

Before the  
**Federal Communications Commission**  
Washington DC 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 Guidelines	)	ET Docket No. 04-37
for Access Broadband over Power Line	)	
Systems	)	

**OPPOSITION OF CURRENT GROUP, LLC  
TO PETITION FOR RECONSIDERATION OF SECOND REPORT AND ORDER  
OF ARRL, THE NATIONAL ASSOCIATION OF AMATEUR RADIO**

CURRENT Group, LLC opposes the Petition for Reconsideration of Second Report and Order in the above-captioned proceeding by ARRL, the National Association for Amateur Radio, filed on December 20, 2012.<sup>1</sup> ARRL seeks reconsideration of *Access Broadband over Power Line Systems*, Second Report and Order, 26 FCC Rcd 15712 (2011) (*2d R&O*).

***About CURRENT Group, LLC.*** CURRENT provides leading distribution automation solutions, including core infrastructure and software products that enable Connected Intelligence® for utilities around the world. CURRENT provides applications that support utilities looking to implement smart metering, improve reliability, and enable grid communication. CURRENT's products are a foundational component of some of the most advanced grid modernization deployments in the world.

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<sup>1</sup> CURRENT participated in earlier phases of this proceeding in the name of its subsidiary, CURRENT Technologies, LLC.

## A. INTRODUCTION

ARRL has opposed the deployment of Broadband-over-Powerline (BPL) technology at every opportunity since the inception of this proceeding nine years ago. Indeed, the long pendency of the proceeding is due entirely to successive requests for reconsideration and review by ARRL and its members. As the proceeding has advanced, however, ARRL's positions have not. Its present Petition is largely a rehash of previous filings.

The Communications Act provides, as to petitions for reconsideration, that

no evidence other than newly discovered evidence, evidence which has become available only since the original taking of evidence, or evidence which the Commission or designated authority within the Commission believes should have been taken in the original proceeding shall be taken on any reconsideration.<sup>2</sup>

Except perhaps for its assertions about the BPL database—which even ARRL must agree cannot support the reconsideration it seeks—nothing that ARRL puts forward here as evidence meets the above requirements. The legal arguments are equally threadbare from overuse. The Commission should find that the Petition has failed to make out a *prima facie* case for reconsideration and summarily deny it.<sup>3</sup>

ARRL's pleading is long on speculation but short on facts, particularly new facts. Most prominent are recycled claims about the *potential* for interference from BPL, while allegations of

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<sup>2</sup> 47 U.S.C. § 405(a)(2).

<sup>3</sup> Moreover, the 50-page Petition exceeds the Commission's limit of 25 pages. 47 C.F.R. § 1.429(d). Perhaps ARRL will counter that the Petition itself is only 25 pages, the rest being appendices. But ARRL cannot evade the page limit simply by re-labeling sections of its pleading. In any event, CURRENT does not request dismissal of the Petition on the basis of its length. We do suggest, however, that the Commission draw ARRL's attention to Section 1.429(d) and request compliance in the future.

actual interference remain insubstantial and undocumented.<sup>4</sup> Indeed, ARRL concedes that only one interference complaint is presently active.<sup>5</sup>

Because its allegations of interference potential do not challenge actions taken in the Second Report and Order, ARRL does not seek relief that the Commission can grant on reconsideration. Most of ARRL's Petition, rather, amounts to yet another request for review of the Commission's initial BPL rules, adopted in 2004,<sup>6</sup> and as to which the period for reconsideration has long since passed.

**B. ARRL HAS NOT SHOWN A 40 dB/DECADE EXTRAPOLATION FACTOR TO BE UNREASONABLE.**

ARRL continues to oppose the Commission's use of a 40 dB/decade extrapolation factor for measurements made at distances closer than 30 meters, at frequencies below 30 MHz.<sup>7</sup>

This extrapolation factor must be the single most litigated measurement parameter in the entire history of the Federal Communications Commission. ARRL opposed the 40 dB/decade value in response to the Commission's Notice of Inquiry,<sup>8</sup> opposed it in response to the initial

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<sup>4</sup> A typical claim: "ARRL experience with many field measurements in BPL interference cases that BPL harmful interference has been noted at Amateur stations with antennas located at distances of 1/2 mile from the power line." ARRL Petition at 7 (apparent word omission in original). Especially at such a considerable distance, the only way to confirm that reported interference in fact is due to BPL, and not some other source, is to repeat the measurements with the BPL system alternately turned on and off. CURRENT cooperated with the Commission in making such measurements while the original (2004) rules were under consideration. The results largely exonerated CURRENT's system as a source of interference.

<sup>5</sup> ARRL Petition at 11.

<sup>6</sup> *Broadband over Power Line Systems*, Report and Order, 19 FCC Rcd 21265 (2004).

<sup>7</sup> 47 C.F.R. § 15.31(f)(3). The rules also permit use of an extrapolation factor calculated from data taken at a particular site. *Id.* Over the objections of ARRL, which opposes all site-specific extrapolation, the *2d R&O* (at ¶¶ 98-100) substantially amends this procedure to make it more stringent.

<sup>8</sup> Comments of ARRL in ET Docket No. 03-104 at 16 (filed July 7, 2003).

Notice of Proposed Rulemaking,<sup>9</sup> sought reconsideration of the value in that rulemaking,<sup>10</sup> raised the extrapolation factor as an issue before the U.S. Court of Appeals,<sup>11</sup> opposed the 40 dB/decade value on remand from the court,<sup>12</sup> and now again seeks reconsideration.<sup>13</sup>

CURRENT has previously acknowledged the impracticality of specifying a single, unambiguous extrapolation factor that is demonstrably more valid than all others in all cases.<sup>14</sup> The measurements are difficult, tending to give differing results according to location, frequency, time, and chosen set of distances from the line under test. But the Commission need not establish that a 40 dB/decade value is the only one that can be justified. Rather, its only obligation under the law is to show that 40 dB/decade comes within a “zone of reasonableness.”<sup>15</sup> The lengthy discussion in the Second Report and Order, with its point-by-point rebuttal of ARRL’s earlier challenges, unquestionably meets that burden.<sup>16</sup>

The Commission nonetheless gave ARRL a large part of the relief it seeks by requiring that extrapolations use the slant distance from the measurement antenna to the overhead line,<sup>17</sup>

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<sup>9</sup> Comments of ARRL at 18 (filed May 3, 2004).

<sup>10</sup> Petition for Reconsideration of ARRL at 12 n.21 (filed Feb. 7, 2005).

<sup>11</sup> *ARRL v. FCC*, 524 F.3d 227, 240-41 (D.C. Cir. 2008).

<sup>12</sup> Comments of ARRL at 47-59 (filed Sept. 23, 2009).

<sup>13</sup> ARRL Petition at 23-24. The list omits ARRL’s replies, ex parte filings, and a “Submission for the Record” that also addressed the issue.

<sup>14</sup> Comments of CURRENT Technologies, LLC at 4-8 (filed Sept. 23, 2009).

<sup>15</sup> *ExxonMobil Gas Mktg. Co. v. FERC*, 297 F.3d 1071, 1084 (D.C. Cir. 2002), *cert. denied*, 540 U.S. 937 (2003).

<sup>16</sup> *2d R&O* at ¶¶ 58-100.

<sup>17</sup> 47 C.F.R. § 15.31(f)(3).

rather than the horizontal distance prescribed for most other compliance measurements.<sup>18</sup> This greatly reduces the permissible extrapolation for a given measurement.<sup>19</sup> In the example given in the preceding footnote, using a slant measurement and correcting by 40 dB/decade gives the same extrapolation as would a horizontal measurement using a 29.3 dB/decade correction.<sup>20</sup> The effect of the slant measurement in reducing the prescribed extrapolation—a benefit, from ARRL’s standpoint—increases at shorter measurement distances. ARRL calls the use of slant-distance measurement a “slight improvement” over horizontal measurement,<sup>21</sup> but in fact it eliminates much of ARRL’s argument against 40 dB/decade. Use of the dB scale understates the result; expressed as numerical values, the effective 29.3 dB/decade from slant measurement (in the example above) is much closer to the 20 dB/decade that ARRL seeks than to the 40 dB/decade it opposes.

Moreover, ARRL’s advocacy for a 20 dB/decade factor suffers from a fatal internal contradiction. ARRL continues to insist that BPL signals radiate from a considerable length of the power line.<sup>22</sup> CURRENT has submitted evidence to the contrary, showing significant

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<sup>18</sup> 47 C.F.R. § 15.31(f) (preamble) (“The distance specified [for measurement] corresponds to the *horizontal* distance between the measurement antenna and the closest point of the equipment under test . . . .”) (emphasis added).

<sup>19</sup> For example: suppose a measurement below 30 MHz is made at a horizontal distance of 10 meters with a measurement antenna height of 1 meter and the height of the power line at 11 meters. The permitted correction using horizontal distances is  $40 \log(30/10) = \mathbf{19.1 \text{ dB}}$ . The slant distance at 30 meters is  $\sqrt{30^2 + (11-1)^2} = 31.6$  meters; the slant distance at 10 meters is  $\sqrt{10^2 + (11-1)^2} = 14.1$  meters. The permitted correction using slant distances is thus  $40 \log(31.6/14.1) = \mathbf{14.0 \text{ dB}}$ , much lower than the correction using horizontal distances.

<sup>20</sup> That is:  $40 \log(31.6/14.1) = 29.3 \log(30/10)$  (using slant distances from previous footnote).

<sup>21</sup> ARRL Petition at 23.

<sup>22</sup> E.g., ARR Petition at 8 n.21 (“BPL noise decays very slowly along an overhead power line.”)

emissions from only the few meters of line adjacent to the coupler;<sup>23</sup> and the Commission has found against ARRL on this issue.<sup>24</sup> But suppose, for the sake of discussion, that ARRL were correct. As a consequence, the prescribed 30 meter measurement distance would come within the near field of the radiator.<sup>25</sup> Emissions drop off much more rapidly with distance in the near field than they do farther away. Accordingly, even if 20 dB/decade were the correct parameter in the far field—and 20 dB/decade is indeed consistent with a very long line-source emitter in the far field—measurements in the near field would show a much steeper attenuation, of at least 40 dB/decade. Or suppose, on the other hand, that ARRL is wrong, and that a BPL device acts like a point-source emitter when seen from a distance of 30 meters. The measurement would then take place in the far field. But the theoretical drop-off from a point-source emitter in the far field is 40 dB/decade.<sup>26</sup> Either way, antenna theory tell us that 40 dB/decade is close to the correct value.

As a final consideration, we note that the extrapolation factor of 40 dB/decade at frequencies below 30 MHz has been part of the rules for decades. Manufacturers, test laboratories, and TCBs are all accustomed to working with this value. Given the absence of

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<sup>23</sup> Comments of CURRENT Technologies, LLC at 5, Figure 1 (filed Sept. 23, 2009).

<sup>24</sup> *2d R&O* at ¶ 22.

<sup>25</sup> The near field is a region close to a radio-frequency emitter within which propagation characteristics are very different from those at greater distances. The extent of the near field increases with both the wavelength of the emissions and the size of the radiating element. *See* WARREN STUTZMAN AND GRAY THIELE, ANTENNA THEORY AND PRACTICE, 24-25 (1981).

<sup>26</sup> An extrapolation value of 20 dB/decade corresponds to a signal drop-off of  $1/r$ , where  $r$  is the distance from the power line. This is the expected attenuation from a line-emitting source much longer than the measurement distance. The 40 dB/decade value corresponds to  $1/r^2$ , the familiar inverse-square law. This value applies when the emitting source is a point, or at least is much smaller than the measurement distance.

compelling empirical support for a change to the rule, its long-standing presence on the books should weigh in its favor.

**C. ARRL HAS NOT JUSTIFIED FULL-TIME NOTCHING OF THE AMATEUR BANDS**

ARRL's first pleading in this proceeding, back in 2003, requested rules that would require BPL to notch out emissions in all amateur bands.<sup>27</sup> ARRL has repeated the same request in every substantive pleading since, up to and including its present Petition.<sup>28</sup> The Commission has turned down the request every time, most recently in the Second Report and Order, always with patient and detailed explanations.<sup>29</sup>

ARRL's Petition brings nothing new to the issue. Previous ARRL filings combed through materials that the Commission had released both before and after the decision in *ARRL v. FCC*,<sup>30</sup> holding up this or that molecule of information as the smoking gun that would invalidate all of the decision-making that came before. The Commission has exhaustively reviewed these data and explained, as to every instance, why none comes close to undermining the process that led to the present rules. ARRL now re-raises many of the same points, but without any new arguments or evidence. To be sure, ARRL makes clear that it thinks the Commission's prior decisions were wrong. But disagreement with the outcome does not in itself support reconsideration. Here, ARRL offers nothing more.

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<sup>27</sup> "ARRL has, upon diligent and exhaustive research, concluded that all Amateur medium-frequency (MF, *i.e.* 1.8-2.0 MHz), all HF, and all VHF allocations must be avoided by any access or in-building BPL system, without exception." Comments of ARRL in ET Docket No. 03-104 at 10 (filed July 7, 2003) (boldface and italics omitted).

<sup>28</sup> ARRL Petition, *passim*.

<sup>29</sup> *2d R&O* at ¶¶ 17-20, 29-38.

<sup>30</sup> See multiple documents released by the Office of Engineering and Technology in ET Docket No. 04-37 variously on December 22, 2004, April 29, 2009, and July 22, 2009.

**D. THE BPL DATABASE IS NOT AT ISSUE ON RECONSIDERATION.**

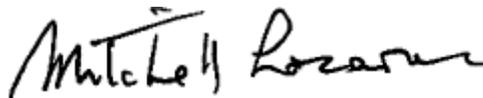
ARRL's complaints about the BPL database are out of place in a reconsideration proceeding. The database is not at issue here. The notice that led to the Second Report and Order barely mentioned it;<sup>31</sup> and the Second Report and Order expressly agreed with ARRL that the database should be kept up to date.<sup>32</sup> Whatever ARRL seeks with regard to the database, it is not reconsideration.

The elements of the database that ARRL claims to be in error, if anything, point to over-inclusiveness. Most of these entries refer to BPL installations or systems that are no longer in operation. While these need to be corrected, their presence does not impair the purpose of the database, namely, to help amateur licensees and others identify potential BPL installations that may be sources of interference.<sup>33</sup>

**CONCLUSION**

ARRL's Petition contains neither fact nor argument sufficient to justify the relief it seeks. The Petition must be denied.

Respectfully submitted,



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July 17, 2012

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<sup>31</sup> *Broadband over Power Line Systems*, Request for Further Comment and Further Notice of Proposed Rulemaking, 24 FCC Rcd 9669 at ¶ 8 (2009).

<sup>32</sup> *2d R&O* at ¶ 101.

<sup>33</sup> CURRENT has corrected the two entries under its name that ARRL identified as being in error. ARRL Petition at Appendix A, page 7.

**CERTIFICATE OF SERVICE**

I, Deborah N. Lunt, a secretary with the law firm of Fletcher, Heald & Hildreth, PLC, hereby state that true copies of the foregoing Opposition of CURRENT Group, LLC to Petition for Reconsideration of Second Report and Order of ARRL, The National Association of Amateur Radio has been mailed first class, postage prepaid, this 17th day of July, 2012, to the attached service list, except that persons having an address at the Federal Communications Commission in Washington, DC were served by hand.

A handwritten signature in black ink, appearing to read 'D. Lunt', with a long horizontal flourish extending to the right.

Deborah N. Lunt

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