Title: NON-BEACON MODE ZIGBEE SENSOR NETWORK SYSTEM FOR LOW POWER CONSUMPTION AND NETWORK COMMUNICATION METHOD THEREOF

[Fig. 3]

(10) International Publication Number
WO 2010/143756 A3

(05) International Patent Classification:
H04L 12/28 (2006.01)  H04B 7/24 (2006.01)

(21) International Application Number:
PCT/KR2009/003064

(22) International Filing Date:
8 June 2009 (08.06.2009)

(25) Filing Language:
English

(26) Publication Language:
English


(72) Inventors; and


Published:
— with international search report (Art. 21(3))

[Continued on next page]

(54) Title: NON-BEACON MODE ZIGBEE SENSOR NETWORK SYSTEM FOR LOW POWER CONSUMPTION AND NETWORK COMMUNICATION METHOD THEREOF

(57) Abstract: Disclosed herein is a non-beacon mode low-power ZigBee sensor network system and network communication method thereof. The method between a parent node (100) and a child node (200) constituting the non-beacon mode ZigBee sensor network system includes providing polling interval information to a parent node (100) if there is a request for network participation from the child node (200), and performing, by the parent node (100), network communication with the child node (200) by determining a time point of a polling request from the child node (200) based on the polling interval information to maintain a wake-up state only at the time point of the polling request from the child node (200) while maintaining a sleep state for a remaining period. The system can reduce power consumption of the parent node (100) in network communication. The system guarantees symmetrical power consumption between the parent node (100) and the child node (200), thereby preventing network instability.
before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
A. CLASSIFICATION OF SUBJECT MATTER

| IPC®: H04L 12/28 (2006.01); H04B 7/24 (2006.01) |

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>US 2005/0020322 A1 (RUUSKA et al.) 27 January 2005 (27.01.2005) abstract; Figs. 3, 4a, 4b; paragraphs 13 - 14, 16; claim 1</td>
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<td>X</td>
<td>EP 1 404 043 A1 (VKR Holding A/S) 31 March 2004 (31.03.2004) abstract; paragraphs 7 - 8, 14 - 16, 18, 55 - 58; claims 1 - 6</td>
<td>1-16</td>
</tr>
<tr>
<td>E</td>
<td>KR 20090102152 A (UNIV KYUNG HEE UNIV IND COOP) 30 September 2009 (30.09.2009) the whole document</td>
<td>1-16</td>
</tr>
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Date of the actual completion of the international search
03 November 2010 (03.11.2010)

Date of mailing of the international search report
24 November 2010 (24.11.2010)

Name and mailing address of the ISA/ AT

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<tr>
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<th>Publication date</th>
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<tr>
<td>US A 2005020322</td>
<td></td>
<td>CN A 1578241</td>
<td>2005-02-09</td>
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<tr>
<td></td>
<td></td>
<td>EP A 1499078</td>
<td>2005-01-19</td>
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<td>AT T 426288T</td>
<td>2009-04-15</td>
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<td>EP A 1494407</td>
<td>2005-01-05</td>
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<td>DE T2 602004007194T</td>
<td>2008-04-30</td>
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<td>AT T 366016T</td>
<td>2007-07-15</td>
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<tr>
<td>EP A 1404043</td>
<td></td>
<td>HK A 1080637</td>
<td>2008-10-31</td>
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<td>US A 2006099980</td>
<td>2006-05-11</td>
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<td>PL A 376114</td>
<td>2005-12-12</td>
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<td>JP T 2006500837T</td>
<td>2006-01-05</td>
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<td>EP A 1543641</td>
<td>2005-06-22</td>
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<td></td>
<td>WO A 2004030251</td>
<td>2004-04-08</td>
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