ETH zürich

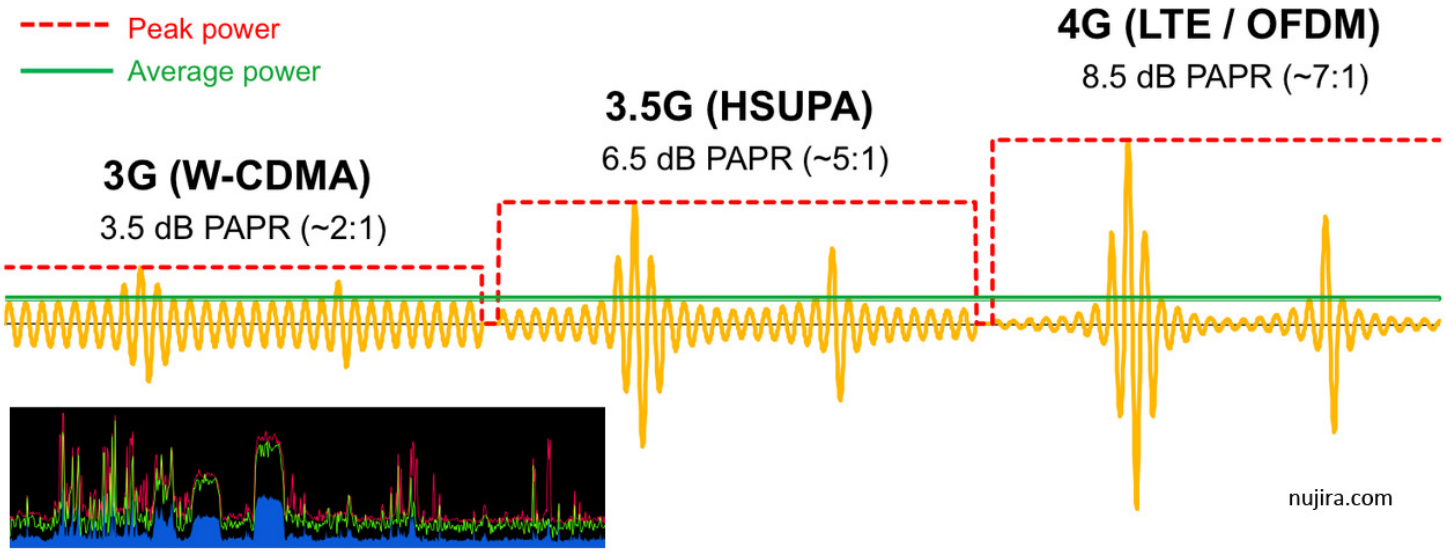
Master Thesis

Intelligent spectrum analyzer for GSM, UMTS and LTE radio signals

Vision and Future Application
In order to optimize the service coverage and data rate using as little transmission power as possible, accurate and detailed RF spectrum measurements are required. Miniature, low power and cost spectrum analyzers will enable pervasive radio power monitoring.

Type of Work
Theory, Simulation, Measurements & Experiments

Requirements
Interests in mobile communication protocols and RF measurements.



Different mobile communication standards exhibit different signal shapes. One characterization parameter is the Peak to Average Power Ratio (PAPR)

Description
Conventional spectrum analyzers are able to measure the spectral power composition of a given signal, but provide little additional information.
Dynamic RF signal analyzers are very powerful, but very expensive, large or too power consuming to be used as a portable device. In this work you will evaluate different ways of detecting not only the power but also additional parameters (e.g. the modulation, wireless standard) of a given RF signal while using minimal hardware resources.

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