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Recommended Practice for the
Installation of Smart Grid Devices

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FOREWARD

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1. Background

The development of the Smart Grid (SG) may entail the interconnection of numerous consumer electronic devices and appliances to each other and to the outside world. As devices become more interconnected the importance of proper installation practices with respect to electromagnetic compatibility (EMC) and electromagnetic interference (EMI) grows. The most destructive phenomena associated with EMI is lightning strikes, which can result in high energy surges and ring wave transients on a building's power and communications wiring and its grounding system; electrostatic discharge, which is a form of ring wave transient that is exacerbated by low humidity; and conducted and radiated radio frequency (RF) energy from equipment power supplies, florescent ballasts, welders, switching, wireless communications devices, dimmers, and other sources.

The traditional first line of defense is to reduce the noise potential at the source. Not all EMI is controllable or accessible so good installation practices are critical, including:

- Proper lightning protection outside the building
- An understanding of proper grounding practices
- Surge protection on all wires entering or leaving the building
- Local surge and ring wave transient protection for sensitive equipment on both power and communications connections to a device
- Proper wiring installation practices
- An understanding of electromagnetic interference issues relating to wired, wireless and powerline carrier networks

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