



Federal Communications Commission  
Washington, D.C. 20554

July 23, 2004

Thomas A. Brown, Amateur Radio Licensee N4TAB  
5525 Old Still Rd.  
Wake Forest, NC

Dear Mr. Brown:

This responds to your correspondence dated April 27, 2004, concerning a complaint with regard to harmful interference to Amateur Radio Service operations from Progress Energy Corporation's Broadband over Power Lines (BPL) trials in Southern Wake County, North Carolina. You state that on April 25, 2004, you drove your vehicle to the James Slaughter Road area and observed that the BPL trials being conducted by Progress Energy in that area "emit radiated RF components that are harmful to spectrum allocated the Amateur Radio Service." You state that the unique RF "signature" of the Progress Energy BPL equipment completely blankets, and therefore causes harmful interference to, several Amateur HF bands.

During the period June 28 and July 2, 2004, personnel from the FCC's Office of Engineering and Technology and Enforcement Bureau, including myself, traveled to North Carolina and undertook extensive testing and measurements of Progress Energy's BPL system deployed near Raleigh in the areas described in your complaint. We first conducted compliance testing of BPL overhead injectors on Slaughter Road and on Holland Church Road. In both instances, these devices were found to be in compliance with the FCC emission limits.

As part of these measurements, we examined the effectiveness of Progress Energy's steps to "notch" its BPL signals to avoid harmful interference. Section 2.1 of the Commission's rules defines harmful interference as "[i]nterference which ... seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service," 47 C.F.R. § 2.1. The notch depth of the Holland Church Road injector was measured in two ways: 1) evaluating spectrum band averages using a bicon antenna and 2) evaluating OFDM peaks using a loop antenna. The results of these measurements indicated a notch depth of 23.4 to 25.0 dB below the Part 15 limits, with an average of 24 dB below. Given the relatively low levels of emissions permitted by BPL systems under the Part 15 rules and the distribution and propagation of the BPL signals of the Progress Energy system, notching at this level is sufficient to eliminate any signals that would be deemed capable of causing harmful interference, including interference to amateur operations.

Measurements and observations with test equipment and a high quality amateur receiver show little field strength or observable signal levels in the notched bands. In no instances were signal levels found that would cause serious degradation, obstruction, or repeated interruption of the communications of amateur mobile stations or the fixed stations identified in your complaint. We did, however, find that the notching in the 10 meter band as implemented by Progress Energy allowed somewhat higher levels of signal in the lower 100 kHz at 28.0-28.1 MHz than the 24 dB notching reduction generally observed.

We next investigated emissions from the BPL system deployed in the vicinity of the Whitehurst subdivision, where the system is deployed using underground wiring. No BPL signals were detected in this area that would be deemed capable of causing harmful interference to mobile amateur operations.

Finally, we took measurements at two fixed amateur locations, 5813 Heathill Court and 509 Wyndham Drive, included in the complaint. No BPL interference was observed on any amateur frequencies at these two locations. In fact, no BPL signals were observed at these locations on any of the frequencies used for BPL operations by Progress Energy. A third site included in the complaint, at 201 Wilbon Road 301B, was not visited due to a GPS mapping error and subsequent time constraints.

Our conclusions from this investigation are that the Progress Energy BPL trial in the Raleigh area is in compliance with the Commission's rules and that the measures implemented to notch frequencies used by the Amateur Radio Service to avoid the potential for harmful interference are effective. We neither found nor observed any BPL signal levels or effects from the Progress Energy BPL operation that appeared to have the potential to seriously degrade, obstruct or repeatedly interrupt mobile amateur communications or fixed amateur communications at the specified addresses. In a separate action, we are however instructing that Progress Energy and Amperion, its equipment vendor, to slightly widen the notch at the lower edge of the 10 meter band by 100 kHz to ensure protection of amateur operations at 28.0-28.1 MHz.

Sincerely,

Bruce A. Franca  
Deputy Chief,  
Office of Engineering and Technology

cc: George Dillon, FCC/EB  
Riley Hollingsworth, FCC/EB  
Len Anthony, Progress Energy Corporation  
Matt Oja, Progress Energy Corporation  
Bill Godwin, Progress Energy Corporation  
David Sumner, President, ARRL  
Chris Imlay, Counsel, ARRL