

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

In the Matter of)	
)	
Carrier Current Systems, including)	ET Docket No. 03-104
Broadband over Power Line Systems)	
)	
Amendment of Part 15 regarding new)	
requirements and measurement)	ET Docket No. 04-37
guidelines for Access Broadband over)	
Power Line Systems)	

To: The Commission

**COMMENTS OF
SOUTHERN LINC,
SOUTHERN TELECOM, INC., AND
SOUTHERN COMPANY SERVICES, INC.**

By:

Christine M. Gill
Jeffrey L. Sheldon
McDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, D.C. 20005
202-756-8000

Michael D. Rosenthal
Director of Legal and External Affairs
Southern LINC
5555 Glenridge Connector, Suite 500
Atlanta, GA 30342
678-443-1500

Their Attorneys

Dated: May 3, 2004

TABLE OF CONTENTS

I.	Introduction	2
A.	BPL Offers a Platform for New Utility-Specific Applications to Support Improved Power Quality and System Reliability	3
B.	BPL Will Contribute to Greater Broadband Deployment and Use	6
C.	Southern is Encouraged by its BPL Trials So Far	7
II.	Comments	8
A.	Although a Notification Process Might Help Identify Whether Access BPL is a Potential Source of Interference, It Must Not Require Disclosure of Sensitive Operational or Competitive Information.....	8
B.	The Definition of “Access BPL” Should Differentiate it from Other Carrier Current Systems.....	12
C.	The Proposed Emission Limits for Access BPL Are Adequate Until More Data Is Collected Confirming the Viability of Higher Emission Limits	15
D.	It Is Unnecessary to Adopt Specific Operational Requirements for Access BPL Since Part 15 Already Provides a Strong Incentive to Avoid Causing Harmful Interference to Licensed Services.....	18
E.	Clarification of the Proposed Measurement Guidelines Will Provide More Efficient and Accurate Measurements	20
III.	CONCLUSION	23

EXECUTIVE SUMMARY

Southern LINC, Southern Telecom, Inc., and Southern Company Services, Inc. (collectively “Southern”) are subsidiaries of Southern Company, and are affiliates of Alabama Power Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company, and Savannah Electric and Power Company. Southern commends the FCC for taking the initiative in removing ambiguities in the Commission’s rules with respect to the operation of Access BPL under Part 15. Southern also appreciates the Commission’s effort to develop rules that will allow BPL to develop as a platform for new utility applications and for the provision of competitive broadband services without unreasonable restrictions.

Southern has concerns with the Commission’s proposal to require a detailed national database of BPL device locations and other operating parameters. While Southern sees value in having a national database of general areas where BPL systems are deployed to assist licensed users in contacting BPL operators, Southern believes this goal can be met by a more limited database requirement that would not raise the same security and competitive concerns as in the Commission’s proposal.

Although the proposed definition of “Access BPL” is generally accurate, Southern recommends that the definition make clear that Access BPL does not include other carrier current systems such as Power Line Carrier (PLC) or In-House BPL, and that Access BPL systems must be installed, owned, and/or operated by the power utility

or an affiliate thereof due to significant safety and reliability concerns associated with use of these devices on energized power lines.

Southern believes the Commission has proposed an acceptable compromise between the position of those who have requested a decrease in the Part 15 emission limits for BPL – in some cases to levels that would render this service inefficient and uneconomical – and the position of BPL manufacturers and users who have not witnessed any harmful interference under the current limits. However, Southern urges the Commission to remain open to increasing the radiated emission limits as more measurement data is developed, technology improves, and systems are extended into areas with longer line distances.

Adaptive interference mitigation techniques are probably unnecessary to prevent or mitigate harmful interference from Access BPL systems. Any such requirements that are adopted should allow flexibility in the types of interference mitigation techniques that could be employed in BPL systems so that innovation in equipment and system design is not stifled.

With respect to the proposal for BPL devices to be tested *in situ* at three “representative installations,” Southern recommends that the Commission make clear that the BPL operator is primarily responsible for determining whether installations tested are “representative” of the types of configurations the BPL operator is likely to deploy in practice. Based on Southern’s experience with its trial BPL installations, Southern recommends that measurements would be more efficient and accurate if testing were required only at three representative signal injection points. Southern also proposes a

more efficient and accurate method for identifying the area of highest emissions around an underground transformer. Southern recommends that the Commission allow measurements to be made on the ground directly below overhead lines, or the closest possible location if testing cannot be done directly under the line, with application of the distance correction factors. If testing on the ground indicates that the Part 15 limits might be exceeded, the BPL operator may (and should) measure at the height and distances specified in Part 15.

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

In the Matter of)	
)	
Carrier Current Systems, including)	ET Docket No. 03-104
Broadband over Power Line Systems)	
)	
Amendment of Part 15 regarding new)	
requirements and measurement)	ET Docket No. 04-37
guidelines for Access Broadband over)	
Power Line Systems)	

To: The Commission

**COMMENTS OF
SOUTHERN LINC,
SOUTHERN TELECOM, INC.,
AND SOUTHERN COMPANY SERVICES, INC.**

Pursuant to Section 1.415 of the FCC's Rules, Southern Communications Services, Inc. d/b/a Southern LINC, Southern Telecom, Inc., and Southern Company Services, Inc. (collectively referred to herein as "Southern") hereby submit their Comments on the FCC's *Notice of Proposed Rule Making* in the above-captioned matter.¹ Through this *NPRM*, the FCC has proposed rules and guidelines for the development of Broadband over Power Line ("BPL") systems, which are new types of carrier current

¹ In re Inquiry Regarding Carrier Current Systems, including Broadband over Power Line Systems, Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems ET Docket Nos. 03-104 and 04-37, *Notice of Proposed Rule Making*, 19 FCC Rcd 3335 (2004) ("*NPRM*"). Pursuant to Public Notice, DA 04-760, released March 23, 2004, these Comments are submitted for filing only in ET Docket No. 04-37. To the extent necessary, Southern hereby

systems, operated under Part 15 of the FCC's Rules, that use existing electric power lines to provide broadband communications services. As explained herein, Southern strongly supports the Commission's initiatives in this area, but recommends certain modifications to the proposed rules to better define Access BPL, clarify some of the operational requirements, and to suggest revisions to some of the measurement guidelines.

I. INTRODUCTION

Southern LINC, Southern Telecom, Inc., and Southern Company Services, Inc. are wholly-owned subsidiaries of Southern Company, which is a registered holding company under the Public Utility Holding Company Act of 1935, as amended. Southern Company, through five electric utility subsidiaries, Alabama Power Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company, and Savannah Electric and Power Company (collectively referred to herein as the "Operating Companies"), provides retail and wholesale electric service throughout a 120,000 square mile service territory in Georgia, most of Alabama and parts of Florida and Mississippi. Southern LINC provides Commercial Mobile Radio Service to business, government, and consumer subscribers, as well as serving Southern Company's operating utility companies. Southern Telecom, Inc. provides long-haul and metropolitan dark fiber and other infrastructure assets in support of competitive telecommunications services. Southern Company Services, Inc. provides administrative and other functions, including internal telecommunications services, in support of Southern Company and its Operating Companies.

incorporates by reference into this rulemaking proceeding its Comments, filed July 7, 2003, and its Reply Comments, filed August 20, 2003, in ET Docket No. 03-104.

As explained below, Southern is very interested in the development of Access BPL, particularly with respect to the range of utility specific applications for which this technology could be used. Southern also agrees with the Commission, as well as many other parties, that Access BPL could be the “third” broadband wire to the home for competitive Internet access services or to extend broadband service to underserved or currently unserved areas.

A. BPL Offers a Platform for New Utility-Specific Applications to Support Improved Power Quality and System Reliability

In the *NPRM*, the Commission notes that Access BPL could “allow electric utilities to improve the safety and efficiency of the electric power distribution system and also further our national homeland security by protecting this vital element of the U.S. critical infrastructure.”² Southern agrees entirely. Recent events have focused attention on the reliability of the nation’s electric grid, and the potential impact on public health, safety, and the economy, if the electric power system suffers catastrophic failure. Automated system controls, as well as widely dispersed data collection and monitoring devices, are critical to maintaining modern electric power systems. Without such monitoring devices and the associated communications systems needed to centralize this data collection and analysis, power system dispatchers would have to depend almost entirely on customer reports of power outages in order to identify locations experiencing outages, diagnose the likely cause of the outage, and initiate restoration efforts. More sophisticated monitoring systems would allow potential problem areas to be identified

² *NPRM* at para. 30.

before system failure, thus allowing the system dispatcher to take action to isolate or correct a problem before a blackout cascades to other portions of the grid.

Access BPL offers a unique communications tool that could be used by utilities to help support functions such as the following:

- Reclosure operations – Ubiquitous communications devices along the power distribution lines would allow the utility to remotely open and close circuit breakers on the electric distribution system. At present, utilities such as Southern may use multiple address radio systems (MAS) for these operations or dispatch field crews to manually open or close the breakers. Use of Access BPL would provide utilities with another option to further automate this activity without relying on increasingly scarce MAS spectrum.
- Power quality monitoring – Electric utilities in the U.S. are required to maintain the frequency of the electric power as close as possible to 60 Hz throughout the generation, transmission and distribution processes. Remote monitoring of power quality allows electric control centers to monitor the grid and make needed adjustments to keep the power as close to 60 Hz as possible. In addition, power quality monitoring is important to certain customer applications, such as certain high-tech manufacturing processes, where variations in power quality can directly impact the quality of finished products. Access BPL could allow the utility to monitor

power quality more extensively throughout the system, including at points that are closer to the customer's location.

- Automated meter reading (AMR) – Southern has successfully used BPL to remotely read an electric meter on an interval basis. Having the ability to remotely read meters creates the potential for a utility to offer real-time pricing as a means of encouraging energy conservation during peak load situations, and the potential for significant utility cost savings by avoiding construction of additional peak load capacity. Having a ubiquitous communications pathway to customers could greatly facilitate AMR.
- Automatic connect and disconnect – Significant utility labor is spent simply turning power on and off at the customer meter when customers move in or out. Similar to automatic meter reading, automatic connect/disconnect could save the utility from having to dispatch crews for these routine services, thereby freeing these resources for more critical utility needs.
- System security – In the post-9/11 world, security of key utility installations is of heightened importance. Southern is currently conducting a trial in which a pole-mounted video camera is trained on an intersection with the near real-time images transmitted back to the utility via BPL. Southern envisions being able to use BPL as the essential link in video surveillance of utility property, such as steam plants, electric substations, and office buildings.

- Voice over IP – Southern has done limited trials of carrying voice over IP (VoIP) on BPL and has found the voice quality to be comparable to traditional telephone service.

B. BPL Will Contribute to Greater Broadband Deployment and Use

Southern agrees with the Commission’s assessment that Access BPL “could play an important role in providing additional competition in the offering of broadband services to the American home and consumers, and in bringing Internet and high-speed access to rural and underserved areas.”³ More recently, both the President and the National Telecommunications and Information Administration (NTIA) have also noted the importance of expanding access to broadband services and the potential for BPL to meet these needs. On April 26, 2004, President Bush announced his new technology agenda and called for universal, affordable broadband access by the year 2007.⁴ As part of this agenda, the President noted that the Department of Commerce is also working to “chart the clear technical path forward for BPL,” which “has the potential to turn every electrical outlet into a broadband pipeline.”⁵ Closely following on this announcement, NTIA expressed its opinion to the Commission that “[t]imely and successful completion of the Commission's BPL docket will lay the foundation for meeting the President's vision for the availability of competitive, universal, and affordable broadband services by

³ *NPRM* at para. 1.

⁴ “A New Generation of American Innovation,” The White House (April 2004) (available at http://www.whitehouse.gov/infocus/technology/economic_policy200404/innovation.pdf).

⁵ *Id.*, at 12.

2007.” NTIA also stated it is committed to working with the FCC to find solutions that will “allow the realization of the promise of a third broadband wire into the home.”⁶

These significant expressions of support for BPL confirm the wisdom in the Commission’s early decision to review the technical issues associated with this technology and to initiate the present rulemaking intended to remove regulatory uncertainty as to the status of BPL under Part 15. Southern applauds both the Commission’s leadership role in this area and its attempt to limit the regulations applicable to BPL to only those deemed essential for sound spectrum management.

C. Southern is Encouraged by its BPL Trials So Far

Over the past year, Southern has been engaged in field trials with Access BPL.⁷ Based on its testing so far, Access BPL is meeting Southern’s expectations. While additional work remains before Southern determines whether to proceed to commercial deployment, the field trials have helped Southern develop more efficient installation techniques for BPL equipment, and to develop “best practices” for system deployment and operation. As noted above, Southern has also been able to test certain applications that might be supported by BPL, such as security monitoring and VoIP. Southern therefore welcomes this opportunity to comment on the Commission’s proposed regulatory structure for this new service.

⁶ Letter dated April 27, 2004, to Michael K. Powell, Chairman, FCC, from Michael D. Gallagher, Acting Assistant Secretary for Communications and Information, U.S. Department of Commerce.

⁷ Southern Telecom, Inc., was granted an Experimental License (Call Sign WC2XZG) on August 29, 2002, to test various configurations of BPL equipment from several vendors in order to gauge general compliance with the Part 15 rules and consumer acceptance of BPL service.

II. COMMENTS

A. **Although a Notification Process Might Help Identify Whether Access BPL is a Potential Source of Interference, It Must Not Require Disclosure of Sensitive Operational or Competitive Information**

The Commission has proposed adoption of a notification requirement similar to the notification requirement currently in the rules for power line carrier systems.⁸ The Commission describes that the purpose of this notification requirement would be to “establish a publicly accessible database for Access BPL information to ensure that the location of Access BPL systems and their operating characteristics are identified if harmful interference occurs and to facilitate mitigation and avoidance measures.” The NPRM proposes to require notification of “the location of the installation, the type of modulation used and the frequency bands of operation.” In the alternative, the Commission asks whether it would be more reasonable to allow each Access BPL operator to maintain a database of its own rather than require a more centralized data base.

Southern agrees that it would be helpful to have a system in place to facilitate the identification of potentially interfering BPL systems, but does not agree that the process outlined in the *NPRM* is necessary or appropriate due to significant security and competitive concerns. First, the precise location of Access BPL installations should not be made available in a publicly accessible database. As noted above, Access BPL equipment will be installed at key locations on a utility’s infrastructure and could be used for electric utility applications related to system security and reliability. For obvious

⁸ NPRM at para. 43. See also Sections 15.113 and 90.35(f) of the Commission’s Rules.

Homeland Security reasons, Southern and other utilities do not routinely allow public access to information about their key infrastructure assets. In fact, the Federal Energy Regulatory Commission (FERC) recently adopted regulations designed to protect from routine public disclosure information filed with that agency about utilities' critical infrastructure.⁹ Requiring public access to a database that contains location and other operating information about Access BPL devices would provide very sensitive information not only on the utility's infrastructure deployment but also the location of devices that could, and probably will, be used by the utility for electric system monitoring and control.

Additionally, public access to a database of BPL device locations would provide broadband competitors with unprecedented and unwarranted access to detailed information on the status of the Access BPL operator's network. Such a requirement would place Access BPL at a significant competitive disadvantage to cable operators and DSL providers, and would thus be contrary to the Commission's policies supporting a level playing field for broadband competitors.

It should be noted that the PLC notification activity outlined in Sections 15.113 and 90.35(g) do not require utilities or licensed users to provide sensitive location or frequency information that would be publicly accessible. In fact, Southern understands that the PLC database is maintained on a confidential basis by the United Telecom Council (UTC), and the corresponding licensed user database is maintained by UTC pursuant to strict security procedures. Southern further understands that any potential

⁹ Critical Energy Infrastructure Information, FERC Order No. 630, 68 Fed. Reg. 9857 (published March 3, 2003).

conflicts or interference claims brought to UTC's attention result in notifications to both parties as to points-of-contact who should communicate with one another about frequency use or potential interference. UTC does not provide specific operating information to either party, thereby maintaining the confidentiality of this information and allowing the parties to disclose whatever information they deem necessary and under whatever conditions they deem appropriate to resolve the matter.

Southern believes that the Commission's objectives – providing for prompt mitigation of interference – could be met by a far less burdensome notification requirement more in line with the existing PLC notification activity. The following is an outline of a notification procedure that would (1) permit each BPL operator to decide how much location information to include in the national database; (2) provide prompt notification to the public of interference cases that demonstrably cannot be due to Access BPL; (3) provide the public with up-to-date information on persons to contact if it is possible that Access BPL could be the source of harmful interference; and (4) shield from public view sensitive information related to electric system security and competitive information. It should be noted that Southern does not suggest that these procedures should be detailed in the Commission's Rules; rather, the outline provided below is only intended to demonstrate that a flexible notification requirement could be developed that protects everyone's interest in the successful, secure and interference-free deployment of BPL.

1. Each BPL provider must provide an industry-operated entity with the following information:
 - A. A list of Zip Codes consisting of either:

1. All Zip Codes in which the BPL provider has installed BPL devices as well as the Zip Codes for all adjacent areas; OR,
 2. All Zip Codes in which the host electric utility provides electric power service, regardless of whether BPL devices are deployed in any of these Zip Codes, as well as any Zip Codes that are adjacent to Zip Codes in which BPL devices are actually deployed.
- B. The range of frequencies over which the BPL system operates (with a default range of 2-80 MHz if no frequency range is provided); and
 - C. A point of contact to whom interference complaints should be sent. This could be either a contact at the power utility or at the BPL provider, if a separate entity.
2. Anyone experiencing interference could query the database by providing (a) contact information (*e.g.*, name, address, and call sign); (b) the address, including Zip Code, at which interference was detected; and (c) the frequency on which interference was detected.
 3. The database will return one of the following responses as appropriate:
 - A. “The electric utility providing electric power service in this Zip Code has not reported having any Access BPL devices anywhere on its power system;” or
 - B. “The frequency on which you claim to receive interference is outside the range of any Access BPL devices that may be installed on power lines of the utility providing electric power service in this area;” or
 - C. “Access BPL devices in this frequency range might be installed on power lines in this area. However, because this database does not contain information on the location of specific BPL devices, you should contact the BPL operator or utility named below to determine whether any BPL devices are installed on power lines in this area, and if so, to initiate procedures to determine whether the interference you are experiencing might be associated with these BPL devices.” *[Included with this response would be the contact information for the BPL operator.]*

By offering the BPL operator the option of identifying just those areas in which it has installed BPL devices, as well as adjacent areas, the BPL operator can elect to have the national database pre-screen and reject queries that are removed from the BPL operator’s actual areas of operation. On the other hand, if the BPL operator prefers not to

provide even general information concerning its BPL deployment, it may elect to provide the Zip Codes comprising all of the host utility's electric power service area. Under this option, the BPL operator may have to directly screen more inquiries, however it would not have to publicly reveal any location data concerning its BPL deployment.

Limiting the national database to providing only point of contact information for BPL operators will facilitate interference resolution by allowing each operator to develop its own intake procedures for interference inquiries. Moreover, nothing would prevent a BPL operator from establishing its own automated database for receiving and processing interference inquiries. A national database as described above would provide a simple, centralized and fully-automated method for screening out interference cases which clearly cannot be attributed to BPL, while providing point of contact information for all other cases.

To implement the above suggestions, Southern recommends the following revisions to Section 15.109(g) as proposed in the NPRM:

(g) Entities operating Access Broadband over Power Line systems shall supply to a Federal Communications Commission recognized industry-operated entity information on the general areas in which Access BPL devices have been installed, the frequency range over which such devices may operate, and contact information for the person(s) to whom inquiries regarding potential BPL interference cases may be directed. No notification to the FCC is required.

B. The Definition of “Access BPL” Should Differentiate it from Other Carrier Current Systems

The *NPRM* proposes to define Access BPL as follows:

“Access Broadband over power line (Access BPL): A carrier current system that transmits radio frequency energy by conduction over electric power lines owned, operated, or controlled by an electric service provider. The electric power lines may be aerial (overhead) or underground.”

Although the proposed definition is an accurate description of Access BPL, it is overinclusive and could bring within its terms low speed carrier current systems operated by electric utilities, such as power line carrier systems (defined as operating only between 10 and 490 kHz) or low speed automatic meter reading systems operating below 1 MHz. To better clarify the distinction between Access BPL and these other utility carrier current systems, Southern recommends that the definition of Access BPL refer to its use of frequencies only above 1.7 MHz. Southern recommends that the lower limit for Access BPL be set at 1.7 MHz because to the best of Southern’s knowledge no manufacturers of Access BPL equipment are proposing to develop systems below 1.7 MHz.

The *NPRM* notes the general distinction between Access BPL and “In-House BPL.” In-House BPL is described as a BPL system operating inside a building using the electrical outlets within the building to transfer information between computers and other home electronic devices.¹⁰ The present *NPRM* focuses almost exclusively on Access BPL systems, and a formal definition of In-House BPL has not been proposed. The proposed definition of Access BPL appears to draw the distinction based on Access BPL operating on electric power lines owned, operated or controlled by an electric service provider. To provide further clarity as to the distinction between Access BPL and In-House BPL, Southern recommends that the definition provide that Access BPL systems

¹⁰ *NPRM* at para. 3.

operate on transmission or distribution lines, including low-voltage lines from the distribution transformer to the electric service demarcation point at the customer premises.¹¹

Because of safety and reliability concerns associated with attaching Access BPL devices to utility assets used to provide regulated utility service, the rules should make clear that all Access BPL equipment must be installed, owned and/or operated by the electric utility or an affiliate thereof. At a minimum, it is absolutely critical that all such equipment, particularly equipment to be coupled directly onto energized power lines or any attachments made in the electric supply space, must be performed only by utility crews and/or utility approved contractors. The Commission should make clear that in defining Access BPL in this manner, it does not intend to limit the nature or scope of business relationships an electric utility or its affiliates may enter in furtherance of BPL service.

Based on the foregoing comments, Southern recommends adoption of the following definition for Access BPL:

Access Broadband over Power Lines (Access BPL): A carrier current system that is installed, owned, and/or operated by an electric service provider or an affiliate thereof, and that transmits radio frequency energy by conduction on frequencies above 1.7 MHz, on overhead or underground electric transmission or distribution lines, including low voltage lines from the distribution transformer to the electric service demarcation point at the customer premises. Access BPL does not include In-House BPL or power line carrier systems (PLC).

¹¹ Although Southern is not aware of any commercially-available Access BPL systems designed to operate on electric *transmission* lines, Southern recommends that the definition of Access BPL include transmission lines so that developments in this area are not precluded.

C. The Proposed Emission Limits for Access BPL Are Adequate Until More Data Is Collected Confirming the Viability of Higher Emission Limits

In the *NPRM*, the Commission noted the wide difference of opinion among parties filing comments on the *NOI* as to the interference potential of Access BPL.¹² On the one hand, amateur radio operators argue that the emissions limits for Access BPL should be lower than the current Part 15 limits or that Access BPL should be excluded from all amateur bands.¹³ On the other hand, BPL equipment manufacturers and utilities presented evidence that there have been no reported cases of harmful interference from Access BPL, and that the current Part 15 emissions limits are adequate to protect other users of the spectrum. Moreover, a number of these parties, including Southern, urged the Commission to permit higher emissions, particularly in the 30-50 MHz band.¹⁴ It was noted that the decrease in emissions limits for frequencies above 30 MHz appears to have been carried forward from when the FCC first adopted limitations for digital computing devices 25 years ago.¹⁵

¹² *NPRM* at para. 14.

¹³ *NPRM* at paras 14-15.

¹⁴ *NPRM* at para. 20, and n.57.

¹⁵ In its rewrite of Part 15 in 1989, the FCC noted that the general limits on radiated emissions in the 30-960 MHz band were the same as those that had been applied to Class B computing devices. In re Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices without an Individual License, GEN Docket No. 87-389, *First Report and Order*, 4 FCC Rcd 3497 (1989). The cut-off at 30 MHz appears to have been adopted due to the FCC's conclusion, in 1979, that conducted emissions limits alone would be effective to protect communications up to 30 MHz from digital computing devices. In re Amendment of Part 15 to Redefine and Clarify the Rules Governing Restricted Radiation Devices and Low Power Communication Devices, Docket No.

Even though Southern continues to maintain that the radiated emissions limits for Access BPL, and particularly the Class A limits for BPL devices operating in the 30-50 MHz range on medium voltage power lines, could be raised without adverse consequences to licensed users, Southern believes that the Commission has proposed an acceptable compromise between the position of those who would request a decrease in the limits for BPL – in some cases to levels that would render this service inefficient and uneconomical – and the position of BPL manufacturers and users who have not witnessed any harmful interference under the current limits. Southern supports the Commission’s proposal to confirm that these limits will continue to suffice for Access BPL, and to reject the comments calling for new limits that would render BPL uneconomical, thus potentially depriving underserved customers access to broadband service.

Southern agrees with the Commission’s conclusion that the current Part 15 emission limits are appropriate for the initial deployment of Access BPL.¹⁶ Southern’s on-going trials continue to support its earlier assessment that a BPL signal injection point can appear like a point-source radiator, with the power line having characteristics somewhere between a waveguide and an antenna.¹⁷ Based on its limited testing to date, Southern also agrees with the FCC’s conclusion that the cumulative effects of BPL

20780, *First Report and Order – Technical Standards for Computing Equipment*, 79 FCC 2d 28, 50 (1979).

¹⁶ *NPRM* at para. 34.

¹⁷ Southern’s Reply Comments in ET Docket No. 03-104, filed August 20, 2003.

transmissions over wide geographic areas are not likely to be of any significant magnitude.¹⁸

Southern therefore concurs with the FCC that the existing Part 15 radiated emissions limits are an adequate starting point for BPL deployment, and applauds the Commission for not succumbing to the pressure being placed upon it by parties who have asked for tighter limits on BPL without substantiation. However, Southern urges the Commission to remain open to increasing the radiated emissions limits as more measurement data is developed, BPL and receiver technology improves, and systems are extended into areas with longer line distances. An increase in the emission limits would ensure that a greater percentage of the public can receive the competitive benefits of BPL.¹⁹

Southern also agrees with the Commission's proposal to exempt Access BPL systems from the conducted emissions limits of Section 15.107(c) due to the safety hazards of measuring conducted emissions on medium voltage power lines and the fact that such measurements will not significantly aid in reducing interference. Measuring for conducted emissions would be impractical as well as unnecessary.

¹⁸ *NPRM* at para. 36.

¹⁹ On April 27, 2004, NTIA published a report entitled, *Potential Interference from Broadband over Power Line (BPL) Systems to Federal Government Radio Communications at 1.7 – 80 MHz – Phase I Study*, NTIA Report 04-413, and filed a copy of the report that same date in this proceeding. Southern intends to address NTIA's report in Southern's Reply Comments in this proceeding.

D. It Is Unnecessary to Adopt Specific Operational Requirements for Access BPL Since Part 15 Already Provides a Strong Incentive to Avoid Causing Harmful Interference to Licensed Services

In addition to complying with the radiated emissions limits of Section 15.109 and the general non-interference conditions of Section 15.5, the Commission has proposed requiring Access BPL systems to incorporate “adaptive interference mitigation techniques,” such as dynamic or remote power reduction or adjustment in operating frequencies. The Commission has also proposed requiring Access BPL systems to incorporate a shut-down feature to deactivate units found to cause harmful interference.²⁰

Such techniques are probably unnecessary to prevent or mitigate harmful interference from Access BPL systems. However, it is Southern’s understanding that most BPL equipment developers are already planning to incorporate such features in their equipment. Southern supports the Commission’s proposal to allow flexibility in the types of interference mitigation techniques that could be employed in BPL systems so that innovation in equipment and system design is not stifled. The Commission has asked whether it should require each Access BPL device to be capable of operating over a minimum range of frequencies or that the system have the capability to remotely exclude a certain percentage of frequencies within this range.²¹ Southern does not believe this is necessary or advisable. Because of the strict non-interference conditions associated with Access BPL, manufacturers and users will both have an incentive to develop and deploy equipment that minimizes the potential for BPL service disruption due to interference mitigation. It would be entirely arbitrary for the Commission to set a minimum

²⁰ *NPRM* at paras. 40-42.

²¹ *NPRM* at para. 42.

bandwidth for BPL systems or the minimum amount of spectrum that must “notched” by each BPL device.

Southern also agrees with the Commission’s observation that Access BPL systems will likely be installed and managed on a more controlled basis than typical Part 15 devices,²² and as noted above, Southern recommends that installation by the utility should be a distinguishing characteristic of Access BPL systems. Use of equipment compliant with Part 15, professional installation, and incorporation of specific techniques to allow remote or automatic adjustment of operating parameters will all serve to ensure that Access BPL systems are an unlikely source of harmful interference to licensed radio services.

The Commission has asked for comment on the appropriate period of time that should be allowed for BPL systems to come into compliance with any new interference mitigation techniques that must be incorporated into Access BPL systems.²³ With respect to the limited amount of BPL equipment that has already been deployed, or which may be deployed before the Commission makes new Part 15 rules governing BPL effective, Southern recommends that the Commission grandfather such equipment from having to comply with any new mitigation techniques. Such equipment has been installed pursuant to clear indications from the Commission that BPL systems may be deployed under the existing Part 15 rules, which do not require use of any particular interference mitigation technologies or techniques. In any event, BPL operators have a strong incentive to deploy

²² *NPRM* at para. 39.

²³ *NPRM* at para. 42.

equipment that facilitates resolution of interference in order to limit the need for truck-rolls and on-site equipment adjustments or replacement.

The amount of time needed by equipment manufacturers to implement any new standards for future equipment will depend on the nature and extent of the new requirements. Southern defers to the BPL equipment vendors on the amount of time needed to bring their product lines into compliance with new standards, but Southern also hopes that all parties will work cooperatively to ensure that any new interference mitigating techniques can be incorporated into devices as soon as practicable.

In order to better clarify the intent behind requiring interference mitigation techniques, Southern recommends that the wording of proposed Section 15.109(f) be revised as follows:

(f) Access BPL systems shall incorporate adaptive interference mitigation techniques such as dynamic or remote reduction in power or adjustment in operating frequencies, in order to provide for localized, site-specific mitigation of harmful interference to licensed radio users. Access BPL systems shall incorporate a shut-down feature to deactivate BPL transmitters found to be causing harmful interference.

E. Clarification of the Proposed Measurement Guidelines Will Provide More Efficient and Accurate Measurements

The Commission has proposed that all BPL electronic devices, such as couplers, injectors, extractors, boosters, and concentrators installed on overhead or underground lines be measured *in situ* to determine compliance with Part 15 emission limits, at a minimum of three representative overhead and three representative underground

installations. The proposed measurement guidelines further specify at least five measurements along an overhead line for each device to be tested, and at least 16 measurements around in-ground power transformers.²⁴

As an initial matter, Southern recommends that the Commission clarify the term, “representative installation.” Because of the wide variety of power system configurations, and because the BPL industry is continuing to test and model various system configurations, the Commission should make clear that the BPL operator is primarily responsible for determining whether the installations tested are “representative” of the types of configurations the BPL operator is likely to deploy in practice. Southern has determined that the highest levels of emissions on overhead systems are found at the signal injection point, and the biggest variable affecting emissions is impedance mismatch between the signal injection system and the power system at the point of injection, which could be at a coupler or a repeater. Therefore, it might be more efficient, and accurate, to require testing at three representative signal injection points.

Similarly, Southern believes there may be a more efficient and accurate methodology for testing emissions from underground transformers than testing 16 points on evenly spaced radials around the transformer. For example, the area around the transformer could be divided into quadrants, with the initial set of measurements taken on each of the four radials around the transformer. Each successive measurement would be taken on the radial bisecting the previous two radials that exhibited the highest emission levels. By continuing to take measurements in this manner, a technician can quickly

²⁴ *NPRM*, Appendix C, Sections 2.b.2 and 2.c.2.

focus in on the radial with the highest signal level from the transformer. For example, the first four measurements would identify the radial with the highest emissions to within +/- 45 degrees. Five measurements would bring the accuracy to within +/- 27.5 degrees; six measurements to within +/-14 degrees; seven measurements to within +/-7 degrees and eight measurements to within +/-3.5 degrees. Thus, by using only half the measurements suggested in the Commission's proposed guidelines, the BPL operator would be able to identify the radial with the highest emission level and with approximately twice the accuracy.

The Commission has also asked for comment on the distances that should be used between the receive antenna and the overhead line when measuring BPL emissions.²⁵ Measurement at the distances specified in Part 15 would be ideal, but the real-world environment near overhead lines often does not permit easy, safe testing at the specified distances. For example, with many distribution lines running close to and parallel with highways, measurements might have to be taken in or near the roadway. Similarly, some distribution lines might be located near trees or fenced-in property that is not accessible to the measurement technician. Finally, it is not an easy process to determine whether the receive antenna is precisely at the specified distance from the line without calculating the distance based on other, known measurements and applying geometric formulas.

Southern therefore recommends that the FCC allow measurements to be made on the ground directly below the lines, or the closest accessible location if testing cannot be performed directly under the line, with application of distance correction factors. If

²⁵ *NPRM* at para. 46.

testing on the ground, with the applicable correction factors, indicates the emissions are within the limits of Part 15, the system would be deemed compliant. If, on the other hand, on-ground testing indicates that the emissions limits might be exceeded, the BPL operator may (and should) test at height and at the distances specified in Part 15.

Appendix C to the *NPRM* also provides measurement principles for devices located on low voltage service drop lines between the distribution transformer and the customer's building. Section 2.b. of Appendix C includes a "note" indicating that if "pole mounted low-voltage boosters are used (i.e., Home-Plug and modem boosters), apply the overhead-line procedures as stated above [for Access BPL on overhead lines] along the low-voltage lines." Similarly, Section 3.b. of Appendix C, on testing of In-House BPL, provides for testing opposite the overhead line at varying distances "down the line from the building connection." Southern requests clarification that the requirement for testing emissions from Access BPL devices installed on the low-voltage service drop lines outside the building are the responsibility of the Access BPL operator using the procedures in Section 2.b. of Appendix C, whereas the requirement for testing emissions along the service line from an In-House BPL installation is appropriately the responsibility of the manufacturer of the In-House BPL device using the procedures specified in Section 3.b of Appendix C.

III. CONCLUSION

Southern appreciates the opportunity to offer these Comments on Access BPL, a technology that holds great promise not only for competitive broadband services, but also for new utility applications in support of power quality and reliability. Adoption of

relatively minor changes to Part 15 will provide much needed regulatory certainty for further investment in this service. Although the Commission's proposals are conservative in protecting licensed users, Southern believes that some of these proposals, as modified pursuant to these Comments, could be adopted without significant detriment to the initial deployments of BPL. However, Southern urges the Commission to remain open to relaxing some of these provisions as further experience is gained with this new technology.

WHEREFORE, THE PREMISES CONSIDERED, Southern respectfully requests the FCC to take action in this docket consistent with the views expressed herein.

Respectfully submitted,

**SOUTHERN LINC, SOUTHERN
TELECOM, INC., AND SOUTHERN
COMPANY SERVICES, INC.**

By: /s/ Christine M. Gill
Christine M. Gill
Jeffrey L. Sheldon
McDERMOTT, WILL & EMERY
600 13th Street, N.W.
Washington, D.C. 20005
202-756-8000

Michael D. Rosenthal
Director of Legal and External Affairs
Southern LINC
5555 Glenridge Connector, Suite 500
Atlanta, GA 30342
678-443-1500

Their Attorneys

Dated: May 3, 2004