



TEST TECHNOLOGIES
EXCELERATE PERFORMANCE



AND PRODUCT QUALITY

PROFITABLE QUALITY DEMANDS VIGILANCE



Electronic devices have become increasingly complex.

A proactive testing strategy enables you to manage not only such factors as miniaturization, component density and limited access to test points. It also helps you to reduce testing cost and time, increase product variant flexibility, and shortens time-to-market.

THE RIGHT TEST STRATEGY

Component quality has improved significantly over the past decade, thanks in part to the wide range of advanced new test technologies that have emerged. Each offers unique features that, alone or together, enable very good test coverage at low cost.

The need for production speed and quality without added cost has increased the automation and embedding of tests in the process equipment itself. It has also moved it up-line. Instead of detecting faults at the final test, most errors today are found where they are made, and corrected immediately in-line.

THE RIGHT TEST STRATEGY GIVES YOU

- Shorter lead-time & higher competitiveness,
- Shorter time-to-volume and time-to-market,
- Lower manufacturing costs with in-process tests,
- Higher product quality and customer satisfaction,
- Higher product- and variant flexibility.

At BB Electronics, we offer a complete range of new test systems and facilities, enabling you to optimise your test strategy. On these pages we provide a brief overview of the possibilities. More details about the individual test systems and processes can be found in our respective process data sheets.

TEST STRATEGY CONSIDERATIONS

To choose the right test strategy, it is important to look at your complete supply chain, to test after specific processes, to minimize redundant tests and to catch defects effectively at their origin.

It is also important to look at the risk analysis; e.g. make an FMEA analysis to predict faults and fault levels, and their cause and effect. It is also important to look at the product's life cycle to determine optimal cost – for one product it might be better to start out with high flexibility and low NRE, while for another it could be appropriate to give lowest cost a higher priority than low NRE and high flexibility.

BB Electronics supports you in all these decisions – through early involvement in your development, or in a product redesign project.

BB ELECTRONICS TEST SERVICES

- Design of optimal test strategy
- DPMO calculation
- Development of test programs
- In-line or off-line tests
- Automatic or manual tests
- Development of test equipment
- Test documentation at item- or batch-level
- Test data available on-line for customer
- Fault statistics/SPC data available for optimisation

TEST STRATEGY ELEMENTS

Expected yield or fault level depends on several factors, the most critical being design and layout of the PCB, the type of components used and the number of fault possibilities – which in turn depends directly on the number of components, solder joints and processes, as well as the quality of these processes.

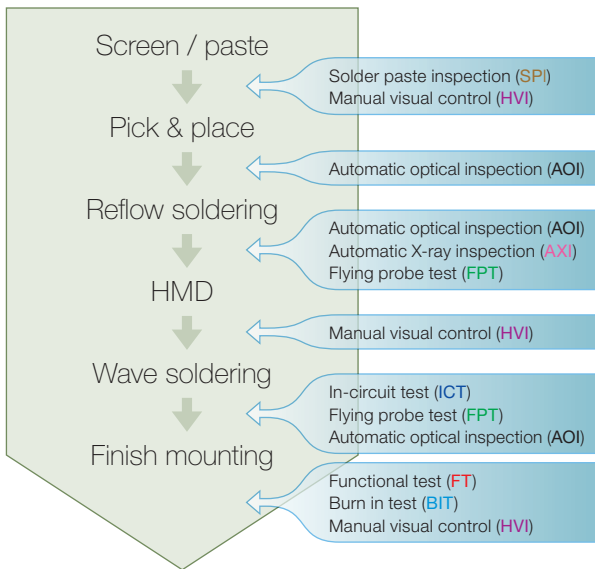
Quality levels are measured in Parts Per Million (PPM), and BB Electronics continuously strives towards low PPM levels in our production processes. We benchmark ourselves against world-class standards.

Given that each production process has a fault level contribution, and each test process has a certain reduction factor on eventual defects, the total DPMO (Defect Per Million Opportunities) can be calculated



and the expected final yield predicted. This is an important aspect in designing the optimal production process flow and test strategy for any specific product.

BB Electronics can implement a DFT process and, by means of in-house software, determine the amount of nets available for FPT or ICT. This service can support you in the development phase to optimise PCB design and component selection. In running production, our advanced SPC-based (Statistical Process Control) fault collection and analytical database enables us to further reduce fault levels.

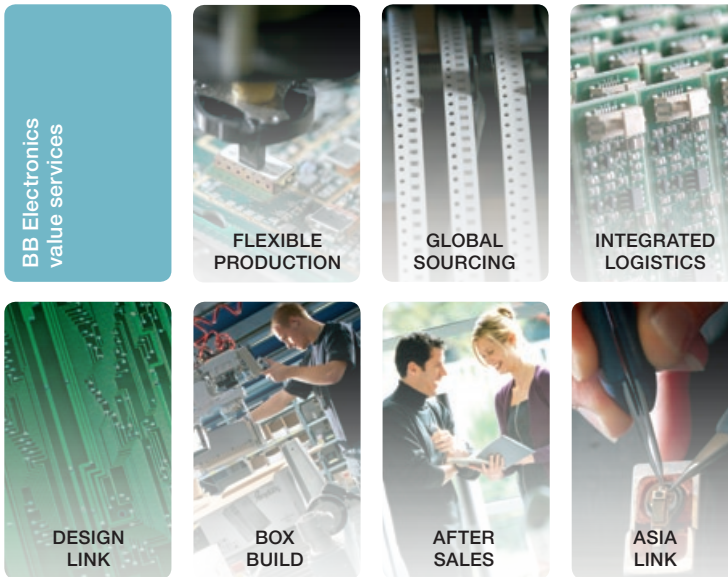


Several test options are available at each stage of the process flow.

MAIN TEST EQUIPMENT

- Agilent P3070II in-circuit tester
- Schlumberger S700 series testers
- ifr 5300 ATE Combi In Circuit testers
- Viscom S6055 Automatic Optical tester
- OMRON Wt-Win Automatic Optical tester
- Agilent 5DX Series II X – Ray test system
- Glenbrook RTX-2500 X-ray inspection
- Takaya APT-8400CE Flying Probe tester
- Ersascope Optical Inspection microscope
- Cyberoptics 3D paste inspection
- Cyberoptics AOI

Code	Name	Test method	Main feature	Fault coverage	Diagnostic details	NRE cost	Operational costs
HVI	Manual Visual control	Visual	High flexibility	Low	High	Low	High
ICT	In-circuit test	Electrical	Fast	High	High	High	Medium
AOI	Automatic optical inspection	Visual	Non-contact & OCR	Medium/High	High	Low	Low
AXI	Automatic X-ray inspection	Visual	Hidden faults	High	High	Medium/High	Medium
FPT	Flying Probe test	Electrical	Versatile	High	High	Low	Low
FT	Functional test	Electrical	Specific solutions	Medium	Low	Medium	Medium/high
SPI	Solder paste Inspection	Visual	Early detection	Medium	High	Low	Low
FOI	Fibre Optical Inspection	Visual	BGA inspection	Low	High		Medium
BIT	Burn-in test	Electrical	Initial fault reduction	Low	Low	Medium	Medium



EXCELERATE YOUR PERFORMANCE

The BB Electronics value chain is a complete palette of EMS services. You select exactly the right mix that optimises the life cycle of your product.

Our services range from design and development, to production and assembly, to warehousing and distribution and after-sales support – for everything from prototypes to large volume series. We can supply components, or turnkey management of a complete product or product line.

Do you want to accelerate your performance?



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