BSI Internet of Things

Testing, verification and certification
solutions for a smarter, more secure world

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...making excellence a habit.™

Build trust in your connected devices

The opportunities brought about by the Internet of Things (IoT) to positively impact our lives and businesses are endless. However, the risks associated with connected devices, particularly those around security, privacy and safety, can make it difficult for manufacturers to build trust in new products and services. To overcome this, it's critical that device manufacturers need to consider the following:

- Is the device secure?
- Is the device safe?
- Does the device function as intended?

- Will it work with other devices (interoperability)?
- Will it work for as long as I need it?

IoT security is a global challenge and it's forecast that there will be more than 64 billion IoT devices by 2025, up from about 10 billion in 2018, and 9 billion in 2017*. All connected devices are vulnerable to external threats and an increasing awareness of this is creating a lack of consumer trust in IoT and reduced business confidence in the return on investment of this technology.

The Internet of Things, trends and challenges

Only **10%** of device manufacturers felt fully confident their devices had adequate security precautions in place (iot for all, 2018)

80 billion connected devices by 2025 (IDC, 2018)

More than **50%** of executive concerns around IoT are related to an "absence of industry-wide IoT standards, coupled with security, interoperability, and cost considerations." (Verizon 2017)

Worldwide IoT security spending is to top **$3 billion** by 2021 (Gartner, 2018)

BSI IoT solutions - designed to build trust

At BSI we focus on delivering a testing and certification partnership underpinned by quality, safety, reliability and trust. As a global organization we have the scale and reach to support organizations large and small and in our dedicated state-of- the-art IoT laboratory our experts provide fast, effective testing for a huge range of IoT products.

BSI has a world-class cyber security capability, recognized by CREST global accreditation, combined with decades of experience in product assurance and testing. We help you embed trust and confidence in your customers by supporting you in ensuring your products are safe and secure.

No matter where you are on your product development journey, our team of skilled IoT professionals can support you with a range of testing, verification and certification services.

BSI services for IoT

Build trust and resilience

Testing
Helps you manage risk. Ideal during product development and prototype testing.

Verification
When you are about to launch your product. Demonstrates compliance with the relevant standards.

Training and cyber resilience professional services

BSI Kitemark™
When you want to differentiate your product. Shows you are a trusted IoT provider.

OWASP (IoT) top ten project and BSI Core IoT testing

Created by security experts from around the world, the OWASP (Open Web Application Security Project) IoT top ten represents the most critical security risks to IoT devices. It helps developers, manufacturers and consumers better understand the security issues associated with the IoT and helps users in any context to make better security decisions when building, deploying, or assessing IoT technologies.

The foundations of BSI Core IoT testing are based on addressing this internationally-recognized list as it represents a broad consensus about the most critical security risks to IoT devices. We can then build on this depending on your own requirements.

OWASP top ten most critical web application security risks are;

1. Weak, guessable or hardcoded passwords
2. Insecure network services / protocols
3. Insecure access interfaces
4. Use of insecure or outdated components
5. Lack of secure update mechanism
6. Insufficient privacy protection
7. Insecure data transfer and storage
8. Lack of physical hardening
9. Insufficient security configurability
10. Lack of device management
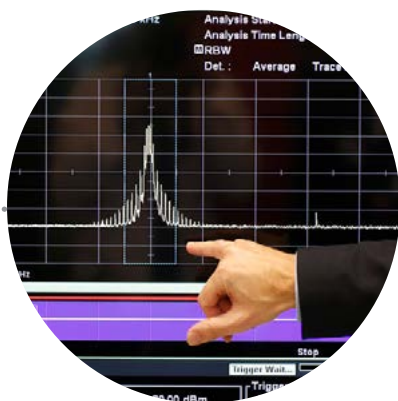
BSI IoT device testing

Testing is about managing the risk - either general risk or risk in complying with regional/specific requirements and if you are beginning your IoT product development journey it's a great place to start.

We can test to a wide range of international, national and industry standards providing an independent test report for you to use for your market needs. This service can help provide valuable feedback on the security of product design early in the process and help accelerate and de-risk time-to-market. It can also help you to meet local regulatory requirements.

BSI IoT testing services include

Core IoT testing

Our Core IoT testing service tests against globally-recognized fundamental vulnerabilities.

* Based on the internationally-recognized OWASP IoT Top 10 vulnerabilities, 2018
* Suitable for all IoT devices
* Helps to de-risk your product development programme
* Gives confidence in OEM Products

Market access testing

* We can perform further testing to support your regional or country market access requirements
* Performed against the required standards as appropriate for the region or country
* Builds on our Core IoT testing service

Specific application testing

* We can also support testing for specific applications and users such as government, healthcare or banking as required
* Performed against the specific requirements beyond basic market access
* Complete user environments/ecosystems
* This can be one-off verification or ongoing security testing as required
* Builds on Core and market access IoT testing making it quick and cost-effective

BSI IoT device verification

BSI IoT device verification provides independent evidence of compliance with regional/application specific standards. It builds on our testing services and may be beneficial when you are at the next stage of your product development journey or about to launch your product.

If you are developing connected products, then security should be an essential part of the design process. We work with you to verify your compliance with good practice IoT security design guidelines. Our experts will review all your technical information and files, carry out further tests as appropriate before a BSI Verification Certificate is issued.

Through our verification service, you can demonstrate that your products are secure as appropriate for their intended use. This gives evidence that BSI has independently verified your product and could help you to grow your commercial opportunities.

Achieving a BSI Verification Certificate can give you the confidence to upgrade to BSI Kitemark certification.

BSI IoT Kitemark certification

The BSI Kitemark is the ultimate mark of quality, safety and trust. When you want to differentiate your device from other products on the market, enhance your reputation and boost customer confidence Kitemark certification is the logical choice.

BSI Kitemark certification proves that a device has been tested for functionality, interoperability and security as well as on an ongoing basis to make sure that standards do not slip or change over time.

Benefits of Kitemark certification

Achieving BSI Kitemark certification can help you to:

- Build and protect your brand
- Increase your customer base and customer satisfaction
- Command price premiums
- Gain competitive advantage

How to achieve Kitemark certification for IoT devices

You will need to:

Demonstrate you have an effective quality management system in place (for example ISO 9001).

Pass the following tests:

- Functionality – relevant product performance and safety tests
- Interoperability – testing between devices and the internet
- Security – penetration testing scanning for vulnerabilities and security flaws

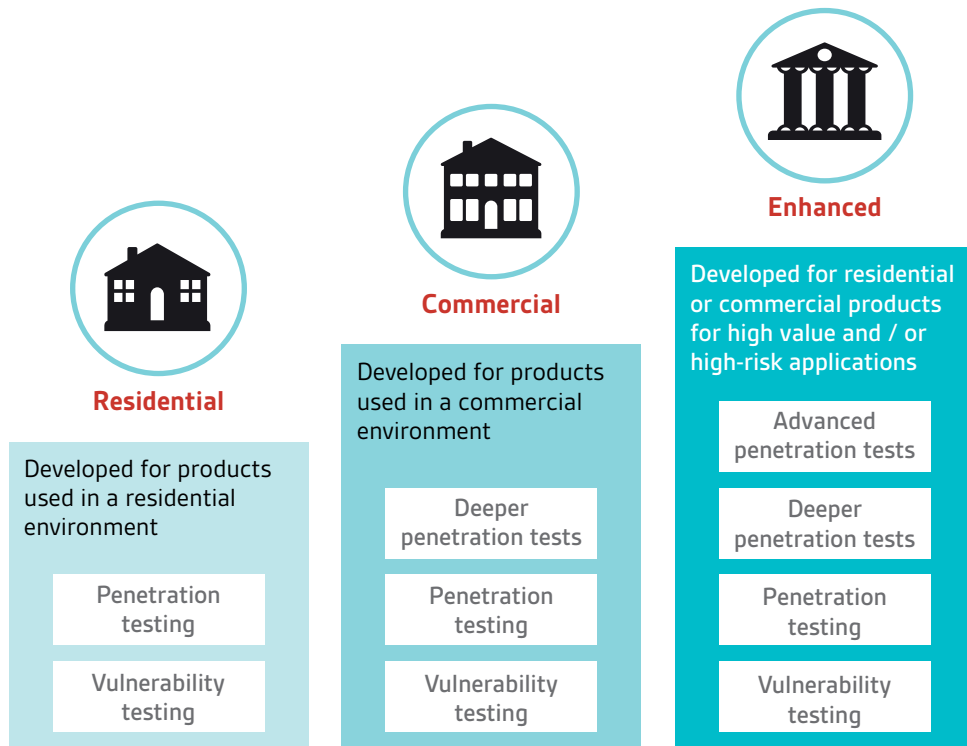You will also need to receive on-going, regular monitoring and assessment comprising of:

- Functional/interoperability tests
- Penetration tests
- A Kitemark annual assessment which includes annual product testing and a review of your quality management system

BSI IoT Kitemark certification

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Internet of Things
Devices
KITEMARK™

Due to the wide range of IoT connected devices, we have developed three different types of BSI Kitemark for IoT Devices. These reflect the environment where the device is used and the typical level of risk.

Enhanced

Developed for residential or commercial products for high value and / or high-risk applications

Advanced penetration tests

Commercial

Deeper penetration tests

Developed for products used in a commercial environment

Deeper penetration tests

Penetration testing

Residential

Penetration testing

Developed for products used in a residential environment

Vulnerability testing

Penetration testing

Vulnerability testing

Vulnerability testing

Why BSI?

BSI works as a trusted, independent convenor of communities to shape, share, embed and support innovation in IoT and the safe and reliable use of 'smart' applications, data and devices. Through our community of IoT experts and organizations BSI is at the forefront of shaping new opportunities and creating industry-led best practice in IoT. That's why we're best placed to help you embed trust and confidence in your products.

Working with over 84,000 clients across 193 countries, BSI is a truly international business with skills and experience across a number of sectors including automotive, aerospace, built environment, food, and healthcare. Through its expertise in Standards Development and Knowledge Solutions, Assurance and Professional Services, BSI improves business performance to help clients grow sustainably, manage risk and ultimately be more resilient.

By Royal Charter

Our products and services

Knowledge

The core of our business centres on the knowledge that we create and impart to our clients.
In the standards arena we continue to build our reputation as an expert body, bringing together experts from industry to shape standards at local, regional and international levels.
In fact, BSI originally created eight of the world's top 10 management system standards.

Assurance

Independent assessment of the conformity of a process or product to a particular standard ensures that our clients perform to a high level of excellence. We train our clients in world-class implementation and auditing techniques to ensure they maximize the benefits of standards.

Compliance

To experience real, long-term benefits, our clients need to ensure ongoing compliance to a regulation, market need or standard so that it becomes an embedded habit. We provide a range of services and differentiated management tools which help facilitate this process.

Find out more
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visit **bsigroup.com/iot**