

## Why is regulatory compliance such a big deal?

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### What is the risk if your onboard electronics lacks it?

By Tech Doctor: Don Wilson



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Ever been in the market for some of those hot new electronic devices? As you reviewed your top choices, you likely compared plenty of features and benefits... but, did you happen to check for that seemingly inconspicuous "regulatory compliance mark?" If you didn't, you could be setting yourself up for disappointment down the road, and potential serious risk. However, in my opinion, regulatory compliance should be mandatory and is arguably the best indicator of a product's ability to perform as well as to prevent harmful consequences or even death. Let's talk about this subject in more detail to understand why this is so important.

#### Q: Why should I make sure that my products have regulatory approval?

Well, consider this: anyone who has been to a basic electronics class can make a simple power supply for charging batteries. Those products could be sold for use in any state or province. However, if there's a circuit that is too small for the maximum rated power, it will fail. What happens when it fails? It shuts off? smoke? fire? what if it charges batteries fine, but fails to turn the charge rate down? damaged batteries? In addition, a regulatory mark also informs a consumer that the product was built by the manufacturer, and then sent to an independent testing laboratory to uncover and isolate any unsafe issues. This test is usually very rigorous, time consuming, and expensive. However, earning the mark is akin to a badge of honor that confirms it is safe to be used as designed.

#### Q: What specific approvals or marks should I look for?

Well, there are so many, but since I deal mostly with electronics, I'll focus my answer there. UL or Underwriters Laboratories is the main regulatory body in the US. Canada has a similar standard written by CSA. This means that they write the specifications and the test procedures. They also have testing labs that give approval to mark the product. However, there are many testing labs that can mark a product for US use, but they must only mark the products that pass the UL, or CSA written test procedures. For instance; in North America the regulatory standard for power electronics, mounted in Land Vehicles and Marine Crafts, is UL 458. It is important not to get confused with UL 1741 which is for residential applications.

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#### Q: What are the consequences of using a non-regulated product?

The consequences can vary widely. It's like asking "What are the consequences of not wearing shoes on a beach?" Likely, you'll be okay, but there could be something in the sand that is unseen that can cause you pain or suffering. In an electrical device, anything from a puff of smoke, to real fire, to a shock hazard or something worse could be the result of a poorly designed or ill performing product.

#### Q: Are non-regulated products legal?

Legal? Yes... sort of. Obviously, there are products that can be sold without the mark or listing and there are plenty of them out there which is why you should always check. However, there are certain approvals that require listing. For instance, an inspector will not approve a house build if non-UL parts are used. On the other hand, a non-UL breaker could be put in a panel that is UL listed for use with the non-UL breaker (since UL tests the entire panel, breaker and all). This is an example of a legal non-listed product being used legally, but it required the panel manufacturer to do the listing. You may be able to buy a non-regulated product for a cheaper price but do you really want to take that risk? I wouldn't.

#### Q: Can you provide an example where a non-regulated product caused extensive damage or put life of people onboard in danger?

I do remember hearing a story about a 55-gallon aquarium which had a non-UL listed pump. The pump overheated, igniting a fire and causing major damage, killing numerous fish and a kitten, the latter of which died of smoke inhalation. There were numerous causes for the fire, including a non-GFCI outlet and other factors, but if the motor had gone through UL testing the design could have been changed to shut down on overheat before temperatures climbed to the ignition point.