Graz University of Technology
Institute of Electronics

Master's thesis

Investigating Harmonic generation in RF system

Motivation

Cell phones can transmit and receive at multiple frequencies at the same time. This can lead to disturbances, for example 800 MHz couples into 2400 MHz due to harmonic distortion. In general, we call this challenge "co-existence".

Signal co-existence has become an ever-growing concern in the mobile device industry, more frequencies, more simultaneous usage of transmitters and receivers, more antennas etc. Failure to properly handle signal co-existence will result in weak RF performance and poor signal quality. Harmonic generation is one of the major concerns signal in co-existence. When the RF power is high enough, passive components, such as contact, in the RF signal path may generate harmonics, due to various reasons. The objective of this research is to understand, characterize and measure the harmonic generation on different spring contacts.

Research topic

A measurement setup should be developed to measure the harmonic levels that are generated in electrical spring contacts. In this regards, a Python script is to be modified and developed which can control some hardware such as spectrum analyzer, power amplifier, XYZ manipulator, Force meter and etc. The software could read and process different measurement data for different contact conditions (different force and location).

Basic experience in Python is an advantage.

Organizational matters

- Start: as soon as possible
- Workplace: at the institute

Contact/Supervision

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