



# The Future of EMC Engineering

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## EMC versus Compliance Engineering

When we mention the acronym EMC, or electromagnetic compatibility, we generally think about how to ensure products comply with regulatory requirements mandated by an entity, be it a government agency, a private certification organization or voluntarily/industry-driven requirements. Why do compliance engineers always seek that elusive 3 dB? Is it because a published standard considers this level appropriate for certain environments of use? Is this limit realistic for, for example, an MP3 player used within an industrial environment? Does violating a Class A or B specification by a few dBs mean the system is an electromagnetic hazard? Will authorities having jurisdiction take the time, money and effort to prosecute companies for non-compliance over a few dBs? Does the general public know about the need for EMC, and most importantly, do they care?

Should we focus on meeting a specification or ensuring “electromagnetic compatibility?” Think about products to be designed in the future and their use. Should radiated emissions be more of a concern than immunity? EMC ensures electrical systems are compatible when used within a certain environment. For future technologies, emissions become not the concern but immunity.

Technology of the future includes the Smart Grid, Broadband over Power Line (BPL), Photovoltaics, Global Earth Observation System (GEOS), advances in health care, nanotechnology products and their applications, ultra high-frequency communication networks, intelligent transportation system, along with other products that have exemption from regulatory compliance mandates (why do exemptions exist?). With technological advances on the horizon, our focus as EMC engineers should be

to ensure products are designed to survive high levels of immunity to maintain reliability and quality.

What will occur when everyone with a hand phone containing multiple wireless features talk at the same time? Is undesired EMI now a concern according to a standard? However, if a strong RF signal from a high-power transmitter nearby is present, all devices could become non-operational. The same for power generation and distribution systems related to the Smart Grid. We should not worry about radiated EMI generated from the grid but preventing EMI threats from shutting down the network. How about ensuring medical systems are robust against high intensity RF fields in a hospital environment? Transportation systems must be 100% reliable when traveling anywhere in the world

Therefore, in the future, should one work as an EMC engineer by definition for products operated in an RF rich broadband wireless world or as a compliance engineer with a focus on achieving that 3 dB margin to a generic specification?

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