Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC. 20554

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

To: The Commission

Additional Comments from Nickolaus E. Leggett
N3NL Amateur Radio Operator

The following are additional formal comments from Nickolaus E. Leggett, an amateur radio operator (Extra Class licensee – call sign N3NL), inventor (U.S. Patents # 3,280,929 and 3,280,930 and one electronics invention patent application pending), and a certified electronics technician (ISCET and NARTE). I also have a Master of Arts degree in Political Science from the Johns Hopkins University (May 1970). My first set of formal comments in this proceeding was submitted on March 1, 2004.

In this set of comments I discuss the need to accommodate multiple radio services in the adaptive interference mitigation system for Broadband over Power Lines (BPL) systems. The primary focus of these comments is international short-wave broadcast reception and radio astronomy receiver operation.

Multiple Radio Services in Residential Areas

It is important to remember that multiple radio services are active in residential areas that would be served by BPL. For example, I am an amateur radio operator (call sign N3NL) and an international short-wave broadcast listener. I am also interested in operating decameter radio astronomy in the vicinity of 20.1 MHz using a Radio JOVE

radio astronomy system. Clearly, just moving BPL radiated noise off of the amateur radio high frequency bands will not accommodate international short wave listening or radio astronomy in my location.

People such as myself who use several high frequency radio services are not unusual. For example, a fairly large number of amateur radio operators also operate a Military Affiliate Radio Service (MARS) radio transmitter on governmental radio frequencies such as those near 5 MHz. The typical MARS operator is active on both the amateur radio frequency bands and the MARS frequencies. Similarly, many amateur radio operators also operate Citizens Band Class D radio transceivers on the 27 MHz channels as well as using the amateur radio bands.

In addition, in many urban and suburban areas users of various high frequency radio services will be located near to each other. For example, Citizens Band users are often fairly close to amateur radio operators, etc.

As a result of this, any adaptive interference mitigation system will have to accommodate co-located high frequency radio services. Just "notching out" one service's allocations is not adequate.

International Short-Wave Broadcast Reception

I have been informed that listeners to international short-wave broadcasts have full legal standing to bring formal complaints of interference. This situation exists because the international radio regulations require the national administrations to take steps to protect this activity and similar uses from interference.

This means that if a BPL service is set up here in my neighborhood in Reston, Virginia it would have to protect both short wave listening and amateur radio from BPL

interference. Looking at the frequency allocation tables, we can see that about 3 MHz of short-wave frequencies are allocated for international short-wave broadcasting. So the BPL operator will have to move his BPL emissions off of these international short-wave broadcasting frequency bands as well as the allocated amateur radio frequency bands.

This is probably a significant challenge. If it is not accomplished, then presumably I could go to the Commission and then the courts to get it done.

Radio Astronomy Observation

The situation for radio astronomy using the Radio JOVE receiver system is less clear. The Radio JOVE receiver observes Jupiter and the Sun in the vicinity of 20.1 MHz. This frequency band is not allocated formally to radio astronomy. Rather, it is one of the many informal frequencies used by radio astronomers to observe broad band radio sources. Thus, the BPL operator would probably not have to protect this frequency band from the BPL noise. However, if I shift the frequency of the Radio JOVE receiver to 25.55 MHz – 25.67 MHz, which is allocated to radio astronomy as a primary allocation, I probably could demand that the BPL operator move his noise from this allocation.

The Bottom Line for Adaptive Interference Mitigation System

The BPL adaptive interference mitigation systems will have to accommodate several recognized radio services at any single geographic location. In response to this need, I recommended in my comments on March 1, 2004 that: "The Commission should require that any BPL adaptive interference mitigation system must have the ability to accommodate at least three (3) users in the same or different radio services within 200 feet of each other."

Suggested Action

I suspect that many short-wave users will insist that the BPL operator take reasonable steps to remove BPL noise from short-wave frequencies formally allocated to recognized activities and services such as amateur radio, international short-wave broadcast listening, Military Affiliate Radio System operations, Citizens Band radio, and radio astronomy (both amateur and professional) observations. The BPL adaptive interference mitigation systems will need to be designed to accommodate these services.

Respectfully submitted,

Nickolaus E. Leggett, N3NL
Amateur Radio Extra Class
1432 Northgate Square, Apt. 2A
Reston, VA 20190-3748
(703) 709-0752
nleggett@earthlink.net

April 27, 2004

Appendix A – Aspects of the Radio JOVE Student Radio Telescope

Antenna – Two-element phased dipole array

Direct conversion receiver tuning around 20.1 MHz (plus or minus 150 kHz)

Receiver stages:

- RF Bandpass filter
- RF Preamplifier

- Local oscillator/mixer
- Low pass filter (up to 3.5 kHz)
- Audio preamplifier
- Audio amplifier

Components

Integrated Circuits

- SA602AN Mixer/oscillator
- NTE824 Audio preamplifier (two)
- 20 MHz crystal oscillator module

Transistors

- J-310 junction field effect (JFET)
- 2N-3904 bipolar, NPN
- 2N-3906 bipolar, PNP

Other components

- 7 diodes
- 7 inductors
- 32 resistors
- 44 capacitors

Detailed information on the Radio JOVE project is available by searching on the National Aeronautics and Space Administration (NASA) web site:

www.nasa.gov