

# Low-complexity, Sub-band DPD with Sequential Learning

## Novel Algorithms and WarpLab Implementation

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**Abstract** Digital predistortion (DPD) is an effective way of mitigating spurious emission violations without the need of a significant power reduction in the transmitter, thus providing better power efficiency and network coverage. In this paper an iterative version of the IM3 sub-band DPD, proposed earlier by the authors, is presented. The DPD learning is iterated between the higher and lower IM3 sub-bands until a satisfactory performance is achieved for both of them. A sequential DPD learning procedure is also presented in order to reduce the hardware complexity when higher order nonlinearities are incorporated in the DPD learning. Improvements on the convergence speed of the adaptive DPD learning are also achieved via incorporating a variable learning rate and training from previous values. A WARPLab implementation of the proposed DPD is also shown with excellent suppression of the targeted spurious emissions.

**Keywords** Adaptive filters · carrier aggregation · digital predistortion · nonlinear distortion · power amplifier · software-defined radio · spectrally-agile radio · spurious emission.

## 1 Introduction

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**Fig. 1** Please write your figure caption here

## 2 Section title

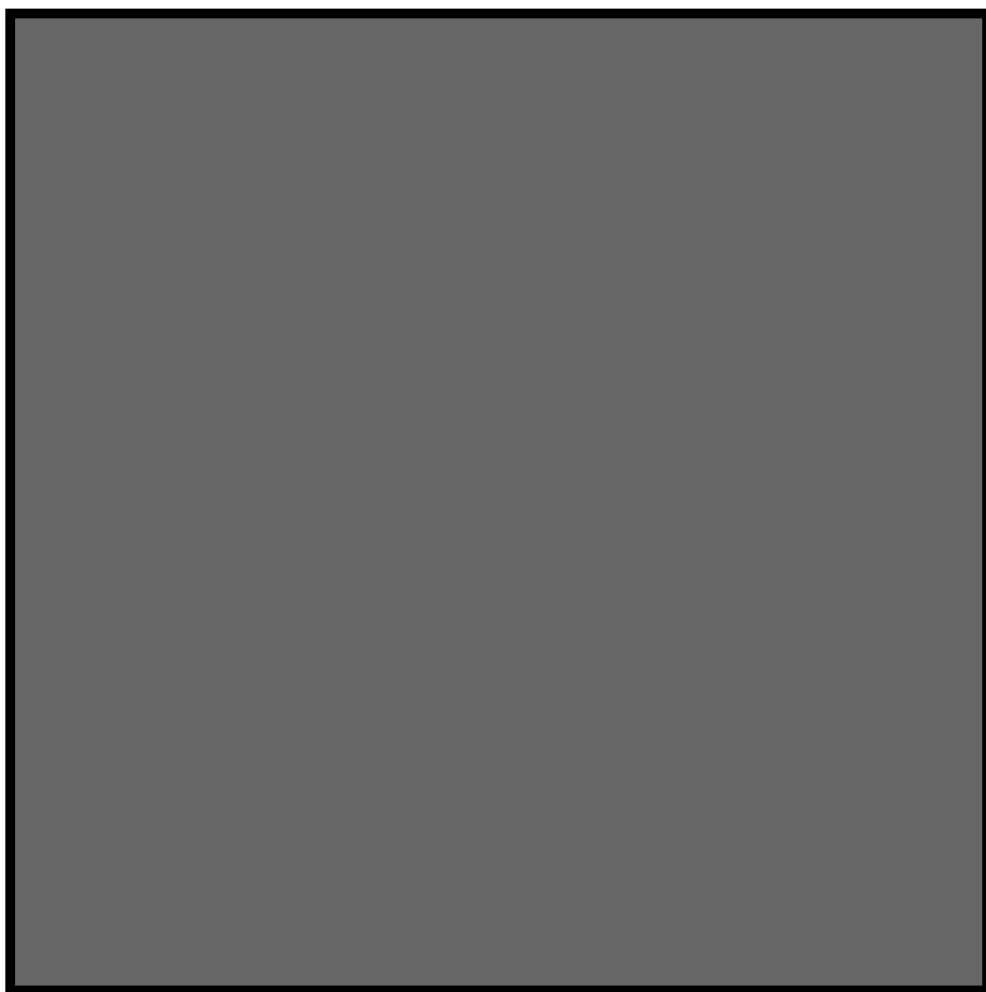
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### 2.1 Subsection title

as required. Don't forget to give each section and subsection a unique label (see Sect. 2).

*Paragraph headings* Use paragraph headings as needed.

$$a^2 + b^2 = c^2 \tag{1}$$



**Fig. 2** Please write your figure caption here

**Table 1** Please write your table caption here

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