

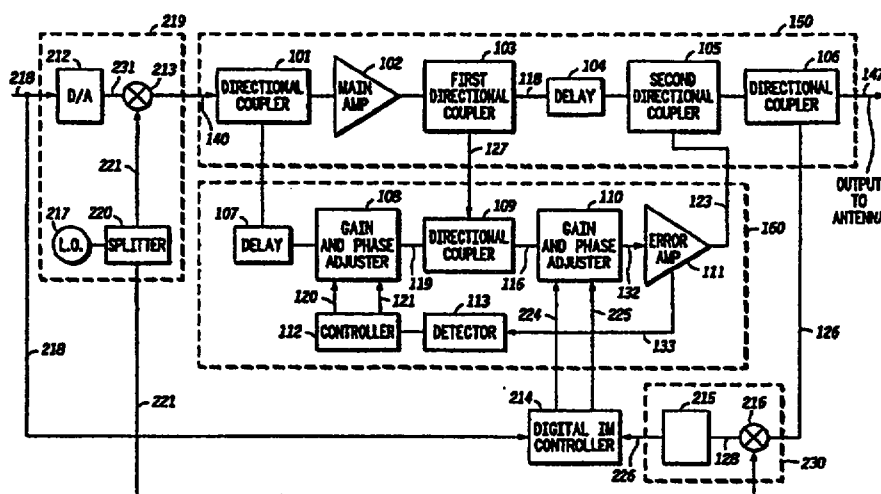
PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

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

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (51) International Patent Classification 6 :<br>H03F 1/26                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | A1 | (11) International Publication Number: WO 99/33167<br>(43) International Publication Date: 1 July 1999 (01.07.99)                                                                       |
| (21) International Application Number: PCT/US98/16657<br>(22) International Filing Date: 10 August 1998 (10.08.98)<br>(30) Priority Data: 08/996,754 23 December 1997 (23.12.97) US<br>(71) Applicant: MOTOROLA INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US).<br>(72) Inventor: MITZLAFF, James, Edward; 1727 North Chestnut Avenue, Arlington Heights, IL 60007 (US).<br>(74) Agents: CREPS, Heather, L. et al.; Motorola Inc., Intellectual Property Dept., 1303 East Algonquin Road, Schaumburg, IL 60196 (US). |    | (81) Designated States: CA, CN, JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).<br>Published<br>With international search report. |

(54) Title: FEED FORWARD AMPLIFIER WITH DIGITAL INTERMODULATION CONTROL



## (57) Abstract

A feed forward amplifier with digital intermodulation control (214) includes an up-converter (219), a feed forward amplifier (150), a down-converter (230), and a digital intermodulation controller (214). The up-converter (219) receives a first digital input (218) and generates an analog composite signal (140) and a reference frequency signal (221). The feed forward amplifier (150) receives the analog composite signal (140) and produces an amplified analog composite signal (147) and an amplified analog composite signal sample (126). The down-converter (230) mixes the amplified analog composite signal sample (126) with the reference frequency signal (221) in a mixer (216) to produce an adjusted amplified analog composite signal sample (128) which is then converted to a second digital input (226) via an analog-to-digital converter (215). A digital intermodulation controller receives a first and second digital input (218, 226) and subsequently generates a phase and gain adjuster input (224, 225) for adjusting the feed forward amplifier (150).