

Master's thesis

In Cooperation with Fronius International GmbH



Influence of multiple similar/identical products in proximity on conducted and radiated emissions

Context and motivation

Electrical/electronic products emit undesired electromagnetic radiation. If radiated emissions of these products exceed certain values, performance of other electrical/electronic devices nearby may be affected, necessitating normative limitations on maximum conducted and radiated electromagnetic emissions of these products and verification of compliance with these limits must be verified prior to market entry at individual products. Now, if multiple similar/identical products, each individually complying with normative EMC requirements, are in close "proximity" to each other, combined emissions may exceed allowed limits and impact devices and systems in the vicinity. This study addresses the question of how the "accumulation" of similar/identical products affects the overall emission.

Research topic(s)

What is the relationship between conducted/radiated emission of individual products and emission of multiple similar/identical products in close proximity to each other?

How does "accumulation" of similar/identical products in close proximity affect compliance with regulatory limits and how could this be considered normatively?

Which parameters (distance, quantity, etc.) influence emission of "accumulation" in which way?

What measures can be taken to minimize impact of emission "accumulation" of products in close proximity?

Approach/methodology/tasks

Familiarization with the topic and review of the current state of research and standardization.

Theoretical considerations, calculations, and conducting simulations to investigate the effect of an increased number of similar/identical devices installed in close proximity on emissions.

Verification and adaptation of findings and results of theory in real EMC measurement environments.

Derivation of insights into influence of number of products on emissions and impact on standardization.

Organizational matters

- Start: immediate
- Workplace: Fronius International GmbH; Location 4600 Thalheim/Wels

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