

Before the  
**Federal Communications Commission**  
Washington DC 20554

In the Matter of )  
 )  
Inquiry Regarding Carrier Current ) ET Docket No. 03-104  
Systems, Including Broadband over )  
Power Line Systems )  
 )

**Reply Comments of HomePlug Powerline Alliance**

The HomePlug Powerline Alliance (“HomePlug”) is pleased to submit these Reply Comments in response to the comments filed on the Commission's Notice of Inquiry (“NOI”) regarding Carrier Current Systems, including In-House Broadband over Power Line (“BPL”) systems.

**Introduction**

HomePlug devices communicate through a home’s electric power wires, allowing every power outlet to also serve as a connection to an in-home data network. The radiation limits in the Commission's existing Part 15 Rules have successfully controlled the interference potential of these existing devices to licensed services. This fact is evidenced by the substantial number of HomePlug-compliant devices already deployed in the field with no reports of harmful interference. Therefore there is no need for additional regulation. HomePlug encourages the FCC to consider only relevant, recent

data for interference potential analysis, of which none demonstrates harmful interference to licensed services by HomePlug-compliant devices.

### **Existing Part 15 Rules Work**

There is no need demonstrated for additional regulation of In-House BPL by the Commission. The regulations that exist today in Part 15 have protected against interference with licensed services while providing freedom for innovation. These concepts were summarized well by the Information Technology Industry Council in their comments. “The Commission’s Part 15 Rules continue to provide a balanced approach to spectrum allocation, interference protection, and provide stability for manufacturers to design products that will integrate and operate efficiently with existing systems resulting in more long term value for the consumer.”<sup>1</sup>

An illustration of how the FCC rules already provide protection of licensed services is the case cited in the ARRL comments regarding an early model of the Phonex Modem Jack carrier current device.<sup>2</sup> As that case was documented by the ARRL, some amateur radio operators reported to the ARRL that they were experiencing interference from the Phonex product. The ARRL contacted Phonex about the problem under their rights given in section 15.5 of the FCC Part 15 Rules. Phonex, understanding their obligation in the matter, immediately worked with the ARRL to eliminate the reported

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<sup>1</sup>Comments of Information Technology Industry Council at page 5.

<sup>2</sup> Comments of ARRL, the National Association for Amateur Radio ("ARRL") at page 14.

cases of interference and then made design changes to eliminate future interference. Phonex bore considerable expense and burden to rectify this situation. Manufacturers such as Phonex recognize their obligation and responsibility to correct any interference situations that result and obviously strong business incentives exist to avoid this significant burden through design of products that avoid creating interference in the first place.

One of the great strengths of the current regulatory scheme encompassed in Part 15 of the Commission's Rules is that it provides incentives for manufactures to avoid causing interference when creating new products as well as safeguards to correct the problem if interference does occur. The FCC Rules provide protection from interference and allow innovative new products, such as the Phonex Modem Jack, to benefit millions of consumers.

### **Radiated Emissions Testing**

A broad array of respondents commented that radiated emissions testing is appropriate for compliance verification of In-House BPL devices. Some, however, requested alternate emissions measurement techniques to ease the burden of emissions measurements, such as extrapolation from conducted measurements. The Part 15 Rules include radiated emission limits designed to prevent interference with licensed services. It may be possible to develop a conducted emissions test that would reduce the effort required for emissions testing, however, measurement of radiated emissions will always be the most reliable indicator of interference potential. Although alternate measurement

methods could be investigated, and if sound, made available as an alternate technique, the existing measurement methods and standards using radiated emissions should always be permitted.

As noted in our Comments, stability in the rules best serves the needs of the nascent In-House BPL industry as well as the overall public benefit. This interest is no different than that of licensed spectral holders, as rapidly shifting spectral allocations diminish the incentive for investment in equipment to utilize the allocations. Stability in rules of measurement and regulation also allows manufacturers and service providers to optimize their equipment and services to create business opportunities and effective services for the public. We urge the Commission to retain such stability in the rules.

### **In-House BPL is Being Widely Deployed Without Problems**

A few respondents have expressed concern over the interference potential of BPL devices to licensed services and the desirability of field study prior to widespread deployment of BPL devices. At present, 17 companies manufacture 58 different products that comply with the HomePlug standard. In addition, a number of manufacturers have announced new types of products. These include Powerline cable/DSL routers,<sup>3</sup> and gateway devices that include Powerline + DSL<sup>4</sup>, and Powerline + cable modem.<sup>5</sup>

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<sup>3</sup> Asoka PlugLink Powerline Cable/DSL Router – PL9920-BBR, <http://www.asokausa.com/news/router.php>.

<sup>4</sup> Efficient Networks Powerline/Wireless DSL Gateway - SpeedStream 6400, <http://www.efficient.com/press/200307071.html>.

<sup>5</sup> ARRIS Touchstone Data Gateway 400 (DG 400), <http://www.arrisi.com/press/pressdetail.asp?id=127>.

A number of products have been brought to market over the last 2 years, and new products are continually being announced. The HomePlug Powerline Alliance is not aware of any complaints of interference caused by HomePlug compliant devices. This U.S.- based experience is the most relevant to showing the limited potential for interference.

In fact, joint testing by ARRL and HomePlug demonstrated the very low probability of interference between HomePlug devices and amateur radio use. Despite this well publicized study,<sup>6</sup> many respondents cited potential In-House BPL interference with amateur radio as a significant concern. Additionally, computer models generated by ARRL and offered in their comments claim interference levels significantly higher than that experienced in their own testing. Accurately modeling the radiation of In-House BPL signals is highly challenging due to the complex interactions between the wiring and switches in a home, a difficulty in fact cited by ARRL in their Comments.<sup>7</sup> Despite this fact and the lack of agreement between modeling results and actual field data, these studies are exclusively cited as being authoritative on potential interference. This effectively distorts the facts and does not materially contribute to the public record. HomePlug encourages the Commission to use realistic interference analyses and data from present deployments in their consideration of In-House BPL.

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<sup>6</sup> HomePlug & ARRL Joint Test Report, January 24, 2001, [http://www.arrl.org/tis/info/HTML/plc/files/HomePlug\\_ARRL\\_Dec\\_2000.pdf](http://www.arrl.org/tis/info/HTML/plc/files/HomePlug_ARRL_Dec_2000.pdf).

<sup>7</sup> Comments of ARRL at page 15: “The only reasonable conclusion is that it is not possible to determine the interference potential of BPL wiring with a computer model.”

### **No Impact From In-House BPL on DSL or Cable Equipment**

Several respondents, including cable and DSL service providers, have commented on the interference potential of BPL on existing cable and DSL networks and equipment. HomePlug has seen no interference to these systems in any of our tests, and we also have not had any reports of interference from any users of the substantial number of HomePlug compliant devices already sold. We are not aware of any data to support interference or potential interference to cable or DSL equipment, and no data was provided by any of the commenters indicating otherwise. Several equipment manufacturers have also announced products that combine a HomePlug based Powerline interface along with a cable or DSL interface (see references above). This further substantiates that there is little interference potential between these technologies.

### **No Solution Required for In-House BPL Interference**

HomePlug would like to reply with regard to comments made by several respondents related to In-House BPL systems and Wi-Fi. The respondents mention the idea of Wi-Fi as a “solution” for the perceived notion of In-house BPL interference. There is no substantiation given to this notion, and we know of no past or current substantial interference from In-house BPL equipment that is compliant with the HomePlug standard. In addition, according to a study published in IEEE Communications Magazine, In-House BPL networks have unique advantages over Wi-Fi

in coverage, reliability and stability, features which are important for home networks.<sup>8</sup> HomePlug believes its next generation technology, HomePlug AV, a 100 Mbps class home networking technology, will provide unmatched “no new wires” in-home video and audio networking capability.<sup>9</sup>

## **Conclusion**

The Commission's existing Part 15 rules offer an effective regulatory scheme to protect licensed spectral users while also offering opportunities for innovation by In-House BPL manufacturers and service providers. The proven history of this scheme and the substantial benefits of regulatory stability should be accorded substantial weight. There is no reason for the Commission to make major modifications to its rules because radiated testing of devices provides the best mechanism to verify compliance with regulatory limits. A broad array of respondents agrees with this assessment.

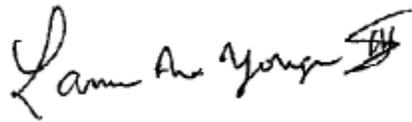
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<sup>8</sup> Y Lin et al., “A Comparative Performance Study of Wireless and Power Line Networks,” IEEE Communications Magazine, April 2003.

<sup>9</sup>H. A. Latchman & L. W. Yonge, “Guest Editorial, Power Line Local Area Networking”, IEEE Communications Magazine, April 2003.

HomePlug therefore urges the Commission to consider realistic interference analysis in its assessment of In-House BPL so as to avoid excessively regulating this exciting new technology or to stifle additional innovation that is likely to benefit broad spectrum of consumers and businesses.

Respectfully Submitted,

A handwritten signature in black ink that reads "Lawrence W. Yonge III". The signature is written in a cursive style with a prominent initial "L" and a stylized "III" at the end.

Lawrence W. Yonge III  
Technical Working Group Chair  
HomePlug Powerline Alliance  
2694 Bishop Drive, Suite 275  
San Ramon, CA 94583

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