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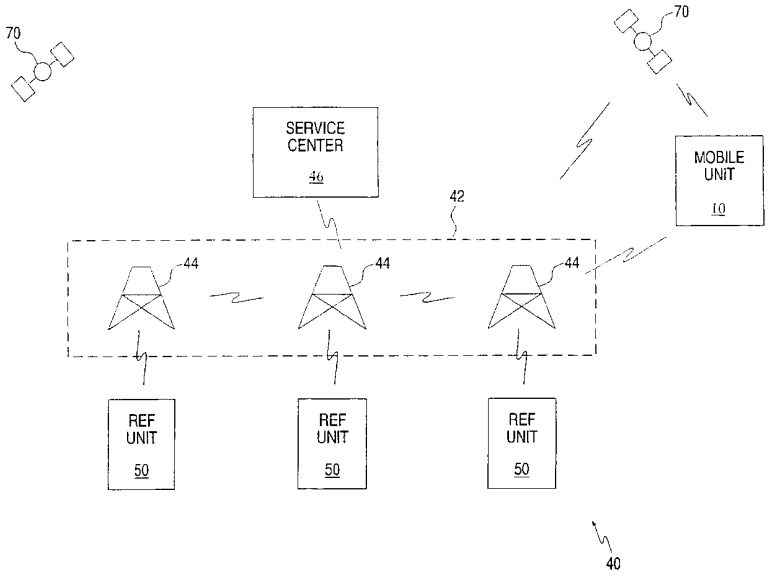
[Continued on next page]

(54) Title: LOCATING A MOBILE UNIT USING SATELLITE SIGNAL



(57) Abstract: A method and system for finding the position of a mobile unit (10) with respect to the satellites (70) of a satellite network such as the Global Positioning System and with respect to the base stations (Figure 2) of a wireless communications network. Each satellite transmits a signal that consists of a series of frames of a pseudonoise sequence. The frames of a signal received from the satellite network by the mobile unit are arranged as columns of a matrix and are processed coherently to provide estimated pseudoranges and estimated rates of change of pseudoranges for in view satellites. The coherent processing includes performing an orthogonal transform on the rows of the matrix, multiplying the elements of the matrix by Doppler compensation factors, and then, for each satellite in view, convolving the columns of the matrix with the pseudonoise sequence of that satellite.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/34306

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :H04B 7/185; G01S 5/02
US CL :342/357.05, 357.09, 357.1; 701/215
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. : 342/357.05, 357.09, 357.1; 701/215

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 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 5,399,957 A (LOOMIS) 04 MAY 1999 (04/05/99) NOTE ABSTRACT, COLUMN 1, LINE 55, COLUMN 2, LINE 2, COLUMN 10, LINE 63, COLUMN 13, LINE 56, COLUMN 8, LINES 26-36, AND COLUMN 19, LINES 1-10.	1-97
X	US 5,774,829 A (CISNEROS ET AL) 30 JUNE 1998 (30/06/98) NOTE COLUMN 12, LINE 36, COLUMN 34, LINE 40, KALMAN FILTER 670, AND COLUMN 4, LINE 28.	1-97

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

*	Special categories of cited documents:	"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
"A"	document defining the general state of the art which is not considered to be of particular relevance	"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
"E"	earlier document published on or after the international filing date	"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
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"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		

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