(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 March 2001 (29.03.2001)

PCT

(10) International Publication Number
WO 01/22604 A1

(51) International Patent Classification[7]: H04B 1/04, H03F 1/02

(21) International Application Number: PCT/US00/26194

(22) International Filing Date:
22 September 2000 (22.09.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
09/404,890 24 September 1999 (24.09.1999) US

(71) Applicant: QUALCOMM INCORPORATED [US/US]; 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).

(72) Inventors: ZHANG, Yang; 11717 Fantasia Court, San Diego, CA 92131 (US). PENG, Yonsheng; 9638 Oviedo Street, San Diego, CA 92129 (US).

(74) Agents: WADSWORTH, Philip, R. et al.; Qualcomm Incorporated, 5775 Morehouse Drive, San Diego, CA 92121-1714 (US).

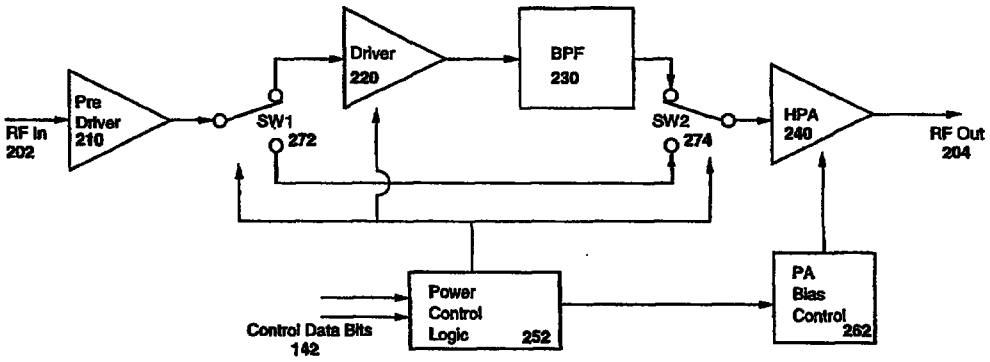
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*
— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR WIRELESS PHONE TRANSMIT POWER AMPLIFICATION WITH REDUCED POWER CONSUMPTION



(57) Abstract: A method and apparatus for RF amplification of a transmit signal within a wireless phone. The amplifier chain is composed of three parts, a pre-driver (202), a bypassable driver amp (220), and a power amp (240). The configuration of the amplifier chain is adjusted in real time to optimize power consumption for a given output power requirement. At low output power levels the driver amp (220) is bypassed and the power amp (240) is provided a low bias current. At medium output power levels the driver amp (220) is bypassed and the power amp (240) is biased at a moderate current. When high output power is required the driver amp (220) is utilized and the power amp (240) is provided a high bias current. The driver amp (220) is shut down when in the bypassed state. The result of implementing this amplifier configuration is an increase in the efficiency of the transmit amplifier. The increase in amplifier efficiency results in increased talk times for battery powered wireless phones.

WO 01/22604 A1