ZigBee: a New Era of Wireless Communications
China Wireless Communications, December 2002
By Edward Leung

Summary of the phone interview with Venkat Bahl, Business Development Manager and Michael Eckardt, Product Marketing Manager ZigBee, PL Wireless PAN / BL Connectivity

Q: Why was the ZigBee Alliance formed?
Bahl: Formed in October 2002, the ZigBee Alliance is an association of companies working together to create a very low-cost, two-way wireless communications standard requiring very low power consumption. This wireless communications standard will be embedded in consumer electronics, home and building automation, industrial controls, PC peripherals, medical sensor applications, toys and games. We are now working with Motorola and Honeywell to develop new technology to support ZigBee.

Q: Why do we need ZigBee technology while Bluetooth, IR, WLAN are co-existing in the market?
Bahl: Before we start, I would like to emphasis that Philips Semiconductors is actively involved in the development of both Bluetooth and Infrared technologies. We are now a pioneer in these markets.

However, the lack of a common standard has not inhibited vendors from embracing and proliferating wireless technology for security and home automation applications. For example, most wireless controllers inevitably need to change batteries from time to time causing inconvenience to end-users. Bluetooth, therefore answers the needs of the users by offering wireless connectivity to micro electronic devices such as audio systems and headphones.

Infrared is a mature wireless technology with a long history. However, it only provides single direction point-to-point transmission between transceiver and receiver. Today, some electric appliances use radio frequency as a wireless control device to provide one-way transmission too.

In comparison to the above technologies, ZigBee obviously addresses the market need for a cost-effective, standards-based wireless networking solution that supports low data rates, low power consumption, security and reliability. Unlike Bluetooth, ZigBee can support 30-40 devices at the same time and is interoperable with different platforms.
Q: How far has the ZigBee alliance developed its technology? What is the target market of ZigBee?

Bahl: We think that ZigBee is still in the preliminary stage of development. We are now developing the ZigBee technology standard and are expecting to complete it by mid-2003.

ZigBee wireless connectivity capability will be embedded in consumer electronics, home and building automation systems, industrial controls, PC peripherals, medical sensor applications, and toys and games. We are hoping that ZigBee compliant products can be commercialised by 2004.

Q: What is the cost for ZigBee compliant products?

Bahl: ZigBee is not a complicated technology, as it has a simple architecture and it requires very low power consumption. Therefore, the cost will be fairly low. We are also paying special attention to the level of market acceptance and have discussed this with industry practitioners. We cannot see any problems or difficulties at this moment.

Q: As you mentioned ZigBee would be used in industrial control devices. How far has this been developed?

Bahl: ZigBee can be used in various industrial control applications, for example it can be applied in sensors to lowering the networking cost. It is also an ideal device to co-operate with dynamic sensors in a traditional network transmission system.

Q: What is the size of the ZigBee Alliance? Can companies in Asia-Pacific join the Alliance?

Bahl: Mitsubishi from Japan is the key Asia-Pacific member of the Alliance. We also have received a lot of inquiries from Japanese and Chinese companies. We are thinking to extend ZigBee applications to all electronic appliances. In addition, some Indian companies have begun to explore the possibility of using ZigBee in consumer electronics products.

### Specifications of ZigBee

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of devices supported</td>
<td>255 devices per network</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Multi-month to multi-year longevity with two &quot;AA&quot; batteries</td>
</tr>
<tr>
<td>Transmission distance</td>
<td>1 - 100 meters</td>
</tr>
<tr>
<td>Applications</td>
<td>Electronics games and toys, home networking, consumer electronics, PC peripherals, industrial controls, medical sensors, audio equipment control</td>
</tr>
</tbody>
</table>