

(51) International Patent Classification:
H03F 1/34 (2006.01)(21) International Application Number:
PCT/EP2009/006069(22) International Filing Date:
18 August 2009 (18.08.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
08290846.8 9 September 2008 (09.09.2008) EP(71) Applicant (for all designated States except US): **ALCATEL LUCENT** [FR/FR]; 54, Rue La Boétie, F-75008 Paris (FR).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **GREBENNIKOV, Andrei** [RU/IE]; 17 Cherry Lodge, Fermleigh Woods, Castleknock, Dublin 15 (IE). **PIVIT, Florian** [DE/IE]; 20 Watermint Court Apartments, Pelletstown Avenue, Dublin, 15 (IE).(74) Agents: **NARMON, Gisèle** et al.; Alcatel-Lucent Bell Nv, Intellectual Property Department, Copernicuslaan 50, B-2018 Antwerp (BE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: POWER AMPLIFIER LINEARIZATION USING RF FEEDBACK

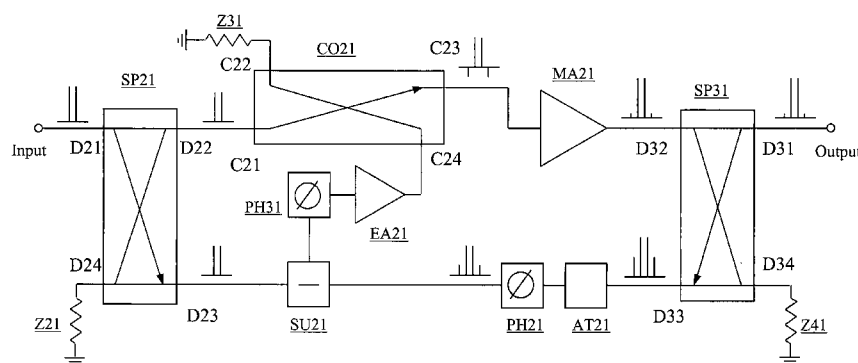


Fig. 2

(57) **Abstract:** A power amplifier adapted to operate with simultaneous high efficiency and high linearity by using a RF feedback path to create an input predistortion signal. This power amplifier mainly includes a main amplifier (MA21), two splitters (SP21, SP31), one combiner (CO21), one subtractor (SU21), two phase shifters (PH21, PH31), one attenuator (AT21) and one error amplifier (EA21). The splitters, subtractor and combiner are designed in the form of 90-degree or quadrature hybrid couplers. A quadrature hybrid can be implemented with any lumped or transmission-line elements and has an important advantage compared to the in-phase splitter that at equal values of reflection coefficients from loads connected to the in phase and 90° phase shift terminals, the reflection wave is lacking at the main input terminal and, consequently, the input voltage standing wave ratio of a quadrature hybrid does not depend on the equal load mismatch level.