



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : H03C 1/52, H04B 1/02, H04C 27/20	A1	(11) International Publication Number: WO 97/15980
		(43) International Publication Date: 1 May 1997 (01.05.97)

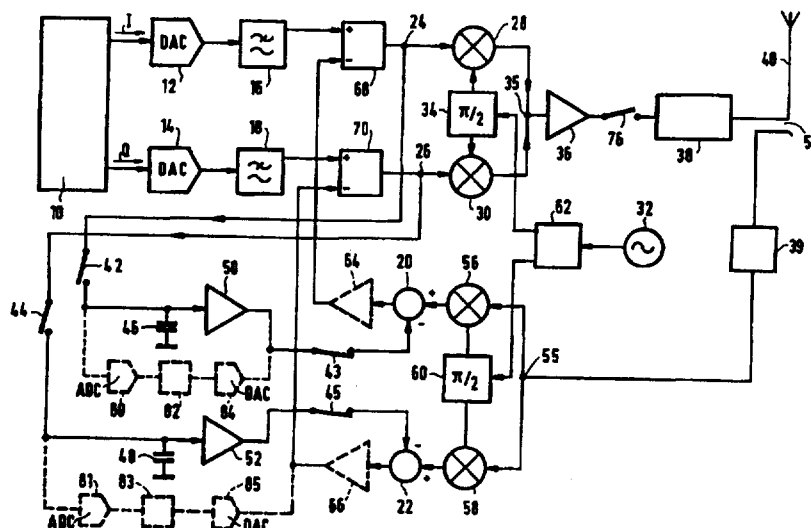
(21) International Application Number: PCT/IB96/01132  
 (22) International Filing Date: 22 October 1996 (22.10.96)  
 (30) Priority Data:  
 9521769.1 24 October 1995 (24.10.95) GB  
 (71) Applicant: PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).  
 (71) Applicant (for SE only): PHILIPS NORDEN AB [SE/SE]; Kottbygatan 7, Kista, S-164 85 Stockholm (SE).  
 (72) Inventor: WILSON, John, F.; Westcroft Cottages, 20B High Green, Great Shelford, Cambs. CB2 5EG (GB).  
 (74) Agent: MOODY, Colin, J.; Internationaal Octrooibureau B.V., P.O. Box 220, NL-5600 AE Eindhoven (NL).

(81) Designated States: JP, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

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

(88) Date of publication of the revised version of the international search report: 23 October 1997 (23.10.97)

(54) Title: TRANSMITTER COMPRISING CARRIER SUPPRESSION AND DC OFFSET REDUCTION MEANS



(57) Abstract

A transmitter comprising at least first and second phase related signal paths (I, Q), having respective frequency up-converting means (28, 30, 32, 34), means (35) for combining the output of the respective frequency up-converting means and for supplying the combined signal to power amplifying means (36, 38). A feedback loop is provided which has a coupler (54) for deriving a portion of the power amplifier output signal and supplying it to first and second phase related feedback paths. Each of the feedback paths comprises frequency down-converting means (56, 58, 60). Means (42 to 52) are provided for measuring the dc offsets at the respective inputs of the frequency up-converting means (28, 30) when the feedback around the linearisation loop is reduced to zero without altering the dc offsets produced at the outputs of the frequency down-converting means (56, 58, 60). Subtracting means (20, 22, 68, 70) subtract the measured dc offsets from the feedback loop error signals.

\* (Referred to in PCT Gazette No. 45/1997, Section II)

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgystan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

**INTERNATIONAL SEARCH REPORT**

International application No.  
**PCT/IB 96/01132**

**A. CLASSIFICATION OF SUBJECT MATTER**

**IPC6: H03C 1/52, H04B 1/02, H04L 27/20**  
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)

**IPC6: H03C, H04B, H04L, H03D**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**SE,DK,FI,NO classes as above**

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5396196 A (BLODGETT), 7 March 1995 (07.03.95), column 5, line 9 - column 8, line 18, figures 3,4	1,5,9,10
A	--	2-4,6-8
A	US 5012208 A (MÄKINEN ET AL), 30 April 1991 (30.04.91), column 2, line 51 - column 4, line 2, figure 2	1,5,9,10
A	Patent Abstracts of Japan, Vol 17, No 456, E-1418, abstract of JP,A,5-102881 (MITSUBISHI ELECTRIC CORP), 23 April 1993 (23.04.93)	1-3,5-7,9,10
	--	

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
- "&" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

**8 Sept 1997**

**11 -09- 1997**

Name and mailing address of the ISA/  
Swedish Patent Office  
Box 5055, S-102 42 STOCKHOLM  
Facsimile No. +46 8 666 02 86

Authorized officer  
**Christian Rasch**  
Telephone No. +46 8 782 25 00

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/IB 96/01132

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	Patent Abstracts of Japan, Vol 17, No 283, E-1373, abstract of JP,A,5-14429 (OKI ELECTRIC IND CO LTD), 22 January 1993 (22.01.93)  --	1,2,5,6,9,10
A	US 4243955 A (DANIEL ET AL), 6 January 1981 (06.01.81), column 3, line 39 - column 4, line 58, figure 3  -- -----	1,5

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

06/08/97

International application No.

PCT/IB 96/01132

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5396196 A	07/03/95	CN 1116375 A EP 0661801 A JP 8070327 A	07/02/96 05/07/95 12/03/96
US 5012208 A	30/04/91	AU 623240 B AU 5303590 A FR 2645688 A,B GB 2232328 A,B SE 468455 B,C SE 9001305 A	07/05/92 18/10/90 12/10/90 05/12/90 18/01/93 12/10/90
US 4243955 A	06/01/81	NONE	