Title: ULTRA-WIDEBAND COMMUNICATION APPARATUS AND METHODS

(57) Abstract: Apparatus methods of ultra-band (UWB) communication are provided. In one embodiment, an UWB communication system splits a serial data stream into a plurality of parallel data streams. At least one of the plurality of parallel data streams is then shifted in phase, and then the plurality of parallel data are combined into a combined data stream. At least one of the plurality of data streams is then selected for communication and then transmitted using an ultra-wideband signal. This abstract is provided for the sole purpose of complying with the abstract requirement rules that allow a reader to quickly ascertain the subject matter of the disclosure contained herein. This abstract is submitted with the explicit understanding that it will not be used to interpret or to limit the scope or the meaning of the claims.
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
## INTERNATIONAL SEARCH REPORT

**International application No.**
PCT/US05/38683

### A. CLASSIFICATION OF SUBJECT MATTER
- IPC(8) - H04B 1/69 (2006.01)
- USPC - 375/140

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(8): H04B 1/69, 1/707, 1/713, 7/216; H04K 1/10; H04L 27/28 (2006.01)
- USPC: 370/320; 375/130, 140, 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)
- MicroPatent
- IEEE Xplore
- El Compendex
- INSPEC
- NTIS: National Technical Information Service
- PASCAL
- Current Contents Search

### 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>Y</td>
<td>US 6,539,908 B1 (AHN et al) 25 March 2003 (25.03.2003) abstract</td>
<td>6</td>
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- Additional documents are listed in the continuation of Box C.

- See patent family annex.

- 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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**Date of the actual completion of the international search**
13 April 2006 (13.04.2006)

**Date of mailing of the international search report**
20 JUN 2006

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Form PCT/ISA/210 (second sheet) (April 2005)