

**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 to Comments of Phonex Broadband Corporation from Amateur Radio
Station KF7IQ General Radiotelephone Operator PG00006746**

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Reply To Comments of Phonex Broadband Corporation

Introduction

In their NOI, the Commission sought comments on both Access and In-house BPL technology. Phonex, as a developer and manufacturer of In-house carrier current and In-house BPL products made their original comments in connection with In-house BPL. Although there are associated issues connected to both In-house and Access BPL, FCC policy regarding each must be kept separate due to their differences. Phonex believes that the current FCC Part 15 rules and test methods have proven effective for the development of In-house BPL, while providing protection to radio users. The remainder of these reply comments will support this assertion as Phonex responds to the original comments sent to the FCC from various parties.

Response of KF7IQ

Although the two separate types of BPL devices are different, the overall effects of interference issues remain possible from either types of service. One possible reason for the low number of interference complaints being received by current BPL manufactures about the existing service is the fact that it is extremely difficult to locate the source from which interference is being introduced into the environment without sophisticated electronic test equipment which most Ham Radio Operators don't have easy access to.

Notched and Allocated Frequencies

The FCC should not allocate frequencies as suggested by the North American Shortwave Society or have notched frequencies as proposed by several respondents including the ARRL and IEE Power Systems Committee, who requested notched frequencies in the ham radio bands.

This would set a precedent for every other group that uses the spectrum to request notches. FCC Rules Part 15 section 15.5 already requires that equipment cannot cause harmful interference to any user of a licensed frequency. The ARRL mentioned a case study involving Phonex and one of their earlier carrier current devices. This case study illustrates that the FCC Rules already work without the need to notch frequencies or change limits. In the case study mentioned, Phonex worked with the ARRL to eliminate the reported cases of interference and even made engineering changes to the next generation of products. Not only was Phonex complying with the FCC Rules by eliminating the interference, it was also to Phonex's interest not to cause interference because of customer concerns. Developers of In-house BPL want to develop products that are best accepted by the consumer who would require that they receive normal broadcast services. These developers must however be able to choose frequencies that work best for product applications as well as those that don't

cause interference. The FCC should not prohibit scientific innovations in this field at this time by allocating frequencies.

Response from KF7IQ

I believe that further study is required before one can assume no notch filtering should be used within the frequency spectrum mentioned. Without scientific data to support possible benefits or disadvantages to either user of the spectrum, one finds it difficult to address this issue without additional evidence. Phonex is correct with respect to part 15 rules and regulations. As I mentioned above, One possible reason for the low number of interference complaints being received by current BPL manufactures about the existing service is the fact that it is extremely difficult to locate the source from which interference is being introduced into the environment without sophisticated electronic test equipment which most Ham Radio Operators don't have easy access to.

Radiated Limits

The current FCC limits have allowed In-house BPL to develop. Any changes in the limits could drastically curtail the development of In-house BPL technology and products. It is clear that the radio community wants to make BPL illegal. For example, the NASB stated in their comments that they were requiring BPL signals being no more than 0 dBuV/m at one meter (which is 40 dB less than those required by computing devices). This illustrates how radically opposed radio groups are against BPL. This approach does not promote the accommodation of developing consumer-based technology while reasonably protecting radio users. Phonex encourages the FCC to avoid this all-or-nothing mentality concerning BPL deployment. As already stated, the current Rules already have safe guards in cases of reported harmful interference.

Response From KF7IQ

I believe that further study is required before one can assume no changes to the current signal levels of Part 15 are needed. One thing I have noticed about most of the pro-BPL proponents commenting on the NOI is the fact that none of them want Conducted and Radiated emission requirements to be included for BPL technology. I'm curious to know why this is, could it be that BPL devices are generating higher conducted spectral signal levels than are currently allowed in Part 15? As quoted from Amos R. Mansfield, Jr. the founder and original developer of Phonex, Inc. in his comments to the NOI dated July 7, 2003 "Given that the electromagnetic spectrum is a valuable resource that needs to be properly managed for the best interests of our great country, it is essential that threats to existing services operating effectively to support the needs of our nation, be protected and preserved. Danger to these services comes from devices and services that can cause interference that impedes or limits their effectiveness. It is no easy task to evaluate all new technologies and claims that the public good will be better served by those that request additional spectrum or favorable rules". Now here is a pioneering scientist and developer of BPL technology that has indicated in his comments to the NOI "It is very probable that Access BPL will be archaic before it is deployed in sufficient quantity to pay for itself, and any problems uncovered in its deployment will be painfully obvious. The probability of problems increases with any effort to fast-track deployment. And the

time required to properly insure minimal, solvable problems will reduce the ability for such a limited bandwidth system to be viable in the marketplace. Similar time, expense and effort on already proven delivery systems is a far wiser choice”.

Cases of Interference

None of the respondents that opposed In-house BPL technology gave an actual occurrence of harmful interference from an In-house BPL device. The ARRL suggested that they had results where some noise could be heard in the ham radio band due to a HomePlug device. The actual noise was not defined as harmful nor was the testing done due to an actual case of interference but was part of an investigation procedure. Developers of BPL technology have worked with groups to avoid the occurrence of harmful interference. The National Association of Broadcasters stated that .A lack of consumer complaints is woefully inadequate evidence upon which to base any conclusions that BPL does not cause interference and suggested that people rarely know how to complain. While this may be true for rare cases of interference, it is not true for common cases of interference as illustrated in the case involving Phonex. It should be noted that the ARRL, under their right, used their network of communication mediums to encourage their members to make comment to the FCC.s NOI. Many ARRL members did so. However, the FCC should note that each time a person bought an In-house BPL device; he or she was casting their vote for wanting In-house BPL. Millions of people will benefit from In-house BPL without causing harmful interference to ham radio users. This must be weighed against a small group of vocal ham radio operators who are filing comments at the urging of the ARRL.

Response of KF7IQ

As I mentioned above, One possible reason for the low number of interference complaints being received by current BPL manufactures about the existing service is the fact that it is extremely difficult to locate the source from which interference is being introduced into the environment without sophisticated electronic test equipment which most Ham Radio Operators don't have easy access to. With the amount of attention brought on by the NOI currently being given to the BPL service, my feeling is that the number of interference complaints being received by these manufactures has a higher probability of increase. Now that the radio community is aware that these devices are being used the homes and offices it's only a matter of time before the complaints start rolling in.

Test Methods

Several respondents mentioned the need to change the current FCC test method so that repeatable results can be made on BPL devices. Some suggested that a specific conductance level and specified mask be used. While Phonex acknowledges that such a procedure would simplify the verification process, several things must be considered. First, Phonex believes from analyzing their own test data, cases of interference are caused by radiated emissions, and not by conducted emissions. Second, each frequency has different radiated tendencies from each other. Third, there has not been any evidence to show

conducted levels translate into a specific radiated level; and fourth, conducted measurements would not take into account BPL installations that may have the cabling underground or inside conduit (In these cases, radiated levels could be very low even though the conducted measurements could be over a specified conducted limit). As opposed to a conducted test, Phonex supports the current procedures, or as an alternative, those similar to the test procedures proposed by Adaptive Networks wherein a radiated test is still used but is done on a turn table in a controlled lab environment using a specified cabling setup and testing the equipment with different cable loop lengths. Testing done by Phonex shows that this test method produces results equivalent to testing in a house. Again, a lab test should be used as an alternative rather than a replacement method.

Response of KF7IQ

I have noticed most of the pro-BPL proponents commenting on the NOI the fact that none of them want Conducted and Radiated emission requirements to be included for BPL technology. I'm curious to know why this is, could it be that BPL devices are generating higher spectral signal levels than are currently allowed in Part 15? It's reassuring to see a manufacture admit that they have had some interference issues in the past with the statement, " Phonex believes from analyzing their own test data, cases of interference are caused by radiated emissions, and not by conducted emissions." It's my option, with this statement, manufactures are aware of interference related issues pertaining to consumer products. Important note; notice the words " cases of interference", from their own data.

In-house BPL already successfully being used.

Some respondents (AMRAD, Aura Communications are two examples) remarked that more study must be done to decide on test procedures, limits and prohibited transmit bands. This however will take several months and even years to complete. Whereas Access BPL is still in the field trial phase, In-house BPL is already widely sold extensively throughout the US. Millions of investment and research and development dollars are being done using the existing FCC Part 15 Rules. Major installers of In-house BPL devices are currently making business plans for new products that are planned to be in the market soon. The FCC should not create a situation of uncertainty in the marketplace.

Response of KF7IQ

With the amount of attention brought on by the NOI currently being given to BPL, my feeling is that the number of interference complaints being received by these manufactures now has a higher probability of increase. Now that the radio community is aware that these devices are being used the homes and offices it's only a matter of time before the complaints start rolling in. As long as a problem exists and stays in the noise level the amount of problems are minimized. However when the source of interference is identified and becomes visible to spectrum users the numbers of complaints are sure to increase.

Public Health and Safety Concerns

Some have suggested (Colorado Council of Amateur Radio Clubs) that BPL will compromise public safety responses during such cases as blackouts. In-house BPL however can not operate when there are blackouts therefore making any BPL transmission impossible, thus eliminating any chance of interference in a blackout situation. Arguments against BPL based on public health concerns, such as the Amhust Alliance gave, fall under all RF devices. BPL uses much lower signal strengths than those generated by licensed transmit devices and should not be singled out in such a manner.

Response of KF7IQ

Of course BPL won't interfere with communications when the power grid fails again. Again here is a manufacture of BPL devices admitting to interference issues pertaining to BPL technologies. However, when the power grid is operational and BPL is running down the high voltage lines the amount of noise being generated will deter future generations of potential Ham Operators due in fact to not being able to communicate via HF because of a high noise floor when the power grid is operational. Thus jeopardizing the future of Ham Radio and trained emergency communicators.

Conclusion

The current FCC Rules and test methods have been shown to protect radio users from harmful interference while at the same time allowing for the development of In-house BPL. There is therefore no reason for the Commission to make major modifications to its rules. In-house BPL products are already being produced and used throughout the country with customer satisfaction. The FCC must allow this technology to grow and let market and consumer forces guide In-house BPL developers. While there are similarities between In-house and Access BPL, the FCC must keep these two technologies separate as they make policy regarding BPL.

Response of KF7IQ

Again, I quote from Mr. Amos R. Mansfield, Jr. the founder and original developer of Phonex, Inc. in his comments to the NOI dated July 7, 2003 "The magnitude of the interference problem is severe already for existing licensed services. Adding the Access BPL system, with its broadband signal being emitted over a very long distance will bring its signal within close proximity to existing licensed services with impunity. Thus, the signal power provided to Access BPL will be costly. Amateur radio stations, a critical infrastructure component of the HomeLand Security and emergency response initiatives, already experience S9 signal levels in most areas over the high frequency amateur bands. This interference is predominantly from unlicensed devices of all types. Access BPL, to insure it can perform adequately, without significantly increasing the existing high noise levels, will require extensive testing that is not limited in any way. Currently, the Access BPL industry is conducting its own tests. A large number of tests would have to be made to insure that the sites, power levels, and system performance actually obtained are all compatible with existing licensed services. Otherwise, a signal power battle will ensue

which will not be easily resolved". I believe Mr. Mansfield has a very valid point here and as a spectrum user I feel that any increase in interference potential is unacceptable. It would be interesting to have access to some of these BPL devices so additional real world tests could be conducted to verify what interference potentials actually exist within the HF spectrum.

WHEREFORE, THE PREMISES CONSIDERED, This author is pleased to provide these comments on the NOI.

Respectfully submitted,

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