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(54) Title: METHOD AND APPARATUS FOR GENERATING A SIGNAL HAVING AT LEAST ONE DESIRED OUTPUT FREQUENCY UTILIZING A BANK OF VIBRATING MICROMECHANICAL DEVICES

(57) Abstract: Several MEMS-based methods and architectures which utilize vibrating micromechanical resonators in circuits to implement filtering, mixing, frequency reference and amplifying functions are provided. A method and apparatus are shown for generating a signal having at least one desired output frequency such as LO frequency in an RF subsystem in response to a tuning voltage and without the need for a phase-locking circuit. One of the primary benefits of the use of such architectures is a savings in power consumption by trading power for high selectivity (i.e., high Q). Consequently, the present invention relies on the use of a large number of micromechanical links in SSI networks to implement signal processing functions with basically zero DC power consumption.

INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H03H9/46

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 H03H

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.
Y	US 5 839 062 A (NGUYEN CLARK TU-CUONG ET AL) 17 November 1998 (1998-11-17) cited in the application	1
A	column 1, line 11 -column 2, line 63	2,3,7
A	column 7, line 1 -column 7, line 15 column 8, line 55 -column 9, line 5	11
Y	EP 0 962 999 A (NOKIA MOBILE PHONES LTD) 8 December 1999 (1999-12-08)	1
A	page 3, line 54 -page 4, line 4 page 6, line 56 -page 7, column 27; figures 14,15	8,11,12,16

Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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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)	*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.
O document referring to an oral disclosure, use, exhibition or other means	*&* document member of the same patent family
P document published prior to the international filing date but later than the priority date claimed	

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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