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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM).

[Continued on next page]

(54) Title: A METHOD AND SYSTEM FOR OPTIMAL BITLOADING IN COMMUNICATION AND DATA COMPRESSION SYSTEMS

(57) Abstract: This invention provides a method and system for determining the number of bits to assign to a frequency range in a signal. The present invention is capable of bit allocation, with B total bits, among a plurality of N frequency ranges in time a time O(N log N), which is independent of the size of B. Embodiments of the present invention have many practical applications, including allocating bits among sub-channels in a multi-carrier communication system, and allocating bits among sub-bands in a signal representing digital multimedia, such as in JPEG or MPEG compressed files.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC: H04L 27/28 (2006.01)

USPC: 375/260

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.: 375/260

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**

<table>
<thead>
<tr>
<th>Category *</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 5,539,777 (Grube et al.) 23 July 1996 (23.07.1996), figures 31, 28, 42, col. 8, 10, 32, 36.</td>
<td>1-20</td>
</tr>
</tbody>
</table>

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
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**Further documents are listed in the continuation of Box C.**

**See patent family annex.**

**Date of the actual completion of the international search**

18 April 2006 (18.04.2006)

**Date of mailing of the international search report**

20 JUN 2006

**Name and mailing address of the ISA/US**

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