

# TUV India Private Limited Electronics, Electrical & Industrial Machinery Product Testing Laboratory



**TÜV NORD GROUP**  
Expertise for your Success



## OUR LABORATORY

TUV India (TUV NORD GROUP) as leading Inspection, Certification and Testing organization has established state-of-the-art Electronics, Electrical & Industrial Machinery Product Testing Laboratory. Our domain experts develop truly excellent solutions making your business more secure, enhancing the quality of your products and services ensuring safety and compliance. Our services offer you important gains in safety, security and quality for technology, processes, product, business decisions and activities. With our expertise in respective local and international standards, we provide single-window solutions to strengthen your product and its credibility in global and local marketplaces. Thus we partner you in your endeavor to achieve prominent position within the competitive market.

Our state-of-the-art facility is equipped with world class infrastructure, competent human resources, high-end test equipment and instruments, latest generation devices to conduct accurate analyses and tests for safety and compliance as per standard method and deliver reliable results. We also provide both in-house and on-site facility which further provides flexibility in terms of meeting timeline in the course of an overall product development lifecycle.



## SOLUTIONS

### Both In-House and On-Site Test facility for:

- Safety Testing and Certification as per National & International standards
- Pre Compliance Testing
- EMI/EMC Compliance Testing and Certification
- IT & Telecom Testing
- Customized Type testing
- Reporting
- Development Assistance
- For EMI/EMC and Safety Testing
- Environmental and Reliability Testing
- Performance Testing

## SERVICES

- Battery Testing (lithium-ion battery or Li-ion battery, Lead acid, nickel-cadmium battery)
- Vibration Testing upto 6TON/ 6000Kg
- EMI/EMC & RNTT Testing
- Environmental & reliability Testing facility
- Electrical Safety Testing facility
- IP Testing upto 69K
- Medical Electrical Testing



## PRODUCT CATEGORIES

- Battery Testing (lithium-ion battery or Li-ion battery, Lead acid, nickel-cadmium battery)
- Medical Electrical device Testing facility
- Electrical And Electronic Products
- Commercial and light industrial machinery
- Control Panels testing
- Switch gears and Transformers
- Audio/Video equipment testing
- IT Products testing
- Power supplies and stabilizers testing
- Domestic Household appliances testing
- Laboratory use Equipment testing
- Power tools testing
- Automotive parts testing
- Testing & Measurement Equipment testing
- Home appliances
- UPS/Inverter Testing



## EMI/EMC Testing:

Electromagnetic compatibility (EMC) is the ability of electrical equipment and systems to function acceptably in their electromagnetic environment, by limiting the unintentional generation, propagation and reception of electromagnetic energy which may cause unwanted effects such as electromagnetic interference (EMI) or even physical damage in operational equipment. The goal of EMC is the correct functioning of different equipment in a common electromagnetic environment.

We offer EMC testing services to various FCC, IEC & EN standards

- EMC Testing for Automotive Equipment
- EMC Testing for Appliances and Consumer Electronics
- EMC Testing for Industrial, Residential, Commercial & Light Industrial
- EMC Testing for Medical Devices
- EMC Testing for Telecom Equipment (IT)
- EMC Testing for Military standards MIL 461
- RNTT Testing
- EMC Testing for Railway Apparatus
- EMI/EMC Compliance Testing and Certification
- Development Assistance for EMI/EMC and many more

## EMI / EMC TEST AS PER CISPR/IEC/EN

### Conducted Emission Test

- 150KHz to 30MHz
- 1 $\phi$ , 16A
- 3 $\phi$ , 100A

### Radiated Emission (OATS) Test

- 30MHz to 8GHz

### Magnetic Field Measurement (OATS - Loop Antenna)

- 150KHz to 30MHz

### Discontinuous Emission (Click) Test

- 150KHz to 30MHz

### Disturbance Power Test

- 30MHz to 300MHz

### Harmonic Emission Test

- 1 $\phi$ , 16A (230VAC, 50Hz)

### Voltage Fluctuation and Flicker Emission Test

- 1 $\phi$ , 16A (230VAC, 50Hz)

### ESD Immunity Test

- $\pm 30$  KV Air Discharge,
- $\pm 15$  KV Contact Discharge

### Conducted RF Immunity Test

- 150KHz to 230MHz (upto 20Vrms)
- 1 $\phi$ , 16A / 3 $\phi$ , 63A / Data Lines

### EFT / Burst Immunity Test

- $\pm 5.3$  KV
- 1 $\phi$ , 16A / 3 $\phi$ , 32A / Data Lines

### Surge Immunity Test

- $\pm 6.6$  KV
- 1 $\phi$ , 16A / 3 $\phi$ , 32A / Data Lines
- Telecom Surge (10/700 $\mu$ s)

### Power Frequency Magnetic Field Test

- Continuous Field upto 160A/m
- Short Duration Field upto 1000 A/m

### Voltage Dips & Short Interruption Test

- 1 $\phi$ , 16A (230VAC, 50Hz) & DC Supply



## Electrical Safety testing:

Electrical safety is an essential requirement for all electronic and electrical devices, considering safety to the user, device and connected equipment. Safety is evaluated based on various hazards that can occur in day-to-day activities involved while using, operating and servicing.

TUV India offers electrical safety testing for all types of electrical and electronic products in our accredited laboratories.

Electrical safety testing is carried out to evaluate the potential risks of electrical shocks to customers when using their product.

Major brands and new start-ups benefit enormously from electrical safety testing of their products.

### We can carry out the testing for the following standards:

- IS 13252-1/ IEC 62368- for IT Equipment
- IEC 61010-1 for Laboratory and Test & Measurement equipment,
- IEC 60335 for Household equipment including various parts,
- IEC 60065 for Audio, Video and Similar Electronic Apparatus
- IEC 61058-1 safety of Switch
- IEC/EN 60598- specifies general requirements for luminaires.
- IEC 61439 various sections- Low-voltage switchgear and control gear assemblies
- IEC 62040-1: Uninterruptible power systems
- IEC 62109 various parts- power conversion equipment for use in photovoltaic systems
- IS 15885 safety of lamp control gear and many more

### Key product categories include:

- Information Technology Equipment
- Laboratory & Testing Equipment
- Telecom & Telecommunications Equipment
- Medical Equipment
- Audio and Video Equipment
- Lighting & Entertainment Equipment
- Machinery Equipment safety
- Consumer, Household, and Commercial Appliance Equipment
- Component and Power Supplies
- Lightning
- Switchgear testing
- Control panel testing
- Safety risk assessments
- And Many more

## Flammability testing:

Equipment Failure to meet flammability testing requirements is not only a considerable risk to public safety, but it also restricts market access and can lead to enforcement actions by regulatory authorities.

Flammability testing determines how easily a material or finished product will ignite or burn when exposed to or used near fire or heat

### Following tests are performed:

- Needle flame test
- Ball pressure test
- Glow wire test
- Horizontal and vertical flammability
- Comparative tracking index test
- And many more tests





## Medical safety testing :

A medical device which depends on a source of electrical energy and that the equipment are directly generated by the human body.

Product Safety requirements for medical Electrical devices are tested under the IEC 60601-xx standard for fulfilment of compliance requirements of the product

Applicable standards for medical equipment:

- IEC 60601-1/ IS 13450-1-General Requirements for Basic Safety And Essential Performance
- IS 13450-2-12 / IEC 60601-2-12-Particular requirements for the safety of lung ventilators - Critical care ventilators
- IS 13450-2-21/ IEC 60601-2-21-Particular requirements for the basic safety and essential performance of infant radiant warmers
- IS 13450-2-19 / IEC 60601-2-19-Particular requirements for the basic safety and essential performance of infant incubators
- IS 13450-2-23 / IEC 60601-2-23-Particular requirements for the basic safety and essential performance of transcutaneous partial pressure monitoring equipment
- IS 13450-2-24 / IEC 60601-2-24- Particular requirements for the basic safety and essential performance of infusion pumps and controllers
- IS 13450-2-25 / IEC 60601-2-25-Particular requirements for the basic safety and essential performance of electrocardiographs
- IS 13450-2-27 / IEC 60601-2-27- Particular requirements for the basic safety and essential performance of electrocardiographic monitoring equipment
- IS 13450-2-34 / IEC 60601-2-34-Particular requirements for the basic safety and essential performance of invasive blood pressure monitoring equipment
- IS 13450-2-30 / IEC 60601-2-30- Particular requirements for the basic safety and essential performance of automated non-invasive sphygmomanometers
- IS 13450-2-41 / IEC 60601-2-41-Particular requirements for the basic safety and essential performance of surgical luminaires and luminaires for diagnosis
- IS 13450-2-46 / IEC 60601-2-46-Particular requirements for the basic safety and essential performance of operating tables
- IS 13450-2-50 / IEC 60601-2-50-Particular requirements for the basic safety and essential performance of infant phototherapy equipment

- IS 13450-2-56 / IEC 60601-2-56-Particular requirements for basic safety and essential performance of screening thermographs for human febrile temperature screening
- IS 13450-2-57 / IEC 60601-2-57-Particular requirements for the basic safety and essential performance of non-laser light source equipment intended for therapeutic, diagnostic, monitoring and cosmetic/aesthetic use



## Battery Testing:

Our battery testing services are applicable to an extensive range of applications such as electric vehicles, stationary batteries, 2-wheel vehicles, grid storage, grid balancing, backup applications, uninterruptable power supplies (UPS), e-bikes etc.

Battery safety and reliability is also a key concern for the renewable energy industry, which utilizes a wide selection of technologies for solar energy storage and other uses.

### Standards for Battery Services:

- EN 50342: 2001 : Lead Acid Starter batteries - Part 1 General Requirements
- IEC / EN 60254-1 : Lead Acid Traction Batteries Part 1 – General Requirements
- IEC /EN 60896 -Stationary Lead Acid Batteries
- BS EN 61427 / IS 16270: Secondary Cells & Batteries for Renewable Energy Storage
- BS6290-2 : Lead Acid stationary cells & Batteries
- IS 16046 / IEC 62133 : Secondary cells & batteries containing non- acid electrolyte
- IEC 61960-2 : Secondary Lithium cells & batteries for Portable applications / secondary lithium batteries



Battery Tester	Specifications
Tester 1	<ul style="list-style-type: none"> <li>• 18V, 25A Charging/ Discharging</li> <li>• No of Circuits: 6 Circuits</li> <li>• Charge Voltage: 0 to 18V</li> <li>• Discharge Voltage: 15 to 0V</li> <li>• Current: 0.25 to 25A</li> <li>• Accuracy Current / Voltage: +/- 0.05% of full scale.</li> <li>• Switching time between Charging &amp; Discharging: 20 ms</li> <li>• Temperature Measuring range: -40 to 100 °C</li> </ul>
Tester 2	<ul style="list-style-type: none"> <li>• 60V, 50A Charging/ Discharging</li> <li>• No of Circuits: 5 Circuits</li> <li>• Charge Voltage: 10V to 60V</li> <li>• Discharge Voltage: 60V to 5V</li> <li>• Current: 0.50A to 50A</li> <li>• Accuracy Current / Voltage: +/- 0.05% of full scale.</li> <li>• Switching time between Charging &amp; Discharging: 20 ms</li> <li>• Temperature Measuring range: -40 to 100 °C</li> </ul>
Tester 3	<ul style="list-style-type: none"> <li>• 12V, 500A high rate Discharger</li> <li>• No of Circuits: 1 Circuits</li> <li>• Discharge Voltage: 15 to 0V</li> <li>• Current: 5.0 to 500A Dch</li> <li>• Accuracy Current / Voltage: +/- 0.05% of full scale.</li> <li>• Temperature Measuring range: -40 to 100 °C</li> </ul>
Tester 4	<ul style="list-style-type: none"> <li>• IGBT Regenerative, Battery Pack Tester</li> <li>• DC output Voltage: 400VDC / Circuit</li> <li>• DC Output Current: 60ADC / Circuit</li> <li>• DC Output Power: 24KW / Circuit</li> <li>• No. of circuits (Channels): 7 Circuits</li> <li>• Switching time between charge to discharge: 50 m sec</li> </ul>



# Vibration Testing & Vibration Analysis (Random, Sine, Shock Test) :

Ensure the integrity of your products using Vibration Analysis, Mechanical Shock and Vibration Testing.

Vibration testing reduces the risk of product failure in the field by simulating the vibration conditions that products are exposed to during their lifetime. Test specification defines the applied vibration levels as well as response defined testing and analysis.

## Standards for Vibration and shock testing:

- IEC 61373
- IEC 60068-2-6
- IEC 60068-2-27

## Vibration machine Specification:

- 6000 Kgf Peak Sine & RMS Random
- 12000 Kgf Shock
- 440 mm Armature Dia., Displacement 76 mm(p-p), Velocity 2.0m/s (Sine) & 2.5m/s (Shock)
- Bare Table Acceleration 100 `g' Sine, Frequency 5 to 2000 Hz
- Accurate Auto Centering despite of payload
- Inclusive of Armature, Armature table, flexures, rotation mechanism with gear reduction for tilting shaker, Air Isolation system etc.

## Cooling Air-blower System

- Centrifugal type air blower system, air suction interlock
- Acoustic silencer at the discharge

## Digital Switching Power Amplifier & Digital Logic Unit

- PWM technology, Class-D type, Solid-state power amplifiers
- 32-Bit Microcontroller based logic unit menu driven interactive user interface
- In-built sine oscillator for generating frequency from 5 to 3000Hz

## Vertical Load Support Platform

- 1200 mm x 1200 mm working platform
- Light weight Mg-alloy webbed structure
- M10/M12 SS inserts with 100 mm X 100mm matrix pattern

## Combo Base Horizontal Slip Table along with Bull Nose Tension/Compression bolt type Drive Bar Adaptor

- 1200 mm x 1200 mm usable platform size of Mg-alloy
- Horizontal guidance with Hydraulic bearings
- Bull nose tension/compression bolt type Drive Bar Coupling
- Sensing and display of shaker orientation
- Auto Start/Stop and Interlocking of HST in horizontal orientation of Shaker

## 8 Channel Digital Vibration Controller

- 8 Channel Controller (all simultaneous inputs)
- Resolution: 24 bit
- Built-in Signal Conditioner



## Environmental testing/ Reliability testing/ Thermal shock chamber :

The testing procedure is useful for exposing technical products and devices to the kind of real-world stresses and strains a device will undergo

### Tests covered

- Dry heat test
- Damp Heat
- Thermal cyclic
- Change in temperature
- Low temperature test/ Cold Test
- And many more

### Equipment specifications:

Equipment	Specification
Climatic chamber	<ul style="list-style-type: none"><li>• Test Space Volume: 1540 Litres approx.</li><li>• Test Space Dimensions : 1100 mm (W) x 1475 mm (D) x 950 mm (H)</li><li>• Temperature Range : -40 °C to +180 °C</li><li>• Humidity Range : 10% to 98% RH</li><li>• Temperature change rate (as per IEC 60068-3-5): 2.5 °K/min. (Cooling) 3.5 °K/min. (Heating)</li></ul>
Walk-in Chamber	<ul style="list-style-type: none"><li>• Test Space Dimensions : 3000mm (W) x 3000 mm (D) x 3000 mm (H)</li><li>• Temperature Range : -40 °C to +100 °C</li><li>• Humidity Range : 20% to 95% RH</li><li>• Ramp up rate: 5 °C /min</li><li>• Ramp down rate: 3 °C /min</li></ul>
Thermal Shock chamber	<ul style="list-style-type: none"><li>• Volume: 120Liter</li><li>• Temperature range of the hot chamber +50 °C to +220 °C</li><li>• Temperature range of the cold chamber -80 °C to +70 °C</li><li>• Cabinet dimension: 1000mm Wide, 2530mm Deep, 2450mm high</li><li>• Transportation time: &lt;10 Sec</li></ul>

### Standards covered :

- JSS 55555
- QM 333
- IEC 60068/IS 9000 various parts
- And many more





## IP Testing up to IP69 :

Ingress protection (IP) testing reduces the risk of product failure in the field by assessing the degree of protection provided against mechanical intrusion, dust, accidental contact and water into casings and enclosures.

IP codes are widely used to indicate the degree of water-proof and dustproof properties of electric equipment

The IP codes defined in IEC 60529 classifies the degree of protection against the ingress of foreign material (including steel balls, copper wire, dirt and dust, water) into the enclosure of electrical and mechanical products.

Dust (First Number)	Moisture (Second Number)
IP 0x - No Protection	IP x0 - No Protection
IP 1x - Objects > 50mm	IP x1 - Vertically Dripping Water
IP 2x - Objects > 12mm	IP x2 - 75 to 90 Degrees Dripping Water
IP 3x - Objects > 2.5mm	IP x3 - Sprayed Water
IP 4x - Objects > 1mm	IP x4 - Splashed Water
IP 5x - Dust Protected (Vacuum)	IP x5 - Water Jets
IP 6x - Dust Tight	IP x6 - Powerful Water Jets
	IP x7 - Effects of Immersion
	IP x8 - Indefinite Immersion



## About Us

With over 14,000 employees, TÜV NORD GROUP is one of the largest technical service providers, offering its advisory, service and inspection expertise in over 100 countries throughout the world. Areas of activity include Industrial Services, Certification, Testing, Product Certification, Mobility, Nuclear, IT & Training. TÜV NORD GROUP occupies a unique position in the sector based on its work in the fields of natural resources and aerospace and is firmly committed to its guiding principle and watchword: "Expertise for your Success".

TUV India Pvt. Ltd. was established in 1989 as part of the German RWTÜV group's Indian operations, now the TÜV NORD GROUP, as one of the first Certification Bodies to start operations in India; since then, it has been closely associated with the quality revolution in India. With over 1100 employees in more than 25 locations across India, TUV India is never far from its customers.

## Why testing and certification?

- Fast market access for your product
- Competitiveness in more markets
- Send a signal to potential clients that quality is your major focus
- Get higher ratings when you're evaluated by retailers & importers
- Improved reliability – market leading third party proof of product conformity

## Our Services Portfolio

- Industrial Services
- Management Systems Certification
- Food Certification And Inspections
- Social Accountability
- Laboratory Services – Agricultural, Food, Chemical, Material and Product Testing
- IT Services
- Product Certification
- Infrastructure and QA Services
- Sustainability Services
- Renewable Energy Services
- Automotive Services
- Training – Management System standards including international accredited auditor courses
- Project Management
- Construction
- Railway Technology

## Who can benefit from this test facility?

- Manufacturers planning to target global market and want free movement for their product in the market.
- Manufacturers who believe in manufacturing world class quality product & want to get it Endorsed through a neutral third party & use it as marketing tool.

### TUV India Private Limited

### Electronics, Electrical & Industrial Machinery Product Testing Laboratory

#### Location 1

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