

**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)	
)	
)	

REPLY COMMENTS OF THE ACADEMY OF MODEL AERONAUTICS

The Academy of Model Aeronautics (AMA) respectfully submits these reply comments to the *Notice of Inquiry* (“NOI”) released April 28, 2003, in the above-captioned proceeding which solicit comments on the appropriate regulatory structure for operation of Broadband over Power Line (BPL).¹

Introduction

The AMA is a 175,000 member national association representing aeromodeling activities. It is the world’s largest sport aviation organization whose purpose is to promote the development of model aviation as a recognized sport and worthwhile recreation activity. The AMA is an associate member of the National Aeronautic Association, and is recognized by the world aviation governing body as the only organization that may direct U.S. participation in international aeromodeling activities. The majority of it's members consist of radio control operators, further the membership also includes approximately 10,000 licensed amateur radio operators who pilot model aircraft, predominately on 50 MHz frequencies.

¹ FCC 03-100, released April 28, 2003. The due date for reply comments was extended by Order served Aug. 1, 2003, DA 03-2590.

The FCC, noting that it has authorized experimental BPL operations over the 1.7 to 80 MHz bands, seeks comments on the appropriate spectrum for BPL to use.² The Commission refers to a number of services which operate in the frequency bands below 300 MHz, and states unequivocally that “Each of these authorized services in the spectrum must be protected from harmful interference.”³ That enumeration of services, however, omits mention of the Radio Control (RC) Service, which operates by rules pursuant to Subpart C of Part 95 of the Commission’s regulations. RC frequencies, used for control of model airplanes, cars, and boats, are in the high-frequency (HF)/ very-high frequency (VHF) bands. Specifically, RC Modeling currently uses six frequencies near 27 MHz, five frequencies below 50 MHz, eighteen frequencies in the 50-54 MHz band, fifty frequencies in the 72 MHz band, and thirty frequencies in the 75 MHz band.

Comments

The AMA acknowledges the great potential of BPL technology. While there is substantial interest in BPL, the comments in response to the NOI also evidence there also is great concern over the potential that BPL, if not properly regulated and operated, could cause harmful interference to existing services and users. The AMA too is concerned that BPL deployment could cause harmful interference to users of RC systems and pose a safety hazard to aeromodeling equipment and spectators.

RC modeling flying sites generally are located away from buildings, but many occupy areas adjacent to power lines. For example, the AMA’s 1,000-acre national flying site, headquarters, and museum in Muncie, Indiana are all located near power lines. In addition, small, electric-powered RC model aircraft (often referred to as "park flyers"), which have

² NOI at ¶ 15.

become increasingly popular in the past five years, can be flown in backyards and other space-restricted areas; and some operate in gymnasiums, auditoriums, and other indoor facilities.

The American Radio Relay League (“ARRL”) submitted comments on July 7, 2003, which emphasized the potential interference of BPL to Amateur Radio medium-frequency (MF), HF, and VHF communications in the 2 to 80 MHz bands. RC systems operate in these same bands and have similar susceptibility to interference as do Amateur operations. The FCC suggests that BPL emissions would be required to meet Part 15 emission levels. Although Part 15 devices historically have not caused interference to authorized spectrum users, the ARRL suggested that the current compatibility of Part 15 devices is predicated on the device being an identified point- source of radiation, operating on discrete frequencies, and radiating intermittently.⁴ By contrast, BPL transmits over a large geographical area, radiates on a broad bandwidth of frequencies, and operates continuously. Limiting BPL radiation to Part 15 levels may be quite difficult to implement in that the radiation pattern of power lines as antennas is difficult to predict and monitor. Therefore, it is possible that actual radiated power could be exceeded without a transmission line operator even noticing and/or correcting the problem. The ARRL therefore questioned whether BPL would be an inappropriate application of the Part 15 rules.⁵

If power lines adjacent to these areas carried broadband signals exceeding the Part 15 limits, interference could limit use of sites available for RC modeling. If an RC model loses control due to interference from power line radiation, it will be difficult-- if not impossible-- to identify BPL as the cause, and the AMA could lose flying sites as a result. Thus, BPL may not

³ NOI at ¶18.

⁴ See Comments of ARRL, The National Association For Amateur Radio, at ¶ 16.

yield the benign environment the Commission expects and could result in an unanticipated negative impact on RC operations.

When the current frequency complement for RC modeling was assigned, the AMA worked with the RC industry to develop a program to improve equipment. The voluntary guidelines have facilitated safe operation of modeling equipment in the harsh radio frequency environment that exists today. Aeromodeling activities have significantly increased in the twenty-one years since the current RC modeling frequencies were assigned. Emissions and radiation from power lines could pose a significant risk to the operation of RC models and, as a result, a safety concern for operators and spectators.

Based on the record before the Commission, it is difficult to predict the impact BPL may have on existing systems using the HF/VHF spectrum. One thing is certain, BPL will raise the ambient noise floor of the radiofrequency environment in which existing services operate. Whether the higher noise floor will be problematic for existing services cannot be ascertained on this record. The true impact will be known only if and when BPL is implemented; but then it will be too late. Neither the public nor the Commission can afford another experience like that in the 800 MHz frequency band where allocation and operating rules placed cellular operations adjacent to and interleaved among the frequency assignments for public safety and other land mobile operations, causing harmful interference to the latter. The estimated cost to re-band to resolve the interference problems which subsequently developed and have gotten worse as both cellular and land mobile use have expanded is close to \$1 Billion; and while one cellular operator has offered to fund this cost, assigning responsibility is difficult, especially where both those

⁵ *See id.* (“...it would be incorrect to assume that the present Part 15 regulations are sufficient to avoid interference to licensed services...”).

causing and those receiving the interference are operating in accordance with the Commission's rules.

AMA recommends that BPL proponents conduct structured tests to determine the impact of the proposed power line usage on RC operations in order to evaluate how RC and other existing services can co-exist with BPL. The AMA would agree to cooperate with BPL proponents in this endeavor. AMA's membership of 175,000 evidences that RC operations must be included within the sphere of services to be protected from harmful interference from BPL operations, and a cooperative test program is the most efficient means to determine the protection required.

In conclusion, the Academy of Model Aeronautics respectfully requests that the Federal Communications Commission recognize the Radio Control Service as one which must be protected from harmful interference in any regulatory environment which recognizes and provides for broadband over power line operations, and that the Commission facilitate test operations between BPL proponents and RC operators to determine the measures needed to assure compatibility between the two types of operation. Only after a thorough technical evaluation should the Commission proceed with a proposed regulatory scheme to recognize and govern BPL operations.

Respectfully Submitted,

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