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Masood et al.(10) **Pub. No.: US 2024/0214014 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **SYSTEM AND METHOD FOR DIGITAL
PREDISTORTION**(52) **U.S. Cl.**CPC ... **H04B 1/0475** (2013.01); **H04B 2001/0425**
(2013.01); **H04B 2001/045** (2013.01)(71) Applicant: **NXP USA, Inc.**, AUSTIN, TX (US)(72) Inventors: **Mir Adeel Masood**, Mesa, AZ (US);
Stephane Kerrurien, May Sur Orme
(FR); **Peter Zahariev Rashev**,
CALGARY (CA)

(57)

ABSTRACT

Systems and methods for digital predistortion (DPD) are disclosed herein. In an example embodiment, a digital front-end circuit includes a digital predistortion (DPD) block having a first input terminal and first output terminal, a PA having a second input terminal and second output terminal, and a transmitter coupling the first output terminal at least indirectly with the second input terminal. The DPD block is configured to receive a first input signal and to provide a first output signal having first and second components at the first output terminal. The DPD block includes a main distortion kernel that is configured to generate the first component, and a nonlinear memory kernel that is configured to generate the second component. The nonlinear memory kernel is configured to perform processing at least in part by a nonlinear envelope modulator including a linear finite impulse response (FIR) filter.

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