
Valid to July 31, 2023



For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.