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1.0.1 OPENING STATEMENT

The Commission is to be commended for taking the first step toward restoring equity of ownership to the airwaves. It is hoped that the FCC can implement a workable and practical form of LPFM, in a manner that discourages abuse by large corporate monopolistic influences, while providing opportunities to small communities and individuals having an excess of creative talent, from which, their respective communities could benefit.

1.0.2 FOREWORD

Before I begin my comments, it is necessary to preface them with the following statement: the comments contained herein are flawed by necessity of working within the framework of current Federal Communications Commission rules. At best, they are a compromise so that a favorable adjustment to existing regulations is better than no adjustment at all.

Before I get into my comments, I find it necessary to state that the doctrine of prior restraint, which has been the cornerstone of Federal Communications Commission law, is flawed on the basis that it assumes that all broadcasters are guilty before they can demonstrate innocence. Prior restraint interferes unnecessarily with free commerce and capitalism. This notion is about as ludicrous as preventing anyone from owning a newspaper lest they might libel someone. It is my firm belief that individuals should be free to construct radio stations with the prerequisite that they can demonstrate that their operation will not cause objectionable or intentional interference to other stations pre-existing.

Since the above situation is not the case today, these comments will be limited to making the best use of the current framework provided by Federal Communications Commission law.

2.0.1 BACKGROUND

Since the 1996 Telecomm Act, radio station ownership has consolidated. The result has been hyper-inflated station prices and a shift to monotonic, plain vanilla programming that is unvaried across the country. Local

community interests are no longer reflected in the broadcasts in America today. Niche musical interests are disregarded, and it is impossible for the talented programmer to obtain airtime on any of the current crop of radio stations.

2.0.2 CONCERNS AND CAVEATS

As a professional engineer working in the radio broadcast industry for several years, I have overheard a number of comments from broadcast decision-makers in response to this low-power FM proposal. Based on a lot of negative comments by these professionals, it is apparent that a backlash counter strategy is being planned by many of these broadcasters. This proposal must incorporate safeguards against such plans. These plans include commercial and noncommercial educational stations applying for multiple low-power FM licenses, if they become available, and using them to replace any translators that might get bumped by higher priority low-power FM stations coming onto the air. Some broadcasters are quietly discussing the intent to have friends and family members apply for licenses, then turn the control of the licenses over to the commercial stations they are associated with.

Another concern is commercial interests. I have spoken with the CEO of one corporation who has explicitly stated that he will buy up as many low-power FM licenses as he can obtain and plans to use them to promote his company's products on the radio.

It is my personal concern that in communities containing educational institutions, which include high schools as well as universities, that such institutions will be given more weight than individuals when applying for one or more channels in a given geographic location. From listening to Commissioner Kennard's comments on one noncommercial radio station recently, I became concerned over this prospect because he never mentioned individual licenses for radio stations owned by individual persons and not institutions like colleges.

In order to restore the balance of influence by individuals as compared with influence by large educational institutions and commercial interests, the Federal

Communications Commission needs to take action to make certain that individuals are able to get licenses for low-power FM radio stations. This may require a proactive approach to the situation. I opened this comment/filing by saying that these comments are necessarily-flawed. The suggestion of a proactive effort to "correct" the balance of broadcast station ownership to favor individuals runs counter to the principles of pure Capitalism, but because I am confining these comments to the framework and system of rules established by the FCC, it becomes necessary suggest a regulatory solution to the problem of equitable ownership of broadcast stations.

A further concern is the proliferation of religious translators. Like the corporate interests, it is almost self-evident that religious ministries will be clamoring to buy up as many low-power FM licenses as possible.

In the event that any of the above conditions is allowed to occur on a large-scale, the entire spirit of the low-power FM proposal will have been circumvented and defeated. Therefore, and it is within the necessarily flawed framework of this proposal, it appears essential that certain safeguards be placed into any new or proposed rules for licensing low-power FM, such as to prevent abuse of this class of licenses.

A brief proposal of these safeguards is as follows:

1. Applicants for LPFM licenses must provide evidence that they will be living within the station's coverage area. This could be liberally defined as the 34dBu contour. Long-distance owners should be expressly prohibited, as such ownership opens the floodgates for more religious networks and corporate interests to further saturate the broadcast band, to the detriment of individuals and diverse programming.
2. That no trafficking of LPFM applications, construction permits, or completed, licensed facilities and their licenses, be permitted.
3. That LP-10 and LP-100 licenses be granted only to individuals and small organizations. That LP-1000 licenses be made available to, but not reserved for, individuals and small organizations, but also be available for small commercial interests having a gross income of not more than \$500,000 annually.

2.0.3 LICENSABILITY OF FORMER "PIRATES"

With regard to the issue of amnesty for former "pirates," I note the strong opinions of parties both pro and con: Many industry professionals falsely argue that former radio "pirates" will not make law-abiding licensed broadcasters. This is simply untrue. The reason is that the "pirates" were excluded entirely from being able to participate in legally licensed broadcast station ownership. It is a simple matter of accusing one of breaking the rules of the "game" when one is, by nature of regulation, barred

from legally participating in the "game." The natural outcome is civil disobedience. I feel strongly that if these individuals had the opportunity to participate legally in broadcast ownership, then they would never have become unlicensed broadcasters. Therefore, I recommend that the commission consider licensing former "pirates" who apply for LPFM licenses. The pride of ownership of a legally licensed broadcast station will drive the small station owner to excel in terms of quality of operation, adherence to FCC rules, and general ethical behavior. The reason such an individual cannot, under the present rules, is because he has not been given a fair chance to participate. Access to the airwaves has become strictly a "muscle game," where he who has the most muscle (ie., money) wins. This type of high stakes "game" does not seem consistent with the role and purpose of the FCC as mandated by Congress.

It must be pointed out, that a major flaw in FCC licensing structure over the years has left the door wide open for piracy: that policy is one of omitting the allocation of a portion of the FM band for "amateur" broadcasting. While one may argue that "HAM" amateur radio already exists, it is not a creative medium and broadcasting is expressly prohibited on that type of service. Something needs to be done to rectify this inequity. LPFM seems to be the most appropriate solution, as it provides access to creative interests on an already established band, for which there are millions of radio receivers in use.

2.0.4 FINANCIAL SUBSISTENCE OF LPFM STATIONS

The next issue is in reference to the matter of the proposed low-power FM licensees means of financial subsistence. A number of low-power FM proponents have expressed a desire for the prohibition of commercial advertising on this type of station. This notion is rather shortsighted, as it removes the primary means by which a station can support itself. In addition, it further removes the station from being of service to small local area businesses who cannot afford advertising rates on full power stations. There is little doubt that if the FCC applies even a small subset of the requirements that must be met by full power commercial stations, then these new LPFM stations will need to raise substantial revenues to support themselves. Therefore, I strongly urge the commission to include acceptance of some type of minimal commercial advertising on LPFM stations.

3.0.1 TECHNICAL CONSIDERATIONS

Turning to technical concerns associated with this proposal, there are several matters related to both measurement techniques and economics which I will cover below:

3.0.2 CONSISTENCY OF THE RULES

The Federal Communications Commission is considering relaxing second and third adjacent channels separation requirements. This is certainly a step in the right direction in most situations. However, there is some confusion about tower to tower spacing between proposed low-power FM facilities and full power broadcast stations. I note that with existing licenses of translators and many class A FM stations, co-channel tower to tower spacing is very close. It is for this reason that I find some of the low-power FM spacing proposals to be contradictory. There are numerous instances where I can cite unused FM channels which bear a complete absence of signal activity under normal weather conditions, yet there are no LPFM-assignable channels allowed on these frequencies based on most of the proposed low-power FM models for tower to tower spacing.

It appears that these spacing models are not taking terrain data into account. In many cases, stations may be spaced several miles short of the required distance, yet enjoy complete protection from contour overlap, due to a range of mountains or other land mass obstacles that geographically divide the two service areas. On the other hand, I look at many current FCC channel allocations, and I can see extensive co-channel interference and overlap between service contours. If an existing licensed station is off the air momentarily because of an emergency, I can clearly see the co-channel station in many cases. So it appears that we have a situation where the low-power FM proposal is applying much stricter co-channels spacing rules than existing full power FM stations already enjoy.

3.0.3 METROPOLITAN PROTECTION ZONES

What also concerns many potential LPFM applicants is that the circle surrounding major metropolitan areas is too large in the proposed rules. I see no compelling technical reason as to why LP FM 1,000 stations cannot exist within 100 kilometers of a metropolitan area. This distance should be shortened to 40 kilometers. The current form of this proposal is flawed because it doesn't take into account the difference in broadcast signal density in various cities. Being 100km from Miami, FL is a lot different than being within 100km of Schenectady, NY.

3.0.4 REQUIREMENT FOR TYPE ACCEPTANCE DEPENDS ON LICENSE CLASS

On the matter of type accepted equipment, I note that the FCC argument of potential interference from non-type certified broadcast transmitters is specious, because the FCC already permits non-type accepted transmitters to be used by amateur radio stations. Anyone who has ever lived within a mile or two of an operating HAM, is well familiar with the terms TVI and BCI. Thus, the argument

that non-type accepted equipment is permissible in HAM bands but not in commercial bands is without merit because no matter what band a transmitter is operated in, it can still produce out-of-band energy. While standards for HAM "home brew" transmitters are lax, in my opinion, I am positive that, if tightened and applied to FM broadcast transmitters, they can be acceptable to the public at large. The implementation of self-certified transmitters could be applied as follows:

Two classes of license for LPFM, dependant upon technical proficiency of the applicant:

1. **Appliance Operator** - This class would require the applicant to either purchase type accepted transmitters, or hire a qualified individual holding the Engineering Class license described in the next paragraph, to build and install the transmission facility. Applicant would have to demonstrate minimal proficiency with requirements now demanded of all FM broadcast licensees, ie., the ability to monitor and determine compliant operation of their transmission facility.
2. **Engineering Class** - This class would require the applicant to possess in-depth technical knowledge in the design and construction of a broadcast transmitter, proficiency in the operation of all test equipment used in the performance measurement of the transmitter, and demonstrated construction skills. This license applicant may be granted the authority to self-certify "home brew" broadcast equipment, provided it is constructed to minimum technical and mechanical standards consistent with good engineering practice.

It is this writer's understanding that the FCC already permits some broadcast equipment makers to self-certify their products. This policy would simply be extended to station owners who demonstrate superior technical competence.

3.0.5 BLANKETING INTERFERENCE & FALSE CONCERNS

Now I will discuss apparent contradictions in current FCC spectrum allocation within the FM commercial broadcast band. Opponents of LPFM defectively argue that adding 10W, 100W and 1,000W FM stations to the dial will degrade the quality of radio reception in their respective areas. If this is so, then why does the FCC permit 50,000W FM stations to exist in populated areas, when the effects of those super power FM stations are detrimental to all radio reception within a 5-mile radius of the large FM station? I have fielded numerous complaints from listeners of a small classical station over recent years. These complaints came from residents living as much as 5.5 miles from a 50kW FM rock music station in the area. The obvious cause of the interference was receiver overload, causing intermodulation products in

the IF stages. Such receivers commonly in use, such as "Walkman" radios, are quite unable to receive channels other than the one local, high power FM station, for this reason. If this kind of gross interference is being permitted, then one can logically deduce that concerns over comparatively miniscule radio signals are unfounded and possibly even ludicrous.

The FCC is aware of the new RFR guidelines, as a matter of course, therefore, it should be obvious to those reading this comment/filing that antenna systems designed to minimize downward local radiation, when applied to LPFM stations, will further reduce or remove the potential for blanketing interference of the nature described above.

3.0.6 POWER REQUIREMENTS VS. ANTENNA HEIGHT & TERRAIN

In regard to the power output of proposed LPFM stations, the FCC needs to take into consideration that many LPFMs are not going to have the benefit of a tower. Many may be forced to rely on a mast, mounted to a chimney, or other short-elevation antenna. This is why some LPFMs will need 1,000 watts of power to serve even a small area of their community. Power requirements vary widely, depending on terrain, interfering signals and antenna HAAT. In mountainous areas, higher power will be needed to fill in shadowed areas, as most of the listeners will be located away from direct line-of-sight path from the transmitter.

Contrastingly, some flat-terrain areas will provide a better signal with 10W of power, than these 1,000W stations tucked away in the hills.

The perceived strength of a station depends on many factors. It is this writer's opinion that multipath signal dropouts serve to degrade the listenability of a signal to a great degree. A 100W transmitter on a hill, but shadowed by the hill to its community below due to inadequate tower structure height, will perform extremely poorly, with unacceptable reception, even 2 miles from the transmitter at the bottom of the hill, in what I'll refer to as the shadow zone. This is due to the fact that over 90% of the signal received is not direct signal (ie., from the transmitter without secondary reflection) but signal that's been bounced many times off of surfaces both organic and man-made and hence greatly attenuated and fraught with phase noise.

Contrast the above situation with a 100W transmitter located in the center of a flat plane: aside from a few buildings over the coverage area, the signal path is unobstructed by substantial signal-absorbing masses and can propagate with minimal attenuation and almost without multiple reflections to induce "flutter" and "picket-fencing" in the mobile receiver.

The conclusion one deduces from the above two paragraphs is that additional power and antenna height is necessary to maintain some degree of satisfactory and consistent reception in rough or mountainous terrain. Signals propagating in such a region are rapidly attenuated, often falling to below 34dBu in many pockets just 2 miles from the transmitter site. The areas of acceptable reception would be mountaintop to mountaintop only, since the low HAG of the predicted typical LPFM antenna would cast a shadow over much of the valley on the downward slope of the terrain that's not "illuminated" directly by the antenna transmitting the signal.

Tower space is prohibitively expensive for LPFM stations, and since power levels must increase as antenna height decreases, it is the opinion of this writer that power levels such as a low-height LP-1000 appear deceptively high, when in fact their coverage areas will, in practice, be lower than a 100W transmitter on a 328' tower. Let the record show that I support LP-1000 licensing, where the population density in the vicinity of the transmitter is low. If there are no residences within 600' of a LP-1000 station, the issue of blanketing interference is a non-sequitur. Furthermore, if low-angle, sharp radiation patterns from high-gain antennas are employed, it is possible to tailor the areas of no interference to take into account local residential population.

Directional antenna systems may be employed in regions where tower-to-tower spacing is short in one direction, but not another. Commercial stations have been employing protection contours and nulling for decades, and these measures can be applied to LPFMs in spectrally tight regions of the country.

5.0.1 CLOSING STATEMENT

The decision to permit LPFM once again, is perhaps a little late in the scheme of the current state of the broadcast industry, but however much damage has been done already, some remedy at this late time is still better than no remedy at all.

It is hoped that the Commission will take a rational approach to the allocation of the spectrum in the future, particularly with respect to commercial broadcasting. There is currently too much evidence of corporate/congressional/agency favoritism, which has skewed the intended aims and goals of the Commission. Docket MM 99-25 is an opportunity to start the slow migration toward correcting this trend.

Respectfully submitted,

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