QUECTEL

Build a Smarter World

Certification white paper

How to accelerate, simplify and optimize IoT device certification

Table of contents

Introduction

Certification is an inescapable requirement for all new IoT devices. It requires investment of both time and money to ensure that the devices can be deployed in each target country and comply with all local requirements.

The task encompasses certification of components such as modules as well as the actual device that is being released to market. But certification requirements across or within specific geographies can be complex and therefore costly to meet. It's important that device OEMs understand this and have the knowledge and expertise needed to ensure certification applications are successful.

Few IoT organizations have the time or skills to understand the variations and in-depth detail of the global certifications landscape. Organizations therefore have to invest in building certification knowledge, partner with certification agents who can address the challenges on their behalf or seek to reduce the certification burden by selecting pre-certified components that can accelerate full device certification in some markets.

To help you decide which approach is best for your business this whitepaper sets out the complexities of certification and details how to optimize your organization's approach to obtaining certification.

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The certification landscape

Certification is required across several dimensions in order to arrive at a fully-certified device that is ready to go to market. The first step is regulatory certification which is fundamental in order to allow market access for devices. This type of certification includes CE for the European Union and Federal Communications Commission (FCC) certification for the US. Other regions have certification requirements as well so globally deployed devices will need certification to be obtained for all the markets they aim to operate in. This can create the need for different versions of products for different reasons.

The next certification area is conformance certification which certifies that a device is compliant with the demands of a particular industry organization. This would typically involve an industry organization that oversees a technology setting out attributes that certified devices must comply with. Certification organizations may have been established by wireless carriers or equipment manufacturers to define test specifications and methods.

The aim is to ensure device interoperability on global wireless networks and well-known examples of certification organizations include the Global Certification Forum (GCF), PTCRB, the Bluetooth Special Interest Group (SIG) and the Wi-Fi Alliance. Each of these set their own criteria for compliance with the benefit that compliant devices can be used globally – subject to regulatory certification.

Another layer of certification, which is particularly relevant to IoT devices, is carrier certification which involves individual carriers requiring devices to meet their certification requirements before being allowed to connect to their networks. This can be a lengthy task with carrier certification programs taking substantial time to pass. Carriers such as AT&T, NTT Docomo, Orange, SK Telecom, Softbank, Telefonica, Telstra, T-Mobile, Verizon, Vodafone and many others all have certification programs in place for IoT devices.

Certification doesn't end with these three main forms of certification. Industry-specific organizations such as eCall, ERA-GLONASS, in the satellite sector, and vendors' own programs also add to the certification burden. Finally, there are also environment and safety-related certifications such as ATmosphere EXplosible (ATEX), Restriction of Hazardous Substances (RoHS), Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) and waste electrical and electronic equipment (WEEE).

If that feels like a long list of certifications for a single product to comply with, you'd be correct, but certification is needed to ensure the essential safety, security, performance and interoperability functions of IoT devices. Regulatory certification addresses radio frequency usage and safety, electro-magnetic interference, environmental issues, labelling, energy efficiency and accessibility. Conformance certification ensures correct adoption of protocols, SIM and universal SIM, field testing practices, performance criteria and radio frequency utilization. Carrier certification is vital for network interoperability, carrier lab tests, field and drive testing, radiated performance requirements and testing and network safety.

Figure 1: Typical certifications requirements by country (Source: Quectel)

COUNTRY/REGION	MANDATORY FOR MARKET ACCESS	VOLUNTARY & DEPENDS ON CUSTOMER/CARRIER REQUIREMENT		CARRIER MANDATORY Y/N?
	REGULATORY	CONFORMANCE	CARRIER	
US Local	FCC	GCF *Device can refer to module GCF	Verizon	Y
	FCC	PTCRB	AT&T	Y
	FCC	PTCRB	T-Mobile	Y
	FCC	PTCRB	US Cellular	Y
Canada	IC	PTCRB	Rogers	Y
	IC	PTCRB	Bell	N
	IC	PTCRB	Telus	N
Europe	CE	GCF	Vodafone Global / Deutsche Telekom / Telefonica / BT/EE / Swisscom / TIM	N
Australia	RCM	GCF *Reports at least	Telstra	N
	RCM	GCF *Optional	Spark	N
China	CCC/SRRC/CTA	/	China Telecom / China Mobile /	
China Mobile	N			
Japan	TELEC/JATE	/	NTT DOCOMO / Softbank / KDDI	Y
Korea	KC	/	KT / SKT / LGU+	Y *If product volume exceeds 1,000.
Taiwan	NCC	/	/	/
Thailand	NBTC	/	/	/
Singapore	IMDA	/	/	/
Russian	FAC	/	/	/
South Africa	ICASA	/	/	/
Brazil	Anatel	/	/	/
Mexico	IFETEL	/	/	/

Simplify and accelerate certification

Only with all of these certifications achieved can products be safely and efficiently launched, so certification therefore plays a critical yet often overlooked role in bringing an IoT device from concept to commercial reality. The task is substantial but the good news is that organizations don't have to continuously re-invent the wheel and repeatedly gain certification for components. For example, if a module has been approved by a regulator, industry body and carrier it may not be necessary for the device to gain separate certification.

This is dependent on individual regulatory requirements but often the certification of the module in a device is sufficient and can be used to support certification of the device. This has obvious benefits in aiding efficiency of the process and minimizing repeated effort so it is well-worth for IoT organizations, to seek out modules that are already certified in order to help simplify and speed up the device's overall certification process.

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Seek expert support

Specifying pre-certified modules is only one way to lighten the load and adopt an optimized strategy for achieving certifications. Certification agents can handle the process on behalf of device OEMs and their customers and this can be a good way for IoT service providers to avoid the costs and delays typically associated with gaining all the necessary certifications a device needs to be sold and to operate in a market. As an alternative to building an in-house team of certification specialists, certification agent services can radically streamline the process because they are already familiar with all the requirements a product is likely to face on its road to certification.

Quectel has developed in-step with the IoT industry since it was founded more than twelve years ago as a vendor of IoT modules. The company has now grown to become a global IoT solutions provider with modules, antennas and connectivity, which enables us to provide pre-integrated solutions that combine modules, antennas and connectivity thereby accelerating time-to-market, increasing simplicity and reducing costs. An added benefit for customers that utilize both Quectel modules and antennas in their design, is that device testing is included for free.

Quectel's modules, antennas and connectivity are augmented by our original design manufacturer (ODM) services and testing and certification services that are now well-established in our portfolio. We have helped countless customers build a smarter world by specifying our modules, antennas and connectivity in their devices and, as we have assisted their market entries, we have accumulated an unparalleled amount of experience and expertise in device certification.

Get certified in six-to-eight weeks

Quectel delivers a comprehensive certification and testing portfolio through Quectel Certification Services which offers a range of professional services and management tools, depending on each customer's needs.

The experienced Quectel team is far larger than that of a single company because it supports a huge number of IoT device customers globally. It therefore has an in-depth global view of certification demands across nations, industries and technologies. This knowledge and experience would be expensive and time-consuming for all but the largest corporations in the world to build for themselves and we make it easily available to all of our customers.

Quectel has become so experienced and adept at navigating the challenges of certification that it guarantees a six-to-eight week certification process for Quectel module customers' devices. That is in contrast to going directly to certification organizations which can result in it taking up to six months to gain certifications. For many IoT use cases a six-month delay to launch is unacceptable and could make or break a proposition in markets where being first-to-launch is a critical differentiator.

Quectel augments its certification expertise and our relationships with certification organizations with professional capabilities that, again, would be challenging for individual companies to assemble. The pre-scan service in our own labs can be used to assess certification compliance before applying to certification authorities. Technical support facilities and debugging solutions are available to address common, and not so common, certification issues. This pre-test capability is extremely effective because Quectel knows what certification authorities look for, so it can tailor testing to identify compliance or areas to work on.

Quectel Certification Services are flexible and enable customers to utilize the resources they have while having the ability to lean on Quectel to address areas in which help is needed. Our aim is to foster great co-operation so a dedicated project manager is provided for certification project management.

Drive down certification costs

This combination of technical support, in-depth knowledge of certification requirements across geographies and industries, and relationships with regulators, testing labs, carriers and industry bodies means Quectel is ideally placed to help you save on labor resources, shorten the lead time for a device to gain certifications and to achieve this at reduced cost. Quectel offers the industry's most cost-efficient pre-testing and certification with faster time-to-market than organizations typically experience if they seek to achieve certifications by going direct to certification authorities.

Put simply, Quectel has the scale to know what certification requirements you face, which organizations your product needs certification from, when pre-certified modules can accelerate the progress, and the relationships and tools to keep certification on track.

Quectel Certification Services is ready to provide full, global certification consultation and service to integrated device customers that have products based on Quectel modules. Capabilities include project management, all paperwork tasks, dealing with labs and carriers, checking the test scope and making the minimum test scope, providing the necessary on-site support and providing testing and debugging. In addition, Quectel will fix issues as they arise. With so much else involved in developing new IoT products and taking them to market, certification is often left to the last minute but this approach causes delay, costs more and is inefficient. A simpler, faster and more cost-effective way is to use a certification agent that really knows what certifications you need and how to get them.

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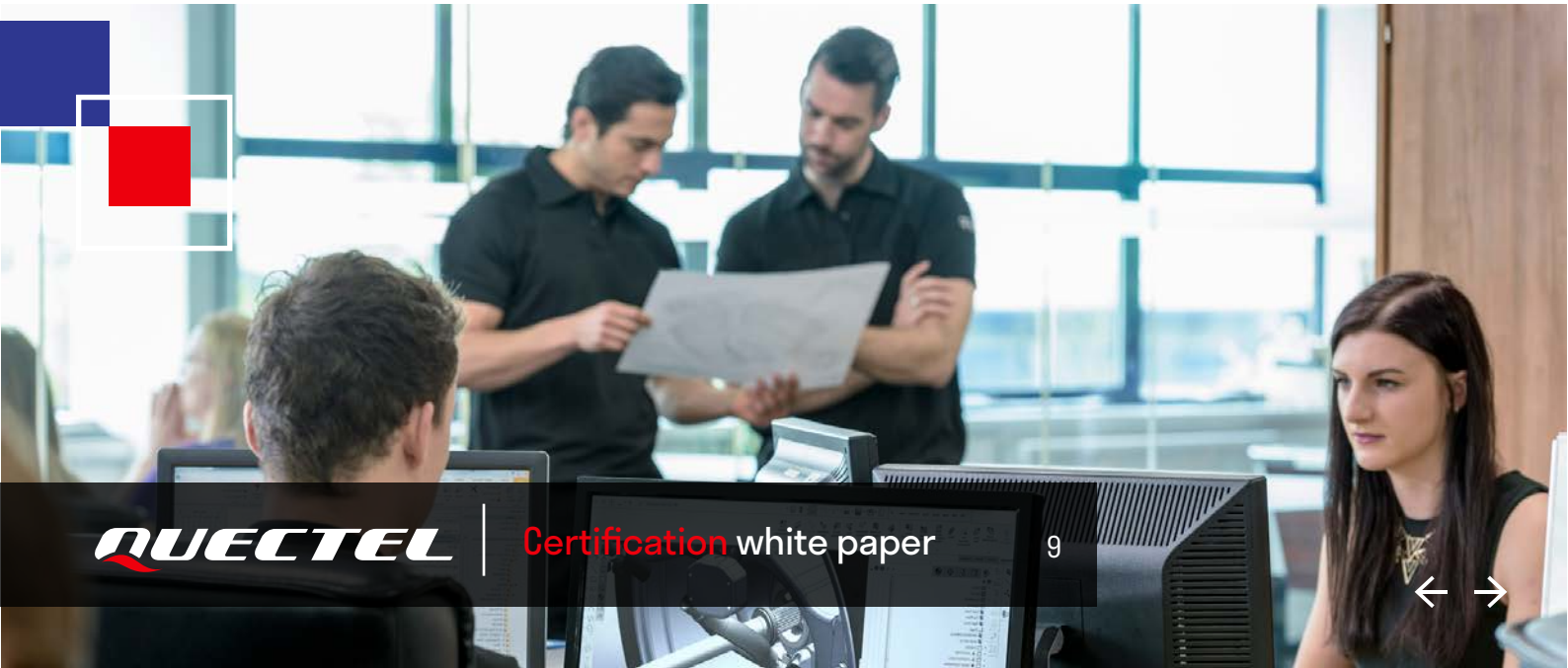
QUECTEL CERTIFICATION SERVICES HAS BEEN GAINING CERTIFICATIONS FOR QUECTEL MODULES AND CUSTOMER DEVICES FOR MANY YEARS SO TO ACCELERATE YOUR DEVICE'S TIME TO MARKET AND TAP INTO QUECTEL'S CERTIFICATION EXPERTISE, CONTACT: QUECTEL.COM/TESTING-CERTIFICATION



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