Title: CIRCUIT BOARD HAVING A PERIPHERAL ANTENNA APPARATUS WITH SELECTABLE ANTENNA ELEMENTS

Abstract: A circuit board for wireless communications includes communication circuitry for modulating and/or demodulating a radio frequency (RF) signal and an antenna apparatus for transmitting and receiving the RF signal, the antenna apparatus having selectable antenna elements located near one or more peripheries of the circuit board. A first antenna element produces a first directional radiation pattern; a second antenna element produces a second directional radiation pattern offset from the first radiation pattern. The antenna elements may include one or more reflectors configured to provide gain and broaden the frequency response of the antenna element. A switching network couples one or more of the selectable elements to the communication circuitry and provides impedance matching regardless of which or how many of the antenna elements are selected. Selecting different combinations of antenna elements results in a configurable radiation pattern; alternatively, selecting several elements may result in an omnidirectional radiation pattern.
(88) Date of publication of the international search report:
12 October 2006

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

A. CLASSIFICATION OF SUBJECT MATTER
IPC: H01Q 9/28(2006.01)
USPC: 343/795
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. : 343/795, 700MS, 793, 846

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

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>X</td>
<td>US 5,754,145 A (EVANS) 19 May 1998 (19.05.1998) see entire document.</td>
<td>1-37</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the international search

Name and mailing address of the ISA/US
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Date of mailing of the international search report
10 AUG 2006

Authorized officer
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Form PCT/ISA/210 (second sheet) (April 2005)
Continuation of B. FIELDS SEARCHED Item 3:
EAST; US-PUB; USPAT; USOCR; EPO; JPO; DERWENT; IBM_TDB; (print$3 adj antenna) with (circuit adj board).