



# Electromagnetic Compatibility Pre-compliance Testing

## Pre-compliance testing may help you save time and money.

Because most electronic products need to meet stringent electromagnetic compatibility (EMC) regulatory requirements, some product designers assume the testing is routine and leave EMC product compliance until the end of the product design cycle.

At UL, our EMC experts find that it is not unusual for products to fail initial EMC compliance testing. Often, it's less expensive and more efficient to discover design-related issues early in the design phase rather than fixing an EMC issue once the final design has been locked in. Plus, fixing problems earlier in the design process can help avoid pushing back a product launch date, risking the ire of customers and distributors or losing the first mover advantage.

This can be avoided by pre-compliance testing that points out potential problem areas early without the cost of full-scale testing to authenticate if the design plan is feasible or modifications will be needed. We offer customized testing solutions that enhance process efficiency and reduce testing cycles, making the most of your time and budget.

### How EMC pre-compliance testing can save you money:

- Testing at an accredited EMC laboratory can help reduce testing time when applying for full certification.
- Pre-compliance testing for both radiated and conducted emissions can help you identify likely sources of failure during early design phases.
- Immunity test results subject the device to different types of immunity disturbances to find design weak spots.

Keeping up with changes in requirements can be challenging; and since no universal EMC standard exists, requirements can also vary from country to country. We have been in the compliance and pre-compliance testing business for more than 20 years and have made staying on top of EMC changes a priority.

We understand that EMC testing can be daunting. We can guide you through every step of the compliance process to help ensure you have the knowledge and tools necessary for your products to meet EMC requirements in your intended markets.

Leveraging our expertise early in your product development process through pre-compliance testing can help increase success rates in EMC certification tests, avoid costly errors in design, and accelerate time to market.



## Common causes of initial EMC test failures:

- Lack of knowledge of EMC principles
- Failure to apply EMC principles
- Application of incorrect EMC regulations
- Unpredicted interactions among circuit elements
- Incorporation of noncompliant modules of subassemblies into the final product
- Uncontrolled environment conditions like relative humidity, temperature and altitude producing different test results
- Testing power supplies separately from full product
- Not considering conducted radio frequency (RF) from cables at low frequencies or radiated RF at high frequencies

## Key design considerations to increase the chance of passing EMC tests:

- Components tolerances/limitation
- Logic families
- Printed circuit board (PCB) and input/output (I/O) layout
- Cable selection and, more importantly, the routing path within the product enclosure
- Enclosure and shielding
- Software and firmware
- Power supply module/circuitry selection

## Recognized expertise

UL has helped enable more than a century of safe innovation, from electricity to digital security. Our engineers come from leading technology industries and government agencies, collaborate with key industry associations and stakeholders, and regularly speak at international tradeshows and safety conferences.

- We work with more than 60% of Fortune 500 and Global 500 companies
- UL Marks appear on tens of billions of products globally
- More than 2 billion global consumers annually receive safety, security and sustainability messages from UL and its affiliate Underwriters Laboratories
- We provide testing, certification and verification across all 24 S&P industry groups for safety, interoperability, energy efficiency, sustainability, wireless capabilities, cybersecurity, performance and electromagnetic compatibility (EMC)
- UL has helped develop more than 1,600 standards to define safety, security, quality and sustainability
- UL's experts sit on more than 500 international committees and in many regions on more than a 100 committee to help write standards. Our senior engineers leverage 23 years of experience on average

## Global reach, local laboratories

Reliable testing, inspection and certification means working with a company that has an extensive network of global testing laboratories and relationships with regulatory and customs agencies across the globe to accelerate market access.

- Our diverse customers are based in more than 100 countries
- UL is a top TIC category brand in more countries than any other brand and rates number one around the world on the trustworthy attribute<sup>3</sup>
- Our experts in global market access (GMA) are based in 21 locations and support certification and regulatory requirements for 150+ countries
- Our global laboratories follow standardized testing plans and have synchronized reporting systems so you can expect consistent results no matter where you do business with UL. Our network of global laboratories provide redundancy and the ability to move staff and projects around to meet surge demands for accelerated product launches.

Contact us today at [UL.com/contact-us](https://www.ul.com/contact-us), or email us at [ConsumerTechInfo@UL.com](mailto:ConsumerTechInfo@UL.com)



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