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## Mitsubishi, Panasonic & Sony to create PLC standard

### Electronics, appliances need to communicate

#### Panasonic reveals new in-home PLC chip

Matsushita Electric Industrial (Panasonic), Mitsubishi Electric and Sony are forming a not-for-profit alliance to develop high-speed PLC specs to “allow smooth interface between systems using electric power lines for audio, video and data networking.”

The new alliance is tentatively called the CE-Powerline Communication Alliance (CEPCA) and intends to promote PLC-capable home networking worldwide by encouraging other consumer electronics and IT companies to join in.

“Recent technology advances have seen the growth in home networks to connect a variety of products like computers and appliances that can be accessed remotely,” the group added,

## Ambient raises \$5.5 million in private investment

### Manhattan pilot underway

After payment of fees and expenses the BPL hardware maker landed \$4.9 million through private placement of its three year 6% convertible debentures to institutional and individual investors.

The money is to be used to expand and speed commercial efforts, broaden sales channels and boost working capital.

John Joyce, Ambient CEO, sees the capital as investor “belief in Ambient and

**BPL goes to Las Vegas:** Last week the Consumer Electronics Show (CES) in Las Vegas saw lots of BPL makers and their partners showing off the advantages of using the existing power lines in a home to connect digital devices.

pointing to a “growing demand for ease of access and smooth interconnectivity.”

Home networks connected to power lines will have authentication and encryption to ensure safe and secure home networking, the alliance reported, and PLC offers more solutions with multiple networking access points and plug-and-play features.

The goal is to make accessing networks simple.

The three have been working together on interface technologies and their role in home networking based on high-speed power line communication.

A major goal is to boost consumer electronics and IT firms worldwide to set an environment where access to PLC-based home networking is available globally.

Matsushita separately unveiled what it called the “world’s first chipset that puts high definition ready, high-speed power line communication (HD-PLC) technology into practical use.”

Called the MN1A92080L, the chip brings high-speed HD video into every

the viability of PLC technology.”

The firm’s pilot project in a high rise apartment building in Manhattan is underway, the firm reported (*BPL Today*, 11/8/04), and the new cash will help speed deployment of the project.

Utility applications such as load management and control are among the suite of applications planned for the pilot.

Convertible debentures can be changed into shares of Ambient’s common stock at an initial conversion rate of 25¢/share.

Interest on the debentures accrues at 6%/annum and is payable bi-annually, in cash or shares of common stock, at Ambient’s option.

Unconverted debentures automatically convert on the third anniversary of issuance and under the arrangement investors got three-year warrants to buy up to 22 million shares of common stock at a per-share exercise price of 50¢.

### Japan may unblock BPL:

The nation is planning to debate dropping its ban on power line communications to make way for BPL, an official of the Ministry of Internal Affairs and Communications told the Agence France Presse (AFP) news service, the service reported last month. If a study group early this year finds it technically feasible, deregulation could happen as early as next year, said the report. “Data communications based on power lines would enable users to build local area networks at home or access the internet and control air conditioners and other home appliances from remote places,” wrote AFP. The ban is meant to protect marine and aircraft radio communication, the report added.

room in the home “via existing home power lines.”

Panasonic expects the chip to speed up development of all kinds of product networking. Panasonic combined all digital processing components onto a single chip including a central processing unit and a media access control layer.

The chip is the core of home networking, said Panasonic and the firm plans to start shipping this spring.

And here’s where in-premises networking lends some insight on broadband access:

“Existing forms of home networking technologies include wireless LANs, coaxial cables and Ethernet LANs,” said Panasonic, each with its own strong points, but coaxial and Ethernet require installing cable “and it can be difficult to communicate between rooms using wireless LANs.”

Ensuring security with wireless is an issue, the firm noted.

Panasonic’s HD-PLC chip is compatible with Ethernet and delivers “broadband connectivity with electric outlets between wide ranges of electronic products from TVs to white goods [large home appliances] by using the already-active internet protocol.”

Is it fast?

About 170 mbps on existing home power lines allows the simultaneous use of

power line and UWB networking lets consumers connect all of their digital entertainment devices and distribute the content anywhere in the home with added freedom, said Samsung.

The firm quoted a recent Parks Associates report that predicted strong consumer demand for connected home entertainment will drive the growth of multimedia networks over the next five years.

The market opportunity for multimedia connectivity including PCs, mobile platforms and consumer electronics devices will reach 120 million units by the end of 2008, Samsung

quoted.

As consumers buy more digital devices for their ideal digital home, a stable hybrid network consisting of mature technologies is needed, the firm explained.

“The purpose of this demonstration is to show the level of maturity of emerging home networking technologies such as HomePlug AV and UWB,” said Jaemoon Jo, vice president of Samsung Electronics.

He thinks the two networking technologies provide what’s needed for consumers to hook up a myriad of devices in the home to get more satisfying entertainment.

The industry sees the need of consumers to converge multiple digital devices throughout the home, observed Andreas Melder, senior vice president of strategic business development for Intellon.

The joint demonstration with Samsung and Freescale shows HomePlug AV’s flexibility to support and complement other networking technologies, he added.

HomePlug AV is a technology poised to change the way that HDTV, digital audio and internet content are distributed around the home, due to its ease of installation and the ubiquity of power outlets within the home, said Intellon.

## Penn State finds gigabit in US grid

Predictions that the physics of power lines give BPL a big potential bandwidth edge over DSL and cable were put to the test at Penn State in an AT&T-funded program.

North American power lines can provide bit rates that far exceed DSL or cable over similar spans, found research led by Mohsen Kavehrad, the WL Weiss professor of electrical engineering and director of the Center for Information & Communications Technology Research at Penn State.

BPL trials underway in the US deliver DSL-comparable rates of 2 or 3 mbps, noted Kavehrad.

His computer simulations found — under ideal conditions — the maximum achievable bit rate was close to a gigabit/second/kilometer “on an overhead medium voltage unshielded US electric power line that’s been properly conditioned through impedance matching.

“The gigabit can be shared by a half dozen homes in a neighborhood to provide rates in the hundreds of megabits per second range, much higher than DSL and even cable,” he explained.

“If you condition those power lines properly, they’re an omni-present national treasure waiting to be tapped for broadband internet service delivery, especially in rural areas where cable or DSL are unavailable.”

Kavehrad and co-author PhD Student Pouyan Amirshahi presented their findings at the IEEE Consumer Communications & Networking Conference in Las Vegas last week.

Their paper is titled *Transmission Channel Model and Capacity of Overhead Multi-conductor Medium-Voltage Power-lines for Broadband Communications*.

While most BPL work and study comes from Europe, Amirshahi told us, the medium voltage distribution system in

## Duke Power joins HomePlug’s “utility” class

### EchoStar, Leviton join too

Duke Power, satellite TV firm EchoStar Technologies and home and business automation maker Leviton Manufacturing joined the HomePlug Power line Alliance, the alliance announced at CES.

The three joined more than 50 firms working to create and promote HomePlug networking specs around the world, said Oleg Logvinov, HomePlug’s president and CEO of Arkados (story this issue).

The alliance described the additions as endorsement of its “industry-wide role in creating world specs for power line networking products and services.”

That leadership position may feel a bit more tenuous with big Japanese electronics makers Sony, Panasonic and Mitsubishi teaming up to create their own standard (story this issue) and newcomer Universal Powerline Alliance making its debut at CES Friday evening, not to mention several other groups around the globe doing the same thing.

Building on global success of the alliance’s first in-home PLC standard HomePlug 1.0, the market for HomePlug technology is growing beyond the home PC network and into video, audio, online gaming and even broadband service to the home, said Logvinov. “As the HomePlug BPL

specification effort gains traction,” an effort begun in November (*BPL Today*, 11/8/04), the alliance created a new level of membership called a Utility Class Member.

This membership class creates an effective forum for power utilities to share ideas on BPL and formalizes the participation of utilities in power line standards development.

Duke announced last month plans to expand its BPL North and South Carolina BPL trial from 500 homes to 10,000 or 15,000.

The firm believes it’s critical for facilities-based providers to be in the BPL standards development process.

Bob Gerardi, power line communications manager at Duke Power made clear he means especially in the compatibility and coexistence of access BPL and in-home power line systems.

Representatives from all parts of the digital home value chain have joined the alliance, noted HomePlug, to create a certification process and “harmonized” approach to specification development.

The goal is to make sure consumer products of all types work together to create a seamless connected environment for end users.

Interested in joining?

Contact Executive Director Rob Ranck ([rranck@inventures.com](mailto:rranck@inventures.com)).

Europe is mostly underground making it less well suited to high-speed communication.

Underground power lines are usually much closer to each other than typical US overhead lines, causing a loss of transmission quality, he explained.

But problems exist here too, with

junctions and branches that cause signals to reflect and thus degrade broadband performance and transmission.

“The signal can bounce back and forth in the lines,” said Kavehrad, without proper impedance matching.

The bouncing takes energy away from the signal and the loss is reflected in the

ultimate capacity. “In service, performance will depend on how close the power company chooses to place the repeaters,” he added.

Kavehrad predicted the engineering needed to make BPL a technical alternative to DSL and cable will happen, although

economical viability depends on “overcoming” interference issues, he added.

The study is supported by a two-year grant from AT&T, although that firm pulled out of the project and the team hopes another will step up.

While the study found one gigabyte to be the likely top possible bandwidth over medium voltage power lines in the US, Amirshahi doesn’t expect that to be achieved.

He sees 500 mbps as a reasonable goal for access BPL service.

## Broadband won 4 million users in six months

### FCC numbers support growth predictions

High-speed internet connections to homes and businesses grew 15% during the first half of 2004 from 28.2 million to 32.5 million lines.

That compares with a faster 20% growth from 23.5 million to 28.2 million in the second half of 2003, but combined into a year ending June 30, 2004, high-speed lines grew a healthy 38%.

The FCC’s Wireline Competition Bureau recently released new data on high-speed internet connections (200 kbps or above in at least one direction) in the US based on semi-annual reports that facilities-based providers submit under the local competition and broadband data gathering program.

The data was collected from providers with at least 250 high-speed lines in a state and reflects numbers as of June 30 last year.

The vast majority of the 32.5 million high-speed lines in service are for homes and small businesses — at 30.1 million. That number is up 16% from 26 million six months earlier.

For the year ending June 30, home and small business subscribers grew 46%, FCC found.

Find the report on the FCC website: [http://www.fcc.gov/Bureaus/Common\\_Carrier/Reports/FCC-State\\_Link/IAD/hspd1204.pdf](http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/hspd1204.pdf)

## DS2 wins CES best innovation award

The Spanish BPL chip-maker won the CES Best of Innovations Award at CES last week.

The firm’s DSS90XX series of chips are the long awaited G3, 200 mbps chips and have begun shipping recently.

The least expensive chip in the series, the DSS9011 is a low cost home audio networking device well suited for IP-phones, MP3 players, home theaters and other low cost appliances, said DS2.

The firm called the series the only available universal solution for home-wide video and media networks.

“Our real achievement has not only been hitting the market more than two years earlier than the nearest competitor,” said DS2 CEO Jorge Blasco at the event, “but to provide a flexible family of chipsets addressing the different needs of different niches of the market — video, audio, in-home networks (and) BPL access

networks.”

The big achievement was made by DS2’s partners, said Blasco, who created “a large portfolio of products now marketed by several ‘blue chip’ manufacturers in BPL-access.”

The HomePlug booth displayed a “growing portfolio” of products for in-home communications including PLC-to-Ethernet bridges, DSL-to-PLC bridges “and a myriad of new products that will hit the market during the coming weeks and months,” said the firm.

Devices using DS2 chipsets comply with the European Telecommunications Standards Institute’s (ETSI) specifications for co-existence between in-home and BPL access networks, the firm added. “It will take several years for competition to be at the same level as we are today.”

DS2 has shipped over 800,000 PLC chips, the firm said at CES.

**Tell us what you think.** We want to hear from you. Send your comments, questions and suggestions about this week’s *BPL Today* to [sam@ghinews.com](mailto:sam@ghinews.com).

**Abbreviations:** To see a glossary of *BPL Today*’s abbreviations, go to [www.bpltoday.com/glossary.htm](http://www.bpltoday.com/glossary.htm).

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