

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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

**COMMENTS OF SPRINT CORPORATION**

Sprint Corporation ("Sprint") hereby submits its Comments on the Notice of Inquiry released April 28, 2003 (FCC 03-100) in the above-captioned docket.

The Commission has opened this inquiry in order to determine whether changes to its Part 15 rules are needed to facilitate the deployment of Broadband over Power Line (BPL) technology without disrupting existing licensed and non-licensed services. The Commission seeks information on a broad range of issues, including BPL interference with authorized spectrum users, appropriate measurement procedures for testing emissions, and equipment authorization procedures.

Sprint supports the Commission's investigation of BPL technology and may consider deploying it in the future as an alternative means of providing access to customers in selected areas. As a provider of telecommunications services, Sprint urges the Commission to ensure that there is no interference with existing licensed services. If BPL is deployed, there must be assurances that BPL will not have adverse effects on Sprint's customers and others in the surrounding area. To this end, Sprint suggests certain issues be investigated, as discussed below. Sprint also recommends that the

existing emissions rules applicable to BPL be examined in light of their potential for interference in the high frequency band and changed if necessary to protect existing services.

The Commission asks about “standards work [that] has been done domestically and internationally on Access BPL and ... the results of such activities.” Sprint has not participated in any of these efforts. However, Sprint believes that any interference due to BPL systems identified in any trials or studies conducted either in the U.S. or internationally should be considered prior to finalizing requirements in the U.S because it is critically important that normal communications are not hampered by any interference from BPL.

Sprint strongly agrees with the Commission that “multiple carriers spread signals over a broad range of frequencies that are used by other services that must be protected from interference.” Para. 18. Clearly, there should be no harmful interference to any user of licensed spectrum; in particular, public services, such as safety-related and law enforcement communications, aircraft navigation and communications, as well as standard time and frequency transmissions, must be protected. In this regard, Sprint believes the widespread deployment of in-house BPL poses a greater threat than those forms of access BPL that use a wireless link to transfer data from the medium voltage power line to the end user's computer or computers.

The Commission asks: "What mitigation techniques are used by In-House BPL systems to avoid possible interference with licensed radio services . . . ." Para. 20. Sprint notes that it is possible for both In-House and Access BPL to use error detection and dynamic frequency allocation to avoid reception of interference to their own signals.

While this might also serve to protect, for example, most amateur and CB band users much of the time, it would not protect high frequency band listeners (*e.g.*, shortwave radio users). There are probably more high frequency band listeners than transmitters, so the value of mitigation techniques used by both In-House and Access BPL as an overall control mechanism for interference is limited.

The Commission seeks comment on the effect of “the close proximity of Access BPL equipment to cable television and telecommunications equipment from third party service providers co-located on the same utility pole ... [on] the operation of these services.” Para. 20. The Commission also requests information related to the proximity of DSL or cable modem service to BPL in residences. *Id.* Sprint believes that the close proximity of BPL equipment to telecommunications facilities on the same pole, or in the same underground facility or residence could be an issue. Residential wiring and open wire telecommunications lines are of greatest concern. Open wire lines are rapidly dwindling, but they are still present in some areas that might be attractive for BPL deployment. While most telecommunications network facilities are shielded twisted pair or fiber that are not as susceptible as open wire lines to interference from BPL, there is some possibility of interference to equipment that was not designed to reject local signals in the high frequency band. Thus, the potential for interference should be investigated.

Sprint is also concerned about the potential for interference with ADSL 2+ and VDSL services, which operate at speeds up to about 10 MHz, within the spectrum which would be used by BPL. Some crosstalk might be experienced without proper precautions. Thus, interference with these two services should be investigated.

The Commission asks for comment on the important question of how to tailor Part 15 rules “to ensure protection against harmful interference to radio services and to avoid adversely impacting the development and deployment of this nascent technology.”

Para. 20. The Commission also asks: “[w]ould the new . . . BPL equipment pose a greater risk of interference to licensed radio services than the traditional carrier current systems.” Para. 26. Sprint believes the risk of interference is greater from BPL equipment than traditional carrier current systems. OFDM (Orthogonal Frequency Divisional Multiplexing) interference is not noise-like at close range and may cause interference to users in high frequency bands with sensitive receivers. It is not clear that the existing Part 15 rules which apply to carrier current stations in the U. S. broadcast (strong signal) bands, where relatively insensitive receivers tend to be used, are adequate or appropriate for the high frequency band, where weak signals predominate and where sensitive receivers are often used.

The Commission recognizes that there are no specific test methods in its rules for carrier current systems and asks for information related to “[h]ow . . . measurement procedures for testing new BPL systems, both Access and In-House, [should] be developed in order to promote consistency with measurements of existing carrier current systems and repeatability of test results.” Para. 23. As stated above, Sprint believes that it is extremely important to ensure that BPL does not interfere with users of the licensed spectrum. Sprint believes that a standard test method is as important as a practical numerical requirement. To this end, a radio receiver and a spectrum analyzer must be used together to determine what level of signal causes interference. Then, once that level

is determined, a practical requirement can be developed, and a test method which would use a spectrum analyzer of specified characteristics can be determined.

Concerning equipment authorization, the Commission asks for comment on “[w]hat components of an access BPL should be subject to equipment authorization.”

Para. 26. Any component of a BPL system that generates radio frequency signals for internal or external use should be subject to equipment authorization and should be covered under procedures currently used for those types of equipment.

Finally, the Commission requests "comments on any other matters or issues . . . pertinent to BPL technology." Para. 30. Licensed spectrum licenses normally require periodic station identification in plain language. One issue for users of the radio spectrum in the presence of BPL is how to identify the source of any BPL interference, so that a request to change frequency bands can be made without the necessity of contacting the Commission. A related question which should be examined is what is the probability of a BPL service provider receiving complaints about every available frequency band at a node, and what should it do in such a case (e.g., should it cease operations). In addition, the Commission did not mention the advantages of BPL systems using Wi-Fi as a link between the medium voltage power line and users' computers (e.g., lower interference). Sprint believes these issues should be considered.

In conclusion, Sprint urges the Commission to investigate interference effects of BPL systems to ensure that existing services are protected. Sprint also recommends that

existing standards sponsors, such as ATIS (Alliance for Telecommunications Industry Solutions) and IEEE (Institute of Electronic and Electrical Engineers), should be involved in testing for interference and establishing standards.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Comments of Sprint Corporation in ET Docket No. 03-104 was sent by electronic mail on this 7th day of July 2003 to the parties listed below.

  
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