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(54) Title: FAST SIGNAL DETECTION AND DISTRIBUTED COMPUTING IN PORTABLE COMPUTING DEVICES

(57) Abstract: This disclosure describes a distributed reader architecture for a mobile computing device such as cellular telephone handset. This architecture includes a reader library that reads device capabilities and business model parameters in the device, and in response, for selects an appropriate configuration of reader modules for identifying a content item. The reader modules each perform a function used in identifying a content item. The modules are selected so that the resources available on the device and in remote devices are used optimally, depending on available computing resources on the device and network bandwidth. One example of a reader module is a fast watermark detection module that quickly detects the presence of a watermark, enabling resources to be focused on portions of content that are most likely going to lead to successful content identification. A watermark signal structure for fast watermark detection is comprised of a dense array of impulse functions in a form of a circle in a Fourier magnitude domain, and the impulse functions having pseudorandom phase. Alternative structures are possible.



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A. CLASSIFICATION OF SUBJECT MATTER  
 IPC: H04K 1/00( 2006.01);H04L 9/00( 2006.01)

USPC: 713/186  
 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. : 713/186

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	U.S. PUB. 2003/0123659A1 (FORSTROM et al) 3 July 2003 (03.07.2003), [0009]-[0014] and [0069].	1-20
A,T	U.S. PUB 2006/0004630 A1 (CRIDDLE et al) 5 January 2006 (05.01.2006), [0007]-[0010].	1-20

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

\* Special categories of cited documents:

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"E" earlier application or patent published on or after the international filing date	"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
"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
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