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# Certifying your wireless product: what you need to know

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# What is product certification?

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In its most basic context, product certification is a process that demonstrates whether a certain product has passed performance and quality assurance tests, and meets qualification criteria stipulated in contracts, regulations, or specifications. It is a process that assesses whether a product is safe to use in the applications and markets it is intended for. Most organisations that assess whether a product meets the required criteria are themselves accredited to an international standard, ISO/IEC Guide 65:1996, that proves and ensures their competence to perform product certifications.

## What certification do I need?

The certification of a wireless electronic product involves two main factors. Firstly, certification depends on the type of product and its use, for example whether it uses a short range transmission such as Bluetooth, or a longer range signal used in the cellular network. Wireless products must normally conform to certain radio emissions regulations.

Secondly, certification varies according to the region that the product will be sold into. The certification of electronic products for conformity with radio emissions regulations and product safety is required in Europe, the US and most other sales territories, and there are a number of routes you can take.

**Europe**

CE Certification: Self Certify

**Europe**

CE Certification: Notified Body

**International  
certification**

## Europe: CE Certification by Self Certification

**CE** For a European market, one option is Self Certified CE Certification which is based around a prescribed set of standards which a product is required to meet. Evidence, in the form of measurements, needs to be made and recorded in a 'technical construction file', which you will need a Technical Consultant to help with, to show that the regulations have been met. The use of pre-certified radio modules for GSM communications and GPS receivers can help reduce these requirements.

A word of warning though; certification rules are evolving all the time, so it is important to stay on top of the current legislation. Some of your customers may also require that tests are done by a Notified Body (i.e. a test house - see section 3) so this is another factor that you need to consider.

## Europe: CE Certification by a Notified Body

**CE** The other route available for electronic products to be sold in the European market is by adding a CE mark through a Notified Body. Whilst not every product requires the mark, for those that do, the CE mark is an EU Declaration of Conformity from the manufacturer, or authorised representative. It states that the product complies with the minimum standards in relevant EU legislation and is necessary if you want to sell in the European Economic Area (the 28 Member States of the EU, as well as the European Free Trade Association countries Iceland, Norway and Liechtenstein). Importantly, it does not make any claims about the quality of the product. Obtaining and displaying the CE mark on the product, packaging and associated documentation, where required, is the responsibility of the manufacturer or authorised representative.



## What is the CE marking process?

There are six crucial steps to receiving a CE marking, which will need to be followed to ensure the process runs smoothly and you can take full advantage of it once awarded. These are as follows:

- 1. Find the CE directive(s) that apply to your product.** It is vital to ensure you have the correct directive in place and that you are not missing any important legislation. The UK Government offers further advice on this procedure on its website: [www.gov.uk/ce-marking](http://www.gov.uk/ce-marking)
- 2. Know the essential requirements for your product.** Before commencing the project it is important to know what must be covered to obtain the CE marking.
- 3. Determine if you need third-party certification.** This may be for a specific customer or territory market.
- 4. Assess product conformity.** Ensure that your finished product meets the brief and all the legislation.
- 5. Create and maintain technical documentation.** This will prove your product meets the specifications in the CE marking and also allows for later adaptations if legislation changes.
- 6. Declaration of Conformity and Affixing the CE Mark.** This formally declares you have the CE marking and needs to be shown on the product and any associated documentation and packaging.

## What does CE marking signify?

Wherever in the world it is manufactured, the CE marking indicates a product's compliance with EU legislation. By affixing the CE marking on a product, a manufacturer is declaring and taking responsibility for conformity with all of the legal requirements to achieve CE marking. This in turn allows free movement and sale of the product throughout the European Economic Area (EEA). CE marking is also intended to help national market surveillance and enforcement authorities to check items being sold in their territory.

Whilst CE marking signifies that the product conforms with all the EU directives that apply to it, it doesn't necessarily indicate the product

was manufactured within the EU. Interestingly, not all products need CE marking to be traded in the EU. Only products in categories that are subject to stipulated legislation are required (or allowed) to display CE marking. Additionally, most CE marked products can be placed on the market having only passed internal production control by the manufacturer themselves, with no independent checks to verify this.

## Who can apply CE marking?

In many cases the original developer or manufacturer will have completed the compliance testing themselves and then affix the CE marking. This is logical as they will have designed and manufactured the product with the criteria in mind as well as holding the documentation and reporting to substantiate this if there are any issues.

However in certain cases, like when a product is made under license from designs by another source, the evidence for CE marking may need to be passed on by the original design or manufacturing organisation. If this hasn't already been done at source, an authorised representative can also apply it. This may be the case when a product is designed and produced outside the EU but an organisation within it wants to bring the product to market. This is considerably easier if the authorised representative has full access to all the development testing and manufacturing specifications to prove compliance.

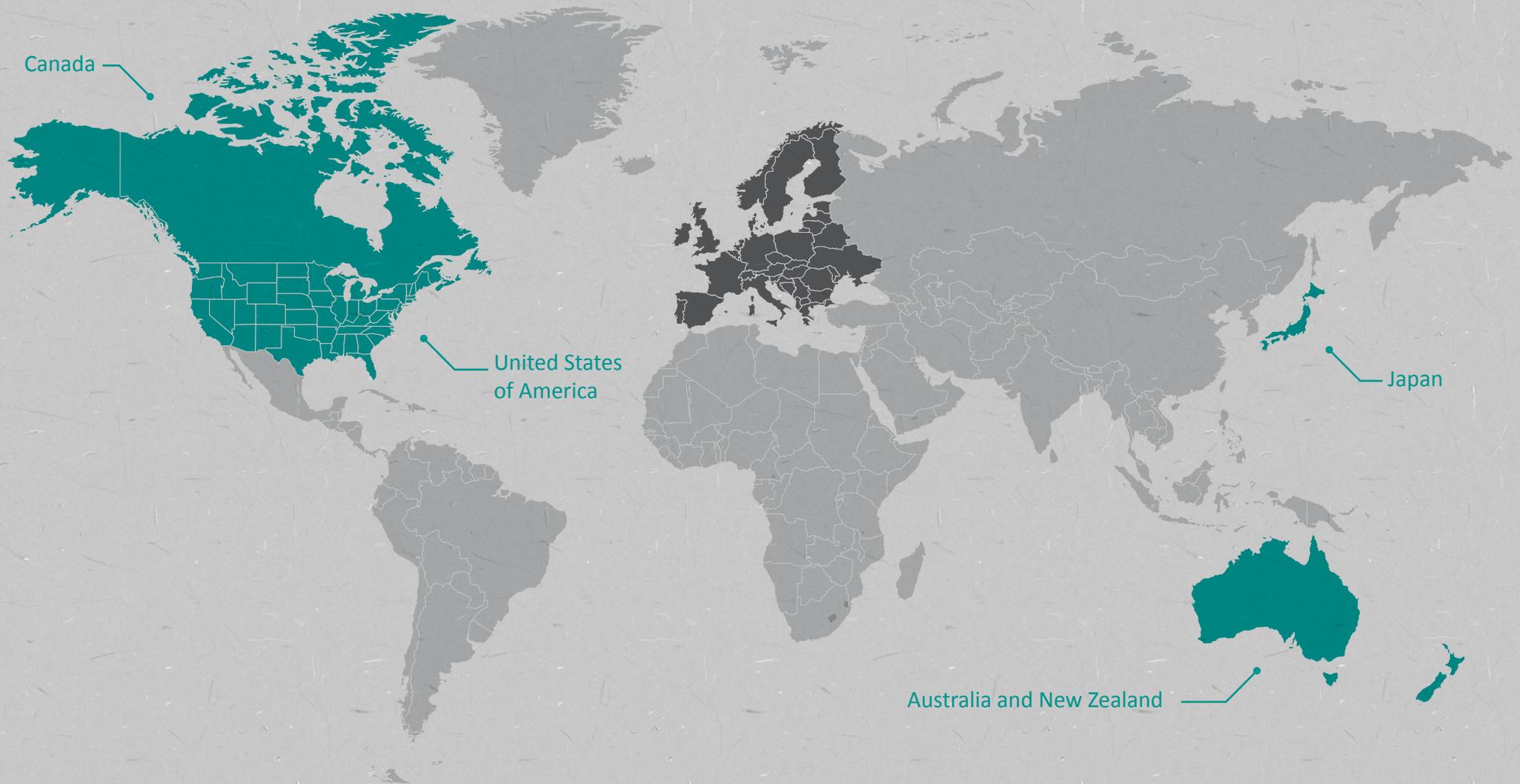
## Who is responsible for CE marking?

In simple terms, it is in most cases the responsibility of the manufacturer to ensure the CE mark is added to the product and its documentation and packaging. This ensures that users are fully aware the product conforms to the relevant regulations for use in the EU.

Whilst the CE mark is not applicable in all cases, generally the regulations on wireless and radio equipment are strict and punitive measures are in place when these rules are broken. Therefore it is essential for manufacturers to ensure the CE mark is included wherever applicable.

# International markets

When it comes to product certification it's simply not a question of 'one size fits all'. The certification needed for a product will be defined by the market(s) in which you intend to sell, with varying standards and testing methods required. For products designed to be sold in the US, Canada, Japan and many other countries, test house certification with accompanying documentation is always required. Additionally, the test methods and limits are not the same, country to country, for these.



## Australia & New Zealand

The Australian and New Zealand C-Tick mark is similar to both the CE mark and the American FCC Declaration of Conformity. In Australia wireless communications are regulated by the Australian Communications and Media Authority (ACMA), an Australian Government statutory authority. The ACMA has a number of regulatory arrangements in place for telecommunications and radio communications equipment. Each of these arrangements requires testing of equipment to identify applicable standards.

The Telecommunications Act 1997 allows for the appointment of 'certification bodies'. Certification bodies are specified persons or associations that, in the opinion of the ACMA have the skills and experience to certify that equipment meets standards based on limited or incomplete evidence. Certification bodies can only certify equipment compliance under certain circumstances and the ACMA has developed guidelines that outline these circumstances. Certification bodies fill a niche in the testing and conformity arrangements in Australia. They perform the conformity assessment process where appropriate testing facilities are not available or where you require additional confirmation that all legal obligations have been met.

A harmonisation of regulations between Australia and New Zealand means that products which carry Australia's C-Tick need no further declaration, certification or labelling for sale in New Zealand.

## Canada

Canada's wireless and telecoms industry is regulated primarily by the Canadian Radio-television and Telecommunications Commission (CRTC). The CRTC can issue broadcasting licenses, but, before doing so, an approved frequency has to be assigned by Industry Canada (a department of the Canadian Government). Much like in the EU and US, it is often easier to obtain the services of a local telecoms expert to make sure your product(s) adhere to local transmission regulations. Applications are judged by the power output of the application, with more in-depth legislative and consultation processes in place for high power applications.

## Japan

In Japan the 'Technical Regulations Conformity Certification System' is run by the Ministry of Internal Affairs and Communications to regulate wireless communications. This allows for testing of any wireless equipment and assessment against the applicable article of the national Radio Law.

There is also a facility for self-certification which is either the responsibility of the manufacturer or the importer, depending on the origins of the equipment. You would need to show you have conducted full testing in accordance with the Japanese legislation and can then attain certification from the Ministry of Internal Affairs and Communications. It is also possible to get certification via a number of state-recognised certification bodies which include TELEC, JARD, DSP Research, TÜV Rheinland Japan and RF Technologies which are licensed by the state on its behalf.

## United States of America

The requirement for certification for use in the US includes mandatory testing of the product in an independent laboratory, and separate qualification testing for devices that connect to a mobile network.

The US equivalent to the EU CE mark is the FCC Declaration of Conformity. US wireless certification is regulated by the Federal Communications Commission (FCC) Wireless Telecommunications Bureau, which has jurisdiction over interstate and international communications by radio, television, wire, satellite and cable in all 50 states, the District of Columbia and U.S. Territories.

Whilst US certification is administered and legislated by the FCC, many independent expert organisations offer certification services to ensure products comply to all the necessary legislation – much as is the case within the EU. The FCC also publish certification standards, but as with their EU equivalent, self-certification can be a complicated and arduous process.

# Do I need help from a test house?

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A test house is an organisation which has the technical facilities and expertise on offer to assess your product fully (TÜV SÜD or TRaC are well established in the UK). Engaging the services of a test house is invaluable when it comes to certification. Not only do they fully understand and track new legislation, they also have technical facilities and know-how to prove your products reach the designated standards for the market and territories it will be sold in. Whilst an expert test house will not be able to help develop products or design new ones, it can give valuable advice on the products it tests which you can then feed back into the design process.

## Conclusion

Certification requirements for wireless electronic products vary from territory to territory. In the EU, CE marking by self certification is the simplest and cheapest option and one few people are aware exists. Designers like ASH can help you put together the technical construction file and take the measurements needed. However, the nature of wireless communications and strict regulation of radio frequencies in international markets requires more stringent quality assurance and certification standards be complied with when shipping outside of the EU.

The ASH logo is rendered in a bold, white, sans-serif font. The letters 'A', 'S', and 'H' are connected at the top, while the 'I' is separate. The background of the entire advertisement is a blurred, high-angle photograph of a busy public space, likely a transit hub, with many people walking and stairs visible. The overall color palette is dark and muted, with the white text providing high contrast.

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The ASH team can assist you throughout your development journey to help you reach your certification goals by giving advice on developing your products and liaising with you and your test house on specific technical issues or needs. To find out more about how we can help you bring your products to market with the certification you need, call ASH...

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