

RECEIVED

FCC 04-37

DOCKET FILE COPY ORIGINAL 2004

SUNSHINE PERIOD

Dear FCC Staff-

Federal Communications Commission

Office of the Secretary

I have recently seen discussions related to the FCC's opinion that notching is an effective tool to mitigate BPL interference in the Amateur Radio HF bands. I've been closely involved with monitoring the system trial that was conducted (and recently terminated) in Penn Yan, NY. I'd like to share with you my experiences and observations that contradict this opinion.

DVI (the BPL provider in Penn Yan) and their equipment supplier, Amperion, used notching to attempt to reduce the level of BPL interference observed by me and others. In my initial complaint to the FCC in late March, 2004, I noted that strong BPL signals were observed continuously from below 18 MHz to above 30 MHz. DVI and Amperion reported that they had worked to improve the situation and on my second visit (in late May, 2004), I observed the following (I would also note here that the FCC never replied to any of my complaints in this matter) (the information below is excerpted and quoted from my second official complaint to the FCC):

"DVI (the provider) has made an attempt to reduce the interference to the Amateur spectrum in Penn Yan. They have been partially successful.
1) The 10m band (28.00-29.70 MHz) is clear of any BPL (it was completely covered with BPL during my first visit).
2) An attempt has been made to notch out BPL from the 15m band (21.00-21.45 MHz).
3) An attempt has been made to notch out BPL from the 12m band (24.890-24.990 MHz).
4) No attempt has been made to remove BPL from the 17m band. The 17m band (18.068-18.168 MHz) is completely covered up with strong BPL (as it was on my first visit).
5) The 15m band is only partially cleared of BPL. The lower 100kHz of the 15m band is completely covered up with strong BPL (the entire 15m band was covered up during my first visit), and residual carriers exist up to about 21.16 MHz.
6) The 12m band is only partially cleared of BPL. The lower 20kHz of the 12m band is completely covered up with strong BPL (the entire 12m band was covered during my first visit). In addition, the notch in the 12m band is rather ineffective- the residual signals never disappear."

As you can see, in their attempts to move and notch the BPL spectrum to mitigate interference, Amperion demonstrated only limited control of their hardware. I also have observed that energy from the Amperion BPL system is not well-contained within it's intended spectrum blocks. Residual signals spill over into neighboring spectrum. These signals ARE weaker than the main "intended" signal, but only attenuate gradually as one tunes away from the edge of the main signal.

In addition to interference in the Amateur bands, apparently no one at DVI or Amperion had given any thought to interference to the International Shortwave Broadcast Bands. The system in Penn Yan showed no attempt to notch or reduce interference there in any way, and moderately strong signals in the SWBC bands were obliterated by BPL.

My belief is that at some point in time, the technology employed by the manufacturers of BPL equipment will be both advanced enough and agile enough to effectively mitigate interference by the use of notching techniques. Today, at least in the experience I've had in Penn Yan, I must conclude that the equipment presently available does not have the capability to do this.

Sincerely,

David Hallidy K2DH
663 Beadle Road
Brockport, NY 14420
585-637-0696
k2dh@frontiernet.net

No. of Copies rec'd 2
List ABCDE

RECEIVED
OCT - 8 2004

FCC-04-37

SUNSHINE PERIOD

Federal Communications Commission
Office of the Secretary

I have seen numerous references made by the promoters of BPL stating that notching (or shifting frequency) techniques can be used to eliminate interference to licensed services using the HF spectrum. Speaking from actual experience, I can tell you that this IS NOT TRUE.

I would add that the BPL interference I experienced was caused by an extremely simple test environment consisting of just four overhead nodes and three spans--just three sets of spread-spectrum frequencies. Any real-world deployment would be much more difficult to deal with.

Alliant Energy in Cedar Rapids, Iowa started an evaluation of an Amperion system on March 30, 2004. I immediately observed extensive interference on most amateur frequencies at my home, some 600 feet away from the nearest node of the BPL system. I went to the test site where they were installing the last node and talked to the Amperion engineer, Tom Luecke. He verified that the frequencies where I found the interference were indeed caused by BPL. He also stated that the gains were set at a lower level to reduce interference and that the 20, 17, 15, 12 and 10 meter amateur bands were notched. Still, I had strong interference at or near S9 on at least part of all the notched bands! In addition, I had interference on the 40 and 30 meter bands. The true extent of the interference could not be determined due to unresolved power-line noise. The notching DID NOT WORK.

On May 25, 2004 I received a request from Alliant Energy asking that I again check my radio for BPL interference. They had received an email from Greg Solt at Amperion which stated: "we have gone back to re-evaluate the effectiveness of the notch filters that we activated in your system. We found that due to changes in some notching methods associated with our software packages, these notches were not working as efficiently as we would like and, in some cases, not working at all. The notches have now been fixed and verified as working correctly. We hope that this will address Mr. Spencer's concerns". I ran a scan of all HF amateur bands and found and reported the following: No BPL above the S9 power-line noise on 160 and 80 meters. On 40 meters I had S7 to S9 BPL. On 30, 20, 17 and 15 meters the BPL was S8 to S9. It was S3 on 12 meters and S8 on 10 meters. Clearly, the notching DID NOT WORK.

On June 1, 2004 I was contacted by Alliant Energy and asked to repeat my tests as the notching had been changed again. I ran the tests on that day and reported to Alliant the following levels of BPL interference: No BPL was detected on 160 and 80 meters in S9+ power-line noise. BPL interference was S8 to S9 on

No. of Copies rec'd 2
List ABCDE /

40 meters, S7 on 30 meters, S9 on 20 meters, S8 on 17 meters, S8 to S9 on 15 meters, S8 on 12 meters. No BPL signals could be heard on 10 meters in S7 to S8 power-line noise. Clearly this notching configuration DID NOT WORK.

In a telephone conversation with Alliant Energy on June 4, 2004, I told them that the BPL frequencies had moved although they stated there had been no changes in the notching since before the June 1 tests. They later confirmed that the notching had indeed been changed. I ran a full set of tests and provided the results to Alliant on June 4. It showed no observable BPL on 160 meters in S9 + 20 db power-line noise and no BPL on 80 meters in S9 + 5 db power-line noise. On 40 meters the BPL signals were S8 to S9. On 30 meters the BPL signals were S8. On 20 meters there were no observable BPL signals above the S8 power-line noise. On 17 meters there were no BPL signals above S4 power-line noise. On 15, 12 and 10 meters there were no BPL signals in near zero power-line noise. In this case, notching partially worked but still caused significant interference to at least two amateur bands that I often use.

What they did in the last case would not work with a "real" BPL deployment. They had simply moved two of the three spread-spectrum ranges above 30 MHz to the Low VHF bands. The important point here is, what would they do with a system with four spans? Or five? Or more as you would have in any "real" BPL system? Clearly there are not enough frequencies available to deploy a real operating BPL system and not interfere with amateurs and other licensed users of the HF and Low VHF spectrum.

The bottom line: At least with this Amperion system, notching DID NOT WORK.

Sincerely,

James L. Spencer, W0SR
3712 Tanager Dr. NE
Cedar Rapids, Iowa 52402

OCT - 8 2004

FCC-04-37

Federal Communications Commission
Office of the Secretary

SUNSHINE PERIOD

I have seen numerous references made by the promoters of BPL stating that notching (or shifting frequency) techniques can be used to eliminate interference to licensed services using the HF spectrum. Speaking from actual experience, I can tell you that this IS NOT TRUE.

I would add that the BPL interference I experienced was caused by an extremely simple test environment consisting of just four overhead nodes and three spans--just three sets of spread-spectrum frequencies. Any real-world deployment would be much more difficult to deal with.

Alliant Energy in Cedar Rapids, Iowa started an evaluation of an Amperion system on March 30, 2004. I immediately observed extensive interference on most amateur frequencies at my home, some 600 feet away from the nearest node of the BPL system. I went to the test site where they were installing the last node and talked to the Amperion engineer, Tom Luecke. He verified that the frequencies where I found the interference were indeed caused by BPL. He also stated that the gains were set at a lower level to reduce interference and that the 20, 17, 15, 12 and 10 meter amateur bands were notched. Still, I had strong interference at or near S9 on at least part of all the notched bands! In addition, I had interference on the 40 and 30 meter bands. The true extent of the interference could not be determined due to unresolved power-line noise. The notching DID NOT WORK.

On May 25, 2004 I received a request from Alliant Energy asking that I again check my radio for BPL interference. They had received an email from Greg Solt at Amperion which stated: "we have gone back to re-evaluate the effectiveness of the notch filters that we activated in your system. We found that due to changes in some notching methods associated with our software packages, these notches were not working as efficiently as we would like and, in some cases, not working at all. The notches have now been fixed and verified as working correctly. We hope that this will address Mr. Spencer's concerns". I ran a scan of all HF amateur bands and found and reported the following: No BPL above the S9 power-line noise on 160 and 80 meters. On 40 meters I had S7 to S9 BPL. On 30, 20, 17 and 15 meters the BPL was S8 to S9. It was S3 on 12 meters and S8 on 10 meters. Clearly, the notching DID NOT WORK.

On June 1, 2004 I was contacted by Alliant Energy and asked to repeat my tests as the notching had been changed again. I ran the tests on that day and reported to Alliant the following levels of BPL interference: No BPL was detected on 160 and 80 meters in S9+ power-line noise. BPL interference was S8 to S9 on

40 meters, S7 on 30 meters, S9 on 20 meters, S8 on 17 meters, S8 to S9 on 15 meters, S8 on 12 meters. No BPL signals could be heard on 10 meters in S7 to S8 power-line noise. Clearly this notching configuration DID NOT WORK.

In a telephone conversation with Alliant Energy on June 4, 2004, I told them that the BPL frequencies had moved although they stated there had been no changes in the notching since before the June 1 tests. They later confirmed that the notching had indeed been changed. I ran a full set of tests and provided the results to Alliant on June 4. It showed no observable BPL on 160 meters in S9 + 20 db power-line noise and no BPL on 80 meters in S9 + 5 db power-line noise. On 40 meters the BPL signals were S8 to S9. On 30 meters the BPL signals were S8. On 20 meters there were no observable BPL signals above the S8 power-line noise. On 17 meters there were no BPL signals above S4 power-line noise. On 15, 12 and 10 meters there were no BPL signals in near zero power-line noise. In this case, notching partially worked but still caused significant interference to at least two amateur bands that I often use.

What they did in the last case would not work with a "real" BPL deployment. They had simply moved two of the three spread-spectrum ranges above 30 MHz to the Low VHF bands. The important point here is, what would they do with a system with four spans? Or five? Or more as you would have in any "real" BPL system? Clearly there are not enough frequencies available to deploy a real operating BPL system and not interfere with amateurs and other licensed users of the HF and Low VHF spectrum.

The bottom line: At least with this Amperion system, notching DID NOT WORK.

Sincerely,

James L. Spencer, W0SR
3712 Tanager Dr. NE
Cedar Rapids, Iowa 52402