

<u>Name</u>	<u>Organisation</u>	<u>Project title</u>	<u>Decision No.</u>	<u>Decision date</u>	<u>Funding period</u>	<u>Funding</u>
Aikio, Janne	OY	Utilization and extension of Volterra-on-top-of-Harmonic balance technique for high efficient power amplifiers (VoHBUtil)	132407	29.09.2009	01.01.2010 - 31.12.2012	265 000

Project description

Nonlinear effects in RF power amplifiers (PAs) are not well understood, and this tends to result in overkill in the PA design and linearization techniques. In the applied project the recently developed distortion analysis technique called Volterra-on-top-of-Harmonic balance (VoHB) will be utilized for detailed analysis of complex PA structures such as Doherty PA, envelope tracking PA as well as polar transmitter. VoHB technique is able to pinpoint the main source of the distortion, cancelling distortion mechanisms and show mixing distortion between frequency bands and is thus one of the best option for detailed distortion analysis for more complex PA structures. The research goal is to gain fundamental understanding on the chosen PA structures as well as to develop physically motivated and verified design guidelines for PA transmitters, where inherent distortion and memory effect cancelling mechanisms are employed. Another goal of the research is to verify and further develop VoHB technique to cope with multi stage PA structures that show strong nonlinear behaviour as well as time varying phenomena. The obtained results are verified using practical circuits and published in respected scientific journals.