

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 January 2007 (18.01.2007)

PCT

(10) International Publication Number
WO 2007/008349 A1

(51) International Patent Classification:
H03F 3/217 (2006.01)

(21) International Application Number:
PCT/US2006/023924

(22) International Filing Date: 20 June 2006 (20.06.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/178,113 6 July 2005 (06.07.2005) US

(71) Applicant (for all designated States except US):
RAYTHEON COMPANY [US/US]; 870 Winter Street,
Waltham, MA 02451-1449 (US).

(72) Inventor: **TAYRANI, Reza**; 13970 Panay Way Unit407,
Marina Del Rey, CA 90292-6184 (US).

(74) Agents: **ALKOV, Leonard, A.** et al.; c/o Raytheon Com-
pany, (EO/E4/N119), 2000 El Segundo Blvd, P O Box 902,
El Segundo, CA 90250 (US).

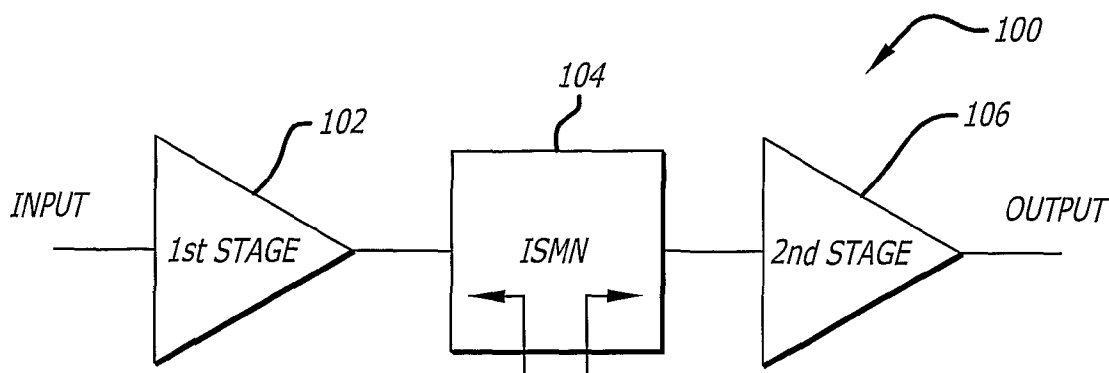
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, 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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

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: TWO STAGE MICROWAVE CLASS E POWER AMPLIFIER



(57) Abstract: A load circuit (40) for use with a switching mode circuit (50). The novel load circuit (40) includes a series inductive-capacitive network (32, 34) coupled to an output of the switching mode circuit (50) and a circuit (42) for providing a capacitance coupled to the output of the switching mode circuit (50). In an illustrative embodiment, the circuit (42) for providing capacitance includes one or more lumped capacitors adapted to compensate for an intrinsic capacitance in the switching mode circuit (50). The load circuit (40) may also include a shunt inductance coupled to the output of the switching mode circuit. In an illustrative embodiment, the load circuit (40) is adapted to provide a Class-E load to a two-stage high power amplifier (100). The amplifier (100) includes a driver stage (102), a novel Class-E inter-stage matching network (ISMN) (104), and a high power stage (106) using the novel load circuit (40).

WO 2007/008349 A1