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- (71) Applicant: **HONEYWELL INTERNATIONAL INC.** [US/US]; 101 Columbia Ave, P.O. Box 2245, Morristown, NJ 07960 (US).
- (72) Inventor: **WHITE, Stanley, A.**; 433 East Avenida Cordoba, San Clemente, CA 92672 (US).
- (74) Agents: **CRISS, Roger, H.** et al.; Honeywell International Inc., 101 Columbia Avenue, P.O. Box 2245, Morristown, NJ 07960 (US).
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(54) Title: A WIDE BAND DIGITAL PHASE LOCKED LOOP (PLL) WITH A HALF-FREQUENCY OUTPUT

(57) Abstract: A digital phase locked loop includes an automatic gain control that applies a gain to an input signal in order to provide a gain controlled signal, A 90° phase shifter applies a 90° phase shift to the gain controlled signal in order to provide a 90° phase shifted version of the gain controlled signal. A phase detector is driven by the gain controlled signal, by the 90° phase shifted version of the gain controlled signal, and by sinusoidal and co-sinusoidal signals. A loop filter integrates an output of the phase detector and provide servo equalization for the phase-locked loop. A digital dual frequency oscillator has a fundamental frequency controlled by an output signal from the loop filter. Also, the digital dual frequency oscillator generates the sinusoidal and co-sinusoidal signals.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H03L7/08 G01C21/16

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)
IPC 7 H03L G01C

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

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

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 379 223 A (ASPLUND MARK D) 3 January 1995 (1995-01-03) column 6, line 35 -column 9, line 64 ---	1, 18 2-17, 19-39
A	US 5 459 432 A (WHITE STANLEY A ET AL) 17 October 1995 (1995-10-17) the whole document ---	
A	US 5 696 420 A (YAMADA YUJI ET AL) 9 December 1997 (1997-12-09) the whole document -----	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Kahn, K-D

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5379223	A	03-01-1995	NONE	
US 5459432	A	17-10-1995	NONE	
US 5696420	A	09-12-1997	WO 9514212 A1	26-05-1995