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22 July 1998

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Office of the Secretary (1800)
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1919 M Street NW
Washington, DC 20554

REPLY COMMENTS: RM-9208, RM-9242, RM-9246

Enclosed are my reply comments in response to comments filed in the above listed proceedings. These comments are also available in machine readable form (html) at http://hallikainen.com/lpfm/comments/reply/Hallikainen.html

Thank you for the opportunity to comment in this proceeding.

Sincerely,

Harold Hallikainen
22 July 1998.

Before the
Federal Communications Commission
Washington, DC 20554

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In the matter of petitions to establish low power) RM-9208, RM-9242, RM-9246
and "event" broadcast stations)

Reply Comments of Harold Hallikainen

1. These comments are filed in response to the comments filed in the above-named rulemakings. The comments raised several interesting issues. I believe they can be categorized as follows:

- Acceptability of petitions
- Need for service.
- Diversity of voices.
- Potential for interference with existing stations.
- FCC workload in licensing and enforcement.
- Spectrum efficiency.
- Licensing procedures
- Preferences for AM or LPTV licensees
- EAS and other full power station requirements
- Provision for unlicensed stations.
- Provision for "event" stations.
- Provision of a low power AM service.

Acceptability of Petitions

2. Several commenters question the acceptability of the petitions. Reasons suggested for immediately dismissing the petitions include the use of nonmetric units (Cosmopolitan Enterprises), lack of specificity of proposed rules (National Public Radio), or even a lack of Commission authority to regulate broadcasting (David Moore). Due to the serious public interest concerns involved, the Commission should initiate a Rulemaking proceeding on its own motion (as specified in 1.411 of the Commission's rules) should it find insufficient merit in the petitions to initiate such a rulemaking.

Need For Service

3. Several commenters (for example, Athens Broadcasting, Bradmark Communications, Carlson Communications, Harlan Communications, etc.) indicated that existing stations provide enough programming to meet the needs of the community (typically listing examples of community service programming), thus no further stations should be authorized. However, in the current regulatory environment, we are not operating under a "planned economy" where a government agency decides what services to offer to the public. Instead, we should let the market decide whether it is being served adequately or not. When arguing for first amendment rights, broadcasters often point to the "print model". I believe the print model is a good goal for broadcasters to use. It is the mass communications medium that was in existence when our constitution was written. Looking to the print model, we find

that the government does not try to determine a need for a newspaper prior to one being permitted to start publishing. Anyone is free to start a newspaper at any time. However, broadcasting, we are told, is different, due to spectrum scarcity. The Commission pretty much said spectrum scarcity is no longer an issue in its decision to throw out the Fairness Doctrine[1]. Spectrum is, of course, limited, but so is newsprint. The scarcity of newsprint determines the price newspapers pay for that newsprint. Similarly, the scarcity of spectrum should determine the price broadcasters pay for use of that spectrum. This scarcity and market forces make someone willing to pay $50,000,000 or more for a major market FM station and $100,000 or less for a small market AM station. I believe these same forces should be used to determine what the public is paid for the use of the spectrum (ideally through auctions of spectrum leases, which would determine the actual market value of the use of the spectrum, instead of use of some arbitrary percentage of sales figure or some other similarly arbitrary figure), as anticipated by 47 USC 309(j)(3)(c). Even though newsprint is scarce, the government does not first determine a need for a newspaper before authorizing its start. Similarly, the Commission should use established interference criteria to determine where a station will fit, and allow such a station to "make a go of it" in the marketplace. Let an individual take the risk of determining whether the market will support another station instead of having the government conduct some study of the issue.

4. Several commenters expressed concern about further division of the advertising and listener base, threatening the finances of the station. I believe this should not be a basis for Commission decision (just as in print, existing newspapers are not protected against new competitors). No one is guaranteed a successful business. Further, broadcasters should gain a large audience due to the excellence of their programming, not due the lack of alternatives.

5. Several commenters (for example, Alan Kline at 3) point out that the petitioners do not present evidence "to demonstrate that there is significant interest on the part of the public to listen to such stations." While providing signals that the public can and will listen to is certainly important, the FCC stated in 43 FCC 570 (1950) (adopting the main studio rule) "We have consistently held that the term 'radio service' as used in section 307(b) comprehends both transmission and reception service. Transmission service is the opportunity which a radio station provides for the development and expression of local interests, ideas, and talents and for the production of radio programs of special interest to a particular community. Reception service, on the other hand, is merely the presence in any area of a listenable radio signal." Thus, it is not merely the needs of the large numbers of listeners that must be considered, radio is also to serve as a means of local expression.

Diversity of Voices

6. The petitions suggest increasing the diversity of ownership of broadcast stations as a reason for the establishment of a low power FM broadcast service. Commenters (for example, National Association of Broadcasters) point out that through consolidation of ownership they are better able to afford to provide programs for minority audiences. They further point out that the courts have questioned the FCC's ownership diversity criteria, pointing out that the Commission has not demonstrated that a minority owned station provides programming directed towards the minority any more than any other station. These two arguments seem to miss the point of diversity of voices.

7. Many commenters pointed out the vast array of community service programming they offer. It must be pointed out, however, that all ideas presented through one licensee are to some degree *filtered* by that licensee. It is, of course, the duty of an editor to edit. Only through having a number of station licensees will a wide range of viewpoints to be heard. *This* is the reason a diversity of voices is important. One person's reasonable opinion is another person's unreasonable opinion. It is the job of the editor (or owner of the station) to edit, but he/she should not then have the government prohibit another "editor" from

presenting a different view.

8. Does the current level of diversity of voices prevent some opinions from being heard? The November 19, 1997 issue of the Wall Street Journal tells of the refusal of ABC, CBS, and NBC to carry an advertisement questioning US economic policy. CNN carried the ad. The three networks did not carry the ad because it may have offended some of their advertisers (the ad questioned American mass consumerism). Constitutional law expert Lawrence Tribe is quoted as saying about the networks, "They know who butters their bread." By not artificially limiting the number of voices (through government regulation), we stand more of a chance that some broadcaster will present unpopular views that deserve the public's attention. It is important to our democracy that we have broadcasters who are not just cheer leaders for the status quo, but are indeed willing to question what we are doing so we do not blindly proceed down a dangerous path.

Potential for Interference with Existing Stations

9 The proposals under consideration would authorize various power levels on channels in the existing FM band. One proposal (RM-9208) would designate a single channel nationwide (and another on AM) for a low power FM service. Other proposals would authorize LPFM stations "where they fit" based upon existing interference criteria, or a new interference standard relaxing adjacent channel considerations and IF separated channel considerations.

10. Petitioners suggest relaxed interference criteria on the basis of improvements in receivers since the standards were established. However, NAB indicates that tests of receivers indicate that the improvements are not as great as the petitioners suggest. Further, NAB and USADR point out that a substantial amount of work has been completed to establish an In Band On Channel (IBOC) digital audio broadcast system. This system has been developed on the basis of the existing adjacent channel protection ratios. Changing the protection ratios at this point would throw out the work thus far completed and would possibly prohibit the completion of an IBOC system.

11. These appear valid concerns. Before there is any relaxation in interference standards due to receiver improvements, a comprehensive test of receivers should be completed to demonstrate that the improvement in receivers will indeed give the public interference free reception within a broadcast station's protected contour. Further, should adjacent channel or IF separated channel interference ratios be changed, that change should not be limited to LPFM. These new interference criteria should also be considered in the allocation of channels for full-power stations.

12. It further appears that changing the interference standards at this point could indeed prohibit the establishment of an IBOC digital audio broadcast service. However, work on this project has been underway for many years, and several more years may be required to get a workable system. Further, just because something *can* be done doesn't mean that it *will* be done. It will be up to the market to determine whether IBOC is actually adopted. Perhaps standard FM is "good enough" for the general public. We have not seen wide acceptance of AM stereo, though it has been available for several years. There is no guarantee that the public will demand IBOC digital audio broadcasting. I believe we should allow a reasonable transition period of perhaps ten years for IBOC to reach some minimum penetration level. If, after the year 2008, sales of IBOC receivers do not represent at least 50% (or some other defined percentage) of total radio receiver sales, we should assume that IBOC is not going to be demanded by the public. At that time, assuming receivers have progressed sufficiently to allow it, we can relax the adjacent channel and IF separated channel interference ratios for all FM stations.

13. Note that the FCC currently authorizes low power FM stations and has interference considerations in

place for these stations. These FM translator stations, authorized under part 74 of the rules, are low power FM stations, but are not authorized to originate programming. The FCC could very simply authorize a low power FM service by removing the prohibition of local origination, just as they did when they established the Low Power Television service. To prohibit local programming on FM translators seems to be against longstanding policies in support of local programming and may raise first amendment questions (is this severe programming restriction necessary to achieve a legitimate governmental interest?). The existing rules (74.1203) provide protection "of the transmission of any authorized broadcast station." Since no mention is made in this rule of protected contour, it appears broadcast stations are to be protected from interference by translators beyond their protected contours (prohibiting a translator from causing interference to a station even if the listener receiving the interference is substantially outside the protected contour). Thus the Commission can dismiss all interference concerns raised by commenters by adopting a low power FM broadcast service through modifying 74.1231 to permit local program origination (as 74.731 does for LPTV stations), since FM translators provide greater interference protection to full power stations than other full power stations provide. However, in the interest of local service, and with no decrease in interference protection for full power stations, the FCC could protect full power stations from translator interference within the full power station's protected contour. This would permit a larger number of local low power stations without compromising a full power station's protected contour.

14. Several parts of the services proposed by the petitions could indeed cause severe interference to existing broadcast stations. These are addressed individually below.

15. The petitions proposed the use of non-FCC approved equipment. One commenter (Media Preservation Foundation) suggested the use of non-approved equipment provided an FCC approved low pass filter was used with the equipment. A low pass filter would attenuate harmonic radiation, but the actual radiated harmonic level would depend upon the harmonic content output by the non-approved transmitter, how that content is attenuated by the filter, and how it is radiated by the antenna. Since the harmonic content out of a non-approved transmitter is entirely unknown, it would not be possible to insure adequate protection against harmonic radiation.

16. A low pass filter would generally only suppress harmonic radiation. It would do nothing to prevent in-band spurious radiation, off frequency operation, or overmodulation. These are all capable of causing significant interference. The equipment required to adequately determine whether a transmitter is meeting FCC specifications is quite expensive. Very few full-power radio stations have this equipment; instead they rely upon FCC approval of the equipment based on tests made by the FCC or the manufacturer. Expecting a low power station to properly complete these tests seems unreasonable. Should a low power station be able to complete the tests, the Commission does have an allowance for individual approval of equipment.

17. I suggest that any transmitter require FCC approval prior to use or marketing.

18. Other than perhaps eliminating protection for full-power stations beyond their protected contour, I don't believe licensed low power FM stations should be permitted unless they meet the FM translator interference criteria.

FCC Workload in Licensing and Enforcement

19. Several commenters opposed to permitting any sort of low power FM broadcast indicate that the workload imposed on the FCC in the licensing and policing of thousands of additional stations would be beyond what the FCC can handle. This is possibly true. Therefore, I propose that licensed LPFM utilize

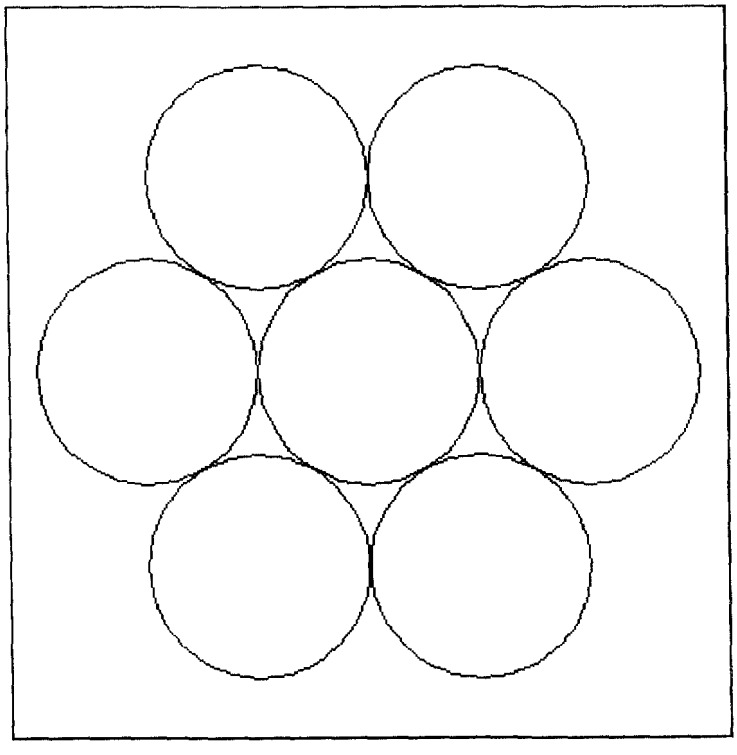
exactly the same procedures currently used for FM translator stations. The FCC has been able to handle this workload. Permitting local program origination is not likely to result in an immediate downpour of applications. Similarly, it appears the Commission has been able to handle the policing of existing FM translator stations. Changing the program source for these stations is not likely to change the policing requirements.

20. The petitioners have proposed services permitting thousands of additional stations, while my proposal to allow the use of FM translators for low power FM broadcasting would result in a far lower number of additional stations. Later in these comments I propose a license-free FM broadcast service that would not require any FCC license processing and would require minimal policing of the service (similar to the policing requirements on cordless telephones).

Spectrum Efficiency

21. In 1978 (69 FCC 2d 240), the FCC stopped licensing class D NCE FM stations based in part on the reported higher spectrum efficiency of higher power stations. In *Amendment of Part 74 of the Commission's Rules Concerning FM Translator Stations*, Notice of Inquiry, MM Docket 88-140, 3 FCC Rcd 3664 (1988), the Commission appears to define spectrum efficiency as the ratio of the coverage area to interference area for a particular station. If, using the figures from the NAB comments, we assume the coverage radius of a 1 watt station is 1.5 km while the *interference radius* (half the required co-channel spacing) 3.75 km. The spectrum efficiency ratio would be $(pi \times 1.5^2)/(pi \times 3.75^2)$. Noting that the pi terms cancel, the *spectrum efficiency ratio* is just the square of the coverage radius divided by the square of the interference radius. For a 1 watt station, this is 0.16.

22. For a class A station, we can take the coverage radius from the NAB comments as 28.5 km and the *interference radius* as 57.5 km [the class A to class A co-channel separation distance specified in 73.207 divided by two]. The *spectrum efficiency ratio* is $28.5^2/57.5^2$ or 0.25. Thus, as the FCC previously stated, a lower power station does have a lower spectrum efficiency ratio.



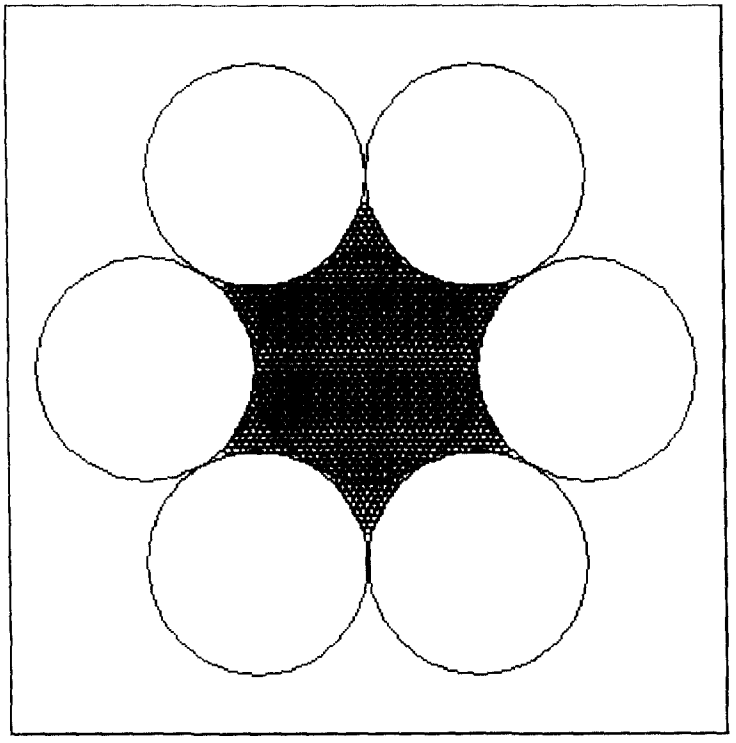
23. The NAB comments repeat this assertion, then present an interesting graphic to demonstrate this. Inside the coverage area of a class A FM station, they draw little "doughnuts" where the outside circumference represents the edge of the "interference area" while the inside circumference represents the edge of the coverage area. They demonstrate that the group of low power stations inside the coverage area of the full power station have substantially less coverage (and more interference area) than the full power coverage area they replace. However, the NAB example did not include the interference area of the full power station in its calculations. Further, if stations with circular interference areas (as assumed by the Commission's use of distance separations instead of contour ratios in channel allocation), there is substantial area between "tightly packed" stations where additional low power stations could exist within the existing interference criteria. In addition, in most cases, stations are

not "tightly packed", thus making additional space available for low power stations while not providing enough space for a full power station. Failure to use these gaps between stations is inefficient use of the spectrum and deprives the public of local service.

24. Though no one has proposed replacing a class A station with a bunch of 1 watt stations (as in the NAB comments), it might be worthwhile to consider this, since NAB did so in its comments.

25. Figure 1 (above) shows an array of "tightly packed" class A FM stations. The circles represent the "interference contour" with a radius of one half the required co-channel separation distance. Each of these circles has a radius of 57.5 km. Within this interference circle, each station has a protected coverage contour radius of 28.5 km. Thus, the coverage area of the single class A station within this tightly packed array of stations is 2552 km^2.

26. Figure 2 (right) shows an array of "tightly packed" 1 watt FM stations, replacing the previous class A station. Each circle represents the "interference contour" of the station with a radius of one half the required co-channel separation distance. From the NAB comments, each of these interference circles has a radius of 3.75 km. Within each interference circle is a coverage circle with a radius of 1.5 km. Thus, the coverage of each 1 watt station is 7 km^2, substantially less than the class A station. However, 1,129 1 watt stations fit, as shown in figure 2, giving a total coverage area of 7,980 km^2, substantially more than the coverage of the single class A station it replaced. Again, no one is suggesting replacing full power stations with low power stations. However, refusing to permit use of the gaps between existing full power stations is inefficient use of the spectrum and deprives the public of a truly local radio service.



27. If our only concern were spectrum efficiency, and the method of achieving that efficiency was through the use of high power stations, we would have a group of very high power stations in the center of the continent. The Commission has instead decided to balance efficiency and local service. The balance chosen does allow for low power FM stations (FM translators) but for some reason disallows them from serving their communities with local programming.

28. Thus, the spectrum efficiency disadvantage is not nearly as bad as claimed, and the Commission has decided that low power stations DO fit into a balanced approach. All that is required is authorizing these existing stations to serve their local communities.

Licensing Procedures

29. The petitioners have requested use of a lottery or first-come first-serve method of awarding licenses. This is contrary to the wishes of Congress, who desires the use of an auction in determining the winner of mutually exclusive license applications. As pointed out in my original comments, it makes sense to me

for all stations receiving interference protection (such as broadcast stations, but excluding stations like amateur and citizen's radio services, which do not receive interference protection), to pay the public for their exclusive use of the radio spectrum. This "recovery for the public of a portion of the value of the public spectrum resource made available for commercial use" is discussed in 47 USC 309(j)(3)(c). These fees should be determined by bidders making offers for leases of the channel for a fixed number of years. Upon the expiration of the lease, the lease for the channel would be auctioned off again. In this manner, the public is paid market rates for the continued use of the spectrum. Other approaches do not adequately compensate the public for the use of the public resource. Instead, some method arbitrarily determines whose speech will be subsidized by the government through use of the spectrum at less than market value.

30. Should the Commission not choose to establish a lease-auction method of awarding licenses, another approach would be to require the return of the license to the FCC should the licensee no longer wish to be engaged in broadcasting. The FCC can then use whatever method it chooses to award the license to another applicant. This avoids the possibility of unjust enrichment where an applicant gets a license for little or no cost, but then sells the license at a substantial profit.

31. The petitioners have suggested some form of ownership limit in low power FM. As pointed out in my original comments, limiting the licensee of a low power FM station to a total broadcast holding of one license would limit the market value of a low power FM station (a licensee holding several licenses would possibly be able to sell them for more than the value of the individual licenses). In order to meet the petitioners objective of lower economic barriers to entry to broadcasting, it is necessary to reduce the actual market value of a station to something that more people can afford. Ownership limits should help limit the market value of the station.

32. National Public Radio, in its comments, stated

> "Similarly, the Low Power Petition makes no attempt to reconcile one of the most fundamental aspects of the proposal --strict limits on the number of low power stations owned by a single individual and entity -- with the statutory prohibition against commercial ownership limits. However, the Telecommunications Act of 1996 removes national ownership limits on radio broadcast stations."

33. However, the section 202 of the *Act* states

> (a) NATIONAL RADIO STATION OWNERSHIP RULE CHANGES REQUIRED- The Commission shall modify section 73.3555 of its regulations (47 C.F.R. 73.3555) by eliminating any provisions limiting the number of AM or FM broadcast stations which may be owned or controlled by one entity nationally.

34. The Commission was *not* directed by Congress to make any changes in part 74 of the Commission's rules where the LPTV rules currently appear, and it is proposed that LPFM rules appear.

35. The petitioners have suggested a local residency requirement and/or local programming requirements. As stated in my original comments, a station ownership limit will probably eliminate the local residency requirement. Given an option of one station to own, people would choose a local one. Putting a rule in place requiring this seems unnecessarily burdensome (people would have to divest of a station if they moved to an adjacent town or something similar).

36. The Commission should stay as far away from dictating programming requirements as possible. Using the "print model", newspapers are free to decide the mix of locally generated content and content bought from other sources (typically wire services or syndicators). Broadcasters should have similar freedom of choice.

Preferences for AM or LPTV licensees

37. Comments suggesting a preference in granting LPFM licenses to holders of AM or LPTV licenses defeat the diversity of ownership goals of the petitions. In particular, suggestions that AM stations operating FM translators will help the AM band seem counterintuitive. If anything, a duplication of AM programming on FM would encourage *fewer* people to listen to AM.

EAS and Other Full Power Station Requirements

38. Commenters raise interesting questions regarding requirements imposed on full power stations and whether similar requirements would be imposed on low power FM stations. Currently FM translator stations carry local EAS broadcasts if the translator is rebroadcasting a local full power station. If the translator is rebroadcasting a distant full power station, it carries national and possibly state EAS broadcasts, but not local EAS broadcasts. Therefore, permitting FM translators to originate local programming will cause a loss in EAS coverage unless low power stations are required to have EAS decoder/encoder units. Requiring stations to have EAS equipment would result in an improvement of EAS coverage (due to local emergency input) over the current operation of FM translators. To insure that EAS service to the public is not decreased, I would propose that licensed LPFM stations be required to fully meet the EAS requirements of full power stations.

39. It appears fair the licensed LPFM stations have the same public access requirements as full power FM stations. These include the public inspection file, lowest unit rate, and main studio requirements.

Provision for Unlicensed Stations

40. To further increase the diversity of voices available to the public, it appears appropriate that the Commission establish a "Citizen's Radio Broadcast Service." This would be similar to the service proposed in the comments of Michael C. Trahos. The Commission currently authorizes the use of radio transmitters with a coverage radius of several miles under the Citizen's Radio Service and the Family Radio Service. These services, however, are "point-to-point" or two way communications type services. The Commission should establish a band of frequencies similarly set aside for license-free broadcasting (point-to-multipoint). Going back to the print model, failure to establish such a service is similar to authorizing the use of a Xerox machine to make one copy of a document, but not permitting it to be used to make many copies of a document for general distribution to the public (whether the document be a lost cat poster, a political handbill, or a mini newspaper or magazine). I fail to see a constitutionally justifiable reason for permitting use of license-free radio for transmitting to an audience of one, but not permitting it to be used for transmitting to an audience of many.

41. Clearly operation of unlicensed transmitters in the existing FM broadcast band could cause severe interference to licensed full power stations that are guaranteed an interference-free coverage area. Therefore, I propose a band of frequencies be set aside for license-free broadcasting. The most logical band of frequencies would be that band now occupied by televison channel 6. During the transition to digital television, TV channel 6 could be made vacant on a nationwide basis, allowing the FM broadcast band to be expanded downward to include a license-free broadcast band. Existing nonsynthesized tuning FM radios already cover a portion of this band. Radios manufactured in the future could include the entire band.

42 Similar to the citizen's radio service and the family radio service, it would make sense to require the transmitters used in this new service to use FCC approved equipment. The Commission could choose to require the use of an attached antenna (such as the requirement for Family Radio Service), or could permit the use of an outside antenna with certain height restrictions, as in the citizen's radio service. Use of FCC approved equipment should minimize interference to other services and should put all such unlicensed broadcasters on an approximately equal footing (as opposed to the unauthorized use of external 1 KW amplifiers in the citizen's radio service).

43. In a letter regarding unlicensed broadcast station "KAW" (see http://www.fcc.gov/mmb/asd/decdoc/letter/1998--03--27--kaw.html), the Commission states: "Section 301 of the Communications Act, however, requires a license in order to broadcast and the Commission has no authority to waive that statutory requirement." Indeed, if we look at 47 USC 301, we see a requirement that all radio stations must have a station license. However, in 47 USC 307(e) an exception is made for remote control transmitters and citizen's radio service transmitters. Further, the definition of the citizen's radio service is left to the Commission. Thus, it appears the Commission is free to establish an unlicensed Citizen's Radio Broadcast Service.
Stations in this unlicensed service would receive no interference protection from other stations (and thus are not granted exclusive use of a frequency removing a requirement for spectrum lease auctions under my proposed system). Operators would most likely choose operating frequencies to minimize interference, since such use also increases their coverage area.

Provision for Event Stations
44. The petitioners suggest a need for event radio stations. I have seen a need for such stations (and have seen the operation of illegal ones) at larger multi-day festivals (typically music and dance festivals). It is a good way to allow participants to hear the activities as they wander the grounds away from performance areas.

45. However, licensing stations for such temporary use could be a severe load on Commission resources. Therefore, I propose that no special provision be made for licensed event radio stations. Instead, events wishing to use a broadcast service should use the unlicensed citizen's radio broadcast service, discussed above.

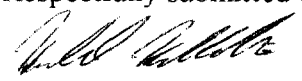
Provision for Low Power AM Broadcast Service
46. Commenter Christopher DiPaola suggests the establishment of a low power AM broadcast service by permitting stations very similar to Traveler Information Service stations be licensed to individuals and organizations for general broadcast use. However, I believe there would be little demand for such stations considering their susceptibility to interference (especially at night), their limited coverage area, and their poor audio quality. The licensed and unlicensed broadcast services proposed above should adequately satisfy consumer demand.

Other Comments
47. NAB comments that "Low power stations would not have the same incentive to abide by any regulations because they have less to lose." It might be pointed out that large group owners need not abide by regulations, since they can afford to pay the fines (ie, Howard Stern).

48. The method used by State Broadcasters Associations in footnote 35 to calculate a percentage increase in stations vastly overstates that percentage. Using their methodology, an addition of zero stations would be a 100% increase.

Thank you for considering these reply comments.

Respectfully submitted by,



Harold Hallikainen
22 July 1998

End Notes

1. See FCC Record, volume 2, page 5043 (adopted 8/4/87). At 36, the FCC states it believes the Supreme Court would decide Red Lion differently today, based on the significant change in technology since 1969. Summarizing, this decision by the Commission to discard the "Fairness Doctrine" was based upon the "scarcity of broadcast frequencies" justification of 1969 no longer existing in 1987.