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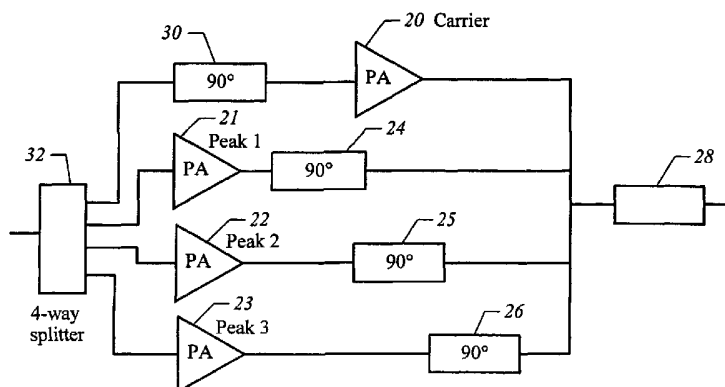
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- (74) Agent: **WOODWARD, Henry, K.**; Beyer Weaver & Thomas, LLP, P.O. BOX 778, Berkeley, CA 94704 (US).
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- (71) Applicant (*for all designated States except US*): **CREE MICROWAVE, INC.** [US/US]; 160 Gibraltar Court, Sunnyvale, CA 94089 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **PENGELLY, Raymond, Sydney** [GB/US]; 8 Treadway Court, Hillsborough, NC 27278 (US). **WOOD, Simon, Maurice** [GB/US]; 1126 Strawberry Court, Sunnyvale, CA 94078 (US).
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(54) Title: N-WAY RF POWER AMPLIFIER CIRCUIT WITH INCREASED BACK-OFF CAPABILITY AND POWER ADDED EFFICIENCY USING UNEQUAL INPUT POWER DIVISION



(57) Abstract: An RF power amplifier circuit for amplifying an RF signal over a broad range of power with improved efficiency includes a carrier amplifier for amplifying an RF signal over a first range of power and with a power saturation level below the maximum of the broad range of power is disclosed. One or more peak amplifiers are connected in parallel with the carrier amplifier with each of the peak amplifiers being biased to sequentially provide an amplified output signal after the carrier amplifier approaches saturation. The input signal is applied through a signal splitter to the carrier amplifier and the plurality of peak amplifiers, and an output for receiving amplified output signals from the carrier amplifier and the plurality of peak amplifiers includes a resistive load $R/2$. The split input signal is applied through a 90° transformer to the carrier amplifier, and the outputs of the peak amplifiers are applied through 90° transformers to a output load. When operating below saturation, the carrier amplifier delivers power to a load of $2R$ when the carrier amplifier delivers current to the load, which is one-half the current at maximum power and the amplifier is saturated. The signal splitter can split the input signal power equally among the carrier and one or more peak amplifiers, or the input signal can be split unequally with the carrier amplifier receiving less input power than each of the peak amplifiers and vice versa.

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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

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A. CLASSIFICATION OF SUBJECT MATTER

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US CL : 220/203070, 203280, 212,231

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 220/203070, 203280, 212,231; 330/295, 124R, 286

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,448,616, B1 (PERUGUPALLI et al) 10 September 2002 (10.09.2002) see entire document.	1-20
X	US 6,262,629 B1 (STENGEL et al) 17 July 2001 (17.07.2001) see entire document.	1-3, 14-20
A	US 5,420,541 A (UPTON et al) 30 May 1995 (30.05.1995) see entire document.	1-20
A	US 5,739,723 A (SIGMON et al) 14 April 1998 (14.04.1998) see entire document.	1-20

☐ Further documents are listed in the continuation of Box C.	☐ See patent family annex.
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"O" document referring to an oral disclosure, use, exhibition or other means	
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer <i>Nava M Chapman</i> Jose Dees Telephone No. 571-272-1850

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Continuation of B. FIELDS SEARCHED Item 3:

EAST: US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; ((carrier near2 (amplifier or amplifiers or amplifying)) and (peak near2 (amplifier or amplifiers or amplifying)) and (bias or biases or biasing) and (saturate or stauration or saturating) and (splitter or splitters or splitting or coupler or couplers or coupling)