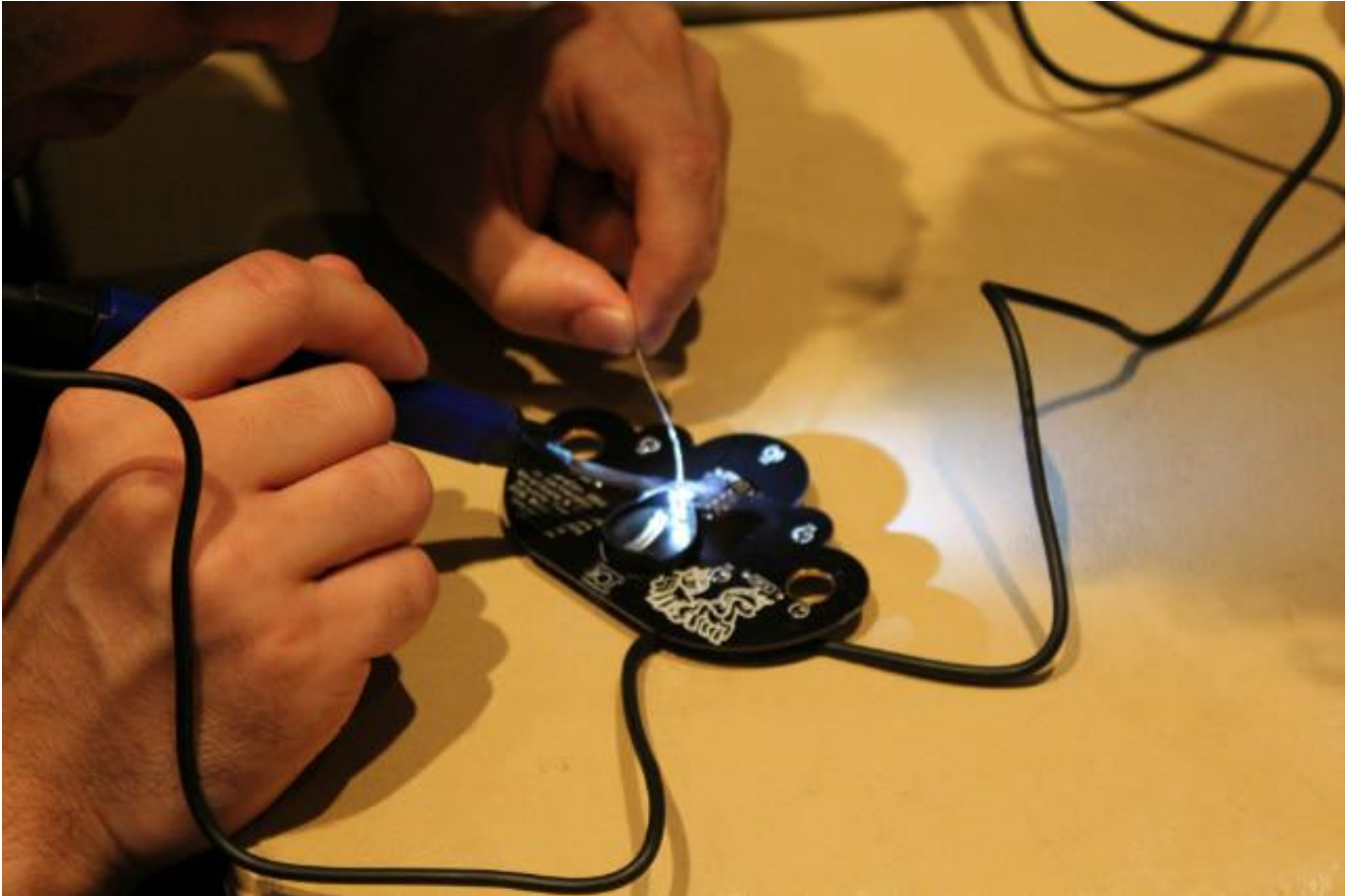


EMI And EMC Testing

EMI/EMC testing is a critical step in bringing a new product to market.



Generally speaking, EMC can be grouped into two categories:

- **Immunity testing** - measures how a device will react when exposed to electromagnetic noise and other disturbances. The purpose of these tests is to gain a reasonable assurance that the device will operate as intended when used within its expected operating environment.
- **Emissions testing** - measures the amount of electromagnetic noise generated by a device during normal operation. The purpose of these tests is to ensure that any emission from the device are below the relevant limits defined for that type of device. This, in turn, provides a reasonable assurance that the device will not cause harmful interference to other devices operating within its expected operating environment.

Regulatory compliance and due diligence require that electronic devices undergo one or both types of testing. In this article, we'll be looking at some of the most common applications for EMC/EMI testing.

Medical Devices

EMC testing is critical for managing risk in medical device manufacturing. Devices must be able to work together in close environments without interference or noise compromising performance. The FDA requires that all medical devices undergo EMC testing per the appropriate FDA Reviewer Guidance document or the European IEC 60601-1-2 standards. In the EU, all medical devices must have CE marking, which requires both immunity and emissions testing per IEC 60601-1-2.

Military/Aerospace Devices

MIL-STD-461 outlines EMC testing requirements for military equipment, including electromagnetic susceptibility and emissions testing. MIL-STD-461 contains relatively stringent electromagnetic compatibility requirements. Devices which are compliant with MIL-STD-461 are typically well-positioned to meet FCC, DO-160 and other standards for avionics equipment, consumer goods and other products.

Consumer Goods

Consumer goods such as microwave ovens, cellular phones, laptops and satellite TV dishes all must undergo EMC/EMI testing to ensure they do not cause harmful interference and accept interference without causing undesired operation in real-world conditions. For more information about EMC/EMI testing for different devices, contact Com-Power Corporation directly.

EMC Testing Routines

A specific EMC testing routine is determined by the nature of the device being tested, its intended application and the regulatory requirements governing its use. Electromagnetic phenomena that may be simulated through EMC testing include:

- Magnetic fields, such as those radiating from electrical wires
- Voltage drops due to a brownout or other power interruption
- Electromagnetic surges due to a lightning strike
- Conducted and radiated electromagnetic noise
- Electrostatic discharges associated with static electricity
- Fast transients caused by electrical switches, motors and relays, fluorescent lamp ballasts, for example.

A wide range of equipment is used to simulate the above conditions and determine the ability of a device under test to recover from them. A typical EMC testing lab may utilize [surge generators](#), [power amplifiers](#), [spectrum analyzers](#) and more.

Com-Power Corporation sells both individual EMC testing equipment as well as complete pre-compliance immunity and emissions testing packages. For more information, keep browsing our website or contact a member of our engineering team directly.