

James Burtie

From: Bruce Franca
Sent: Friday, September 10, 2004 8:54 AM
To: James Burtie
CC: Steve Martin; Alan Scrimie; Alan Stillwell; Anh Wride
Subject: FW: Answer to Ambient re Briarcliff

Jim -
Briarcliff is still an experimental, right? Could you please draft a letter to the
Ambient and other relevant folks here.

Thanks,
Bruce Franca
Office of Engineering & Technology
18-2470

****Non-Public: For Official Use Only*****

-----Original Message-----

From: Steve Martin
Sent: Friday, September 10, 2004 8:48 AM
To: Bruce Franca
Subject: RE: Answer to Ambient re Briarcliff

Thanks!

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

-----Original Message-----

From: Bruce Franca
Sent: Friday, September 10, 2004 8:47 AM
To: Steve Martin
Cc: Anh Wride; Alan Stillwell; Andrew Leimer; Rashmi Doshi; William Hurst
Subject: RE: Answer to Ambient re Briarcliff

Steve -

I think a quick e-mail is fine. I would suggest we say something along the lines of the
following for the 3rd sentence: "Measured emissions from the device were found compliant
with the current limits within the measurement error of our equipment." - if its
measurement error we really don't know it was 3 dB above the limit. I would also add
after your last sentence. "You should be receiving a formal letter requesting this
information in the next few days."

Bruce Franca
Office of Engineering & Technology
418-2470

****Non-Public: For Official Use Only*****

-----Original Message-----

From: Steve Martin
Sent: Thursday, September 09, 2004 4:16 PM
To: Bruce Franca

Gc: Anh Wride; Alan Stillwell; Andrew Leimer; Rashmi Doshi; William Hurst
Subject: Answer to Ambient re Briarcliff

Bruce,
Ambient has been pressing me for a briefing on the Briarcliff Manor test results, and I've been putting them off by saying I need to present to headquarters 1st. I think that excuse has run out.

I would suggest that we either get the official letter out to them soon, or that I send an interim email saying something like the following. What do you think?

"We do not plan to provide a briefing at this time; however, our findings are as follows:
1. We tested one access BPL device located on Dalmeny Rd. Measured emissions in its intended band of operation were 3 dB above the emission limit; however, that difference is within our measurement error.

2. Performance of notching intended to protect the 20-meter amateur band was found to be inadequate to prevent harmful interference to the claimant.

Please let us know when you have completed implementation of the planned fix to the notch."

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

James Burtle

From: Bruce Franca
Sent: Friday, September 10, 2004 9:45 AM
To: James Burtle
Subject: FW: Briarcliff Manor test

FYI
Bruce Franca
Office of Engineering & Technology
418-2470

*****Non-Public: For Official Use Only*****

-----Original Message-----

From: Steve Martin
Sent: Friday, September 10, 2004 9:31 AM
To: 'Yehuda Cern'
Subject: Briarcliff Manor test

Yehuda,
Please pass this on to Aaron Viner. I don't have his email address

We do not plan to provide a briefing on the Briarcliff Manor test results at this time; however, our findings are as follows:

1. We tested one access BPL device located on Dalmeny Rd. Measured emissions in its intended band of operation were found compliant with the current limits within the measurement error of our equipment.
2. Performance of notching intended to protect the 20-meter amateur band was found to be inadequate to prevent harmful interference to the claimant.

Please let us know when you have completed implementation of the planned fix to the notch.

You should be receiving a formal letter requesting this information in the next few days.

Sincerely

Steve Martin
Technical Research Branch
FCC Laboratory
7435 Oakland Mills Road
Laurel, MD, USA 21046
(301)362-3052

James Burtle

From: Steve Martin
Sent: Thursday, September 23, 2004 3:24 PM
To: Bruce Franca; Alan Stillwell; Alan Scrimie; James Burtle
Cc: Rashmi Doshi; William Hurst; Andrew Leimer
Subject: FW: BPL in Briarcliff Manor

As you can see below, I just sent a brief reply in response to a new email from the Briarcliff Manor complainant. I'd like your opinion on item (1) below and want to alert you to item (2).

(1) Complainant "saw an improvement on 14 MHz" in one location, but still had high interference levels at another. I'm waiting for confirmation whether this other location also involved 14 MHz. If so, I'd like to forward this info to Ambient since it may indicate that they haven't fixed the notching on some of their units. Is there any problem with me contacting Ambient regarding this?

(2) The complainant also says "I also have not looked on other amateur bands (yet). I do have mobile antennae for 80 and 10 m in addition to the 20 m hamstick I usually drive around with." Until now, he has complained only about the 20-meter (14 MHz) amateur band and a nearby shortwave broadcast. The Ambient system in Briarcliff Manor also operates in both the 10 and 80 meter bands. The only band Ambient is intentionally avoiding is the 20-meter band.

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

-----Original Message-----

From: Steve Martin
Sent: Thursday, September 23, 2004 2:54 PM
To: 'Alan Crosswell'
Subject: RE: BPL in Briarcliff Manor

Alan,
Thanks for the report. Was the interference on North State also at 14 MHz?

Steve Martin
Technical Research Branch
FCC Laboratory
7435 Oakland Mills Road
Laurel, MD, USA 21046

-----Original Message-----

From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Thursday, September 23, 2004 2:11 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

Last night I saw an improvement on 14 MHz on Dalmeny Road. I saw S9+10 QRM on North State road east of Rt 9A. I also have not looked on other amateur bands (yet). I do have mobile antennae for 80 and 10 m in addition to the 20 m hamstick I usually drive around with. Please let me know when Ambient claims they've applied the change and I'll drive the route again.

Thanks.

/a

Steve Martin wrote:

> Alan,
> Our testing in Briarcliff Manor identified two specific problems with
> notching of the 20-meter amateur band as implemented in the BPL
> installation at the time of our test. One problem was addressed while
> we were there, and I understand that the other one has been addressed
> within the last few days, but has not yet been tested by the provider.
> Pending hearing the results of such tests from the provider, we are
> interested in knowing whether your observations indicate an
> improvement.

>
> Thanks

>
> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046

>
>
> -----Original Message-----

> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Monday, September 20, 2004 7:04 AM
> To: Steve Martin
> Cc: Riley Hollingsworth
> Subject: Re: BPL in Briarcliff Manor

>
>
> Steve,

>
> I am still waiting to hear this information from FCC HQ staff. Please
> make sure I get a report back ASAP. There is still harmful
> interference caused by this system, including making it difficult to
> hear the Hurricane Watch Net on 14.325.
> If this BPL service extends to my street, I fear that I will not be
> able to
> participate in emergency communications with low power stations (e.g. on
> battery) which I otherwise might be able to today.

>
> Thanks.

> /a

>
>
> Steve Martin wrote:

>>Alan,
>>Thanks for the update. I also notice that you've updated your log
>>this week indicating S9+10 dB interference levels in the 20m band.
>>
>>Two of us visited Briarcliff Manor last week. The FCC staff members
>>in charge of BPL at FCC headquarters are out of the office this week,
>>but I will present our findings to them after their return, and you
>>can expect to hear from them subsequently.

>>
>>Thanks for keeping us informed.

>>
>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>**** Non-Public: For Internal Use Only ***

>>
>>
>>-----Original Message-----

>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>Sent: Wednesday, August 25, 2004 10:01 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor
>>
>>
>>Steve,
>>
>>I'm back from vacation and the harmful interference is still there. /a
>>
>>Alan Crosswell wrote:
>>
>>
>>>OK, I've posted my latest log including QRM up to S9 covering WWV 15
>>>MHz experience this morning on the way to the train station. It
>>>seems
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>>>the noise is now worse along North State Rd and better but not
>>>eliminated at all along Poplar and Dalmeny. I'll also be emailing
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>>Rich
>>
>>
>>>Mazzini who said he'd follow up on 7/16 and hasn't.
>>>
>>>If you're planning to be in the area to observe, I'd be happy to meet
>>>with you and show you my mobile station. It's not all that
>>>impressive. I'll be back from vacation on 8/20.
>>>
>>>Thanks.
>>>/a
>>
>>
>

James Burtle

From: Steve Martin
Sent: Monday, September 27, 2004 8:50 AM
To: Bruce Franca; Alan Stillwell; Alan Scime; James Burtle
Cc: Anh Wride; Andrew Leimer
Subject: FW: BPL in Briarcliff Manor

FYI

-----Original Message-----

From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Friday, September 24, 2004 8:37 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

I will make some time to test it, but why is it necessary for Ambient to rely on me to check their system for problems? Don't they have competent RF engineers on staff?

/a

Steve Martin wrote:

> Alan,
> Ambient tells me that by the end of the workday today, they should
> have implemented a fix to a device on North State Rd that was not
> properly notched previously. They said that, if you still see
> interference after that time, they would appreciate any information
> you can provide as to where it is strongest.

>

> Thanks,

>

> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046
> (301)362-3052

>

>

> -----Original Message-----

> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Thursday, September 23, 2004 2:11 PM
> To: Steve Martin
> Subject: Re: BPL in Briarcliff Manor

>

>

> Steve,

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> Last night I saw an improvement on 14 MHz on Dalmeny Road. I saw
> S9+10 QRM on North State road east of Rt 9A. I also have not looked
> on other amateur bands
> (yet). I do have mobile antennae for 80 and 10 m in addition to the
> 20 m hamstick I usually drive around with. Please let me know when
> Ambient claims
> they've applied the change and I'll drive the route again.

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> Thanks.

> /a

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> Steve Martin wrote:

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>>Our testing in Briarcliff Manor identified two specific problems with
>>notching of the 20-meter amateur band as implemented in the BPL
>>installation at the time of our test. One problem was addressed while
>>we were there, and I understand that the other one has been addressed
>>within the last few days, but has not yet been tested by the provider.
>>Pending hearing the results of such tests from the provider, we are
>>interested in knowing whether your observations indicate an

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> improvement.

>
>>Thanks

>>
>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>7435 Oakland Mills Road
>>Laurel, MD, USA 21046

>>
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>>-----Original Message-----

>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>Sent: Monday, September 20, 2004 7:04 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor

>>
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>>Steve,
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>>I am still waiting to hear this information from FCC HQ staff. Please

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>>make sure I get a report back ASAP. There is still harmful
>>interference caused by this system, including making it difficult to
>>hear the Hurricane Watch Net

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>> If this BPL service extends to my street, I fear that I will not be
>>able to participate in emergency communications with low power
>>stations (e.g.

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> on
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>>battery) which I otherwise might be able to today.

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>>Thanks.

>>/a
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>>Steve Martin wrote:

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>>>Alan,
>>>Thanks for the update. I also notice that you've updated your log
>>>this week indicating S9+10 dB interference levels in the 20m band.
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>>>Two of us visited Briarcliff Manor last week. The FCC staff members
>>>in charge of BPL at FCC headquarters are out of the office this week,
>>>but I will present our findings to them after their return, and you
>>>can expect to hear from them subsequently.

>>>
>>>Thanks for keeping us informed.
>>>

>>>Steve Martin
>>>Technical Research Branch
>>>FCC Laboratory
>>>*** Non-Public: For Internal Use Only ***
>>>
>>>
>>>-----Original Message-----
>>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>>Sent: Wednesday, August 25, 2004 10:01 AM
>>>To: Steve Martin
>>>Cc: Riley Hollingsworth
>>>Subject: Re: BPL in Briarcliff Manor
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>>>Steve,
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>>>I'm back from vacation and the harmful interference is still there.
>>>/a
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>>>Alan Crosswell wrote:
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>>>>15 MHz experience this morning on the way to the train station. It
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>>>>Mazzini who said he'd follow up on 7/16 and hasn't.
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>>>>If you're planning to be in the area to observe, I'd be happy to
>>>>meet with you and show you my mobile station. It's not all that
>>>>impressive. I'll be back from vacation on 8/20.
>>>>
>>>>Thanks.
>>>>/a
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>>>>
>>>>
>>>>

James Burtle

From: Dave Hallidy [k2dh@frontiernet.net]
Sent: Wednesday, October 06, 2004 11:00 PM
To: Anh Wride; Alan Stillwell; Riley Hollingsworth; James Burtle; Sheryl Wilkerson
Cc: Ed W1RFI Hare; Dave Hallidy
Subject: Effectiveness Of "Notching" BPL Signals In Amateur Radio/SWL Bands

Dear FCC Staff-

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

James Burtle

From: Alan Crosswell [alan@columbia.edu]
Sent: Thursday, October 07, 2004 10:02 AM
To: James Burtle
Subject: Re: Your BPL Complaint

Customer Communications
Con Edison
511 Theodore Fremd Ave
Rye, NY 10580

/a

James Burtle wrote:

> Thank you Mr. Crosswell. Could you please provide the address that
> Con Ed customer service gave you?

>

> Thanks,

>

> Jim Burtle

>

> *** Non-Public: For Internal Use Only ***

>

> -----Original Message-----

> From: Alan Crosswell [mailto:alan@columbia.edu]

> Sent: Wednesday, October 06, 2004 10:40 AM

> To: James Burtle

> Subject: Re: Your BPL Complaint

>

>

> Mr. Burtle:

>

> I first complained to the system operators (Con Edison and Ambient
> Corporation)

> as follows:

>

> March 30, 2004: Phone complaint to Con Ed customer service. They gave
> me the US mail address to send my complaint to.

>

> March 31, 2004: Written complaints to Con Ed and Ambient were mailed.

>

> April 6, 2004: First communication received in response to my
> complaint from a P.E. hired to represent Ambient Corporation.

>

> To date, Con Ed has never acknowledged nor responded to this
> complaint.

>

> I have worked with Ambient and with FCC staff on this issue since
> then. Your files should indicate the history of this, including my
> formal complaint sent to

> you on June 22, 2004 on the advice of Riley Hollingsworth to whom I
> originally

> sent my formal complaint on June 11, 2004. I also sent these same
> formal

> complaints via US mail.

>

> Alan Crosswell

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> James Burtle wrote:

>

>>
>> Dear BPL complainant,
>>
>> The FCC has received your complaint of interference from a
>> Broadband-over-Power Lines (BPL) to amateur radio. The
>> Commission's policy is that parties who believe they are
>
> receiving
>
>> interference from a BPL system should first refer their
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> complaint
>
>> to the system operator in order to give the operator an
>> opportunity to remedy the problem.
>>
>> You may have previously received an e-mail notice from me that
>
> the
>
>> Commission has received your complaint. If so, please note that
>
> I
>
>> am sending this message to several complainants because I
>
> recently
>
>> discovered that I have had a problem with my e-mail software.
>> Some of the messages that I sent were, in fact, not transmitted.
>
>
>> I apologize if this message is the second e-mail that you have
>> received acknowledging your complaint.
>>
>> Jim Burtle
>>
>>
>
>

James Burtle

From: Steve Martin
Sent: Thursday, October 07, 2004 10:55 AM
To: Bruce Franca; Alan Scrim; Alan Stillwell; James Burtle; Andrew Leimer
Cc: Rashmi Doshi; William Hurst
Subject: Briarcliff Manor BPL--New complaint

Below is a new email from our Briarcliff Manor complainant and my "Thanks for the update". Bottom line is that the 14 MHz band where he initially complained now looks good, but he is starting to look at other amateur bands and finding interference. His latest log entry on his website is as follows:

"10/06/04 19:30

14.208 heard not discernible interference (remember my ignition noise is about S5) on Dalmeny to Poplar, Pleasantville Road north to Chappaqua Road, across 9A to Fuller, down Fuller, left on Whitson, right on Burns back to Chappaqua. At Chappaqua and North State traffic light I switched bands to 15 meters and S7 QRM appears at 21.340 on an antenna that is nowhere near resonant for this band and proceeds from the intersection clear across Route 100 and even a little way up Carleton where the power lines are underground. So they cleaned up 20 meters by moving the harmful interference to 15 meters. Or maybe it was always there as I was concentrating on 20 meters. Nice try. No cigar."

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

-----Original Message-----

From: Steve Martin
Sent: Thursday, October 07, 2004 10:52 AM
To: 'Alan Crosswell'
Subject: RE: BPL in Briarcliff Manor

Alan,
Thanks for the update

Steve Martin

-----Original Message-----

From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Wednesday, October 06, 2004 9:52 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

I've updated my weblog at <http://www.columbia.edu/~alan/bpl>. Looks like they've notched the interference on 14 MHz (as well as I can tell with an S5 ignition noise level from my car) but it appears that the interference is there on 21 MHz. This is the first time I've checked on a band other than 14 MHz. I guess I'll be unscrewing the 20 meter antenna and screwing in some of the others in my collection to see where there's still unremediated harmful interference....

/a

Steve Martin wrote:

> Alan,
> Ambient tells me that by the end of the workday today, they should

> have implemented a fix to a device on North State Rd that was not
> properly notched previously. They said that, if you still see
> interference after that time, they would appreciate any information
> you can provide as to where it is strongest.

> Thanks,

> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046
> (301)362-3052

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> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Thursday, September 23, 2004 2:11 PM
> To: Steve Martin
> Subject: Re: BPL in Briarcliff Manor

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> Ambient claims
> they've applied the change and I'll drive the route again.

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> /a

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>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>7435 Oakland Mills Road
>>Laurel, MD, USA 21046

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>>Sent: Monday, September 20, 2004 7:04 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor

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>>>Steve Martin
>>>Technical Research Branch
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>>>*** Non-Public: For Internal Use Only ***
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>>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>>Sent: Wednesday, August 25, 2004 10:01 AM
>>>To: Steve Martin
>>>Cc: Riley Hollingsworth
>>>Subject: Re: BPL in Briarcliff Manor
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>>>Steve,
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>>>>meet with you and show you my mobile station. It's not all that
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>>>>Thanks.
>>>>/a
>>>
>>>
>

James Burtle

From: dgsvetan@rockwellcollins.com
Sent: Thursday, October 07, 2004 2:51 PM
To: Anh Wride; Alan Stillwell; Riley Hollingsworth; James Burtle
Cc: w1rfi@arrl.org
Subject: BPL Notching Effectiveness



pic22190.jpg (33 KB)



pic01842.jpg (31 KB)



Communication Receiver Charact..

All recipients,

I sent the message below to Ms. Wilkerson earlier today. I believe that the experiences with the Alliant Energy BPL trials in Cedar Rapids, IA, provide clear indication that notching of BPL spectrum, as presently done, is not, and will not be, a viable means to mitigate interference to Amateur Radio operators and other users of the HF and low VHF spectrum. Further, keep in mind that these unacceptable interference levels were occurring at distances of about 180 meters from the active BPL node, a far greater distance than will be the case for BPL riding down neighborhood power lines on every residential street and alley, thus likely passing within 10 or 20 meters of Amateur station antennas.

Thank you for your consideration of the information.

Dale Svetanoff

----- Forwarded by Dale G Svetanoff/CedarRapids/RockwellCollins on 10/07/2004 01:26 PM -----

Dale G Svetanoff	To:	Sheryl.Wilkerson@fcc.gov
10/07/2004 11:55	cc:	(bcc: Dale G
Svetanoff/CedarRapids/RockwellCollins)	Subject:	BPL Notching Effectiveness
AM		

Dear Ms Wilkerson:

I am the EMC engineer who performed the RFI investigation at the home of Mr. James Spencer, licensee of the Amateur Radio Call WOSR, here in Cedar Rapids, IA. As you probably know, Alliant Energy conducted a BPL trial here in the Spring of this year. Mr. Spencer's ability to conduct two-way HF communications was adversely affected by the BPL signals, and that was the situation which led to my making test readings at his station location.

Briefly, station WOSR is located about 180 meters from the nearest active BPL node of the trial system. Interference from the trial BPL system lasted the entire time that the system was active, which was from late March through late June, 2004. Alliant Energy, and their equipment vendor, Amperion, did employ both frequency notching and system signal transmission level adjustment during the trial period, with varying degrees of effectiveness, and none of it successful at eliminating harmful levels of interference within the assigned Amateur Radio HF bands.

Here are two examples from the Test Report that I wrote on behalf of the Cedar Rapids BPL Steering Committee, and which was submitted to Alliant Energy and the FCC (as part of reply Comments on Docket 04-37):

This first figure shows the spectrum around the 17m Amateur Band, with the plot spanning

17.0 to 19.0 MHz. The 17m Band is denoted by the BLACK line near bottom center of the plot. The BLUE trace was made with the BPL system ON, and the YELLOW trace was made with the BPL system switched off (with due thanks to Alliant Energy). Note that there is a decrease in the blue trace at the lower frequency end of the 17m Band, and I believe that decrease to be an attempt to notch the band. However, please also note that the notch does not extend across the band and that the deepest part of the notch is actually below the 17m Band, making the notch's value worthless. The YELLOW signals are partly due to skywave signals (the traces were taken in late afternoon, when 17m would support skywave propagation) and partly from power line noise, a long standing problem at WOSR.

(Embedded image moved to file: pic22190.jpg)

The figure below shows the area just below and in the 10m Amateur Band. (The 28.0 to 29.7 MHz band is denoted by a black line on the plot.) Again, BLUE trace is BPL ON, and YELLOW is without BPL. In this plot, most of the yellow signals are skywave signals. Please note the following about this plot:

1. The notching missed again. Although most of the 10m band has reduced BPL signal, the lower 100 kHz of the band is receiving full BPL signal strength.
2. The notching is NOT deep enough. Note that most of the yellow signals are of equal or lower amplitude than the notched BPL signals. It is those areas where communications are NOT possible and THAT is harmful interference!
3. In both this plot, and the one above, I added a MAGENTA trace line to the plot. That trace is at a level which represents 1 microvolt of signal in a 50 ohm system, or -107 dBm. The reason I added that trace is because most communication receivers are able to achieve somewhere around a 10 dB signal-to-noise ratio (or better) at 1 microvolt input. That is a very good number for conducting communications. HOWEVER, IF THERE IS ON-CHANNEL INTERFERENCE AT LEVELS OF 1 MICROVOLT OR MORE, THEN NO COMMUNICATIONS ARE POSSIBLE BECAUSE THE USABLE SIGNAL-TO-NOISE HAS BEEN REDUCED TO NEAR 0 dB.

(Embedded image moved to file: pic01842.jpg)

I submit my point #3, above, as the reason for my saying that notching to the levels presently achieved does not work. The in-notch signals would have to be about 20 to 30 dB LESS than they are in the above examples in order to be effective.

Just so that there is no confusion on anyone's part about the above plots, let me state the following:

- A. All plots were taken at station WOSR using Agilent spectrum analyzers and saved onto floppy disc. Date and time stamps, with serial number of the spectrum analyzer, are available for all files.
- B. All plots were made using the antennas and transmission lines of station WOSR - NOT compliance measurement antennas at 3m or 10m from the power lines. The measurement bandwidth of the spectrum analyzers was set at 3 kHz, NOT the compliance measurement bandwidth. That is because communication receivers use bandwidths of between 2 kHz and 3 kHz for voice SSB signal reception. The object of the testing was to duplicate what a communication receiver "sees" when BPL signals are within its tuned range.
- C. The performance of the Agilent spectrum analyzers, at 3 kHz bandwidth, was within one (1) order of magnitude for signal sensitivity with respect to communication grade receivers. All plotted signals were more than 6 dB above the instrument noise floor.

I am attaching a file (extracted from the Cedar Rapids BPL Steering Committee report) that contains performance charts for modern communications receivers, as well as some of years past. Please note either the rated sensitivity levels or the levels at which acceptable signal-to-noise performance is achieved, but ONLY if there is no on-channel interference present. The actions and statements by the Commission to date on the BPL issue have been centered almost solely on radiated emissions compliance of the BPL systems and NOT on interference issues to spectrum users. Those users have communication antennas and receivers, not compliance antennas and spectrum analyzers. The situation at WOSR more

than amply demonstrates why notching does not work and why it will not work in its present form. It also should be an indicator of what will happen when BPL signals are even closer to spectrum users than the 180m separation at this site.

Thank you for your consideration of this information.

Sincerely,

Dale Svetanoff, Amateur Radio Licensee WA9ENA
N.A.R.T.E Certified EMC Engineer, Cert. # EMC-001549-NE

<dgsvetan@rockwellcollins.com>

(319) 295-4928 Office
(319) 462-5984 Home

(See attached file: Communication Receiver Characteristics.doc)

*Briarcliff Manor***James Burtle**

From: Steve Martin
Sent: Thursday, October 07, 2004 11:05 AM
To: 'Ram Rao'
Cc: Yehuda Cern; Aron Viner
Subject: RE: Response to your email

Ram

Thanks for the update. The latest entry on Alan Crosswell's website (<http://www.columbia.edu/~alan/bpl/interference.txt>) is as follows.

"10/06/04 19:30

14.208 heard not discernible interference (remember my ignition noise is about S5) on Dalmeny to Poplar, Pleasantville Road north to Chappaqua Road, across 9A to Fuller, down Fuller, left on Whitson, right on Burns back to Chappaqua. At Chappaqua and North State traffic light I switched bands to 15 meters and S7 QRM appears at 21.340 on an antenna that is nowhere near resonant for this band and proceeds from the intersection clear across Route 100 and even a little way up Carleton where the power lines are underground. So they cleaned up 20 meters by moving the harmful interference to 15 meters. Or maybe it was always there as I was concentrating on 20 meters. Nice try. No cigar."

What is the status of the 15 meter amateur band in your installation?

Thanks

Steve Martin
Technical Research Branch
FCC Laboratory
7435 Oakland Mills Road
Laurel, MD, USA 21046
(301)362-3052

-----Original Message-----

From: Ram Rao [mailto:rrao@ambientcorp.com]
Sent: Wednesday, October 06, 2004 11:09 PM
To: Steve Martin
Cc: Yehuda Cern; Aron Viner
Subject: Response to your email

Dear Steve,

While Yehuda is away for the holidays, I am responding to your email to him on Friday, 9/24.

Attached are the results of the measurements taken at Briarcliff Manor (NY) BPL deployment after Ambient's new software was installed. The goal of the latest upgrade is to demonstrate the advanced notching capabilities of our PLC system in the radio amateur bands. The measurements were recorded with Agilent E7403 spectrum analyzer, 32 dB preamplifier and 2 m high portable resonant dipole antenna for 28 - 29.7 MHz and 14.0 - 14.35 MHz bands.

The same equipment with 3 m high loop antenna was used to record the emissions in the 3.5 - 4.0 MHz band.

10/12/2004

The measurements were conducted done at the different locations of the injection devices directly under the power lines.

As it can be seen from attached graphs, the emissions from Ambient BPL system was removed or mitigated by at least 25 dB in the frequency bands, allocated for radio amateurs. Our observations were also confirmed with an ICOM IC-706 amateur transceiver.

Please let us know if you have any questions.

Best regards,

Ram

<<TRACE126_2.pdf>> <<TRACE111_2.pdf>> <<TRACE118_2.pdf>>

Ram Rao

Ambient Corporation Voice: +1.617.332.0004 Ext. 211
79 Chapel Street Cell: +1.617.519.5800
Newton, MA 02458 Fax: +1.617.332.7260

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James Burtie

From: Steve Martin
Sent: Thursday, October 07, 2004 10:55 AM
To: Bruce Franca; Alan Scrimie; Alan Stillwell; James Burtie; Andrew Leimer
Cc: Rashmi Doshi; William Hurst
Subject: Briarcliff Manor BPL--New complaint

Below is a new email from our Briarcliff Manor complainant and my "Thanks for the update". Bottom line is that the 14 MHz band where he initially complained now looks good, but he is starting to look at other amateur bands and finding interference. His latest log entry on his website is as follows:

"10/06/04 19:30
14.208 heard not discernible interference (remember my ignition noise is about S5) on Dalmeny to Poplar, Pleasantville Road north to Chappaqua Road, across 9A to Fuller, down Fuller, left on Whitson, right on Burns back to Chappaqua. At Chappaqua and North State traffic light I switched bands to 15 meters and S7 QRM appears at 21.340 on an antenna that is nowhere near resonant for this band and proceeds from the intersection clear across Route 100 and even a little way up Carleton where the power lines are underground. So they cleaned up 20 meters by moving the harmful interference to 15 meters. Or maybe it was always there as I was concentrating on 20 meters. Nice try. No cigar."

Steve Martin
Technical Research Branch
FCC Laboratory
*** Non-Public: For Internal Use Only ***

-----Original Message-----

From: Steve Martin
Sent: Thursday, October 07, 2004 10:52 AM
To: 'Alan Crosswell'
Subject: RE: BPL in Briarcliff Manor

Alan,
Thanks for the update

Steve Martin

-----Original Message-----

From: Alan Crosswell [mailto:alan@columbia.edu]
Sent: Wednesday, October 06, 2004 9:52 PM
To: Steve Martin
Subject: Re: BPL in Briarcliff Manor

Steve,

I've updated my weblog at <http://www.columbia.edu/~alan/bpl>. Looks like they've notched the interference on 14 MHz (as well as I can tell with an S5 ignition noise level from my car) but it appears that the interference is there on 21 MHz. This is the first time I've checked on a band other than 14 MHz. I guess I'll be unscrewing the 20 meter antenna and screwing in some of the others in my collection to see where there's still unremediated harmful interference....

/a

Steve Martin wrote:

> Alan,
> Ambient tells me that by the end of the workday today, they should

> have implemented a fix to a device on North State Rd that was not
> properly notched previously. They said that, if you still see
> interference after that time, they would appreciate any information
> you can provide as to where it is strongest.

> Thanks,

> Steve Martin
> Technical Research Branch
> FCC Laboratory
> 7435 Oakland Mills Road
> Laurel, MD, USA 21046
> (301)362-3052

> -----Original Message-----

> From: Alan Crosswell [mailto:alan@columbia.edu]
> Sent: Thursday, September 23, 2004 2:11 PM
> To: Steve Martin
> Subject: Re: BPL in Briarcliff Manor

> Steve,

> Last night I saw an improvement on 14 MHz on Dalmeny Road. I saw
> S9+10 QRM on North State road east of Rt 9A. I also have not looked
> on other amateur bands
> (yet). I do have mobile antennae for 80 and 10 m in addition to the
> 20 m hamstick I usually drive around with. Please let me know when
> Ambient claims
> they've applied the change and I'll drive the route again.

> Thanks.

> /a

> Steve Martin wrote:

>>Alan,

>>Our testing in Briarcliff Manor identified two specific problems with
>>notching of the 20-meter amateur band as implemented in the BPL
>>installation at the time of our test. One problem was addressed while
>>we were there, and I understand that the other one has been addressed
>>within the last few days, but has not yet been tested by the provider.
>>Pending hearing the results of such tests from the provider, we are
>>interested in knowing whether your observations indicate an

> improvement.

>>Thanks

>>Steve Martin
>>Technical Research Branch
>>FCC Laboratory
>>7435 Oakland Mills Road
>>Laurel, MD, USA 21046

>>-----Original Message-----

>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>Sent: Monday, September 20, 2004 7:04 AM
>>To: Steve Martin
>>Cc: Riley Hollingsworth
>>Subject: Re: BPL in Briarcliff Manor

>>Steve,

>>
>>I am still waiting to hear this information from FCC HQ staff. Please
>
>
>>make sure I get a report back ASAP. There is still harmful
>>interference caused by this system, including making it difficult to
>>hear the Hurricane Watch Net
>
> on
>
>>14.325.
>> If this BPL service extends to my street, I fear that I will not be
>>able to participate in emergency communications with low power
>>stations (e.g.
>
> on
>
>>battery) which I otherwise might be able to today.
>>
>>Thanks.
>>/a
>>
>>
>>Steve Martin wrote:
>>
>>
>>>Alan,
>>>Thanks for the update. I also notice that you've updated your log
>>>this week indicating S9+10 dB interference levels in the 20m band.
>>>
>>>Two of us visited Briarcliff Manor last week. The FCC staff members
>>>in charge of BPL at FCC headquarters are out of the office this week,
>>>but I will present our findings to them after their return, and you
>>>can expect to hear from them subsequently.
>>>
>>>Thanks for keeping us informed.
>>>
>>>Steve Martin
>>>Technical Research Branch
>>>FCC Laboratory
>>>*** Non-Public: For Internal Use Only ***
>>>
>>>
>>>-----Original Message-----
>>>From: Alan Crosswell [mailto:alan@columbia.edu]
>>>Sent: Wednesday, August 25, 2004 10:01 AM
>>>To: Steve Martin
>>>Cc: Riley Hollingsworth
>>>Subject: Re: BPL in Briarcliff Manor
>>>
>>>
>>>Steve,
>>>
>>>I'm back from vacation and the harmful interference is still there.
>>>/a
>>>
>>>Alan Crosswell wrote:
>>>
>>>
>>>
>>>>OK, I've posted my latest log including QRM up to S9 covering WWV
>>>>15 MHz experience this morning on the way to the train station. It
>
> seems
>
>>>
>>>>the noise is now worse along North State Rd and better but not