Before the
Federal Communications Commission
Washington, D.C. 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
	)	
Carrier Current Systems, including Broadband over Power Line Systems	)	ET Docket No. 03-104

Comments of the United Power Line Council

The United Power Line Council (UPLC) hereby files its comments in the above-referenced proceeding in response to the Commission's Request for Comment and Further Notice of Proposed Rule Making.[1] The UPLC comments that the unredacted versions of the internal staff technical studies are generally consistent with the conclusions of the FCC's 2004 Report and Order[2] and its 2006 BPL Reconsideration Order[3]; and it opposes lowering the extrapolation factor to 30 dB per decade for measuring BPL emissions below 30 MHz. There is insufficient evidence to support a departure from the current 40 dB per decade extrapolation factor, and what evidence does exist suggests that the 40 dB per decade extrapolation factor better approximates the rate of decay of BPL emissions.

[1] *Amendment of Part 15 regarding new requirements and measurement guidelines for Access Broadband over Power Line Systems/Carrier Current Systems, including Broadband over Power Line Systems*, Request for Further Comment and Further Notice of Proposed Rule Making, ET Docket No. 04-37, 2009 WL 2148148, released Jul. 17, 2009 ("*BPL Request and Further Notice*").

[2] *See Report and Order* in ET Docket Nos. 04-37, 03-104 *(Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband Over Power Line Systems, Carrier Current Systems),* 19 FCC Rcd 21265 (2004) ("*BPL Report and Order*").

[3] *Memorandum Opinion and Order* in ET Docket Nos. 04-37, 03-104 *(Amendment of Part 15 Regarding New Requirements and Measurement Guidelines for Access Broadband Over Power Line Systems, Carrier Current Systems, Memorandum Opinion and Order)* ("*BPL Reconsideration Order")*, 21 FCC Rcd 9308, 9310 (2006).

I. Introduction

The United Power Line Council is an alliance of utilities and technology providers to drive the development of BPL. It was formed in 2001 by the Utilities Telecom Council (UTC), which is the international association for the telecommunications and information technology interests of electric, gas and water utilities, pipeline companies and other critical infrastructure industries. Since its formation, the UPLC has participated in every FCC proceeding regarding BPL, as well as other proceedings that might affect BPL. Through UTC it also was a party to the appeal of the FCC's 2004 Report and Order before the U.S. Court of Appeals for the District of Columbia Circuit, whose 2008 remand[4] led directly to the present Request for Comment and Further Notice of Proposed Rule Making. As the leading organization for the interests of utilities and BPL technology providers and as an active participant in all of the underlying proceedings to the present Request for Comment and Further Notice of Proposed Rule Making, the UPLC is pleased to provide its comments herein.

II. The Unredacted Internal Staff Studies Are Generally Consistent with the FCC's 2004 Report and Order and its 2006 BPL Reconsideration Order.

The UPLC submits that the unredacted internal staff studies that were inserted into the record by the FCC are generally consistent with the FCC's 2004 BPL Report and Order and its 2006 BPL Reconsideration Order. The portions of the staff studies that were previously redacted are largely opinions, and in any event, the 2004 BPL Report and Order and the 2006 BPL Reconsideration Order adopted rules that address these opinions. These opinions make observations, explain "caveats" in the data, and provide options for the Commission to take. While they are helpful to understanding some of the findings – in the end they are merely

[4] *American Radio Relay League v. FCC*, 524 F.3d 227 (DC Cir. 2008)("Remand").

opinions, which the Commission has the discretion to follow or not. As such, the unredacted portions of the studies are largely opinions that are generally consistent with the FCC rules that were ultimately adopted and include additional information that is advisory in nature.

For example, the unredacted internal staff studies concluded that BPL devices do not act as point sources,[5] which is consistent with the 2004 BPL Report and Order, which also agreed that BPL "is not a traditional point-source emitter."[6] In that regard, the FCC adopted guidelines to measure emissions all along the lines at quarter wavelength increments on overhead installations, as well as at various radials on underground installations.[7] This is only one example of where the FCC adopted rules that address the opinions in the redacted portions of the studies. In addition, the FCC also ultimately adopted a 5 dB height correction factor and public safety coordination requirements, which were suggested in the unredacted staff study as some of the "options" to address "BPL HF Issues" and "Low VHF Options".[8] These examples illustrate that many of the conclusions in the unredacted staff studies were addressed by the FCC when it ultimately adopted its BPL technical rules.

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[5] *See e.g.* "A presentation representing data collected during a field test of the Amperion and Main.Net BPL installations in Allentown, Pennsylvania, conducted to familiarize the FCC with BPL operations and to develop measurement techniques", Submission by the Office of Engineering and Technology Federal Communications Commission, Apr. 8, 2009 at slides 3, 17 and 50.

[6] BPL Report and Order, 19 FCC Rcd. 21265 at ¶39 (Although we agree with ARRL that Access BPL on overhead lines is not a traditional point-source emitter, we do not believe that Access BPL devices will cause the power lines to act as countless miles of transmission lines all radiating RF energy along their full length.

[7] *See e.g.* 47 C.F.R. §15.613 (stating that compliance measurements for Access BPL shall be made in accordance with the Guidelines for Access BPL systems specified by the Commission). *See also* 2004 BPL Report and Order, Appendix E ("Access BPL Guidelines") at Sections (b)(2) and (c)(3).

[8] *See e.g.* "A presentation representing data collected in a field investigation by FCC personnel of the BPL system in Briarcliff Manor, New York, which has been the subject of an interference complaint." Submission by the Office of Engineering and Technology, Federal Communications Commission, Apr. 8, 2009 at Slide 19 and 20. *See also Id.* at 35 (concluding that "receive antenna height has a significant effect – under power line, maximum over 1-4 meter scan occurred at 2 m" and that "for typical geometries, maximum over 1-4 meter scan occurred at 3-4 m, but results were influenced by impulse noise.")

To be sure, there are parts of the unredacted studies that the Commission did not ultimately follow. For example, the FCC did not "ban BPL in HF on overhead MV lines," which was one of the "options" to address "BPL HF Issues"; nor did it require notching for some or all local public safety licensees.[9] But, "it is within the Commission's prerogative to credit only certain parts of the studies."[10]

Other parts of the unredacted staff studies provided qualifying information about the data. For example, the studies explained "caveats" that "measurements were not intended to ensure compliance," because *inter alia* "testing was limited to intended operating bands of devices" rather than "over the full range of frequencies required by rules."[11] It also explained that NTIA measurement models were based on ambient noise levels that were less than the ITU Residential levels, which could result in "underestimation of interference levels." This information is merely advisory in nature; and doesn't seem essential to the studies or to the basis of the FCC's technical rules.

III. The FCC Should Continue to Use a 40 dB per Decade Extrapolation Factor

a. The FCC was Reasonable in Adopting and Affirming the 40 dB Decade Extrapolation Factor.

The UPLC agrees with the FCC's reasoning for adopting a 40 dB extrapolation factor and rejecting the ARRL's cited studies in support of its sliding scale extrapolation factor. As the FCC explained, the *Winchester* and the *Crieff Amperion* studies cited by ARRL were anecdotal

[9] *Id.* at Slides 19-20.

[10] *American Radio Relay League v. FCC*, 524 F.3d 227 (DC Cir. 2008).

[11] "A presentation representing data collected during a field test of the Amperion and Main.Net BPL installations in Allentown, Pennsylvania, conducted to familiarize the FCC with BPL operations and to develop measurement techniques", Submission by the Office of Engineering and Technology Federal Communications Commission, Apr. 8, 2009 at Slides 26, 48.

in nature and contained technical deficiencies.[12] The UPLC also agrees with the comments of HomePlug in this proceeding which describe other methodological defects in the OFCOM studies.[13] In addition, the ARRL failed to adequately explain the basis for its own proposal for a sliding scale extrapolation factor.[14] Finally – and importantly – the 40 dB extrapolation factor has been used for decades for a variety of Part 15 devices as well as BPL systems.[15] A departure from this extrapolation factor in the context of BPL would require more evidence that BPL emissions decay at a different rate. In that regard, there has been a lack of interference complaints involving BPL systems, which serves to validate the 40 dB extrapolation factor for BPL, as the FCC recognizes in its BPL Request and Further Notice.[16]

b. The FCC Should Not Adopt a 30 dB per Decade Extrapolation Factor.

The UPLC opposes reducing the extrapolation factor to 30 dB per decade.[17] There is insufficient evidence to depart from the 40 dB extrapolation factor that the FCC adopted in the 2004 BPL Report and Order and affirmed in the 2006 Reconsideration Order. Moreover, what evidence exists indicates that the 40 dB extrapolation factor better approximates the rate of decay of BPL emissions. Finally, as the FCC recognizes and as further explained below, a 30 dB

[12] *BPL Request for Comment and Further Notice*, at 28 (stating that "those two studies each report only a few measurements on a small number of operating frequencies along a single perpendicular path each at two small and very dissimilar BPL installations (one underground and one overhead) on power line configurations which may not be representative of power line configurations in the United States.")

[13] *See* Comments of the HomePlug Powerline Association in ET Docket No. 07-245 (filed Sept. 23, 2009).

[14] *Id.* at ¶31 (explaining that ARRL's sliding scale proposal makes inaccurate assumptions about power line noise environments, which are contradicted by NTIA.)

[15] *See* 47 C.F.R. §15.31(f). The 40 dB per decade extrapolation factor was adopted in 1989 and applies to a broad variety of Part 15 devices.

[16] *Id*. at ¶22.

[17] *BPL Request for Comment and Further Notice*, at ¶¶33-41.

extrapolation factor would impose a significant compliance burden on BPL operators.[18] As such, the FCC should continue to use the 40 dB extrapolation factor for measuring BPL emissions.

The FCC only cites to two new studies as the basis for considering adopting a 30 dB per decade extrapolation factor.[19] Only one of those (the NTIA Phase 2 Study) indicates that the extrapolation factor should be lower than 40 dB – the other (the Brazil Study) indicates that the rate of decay is *greater* than 40 dB per decade.[20] Even the NTIA Phase 2 Study states that "at or above 10 MHz, the simulation results show good agreement between the rate that field strength decays and the Part 15 distance extrapolation rate using the slant range distance to the Access BPL device and power lines." The only issue (according to NTIA) is in a discrete frequency range between 4-8 MHz. The UPLC is unaware of any other study that shows that the rate of decay is less than 40 dB below 30 MHz. As such, the FCC should continue to use the 40 dB extrapolation factor, until further information is available to adjust it.

As a practical matter, a 30 dB extrapolation factor would impose significant compliance burdens on BPL systems. Due to the presence of noise in many areas where BPL systems are deployed, it is often necessary to measure at distances less than 30 meters in order to hear the BPL signal. Using a 30 dB extrapolation factor would necessarily require BPL systems to reduce power in order to comply with the emission limits. That would negatively impact performance of the BPL system and drive up the costs, because repeaters would need to be spaced closer together if they operate on lower power. This is not a remote possibility; the 40 dB

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[18] *Id.* at ¶38 (recognizing that "reliance on a 30 dB per decade extrapolation factor could increase the compliance burden for BPL equipment and systems that are tested at locations where the attenuation rate is in fact greater than 40 dB per decade.")

[19] *Id.* at ¶20 (citing NTIA Phase 2 Study and the Brazil Study).

[20] *See* Letter from Jeffrey A. Krauss to Marlene H. Dortch, Secretary, Federal Communications Commission, filed Dec. 9, 2008 in ET Docket No. 07-245.

extrapolation factor is commonly used in most BPL deployments today, due to physical obstacles (e.g. roads, etc.), as well as noise. In addition, there would be little relief if the FCC allowed BPL system operators to use an *in situ* extrapolation factor, as proposed by the FCC.[21] This proposal would be time consuming and costly, as well. Therefore, the FCC should not adopt a 30 dB extrapolation factor due to the significant compliance burden it would cause; and it should allow BPL systems operators to develop their own *in situ* BPL extrapolation factors on a voluntary basis.

Allowing BPL system operators to voluntarily develop their own *in situ* BPL extrapolation factors would provide them with flexibility to demonstrate compliance with the FCC rules. For the reasons stated above, this would be critical if the FCC decides to adopt a 30 dB extrapolation factor. In any event, the data that is gathered may also lead to empirical studies that would support an *increase* in the extrapolation factor. For all of these reasons, the UPLC supports allowing BPL system operators to use their own *in situ* extrapolation factors.

[21] *Id.* (citing IEEE P1775/D2).

CONCLUSION

WHEREFORE, the premises considered, the UPLC respectfully requests that the Commission continue to use the 40 dB extrapolation factor and permit BPL system operators to develop their own *in situ* extrapolation factors. In addition, the UPLC asserts that the internal staff studies are consistent with the 2004 BPL Report and Order and the 2006 Reconsideration Order.

Respectfully submitted,

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