

Product Hardware Validation Service



Working With Red: The Benefits

- Practical thorough and innovative approach
- In-depth knowledge and network of hardware design specialists
- Flexible service offer configurable to your validation needs
- Quick mobilization using turnkey approach
- Specialised design experience across all aspects of hardware design
- Global perspective built on over 20 years design experience

Flexible service offer that can be mobilised quickly to reduce the risk of costly in-field failures.

Red Embedded Consulting support Broadcast and Broadband operators, product suppliers and Systems Integrators. We provide a tailored product validation and supplier audit service to enhance our clients' ability to validate their product hardware and eliminate costly design and manufacturing related failures from the field.

We offer focus, knowledge and substance in understanding how to not only design complex hardware but also validate it. Providing practical advice on what the results mean and identifying potential risks. Our engineering background, approach and processes enable us to mobilise quickly and provide a tailored solution that adds value to our clients' validation processes. This service has detected over 30 different types of hardware related issues that could have manifested as epidemic failures, safety issues or poor in field reliability, saving our clients both cost and reputation.



The economics of an in-field failure can be alarming. Investing early in preventative measures reduces the risk significantly.

Our experience means we understand how the costs associated with in-field failures can mount up.

The Broadcast and Broadband industry landscape is changing rapidly. To get ahead you need to innovate with technology and be ruthless in driving down equipment cost and the time it takes to bring new products to market. The pace of this evolution means that new suppliers need to be introduced quickly and that incumbent suppliers need to be proactive and inventive in the way they develop their products and in the sourcing of the components they use.

This drive brings with it an inherent level of risk that mistakes will be made in both design and in the selection of suppliers. Issues have played out time after time in both the Broadcast and Broadband industries as operators have experienced poor user experience, higher than average failure rates, epidemic failures and worst of all safety related failures.

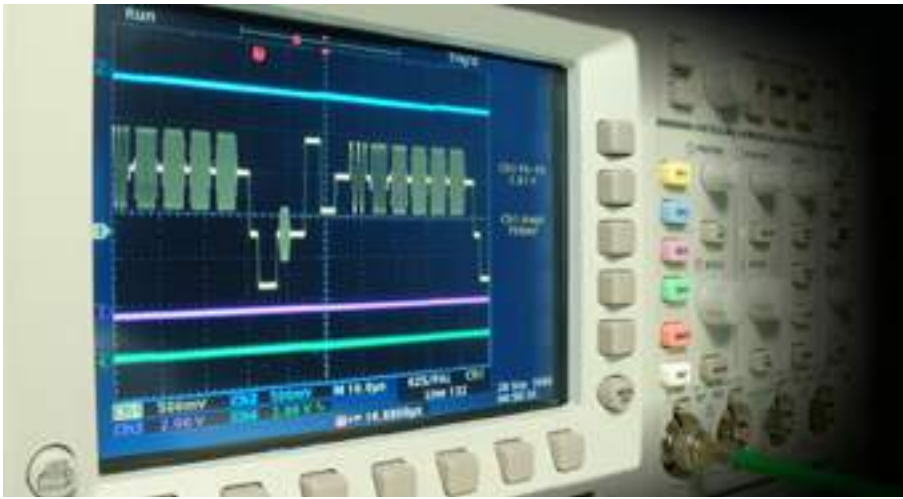
Our experience has shown that the tangible costs alone associated with these types of failures is significant to both operator and device supplier even before the intangible effect on operator reputation is taken in to account. We have also seen how the length of time it takes for some faults to manifest themselves mean that the liability for the failure falls outside of the product warranty period. In most cases leaving these costs in the hands of the operator.

In selecting our product validation service, management, security, and quality assurance is provided to assist in significantly de-risking the chance of these types of issues reaching your customers. All this is available through a variety of cost models designed to minimise additional product development costs. An investment we believe is justified when looked at in the context of the significant costs it can prevent.

“We have been working with Red Embedded since the start of the service and have seen the benefits first hand. We know that we will get a straightforward and pragmatic view of a product from Red Embedded and we have seen a number of issues averted that would have been costly to address in-field.”

**Gerdu Van Eden,
CTO of Multichoice**

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Product Hardware Validation Service Description

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Using our in-depth knowledge and network of hardware design specialists we provide a practical, thorough and innovative approach to validating the hardware design of our clients products. Our service offer is flexible to ensure we offer a level of validation suited to the product and network in question as well as the maturity of the device supplier. In working with Red Embedded you are assured that your investment in the roll out of a product will be sustained when it is deployed in the demanding environment of your network and customer premises. In trusting Red Embedded to validate your products you will gain access to specialised hardware design experience gained in delivering products to top tier Broadcast and Broadband operators on a global scale for over 20 years.

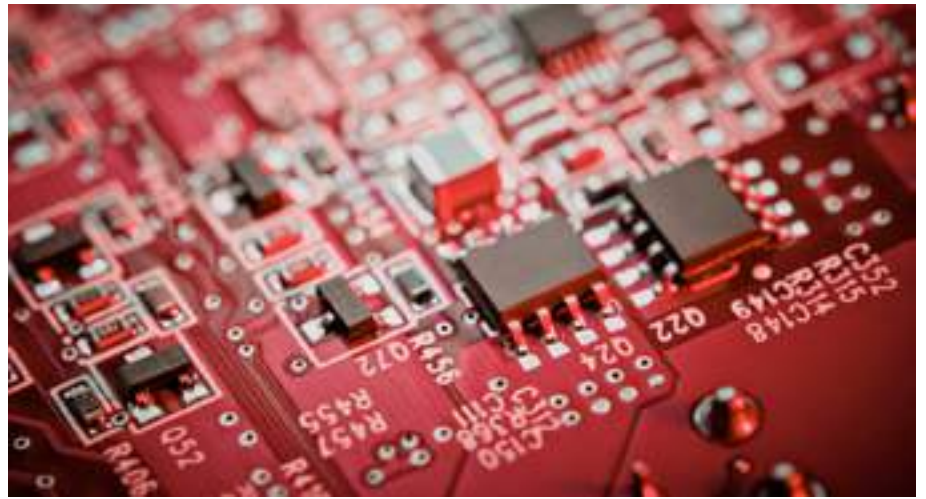
The Red Embedded Product Hardware Validation Service is split into a number of different work packages. This approach means you can pick and mix the most appropriate elements of the service depending upon your needs. The scope of each of these packages is described as follows:

Specification Review

This package delivers a thorough audit of the supplier's device specification compared with the operator's product requirements. The aim is to uncover any significant discrepancies, which we will clearly explain to you, so you are able to feedback directly into commercial discussions with the supplier.

"Our Validation Service has shown it has the ability to raise the bar across product suppliers, ensuring our clients' are assured a more uniform test framework is being deployed by all their suppliers. The service has helped improve the test regime of good suppliers and significantly improve that of lower tier suppliers."

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Test Process Review

In this package we will audit the test processes and procedures, to check whether the supplier's testing has the detail and depth needed. Any gaps found are raised with the supplier who is then able to iterate and improve their test plans. Our involvement in tightening up the test process reduces the chances of problems being missed and manifesting themselves as major issues later in your project.

"I use Red Embedded when I need help, when I need someone to know the answer and to give accurate and concise responses. They don't let me down. Red are pragmatic, fair and attentive, ensuring the customer receives good value for money, without protracted negotiation."

Roger Lambert,
Director B Sky B

Test Results Review

In this package we analyse the supplier's test results to ensure that they meet the required specifications, and have no intrinsic bias. We also double-check the distribution of results are performed over a realistic sample population. Again issues uncovered can be raised and resolved with the supplier, ensuring that your requirements are fulfilled.

Hardware Validation Tests

This package validates the product against key design criteria that will affect in-field operation such as thermal design, component reliability, system performance and hardware conformance. These design criteria are assessed across all the key functional areas found in Broadcast and Broadband products today ranging from the PSU, HDD, A/V and Processor through to key RF and Network interfaces.

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The aim of the Hardware Validation package is to validate the results with a set of spot tests. These are chosen with you and are based on our experience, input from the previous stages of the project and your own field knowledge. For each selected test area we perform a subset of the full OEM tests, checking for consistency between our results and those from the supplier. Our thorough approach provides you with confidence that the supplier testing performed is an honest representation of the product's performance and so avoids costly post-launch failures.

Product Supply Audit

This package is designed to capture un-approved changes that can effect in field performance and product reliability. The aim is to audit current production samples against the results recorded as part of the initial product validation performed during the design and development stages. Typical areas audited will include a build variant assessment, device type, version and temperature grade checks, mechanical assembly and build quality assessment.

Production Test Audit

The aim of this package is to prevent poor quality production units reaching the field. We work with you and the product supplier to ensure firstly that the test processes are thorough and secondly that the inspection frameworks deployed in your supply chain are robust. The primary objective of this audit is to validate the production test scheme being deployed by your suppliers in the factory, ensuring that manufacturing errors do not manifest themselves in product supplied to you.

“We have been using Red Embedded Hardware Validation Service for a number of years across several products. This is a flexible service that has raised the standards of our suppliers and we have now incorporated it into our standard product acceptance process.”

**Taylan Özsípahí, STB & CA Technologies
Director Digiturk**

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Validation: Benefits In Brief

- Avoid costly Epidemic and Safety related issues
- Reduce in-field failure rate
- Avoid poor user experience issues
- Problems identified early in design cycle
- Timely corrective action possible
- Duplication of test effort reduced
- Project launch risk of failure reduced
- Operator's reputation protected

Service Test Audit

This package entails an independent review of your service centre's incoming product inspection regimes. The emphasis of our work is in reviewing test methods and coverage with the intent of minimising No-Fault-Founds' and understanding if any early signs of epidemic or safety related issues can be detected in the field population being returned.

Final Report

At the end of the engagement we will produce a final report for you which will contain:

- A summary of the Work Packages performed and the results found.
- A detailed explanation of any outstanding issues and the impact of not resolving these issues.

You are then able to tackle any outstanding issues raised in the report with Red Embedded and the supplier before the final product acceptance.

"I would like to express my sincere thanks to Red Embedded for a thorough, clear, concise and highly professional report. Rest assured that I'll make use of your services again and that I won't hesitate to recommend you to anyone with a similar or related need."

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Working With You

We bring our specialist experience and technical capability to work on your projects. We work in a flexible way, allocating the right skills mix of directors, consultants, project managers and hardware/software developers to your project. We provide a project-based service, ranging from complete turnkey validation service to individual work packages tailored to your specific needs.

At key stages, we place our class-leading staff within your company. You'll find us practical and plain speaking, thorough and innovative, with the capacity and skills to help deliver your project, right first time.

Throughout our projects, Red Embedded work with both you and your suppliers to understand any problems and their impact and where possible resolve the issue to the your satisfaction. Where issues cannot be fully resolved, we will undertake a thorough analysis of the problem.

About Us

Red Embedded Consulting is part of the Red Embedded Group, which was formed in 2003 to bring a range of practical, innovative and technology-led consultancy services to the digital technologies market.

We've built a strong reputation in the industry for our practical, thorough, cost effective consultancy services. We work closely with you and your partners around the world to realise your technological goals.

Founded by five senior engineers with extensive experience in defining, developing and launching new products in the high volume digital consumer market, the group has gone from strength to strength. Based in the UK, the company is privately owned and now employs over fifty best-in-class engineers.



- Strategic Research
- Design & Development
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