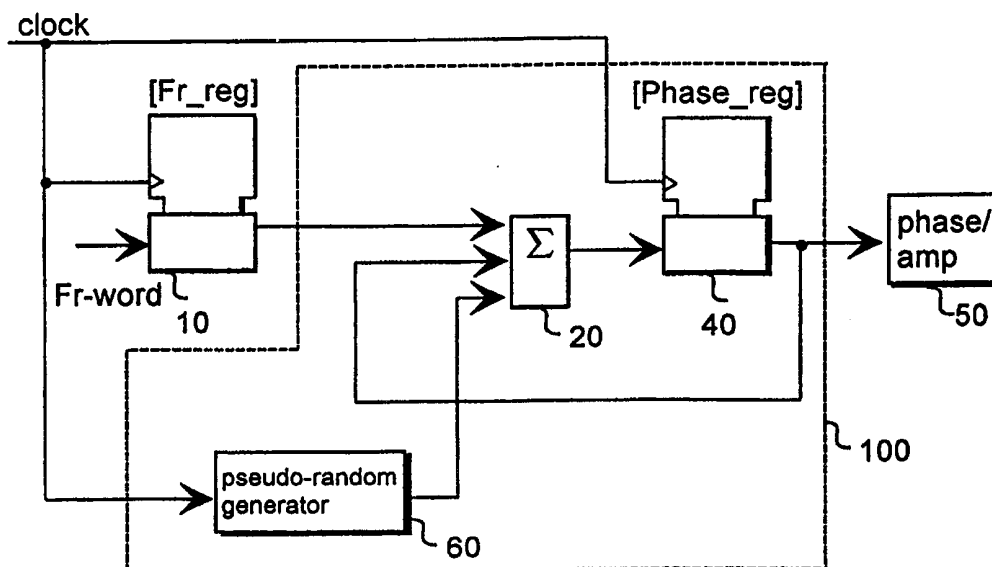




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(54) Title: METHOD FOR REDUCING INTERFERENCE, AND SYNTHESIZER ARRANGEMENT

**(57) Abstract**

The invention relates to a method for reducing interfering signals from an output signal of a digital synthesizer arrangement and to a synthesizer arrangement which comprises a reception means (10) which receives a signal which determines the frequency of the output signal to which is added a signal which breaks the periodicity of the signal. The arrangement comprises a means (40) which forms, on the basis of the received signal, a signal which comprises the information on the phase used in the output signal, a generator means (60) which forms a pseudo-random signal, a summing means (20) which forms a sum signal by adding the signal comprising the phase information to the signal used in determining the frequency and to the pseudo-random signal, and in which means part of the signal formed by the means (40) is added to a next sum signal.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/FI 99/00169

A. CLASSIFICATION OF SUBJECT MATTER		
IPC6: H04B 15/00, H04B 1/10 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: H04B, H04K, H03M		
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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5235613 A (DAVID K. BROWN ET AL), 10 August 1993 (10.08.93), column 1, line 67 - column 2, line 36 --	1-20
A	US 4901265 A (RICHARD J. KERR ET AL), 13 February 1990 (13.02.90), abstract --	1-20
A	US 5426392 A (RICHARD K. KORNFELD), 20 June 1995 (20.06.95) -- -----	1-20
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23 August 1999		30 -08- 1999
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 Rune Bengtsson/cs Telephone No. +46 8 782 25 00

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Information on patent family members

02/08/99

International application No.

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Patent document cited in search report			Publication date	Patent family member(s)	Publication date
US	5235613	A	10/08/93	NONE	
US	4901265	A	13/02/90	AT 130946 T DE 3854744 D,T EP 0390868 A,B SE 0390868 T3 JP 2823913 B JP 4502092 T WO 8906009 A	15/12/95 08/08/96 10/10/90 11/11/98 09/04/92 29/06/89
US	5426392	A	20/06/95	NONE	