Universität Stuttgart

Institut of Robust Power Semiconductor Systems

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Open6GHub

Open6G-Hub - High Bandwidth Spectrum Analyzation for digital Predistortion

Research/Master thesis:

To achieve more output-power in RF-high power amplifiers they are often driven in saturation. To be able to filter out unwanted signal distortions, a high quality measurement over a large bandwidth has to be conducted to enhance the signal quality. For this application frequency-based predistortion algorithms should be investigated.

Tasks

- Research of System concepts for real-time aquisition of spectrum of distorted signals
- Research on digital predistortion algorithms working in the freqency domain
- Development of Aquistion/Spectrum Analyzer with off the shelf components
- Testing of the implemented HW

Goals

- Efficient real-time measurement of power spectrum with bandwidth of 10GHz
- Quantification of analyzer precision using simulation and measurements
- Evaluation of possible predistortion algorithms using the proposed spectrum analyzation

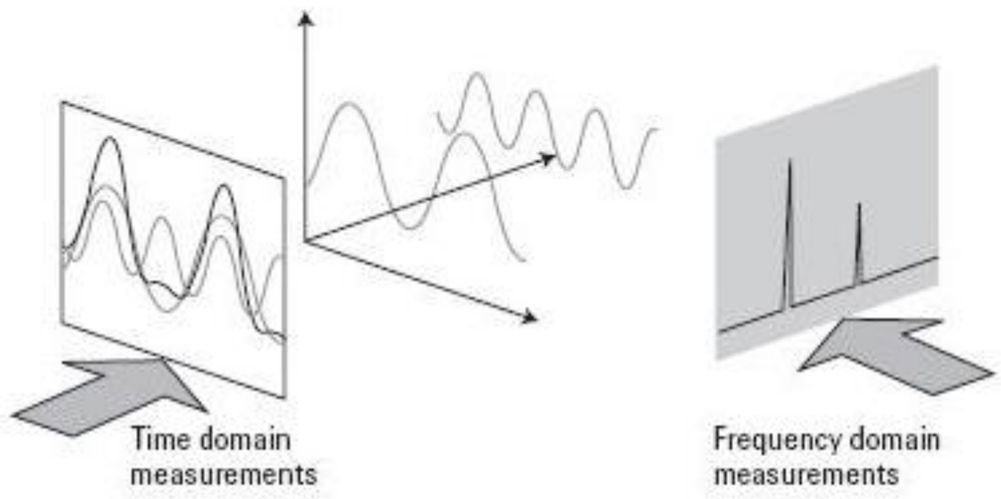

Figure 1. Measurement domain

Visualisation of difference between time- and frequency domain measurement

Source: https://rfmw.em.keysight.com/spectrum-analyzer/

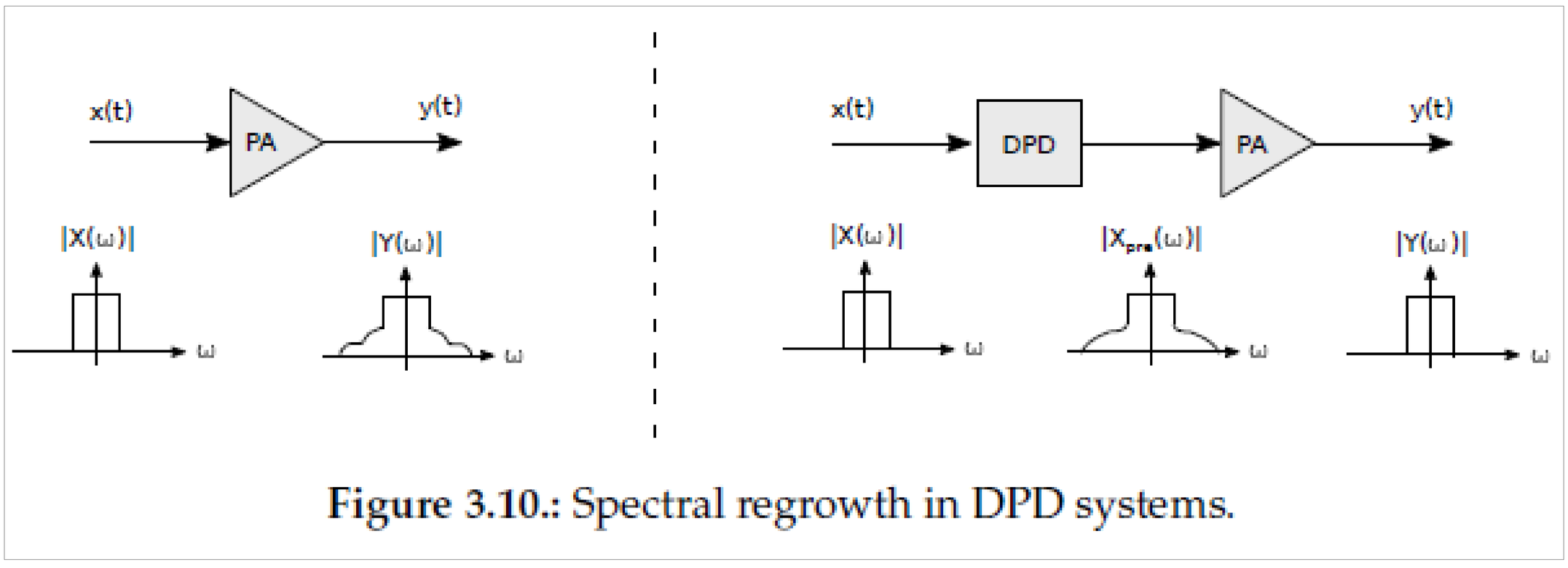

Figure 3.10.: Spectral regrowth in DPD systems.

Diagramms showing the spectral representation of non-linear distorted Signal

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