

From: Ed Bolton <wa3pun@ezonline.com>  
To: <ecfs@fcc.gov>  
Sent: Friday, August 20, 1999 3:17 PM  
Subject: LOW-POWER BROADCASTING - REPLY TO DOCKET 99-25

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Dear Sirs:

This is in reply to Docket 99-25, with regard to low-power broadcasting. I'm in favor of low-power broadcasting, provided that certain limitations are set in place and observed.

First of all, I must emphasize the fact that I'm in favor, not only of low-power FM broadcasting, but of AM low-power broadcasting, as well.

Since the Communications Act has been passed by Congress, multi-million-dollar corporations have been swallowing up small broadcast radio stations, all over the country. In the big cities of the USA, one point of view is increasingly becoming the rule, on broadcast radio. This is unhealthy, because it rules out diversity of opinions from the public, and amounts to a dictatorship, which represents the very opposite of the principle of Freedom of Speech, upon this country was originally founded.

It also locks out the dissemination of information of direct interest to any given local community, and caters only to the commercially-enriching coffers of the ownership of the radio stations under their control, rather than the public interest.

Low-power broadcasting is a way out of this undesirable state of affairs, for it welcomes diversity of opinion, as well as directs itself specifically to the local area within its signal-path.

As far as the issue of interference to already-licensed radio stations is concerned, I feel that although, in some few cases, this may be a legitimate concern, on the part of the already-licensed big-power stations, I am nevertheless of the opinion that some now-licensed big-power stations are just USING this excuse to "choke out" the low-power initiative.

Therefore, before FCC acts on a complaint from a big-power radio station, it should be sure that the complaint is really justified in fact, by requiring the complainant to personally DEMONSTRATE to the FCC representative that the alleged interference is indeed taking place. The REAL reason for its complaint may be that the owner is simply JEALOUS over any revenues or listenership that the low-power station may be commanding, through its better programming!

A simple way for low-power broadcasting to proceed is to allow the operator first to select a frequency that he feels is not being used; then to demonstrate to the FCC representative that he can transmit on that frequency without interfering to any other station already operating on that frequency. If he can successfully do this, then I believe he should be given the license to continue to do so, on that frequency.

Of course, the usual program-content limitations should be in place. Not

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inciting to riot, broadcasting Nazi propaganda, etc., etc.

I suggest there be a PROVISIONAL license first issued, so that the operator can prove that his station is operating under the required rules, without interfering to another established station, for a given period of time --- say six months. Thereafter, the permanent license can be issued.

Once again, let me emphasize that low-power broadcasting should NOT, by any means, be limited only to FM. There are plenty of opportunities on the AM broadcast band, as well, for low-power broadcasters.

I further suggest that the article of August 18th, 1999, page 5, by Scott Fowler, in RADIO WORLD, recently written and published, can serve as a workable guide for implementing low-power broadcasting as an FCC-sanctioned public service. He has done an excellent job of working out most of the details, in how low-power broadcasting can be done.

Yours truly,

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*August 22, 1999*

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GUEST COMMENTARY

# LPFM Without Interference

by Scott Fowler

The most critical technical issue for low-power radio is whether we need to protect existing stations on second- and third-adjacent channels. If these protections are maintained, few low-power stations will be possible in urban areas. If protections are dropped, will spectrum degradation result?

We should be concerned about spectrum integrity. We are degrading it as we add more stations. We should, however, admit that this is largely our fault in pursuit of our self-interest.

No reasonable person would suggest relaxing co-channel and first-adjacent protections to permit LPFM. Consider how many existing stations would be put out of business or powered down to comply with the existing rules for co-channel and first-adjacent channel protection.

It's easy to blame the FCC; they let this happen, right? However, the FCC is subject to our political will. We bend the rules in our favor and often justify our self-interest by arguing in the public interest.

### Acceptable Interference

I favor low-power service, but I do not pretend that there will be no interference. When you build an antenna and broadcast, somebody will receive interference. It does not matter what the contour studies show or what the field strength ratios are.

When I argue for low-power service, I am also arguing for more interference. How much interference is acceptable?

There is discussion about eliminating second- and third-adjacent protection because receivers have improved. Strong closely spaced signals still create intermodulation in most receivers. Imagine the problem if we spaced stations in all markets two channels apart instead of four?

There are two other significant argu-

ments for eliminating second- and third-adjacent channel protection. One is based on the method of signal strength ratios that often predicts minimal interference. However, the method ignores multipath and shadowing effects, and was intended to predict interference near the edge of service.

Waiver requests for contour overlap in unpopulated fringe areas are now requested within city grade contours. The FCC has shown tolerance for translator waivers because the translator must shut down if any actual interference is caused. However, that places the burden of enforcement on the existing service, which must file a petition to deny or later prove a problem.

### Restrictive, not preclusive

The success of squeezing in these signals has led to a second argument that has been generalized to full-power stations. Plenty of stations are short-spaced on second- and third-adjacent channels. The argument is then made that a lack of interference complaints implies no interference.

Few people will report interference to the FCC. However, we eagerly reach the conclusion that serves our self-interest.

We can retain second- and third-adjacent protection and permit many low-power stations by changing the protection from preclusive to restrictive. Instead of a yes-or-no criterion, allow second- and third-adjacent stations, but place specific limits on their power. This is a win-win solution for broadcasters and low-power advocates.

The power limits on a low-power second- or third-adjacent channel station should be determined by three factors. They are the power of an affected adjacent channel station, the location of signal overlap and whether the overlap is second- or third-adjacent.

Many low-power FM translators oper-

ate with minimal impact within the same community as a second- or third-adjacent local station; most would conform to my proposed limitations. A second-adjacent 1,000 W station may be acceptable to a 100 kW station. If you are broadcasting with 500 W from a mountain, then a second-adjacent 100 W station downtown in your community may be too much.

What will happen to your listener's reception around a low-power station if your signal suffers multipath nulls every few feet or your signal is shadowed by a nearby hill? Good technical rules need to reflect reality and be valid at their limits.

### The proposal

Our coverage areas are like Swiss cheese. We compensate with plenty of power and aggressive audio processing. Interference to second- and third-adjacent channel stations will result as you increase the power of the interfering station, decrease the power of the affected station, increase the number of other in-band signals and add receiver and propagation effects.

My proposal for second- and third-adjacent channel protection is shown in the table. Protection is calculated from the ERP of the existing second- or third-adjacent station and depends upon the type of contour overlap.

► LOW POWER, continued from page 5

These protections can be applied to AM. There are more than 700 low-power radio stations on AM; they are Traveler's Information Service (TIS) stations. However, you have to be a government entity to own one.

### Allow LPAM

I ask the FCC to reconsider its arguments against low power on AM. I strongly advocate an AM service and believe FM spectrum will be insufficient. Some advocates of low-power FM argue that AM antennas are impractical. I observe TIS stations along roadways that use antennas mounted on utility poles. They cover a couple of miles with 10 W.

If you want to serve the local community rather than your self-interest, then why not on AM? The expanded

Stations need greater protection, not less, when the other adjacent station is in the same community. This is because receiver problems are more likely to occur where both signals are strong; the resultant interference may also affect the reception of other stations.

Here is an example of the method. A Class B station with 15 kW at 900 feet would limit a new second-adjacent station in the same community by 20 dB, to 150 W. I think the existing station can live with that. We have created space for a few microstations, or an LP100, or a full-power LP1000 if an antenna height of 500 feet is used.

Stations from a few watts to 100 kW exist. We must consider these ranges of power in our analysis. Stations with less power need more protection. Therefore, we should provide the same consideration for low-power services. They will be subject to more interference from existing stronger stations and from other low-power stations too.

Also consider your station's ability to monitor its air signal from your studio. Suppose an LP1000, second-adjacent to your station's frequency, is built on a nearby tower. Your studio is outside their blanketing contour, but you cannot monitor your signal properly. These situations could result if we allow second- and third-adjacent stations in the same community. I also propose protection for studio sites inside their city grade contour.

See LPFM, page 12 ►

## An LPFM Proposal

AM band may be the best place of all. Many TIS stations occupy this band because small chunks of spectrum are easily found there. Sufficient power, perhaps up to 100 W daytime, would permit low-power stations to serve the public interest on AM too.

I welcome comments and questions on this subject. If you have e-mail, I can send you my comments on MM 99-25 filed with the FCC (Word 6.0 format, 63 pages).

■■■

Scott Fowler was technical director at WXPN(FM) at the University of Pennsylvania in Philadelphia for eight years; he is now a free-lance engineer and consultant who specializes in FCC engineering studies. Reach him at (610) 562-4761 or by e-mail at fowler@enter.net

RW welcomes other points of view.

ERP of an existing primary station is ...	and overlaps the following contour of the proposed LPFM ...	the existing station's ERP must be ...
54 dBu (Class B)	74 dBu	10 dB
57 dBu (Class B1)	77 dBu	10 dB
60 dBu (other classes) <sup>1</sup>	80 dBu	10 dB
70 dBu (all classes)	70 dBu	20 dB
54 dBu (Class B)	94 dBu	0 dB
57 dBu (Class B1)	97 dBu	0 dB
60 dBu (other classes) <sup>1</sup>	100 dBu	0 dB
70 dBu (all classes)	70 dBu	0 dB

<sup>1</sup> Conditions include: