

Envitest Laboratories Pvt. Ltd.

# Adopting “Knowledge-Quality” methods for Enhanced Test and Measurements at Envitest Lab

## Encouraging Quality Consciousness for Safer and Reliable Innovations

### Special points of interest:

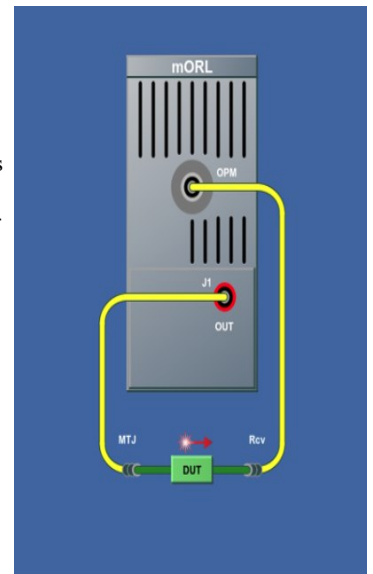
- Envitest Lab was delighted to participate in the 13th edition of Source India - Electronics Supply Chain Expo held in Chennai .
- Conducted mist tests on CCTV cameras to assess their performance under misty conditions.
- Performed Interoperability Testing for GPON Optical Line Terminal Interfaces in accordance with TEC ER requirements.

While individuals may have the ability to operate a car, ensuring optimal acceleration and braking requires additional validation. This is precisely where knowledge and quality come into play. At Envitest Lab, we've become a reliable partner by focusing strongly on quality in everything we do and have quality consciousness in every aspect of our operations. Through rigorous testing protocols and meticulous attention to detail, we strive to make innovations better, safer, and more reliable for the benefit of our clients and society at large.

Quality consciousness lies at the heart of everything we do at Envitest Lab. From the moment a product enters our testing facility, it undergoes a thorough and comprehensive evaluation to identify any potential issues or vulnerabilities. Our team of highly skilled engineers and technicians us best

in class equipment and methodologies to conduct a wide range of tests, including environmental stress testing, electrical performance analysis, and reliability testing, among others. Each test is meticulously planned and executed with the utmost care and precision, ensuring accurate and reliable results.

Central to our approach is a commitment to caution and diligence. We understand that even the smallest oversight can have significant consequences, which is why we leave no stone unturned in our quest for perfection. Every test is conducted with the highest level of scrutiny and attention to detail, with a focus on identifying even the most minute defects or irregularities. This cautious approach not only ensures the safety and reliability of the products we test but also instils confidence in our clients that their innovations



are in good hands. In conclusion, Envitest Lab is committed to Knowledge-Quality approach in the pursuit for reliable and better innovations.

## Quality Consciousness Approach

We recognize that quality consciousness is not just about identifying problems but also about finding solutions. In the event that a product fails to meet our stringent quality standards, our team works closely with the client to develop targeted solutions to address any deficiencies. Whether it's redesigning a component, adjusting manufacturing processes, or implementing additional safety measures, we collaborate with our clients to ensure that their innovations meet the

highest standards of quality and reliability.

Our commitment to quality extends beyond the confines of our testing facilities. We actively engage with industry stakeholders to promote best practices and raise awareness about the importance of quality assurance in innovation. Through seminars, workshops, and knowledge-sharing sessions, we seek to empower our clients and partners with the knowledge and tools they need to navigate the com-

plexities of product development with confidence.

At Envitest Lab, we firmly believe that achieving quality consciousness is the cornerstone of innovation. By prioritizing safety, reliability, and quality in everything we do, we enable our clients to bring their most ambitious ideas to fruition with confidence. By ensuring the reliability of critical infrastructure, we stand ready to support our clients in their quest for excellence.

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*"Testing setup for full capability MIL STD 704 on an engineering product at Envitest Lab Live!"*

## Ensuring Compliance with MIL-STD-704 for Aircraft Electrical Power Characteristics

At Envitest Labs, we pride ourselves on offering state-of-the-art testing facilities that enable manufacturers to demonstrate compliance with MIL-STD-704, a critical United States Military Standard governing the standardized power interface between military aircraft and their equipment.

MIL-STD-704 defines a comprehensive set of parameters encompassing voltage, frequency, phase, power factor, ripple, maximum current, electrical noise, and abnormal conditions such as overvoltage and undervoltage for both AC and DC systems. Compliance with this

standard is essential to guarantee the seamless operation of aircraft systems and the safe deployment of mission-critical equipment.

Our testing facility is equipped with instrumentation and expertise to conduct rigorous evaluations in accordance with MIL-STD-704 requirements. Leveraging the guidance outlined in MIL-HDBK-704, which provides detailed test procedures for demonstrating compliance, our team ensures that utilization equipment meets the stringent electrical power characteristics mandated by the standard.

The standard outlines the basic aircraft AC system at 115/200 volts, 400 Hz, with allowances for variable frequency systems ranging between 360 and 800 Hz. Double voltage systems, operating at 230/400 volts, and secondary power systems, which may utilize variable frequency or double voltage configurations, are also addressed. Additionally, the standard accommodates the use of 115 volts, 60 Hz DC systems to power commercial off-the-shelf products. The DC system runs at 28 volts or 270 volts. These systems are vital components of aircraft.

*With our advanced testing facilities and expert personnel, we empower manufacturers meet the regulatory compliance with confidence, ensuring the safety and reliability of military aircraft and their onboard equipment.*

## Aircraft Electric Power System Requirements:

The main power source of aircraft electric power systems is typically derived from generators driven by propulsion engines, while emergency power can come from batteries, engine bleed air, auxiliary power units, or other sources. As an integral part of the airframe modifier or manufacturer's responsibilities, Envitest Lab test scope ensures that the protection network and distribution to utilization equipment terminals are provided while maintaining the specified power characteristics.

Our testing procedures ensure that all protective devices function independently of regulation and control equipment, guaranteeing the reliability and safety of the aircraft electric power system. Utilization equipment, such as ruggedized power supplies, must accept power with specified characteristics to generate power at their output terminals, meeting their detailed specifications.

Envitest Lab's comprehensive testing services encompass parameters, including voltage stabil-

ity, frequency accuracy, phase synchronization, and power factor efficiency. We verify that utilization equipment operates seamlessly within the prescribed parameters, providing reliable electrical power for critical airborne systems like radar, sonar, and computer processors. These systems are vital components of aircraft, comprising main and emergency power sources, power conversion equipment, control and protection devices, and interconnection networks.



## Classification of Power Groups in MIL-STD-704

MIL-STD-704 covers the power generation system by citing the requirements that the power system is to provide at the utilization equipment power terminals. Seven power groups are defined based on power type for utilization equipment, selected according to platform capacity, aircraft availability:

- |  |                                    |
|--|------------------------------------|
| 1. MIL-HDBK-704-2: Single phase, 400 Hz, 115Vac              | phase, variable frequency, 115 Vac |
| 2. MIL-HDBK-704-3: Three phase, 400 Hz, 115Vac               |                                    |
| 3. MIL-HDBK-704-4: Single phase, variable frequency, 115 Vac |                                    |
| 4. MIL-HDBK-704-5: Three                                     |                                    |
| 5. MIL-HDBK-704-6: Single phase, 60 Hz, 115 Vac              |                                    |
| 6. MIL-HDBK-704-7: Direct current, 270 Vdc                   |                                    |
| 7. MIL-HDBK-704-8: Direct current 28 Vdc                     |                                    |

## Ensuring Electrical Safety: Insulation Resistance Testing at Envitest Lab

As an essential component of electrical safety assessment, the IR test measures the electrical resistance of insulation by applying a voltage between two points and assessing the resulting current flow. Our highly trained engineers adhere to stringent safety protocols, including the establishment of exclusion zones, ensuring wire insulation integrity, and donning appropriate personal protective equipment. Recognized by various standards and safety and certification agencies as a

crucial electrical safety test, the insulation resistance test is a one of the important test of our testing portfolio.

Utilizing insulation resistance testers, we tailor the test parameters according to specific requirements ranging from handheld battery-powered devices to larger, high-voltage-capable equipment. Variables such as test voltage, duration, and points are selected to ensure accurate and reliable results. Acceptable insulation

resistance values are determined by industry standards and regulations, with deviations recorded and tracked over time for periodic condition assessment.

Envitest Lab insulation resistance testing, safeguarding the integrity and safety of electrical installations and products. Furthermore, our testing approach accounts for environmental factors, with precise measurements and compensation applied accordingly.



*Insulation Resistance test verification in real time at Envitest lab*

## India's Evolving Quality Consciousness

Envitest Lab was delighted to participate in the 13th edition of Source India - Electronics Supply Chain Expo held in Chennai. Our presence at the expo provided us with a valuable opportunity to showcase our expertise in environmental and electrical testing services to a diverse audience within the electronics supply chain industry.

Through engaging discussions

with industry professionals, we witnessed India's growing commitment to quality consciousness. It was evident that stakeholders across the electronics supply chain are increasingly prioritizing quality assurance and compliance. These discussions reaffirmed our belief in the importance of our services and motivated us to continue our mission of providing top-notch environmental and elec-

trical testing solutions. We are excited to contribute to India's journey towards achieving global standards of quality and excellence in the electronics industry.

Our engagement at the event provided invaluable insights into India's growing commitment to quality consciousness and inspired us for business excellence by adapting good quality measures.

*Our commitment to quality extends beyond the confines of our testing facilities. We actively engage with industry stakeholders to promote best practices and raise awareness about the importance of quality assurance in innovation.*

## Envitest Lab: Inspiring Insights at Source India Expo

We were overwhelmed by the enthusiastic response we received from visitors and industry professionals who visited our stall. Engaging with various dignitaries and stakeholders allowed us to gain invaluable insights into the evolving needs and challenges of the industry.

Despite the positive feedback received, we learned that there

is still room for improvement and innovation in our services. The conversations and interactions at the expo highlighted areas where we can further enhance our offerings to better meet the demands of our clients and stay ahead in a rapidly evolving market. As a result, we are more determined than ever to continue pushing the boundaries of excellence and

innovation in environmental and electrical testing. We are committed to leveraging these insights to further refine our processes, expand our capabilities, and deliver even greater value to our clients.

Overall, our participation in Source India was a rewarding experience and inspired us for continuous improvement.



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## Our Services

*Climatic Simulations*

*Contamination and Ingress*

*Aircraft Electrical Testing*

*Optical Fibre Cable Testing*

*International Approvals*

*Customized Tests*

*Dynamics & Vibration*

*Materials / Metallurgical Testing*

*Electrical Safety Testing*

*Telecom Interface Testing*

*Connectors Test*

*Engineering Services*



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## About Envitest Lab

ENVITEST abbreviated for “ENVIRONMENTAL TESTING”, established in 2017 at Bangalore Electronic City, is a ISO/IEC 17025 certified company with an unlimited vision backed by professionals having great experience in problem solving, with an objective to offer high-quality testing and inspection, pre-compliance and certification, engineering services for the across the globe products at best quality results, consistent process, and affordable cost.

We serve across domains products for the compliance and certifications. Over time we kept on adding the new testing facilities to bring more opportunities for growth but would allow to provide a more complete portfolio of testing solutions to our customers. From our humble beginnings, we have grown from a simple test house who worked

on the world’s most complex engineering projects to become a leading test lab of standard and custom test services.

Throughout our journey to become one of the premier worldwide service providers of testing solutions, we have held true to the philosophy that the customer comes first. This dedication to customer service has allowed us to work with leading manufacturers in over 22 industries including aviation, automotive, aerospace, defense, medical, energy, to name a few. Located in Bangalore, our campus is comprised of two buildings with over 10,000 square feet of space. Each building has been tailored to provide flexibility, comfort, and safety for everyone while providing room for continued growth and innovation.

We have 3 Disciplines -

**Electronics and Electrical Product Test** covering Optic fibre, electrical connectors for automotive and MIL, Aircraft electrical characteristic, Product safety, Product performance, Product susceptibility test.,

**Telecom Product Test** covering telecom products which covers PON and GPON Test, Interface Test, EMI/EMC test, Router and Switches and many more.

**Environmental Test for Any Product** covering - Shock and Vibration, Bump, Thermal, Humidity, Damp Heat, Cold Hot temperatures, thermal shock, Ingress protection, dust, water, contamination, fungus, Ultraviolet UV, salt and acidic corrosions and many more.