

Electromagnetic Compliance (EMC) regulatory requirements;

How to make the approval process easier and faster.

Regulatory requirements can apply to almost any new product: hazardous materials, safety, disposal, labeling, etc. In determining what specific requirements apply to your product, your experience, colleagues, governmental agencies and also the accredited laboratories that test products against a range of requirements, can all be of use.

However, if your product is an electrical device that includes a microprocessor and is also a commercial/industrial or consumer product, it will emit electromagnetic radio waves and will also conduct energy “up-stream”, as it were, into a building’s electrical grid. Both can interfere with clear static-free communication and reception and may also affect other items of equipment that depend on “clean” ether or electricity. That’s why the US Federal Communications Commission (FCC) has established requirements for such emissions.

Core Compliance Testing Services is accredited for EMC testing (and provides other testing services as well.) We’re experienced and efficient in testing against these requirements and most testing can be completed in a day. We offer experienced engineers who can also offer advice on solving problems when needed. And we offer testing time for diagnostic purposes as well, so you don’t have to have your product absolutely completed before doing some diagnostics.

The FCC standards cover two areas.

1. Emissions radiated by the product.

The strength and frequency of emissions radiated from your product must be within specific limits, whether such radiation is intentional such as an RF garage door opener, or unintentional such as a laptop computer.

Testing for radiated emissions can be done either outdoors (not a good option for New Hampshire) or in a large building (30-foot ceiling height required) constructed entirely of non-conducting materials. External radiation (radio, TV and other RF signals) is recognized and factored out.

Alternatively, emissions can be measured in large chambers which are metal-clad to block external RF energy waves and lined with ferrite tiles and foam cones that absorb energy and eliminate reflection of the product’s own emissions.

2. Emissions conducted by the product.

Energy can also be conducted by your product’s case or shell and flow “up-stream as it were, via the power cord into the electrical system. Energy is measured in a normal lab environment using a “line impedance stabilization network” setup.

Special requirements by country

Some countries have expanded these requirements; Europe for example requires additional related tests which measure a range of characteristics such as susceptibility to transient electrical bursts, interruptions, immunity to static electricity, etc. Accredited US labs can qualify your product, also usually in a day of testing.

Special requirements of some industries.

More-rigorous requirements have been established for some categories of products. In particular, medical devices have some extended requirements, such as increased immunity to emissions, because of the in-use proximity to other medical devices. Products for the Department of Defense, automotive and aircraft industries have their own regulatory process.

How to meet requirements easier and sooner.

We’re always happy to discuss requirements and the testing process at no charge and provide some advice going-in about how to forestall problems, for example making ground connections as short as possible, grounding to bare metal not paint, adding shielding and filters.

It can be very helpful to do some diagnostic testing before your product is finished but can be powered up. We also offer half-days for testing or diagnostic work. Results will not get any better with the addition of boards, etc. and it’s easier to solve a problem when the innards are accessible.

Other testing

We also offer product safety testing, and other regulatory and commercial testing as well as environmental, reliability and accelerated product life testing (HALT, etc.).