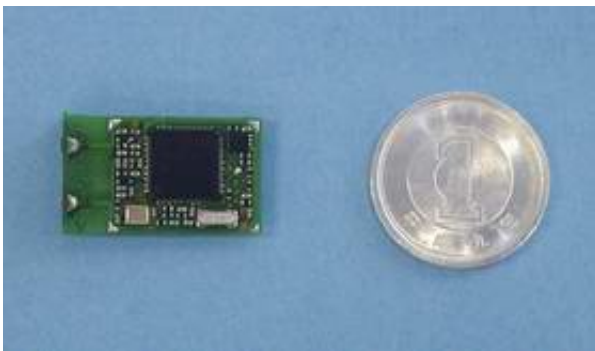


Panasonic Develops Coin-size Low-Power Bidirectional Wireless Module

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Panasonic, the leading brand by which Matsushita Electric Industrial Co., Ltd. is known, today unveiled its ultra-small low-power wireless module by incorporating a radio circuit and a microcomputer onto a single CMOS LSI chip, the world's first in 400-MHz band low-power wireless technology. The tiny high-speed wireless module is suitable for a wide range of home and industrial applications.

Mr. Yoshio Ishii, Vice President of Matsushita Home Appliances Company, said, "We believe this coin-size module will help expedite the realization of a 'ubiquitous society.' The module meets the home networking specifications of the Energy Conservation and Homecare Network (ECHONET) standard. It is ideal for connecting a whole gamut of products to networks, from various home appliances, home

entertainment products and home security devices to car navigations, car entertainment equipment, and electronic shelf tags, to name a few. We plan to put the new module into practical use by the fall this year."

The development of low-power radio communication devices operating on the 400MHz band has been limited by size and power consumption. Panasonic has addressed these problems by capitalizing on its expertise in semiconductor and home appliances.

The new one chip module measures $12 \times 16 \times 1.3$ mm and 0.25 cc in volume, excluding the newly-developed high efficiency antenna, and is only one sixtieth of the volume of its previous GB-E01 module, which uses two separate chips for a radio circuit and a microcomputer. Panasonic also cut down the number of components for the module by 75 percent compared to the GB-E01, contributing to reductions in the size and manufacturing cost.

A combination of high-speed Phase-Locked Loop (PLL) technology and high-speed processing reduces radio signal checking time to 3 ms, one quarter of the time required by its conventional model. The module checks the receiving radio wave every 3 seconds. When no incoming signal is detected, it stops checking immediately. Thus, it lowers the average current consumption during standby and prolongs the battery life about three times. The module consumes 25 mA for transmitting (10 mW output) and 12 mA for receiving. On average, the module uses only 14 μ A including active and standby modes. Depending on the application, the battery lasts one year to 10 years.

By adopting the four-level Frequency Shift Keying (FSK) modulation, the new module can transmit the data at 14.4kbps, twice the speed of the previous two-level FSK type.

Panasonic has applied for 78 patents on the new module in Japan, of

which 11 have so far been granted, and two patents overseas.

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