TEST SERVICES

ANALYTICAL SERVICES & CLEANING TRIALS

GEN3
PRECISION AS STANDARD

WHAT WE OFFER

OUR COMPREHENSIVE RELIABILITY SOLUTIONS

- Wide range of Test & Measurement equipment, researched and developed in collaboration with Bosch, GEA (Formally IPC) & NPL.
- One partner capable of supporting multiple critical quality tests under one roof, reducing complexity and integration risk.
- High-precision, standards-compliant solutions delivering accurate, repeatable data for reduced field failure risk.
- Door to door service - Let us handle the complicated logistics.

SUPPORTING YOUR JOURNEY TO COMPLIANCE

- Navigating Objective Evidence – The latest requirement in electronics manufacturing.
- Guiding You Through Standards & Compliance – Utilising 50+ years of industry knowledge.
- In-House Test Service work - In collaboration with our Strategic Partners Zestron.
- Consultancy & Coaching Services - Understanding the results & implementing production processes to safe guard your electronics.

"WITH OVER 50 YEARS OF INDUSTRY EXPERIENCE, GEN3 DOESN'T JUST UNDERSTAND ELECTRONICS - WE UNDERSTAND THE REAL-WORLD IMPACT OF FAILURE. "

INTO THE DETAILS

Combining over 50 years of industry expertise with state-of-the-art analytical capabilities to deliver comprehensive test services for high-reliability electronics.

Whether you're producing semiconductors, printed circuit boards (PCBs), or critical components for aerospace, automotive or medical applications, our UK Technical Centre provides a full range of services all designed to ensure your products meet the highest standards of quality and reliability.

With GEN3, you get precise, actionable insight into potential failure mechanisms before they ever reach the field.

CONTRACT CLEANING SERVICES

Keep your production running smoothly with expert contract cleaning for PCBs and stencils. Using advanced cleaning technologies and proven processes, GEN3 ensure your assemblies and tooling meet the highest cleanliness and performance standards.

Benefits at a glance:

- ✓ Consistent, high-standard cleaning for PCBs and stencils
- ✓ Reduced contamination-related failures and defects
- ✓ Fast turnaround with reliable, repeatable results
- ✓ No need to invest in additional cleaning equipment or labour
- ✓ Enhanced process reliability and product performanceFull support from expert engineers throughout testing, analysis and implementation.

Leave the cleaning to us — and get peace of mind with every batch.

DISCOVER YOUR PERFECT CLEANING PROCESS

We understand that no two manufacturing environments are the same — and neither should their cleaning solutions be. Our customised cleaning solution trials are designed to identify the most effective cleaning chemistries and processes for your exact production challenges. Leveraging decades of expertise in electronics reliability and advanced contamination testing, we help you optimise cleaning performance with confidence.

Whether you're addressing complex residues, validating new process parameters or aiming to improve long-term reliability, our tailored trials deliver real-world results supported by measurable data and expert analysis.

Why Customers Choose Our Customised Cleaning Trials:

- ✓ Objective, data-driven recommendations tailored to your specific contamination profile.
- ✓ Access to industry-leading cleaning chemistries and extensive application expertise.
- ✓ Improved product reliability through enhanced residue removal and validated processes.
- ✓ Reduced risk and rework with scientifically verified cleaning performance.
- ✓ Faster process optimisation without costly trial-and-error experimentation.
- ✓ Full support from expert engineers throughout testing, analysis and implementation.

Get started with a 60-minute, no-obligation consultation call, where our specialists review your cleaning challenges and outline a clear, tailored trial plan to elevate your cleaning performance.

Book your consultation today and discover a smarter path to cleaning excellence.

CLEANINESS & CONTAMINATION

IDEAL FOR

Manufacturers looking to prevent corrosion, leakage currents, electrochemical migration, and long-term reliability failures linked to contamination.

WHATS INCLUDED?

Expert Consultation

- Review of cleaning processes, materials, and assembly flow
- Identification of risk points for ionic, organic, and particulate contamination
- Detailed report and roadmap to success

TESTS AVAILABLE

Ion Chromatography – Quantifies specific ionic contaminants.

Ionic Contamination Testing (ROSE / PICT) – Measures total ionic residue to verify cleaning effectiveness.

FTIR Analysis – Identifies organic residues from flux, oils, coatings, or handling.

Particle Measurement / Technical Cleanliness – Counts and characterizes foreign particles that may interfere with fine-pitch circuitry.

MATERIAL & SURFACE PERFORMANCE

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IDEAL FOR

Ensuring surfaces, coatings, and materials on PCBs perform reliably during assembly and product life.

WHATS INCLUDED?

Expert Consultation

- Review of coating requirements, soldering processes, and material selection
- Guidance on environmental exposure requirements
- Detailed report and roadmap to success

TESTS AVAILABLE

Contact Angle Measurement – Evaluates surface cleanliness and wetting behavior before soldering or coating.

Flux/Resin Testing – Assesses corrosiveness and residue behavior of materials used.

FTIR Analysis – Chemical identification of unknown surface residues.

Differential Thermal Analysis (DTA) – Determines thermal stability and transitions of PCB and coating materials.

SOLDERING & ASSEMBLY QA

IDEAL FOR

Improving manufacturing yield, detecting solderability issues, and preventing latent defects.

WHATS INCLUDED?

Expert Consultation

- Review of soldering parameters, PCB finish, component storage, and assembly defects
- Detailed report and roadmap to success

TESTS AVAILABLE

Solderability Testing – Confirms that pads and component leads can be reliably wetted by solder.

Visual Inspection – Detects visible defects prior to deeper analysis.

Scanning Electron Microscope / Energy-Dispersive X-ray Spectroscopy SEM/EDX Analysis – High-magnification failure analysis, including elemental composition (e.g., corrosion, alloy issues).

CONFORMAL COATING RELIABILITY

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IDEAL FOR

Manufacturers using conformal coatings for harsh environments (automotive, aerospace, industrial, medical).

WHATS INCLUDED?

Expert Consultation

- Review of coating material selection and curing processes
- Discussion of humidity, chemical, and temperature exposure requirements
- Detailed report and roadmap to success

TESTS AVAILABLE

Coating Layer Testing – Thickness, uniformity, and adhesion verification.

Coating Reliability Testing – Environmental aging, chemical resistance, and electrical performance testing.

Contact Angle Measurement – Ensures coating adhesion readiness.

RELIABILITY & FAILURE PREVENTION

IDEAL FOR

Predicting long-term PCB reliability under electrical stress, humidity, and temperature cycling.

WHATS INCLUDED?

Expert Consultation

- Review of PCB design, manufacturing parameters, and reliability goals
- Identification of high-risk structures (tight trace spacing, buried vias, etc.)
- Detailed report and roadmap to success

TESTS AVAILABLE

Surface Insulation Resistance (SIR) – Measures leakage current and contamination-induced failures.

Conductive Anodic Filament (CAF) Testing – Evaluates risk of internal conductive filaments forming in PCB laminate.

Highly Accelerated Thermal Shock Testing – Identifies risks from temperature-driven mechanical stress.

J-STD-001 QUALIFICATION

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IDEAL FOR

Manufacturers aiming to demonstrate compliance with J-STD-001 and provide Objective Evidence to validate the reliability and robustness of their assemblies.

WHATS INCLUDED?

Expert Consultation

- Gap analysis of your processes versus J-STD-001 and OE expectations
- Guidance on OE-compliant process control and documentation
- Detailed report and roadmap to success

TESTS AVAILABLE

Surface Insulation Resistance (SIR) Testing – Demonstrates electrical reliability under humidity and bias conditions.

Ion Chromatography (IC) – Quantifies ionic contamination to confirm cleanliness and process consistency.

Ionic Contamination Testing (ROSE / PICT) – Provides additional contamination data for OE compliance.

THE NEXT STEPS

Contact us today - it's as simple as 1, 2, 3

1. Book your discovery call & recieve a quote
Our experts will review your requirements, recommend the right tests or packages, and provide a detailed, transparent quotation.

2. Send us your samples
Ship your PCB assemblies, components, or materials, and we'll start testing immediately with full process control and traceability.

3. Recieve your test report & follow up consultation
You'll get a detailed, actionable report highlighting risks, recommended improvements, and next steps—plus a consultation with our engineers to ensure insights are implemented effectively.

Our expert consultation, comprehensive PCB and electronics test services, and actionable reports help you detect issues early, optimise manufacturing processes, and ensure long-term product reliability.

The result? Fewer failures, lower rework and warranty costs, and a stronger brand reputation—all while turning complex testing into a simple, efficient, and cost-effective process.

Test services are a strategic investment, not a cost.

All tests are available as individual services or as part of the tailored test packages.

For customers requiring a broader evaluation, we also offer comprehensive packages that include all test families—ideal for:

- **New Product Introduction (NPI)** - Ensure your designs are robust and production-ready.
- **Root-cause Investigations** - Quickly identify and resolve assembly or material issues.
- **Supplier Validation & Audits** - Verify supplier processes and build confidence in your supply chain.
- **High-Reliability & Safety-Critical Markets** - Automotive, aerospace, medical, and industrial applications where failure is not an option.

The Key Benefits?

- Achieve OE compliance and demonstrate assembly reliability
- Reduce risk of product failure and non-compliance
- Provide repeatable, data-driven evidence for customers and auditors
- Integrates seamlessly with existing GEN3 testing packages for broader quality assurance

RELIABILITY A-Z

Coating Layer Testing – Verifies the thickness, uniformity, and adherence of conformal coatings applied to PCBs to protect against moisture, dust, and chemicals.

Coating Reliability Testing – Assesses how well a conformal coating performs over time under stress (temperature, humidity, chemicals) to ensure long-term PCB protection.

Conductive Anodic Filament Testing (CAF) – Evaluates the risk of electrochemical migration inside the PCB laminate, where conductive filaments can form and cause electrical shorts.

Contact Angle Measurement – Measures how liquids (like fluxes or coatings) wet the PCB surface, indicating cleanliness and surface energy suitability for coating or soldering.

Differential Thermal Analysis (DTA) – Measures how PCB materials respond to temperature changes, identifying phase transitions or decomposition that indicate material stability.

Flux Test / Resin Testing – Examines flux or resin residues for corrosiveness, activation levels, and compatibility to ensure they don't harm solder joints or PCB surfaces.

Fourier Transform Infrared Spectroscopy (FTIR) – Identifies chemical compounds in residues, contaminants, or materials on PCBs by analysing their infrared absorption patterns.

Highly Accelerated Thermal Shock Testing – Rapidly cycles PCBs between extreme temperatures to reveal weaknesses like cracking, delamination, or solder joint failures.

Ion Chromatography – Detects and quantifies ionic contamination on PCBs, which can lead to corrosion or electrical leakage if not cleaned properly.

Ionic Contamination Testing (ROSE or PICT) – Measures overall ionic residue levels on PCB assemblies to determine if cleaning processes are adequate.

Particle Measurement / Technical Cleanliness – Identifies and counts particulate contamination on PCBs that could interfere with assembly, reliability, or high-density circuits.

Scanning Electron Microscope / Energy-Dispersive X-ray Spectroscopy (SEM / EDX) – Provides high-magnification imaging and elemental analysis to investigate defects, residues, or material composition on PCBs.

Solderability Testing – Determines whether PCB pads and component leads can be properly wetted by solder, ensuring reliable solder joints during assembly.

Surface Insulation Resistance Testing (SIR) – Measures electrical resistance between PCB traces under humidity and bias to detect ionic contamination and risk of electrochemical failure.

Visual Inspection – Basic examination of PCBs or assemblies to find defects such as solder bridges, cracks, misalignment, and contamination before more advanced testing.

OUR EXPERIENCE

At GEN3, we take pride in delivering comprehensive support throughout your product reliability journey—ensuring the highest standards of quality and performance. From expert consultancy to advanced testing services, we help protect your products against potential failures in the field.

Our dedicated team is committed to supporting you at every stage, whether it's initial sales and technical guidance, logistics and installation, or ongoing after-sales care. This end-to-end partnership guarantees a seamless experience and lasting value, making GEN3 the right investment for your business.

GEN3 has collaborated closely with the National Physical Laboratory (NPL) for over two decades, developing innovative solutions like the MUST and AutoSIR2+ test systems and pioneered advancements in measurement techniques.

This partnership extends to shaping international standards through BSi, IEC, and GEA (Formally IPC), reinforcing our leadership in the electronics reliability industry.

OUR UNWAVERING COMMITMENT TO QUALITY IS EMBEDDED ACROSS ALL LEVELS OF OUR ORGANISATION—FROM ENGINEERING TO ADMINISTRATION—ENSURING STRINGENT QUALITY CONTROL.

TEST SERVICE FAQ'S

Q: HOW DO I GET STARTED WITH GEN3 TESTING SERVICES?

A: Getting started is simple. contact our team via email, phone, or our online enquiry form. we'll schedule an initial consultation to understand your objectives, recommend the right tests or packages, and provide a detailed test plan and quotation. once samples are received, testing begins immediately, followed by comprehensive reporting and actionable recommendations.

Q: CAN I CHOOSE INDIVIDUAL TESTS INSTEAD OF A FULL PACKAGE?

A: Yes. You can select single tests or create a customised combination of tests to suit specific needs, budget, or project stage. Packages are ideal for comprehensive assessments, but flexibility is available for targeted analysis.

Q: HOW LONG DOES TESTING TAKE?

A: Turnaround varies greatly depending on the type and number of tests requested, as well as sample complexity. Typical individual tests may take anywhere from a few days to a few months, while full packages or multiple tests may require longer. GEN3 provides an estimated timeline in the test quote so you can schedule production or product launches confidently.

CONTACT US

Sales@gen3systems.com

+44 1252 521 500

www.gen3systems.com

GEN3

B2, Armstrong Mall, Southwood Business Park,
Farnborough, Hampshire GU14 0NR, UK

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