FCC'S LOW POWER FM: A REVIEW OF THE FCC'S SPECTRUM MANAGEMENT RESPONSIBILITIES

HEARING

BEFORE THE

SUBCOMMITTEE ON TELECOMMUNICATIONS, TRADE, AND CONSUMER PROTECTION

OF THE

COMMITTEE ON COMMERCE
HOUSE OF REPRESENTATIVES

ONE HUNDRED SIXTH CONGRESS

SECOND SESSION

ON

H.R. 3439

FEBRUARY 17, 2000

Serial No. 106–118

Printed for the use of the Committee on Commerce

U.S. GOVERNMENT PRINTING OFFICE
62–973CC WASHINGTON : 2000

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FCC'S LOW POWER FM: A REVIEW OF THE FCC'S SPECTRUM MANAGEMENT RESPONSIBILITIES IN ADDITION TO H.R. 3439, THE RADIO BROADCASTING PRESERVATION ACT

THURSDAY, FEBRUARY 17, 2000

HOUSE OF REPRESENTATIVES,
COMMITTEE ON COMMERCE,
SUBCOMMITTEE ON TELECOMMUNICATIONS,
TRADE AND CONSUMER PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:01 a.m., in room 2322, Rayburn House Office Building, Hon. W.J. Tauzin (chairman) presiding.

Members present: Representatives Tauzin, Oxley, Stearns, Gillmor, Markey, Gordon, Rush, and Wynn.

Staff present: Linda Bloss-Baum, majority counsel; Cliff Riccio, legislative clerk; and Andy Levin, minority counsel.

Mr. TAUZIN. The committee will please come to order.

Let me first apologize for the absence of my colleagues. I hope some of them show up today. I think some will. We unexpectedly canceled votes for today and when that happens members tend to go home. So will have a few but not as many members as I hope. That, of course, does not mean we aren't going to have a good record made today and we are going to get a chance to do some good dialoging on this important issue.

I want to particularly thank those of you who traveled long distances to be on this panel and I deeply appreciate your attendance to this issue.

There is no doubt that diverse voices in mass media are an essential part of communications in a free democracy such as ours. Diversity of viewpoint is the principal champion by the First Amendment of the Constitution and it surely enriches the cultural life and the cultural values of our American society.

As a result, I can appreciate, at least in principle, the notion that the FCC wishes to afford to churches, schools, civic organizations and other similarly situated groups a greater radio presence than they currently enjoy.

However, I and other members have questioned the Commission's creation of the new low power FM license at this juncture as to whether it is best and the most efficient way to achieve the greatest level of diversity on our airwaves. Since the FCC announced its intention to create the new class of licenses for low

power radio stations over a year ago, we have been concerned that the Commission is moving a bit prematurely.

Essentially, there are two reasons for these sentiments. First and foremost, the FCC appears to have made a substantial public policy decision without seeking the advice and consultation of the Congress. The FCC is a quasi-independent agency of the U.S. Government, by law subject to Congress. Congress makes the policy that the FCC enforces. But with little regard for the opinion of the members of this committee, the Commission has now passed the final order creating these new low power radio licenses, even did so while we were out of session.

It need only at this point begin reviewing and considering applications because there are no further procedures subject to comment that are left to be taken. That, I think, was an improper decision by the Commission and one that has now indeed prompted legislation filed in this session of Congress to exercise congressional authority in the area.

Second, it is clear to me—and I believe this hearing will only make it clearer—that the FCC's record on this matter does not support the conclusion that the newly created licenses will not interfere with other frequencies on the electromagnetic spectrum.

Many have studied the policy and technical effects that the new services would create. During the official comment period, the FCC received dozens of comments from a variety of individuals and groups about the merits of the new service and its potential impact on radio broadcasting as we know it today.

As we all know, in classic FCC proceedings, it is not unusual for the public comments to represent very different views as they do in this case, regarding LPFM. However, what is interesting with this issue is that the technical and engineering studies result in contrary findings as to the level of interference that the new service would create on the FM band.

In our minds, it is not at all prudent to create new low power licenses when we cannot be at least reasonably sure that their creation will not result in unacceptable levels of interference. As a result, I do not believe the Commission, as the manager of our Nation's electromagnetic spectrum, has adequately served the public interest when it proceeded to create these new licenses.

Furthermore, I fear that the Commission has disregarded the substantial risk that interference produced by these low power licenses once operational could instantly devalue all the licenses issued for spectrum allocation in use. Obviously, the interference issue is one that we absolutely need to get to the bottom of.

I am happy we have with us today several of the engineers who conducted the interference studies in question. I hope they can explain to us in layman's terms why they have reached their ultimate conclusions regarding the technical aspects of low power FM.

I want to remind you all that I studied engineering for a total of 1 whole year. Keep it in layman's terms, please.

While I am discussing witnesses, let me also conclude by saying that the champion of this new service, Chairman Kinard, was invited to join us this morning to discuss the merits. Because he has said many times that this issue is one of his top priorities at the Commission, I had hoped that he would accept the invitation. I

even offered to postpone the hearing until noon that he might complete his public hearing today. Nonetheless, he has declined because of commitments in Florida and that concerns me.

I understand that Mr. Bruce Franca, Deputy Chief of the FCC's Office of Engineering and Technology, is here to speak on behalf of the Commission to the technical issues involved and we certainly welcome his testimony. However, I remain interested in hearing Chairman Kinard's explanation of why policy considerations led to the creation of this new service before the final report on the digital transformation of radio was complete and why there is substantial disagreement on the technical aspects of interference.

He needs to address our concerns that the policies behind this service were not promulgated based on an objective assessment of the administrative record and that further congressional consideration is or is not needed.

Let me say a couple of final thoughts in addition. Interference is not the only concern I have heard expressed by members of our committee. We have had some pretty tough hearings on public radio in hearings last year. There have been some pretty big disputes about the way public radio has conducted its business. Taxpayer dollars fund public radio.

One of the questions that is going to be before us today is does this decision severely impact public radio. If we are going to have hundreds of thousands new community voices in every community in America addressing the special community needs of different aspects of our society, do we need to continue to put Federal dollars, public money into a radio system to do the same thing. That is a serious question. How does this decision on low power affect the audience of public broadcasting? Will it make it less supportable than the private sector as its audience is fractured away?

We have raised questions about minority broadcasters. I have applauded Chairman Kinard in his efforts to alert advertisers in America about old prejudices and old stereotypes that have led them not to invest in minority broadcasting stations where audiences indeed would like to buy their products, and the light he has shown on that practice and the fact that minority broadcasters very often in our country feel like they are being discriminated in the advertising market. I have congratulated him for that good work.

My concern now is that this FM license proposal may in fact again fracture that audience to the point where advertisers are less likely to invest in helping to sustain minority broadcasters in our country. I have heard similar complaints from small and independent radio broadcasters who literally are operating at margins that are difficult to sustain.

The bottom line is that there are a lot of questions we needed answered today. As you know, Mr. Oxley, the vice chairman of this committee, has filed legislation on this issue that we may well take up. What we learn today will teach us a great deal about whether the Commission has acted precipitously, has acted without regard to the public interest and whether the Congress needs to step in.

I look forward to hearing your testimony and the Chair now yields to the vice chairman of our subcommittee, Mr. Oxley, for an opening statement.

Mr. OXLEY. Thank you, Mr. Chairman, and welcome to all of our witnesses. I especially look forward to testimony from one of our favorites at the Commission, Harold Furchtgott-Roth, a former staffer here who I understand will be joining us later this morning.

First, Mr. Chairman, I want to commend you for calling today's hearing. It is timely. I believe the FCC decision to establish a new low power FM radio service raised more questions than it answered. I am pleased that we will be hearing from experts on both sides of this issue.

Certainly the foremost question in my mind is the interference question. The record of public comment and technical analysis suggests to me that low power FM will cause significant interference with existing services, to the detriment of broadcasters and listeners alike. I expect that we will hear conflicting testimony on that point this morning, so I suggest that members pay close attention to the standards used in determining what constitutes unacceptable interference.

As members know, I introduced legislation on November 17 to prevent the FCC from implementing rules authorizing new low power FM stations. Joining me in introducing the bill, H.R. 3439, The Radio Broadcasting Preservation Act, were Representatives Stearns, Cubin, Pallone and Ehrlich and since then, a total of 113 members of the House have co-sponsored H.R. 3439, including 20 members of this committee. I thank each of them for their support.

When I introduced H.R. 3439, I did so in response to grave concerns expressed to me by radio station managers in my congressional district. I had previously written to the Commission twice with my colleague, the gentleman from Florida, Mr. Stearns, to express our apprehension about low power radio and the interference it would cause. By introducing the bill, I wanted to send the additional message that there were members who were prepared to act legislatively if the Commission's final rule did not adequately address the interference question.

While I will closely review this morning's testimony, after scrutinizing the Commission's action, my initial conclusion is that the new rules do not offer adequate protection against harmful interference. I am disappointed the Commission chose to weaken its interference safeguards to make room for low-power FM. This decision will undoubtedly lead to increased interference with existing stations, thereby harming loyal listeners and undercutting the value and the investment of current licenseholders. To the Commission's assertion that there will not be a meaningful increase in interference, I ask, then, why did you have to weaken your standards in the first place?

I am concerned as well that the rules jeopardize the conversion to digital radio. Unlike television broadcasters who are being given additional free spectrum to broadcast in digital format, radio broadcasters must use their current spectrum allocations to transmit both digital and analog signals, making adjacent channel safeguards all the more important.

I most object to the provisions making former unlicensed, pirate radio operators eligible for low power licenses, thus reinforcing their unlawful behavior and encouraging new unauthorized broadcasts in the future.

My hope, and frankly, my expectation, is that the subcommittee will soon be marking up H.R. 3439. I have yet to hear an adequate reason why we should not.

Thank you, Mr. Chairman. I yield back the balance of my time.

Mr. TAUZIN. I thank the gentleman.

The Chair is now pleased to recognize the ranking minority member of the committee from Massachusetts, Mr. Markey.

Mr. MARKEY. Thank you, Mr. Chairman.

I want to commend you for holding this hearing today on low power radio issues.

Mr. Chairman, if we were having this hearing decades and decades ago in 1915, we would have only one witness at the table. We would have said, Mr. Marconi, could you outline how we could efficiently utilize this new service?

A few years after that, with the advent of television, we would have had a panel where we would have said, Mr. Farnsworth, Mr. Sarnoff, could you get together with the Marconi engineers and figure out this thing so we can launch television service?

Over time, as things got more complicated and more commercial, it became a larger group of people in these conversations and it took longer for them to agree for various reasons. Interference developed. The government stepped in and decided to create a neutral agency to arbitrate disputes and efficiently allocate spectrum resources. The Federal Communications Commission has been doing this job and doing it quite well for decades.

They have done their job so well, in fact, that the American telecommunications industry, including the vibrant broadcast, television, radio, cellular, PCS, microwave, satellite service and other spectrum-based services are the envy of the world.

We are not content with the progress we have made thus far, however. We want more choices. That is the American way. Low power radio could meet an important need for low broadcasting, especially in light of the rapid, and in my view, unhealthy, consolidation of radio stations in individual markets after the passage of the Telecommunications Act.

Clearly issues of interference need to be fully explored and worked out as was done in creating low power TV. I want to applaud the Commission for exploring this worthwhile proposal and moving forward on it. The Commission is always at its best when it takes the public's airways resources and works to make more efficient use of that spectrum for the public.

There are certainly legitimate concerns about interference. At one level, that will evolve into a shouting match between engineers. Non-engineers cannot assist in resolving that debate. Yet, we can create a climate for reconciliation because in the final analysis, the effort underway is to supplement what already exists, not supplant or interfere in any harmful way with existing services.

I thank you, Mr. Chairman. I look forward to a discussion on relative DBU levels this morning and whatever illumination our subcommittee can gain in that area.

Thank you, Mr. Chairman.

Mr. TAUZIN. The gentleman from Chicago is recognized for an opening statement, Mr. Rush.

Mr. RUSH. Thank you, Mr. Chairman.

I would first like to applaud the FCC, principally Chairman Kinard, for his creation of thousands of new stations that will ensure a diversity of voices on the airwaves. Such diversity is very much needed in our communities. These new low power FM stations will allow churches, universities, local schools, community health organizations access to a medium that has been inaccessible because of the tremendous cost.

I understand that many existing FM broadcast stations are concerned that these new low power FM radio stations will cause interference with their signals and am sympathetic to these concerns, but I remain firmly committed to providing those without significant financial resources access to the airwaves.

I look forward to his hearing today and to the testimony on this particular issue.

I yield back the balance of my time.

Mr. TAUZIN. I thank my friend.

The Chair is now pleased to welcome our panel.

Mr. MARKEY. Mr. Chairman, may I ask unanimous consent to submit for the record a statement by Mr. Bonior in support of low power radio and ask that the record remain open for the customary period for members to submit statements and other material relevant to this issue.

Mr. TAUZIN. Without objection, the gentleman's consent is granted.

[The prepared statement of Hon. David E. Bonior follows:]

PREPARED STATEMENT OF HON. DAVID E. BONIOR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

I applaud the Federal Communications Commission for creating a new class of licenses for low power FM radio stations. These non-commercial licenses will provide tremendous opportunities for educational institutions, local governments, churches, community groups and emerging artists—without interfering with existing commercial stations.

I think it's important for the Subcommittee to know just how wide-spread and broad the support is for low power community radio. It is people like Kevin McGaughey in Brookland, Arkansas who would like to give children in Brookland's local public schools the opportunity to learn the ins and outs of broadcasting. It is people like Lynn Breidenbach in Lakeland, Florida whose community has no voice on either Tampa/St. Petersburg or Orlando radio. It is people like Amanda Huron in Washington, D.C. whose community group is trying to empower African-American and Latino-American youth by teaching them how to be radio disc jockeys rather than just hanging out in the streets. These are the advocates for community radio—and they are mobilized throughout our country.

The FCC's decision to grant low power community radio licenses also has the support of organizations ranging from the AFL-CIO, to the U.S. Catholic Conference, to the NAACP, to the National Council on La Raza to the U.S.P.I.R.G. In my home state, the Michigan Music is World Class Campaign has secured resolutions of support from at least 45 communities. Further, musicians like Bonnie Raitt and the Indigo Girls, as well as the Louisiana Music Commission have thrown their support behind low power community radio. For those whose voices are not heard on today's cookie-cutter format radio, low power community stations are deeply wanted and much needed. The activism surrounding this issue is inspiring, and the Subcommittee would be well advised to take this groundswell of support into account.

One of the fundamental tenets of our democracy is to ensure that diverse interests have opportunities to express themselves at different levels, and that they are not locked out in a monopolistic fashion by large media conglomerates. It is as fundamental as free speech.

The FCC, and its Chairman William Kennard, should be commended for doing their job—protecting the public interest while at the same time giving serious consideration to the interference concerns of existing broadcasters. Providing non-profit, educational or community-based radio stations to broadcast information about local

events, provide open forums for issues of the day and improve access to our airwaves—without interfering with current FM radio stations—is the legitimate role of the FCC as stewards of our airwaves. I support their efforts to make the vision of community radio a reality.

Mr. TAUZIN. All members' written statements, without objection, are permitted into the record as well as all written statements of our witnesses. Without objection, it is so ordered.

[Additional statements submitted for the record follow:

PREPARED STATEMENT OF HON. CLIFF STEARNS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF FLORIDA

Mr. Chairman: Thank you for holding this hearing on "Low Power FM: A Review of the FCC's Spectrum Management Responsibilities." I would also like to thank our witnesses for appearing before this committee and I look forward to their testimony.

Mr. Chairman, for a brief moment, I thought I had deja vu. It seemed so real, you, I, and other members of this committee criticizing a government agency for exercising poor judgment and for rushing to pursue its own agenda. But then I realized this hearing is focusing on the Federal Communications Commission and lower power FM, and rather than being a dream, it's an all-too-real routine of what this committee is forced to do on a regular basis. And then I remembered I am a cosponsor of H.R. 3439, the Radio Broadcasting Preservation Act, for this very reason.

May I suggest to the Chairman that the Commerce Committee form a new subcommittee named "What the FCC Shouldn't Be Doing." And then that committee could hold hearings on low power FM, merger review, and attacking religious broadcasters. Of course, we would be hard pressed to get anyone who would want to chair that subcommittee.

When the FCC began it's journey into bastardizing spectrum integrity by adopting a Notice of Proposed Rule Making designed to establish low power FM service, many voiced concerns about the potential interference larger commercial and public stations would face from this service. Surely, the FCC would not undertake and implement a service when such an important point as interference was not conclusively resolved. Well, if you still believe that once you've read the January 20, 2000 FCC order authorizing low power FM's, then I have a low power FM station and the bridge its on to sell you in Brooklyn.

Five technical studies analyzing the interference issue caused by low power FM stations have produced conflicting conclusions regarding interference on the 3rd adjacent channel. And the FCC believes that 3rd adjacent channel restrictions on low power FM stations are not needed because "interference would be very small and would be outweighed by the benefits of the new service." So the additional security and protection of a 3rd adjacent channel restriction is not necessary. Sure it would be nice, but it's not necessary. Now I don't know how many of you have gone skydiving without a spare or back-up parachute . . . sure a back-up chute is not necessary to jump out of a plane, but it sure would be a nice thing to have when you are in need of one. And the 3rd channel protection is akin to a back-up chute for full power broadcasters. Sure it's not necessary, but it sure would be a nice thing to have when you are in need of one. Instead broadcasters who have invested millions of dollars into stations with the assumption the FCC would ensure the integrity of their spectrum, now have to worry about interference from a project the FCC has no idea whether will work properly or not.

Why the rush to fully implement this service when many questions still remain unanswered? I am curious as to why the FCC did not select a handful of low power FM stations to experiment with this service, rather paving a road for stations to begin broadcasting in the real world when the interference question has not yet been answered. Had they done so, many of the questions we are asking today would have already been answered.

Mr. Chairman I thank you for holding this hearing and will conclude by stressing that the need for substantive reform of the FCC becomes clearer by the day. Thank you.

PREPARED STATEMENT OF HON. TOM BLILEY, CHAIRMAN, COMMITTEE ON COMMERCE

I want to commend the Subcommittee Chairman for convening this hearing today to explore the FCC's new Low Power FM Radio Service. I must admit, that I was disappointed at the Commission's decision to release its Order on the new class of

broadcast licenses while most of us were back home with our constituents over the January recess.

It is obvious by reading the testimony of today's witnesses that this issue is a controversial one that warrants Congressional consideration. I am pleased that this Committee can at least have the opportunity *today*, that we did not have last month, to delve into both the policy and technical issues surrounding this newly proposed service.

I think that we can all agree that, thanks to new technologies and opportunities, some radio stations have begun to consolidate into commercial groups. The question is—whether these new arrangements help or hinder highly localized broadcasting in small communities and neighborhoods.

In theory, I am open to new opportunities for small, local broadcasters. That said, I do strongly believe that we must preserve the signals of existing licensees who have justly earned the right to broadcast at a particular signal strength on a particular dial position.

I have traditionally been concerned about signal congestion on our airwaves, particularly in large metropolitan areas. The addition of hundreds of new low power FM stations could potentially disrupt and cause interference to existing broadcasters.

Several engineering studies have been conducted to test the level of interference caused by these potential new stations. However, those studies have produced vastly different results. I look forward to hearing the testimony of the technical experts before the Committee today, to get to the bottom of what these different conclusions mean.

Finally, I am interested in learning more about today's alternatives, and even ideas that are on the horizon that achieve the same end as the proposed low power service. New technologies, such as Internet radio, reach targeted audiences. I hope that today's witnesses will address innovative ideas, not just more regulation.

In conclusion, I hope that this hearing sheds light on the controversies related to Low Power FM.

With that, I yield back the balance of my time.

Mr. TAUZIN. Let me now introduce the panel. The Deputy Chief of the Office of Engineering, Mr. Bruce Franca, is here. We want to thank you for coming, sir. Mr. Eddie Fritts, CEO, National Association of Broadcasting, is here. David Maxon, Founder, Broadcast Signal Lab on behalf of The Lawyers Guild, is here. Mr. Bruce Reese, President and CEO, Bonneville International Corporation, Salt Lake City, is here. Mr. Theodore Rappaport, Professor, Virginia Tech in Blacksburg, Virginia, whom a lot of people didn't know existed until this year, is here. My son is a senior at Virginia Tech. Mr. Charles Jackson, CEO, Jackson Telecom Consulting is here. Mr. Don Schellhardt, National Coordinator, The Amherst Alliance, is here. Mr Dirk Koning, Executive Director, Grand Rapids Community Media Center, is here. Mr. Kevin Klose, President and CEO, National Public Radio, is here. The Honorable Harold Furchtgott-Rott will be with us later. There is a public hearing, as you know, going on and he is committed to come to this hearing as soon as he completes that public hearing at the FCC this morning.

In order to facilitate a demonstration this morning, the Chair will first recognize Mr. Charles Jackson, CEO, Jackson Telecom Consulting, who I believe will present to us a demonstration that will sort of frame this discussion.

Mr. Jackson?

STATEMENT OF CHARLES L. JACKSON, CEO, JACKSON TELECOM CONSULTING

Mr. JACKSON. Mr. Chairman, members of the subcommittee, I am Chuck Jackson. I am testifying today on behalf of the NAB. I am an engineer with more than 30 years experience in the elec-

tronics and communications industry. Today, I will describe a significant flaw in the engineering that the FCC relied upon for the LPFM proceeding.

Mr. Chairman, in your opening statement you said that engineers should be able to get together and agree on these interference issues. I completely agree. We are not talking about something that was invented recently; FM has been around for 50 years, the technologies of measuring it are well known, and there should not be disagreement among the engineering studies on interference.

Together with Professor Raymond Picholtz of George Washington University, I reviewed four studies of FM receivers that were part of the LPFM proceeding of the FCC. Our key conclusion was that the studies differed in how they defined harmful interference.

The NAB defined a harmful interference signal as one that irritates listeners and their definition matched a widely accepted international standard. The FCC's studies' definition of harmful interference went well beyond irritating to what most would consider unlistenable.

Worse yet, the FCC measured interference but reported the results as if it had measured harmonic distortion, which is an entirely different impairment. The FCC then claimed that consumers would not find this distortion objectionable. They are correct. Such distortion is not objectionable. However, interference generates noise and cross-talk not distortion.

Noise and cross-talk are far more objectionable to listeners than distortion. There is no support in the record or anywhere else supporting the FCC's use of distortion as the measure of the effects of interference. In fact, the FCC's claims about the harmful effects of interference approach junk science.

Here are some audio clips that let you hear the types of interference we expect listeners will experience from LPFM stations. We will see if this works, we already had an equipment failure this morning.

This is an unimpaired example recorded off the air with a good quality radio from WAMU, a public station in the Washington, DC area run by American University.

[Playing of sample.]

Mr. JACKSON. Now here is that same example but with cross-talk. Remember, that is a fancy word for interference, at a level the FCC regards as acceptable if a consumer hears it over a Sony Walkman.

[Playing of sample.]

Mr. JACKSON. Here is a different format station, classical station WGMS, the No. 1 classical station in the market, and here is an unimpaired segment that was recorded off the air. This is a quiet segment, not a real loud one.

[Playing of sample.]

Mr. JACKSON. Here is WGMS with cross-talk, the effects of interference at levels acceptable under the FCC testing regime.

[Playing of sample.]

Mr. JACKSON. Here is an unimpaired example from WHUR, an urban format station that is the No. 1 station in the DC market.

[Playing of sample.]

Mr. JACKSON. Here is WhUR with cross-talk.

[Playing of sample.]

Mr. JACKSON. The FCC says that listening to this level of impairment on a Sony Walkman would be acceptable to consumers. I believe they are dead wrong.

Mr. Chairman, the FCC based its LPFM decision on misleading science. In so doing, they overrode decades of history devoted to protecting consumers from interference on the FM band.

Thank you.

[The prepared statement of Charles Jackson follows:]

PREPARED STATEMENT OF CHARLES JACKSON, CEO, JACKSON TELECOM CONSULTING, ON BEHALF OF THE NATIONAL ASSOCIATION OF BROADCASTERS

Mr. Chairman, members of the subcommittee, I am Charles Jackson. I testify here today on behalf of the National Association of Broadcasters (NAB). I am an engineer with an independent consulting practice. I have experience at the FCC and have worked for more than 30 years in the electronics and communications industry—including 4 years on the staff of this subcommittee's predecessor. I earned my PhD in electrical engineering at MIT.

My message is short. The FCC, as part of its Low-Power FM (LPFM) rulemaking, tested the ability of consumer receivers to withstand interfering signals on adjacent radio channels. Those tests were not reported properly. The FCC used an incorrect criterion for measuring the effects of interference and thereby provided misleading information in their order regarding the interference potential of LPFM stations. The fundamental problem is that the FCC measured interference but reported the results as if it had measured harmonic distortion. Such distortion is much harder to hear than is noise or cross-talk.

Overview

Below I establish the error in the FCC's criterion through references to the engineering literature, FM receiver specifications, and materials from the manufacturer of the test equipment used by the FCC. First, I describe the two measurement criteria at issue: harmonic distortion and cross-talk. Second, I play audio signals that meet the FCC's definition of "adequate" quality for consumers.[1] After hearing these you can decide for yourself whether or not the FCC is correct in its judgment of what is adequate.[2]

Measuring Audio Impairments-Distortion versus Noise and Cross-talk

One technical complexity intrudes. The FCC measured performance of FM receivers using a criterion called *distortion* or *total harmonic distortion plus noise* (THD+N).[3] In contrast, the NAB recommended using a measure called *signal-to-noise ratio* (SNR) as the measure of FM receiver performance. The process of measuring these two quantities is quite similar, although the units that are used normally differ. However, THD is normally used to measure a quantity called harmonic distortion or nonlinearity. It is well known that listeners find it hard to notice harmonic distortion at levels as high as 2 or 3%. In contrast, many people can hear noise or cross-talk when it is at the level that would measure as 1% distortion (if one were improperly measuring noise or cross-talk as distortion).

I have attached an appendix to this testimony that goes into more detail on the differences between measuring SNR and THD and how the choice of measurement units can be misleading.

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[1] The FCC stated, "The OET and NLG studies generally conclude that FM receivers provide for adequate rejection of interference on 2nd- and 3rd-adjacent channels.", LPFM Order at paragraph 100. The OET test report makes it clear that the criterion for adequacy is performance with less than 3% added distortion.

[2] The MS Word version of this document has embedded audio objects that contain the various demonstrations. Obviously, the printed copy cannot contain these audio objects and the MS Word file with the objects is too large for some email systems. If you wish a copy of the Word document with the embedded audio, it should be available at www.jacksons.net/HSC until at least March 1, 2001.

[3] The FCC Order and the OET report consistently refer to distortion. The Audio Precision System One manuals refer to THD+N. See, for example, System One Description/Installation/APWIN Version 22 Guide, p. 2-6.

Examples

Let me now give you a chance to listen to the difference between cross-talk and harmonic distortion. I will play an audio selection with no added distortion. I will then allow you to compare the effects of adding harmonic distortion and the effects of adding cross-talk.

Here is a brief audio sample—one familiar to many—taken from Bernstein's *West Side Story.*[4] This selection is taken from track 11 on the CD. That track has a wide dynamic range—running up to within 1 dB of full scale but also containing some quiet passages. This specific selection runs to within 3 dB of full scale.

Here is that same sample, but now transformed to pure harmonic distortion—all tones have been shifted up one octave using signal processing software.

Here is the original, but with the distorted version added back in at the 3% level.[5] As you probably notice, the added distorted element is almost impossible to hear.

In contrast, here is that same sample with cross-talk added just below the 3% level.[6] The cross-talk signal was taken from another recording.

The FCC treats these two quite different forms of impairment as if they are the same. But, as you can hear they are not. A central flaw in the FCC's analysis was the treatment of added interfering signals (cross-talk) as if they were harmonic distortion.

The FCC's tests judged a signal as acceptable if interference increased the measured distortion by no more than 3%. Consumer receivers have distortion as high as 3.5%. Thus, the FCC's procedures would accept signals with cross-talk just below the 6.5% level. Here is the selection from *West Side Story* with cross-talk added at a level that would drive the total of cross-talk and distortion of a signal with 3.5% distortion to just below the 6.5% level.

Examples from Over-the-Air Broadcasts

Here is a cut recorded from WGMS, the number one classical music station in the Washington, DC, market.

Here it is with cross-talk just below the 6.5% level that the FCC would judge unacceptable if the consumer were using a receiver with 3.5% audio distortion.

Here is a cut from WHUR, the leading station in the DC market, with cross-talk just below the FCC limit of 6.5% total measured distortion for a radio with 3.5% audio distortion.[7]

The Pickholtz/Jackson Study

Professor Ray Pickholtz of George Washington University and I reviewed four studies of FM receiver performance that were before the FCC in its LPFM proceeding.[8] We concluded that the tests performed by the various parties were similar; the differences in the conclusions of the studies reflected differences in the definition of harmful interference used in each study. We believe that the FCC made a mistake when they reported results in terms of distortion but they were actually measuring noise and cross-talk-signal impairments that are much more objectionable to listeners than is harmonic distortion. This is a serious error—roughly as bad as telling someone to suit up for a football game in a basketball uniform.

Evidence from Others that Interference and Distortion Are Different

The FCC's tests used a criterion, distortion, that is appropriate for measuring how good amplifiers perform but is not a good measure of the presence of objectionable cross-talk or of static. FM receiver manufacturers specify both distortion (measured in percentage just like the FCC did) and S/N ratio (SNR). For example, Sony provides the following specifications for their STR-DE835 (the top-rated digital receiver in the March 2000 issue of *Consumer Reports*).[9]

- FM Frequency Response 30—15 kHz, +0.5/-2 dB

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[4] Deutche Grammophon, 415 254-2, recorded live.

[5] That is, the harmonic distortion is reduced in volume to 31 dB below the original signal and added back in. Because the distortion does not decline as the amplitude of the signal falls, this process results in more distortion than would occur in a typical amplifier with 3% measured distortion.

[6] Here the 3% less a little bit level is set to 31 dB below a full-scale sine wave as would be the case when measuring FM receivers with a single tone as the desired signal. That is, the cross-talk is set at the level that would measure just below 3% in the FCC's test of FM receivers.

[7] These examples, and more, together with an explanation of the test set-up and parameters are available at www.nab.org.

[8] This study was performed on behalf of the NAB. It is available from my website at www.jacksons.net.

[9] Taken from http://www.sel.sony.com/SEI,/consumer/ss5/home/homeaudio/receivers/strde835 specs.shtml on February 13, 2000.

- FM THD @ 1 kHz, Mono/Stereo 0.30%/0.50%
- FM S/N Ratio, Mono/Stereo 76 dB/70 dB

Sony specifies that the S/N ratio, the measure of how well the receiver pulls the desired signal out of the natural static, is 70 dB. In contrast, Sony specifies that the receiver's THD, a measure of how well the output stage of the receiver reproduces signals, is 0.50%. Distortion signals at the 0.50% level correspond to signals only 46 dB below the desired signal. If distortion and noise were different names for the same phenomenon, then the receiver would have a 46 dB SNR. Similarly, if distortion of 0.50% prevents one from hearing noise at levels much below 46 dB below the desired signal, Sony is wasting its efforts in delivering a 70 dB SNR.

Similarly, a technical paper available from Audio Precision, the manufacturer of the test equipment the FCC used in its tests, states, "Harmonic distortion, illustrated in Fig. 16 is probably the oldest and most universally accepted method of **measuring linearity** (Cabot 1992)."[10] It is well known that linearity—the degree to which an amplifier's outputs are just bigger versions of the input signals—measures accurately an amplifier's performance and that small deviations from linearity are hard to hear.

Audio Precision also says,

> Most audio Total Harmonic Distortion (THD) measurement systems are in fact Total Harmonic Distortion plus Noise (THD+N) analyzers. They operate by removing the fundamental from the test signal with a sharply tuned band reject or "notch" filter and measuring everything that remains. The amplitude of this "residual" is compared to the amplitude of the fundamental and the result is expressed as a percentage or dB figure. This measurement technique does not discriminate between test signal related harmonics caused by non-linearity in the device under test, broadband noise in the device under test, crosstalk or interference from external sources, or any other artifacts present within the measurement bandwidth. **The "single number" result may thus be ambiguous.**[11]

The FCC's Use of the 3% Standard

The FCC stated in its LPFM order that the OET tests did not use the 3% distortion level as the measure of harmful interference. The FCC specifically stated,

> **The above conclusions of the OET report** that "nearly all the receivers in the sample appear to meet or exceed the 40 dB 2nd-adjacent channel criterion and exceed the 3rd-adjacent channel protection criterion by a substantial margin" **reflect measurements taken at the 1% distortion level**.[12]

This statement conflicts with the text of the OET study. It reads,

> Section 73.215 of the Commission's rules provides that the predicted field strength of a potentially interfering station can be no more than 40 dB stronger than the protected field strength along a station's protected contour. **At the 3% distortion level** all the receivers in the sample, except for two (samples #2 and #6), appear to meet or exceed the 40 dB second adjacent channel protection criterion and to exceed the 40 dB third adjacent channel protection criterion by a substantial margin.[13]

The text in the order also reflects a basic confusion between distortion and other forms of signal impairments when the FCC states, "The 1% level corresponds to a point at which most listeners would not be able to perceive any degradation in performance. On the other hand, the 3% distortion represents a level at which most listeners would perceive a difference in the received signal."[14] This statement is almost a textbook discussion of the effects of harmonic distortion—but does not apply to noise and cross-talk. The FCC claims that a person would find it impossible or hard to hear the effects of interference that were measured as 1% or 3 % distortion. This is incorrect. It is hard to hear 3% distortion; it is easy to hear cross-talk at the 3% power level as I just showed you.[15]

The FCC holds the entities it regulates to high standards of truthfulness (called candor in the Commission's jargon) in their statements to the Commission. It should hold to those same standards when it speaks to the public.

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[10] "Fundamentals of Modem Audio Measurement," by Richard C. Cabot, Presented at the 103rd Convention of the Audio Engineering Society, New York, USA, 1997 September 26-29, revised 1999 August 8, p. 12. Emphasis added.

[11] Audio Precision Tech Note TN-17, available at www.audioprecision.com. Emphasis added.

[12] FCC LPFM Order, footnote 156.

[13] Second and Third Adjacent Channel Interference Study of FM Broadcast Receivers, Project TRB-99-3 Interim Report, July 19, 1999, p. 31.

[14] Ibid.

[15] This statement requires some qualification. It is hard to hear low-order distortion, that is 2nd- or 3rd-harmonic distortion. It is much easier to hear higher order distortion.

Conclusion

To summarize, the FCC used the wrong criterion when assessing the performance of FM receivers in the presence of interference. In particular, they used a measurement method that indicated no harmful interference where in fact, harmful interference would occur. This use of the wrong criterion has led to justification for the authorization of LPFM stations that will result in objectionable interference to existing radio stations interference that the FCC does not acknowledge because it has not used the relevant measurement tool.

APPENDIX: MEASURING AUDIO IMPAIRMENTS

First, *subjective testing*—the use of a panel of listeners to compare and grade the performance of alternative systems—is the gold standard of audio system evaluation.[16] Second, although they may be the gold standard, subjective listening tests are, like gold, very expensive—requiring significant time and staff. Consequently, other objective test methods have been developed. These objective measurements may or may not be monotonically related to subjective quality, but they are close enough for many applications. A primary measurement used to assess the performance of analog broadcasting and recording systems is the audio or output *signal-to-noise* ratio (SNR). This ratio compares the energy in the desired signal with the energy in the obscuring or impairing noise signal. Often the SNR is calculated using a weighting procedure that attaches more weight to noise at the most easily heard frequencies and less weight to noise at frequencies that are less irritating. Informally speaking, SNR is a measure of the static that has been added to a signal.

Table 1 below shows SNR for some familiar audio systems. In this table, a higher number is better and SNR is reported in dB—a logarithmic measure that matches well with the human hearing process. A difference of about 3 dB in SNR is usually regarded as the smallest size difference a typical observer will notice. Thus, there is not much difference in the typical subjective evaluation of the performance of two audio systems—one operating with 40-dB SNR and the other with 43-dB SNR. However, there is a big difference between a system operating with 40-dB SNR and one operating with 60-dB SNR.

TABLE 1—Signal-to-Noise Ratio for some Familiar Audio Systems

System	Approximate SNR
Compact disc	100 dB
Sony Walkman digital audio tape	Better than 87 dB
FM broadcasting (best conditions)	60-80 dB
Consumer audio taping equipment[17]	60 dB
Telephone call	30-50 dB

[17] For example the Sony TC-KE500S.

A second measure of audio system performance is *harmonic distortion.* Harmonic distortion is most often used to measure the performance of audio devices such as amplifiers or recording systems. It is a measure of how accurately an audio system reproduces the input signal. Harmonic distortion is often used to characterize the performance of amplifiers. It is caused by nonlinearity in the amplification chain that creates frequency components that are harmonics of the original frequencies (integer multiples of the original frequencies, also called overtones). If the output signal from an amplifier is the same as the input signal, except bigger, then there is no distortion. With music or pure tones, distortion can be noticed by the presence of overtones. For example, if a real-world amplifier has as input a 1,000-Hz tone, the output will consist primarily of a 1,000-Hz tone, but tones at 2,000 and 3,000 Hz (and other frequencies) will also be present in the amplifier output. These unintended overtones produced by the amplifier are called harmonic distortion. It is hard for the human ear to hear harmonic distortion.

The human ear's response to a 2,000-Hz tone is reduced when a strong signal is also present at 1,000 Hz. Similarly, people often think they hear a sound at 2,000

[16] It may seem strange to some that engineers rank a subjective test as the highest performance standard. Despite stereotypes, engineers actually have normal endowments of common sense and they recognize that the proper measure of a system designed to serve consumers is the consumer reaction to that system.

Hz when they only hear a sound at 1,000 Hz.[18] Most music sources, such as a piano or violin note, contain overtones that are only slightly modified by the overtones created by distortion.

Hence, given both the reaction of the human hearing system and the content of most music, harmonic distortion is harder to hear than unrelated noise.[19] It is generally accepted that harmonic distortion has to rise to about 1 to 2% before people find it objectionable.[20] Some people would find 1% harmonic distortion hard to notice.[21] The nonlinearities in the signal processing chain that cause harmonic distortion also cause intermodulation distortion that produces other, unintended frequency components. The usual test procedures for audio equipment use the measure of total harmonic distortion plus noise (THD+N) as shorthand for all nonlinear impairments.

Although it may be possible, albeit rare, for interference to drive the signal into the nonlinear region and cause harmonic distortion, that is not usually the principal concern when considering the effects of interference. Interference is best treated as a different, extraneous source of additive noise. Thus, we measure its effects by considering the signal-to-noise plus interference ratio (SNIR). The *noise* we refer to here is due to thermal, environmental, or receiver noise that we cannot overcome and is not the interference from like signals residing in a co- or adjacent channel. The interference of concern here is external and produced by other emissions in the radio spectrum by other than the desired transmitter. It is what can be controlled by regulation. It is therefore our considered opinion that the deleterious effects caused by this interference must be measured. Other undesirable effects, inherent in the imperfections in the signal chain may also be present, but they are a red herring when the objective is to determine whether controllable external additional emissions such as second and third adjacent channel interference should be permitted to degrade expected reception quality.

Mr. TAUZIN. Thank you very much, Mr. Jackson.

We will now hear from the FCC, the Deputy Chief, Office of Engineering and Technology, Mr. Bruce Franca.

STATEMENTS OF BRUCE A. FRANCA, DEPUTY CHIEF, OFFICE OF ENGINEERING AND TECHNOLOGY, FEDERAL COMMUNICATIONS COMMISSION; EDWARD O. FRITTS, CEO, NATIONAL ASSOCIATION OF BROADCASTING; DAVID MAXON, FOUNDER, BROADCAST SIGNAL LAB; AND BRUCE T. REESE, PRESIDENT AND CEO, BONNEVILLE INTERNATIONAL CORPORATION

Mr. FRANCA. I think Mr. Jackson is right. I think we have just heard about junk science. Let me go on and talk a little bit.

I do thank you, Mr. Chairman and members of the committee, for the opportunity to appear before you today to discuss the FCC's spectrum management responsibilities and the technical aspects of the Commission's recent decision to authorize low power FM radio stations. I will briefly summarize my written testimony.

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[18] See, for example, A. Gersho, "Advances in speech and audio compression," *Proceedings of The IEEE*, vol. 82, pp. 900-918, June 1994. P. Noll, "Wideband speech and audio coding," *IEEE Communication Magazine*, vol. 26, pp. 34-44, November 1993. J.J.N. Jayant and Y. Shoham, "Coding of wideband speech," *Speech Communication*, vol. 11, pp. 127-138, 1992.

[19] It is easier to hear someone cough at an orchestra concert than to tell that one of the violinists is playing an octave high. Indeed, everybody in the audience can hear the person coughing, but only audience members with unusual musical acuity will notice that one violin is an octave high.

[20] See H.F. Olson, *Elements of Acoustical Engineering*, Van Nostrand, New York, 1947 as quoted in Electronics Engineers' Handbook, 2nd Edition, Donald G. Fink and Donald Christiansen, eds., McGraw-Hill, 1982, at p. 19-18.

[21] While engineers are good, they are not perfect. Engineers often use different units to measure SNR and harmonic distortion. Although SNR is normally measured as a power ratio and expressed in dB, harmonic distortion is often measured as a voltage ratio and expressed in percent. This notational difference makes it harder for the nonexpert to keep track of what is going on in the four studies we consider. This confusion adds an unintended shell-game element to reading the engineering studies in the FCC's LPFM rulemaking.

Spectrum is a valuable and finite public resource. Our mission at the Office of Engineering and Technology is to develop policies that maximize the use of the spectrum, ensure that stations do not interfere with one another and promote the introduction of new services and technologies. In other words, our job is to ensure that the radio spectrum is used efficiently and effectively. To do this we have sought to encourage development and deployment of new spectrum efficient technologies. We have also promoted greater use and sharing of the spectrum. Our recent decision on low power radio is an example of this approach.

New LPFM stations will share the FM radio spectrum, thereby making more efficient use of the FM band. These low power stations will allow local churches, schools, community organizations and other citizens groups new access to the airways. We are, of course, aware of the differences of opinion that exist over whether LPFM stations will cause interference to existing FM service.

Based on the technical studies by our laboratory and our analysis of the studies by others, we are convinced that LPFM service as provided for under the new rules will not adversely impact full service FM stations, nor will it affect their transition to digital service.

The principal issue here is over whether we should have imposed third adjacent channel restrictions on low power stations. I believe the record provides strong support that third adjacent channel restrictions are not needed and that any areas experiencing interference from LPFM would be small and that interference would be outweighed by the benefits of the new service.

Initially, I would note that we currently permit certain full power FM stations to modify their facilities without regard to either second, or third adjacent channel spacings. We have not received any interference complaints with such changes.

All of the technical studies show that the ability of FM radios to reject interference on third adjacent channels is much better than on second adjacent channels. This is expected since third adjacent channels are further removed from the channel to which you are tuning.

The studies also generally find that automobile radios, and home stereo receivers do a good job in rejecting third adjacent channel interference and will not be affected by low power stations. NAB's test results, for example, show that car radios, where almost half of FM listening takes place, do not need third adjacent channel protection.

Our analysis also shows that the area in which additional interference could occur from an LPFM station would be small and occur only in the immediate vicinity of the low power station. For example, even using NAB's test results for its three worst FM radio categories—portable, clock and Walkman type personal—the area where such receivers would potentially experience degradation from interference is small, generally on the order of one kilometer or less.

There has been considerable controversy over whether signal to noise ratios or harmonic distortion is a better test of interference. We believe both measures are appropriate. However, we believe that NAB's and CEA's standards for judging FM receiver inter-

ference are too stringent since, in fact, the majority of their radios did not meet their own standards, even in the cases where no interference was present. We have seen no indication from consumers that the vast majority of FM receivers do not provide satisfactory service.

We also recognize that some lower quality receivers, such as personal Walkman-type radios, may experience additional interference as a result of eliminating third adjacent channel protections for LPFM stations. However, if, for example, we were to define acceptable FM service using NAB's test results for Walkman-type radios, the service area of a Class A radio station would go from a radius of about 27 kilometers to a radius of less than 10 kilometers. We therefore believe that a poor performance radio should not be used to either define acceptable service or unacceptable interference. That is simply not good spectrum management. We also believe that consumers are smart enough to understand that there are performance differences among radios.

We also disagree with NAB's criticism of our decision to use harmonic distortion rather than signal to noise. We do have a demonstration to show you what a 1-percent distortion level would sound like. These recordings use special professional material intended for critical listening. This is obviously not something you would hear on a local top forty station.

This first piece is with no impairments present.

[Playing of sample.]

Mr. FRANCA. Why don't we go to the next one? This is the level we determined was interference.

[Playing of sample.]

Mr. FRANCA. This is 3 percent distortion.

[Playing of sample.]

Mr. FRANCA. We have heard that test a lot, so it is even worse for us. There is actually another series with classical music.

The point is that the 1 percent distortion level we believe is an appropriate level to use to make our judgments on interference. We clearly believe that the NAB's 3 percent level is plainly objectionable. I think we have done a good job here.

In concluding, I want to thank the subcommittee for the opportunity to appear before you. Please be assured that we have, in fact, made every effort to consider all the information, and there certainly was a lot of information in this proceeding.

I believe that the Commission's low power decision fairly addresses the concerns of all the parties and that these new stations will not compromise existing FM service.

I would be pleased to answer any questions you may have.

[The prepared statement of Bruce A. Franca follows:]

PREPARED STATEMENT OF BRUCE A. FRANCA, DEPUTY CHIEF, OFFICE OF ENGINEERING AND TECHNOLOGY, FEDERAL COMMUNICATIONS COMMISSION

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear before you today to discuss the FCC's spectrum management responsibilities and the Commission's recent decision to authorize low power FM (LPFM) stations.

THE FCC'S SPECTRUM MANAGEMENT RESPONSIBILITIES

I would like to begin with an overview of the Commission's role in managing the radio spectrum. Under Section 303 of the Communications Act, which defines the general powers of the agency, the FCC is tasked with assigning bands of radio frequencies to the various classes of stations, assigning frequencies and power for individual stations, and specifying the locations where classes of stations or individual stations may operate. In addition, Section 7 of the Communications Act states: "(I)t shall be the policy of the United States to encourage the provision of new technologies and services to the public." Effective management of the radio spectrum is therefore a core responsibility of the FCC.

Spectrum is a valuable and finite public resource that must be allocated and assigned in a manner that will provide the greatest possible benefit to the American public. Consistent with the FCC's statutory obligations, we view our mission in the Office of Engineering and Technology (OET) as ensuring that the radio spectrum is used efficiently and effectively. One of our principle jobs is to help to define policies that maximize the efficient use of the spectrum and promote the introduction of new services and technologies. OET, for example, developed the allocation plans for cellular and PCS wireless communications services and for digital television service.

Over time, technological advances, growth in user demand, and the finite nature of spectrum have made our spectrum management responsibilities increasingly complex. To address the continuing growth of demand for radio services, we have focused our approach to spectrum management on allowing spectrum markets to make more efficient use of frequency bands through new technologies and on increasing the amount of spectrum available for use. In addition, we have sought to encourage the development and deployment of new, more spectrum-efficient technologies that will increase the amount of information that can be transmitted in a given amount of bandwidth and to allow greater use of the spectrum occupied by existing services wherever possible.

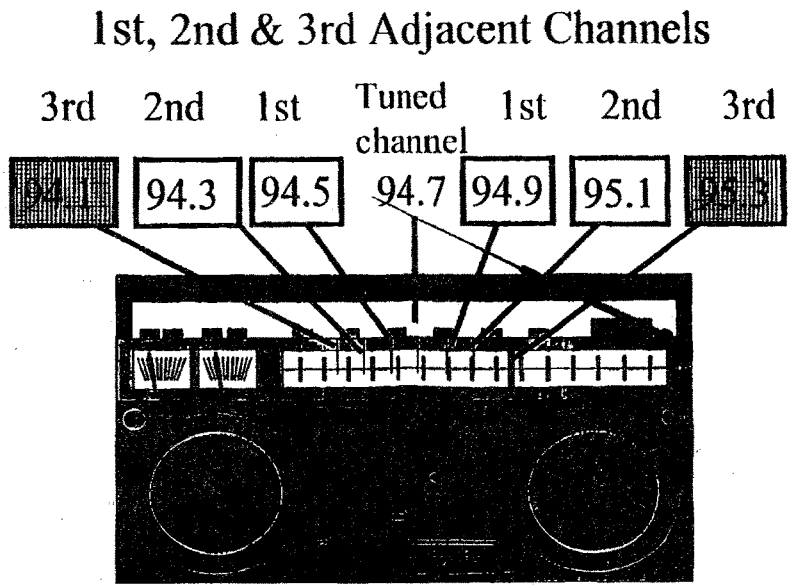
Under this approach, new services have been implemented either through sharing with existing operations or through reallocation of spectrum from existing services to new services and technologies. In this regard, we have, for example, developed plans for sharing between satellite and terrestrial fixed services and for recovery of spectrum from existing uses to make way for new technologies. The spectrum used for PCS service at 2—GHz was recovered from fixed microwave services that were relocated to higher bands. In addition, the efficiency of the digital television transmission standard has made it possible to plan for the reallocation of the 108 MHz of spectrum now used for television channels 52-69 to new public safety, commercial wireless, and broadcast services.

LOW POWER FM RADIO

I next will discuss the Commission's decision to allow the operation of low power FM stations. In its January 20, 2000, *Report and Order* in MM Docket No. 99-25, the Commission authorized the licensing of two new classes of low power radio stations—one operating at a maximum power of 100 watts and the other at a maximum power of 10 watts. The new LPFM stations will be licensed to operate on a noncommercial educational basis only, and to parties that do not hold an attributable interest in any other broadcast station or media. The rules also provide for a significant preference to locally based applicants.

The Commission has taken a conservative approach in protecting existing FM service. For example, the Commission did not adopt its original proposals to permit 1000 watt, commercial LPFM stations and to allow LPFM operations on 2nd adjacent channels. In addition to specifying low power operation, the rules provide a number of other safeguards to protect existing FM stations, such as limitations on antenna height and separation requirements for low power stations with respect to full power stations operating on the same channel, on 1st and 2nd adjacent channels, and on intermediate frequency channels. We also added a 20 km buffer to the required separation distances between LPFM and full service stations that are operating on co- and 1st adjacent channels. This buffer will provide an additional margin of protection for full power stations that modify or upgrade their facilities.

We did not, however, impose requirements for separation of LPFM stations from stations on 3rd adjacent channels. From the considerable technical record in our proceeding, we found that LPFM operation on 3rd adjacent channels will not result in significant new interference to the service of existing FM stations. Our discussions with, and comments from, proponents of new digital radio technologies also indicate that LPFM operations on 3rd adjacent channels will not impact potential future digital services in the FM band. (*See* attached illustration of 1st, 2nd and 3rd adjacent channels on the FM radio dial.)



Our decision in this matter followed a nearly one-year long public comment period extended four times between January and November 1999. We granted these four extensions at the request of the broadcasting industry, at times over the strong opposition of other parties in the proceeding. We did so to give broadcasters and all other parties a more than ample opportunity to comment on the proposed LPFM service. During this lengthy comment period the Commission received significant expressions of interest and public support for LPFM service. The Commission received comments and letters from thousands of individuals and groups seeking licenses for new radio stations. These comments—from churches or other religious organizations, schools, colleges, students, community organizations, musicians and other citizens—reflected a broad interest in, and need for, service from highly local radio stations that are strongly grounded in their communities. The plan for LPFM service adopted by the Commission will address these needs by enhancing listeners' access to locally focused, community-oriented radio broadcasting.

In providing for the operation of LPFM radio stations, we have followed the principles of our general approach to spectrum management: the new LPFM stations will share the FM radio spectrum with existing stations, thereby making more efficient use of the FM band. In establishing this service, the Commission was also following two longstanding foundation principles under Section 307(b) of the Communications Act in providing spectrum for broadcast use. The first is to promote a diversity of media voices. The second is to adopt policies that facilitate and encourage the operation of broadcast services that meet local needs and specialized interests wherever possible. Consistent with these principles, the Commission's first goal in establishing a new LPFM service was to create a class of radio stations that would serve very localized communities or underrepresented groups within communities. This new service will enhance service to the public by providing service opportunities for parties who had previously been denied access to broadcast spectrum. A second, specific, goal was that the LPFM service include the voices of community-based schools, churches, and civic organizations.

The Commission in planning for the LPFM service also emphasized that it would not compromise the integrity of the FM radio spectrum. The Commission was particularly cognizant of the concerns of FM broadcasters with regard to both existing service and possible options for FM stations to provide digital service. Addressing these concerns, the Commission stated that it was determined "to preserve the integrity and technical excellence of existing FM radio service, and not to impede its transition to a digital future." In this regard, the principal technical issues in this proceeding have been the potential for new low power stations to cause interference to existing FM radio service and to impact future digital radio technologies, such

as In-Band On-Channel, or "IBOC," systems. Based on our own technical studies and analyses of studies by a number of others, we are convinced that LPFM service, as provided under the new rules, will not adversely impact reception of full service FM stations, nor will it affect the transition of these stations to digital service using IBOC technology that transmits digital signals on adjacent channels.

THIRD ADJACENT CHANNEL PROTECTION IS NOT NECESSARY

Of course, I am aware of the differences of opinion that exist, particularly on the part of full service FM stations and their representatives, over whether LPFM stations will cause interference to existing FM service. The principle issue here is over whether we should have imposed 3rd adjacent channel restrictions on LPFM stations. The main determinative factor is the ability of FM receivers to operate satisfactorily when signals from LPFM stations are present on 3rd adjacent channels. I believe that the record provides strong support that 3rd adjacent channel restrictions are not needed for LPFM and that any areas experiencing interference would be very small and would be outweighed by the benefits of the new service.

Initially, I would point out that during the period from 1964 to 1987, pre-1964, "grandfathered," short-spaced full power FM stations were permitted to modify their facilities without regard to either 2nd or 3rd adjacent channel spacings. No interference complaints were received as a result of such modifications, and this policy was re-instituted in 1997, again without subsequent interference complaints. Similarly, in 1991, the Commission decided to accept small amounts of potential 2nd and 3rd adjacent channel interference in the noncommercial FM service where such interference is counter-balanced by substantial service gains.

TECHNICAL STUDIES

In addition to these historical precedents, the technical data submitted in the proceeding also supports the conclusion that 3rd adjacent channel restrictions are not needed to protect full service FM stations from LPFM operations. As you are aware, three technical studies of FM receivers were filed in response to the Commission's *Notice of Proposed Rule Making*. These studies were submitted by the Consumer Electronics Association (CEA), the National Association of Broadcasters (NAB), and the National Lawyers Guild (NLG).[1] In addition, our Office conducted its own study of a sample of 21 FM receivers. Taken together, the studies examined 75 consumer FM radios of various types and performance capabilities, including automobile radios, component tuners or receivers, portable radios such as "boom boxes," personal radios such as "Walkman" type units, and clock radios. Finally, the NAB and CEA filed supplementary technical information in their reply comments, and the Media Access Project submitted in its reply comments a *Technical Analysis of the Low Power FM Service* prepared by Professor Theodore Rappaport, James S. Tucker Professor of Electrical Engineering, Virginia Tech, and Chairman, Wireless Valley Communications, Inc., Blacksburg, Va.

These studies provide a substantial body of information on FM receiver performance in the presence of interfering signals. Unfortunately, the studies used different methodologies that make direct comparisons between them difficult. However, as the NAB stated in its reply comments, the significant differences among the studies were not in the measurements or in the performance of the radio receivers tested, but rather, in the definition of impaired reception. We generally concur with that assessment and believe that the most significant differences in the conclusions of these studies are the result of variations in the definitions of desired service and when the desired service is impaired.

NAB/CEA Criteria Are Inappropriate for Today's FM Service

Both CEA and NAB, for example, generally find the performance of today's FM radios unacceptable because they do not meet their presupposed desired levels of performance. For example, 17 of the 28 radios tested by the NAB failed to meet its standard of 50 dB audio signal-to-noise ratio (S/N) performance *with no interference*

[1] See *FM Interference Tests, Laboratory Test Report*, Thomas B. Keller, Robert W. McCutheon, Consumer Electronics Manufacturers Association (CEMA), conducted under the auspices of National Public Radio (NPR), CEMA and the Corporation of Public Broadcasting (CPB); *Technical Studies and Reports* filed by the National Association of Broadcasters; and, *Receiver Evaluation Project* conducted by Broadcast Signal Lab, LLP for the National Lawyers' Guild, Committee on Democratic Communications. CEMA has since become the Consumer Electronics Association (CEA).

present and with the "strongest" desired signal level tested.[2] Similarly, CEA reports that *none* of its sample receivers "came near meeting" its 45 dB S/N performance target at the current FCC protection standards for full power co-channel stations. While such performance levels may indicate more interference from prospective LPFM stations, we fail to see how such levels can be appropriate measures when most radios do not perform to these levels, even in the absence of any interference, as was the case in NAB's tests.

Moreover, we have seen no indication from consumers that they find that the vast majority of FM receivers do not provide satisfactory service. Therefore, as stated in our *Report and Order,* we do not find the S/N levels suggested by CEA or NAB to be appropriate interference criteria for today's FM radio service. We also note that a previous study by the NAB indicated that the current FCC co-channel protection requirement for FM stereo yields an audio S/N of about 30 dB, not the 50 dB suggested by NAB in its technical study. [3]

Receivers Are Better at Rejecting 3rd Adjacent Channel Interference

Notwithstanding the differences among the technical studies regarding performance standards, there are important consistencies in the study results that we find support a conclusion that 3rd-adjacent channel restrictions are not needed for LPFM stations. All four studies show that the ability of FM radios to reject interference from signals on a 3rd adjacent channel is generally much better than from interference from signals on a 2nd adjacent channel. This is to be expected since 3rd adjacent channel is further removed from the desired channel to which you are tuning. (*See* again the attached illustration.)

The OET and NLG studies generally conclude that FM receivers provide for adequate rejection of interference on 2nd and 3rd adjacent channels. The OET study, for example, finds that nearly all of our receivers appear to meet the 2nd adjacent channel protection criteria and exceed the 3rd adjacent protection criteria by about 8-10 dB, a wide margin. While CEA and NAB argue that their studies show that the adjacent channel protections should be retained, a review of CEA's results shows that its median receiver provides about -40 dB of rejection of 3rd adjacent channel interference, and that this margin of performance is about 3 to 7 dB better than 2nd adjacent performance for its sample. Similarly, the NAB tests also show 3rd adjacent channel performance to be substantially better than 2nd adjacent—on the order of 8 to 10 dB. This means that radios can generally reject signals on a 3rd adjacent channel that are about six to ten times stronger than signals on 2nd adjacent channels.

The studies also found that automobile radios and home stereo/component receivers tend to be more effective at rejecting adjacent channel interference than clock, personal and portable radios. Our examination of the studies indicates that automobile radios and home stereo/component receivers generally are able to provide -40 dB or more rejection of 3rd adjacent channel signals and therefore generally will provide acceptable service in the absence of 3rd adjacent channel protection. NAB's test results, for example, show that FM radios in automobiles, where most FM listening is done, meet the current -40 dB criteria.

We also recognize that poorer quality receivers, such as personal and clock radios, may experience some additional interference as a result of eliminating the 3rd adjacent channel protection for LPFM stations. We note, however, that these classes of radio may also experience some degree of interference from co- and 1st adjacent channel full power FM stations operating within the existing protection requirements. We also believe that consumers generally understand that there are performance differences among the classes of radios and that they accept the fact that lower cost radios may provide more limited service capabilities. We therefore believe that our decisions with regard to LPFM service should not be constrained solely by the performance limitations of lower cost radios any more than we should use those ra-

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[2] Signal-to-noise (S/N) is one of the ways to characterize audio quality. It is the measure of the relative volume of the desired sound to the noise that may be present in the system. Noise manifests itself as "hissing" or static. A higher S/N ratio indicates better audio quality. A lower S/N ratio means the output will sound noisier. S/N ratio is measured in decibels or dB, a logarithmic expression of ratios. For example, 10 dB means that the signal is ten times stronger than the noise and 20 dB means that the signal is 100 times greater than the noise. To meet the NAB 50 dB S/N criterion, the volume of the desired sound would have to be 100,000 times stronger than the volume of the noise. Since many of the radios tested by NAB did not meet its 50 dB value, NAB also employed a degradation in S/N of 5 dB as a measure when the desired service is impaired.

[3] *See* NAB study entitled, "Subjective Evaluation of Audio Degraded by Noise and Undesired FM Signals" by Lawrence C. Middlekamp, November 17, 1982, cited in para. 97, p. 38, of the FCC's *Report and Order* in MM Docket No. 99-25.

dios to redefine existing FM radio service. For example, if we were to define acceptable FM radio service using NAB's performance measure and NAB's median test results for personal radios—the radius of a 6 kilowatt Class A radio station's protected service area would go from 27.5 km to less than 10 km. This is because such radios do not provide acceptable service as defined by NAB beyond about 10 km, even in the absence of any interference. I do not believe that this is a realistic approach, as this would ignore service provided to radios that provide more typical performance, and would unfairly reduce the station's expected audience reach.

Potential Interference from LPFM is Small

We also found that the area in which any additional interference would be likely to occur from an LPFM station operating on a third adjacent channel at maximum facilities of 100 watts and antenna height of 30 meters above average terrain would be very small and occur only in the immediate vicinity of the LPFM station. For example, even using NAB's median receiver performance test results for its three "worst" FM radio categories, i.e., clock, personal and portable, we find that the area where such receivers could potentially experience degradation from interference is small, generally 1 km or less. This interference analysis is shown in the following table:

LPFM Potential Interference Radius Based on NAB Tests

Receiver Category	Desired Signal Level		
	-45 dBm (Close to Station)	-55 dBm (–Principle Community)	-65 dBm (–Protected Service)
Clock	0.3 km (0.2 mi.)	0.7 km (0.4 mi.)	2.1 km (1.3 mi.)
Portable	1.0 km (0.6 mi.)	0.9 km (0.6 mi.)	1.0 km (0.6 mi.)
Personal	0.4 km (0.3 mi.)	0.5 km (0.3 mi.)	0.5 km (0.3 mi.)

The above Table shows the approximate radius around an LPFM station where interference could potentially occur to a 3rd adjacent channel full service station with different types of radios, based on the NAB test data. As indicated in the Table, the area of potential interference depends on the type of radio used and on whether the LPFM station is located relatively close to the "desired" full power station, *i.e.*, at the -45 dBm contour, or whether the LPFM station is at the edge of the full power station's service area, *i.e.*, at the "65 dBm contour. For example, if an LPFM station is located about 9 or 10 km from a 3rd adjacent channel Class A full power station (-45 dBm), a listener using a clock radio located about 0.3 km (about 1000 feet) from that LPFM station could experience some degradation in service. If the LPFM station is located at the edge of service of the full power station, the radius of potential interference would increase to about 2.1 km. Alternatively, if the listener were using a personal or "Walkman" type radio at the edge of coverage of the full power station, the potential interference area would have a radius of about 0.5 km.

It should be noted, however, that the actual audio S/N value that NAB uses to "define" where interference begins would be different for these two cases. For clock radios, interference at the edge of coverage would be said to begin to occur at a value of 41.5 dB S/N. This is a level we believe that most listeners would find more than acceptable for clock radio use. In the case of the personal radio, the value would be 20.3 dB, which may indicate, as discussed above, that these radios are not providing satisfactory service out to the protected contour of a full service station.

Further, we believe that this analysis provides a conservative estimate of the actual interference potential of LPFM, given NAB's performance criteria and the fact that NAB's sample included some of the poorer performing radios among the four studies. In addition, whether interference, in fact, occurs to FM listening depends on a number of factors, besides the performance of the FM receiver. These include, among other things, the actual reception conditions, such as the location and position of the radio, the frequency and location of both the desired and undesired stations, and the type of program material being transmitted and received. CEA noted, for example, that when the desired signal was modulated with rock music the interference was masked in its 2nd and 3rd adjacent channel subjective tests.

CONCLUSION

Based on the record before us, we therefore found that LPFM stations operating with 100 watts power or less on 3rd adjacent channels would not result in significant new interference to the service of existing FM stations. The Commission also

concluded that any small amount of interference that might occur would be outweighed by the benefits to listeners from the new services to be provided by LPFM stations. With regard to 2nd adjacent channel protection requirements, we concluded that, since receiver performance appears to be only at about the same level as that provided in the rules, the risk of interference from LPFM signals on 2nd adjacent channels may be somewhat higher. We therefore applied 2nd adjacent channel separation requirements to these stations that are consistent with the -40 dB standard reflected in the current FM rules.

In concluding, I want to express my gratitude to the Subcommittee for the opportunity to appear before you today. The Commission understands and shares the industry's concerns for protecting the integrity of the FM band. Please be assured that we have made every effort to consider all the available information in this matter. I believe the Commission's LPFM decisions fairly address the concerns of all interests and that this new service will not compromise existing FM service. I would be pleased to answer any questions you may have.

Mr. TAUZIN. Thank you very much.

When we do get to Q & A, I will ask each of you to comment on each other's demonstrations. I think that would be very constructive for us.

The Chair now recognizes Mr. Fritts for his statement. Remember, all witnesses, we have your written statements, so please try to conclude in 5 minutes if you can.

Mr. Fritts?

STATEMENT OF EDWARD O. FRITTS

Mr. FRITTS. Thank you, Mr. Chairman.

I am not an engineer and you will not hear about DBUs and 1 and 3 percents.

We appreciate you holding this hearing early in the session to focus on what we believe will be the impending disaster of the FCC's low power FM rule which is about to take place.

Let us put things in perspective. There are 12,000 radio stations licensed in the United States now. To sort of get a grip on that, there are only 18,000 Burger King franchises in the world and there are 12,000 radio stations in the United States now.

I have been President and CEO of NAB for some 18 years and prior to that, for more than 20 years, I was a licensee and group owner of a number of radio stations in the south. Never before have I seen the FCC act with such willful disregard for Congress or to turn its back on the spectrum integrity they were trusted to oversee.

I am not an engineer but what I heard Mr. Franca say, and I have great respect for him, is that yes, we are going to cause interference and we hope that you will accept it.

This is a case where I believe the FCC has abandoned its historic mission and really and truly forgotten the American consumer. Congress established the communications regulations back in 1927 to ensure clear, interference-free radio service and to end the technical chaos on the airways which existed through the 1920's.

Back in the early 1980's, ignoring this obligation, the FCC at that time decided that it should reduce the interference protections for FM radio to add thousands of new stations in the name of diversity. That proceeding, now the infamous Docket 80-90, only created the opportunity for radio stations to fail. I might add that 2,500 new FM stations have been added since that time.

By the early 1990's, more than 60 percent of all radio stations were losing money. The FCC's misguided plan, in part, resulted in

the Congress' decision to deregulate radio ownership back in 1996. There is no demonstrated need in the record that supports the establishment of LPFM stations, but I am sure if you were to ask people on the street, would you like to have your own radio station, most everyone would say yes. By using that logic, pretty soon when babies are born, we will be handing them their own radio license along with their social security card.

Think about this for a moment. For decades, the policy at the FCC has been that low power radio stations are an inefficient use of the spectrum. In fact, the Commission has developed an extensive and detailed record and consistently rejected proposals to create low power radio services.

Just 5 years ago, the FCC said that low power radio, "would lower the quality of FM broadcasting service." LPFM will simply create islands of service in a sea of interference. Although the laws of physics have not been repealed, the FCC has clearly turned this longstanding policy on its head.

The FCC says it is doing this to increase diversity but the evidence of our study and of an FCC study shows that listeners get more formats now than before consolidation began in 1996. The trend is increasing. As one example, there were only 400 Hispanic radio stations in the United States in 1996; now there are 600.

The FCC's goal of creating more diversity is laudable and we certainly support that, but this low power decision will not solve that problem. The FCC claimed that the demand for the new service is greatest in highly populated areas. We all recognize that but they have also acknowledged that there will be few, if any, LPFM stations located in those major metropolitan areas. It just won't happen. Instead, most of the stations will be located in small markets where vacant, full power allocations go begging now.

As Commissioner Michael Powell pointed out, "It is the current FM stations in those very small markets, including stations run by women and minorities, that could suffer most from LPFM." As the Commissioner stated, "It would be a perverse result indeed if these stations were to fail or the quality of locally originated programming suffered because new LPFM stations diluted their already tenuous base of support."

Commissioner Harold Furchtgott-Roth called the FCC's decision "a rush to judgment." I call it a rush to create interference before the Congress finds out about it.

The vice chairman of this committee, as noted this morning, Mr. Oxley and his colleague, Mr. Pallone, have introduced legislation to stop this ill-fated proposal. He currently has 113 co-sponsors.

Given the FCC's unwillingness to follow its core obligation to protect the spectrum, I see no other option than for Congress to say no to low power FM.

Wrapping up, Mr. Chairman, you and other members of the committee and this Congress will stand up for your constituents and the listeners to local radio stations who depend on local radio for entertainment, news, weather and sports. The time to move H.R. 3439 is now. We hope you will do it as soon as possible and send a powerful message to the FCC. That message is, we will not allow politics at the FCC to disrupt local radio service.

Thank you.

[The prepared statement of Edward O. Fritts and Bruce T. Reese follows:]

PREPARED STATEMENT OF EDWARD O. FRITTS, PRESIDENT AND CEO, NATIONAL ASSOCIATION OF BROADCASTERS AND BRUCE T. REESE, PRESIDENT AND CEO, BONNEVILLE INTERNATIONAL CORPORATION

INTRODUCTION

Thank you, Mr. Chairman, for the opportunity to appear before the House Telecommunications Subcommittee today. The National Association of Broadcasters (NAB) represents the owners and operators of America's radio and television stations. Our remarks today will address the Low Power FM (LFPM) Radio Service adopted by the Federal Communications Commission (FCC) on January 20, 2000.[1]

The FCC has a fundamental obligation under Section 1 of the Communications Act to "make available—a rapid, efficient, Nation-wide and world wide wire and radio and communication service." FCC Chairman William E. Kennard noted in his Separate Statement on the LPFM *Report and Order* that "at the heart of this mandate is the notion of opening up new opportunities in a way that protects the integrity of existing services."[2] This mandate should be read in light of the history that gave rise to communications regulation in the 1920's—the need to control interference to radio service. NAB believes the FCC has abandoned its mandate and primary function of spectrum manager and has crossed over to social engineering at the expense of the integrity of the spectrum for existing FM broadcast stations and their listeners.

NAB fully supports H.R. 3439, a bill that would rescind the FCC's newly adopted LPFM rules. Representatives Oxley and Pallone, and the other 70 co-sponsors have begun an important step to undo the FCC's action in order to protect free, over-the-air FM broadcasting from further interference. Further, NAB applauds the Subcommittee for holding today's hearing in order to gain more insight into this important issue. The FCC has failed in its mandate to properly weigh the costs and benefits of its new service and rushed to judgment without taking into account the volumes of evidence in its record that point to an opposite conclusion than the one it reached.

FROM THE BIRTH OF LPFM TO THE DEATH OF SPECTRUM INTEGRITY: THE FCC'S RUSH TO CREATE A NEW SERVICE

Not even 13 months ago, on January 28, 1999, the FCC voted to adopt a *Notice of Proposed Rule Making* designed to establish an LPFM service. The FCC proposed to authorize two levels of LPFM service—1000-watt stations or 100-watt stations. It also sought comment on whether it should authorize a service with stations at 10 watts or less. The FCC proposed to drastically alter the technical rules applicable to FM broadcasting in order to "make room" for enough new LPFM entrants to justify its efforts in pursuing the service.

The FCC asked for substantial technical evidence regarding existing FM receivers because its proposals would have a direct effect on how these radios would perform with additional LPFM stations inserted into the crowded FM band.[3] The FCC proposed to loosen its interference protection separation distances to introduce more LPFM stations. It believed that there would be minimal interference to existing radio service because radios would be able to adequately reject the additional signals produced by the LPFM stations; however, at that time, the FCC had not conducted its own study to test its assumption.

The adjacent channel interference separation distances are in place to help prevent interference from occurring to stations that operate near one another on the band. These adjacent channel stations need to have a specific amount of mileage between transmitter locations so that their signals do not bleed into each other, resulting in the listening public's inability to properly receive the signals virtually interference-free.

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[1] *Report and Order* in MM Docket No. 99-25, Creation of a Low Power Radio Service, adopted January 20, 2000; released January 27, 2000.

[2] *See* Separate Statement of Chairman William E. Kennard, Re: Creation of a Low Power Radio Service (MM 99-25) at 2.

[3] Currently, there are almost 8,000 full-power FM radio stations operating in the United States.

At the FCC's request, three independent parties submitted receiver studies into the docket.[4] The FCC's Office of Engineering and Technology (OET) also prepared a report of its receiver testing. NAB provided a detailed technical study to the FCC regarding FM radio performance in the absence of second- and third-adjacent channel protections.[5] NAB tested 28 radios from five different categories.[6] This sample was the largest and most representative of the universe of existing FM receivers of any of the receiver studies submitted into the record.[7]

In order to quantify the amount of interference that would result with the introduction of LPFM, a definition of unacceptable interference had to be developed. We chose an interference standard that is based on subjective audience listening and one that was also relied on by the FCC in past proceedings, and which is supported by international standards.[8] This was the benchmark NAB used to determine whether radios would acceptably reject adjacent channel interference. By contrast, the OET study focused only on distortion, a measure that has not previously been used to evaluate interference. Our study indicated that a majority of the radios tested did not perform up to the level previously assumed by the FCC, and certainly did not show that radio performance had improved. Car radios and home stereos generally were able to reject adequately the interfering signals. However, portable radios, personal radios and clock radios—those categories that make up 65.3% of the radios sold in 1998—failed to perform up to a level that could conceivably be considered "fair" reception under accepted testing standards.[9]

After the receiver testing was completed, NAB took the analysis one step further and conducted a study to determine how much interference could result in the 60 cities the FCC had initially studied to determine if LPFM was feasible. NAB used the FCC's computer program to study the effects of the transmitter locations of LPFM stations in these 60 cities. Then, we applied the data from our receiver testing to approximate the areas of interference resulting from the LPFM allotments. Finally, we used population data to estimate the number of listeners who would receive unacceptable interference to at least one full-power FM station due to an LPFM station being dropped in under the FCC's proposal. NAB found that, conservatively, millions of people would experience interference in these 60 cities.[10]

NAB concluded that radio receivers have not improved in their interference rejection capabilities, and thus, the FCC's key assumption in its Notice was unwarranted. Further, we commented that because the FCC relied on this assumption as its justification for proposing an LPFM service, the FCC could not adopt its proposed LPFM service because it would cause unacceptable levels of interference to the listening public.

For Reply Comments, NAB commissioned two independent analyses of all four receiver studies because of the different conclusions reached by the studies. The NAB and CEMA studies concluded that unacceptable interference would result from the LPFM proposal, and thus the Commission could not loosen its interference protections for LPFM. The National Lawyers Guild and the OET determined that radios could reject the additional interference, and thus LPFM stations could be authorized.

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[4] In addition to NAB's receiver study, the Consumer Electronics Manufacturers Association (CEMA, now the Consumer Electronics Association), National Public Radio and the Corporation for Public Broadcasting conducted and submitted a study. Additionally, the National Lawyers Guild and various LPFM proponents conducted their own receiver study.

[5] A copy of the NAB's comments and reply comments has been attached to this testimony for incorporation into the record of this hearing.

[6] NAB tested eight car radios, five home stereos, five portable/ "boom boxes", five personal/ "Walkman" radios and five clock radios.

[7] Attached to these written comments as Appendix A is a brief comparison of the four receiver studies comparing the number of radios tested, the types of radio tested and the test methodology.

[8] Our study used the ITU Recommendation 641, "Determination of Radio-Frequency Protection Ratios For Frequency-Modulated Sound Broadcasting," 1986, Geneva, Switzerland. This ITU standard sets a -50 dB signal-to-noise ratio as acceptable reception. On a subjective listening chart, perceived impairment from interference at this level is rated at "slightly annoying." Any reception levels produced by a radio above this number indicated the radio could reject the adjacent channel signal, any number below this level indicated the listener would receive an unacceptable amount of interference. It should be noted that some of the tested radios did not perform at this level without injecting additional interference. In those cases, we determined that unacceptable interference occurred when the radio's reception dropped 5 dB from its initial level. NAB supported this alternative interference criteria method in our Comments. Although the FCC criticized this aspect of our study, if we had not used the alternative criteria, the results would have shown even greater harm from the introduction of LPFM.

[9] *See* NAB Comments, Vol. 2.

[10] *See* NAB Comments, Vol. 3, at 20.

NAB's review provided the FCC with a detailed comparison of the type of receivers tested, the interference criteria used and the test methodology.[11] Both groups of experts concluded that NAB's testing was the most comprehensive and NAB's test methodology of using signal-to-noise ratios was the appropriate way to test for signal interference. One group of experts went further to prove that, although the four studies applied different methodologies and different conclusions were reached, the main difference between the studies was the definition of when unacceptable interference results.[12] Those same experts concluded that NAB provided the strongest support for our interference criteria and that the listening public would likely demand a higher level of reception quality.

It is important to note that in addition to the volumes of comments provided by NAB in this proceeding, thousands of other comments were filed, generating a huge record for the FCC to consider. Yet, a little over two months after the comment period officially closed, the FCC adopted a *Report and Order* authorizing two levels of LPFM service—one level for 100 watt stations and another "microradio" level where stations operate at 10 watts or less.

NAB believes the FCC failed to adequately analyze the interference issue and mistakenly relied on the OET receiver study—one that experts have concluded does not properly measure the audible effects of the interference that will result.[13] At least two FCC Commissioners also questioned whether the interference issue was properly resolved prior to the adoption of the *Report and Order*. Commissioner Michael Powell, in his separate statement, confessed that he has "no clear idea as to whether or not existing broadcasters will suffer intolerable interference" and suggested a phase-in approach that would have answered questions before any harms are realized.[14] Further, Commissioner Furchtgott-Roth said, "There are real costs—to existing stations, their listeners, and to public perception of the quality of FM radio as a media service—here that the Commission has not even attempted to quantify."[15] Finally, the Commission itself noted in its *Report and Order* that the limited number of receivers tested makes it difficult to draw statistical inferences with regard to the general population of FM receivers.[16] This fact alone should have given the FCC pause as to whether it could have—and should have—adopted LPFM rules.

WHAT ARE THE BENEFITS OF AN LPFM SERVICE THAT OUTWEIGH THE COSTS?

In order to justify adopting an LPFM service, in its *Report and Order* the FCC relies on a cost/benefit analysis. It recognized that some interference would be caused by LPFM, but concluded that the benefits outweighed the costs. Such an analysis, if done properly, identifies and weighs the benefits of an action with the costs that will be incurred. NAB believes the FCC failed to properly conduct this analysis.

The FCC's View of the Benefit of LPFM Service

The FCC believes that the establishment of a LPFM service will permit a greater number of new stations to be authorized and will foster diversity of voices on the airwaves. Both Chairman Kennard and Commissioner Gloria Tristani note this new service is important because they believe that the radio broadcast industry has become too concentrated since the Telecommunications Act of 1996 was signed into law. They believe that this consolidation has led to a decrease in diversity on the airwaves.

There has been significant consolidation in the radio industry since Congress relaxed the ownership limits on radio stations to bolster the economic efficiencies that result from common ownership. This Congressional policy decision has not negatively affected the diversity of formats available to listeners. NAB provided substantial evidence to the FCC in the LPFM proceeding that format diversity has increased in the last three years, as stations have been able to diversify to reach particularized audiences.[17] Indeed, an earlier FCC study itself reached the same conclusion. Thus, the choices for listeners have increased—not decreased to where "national play lists and syndicated programming" are prevalent, as Commissioner

[11] *See* NAB Reply Comments at Appendix A and B.
[12] *See* NAB Reply Comments at Appendix B.
[13] *See* NAB Reply Comments at Appendix B.
[14] *See* Separate Statement of Commissioner Michael Powell at 3.
[15] *See* Separate Statement of Commissioner Harold Furchtgott-Roth at 1.
[16] *Report and Order* in MM Docket No. 99-25 at ¶98.
[17] *See* Format Availability After Consolidation, NAB Comments, Vol. 1, Attachment B.

Tristani believes.[18] Thus, the existence of the "problem" the FCC identified is not supported by the facts.

Further, NAB provided a study to the FCC of the radio marketplace that concluded that a significant percentage of independent voices exist in the radio market—including larger markets—even after consolidation.[19] For example, NAB's study shows that nationally, 28.8% of all commercial radio stations in all Arbitron metros are standalone stations, while another 21.4% are part of a local two-station operation. Thus, nearly half of the commercial radio stations in the nation are still either a standalone station or part of a duopoly in their market, and not part of a large group, as assumed by the FCC.

With this evidence, we proved that the FCC's assumptions that consolidation permitted by the Telecommunications Act of 1996 has eliminated independent voices in the radio industry and reduced format diversity are unfounded. Congress should not let the FCC determine whether to effectuate the will of Congress. In this instance, the FCC has concluded that consolidation has had a negative effect—despite the evidence provided by NAB that points to the contrary—and has adopted new rules designed to counteract the policy set by Congress in 1996.

Any Alleged Benefit Will Not Be Realized

The FCC states that it is modifying its interference protections in order to provide room for LPFM stations in markets that otherwise would not have space available. The FCC believes that the greatest demand for LPFM stations will be in highly populated areas where it believes alternative forms of radio service are most needed.[20] However, it is these same highly populated areas where virtually no LPFM stations can be allocated, no matter how the FCC alters its interference protections. In this particular case, it appears that the FCC's goal and benefit of new voices can never be realized in most of the major markets.

Alternatively, the FCC's LPFM plan will provide numerous opportunities in the smaller and medium sized markets where the lack of demand for such services has left hundreds of available full-power allotments open. Thus, the fact that there is spectrum standing open begs whether there was a need for the new voices in these markets in the first place. Also, as we note below, the benefit is diminished—if not extinguished—by interference to LPFM stations from full-power stations and other LPFM stations. This is another fact the FCC entirely ignored.

In short, the FCC only identified one benefit to its LPFM service—the provision of new diversity of voices. However, this benefit will not be realized in the areas where the FCC believes it is needed the most and it is questionable whether the benefit is needed elsewhere. In making its decision, the FCC claims to have weighed the costs and the benefits and concluded that the one benefit substantially outweighs the costs associated with its implementation of LPFM service. The truth of the matter is that the FCC has not properly weighed the costs because it has chosen to ignore a substantial part of the record in order to justify implementing its new service.

The Costs Ignored by the FCC

There are three areas where the FCC has ignored—or mistakenly undervalued—the costs of an LPFM service on the listening public, on existing broadcasters, and in some cases, on even the LPFM stations. The first area is one of interference.

As noted above, NAB provided in the record a substantial receiver study and a comprehensive critique of the other receiver studies. The conclusion of those studies is that there will be *significant* unacceptable interference due to the introduction of LPFM service. This interference will affect the American public's ability to receive full-power station signals. The FCC claims to have analyzed the record and concluded the risk of interference is minimal. However, in the *FCC's Report and Order*, there is virtually no discussion of NAB's expert critique of the OET study and no attempt to quantify the interference potential in order to properly weigh this against the alleged benefit.

The conclusions reached by the FCC were made by discounting the interference suffered by less expensive radios. In the *Report and Order,* the FCC recognized that poorer quality radios may experience some additional interference. However, it believes that its decisions "should not be constrained solely by the performance limitations of lower cost radios any more than we should use those radios to redefine ex-

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[18] *See* Separate Statement of Commissioner Gloria Tristani, Re: Creation of a Low Power Radio Service (MM 99-25). Commissioner Tristani believes that LPFM is "a partial antidote the negative effects of consolidation."

[19] *See* Independent Radio Voices in Radio Markets, NAB Comments, Vol. 1, Attachment A.

[20] *Report and Order* at ¶2.

isting FM radio service."[21] This decision is an abrupt reversal of the FCC's *Notice*, where it assumed current radios had improved at rejecting interference. In the face of evidence that the typical radio instead performs worse, the FCC simply decided to ignore the evidence.

Additionally, NAB provided evidence that showed the threat of interference to LPFM stations from full-power stations. We showed that it is possible that if a 100 watt LPFM station were placed on a third-adjacent channel of a Class B FM station one mile from each other, 72.9% of the LPFM station's service area would face interference.[22] Further, the FCC itself has not provided any protection from LPFM stations in this regard. The LPFM stations will be allowed to accept more interference from full-power stations (and other LPFM stations) than previously proposed by the FCC. These facts are significant costs that were not considered in the FCC's analysis.

The second cost that the FCC ignored is in the area of economics. NAB provided evidence to the FCC in this area concluding that the economic harms to both existing broadcasters in their efforts to serve their listeners and the economic costs to LPFM stations should preclude the FCC from moving forward on its proposal.[23] The study concludes that the limited benefit of the "narrowcast" programming that will be provided by LPFM stations is likely to be low quality and of limited value, making the viability of LPFM stations doubtful. Additionally, the introduction of LPFM service will cause interference to full-power stations and this interference translates into audience losses that results in a decrease in local service programming by full-power stations. This result has strong support because the FCC has been down this road before.

In the early 1980's, the FCC adopted a plan to drop in thousands of new full-power stations to provide service to underserved communities.[24] In the eight years following, nearly 2,500 stations were added. The effect of this was disasterous on the radio industry. In fact, the FCC was forced to modify its ownership rules to provide increased efficiencies to heal the radio marketplace. Congress, then, provided further deregulation with the Telecommunications Act of 1996.

The FCC chose to ignore this evidence claiming it does not need to consider such arguments because, as Chairman Kennard stated, "it is not the business of the FCC to pick winners and losers."[25] However, as Commissioner Michael Powell aptly points out, "the Commission itself has recognized that the industry's ability to function in the public interest, convenience and necessity is fundamentally *premised on the industry's economic viability*."[26]

Ironically, it is likely that the most harm from the LPFM service will come to the independently owned, "mom-and-pop" stations in the smaller markets that have fought to keep their heads above water and provide quality local programming. In many of these instances, these stations are minority owned stations. Even in the absence of the interference potential, the threat of new voices—even if non-commercial—could reduce the ability of these stations to maintain the level of service now provided. If that service changes, it is the listeners who will suffer due to the inability of LPFM stations to fill in the gap of programming quality and quantity.

Finally, the FCC virtually ignored the issue of enforcement as a factor in its analysis. With its LPFM service, the FCC expects to license over 1,000 new stations. These stations are subject to many—but not all—of the same regulations as full-power broadcasters. However, the FCC has not proposed any plans as to how it expects to enforce its rules on this new amateur radio service where the licensees will either be those who have never operated a broadcast station or did so illegally. The fact is that the FCC is operating with greatly reduced Field Office staff. For the past few years, these offices have diligently attempted to shut down illegal pirate broadcasters, in addition to enforcing the rules for all other FCC licensees. The FCC apparently has no plans to devote more resources to enforcement, and thus seems to be relying only on the good faith of inexperienced LPFM operators to ensure that the rules are followed.

These amateur operators will not possess the same incentive to abide by the rules as full-power broadcasters because they do not have the same investment in the license. While the FCC may think that it has no reason to believe that these amateur operators will not follow the rules, the fact is that the LPFM movement does have

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[21] *Report and Order* at ¶98.
[22] *See* NAB Comments, Vol. 1 at 23.
[23] *See* LPFM: The Threat to Consumer Welfare, NAB Comments, Vol. 1, Attachment C.
[24] Modification of FM Broadcast Station Rules to Increase the Availablility of Commercial FM Broadcast Assignments, 94 FCC 2d 152 (1983).
[25] *See* Separate Statement of Chairman William E. Kennard at 1.
[26] *See* Separate Statement of Commissioner Michael Powell at 2.

roots in pirate broadcasting. The FCC does not have the ability to control thousands of new LPFM stations and continue to shut down pirates. NAB believes that part of the FCC's mandate to provide efficient use of the spectrum also includes the ability to maintain that use through effective enforcement. That element is severely lacking in this case and must be considered in any analysis.

CONCLUSION

Mr. Chairman, NAB is encouraged by the Subcommittee's interest in the LPFM issue. The FCC has taken steps that threaten the spectrum integrity of the FM band without justifiable cause. NAB also supports H.R. 3439, a measure that would turn back the clock and undo the FCC action before real harm results. The FCC has rushed to judgment by substituting social engineering for rational, prudent policy making by adopting a service that lacks any benefit that outweighs the substantial costs that will be produced. Once again, we would like to express on behalf of NAB, its appreciation for the opportunity to testify before the members of the House Telecommunications Subcommittee today.

National Association of NAB BROADCASTERS

APPENDIX A

Side-by-Side Comparison of Receiver Studies

	NAB Receiver Study	Other Receiver Studies
# of radios	▪ 28 radios	▪ CEMA – 16 radios ▪ FCC – 21 radios ▪ National Lawyers Guild – 11 radios
Type of radios	▪ Tested eight car radios, five clock radios, five components, five personal radios and five portable radios. ▪ According to 1998 sales data – clock, personal and portable radios made up 65.3% of the total radio sales. Components make up 14.1% and car radios make up 20.5%.	▪ CEMA – Did not test clock radios and only tested one personal radio. Tested five car radios, five components and five portable radios. ▪ FCC – Did not test clock radios or personal radios. Tested primarily car radios (7) and component radios (9) with five portable radios. ▪ National Lawyers Guild – Only tested one clock radio and one personal radio, four component, three portable radios and two car radios.
Test Methodology	▪ Used the International Telecommunications Union-Radiocommunication Sector (ITU-R) interference standard (i.e. signal-to-noise ratio of 50 dB).	▪ CEMA – Used a signal-to-noise ratio of 45 dB as its interference reference. That ratio was established as a minimum for quality broadcasting in a NPR report filed in MM Docket 87-268. ▪ FCC – Tested its radios for distortion. It increased undesired signals until distortion increased 1% and 3% from baseline levels. ▪ National Lawyers Guild – Did not establish an interference standard. The study reported a "transition zone" for each radio where the injection of undesired signal caused the radio to fail.

Conclusions

- NAB tested the most radios and tested several in each category. NAB's radios fairly represent the radios sold in 1998. Omitting categories or testing only one or two radios in a category does not provide adequate data on which to base sound conclusions.
- NAB and CEMA used accepted interference standards as baselines for each study.
- The FCC did not have any reasoning or justification for its methodology and there is no indication that measuring distortion shows when interference that would bother a listener would occur.
- The National Lawyers Guild testing demonstrates when a radio fails to receive a signal, but does not fairly represent the point at which unacceptable interference will result. Unacceptable interference occurs before a radio fails to receive a desired signal.

Mr. TAUZIN. Thank you very much, Mr. Fritts.

The Chair now recognizes Mr. David Maxon, Founder, Broadcast Signal Lab on behalf of The Lawyers Guild.

STATEMENT OF DAVID MAXON

Mr. MAXON. Mr. Chairman, members of the subcommittee, thank you for inviting me to speak today.

My name is David Maxon. I am co-founder and have been managing partner of Broadcast Signal Lab in Cambridge, Massachusetts since its inception in 1982. I was also Vice President, Director of Engineering, Charles River Broadcasting Company whose flagship radio station in Boston is the highest rated classical music station in the Nation. I served that company for 20 years.

Broadcast Signal Lab was contracted by The National Lawyers Guild to evaluate a sample of consumer radios for their susceptibility to interference under a variety of conditions. We are here today at the request of the subcommittee to address the interference question in the matter of low power FM broadcasting. My role is that of an engineer and The National Lawyers Guild Committee on Democratic Communications has asked me to testify on its behalf in that capacity.

They are very concerned with the free speech issues involved in the creation of LPFM and have asked me to introduce the attached statement of fundamental principles relating to spectrum integrity that is attached with my testimony into the record.

On behalf of The National Lawyers Guild and the related parties that funded the work that my company did, we studied 11 consumer radios to develop an understanding of their susceptibility to interference under a variety of conditions. We varied a number of things—signals strengths of desired and undesired signals, modulation of the signals—the loudness of the sound put on the signal, the types of sound put on the signal, and we looked at various measures of susceptibility. You have heard harmonic distortion mentioned, you have heard noise mentioned. We measured both and looked for patterns in the data.

I would like to note well that the receiver tests alone, as you can see from the dissention among the different testers of receivers, do not prove or disprove anyone's case about interference. There are so many other factors such as how and where different types of radios are used, such as consumer preferences that should be considered in a thorough analysis.

For the most part, the radios that we did test, and it was just a sampling of radios as were the other tests, they did have a much greater ability to withstand interference on second and third adjacent channels than one might anticipate using the rules that were established for FM broadcasting half a century or so ago.

We felt that the FCC protection standards could be relaxed for low power services without causing a significant increase in interference. We did some testing of fourth adjacent channel interference, which is not an issue as far as interference is concerned, and found some comparison between fourth adjacent channel interference and third adjacent channel interference. There were some similarities. This suggests that if fourth isn't regulated, perhaps third doesn't need to be.

We determined that with the low power FM stations, the 110 watt stations, not the 1,000 that were originally also mentioned in the Notice of Proposed Rulemaking, but those lower power stations, we felt with the separation distances that were proposed, subsequently modified and adopted by the FCC, they are very conservative separation distances and that if any interference occurs, it will be no greater than the interference that the FCC and broadcasters accept on a variety of other circumstances throughout the country in urban and rural areas.

The separation requirements for LP-100 stations are in fact much more conservative than those which apply to some existing low power services, specifically Class D stations and translators. These facilities have been coexisting successfully with full power stations for many, many years.

Low power FM is, to my way of thinking, the way the separation distances have been applied, an extension of Class D radio basically. It is a creation of an additional number of low power stations similar to ones that are already in use by some noncommercial broadcasters today.

We also felt that while we could take a radio signal and not put any sound on it and take a noise measurement, that wouldn't be a realistic measurement of interference, but just a measure of noise. So we also did measurements where we put sound on the interfering signal and sound on a signal that we would like to receive on our test radio. You can't measure noise because the sound is in the way, so you have to take out the sound and measure what is left and that is the noise. This is the harmonic distortion that is being mentioned by a number of other people.

The harmonic distortion measurement is, in fact, a noise measurement. It is nothing other than that. It is a more practical, real world way to measure the performance of radios. One battery of our measurements did use the harmonic distortion technique.

We also note that in the unlikely event there is a conflict between a noncommercial translator's ability to receive a distant signal, for instance, we understand there may be some issues especially with present noncommercial broadcasters of a translator somewhere else and picking up their signal and translating it onto a new frequency in this remove market, that perhaps an LPFM could come in and prevent them from picking up their own distant signal to put on their own translator.

There are alternative delivery means that you can use to feed a translator. In fact, many translators are permitted to do this. We would suggest that in the case of an LPFM that interferes with the reception of a primary station for a translator, that the FCC can simply modify the rules to address any concerns that are raised about how LPFM may affect reception of signals for existing translators.

As we said, we feel the decision the FCC made to authorize LPFM service is very conservative from a technical perspective. It is the least change possible to the technical rules that the FCC could have made. As the FCC has acknowledged, because of the conservative approach they took, it does preclude LPFM in places where it might otherwise have been permitted.

As a point of comparison, I would like to just mention the Class D station in the Boston area at Brandeis University that has been there for many years. It is on a commercial channel and it is within the protected area of two third adjacent channel stations. The FCC permitted it because its supposed interference area would fall within the campus of the school.

I have been to the campus many times, I have serviced the station. I have never seen, never heard any complaints about interference with either of the two third adjacent channel stations that are also received on campus.

So it is our opinion that the third adjacent channel changes are de minimis and they do not have an impact on commercial broadcasting. I would suggest that the interference issue, in spite of all the people we have seated here today, is functionally a red herring, that we really should be discussing the policy issues with the people here who are the policy experts.

Thank you very much.

[The prepared statement of David Maxon follows:]

PREPARED STATEMENT OF DAVID MAXSON, FOUNDER, BROADCAST SIGNAL LAB, ON BEHALF OF THE LAWYERS GUILD

My name is David Maxson, co-founder and managing partner of Broadcast Signal Lab, LLP, Cambridge, Massachusetts since its inception in 1982. I was Vice President, Director of Engineering of Charles River Broadcasting Company, whose flagship radio station in Boston is the highest-rated classical music station in the nation. I served the company for twenty years.

Broadcast Signal Lab was contracted by the National Lawyers' Guild to evaluate a sample of consumer radios for their susceptibility to interference under a variety of conditions. We are here today at the request of the Subcommittee to address the interference question in the matter of Low Power FM broadcasting (LPFM).

The FCC decision to authorize an LPFM service is very conservative from a technical perspective. Its changes to the technical rules are the least one could make. While LPFM stations are being permitted to overlap with signals of third adjacent channel stations, the protections afforded to existing stations on the first and second adjacent, or on channels the same channel are extremely conservative. The FCC chose to employ a simple LPFM distance separation methodology that in the Commission's words "will preclude new LPFM stations in some areas." (FCC 00-19, par. 70)

As a point of comparison, consider the other two low power FM services peacefully coexisting with full power stations—Class D and translator stations. There are plenty of Class D stations and translators that would not meet the LPFM separation distances. One of our clients, WBRS, at Brandeis University, has a Class D station operating at 35 watts ERP at about 150 feet above average terrain. It is very similar to an LP-100 facility in its power and antenna height. This station is directly in the middle of the protected contours of third adjacent stations on 100.7 and 95.5. This station is also at a location and frequency that would not meet LPFM separation distances. The FCC licensed this station because the area of third adjacent channel overlap was contained within the college campus. In reality, even on the campus, there is no interference from the Class D to the third-adjacent stations.

Therefore, based on practical experience, and our evaluation of radio receivers, ten or 100-watt low power FM radio stations that meet the FCC's conservative criteria will have an interference effect that is at worst, *de minimus*, with respect to the existing radio environment.

The interference issue, in our opinion, is a red herring in this proceeding. I respectfully encourage the subcommittee to spend its precious time on considering the policy issues related to the LPFM service, not the interference issues.

Mr. TAUZIN. Thank you very much, Mr. Maxon.

The Chair is now pleased to welcome Mr. Bruce Reese, President and CEO, Bonneville International Corporation, Salt Lake City.

Mr. Reese?

STATEMENT OF BRUCE T. REESE

Mr. REESE. Thank you, Mr. Chairman.

I am Bruce Reese, President and CEO of Bonneville. We operate 15 stations around the country including several here in Washington, DC, WTOP AM and FM and WGMS, whose badly interfered signal you heard earlier on Mr. Jackson's evaluation. Our company has been in the radio business since 1922.

I am also here as Chairman of the NAB Specturm Integrity Task Force which was formed last year to monitor and evaluate the FCC's low power FM proposal.

My job here today is to focus on real operating problems and real listener problems. As operators of FM stations, there is nothing more important to us and to our listeners than being able to hear our station without interference.

This is the Sony Walkman that has been talked about here today. This one of the types of radios that the NAB tested. Our study found that the relaxed interference standards proposed and now adopted by the FCC would make this type and other types of radios much harder to listen to. In fact, hundreds of millions of radios fit into these threatened categories. Not every radio will experience interference everyplace, not every radio station will experience interference everywhere in its service area, but let us be clear on one point. The FCC's new rules will create new interference for millions of American listeners.

Even Professor Rappaport, the outside expert the FCC cited, conceded that many radios will suffer new interference from LPFM. The FCC was ultimately forced to agree with that. Nonetheless, the FCC decided to plunge forward with LPFM. It simply ignored new interference to radios in millions of American homes. These radios won't stand up to more interference from gerrymandered stations.

You have heard Mr. Jackson's examples of what the FCC now deems acceptable interference. The FCC says that the benefits outweigh the cost of this so-called acceptable interference. What are the benefits?

The FCC supposedly wants to get these licenses into the hands of community-based groups and minorities in large markets. Will this work? In ignoring the laws of physics to reduce interference protections for full power stations, the FCC also had to reduce the protection levels for these new LPFM stations. As a result, the new LPFM stations themselves will suffer substantial interference. Thus, the FCC will be licensing new interfering stations that will be largely unlistenable for the intended audiences. The cost of this ineffective spectrum allocation is the creation of a swiss cheese coverage pattern for existing full service broadcasters.

The combination of bad science, bad economics and ill conceived social engineering that is the LPFM decision also creates all kinds of incentives for LPFM stations to cheat, whether on the technical standards be it tower high power, hours of operations, or the educational and noncommercial requirements.

The FCC does not have and is unlikely to get the resources to enforce these rules for hundreds or thousands of new stations. Notwithstanding their good intent, they haven't even been able to shut down the hundreds of pirate radio stations now on the air.

The irony is that the Internet provides the creative tools and the distribution mechanism to accomplish all of the FCC's goals. Why reek havoc on the FM dial? The only apparent reasons not to use the Internet are one, that the FCC won't get to regulate it and two, that the FCC won't get credit for it.

Broadcasters spend millions of dollars annually to keep high quality sound on the air. Our audience demands it. That is why we support the development of in-band, on-channel digital radio. Another reason why the FCC's LPFM decision is wrong is that it adds new low power stations to the dial before any testing to find out whether new digital radios can deliver the promised CD quality service in the face of this new LPFM interference. In fact, the Commission issued its final LPFM order before receiving initial comments on the digital rulemaking.

Don't let misguided social policy and a disregard for scientific evidence undermine the investment we have made and the expectations your constituents have for the sound of their FM radios. We urge you to pass the Oxley-Pallone bill. It is the only way we can provide the spectrum integrity millions of American radio listeners need and deserve.

Thank you.

Mr. TAUZIN. Thank you very much, Mr. Reese.

The Chair is now pleased to welcome Dr. Theodore Rappaport, Professor, Virginia Tech Engineering School, Blacksburg, Virginia.

STATEMENTS OF THEODORE S. RAPPAPORT, PROFESSOR, VIRGINIA TECH; DON SCHELLHARDT, NATIONAL COORDINATOR, THE AMHERST ALLIANCE; DIRK KONING, EXECUTIVE DIRECTOR, GRAND RAPIDS COMMUNITY MEDIA CENTER; HON. HAROLD W. FURCHTGOTT-ROTH, COMMISSIONER, FEDERAL COMMUNICATIONS COMMISSION; AND KEVIN KLOSE, PRESIDENT AND CEO, NATIONAL PUBLIC RADIO

Mr. RAPPAPORT. Thank you, Mr. Chairman and other esteemed members of the committee. It is an honor to be here before you.

My name is Ted Rappaport. I am the James S. Tucker Professor of Electrical Engineering at Virginia Tech.

Mr. Chairman, I would like to thank you and commend you and your son for your choice of a higher education school in Blacksburg.

Mr. MARKEY. May I interrupt for a second? The rest of the world might not have known a lot about Virginia Tech but since they beat Boston College every year, I am very familiar with them.

Mr. RAPPAPORT. I also serve as Chairman of Wireless Valley Communications in Blacksburg. My research expertise is in the field of radiowave propagation, communications system design and broadband wireless communications. I am also a registered professional engineer in the Commonwealth of Virginia and received the NSF Presidential Faculty Fellowship Award from President Bush back in 1992, the first class of its kind.

In the Rose Garden, President Bush encouraged all of us, the 30 faculty there, to try to make a contribution to the US in our careers. So when I was approached by a number of public interest groups, the United Church of Christ and their lawyers at the Media Access Project to try to ring technically and objectively on this topic, I was eager to participate.

In getting involved, I insisted that my work in this area would have to be preconditioned on the fact that it would have to be technical, objective and without bias. In so doing this work, my staff and I at Wireless Valley conducted a very extensive study of how the FCC licenses FM transmitters today and how low power FM might impact the future of FM services, digital services and also reading for the blind and the like.

What we did is we made a very comprehensive study, extensive, using the entire data base of FCC FM licenses with maps and geographical input of power stations, of all the FM stations that exist in the US today, as well as all stations in Canada and Mexico and studied how low power FM would impact today's spectrum and also how newer, lower power, 10 watt and 1 watt, stations, which were not on the FCC radar screen, would also impact the service to listeners both present and future.

In fact, we spent several weeks not only analyzing FCC radio propagation programs but we also developed numbers of the actual channels and their specific locations in 60 representative US cities. One of the interesting things about the study is unlike what has been claimed by low power opponents, is that it is not at all a swiss cheese type nature but in fact there must be very, very careful technical analysis and careful FCC licensing procedures to license these low power FM stations to protect the public. That is exactly what the FCC has proposed very responsibly in their low power FM ruling.

My analysis concluded that low power FM will not cause unacceptable levels of interference for existing FM broadcast stations, their listeners or future services, digital radio. Our simulations demonstrated that under the conservative proposal adopted by the FCC, that in the absolute worse case, if all new low power FM stations used 100 watt transmitters, all of them put their antennas at 30 meters above ground level, the maximum number of new listeners who could receive low power FM, of that new number of served listeners at most 1.6 percent of those new listeners might, and that is just might, experience interference.

Furthermore, of that small minority of 1.6 percent, the majority of the actually would not experience any interference whatsoever given the fact that the regulations as proposed by the FCC provide sufficient protection. In fact, if you look at the low power FM broadcast rules, they are very, very similar to existing FM stations. The only difference is the elimination of the third adjacent channel protection.

I think it is very important to note, and I know Mr. Oxley would be interested in this, that the USADR, which is a digital radio proponent publicly stated in low power FM comments that it was the third adjacent protection ratio, not the second, that they were concerned about. In fact, this is what the FCC eventually did in the ruling.

The second part of my study was based on analyzing the public comments that had been filed to date regarding the technical issues of low power FM. I must tell you, Mr. Chairman, I was very dismayed at the hyperbole and the lack of objectivity in those studies that were submitted from opponents of low power FM.

I could name a large list of calculations and misrepresentations that in any technical journal that I review and my peers review, would never pass muster. In fact, I would be happy to address some of those in the comments.

In concluding, I would like to say my hope is that this testimony has convinced you and the committee that indeed there was very, very good technical rigor in determining the low power FM standards and that there will not, I repeat not, be tremendous interference. It will be very, very slight and it will be of great benefit to the public.

Thank you.

[The prepared statement of Theodore S. Rappaport follows:]

PREPARED STATEMENT OF THEODORE S. RAPPAPORT, PROFESSOR, VIRGINIA TECH

Thank you for the honor to appear before you today. My name is Dr. Ted Rappaport. I am the James S. Tucker professor of electrical engineering at Virginia Tech, Blacksburg, and have been on the faculty for 12 years. In 1990, I founded Virginia Tech's Mobile and Portable Radio Research Group, one of the world's first research and education centers to specialize in the field of wireless communications. I also serve as Chairman of Wireless Valley Communications, Inc. in Blacksburg, VA. My research expertise is in the areas of radio wave propagation, communication system design, signal processing, and emerging broadband wireless communications. I have authored or coauthored more than 10 books in the field of wireless communications, including the popular textbook "Wireless Communications" published by Prentice-Hall. I received my engineering degrees from Purdue University in the 1980's, and in 1992 was recipient of the National Science Foundation (NSF) Presidential Faculty Fellowship. I am a registered professional engineer in the Commonwealth of Virginia.

I became acquainted with low power FM radio, also known as LPFM, when I was approached last summer to perform technical analysis on behalf of a coalition of churches, non-profit foundations, and other public-interest groups, led by the United Church of Christ and their lawyers at Media Access Project. Before I agreed to do any work for them with regard to LPFM, I insisted the public interest groups would have to accept my results based on technical analysis, without bias or a predetermined outcome. The groups seeking my technical analysis agreed to these conditions, and I carefully studied the Notice for Proposed Rule Making (NPRM) for LPFM. It seemed well thought out, and made a compelling case for LPFM stations. In the NPRM, the FCC asked for technical analyses from the public to help them in the rulemaking process.

After reading the NPRM for LPFM, I agreed to provide a detailed technical analysis of LPFM through my engineering company, Wireless Valley Communications, Inc. To determine the technical feasibility of low power radio, my staff and I did two things. First, we performed extensive analysis and computer simulation using the FCC's own interference protection rules and licensing procedures for existing FM radio stations. This analysis allowed us to determine how the addition of LPFM stations would impact existing FM stations, as well as emerging digital radio services. Second, we conducted a rigorous review of some of the technical data and public comments that had already been submitted to the FCC in response to the NPRM for LPFM.

My analysis concluded that LPFM will not cause unacceptable levels of interference to existing FM broadcast stations or their listeners. My computer simulations demonstrate that under the conservative proposal adopted by the FCC, in the absolute *worst case*, if all new LPFM stations used 100 Watts, then at most, 1.6 percent of listeners who could hear a new LPFM station *might* be unable to receive a currently-existing broadcast station. More importantly, the large majority of the affected listeners would actually be able to receive *all* current stations, and other affected listeners would be able to receive an incumbent station by simply moving their radios a few feet or by rotating them on their nightstands.

In addition, when I analyzed the technical data filed as public comments, I found that most of the technical studies would not meet the objective standards necessary for peer review or publication acceptance in the engineering community. Standards for peer review include the open disclosure of all formulas, assumptions, data processing methodologies, and in some cases software codes, such that others who are familiar with the technical issues can evaluate, replicate and corroborate results. To

best serve the interests of the FCC and the public, I firmly believe that public comments of a technical nature should be filed such that they can be peer reviewed and stand up to scrutiny and objectivity. The studies filed by some opponents of LPFM, unfortunately, lacked technical details or objectivity, and were based on the misguided premise that most FM radios today do not work properly. This is clearly not true. Most consumers today are very pleased with their FM radios as evidenced by the lack of public outcry or FCC complaints.

In the end, the FCC adopted a very safe and conservative ruling that is certain to minimize LPFM interference to incumbent broadcasters and listeners. The FCC was originally considering whether to create three sizes of radio stations—10 watts, 100 watts, and 1000 watts. In addition, the FCC was considering whether to change the transmitter spacing protections around those stations by lifting what is called third adjacent and second adjacent channel protection levels. These transmitter spacing rules create cushions (interference protection zones) around radio stations so their transmissions do not interfere or "bleed" with one another. Existing commercial FM stations are required to obey these spacing rules prior to licensure.

I determined that 1000 watt LPFM stations required full protection—both second and third adjacent protection. Ten watt and 100 watt stations are so small in power, however, that they cover such a small area and therefore do not require either second or third adjacent channel protection. The proposal the FCC adopted is more conservative than my recommendations. The FCC not only decided not to adopt 1000 watt stations, but they also retained second adjacent channel protection for the smaller 10 and 100 watt stations. This assures even greater interference protection to incumbent FM broadcasters and current station listeners than I had recommended, since it greatly reduces the number of possible LPFM stations that will be allowed. My computer analysis considered a wide range of possible interference rules, including the case of second adjacent channel protection which the FCC has adopted [see Appendix D of "Technical Analysis of the Low Power FM Service" by Wireless Valley Communications, Inc., August 26, 1999, submitted to Media Access Project for public filing]. My analysis found that, by using worst case interference assumptions and by relaxing the second and third adjacent channel protections, 626 new LPFM stations could be added in 60 US cities. My recommendations would have allowed over 81 million new citizen-channels on the FM airways, with a worst case potential interference of 1.2 million citizen-channels (however, since the analysis was worst case, only a small fraction of the 1.2 million citizen-channels actually would have experienced interference of some kind). However, the FCC adopted a more conservative approach, and insisted that all LPFM stations must obey the existing second adjacent channel projection rule, which reduces the number of new LPFM stations to 247 in the same 60 US markets. This reduces the number of citizens-channels by almost 300%, and decreases the number of potential interference events by the same factor.

Details Behind My Computer Analysis

Let me now provide further details about the computer analysis that demonstrated low power radio would not harm current broadcasts. My computer analysis included an extensive radio spectrum simulation to demonstrate that hundreds of LPFM stations may indeed be deployed in the top U.S. markets with minimal impact to incumbent and future digital FM radio stations. We used the FCC's FM radio license database, the FCC radio propagation programs, and Part 73 interference and coverage rules for FM radio stations, to show that properly certified LPFM transmitters with radiated power levels between 1 and 100 Watts and no 2nd or 3rd adjacent channel protection requirements can serve tens of millions of neighborhood listeners in the U.S., while having minimal interference impact on a very small fraction of listeners. My computer program increased the granularity, or precision, of the FCC's models. In addition, my computer program analyzed the impact of 10 watt and 1 watt stations, which the FCC did not do in its original NPRM, and considered other channel protection schemes.

We spent several weeks analyzing the FCC radio propagation programs and improving the FCC's software that is used for issuing standard FM radio licenses. In addition to analyzing new LPFM stations having power levels of 1000, 100, 10 and 1 watt, we also developed programs that could draw maps of the possible locations and the maximum number of LPFM stations that could be supported within a specific market for a given protection ratio ruling. To verify that we were following FCC FM radio license guidelines and to make certain that our programs were working properly, we spoke with FCC engineers throughout the process to verify our programs recreated the same data which FCC engineers could obtain with their original program. Since the FM radio license database is constantly changing, we used the most recent version of the FM station license database. The FCC's FM radio sta-

tion license database includes key technical details that are vital for determining whether or not any new FM stations might cause interference.

These key details include radio frequency, geographical position, and transmitter power of each FM station license in the US, as well as similar data for FM stations licensed near the US borders in Canada and Mexico. Using our modified programs, and considering a wide variety of transmitter powers, interference protection rules, and geographic resolutions, we determined the exact number of viable LPFM stations in 60 representative US cities, and presented maps which illustrate possible LPFM locations in many of these markets. Once written, our computer program took about 2 days of continuous computer time on a 400 MHz personal computer to produce the results provided in our public comments submitted to the FCC.

I wish to point out that we have provided both the source code and executable code of our computer programs with our filing, and believe they could be of significant value to the FCC and to the public. In fact, these programs could be used with very little modification by the FCC or a private entity to properly license LPFM stations in the US. All of this data is available to the public on the Media Access Project web site at http://www.mediaaccess.org/.

Our analysis shows that between 64 and 680 times as many citizens are able to receive LPFM programming over small distances (i.e. within neighborhoods) as compared with those who may rarely experience some level of interference or degraded service. Even those listeners experiencing some degradation of service will likely be able to improve their reception by simply relocating their radio or adjusting their antenna.[1]

In my presentation to the FCC, I included maps to demonstrate suitable locations of LPFM stations in several representative cities. These maps demonstrate the careful analysis and limited nature of the new low power radio stations. They show that not every city will accommodate low power stations. In addition, in certain cities, it will be possible to add new stations in only certain areas of a city. Thus, concerns that low power stations might pop up like mushrooms, or like the holes in Swiss cheese, without regard for current broadcasts is completely false. Careful, stringent engineering analysis shows where the stations may safely be added and this same analysis must be used for the proper issuance of low power radio licenses.

Although we made all of our information publicly available, the opponents of low power radio have been unable to find any flaws in my analysis.

Details Behind My Analysis of Other Studies

The receiver studies submitted to the FCC by low power radio opponents show that the true "real world" FM interference environment for household radios is benign, due to the FCC's unnecessarily high interference protection ratios which stem from the state-of-the-art several decades ago. The receiver studies offer very strong support for LPFM as a viable service without the need for 2nd and 3rd adjacent protection ratios, because today's fixed and portable FM radios operate successfully with much less interference protection than assumed by the FCC in its present station licensing process. The small additional interference introduced by LPFM is miniscule in comparison to already existing levels of interference in the FM band.

A simple analogy will explain the basis and conclusions of the NAB's and CEMA's studies. Let's imagine there is a Federal Building Commission (FBC) that regulates the occupancy of people on floors in office buildings. Let's say that the Commission's rules require each building owner to assume that each person weighs, on average, 300 pounds, and that each person occupies a particular floor area, say 6 square feet. The building owners, analogous to FM station license holders, are thus required to limit the number of people they allow to live on each floor of their building according to FBC rules.

However, the construction companies, analogous to radio manufacturers in this example, realize that they can safely build buildings at much less cost if they assume that, on average, every person only weighs 200 pounds. Just as the radio man-

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[1] People listening inside the interference area would experience interference to an incumbent station's signal if and only if all of the following conditions applied concurrently:

If the LPFM station were placed near the coverage fringe of the incumbent station,

If the incumbent station transmits on a channel 2 or 3 channels above or below the LPFM station's assigned frequency,

If the listener only wishes to listen to the incumbent station out of the dozens of stations available, and

If their radio happens to be a poor-performing model like a clock radio.

In many instances, the listener would be able to "tune" out the LPFM interference by moving the FM receiver. It is quite common for people to adjust the position of their clock radio or boom box for good reception. Such adjustment could cause the LPFM interferer to fade while maximizing the desired signal.

ufacturers for FM radio are not regulated by the FCC to provide specific technical specifications of their product, the construction companies are not regulated by the Federal Building Commission, so a wide range of construction techniques and building materials are used.

Assume this is what is done for years, with great success. Now, assume time passes and some new building owners wish to build small, low-cost buildings, but wish to allow more people to live on each floor of their buildings, because they have fewer resources and wish to provide shelter to more patrons. The Federal Building Commission decides that it has been too restrictive, and proposes that the safety standard for occupancy of floors in office buildings should be relaxed a bit to assume everyone weighs 250 pounds instead of 300 pounds—since this will allow the new building owners to allow more people within a building floor.

But the construction companies and building owners now claim that the Federal Building Commission is going too far—they cry "Wait, the current buildings don't even meet the safety standards now, how can we relax them further?" But the construction companies and building owners already know that the original rules were far, far too restrictive. In fact, the construction companies have actually been assuming people weigh less on average all along, and in fact have been building offices for years which serve the public well using less costly materials. It is clear from this example that the Federal Building Commission's relaxation of the rules will have no impact on the existing buildings or the construction companies. Buildings will continue to hold occupants. All that has happened is the Federal Building Commission has realized that the old rules were much too restrictive and unrealistic, and has successfully accommodated the request of a handful of new, smaller building owners.

This is the same situation for FM radio. Radio manufacturers and FM station license holders have known that the FCC rules for FM broadcast licensing provide an overabundance of interference protection. By FCC licensing guidelines, FM radio stations are spaced far apart in such a conservative manner as to prevent radio interference. This in turn allows FM radios to be manufactured very inexpensively. The FCC rules for FM broadcast licenses offer so much spacing (e.g. interference protection) because they were developed when FM radio was in its infancy, when older FM radio receivers were far more susceptible to adjacent channel interference and frequency drift than today's receivers. In fact, the FM station license rules used today were developed before most FM receivers used completely integrated receiver circuits (chips). Today's modern integrated circuit design and filtering technologies are far more robust to drift and interference than radio receivers of 30 years ago. The technological advances in receiver technology (just look at today's cellphone—its much more robust than its shoebox counterpart of 1985) is why the addition of a few LPFM stations in each market will make virtually no difference to the listening public.

It is important to note that the FCC rules for FM broadcast licensing have no regulatory bearing on how FM radio receivers should perform or be constructed. This is a wise and sensible approach that the FCC has traditionally taken, because it allows various manufacturers of radios to freely compete and differentiate themselves on the basis of price and performance. In short, there is a great deal of protection in the FCC's FM broadcast licensing standards. Small stations of 10 and 100 watts will not harm any current broadcasts. Opponents of LPFM did not objectively point this out or properly address the relationship between FCC FM licensing guidelines versus commercial FM receiver performance.

Another example will demonstrate the flaws in the NAB's study. The NAB sought to identify how well FM receivers work by establishing a performance standard. But more than half of the FM receivers tested in the NAB study could not even meet the NAB's performance standards *before* the simulation of new low power radio stations. That is, even in a perfect, interference-free environment in the test laboratory, without the introduction of any additional FM interference, NAB's experiments had more than 50% of the radios it tested as failing its own performance standard in a noise-free environment! But we all know that if we purchase FM radios at random, virtually all of them will work fine. Put another way, according to the NAB, half of all radios they tested do not perform acceptably today, even before LPFM is introduced! This result obviously defies common sense. There were many other issues which, as an engineer and reviewer, disturbed me and which would certainly disturb others if they were looking for objectivity.

My hope is that this testimony has helped you understand some of the technical issues involved with FM radio licensing, FM receiver design, and the Low Power FM Process. I also hope it helps clarify the work that my staff and I have conducted and made available to the FCC and the public, for possible use in properly licensing LPFM stations in this country. As an engineering professional who makes a living

by teaching, studying, and creating new technologies in the wireless communications field, I am confident that the FCC's low power FM system, as recently adopted, will have no detrimental impact on existing and future commercial FM radio stations or their listeners, and will benefit millions of Americans with a will and desire to communicate responsibly within their own neighborhoods and communities. Thank you again for the honor to address you, and to serve our nation in this matter.

Mr. TAUZIN. Thank you very much, Professor.

The Chair is now pleased to welcome Mr. Don Schellhardt, National Coordinator, The Amherst Alliance.

Mr. Schellhardt?

STATEMENT OF DON SCHELLHARDT

Mr. SCHELLHARDT. Mr. Chairman, members and staff of the subcommittee, good morning. Thank you for permitting me this opportunity to testify. Thank you also for ordering that my written statement and supplemental materials be included in the permanent record.

Before I move into the substance of my remarks, I have a procedural point to raise. I have noticed that we have witnesses here who represent experts and advocates on both sides of the low power radio issue. However, we don't have anyone here who actually plans to apply for a low power radio license.

Fortunately, seated behind me are two people who do intend to apply, Wesley and Marie Denick of Providence, Rhode Island and Christopher Maxwell of Richmond, Virginia. Wesley is with Providence Community Radio and Christopher is with the Virginia Center for the Public Press.

With the subcommittee's permission, I would like to request that their written statements and supplemental materials which have already been submitted, be included in the record as well.

Mr. TAUZIN. The Chair has already, by unanimous consent, kept the record open for 30 days for supplemental filings. The gentleman is perfectly free to do so for the record.

Mr. SCHELLHARDT. I would also ask the subcommittee's consent to allow these people to participate in the question and answer session if it is relevant to LP FM licensing.

Mr. TAUZIN. The Chair wishes to inform the gentleman that witnesses are invited to testify in advance of these hearings and that it is standard procedure for the committees of Congress to hear from the witnesses invited. Unless there is unanimous consent that any other witness be introduced to the panel accepted by all the members here, that the witnesses are limited to those who attend.

I might say Mr. Schellhardt, I don't think you can say categorically that there aren't some people at the table who might apply for one of these licenses. I can see Mr. Eddie Fritts applying for a license right now.

Mr. SCHELLHARDT. I took my procedural shot and I will move on to the substance of my remarks. I would like to mention at the outset I am planning to discuss interference last if time permits because there are other important issues that need to be addressed here.

Let me begin on a personal note. This appearance today represents something of a homecoming for me. A number of years ago I was legislative counsel to Representative Matthew Renaldo, Re-

publican of New Jersey, who served on the Commerce Committee and on this subcommittee.

Also for 12 years, I worked with the American Gas Association holding several positions which included Director of Legislative and Regulatory Affairs. Of course that brought me over here fairly often. In fact, Mr. Chairman, I remember working with you to reform the Fuel Use Act and repealing incremental pricing back in the 1980's. That shows why it is important to be civil and reasonable in debates like this. You never know whether the ally of today is going to be an adversary of tomorrow or vice versa.

I can't speak for everyone in the movement but in Amherst, we are trying to be firm but at the same time, very reasonable and courteous.

I have four points to raise, with interference being last. The first point concerns my powder blue sports jacket and bright yellow tie. The relevance there is that back at home, I have an $800 pure wool corporate gray suit. Some of my friends thought I should wear that so that I would like all the other lawyers, but I figured this time, I am not testifying on somebody else's dime, I am not representing anybody else except me, I am here on my own time, my own dime, I am going to be myself. So here I am in my $40 Sears suit.

The relevance of that comment is that a lot of people feel that way about the radio. They feel that every time they turn on the dial, all that is out there are corporate gray suits. They would like to have some powder blue suits and bright yellow ties on the dial as well.

Mr. TAUZIN. I am sure you will look great on the radio. I am not sure how you are going to do that, but good luck.

Mr. SCHELLHARDT. My second point concerns the pent-up public demand out there for reform of the way that ideas and information are circulated in our society. Low power radio is only the tip of that iceberg. Beyond low power radio, there is a lot of concern among a lot of people about the general overconsolidation of ownership in the radio industry and in the mass media. There is also connected to that concern about the way the political process is covered by the media and the way the candidates are able to present their views to the voter.

Mr. TAUZIN. Your time has expired but I want to do something. I am going to ask unanimous consent that given the long and very interesting preamble to your discussion, I will ask that we give you an additional 3 minutes.

Mr. SCHELLHARDT. Moving rapidly, we hope that Congress will also look at auctions, ending the statutory mandate for auctioning of all commercial radio licenses. If you can't do that, we hope that you will at least choose to exempt commercial low power radio stations 100 watts or less so that we can get some commercial airing stations out there too.

Not speaking for Amherst, but just speaking for myself, I hope you will support free air time for candidates and public financing of elections. I know personally I would like to run for Congress if I could afford it, so I have a vested interest. Most of the people I talk to in Amherst don't want to run for Congress but many of them want to be on the air and they can't afford to get a radio station either.

So if you multiply my frustrated political ambitions by tens of thousands and if you multiply the frustrated career aspirations of some of my followers by millions, that is a lot of pent-up energy. I think that pent-up energy could do some good.

I remember my friend Bud Laurence from the American Gas Association used to always say, it is better to have them on the inside spitting out than on the outside spitting in. He didn't actually say spitting but you get the point.

Third, to quote another gentleman you all know, former Representative Phil Sharpe from Indiana who was on the House Commerce Committed, he used to always say let us do the doable. That is my feeling toward the FCC's proposed final rule. Most of us at Amherst would like it to go farther, the details of how much further are in the written testimony but we still think it is the best that probably could have been accomplished under the current circumstances. We think it is a beach head for building more reform in the future.

We hope that Congress will at least leave it alone and preferably embrace it with enthusiasm.

Thank you for the extra 3 minutes, Mr. Chairman.

[The prepared statement of Don Schellhardt follows:]

PREPARED STATEMENT OF DON SCHELLHARDT, NATIONAL COORDINATOR, THE AMHERST ALLIANCE

Mr. Chairman, Members of the Telecommunications Subcommittee and Staff of the Telecommunications Subcommittee: My name is Don Schellhardt. I am the Co-Founder and National Coordinator of THE AMHERST ALLIANCE. I speak to you today on behalf of this group.

WHAT IS THE AMHERST ALLIANCE?

THE AMHERST ALLIANCE may not be a household word. However, it is the channel for an immense tide of human energy. We are a nationwide citizens' advocacy group, organized and mobilized mainly over The Internet. We are composed of roughly 200 individuals, from Maine to California and Florida to Alaska. Thanks to Internet postings, we have a "sphere of influence" which reaches hundreds, or possibly thousands, of additional people around the globe.

We take our name from the small but distinguished college town of Amherst, Massachusetts—where Minutemen were recruited, two centuries ago, and Emily Dickinson wrote her gentle, brilliant poetry, which was then rejected by the Media Establishment of her day. Our group was born, over dinner at Friendly's, a century after Emily: on September 17, 1998.

Roughly a third of our members, and about two thirds of our Board Members, are people who want to obtain a Low Power Radio license and set up a station. The rest of us, including me, are "simply" concerned citizens. We want more choices on the dial—and we fear that our representative democracy is endangered by today's excessive concentrations of mass media ownership.

Every member of Amherst, without exception, has signed a document known as THE AMHERST DECLARATION. It is our only requirement for membership—and a copy of it may be found in APPENDIX A of this testimony.

When you read the text of THE AMHERST DECLARATION, you may be struck by its attempt to invoke the spirit of our nation's founders. Some consider this effort at emulation to be pompous, or pretentious, but we see it as a humble attempt to revive the spirit which gave birth to this nation. That spirit seems to be missing today, in many quarters, and we like to believe the nation's founders—wherever they may be now—are pleased to see us trying to bring it back.

WHO IS DON SCHELLHARDT?

I am an attorney and a writer, with several articles, untold ghostwritten speeches and one novel—CURRENTLY unpublished—to my credit. I earned a B.A. in Government from Wesleyan University in Connecticut and a law degree from George Washington University, here in Washington, DC. Among other posts, I have been

Legislative Counsel for Representative Matthew J. Rinaldo (R-NJ, retired), Director of Legislative and Regulatory Affairs at the American Gas Association and a policy advisor on global warming at U.S. EPA.

With Nickolaus and Judith Leggett, of Reston, Virginia, I co-authored the Petition For Rulemaking that triggered FCC Docket RM-9208. This Docket led, in turn, to the FCC's proposed rule, and later its final rule, on Low Power Radio.

I left Washington for a number of reasons. One key factor, however, was my rising level of frustration with my inability to get things done in this town.

I had worked for a succession of causes, which I considered to be both noble and important: Coolwater-style coal gasification, which could enable us to burn America's abundant coal, efficiently and CLEANLY, in combined cycle powerplants . . . Natural Gas Vehicles and electric vehicles, which could further reduce our dangerous dependence on imported oil, and greatly improve our balance of trade, while making the air we breathe much. much healthier—and meaningful government action on global warming, which may be costly but is still cheaper than the price tag of global ecosystem collapse.

These three causes were my great passions as a Washington "insider". However, I was able to make only marginal headway on Natural Gas and electric vehicles—and no headway at all on the other two fronts.

I did play a role in the 1987 legislation which repealed incremental pricing and most of the Fuel Use Act. I also played a role in enactment of the 1990 legislation that reduced, and is still reducing, the acid rain in our atmosphere.

Still, in the face of what needs to be done in our country, these steps forward were painfully modest. Further, even these "modest steps forward" came only at the cost of enormous investments of time and energy, often mustered at the expense of progress on other crucially important priorities.

I finally decided I could accomplish more OUTSIDE The Washington System, at "the grassroots", than I could accomplish WITHIN The Washington System.

This leads me back to our Hearings. Topic A is Low Power Radio, but The Topic Behind The Topic is REFORM. Reform of the media—and, with it, reform of the political system. Less power for the megacorporations—and other elites. More power for the people. .Reform of The Washington System.

A SYSTEM OUT OF BALANCE

I want to stress the need for reform—of both the overly "consolidated" mass media AND the current system for choosing our elected leaders.

At the same time, I do not want to "demonize The System". There ARE good people in Washington: MANY good people. Some of them even work for special interests. I worked for a special interest myself, for 12 years, and my work there was honorable. I was promoting natural gas: "America's cleanest, most affordable fossil fuel." Most of it drilled right here in the U.S.A.

In short, I saw myself wearing a white hat.

The truth is that Congress and the Executive Branch NEED to hear from special interests. How can either Branch regulate knowledgeably without SOME kind of consultation, preferably in advance, with people in the industries they are trying to regulate? Unless special interests have SOME kind of a voice in Washington, Washington will be "flying blind".

The problem isn't the fact that special interests have a voice.

The problem is: All too often, nobody else does.

The System is Out Of Balance. The special interests often speak so loudly that the voice of the people cannot be heard.

The same can be said of the massive concentrations of ownership in the mass media—particularly after Congress, AND President Clinton, decided to let megacorporations "raid the cookie jar" through the Telecommunications "Reform" Act of 1996.

There ARE radicals, and even Marxists, within the movement to legalize Low Power Radio stations. However, most of us in the Low Power Radio movement—and, certainly,most of us in THE AMHERST ALLIANCE—recognize the value of having a viable private sector in our economy. We even recognize the value of having SOME large corporations. With their resources and their profit motivations, they can get things done that no other institutions can do.

By the same token, however, there are some things that only SMALL businesses can do. And some things that only non-profits can do. And even some things that only INDIVIDUALS can do.

So: Few us in Amherst want to put Fox or Disney or ABC out of business.

We just don't want them to become so large, and control so much, that they smother everyone else.

More to the point: We don't want them to smother US.

THE EVIDENCE ON THE RECORD AT THE FCC

When it comes to radio, the high level of public discontent is evident from the high level of public participation in the FCC's Low Power Radio Dockets.

Indeed, the FCC's proposed rule on Low Power Radio set a record for public participation in the 65-year history of the FCC.

The proposed rule attracted more than 3,000 written comments. Most of these 3,000 comments FAVORED Low Power Radio—and many of them came from individuals and small groups who had never participated in an FCC proceeding, or for that matter any kind of governmental proceeding, before.

Clearly, there is widespread, and intensely felt, public dissatisfaction with the status quo in radio. Clearly, there is public demand for something new.

Just as clearly, the stance of total "stonewalling" and non-negotiation by the National Association of Broadcasters (NAB) tells us that this "something new" is not going to come from the established broadcasters.

It is clear as well that the FCC's decision to establish a Low Power Radio Service was not "a rush to judgment".

The Commission held a 6-month comment period on RM-9208, the previously referenced Petition For Rulemaking that was filed in June of 1997 by Nickolaus Leggett, Judith Leggett and myself.

The FCC issued Docket RM-9208 in February of 1998: 8 months after our Petition For Rulemaking was filed. Three weeks after the FCC established this Docket, soliciting public input on the Leggett/Schellhardt Petition For Rulemaking, an alternative Petition For Rulemaking was filed by J. Rodger Skinner of TRS Communications in Florida. In March of 1998, Skinner's competing vision of Low Power Radio was assigned to Docket RM-9242 and the two Dockets were consolidated.

Thus, the FCC spent 6 months receiving public comments on two different Low Power Radio proposals. Over 1,000 public comments were received, many of them coming from individual citizens and most of them urging favorable action. Then the FCC spent several months reviewing these public comments before it drafted and released a proposed rule—in January of 1999.

Once the proposed rule was issued, public comments were received over an exceptionally long period: 9 months.

Two months after the close of this 9-month comment period, the FCC issued the final rule that is the target of H.R. 3439. Along the way, it had granted each of several requests by the NAB for extensions of the comment deadline(s).

In short, the FCC's final rule on Low Power Radio is the product of very deliberate deliberations over a cumulative period of 2 years. Further, the FCC's decision is based on abundant evidence of public demand for this Service: far more abundant, in fact, than the evidence that the public wants Digitalization.

DOES ANY KIND OF LOW POWER RADIO, UNDER ANY KIND OF CIRCUMSTANCES, POSE AN UNAVOIDABLE LIKELIHOOD OF UNACCEPTABLE RADIO INTERFERENCE?

This is the proper way to ask the question—because H.R. 3439, the Oxley bill, would remove the FCC's authority to authorize any kind of Low Power FM stations, anytime or anywhere . . . 100 watts and 10 watts and 1 watt, in mid-town Manhattan and the prairies of Nebraska, regardless of the technology used or the channel spacing required or the level of regulatory oversight.

In the eyes of Representative Oxley's bill, there is no place in America where the spectrum is open enough, and no level of wattage where the signal is low enough, and no technology—present or future—where the signal is controlled enough. Now and forever, from sea to shining sea, FM stations of 100 watts or less pose an inherent risk of unacceptable interference to all of those helpless, endangered 30,000 watt and 50,000 watt stations.

Needless to say, Amherst doesn't see things that way.

Neither does the Federal Communications Commission. Thank God!

The evidence for the Oxley bill's premise is Missing In Action. The interference studies commissioned by the NAB may predict major interference, In SOME locations. However, this has not been the conclusion of other studies, conducted by those who do not have a financial stake in the status quo.

Alarms about radio interference are also unsupported by evidence in "the real world".

In recent years, many Americans, unable to afford a conventional radio station and unable to obtain a license for an unconventional one, have taken to the airwaves without FCC authorization. Depending on whose estimates you believe, their numbers run into the hundreds or even the thousands.

All of these unlicensed broadcasters have been COMPLETELY unregulated.

However, even though many of these unlicensed stations have been shut down by the FCC for violating its regulations, only a handful have been shut down on the basis of evidence that they have actually caused interference.

Thus, under something approaching a "worst case scenario"—that is, hundreds or even thousands of totally unregulated stations on the air, many of them broadcasting in crowded urban areas—the actual evidence of reported interference has been minimal.

Why is this the case?

Maybe it's because there are more "holes in the spectrum", even in crowded urban areas, than the NAB wants to admit. Or maybe it's because "unlicensed broadcasters", even including those left-wing "aging hippies" with the sour dispositions, are more prudent and responsible than the NAB wants you to know.

Or maybe both.

There is, in any event, a problem with the NAB's logic:

WHATEVER the actual level of interference from unlicensed broadcasters might be, why would it INCREASE—rather than decrease—after some or most of these broadcasters obtain licenses and become regulated?

IF RADIO INTERFERENCE IS NOT A PROBLEM, IS THERE ANY OTHER REASON TO OVERRIDE THE FCC'S AUTHORITY TO ESTABLISH A LOW POWER RADIO SERVICE?

As we read the various statements by Representative Oxley, and others whose names appear on H.R. 3439, it appears their answer would be "No".

So far as we can tell, their sole expressed concern has been interference.

We cannot think of any other reasons to ban Low Power Radio, either.

We do consider it worthwhile to mention some of the BENEFITS of Low Power Radio. These benefits include more choices for radio listeners, more opportunities for innovation, the return of decent community coverage and—most important of all—a much-needed increase in the free flow of ideas, without which our country cannot remain a representative democracy for long.

These benefits are worth fighting for—and many everyday Americans have in fact been doing just that.

It would indeed be a tragedy if Congress erased these hard-won gains on the basis of inflated fears, peddled solely by those with dollars to lose.

DOES THE FCC'S NEW RULE GO FAR ENOUGH?

Does the FCC's rule go as far as Amherst would like? No, it does not.

Is it nevertheless a vast improvement over the status quo that preceded it? Yes, it is.

Further, given the practical politics of assembling a bi-partisan majority at the Federal Communications Commission, at this time in our nation's history, this new rule may well represent the best work that the Commission could have done under the circumstances.

We salute the Commission and its willingness to consider, and embrace, positive change. In particular, we commend FCC Chairman William Kennard—as well as his indispensable ally, Commissioner Gloria Tristani—for their vision and their courage.

We also thank Commissioners Susan Ness and Michael Powell, whose enthusiasm for Low Power Radio was somewhat more contained—but who nevertheless voted to proceed.

To those in the Low Power Radio movement who wanted something more, I quote the words of Representative Phil Sharp (D-IN, retired): a former member of the House Commerce Committee and a man I admire.

Phil used to say, all the time: "Let's do the doable."

That's what Chairman Kennard, and his fellow Commissioners, have done. They have done the doable—and we should applaud their efforts.

Having said this, the limits of what is "doable" can change dramatically over time. They can contract, but they can also expand. In the case of Low Power Radio, and of media reform and political reform in general, we expect that these limits WILL expand—if only because a concerned public insists on it.

In the immediate future:

1. Amherst may ask the Commission, in a Motion For Clarification and/or a Motion For Reconsideration, to allow LPFM licenses for Individuals as well as organizations.

2. We may also ask the FCC to either: (1) license non-commercial LPFM stations which are NOT "educational"; or (2) clarify that the "educational" category may include stations which are primarily or exclusively oriented toward entertainment, IF

their kind of entertainment is not otherwise available on the airwaves of their community.

3. We may ask again for Primary Service Status for LPFM stations.

4. We may ask for greater protection of Low Power stations from "bumping" by license applications that "warehouse" frequencies for possible future use and/or translator applications made for anti-competitive purposes.

The Amherst Board of Directors has not yet decided how and when to seek resolution of these concerns by the FCC. As noted earlier, a Motion For Clarification is a possibility, as is a Motion For Reconsideration, but neither filing Is a certainty at this time.

Looking further down the road, Amherst has also made clear to the Commission that we do not automatically oppose any kind of Digitalization—but we can accept Digitalization ONLY if reasonable accommodations are made to preserve a viable, and meaningful, Low Power Radio Service.

On the legislative front, we ask this Subcommittee, AND Congress as a whole, to reform the Telecommunications "Reform" Act of 1996.

A. Repeal the statutory mandate for auctioning of all commercial radio licenses. Failing that, AT LEAST allow room for commercial-airing Low Power stations by exempting commercial stations from the mandatory auctions if they broadcast at 100 watts or less.

B. Reduce—don't raise or eliminate—the limits of how many radio stations a single entity, including its subsidiaries and affiliates, can own.

C. Restore meaningful restrictions on CROSS-MEDIA ownership, INCLUDING acquisitions related to The Internet. Make radio more open and competitive. Don't let The Net follow radio's current pattern of "consolidation".

D. Encourage—don't DIScourage!—reasonable efforts by the FCC to combat radio "over-consolidation" by ordering divestiture of certain radio stations.

E. While you're at it, direct the Justice Department to start enforcing the anti-trust laws again. One Microsoft case, every 20 years or so, isn't enough.

DOES DON SCHELLHARDT HAVE "A HIDDEN AGENDA"?

Let me close as I began: on a personal note.

When people learn that I have no desire to be a Low Power broadcaster, that I run Amherst on my own time and my own dime, with no pay whatsoever for the thousands of personhours I've invested in it—they often start to look puzzled, or even suspicious.

"What's in it for you?" they ask.

The bolder ones ask: "What's your 'Hidden Agenda'?"

It's a commentary on our time that so few people will accept pure patriotism as a major motivation. Yet, in truth, patriotism IS one of my motivations.

I was in college during the Vietnam War. I never "dodged" the draft, or joined the National Guard, but I did have a high enough lottery number to stay out of the military. I don't regret that my birthday did get matched to a number that kept me out of Vietnam: I might not be here today if it hadn't. Nevertheless, I have always felt guilty because I believe we all SHOULD give a year or two of service to our country.

So . . . I put in my year of service around 50 instead of around 20. Call me a late bloomer. And I spread the year or two over two years or three—because I had to leave enough room in my schedule to make enough money to keep me alive. But I did serve my country, even if the service was delayed—and I did fight for freedom, even if the enemy was here at home.

So much for my noble motivations! I also had self-interested motivations. Not exactly "a hidden agenda" . . . but an agenda that might not be too visible until you got to know me.

First, Low Power Radio added meaning to my life at a time when I needed it desperately. Most of us like to feel that we add something positive to the planet by being here—but some of us NEED to feel that way. We need to feel it the same way we need to drink our water and breathe the air.

I'm one of that second group. Founding Amherst gave me a reason to "keep on keepin' on"—at a low point in my life.

Second, I'm trying to gain name recognition and build a political base—because I'd like to be a Member of Congress. In fact, I'd like to have a seat on the House Commerce Committee.

I've served my time as an advisor and an aide. I won't come back to Washington just to do that again.

I want to be a player—perhaps right on this Committee.

There are several reasons why I've never run, but most of them have faded into the past.

Now there's only one reason I don't run for Congress:

I haven't got the money to run. I'm not even close.

Further, being an independent thinker (and an independent feeler), I don't see any special interests I can approach for the money without selling out my conscience.

So I'm stuck On The Outside, Looking In. Along with the other 99% of the American people who can't afford to run for Congress.

So far, Mr. Chairman, founding Amherst has been the next best thing to being up there on the Commerce Committee with you. In fact, I may just start up another national organization, with a broader agenda and a broader base, and push for change on a bigger scale—from my place On The Outside, Looking In.

And maybe, somewhere along the line, I'll get my chance to run—and win.

In the meantime, all of this makes my work for reform very, very personal.

Of course, most of the folks in Amherst don't want a seat in Congress.

They just want a VOICE in the national dialogue. But they don't feel they have one now—and, believe me, Mr. Chairman, for them it's personal, too.

CONCLUSION

Mr. Chairman, and Members and Staff of this Subcommittee, we in THE AMHERST ALLIANCE urge you to begin moving—this year, this month, this day—toward the kind of media reform and political we need to revive and maintain our representative democracy.

Supporting the new Low Power Radio Service Is quite literally THE LEAST that Congress can do. It is a minimal step . . . a "down payment" on real reform.

Low Power Radio is as clearcut as "reform" issues ever get.

To the best of our knowledge, ALL of the institutions which oppose it have a direct financial stake in the status quo. To the best of our knowledge, NOT ONE financially impartial group or institution is against it.

Politically, tough choices don't get any easier than this one.

If Congress cannot summon the courage to embrace reform on the Low Power Radio issue, how can the people of America trust this Congress to make the hard decisions of the future?

Mr. TAUZIN. Thank you very much, Mr. Schellhardt.

Mr. MARKEY. Mr. Chairman, I just want to let you know that I am going to let Congressman Olver know about your congressional aspirations so that he can take a closer interest.

Mr. TAUZIN. I assume you will be dressing differently in the next few weeks as well.

The Chair is now pleased to welcome Mr. Dirk Koning, Executive Director, Grand Rapids Community Media Center.

Mr. Koning?

STATEMENT OF DIRK KONING

Mr. KONING. Thank you very much. That is a tough act to follow. I will do my best.

Mr. TAUZIN. But you look good too, I want you to know that.

Mr. KONING. Thank you very much. I appreciate that.

I too am here in support of the FCC's decision. I am Dirk Koning from beautiful Grand Rapids, Michigan. I operate a community media center there that operates an LP 1000 license, owned and operated by the citizens of the community with over 70 volunteers, programming 24 hours a day. I also edit the community media review magazine. Our latest issue actually talks about the politics of community media. I am the President of the Alliance for Communications Democracy, a legal defense fund here in DC that tries to support citizen access to media where it is challenged constitutionally.

I also would like to address you as a 20-year veteran in the field with sleeves rolled up, soldering connections, trying to make micromedia work. In the best of conditions, it is not easy to do. I have been involved with projects in South Korea, projects in Brazil, projects in Ireland and most recently working with the Mandela government to launch 18 microradio stations in South Africa.

I am here to say when it comes to citizen access to media and social uses of media, there is nothing more valuable than media of, for and by the people. The possibility of these licenses going into communities, going into the hands of nontraditional users and with information coming from the community to the community for community needs and interests, that is what this is about.

In southern Africa we had very tough conditions, especially without electricity in most villages and trying to get micro stations to work with solar power adds a whole other twist to it, but it can happen and a little interference in that case is better than no information at all. In fact, I point out that the message, even though they say the medium is the message, the message is still the message and we appreciate the Declaration of Independence even though it is kind of sloppily written in ink on hemp paper. The contents still comes through loud and clear and is very valuable to citizens to this day.

I try to specialize in researching new technology for its social and cultural development purposes. How can we use this technology in a social fashion, not necessarily for profit or for gain and how can we use appropriate technology in appropriate circumstances. That is a real tricky one. With all the new technology out there, how do you assess the value of any given technology. Community radio, microradio is a very critical source in community for underserved communities. For a niche mark, it is a niche programming.

We are always looking for a way to share those resources. In fact, I was looking in a dictionary of word origins. I looked up the word community. The Latin sub means to share. Then I took a chance and looked up communication and I shouldn't have been surprised that the Latin sub for communication is also to share. I think it is critical in that context of community communication and low power radio that we are finding ways to share the air with the communities in which these are located. That is the critical juncture that the Community Media Center and other low power activists are working for.

In the history of communication, it is quite interesting that sharing has not been a tradition. If you go all the way back to scribes, Pharisees, in many cases who were able to read and write and make paper out of papyrus, it wasn't about helping everyone make paper out of papyrus. It was a control factor that they knew how to read and write and they kept that information very close to themselves.

I wonder if even in some cave somewhere back when there was argument about who was going to be able to paint what bison on what wall, if there was a limited spectrum in that particular case.

I know with the church and the Gutenberg printing press, that thing was locked up and protected very carefully because in fact the idea was not everyone should have one of these. I think in the United States, we have taken the chance historically on providing

access to information and the means to create and disseminate it and I think the low power radio stations are a prime example of citizen access to media and information being the currency of democracy.

So I encourage you to go forward. Find a way to get through the technical situation, it can't be that complicated. Let us allow citizens to use media to share in their communities.

Thank you very much.

[The prepared statement of Dirk Koning follows:]

PREPARED STATEMENT OF DIRK KONING, EXECUTIVE DIRECTOR, GRAND RAPIDS COMMUNITY MEDIA CENTER

INFORMATION IS THE CURRENCY OF DEMOCRACY

I am Dirk Koning, the executive director of the Community Media Center in Grand Rapids, Michigan, the chair of the editorial board of the Community Media Review Magazine of the Alliance for Community Media and the president of the Washington D.C.-based Alliance for Communications Democracy. This testimony is in opposition to House Bill 3439, the Radio Broadcasting Preservation Act of 1999. By many accounts the Telecommunications Act of 1996 has already provided a vast amount of radio broadcasting preservation by allowing expanded ownership of multiple broadcast licenses in local communities and nationwide.

I respectfully provide this testimony as a 20-year veteran of community media including community radio, television and the Internet. I submit that LPFM promotes the, "public interest, convenience and necessity." I have read several technical surveys on this issue and am convinced along with the FCC that technical interference from 10-100 watt stations is not a problem. The relative equivalent of LPFM to full strength broadcasting is a static shock from dragging your feet across the carpet versus putting your finger in a socket. My testimony comes from a "trench" worker who has dedicated half his life to improving civil society through media access and democracy.

> "[T]he people as a whole retain their interest in free speech by radio and their collective right to have the medium function consistently with the ends and purposes of the First Amendment. It is the right of the viewers and listeners . . . which is paramount"
>
> *Justice Byron White, writing the unanimous opinion of the Supreme Court in Red Lion Broadcasting v. Federal Communications Commission.*

BUILDING COMMUNITY THROUGH MEDIA

A media center has a simple mission to: "Build Community Through Media." Providing for additional non-commercial local voices to the choir of FM stations in a market will build community with valuable local information, cultural enhancement and niche services. One of the crucial benefits of LPFM is the concept of narrowcasting. Traditional commercial radio often selects a marketable format and then attempts the shotgun approach to build listenership to sell time.

Local non-commercial radio will have the ability to concentrate on narrow interest groups to provide unique and critical services without market pressures of building audience share. This is a novel concept in the burgeoning "deregulated" environment of national and international consolidations for cost-effective mass marketing.

Our local communities need a collective local non-commercial voice via radio. Our local communities need their own voices amplified electronically to serve their own community. Our local communities need a thin sliver of the public airwaves.

INFORMATION ACCESS AS A FUNDAMENTAL HUMAN RIGHT

I have had the good fortune to travel to a dozen countries developing various non-commercial media models ranging from local television in Korea to community video in Brazil and low power radio in South Africa. Many international community media Activists have crafted the People's Communications Charter (www.waag.org/pcc) to spell out basic human rights pertaining to information. The hope is to ultimately amend the United Nation's Human Rights Charter to add access to information as a fundamental human right worldwide. Several of the 18 published Articles include: Justice, Privacy, Respect, Access, Literacy and Cultural Identity.

Community Media is an entirely different animal than commercial broadcast media. The community model provides a motive for social improvement and develop-

ment via information exchange with no regard to market share, profit or shareholder desires. I often tell people our Community Media Center is a social service agency that provides fundamental community needs through media training, equipment access and uncensored transmission via voice, video or data. We are not unlike United Way, Goodwill or the Red Cross. We just happen to use media as our community development tool.

Lower Power FM in the United States could easily follow international models pertaining to community development work. The World Association of Community Radio (www.amarc.org) cites dozens of community improvement projects developed exclusively through community radio. I personally am aware of community radio development efforts in South Africa. In an attempt to "jump start" democracy in South Africa, the Mandella Government launched community radio stations. Community radio was strategically chosen due to the low cost of implementation and operation, ability to serve niche communities with different languages and dialects, the lack of expense for the receivers and the ability to operate from solar power.

This "Bush Radio" as it is called provides local programming on HIV/AIDS awareness and prevention, water quality issues, planting and crop rotation issues and indigenous music.

FUNDAMENTAL SOCIAL DEVELOPMENT AND COMMUNITY CAPACITY BUILDING THROUGH MEDIA

On the home front in Grand Rapids, the Community Media Center (www.grcmc.org) is a valuable resource for local governments, churches, non-profit groups, politicians, artists, activists, seniors and youth. Centers like this are located in over a thousand communities in the U.S. and groups like the Alliance for Community Media, Community Technology Centers Net and National Federation of Community Broadcasters provide national guidance and support for these Centers. On any day but Sunday, you can walk into the Media Center on the second floor of a 1925 "Carnegiesque" Library and take low cost classes in radio, television and Internet use and production. Once you take a class you are welcome to use on-site equipment ranging from camcorders to microphones to digital editing equipment to a computer lab to tell your story. Once you have your voice, video or data material ready, you can broadcast it or narrowcast it via cable access television channels, a 1000 watt FM radio station or high speed Internet connections with real audio and real video streaming. Not to mention all of the above is provided first come, first served, non-discriminatory on a content neutral basis. Over 30 church groups use the Center, seven political parties, neighborhood associations, the Public Museum, Library and Art Museum to name a few. Programs are produced in half a dozen languages and media from around the world is introduced to the local community. Almost a thousand local web sites are indexed by major categories to expedite local research for local services. We even host on line community computer conferences on critical local issues. As the digital convergence of voice, video and data marches relentlessly onward, citizen access to integrated information technology will become increasingly important if not a critical necessity. We are already experiencing effects of the Digital Divide in Grand Rapids. Certain communities and schools have 70% access to the Internet and others are lucky to crack 10%.

MEDIA OF, FOR AND BY THE PEOPLE

Corporate radio consolidation has been hot and heavy in Grand Rapids. Located in the top 50 broadcast markets, Grand Rapids has been indicative of the aggressive and expansive amount of corporate consolidation of broadcast radio properties. With the impending merger of Clear Channel and AMFM, over 10 stations will be under single non-local ownership prior to forced divestiture. In fact Federal Trade Commission guidelines may kick in slowing consolidation for fear of more than 70% of the advertising market being in a single corporate hand. Arbitron numbers from fall of 1999 indicate the top three radio companies own just under 70% of the radio stations in our market. Local news is funneled through less channels, local musicians are almost completely ignored for e-mailed play lists from "corporate" and non English programming is virtually non existent. We all know the difference between someone saying, "Here take this, I know what's good for you" versus self-discovery and self-programming.

On April 22nd, 1999 the FCC broke into a local Hispanic Church Basement and seized approximately $2,000 in equipment from La Voz Broadcasting for broadcasting in 93.1 FM without a license. The channel was open and a preliminary injunction had been filed against the FCC. The all-Hispanic programming station provided consumer advice, health and employment information and Christian Music to the fastest growing minority population in the Grand Rapids market. On September

10, 1999, the Grand Rapids Press endorsed Low Power Radio in an Editorial that stated:

"Why is this important? Because the more opportunities that people have to get their messages out, the better. The FCC is mulling the small station issue right now. If the members value free speech, they will let the little broadcasters in."

The FCC's January 27, 2000 Report and Order is a giant step forward in fostering local non-commercial communication. This action opens a thin but important sliver of the public airwaves, for such communication. I urge you not to overturn that needed action.

Mr. TAUZIN. Thank you very much, Mr. Koning.

We are pleased now to welcome one of the Commissioners of the FCC who has arrived and I want to skip the order and welcome him and allow him to testify. A former staffer of our own Commerce Committee, so he is well known here.

We want to welcome you again, Commissioner Harold Furchtgott-Roth.

STATEMENT OF HON. HAROLD W. FURCHTGOTT-ROTH

Mr. FURCHTGOTT-ROTH. Thank you, Mr. Chairman. As always, it is a great privilege and honor for me to come home to the Commerce Committee. I see a lot of friends here.

I would like to have my testimony entered into the record.

Mr. TAUZIN. Without objection, it has been ordered.

Mr. FURCHTGOTT-ROTH. I have spoken often on the issue of low power radio in the past year. My message has been consistent. I am not opposed to low power service but I am opposed to new interference.

I just would like to note that Mr. Koning and his station is a precise example that under preexisting rules community radio can get on the air, low power radio can get on the air, we do not need to change the interference standards. Mr. Koning is exactly the poster child for why that is the case.

The FCC's recent decision to create a new class of low power radio service is really, in effect, the degrading of the quality of radio service on the FM band for listeners nationwide. As you know, Mr. Chairman, I dissented from the Notice of Proposed Rulemaking which is very rare, as well as the Order adopting the final rules on this matter.

At the outset of the low power proceeding, however, I made clear that I was not then and am not today opposed to the creation of a low power radio service per se. Whatever new service could have been provided within the range of existing interference regulations would have been worth considering but I did not believe that we should create new stations at the expense of those interference protection standards. That, unfortunately, is precisely what the Commission did last month.

Under the protection standards in place at the time of the Notice of Proposed Rulemaking, the Commission could have authorized so few new stations, not more than a handful across the country, that the results would not have warranted the efforts of even printing the new regulations.

In order to create any marginal amount of new service, protection standards had to be loosened so as to eliminate third adjacent channel interference safeguards. In my view, this action represents a severe incursion on the rights of current licenseholders, as well

as on the value of those licenses. These licensees had a reasonable expectation that the Commission would protect the integrity of the band on which they were licensed to operate as we do for licensees in any part of the spectrum.

Far more importantly, this action impairs the ability of current licensees to serve their listeners who must not be forgotten. While a few new people may be able to broadcast, others may lose their ability to receive and to listen to existing stations due to interference. I do not think that radio listeners will be pleased to find out that their favorite station is no longer listenable on their radio. It troubles me that the Commission never made any effort to assess, much less quantify, the entire effect on existing stations and listeners of eliminating interference protections. Not simply conducting some laboratory tests over which we have a very conflicted, mixed record, but actually go out across America and find out how this is going to affect ordinary citizens.

Clearly the Commission's actions harm existing licenseholders and their listeners. On the other side of the ledger, the benefit side, let us consider what the Commission has actually achieved.

According to the NPRM in this proceeding, elimination of third adjacent channel protection for 100 watt stations will allow for the creation of entirely one station in Houston, Texas in the top five markets in America. No such stations will be created in New York, Los Angeles, Chicago, Philadelphia, San Diego, Dallas, San Francisco, Washington, Charlotte or Miami.

At the very last minute, the Commission staff rejiggered these numbers so as to produce slightly more stations. Current and final estimates are that in the five largest cities there will now be a total of three stations. Where there were previously no stations, there will now be one station in Philadelphia or in Dallas, two in San Francisco, three in Washington and four in Miami, but still none in New York, Los Angeles, San Diego, Charlotte or any number of other cities.

Of course the extra stations that were created between the NPRM stage and the final Order were bought at the price of dropping interference protection that would have protected low power stations from full power stations. So while there may be a few more stations now than originally thought, they are still very few in number and those stations are defenseless in terms of interference from regular power stations, further decreasing the utility of these stations.

In short, so much for the gall of creating low power stations to serve urban communities. There will simply be precious few new licenses in urban America. In fact, the bulk of new licensees will be in smaller markets. In many of these areas, full power stations could likely already be dropped in without changing the third adjacent channel standards at all. At least there is no indication of an effort on the part of the Commission even to consider such an alternative approach.

Given that there is little existing demand for additional full power stations in these markets, there is no evidence of commercial viability. Indeed, the evidence suggests that such stations are not capable of existing as going concerns.

Perhaps there is a demand for low power, noncommercial stations. Theoretically, however, any such actual demand could be met by the dispensing licenses within our previous rules, that is by giving out 101 watt licenses consistent with the 100 watt minimum requirement.

Notably the rationale for the 100 watt minimum was efficiency in spectrum distribution. It was thought inefficient, unwise and unmanageable to license radio stations at operating powers any less than 100 watts. The Commission has never explained why it is any less inefficient today than it has been for decades to allocate radio spectrum at lower levels. This was Commission policy for decades. There would be no licenses at 100 watts or less because it was inefficient spectrum management.

In any event, we receive few, if any, applications for 101 watt licenses. People could walk in and say I want a 101 watt license. No one came. As far as going below that, people could seek a waiver and say, I would like a 10 watt station. Do you know how many applications we have had for waivers over the 100 watt rule. As far as I can tell, no such waiver request has ever been filed, again suggesting a lack of any real demand for such licenses.

In short, there is no evidence in the behavior of actual license applicants that suggests any pent up demand for the stations in question.

After creating this new class of licensees, the Commission loaded them up with the heavy regulatory burdens that most broadcasters must shoulder. Make no mistake, being a broadcaster, a small radio broadcaster is not the way to get rich in America today. You do it because you love it and you do it knowing you have to put up with all kinds of regulations. The Commission loaded them on this new class of licensees.

The required actions and paperwork for compliance with the new regulations may well prove overwhelming for the operators of low power radio stations. If these duties are taken seriously by operators and enforced by the Commission, low power operators will spend more time attempting to figure out what Title 47 of the Code of Federal Regulations requires than actual time spent broadcasting.

The net result of the foregoing is that there is very little evidence in the form of applications for 100 watt stations or waivers to put in 10 watt minimum stations indicative of current market demand for the stations now being created. When we do receive license applications for the new low power licenses, one must ask the question, why didn't you apply 6 months ago? You could have.

The only instances where you couldn't have is where we had changed the interference standard. The only instance where anyone in America can come in and request these new licenses where they couldn't have before is where interference will be created, where the listeners of radio are going to be harmed.

In short, the Commission has, at the expense of existing service quality to the American listening public, created a handful of new stations in primarily nonurban markets, stations that themselves may well be unlistenable due to interference from high power stations, a threat to the development of digital radio services, with the new heavy regulatory scheme including ownership, cross owner-

ship, political programming to govern these very small operators, and more enforcement obligations on an already taxed Commission.

To conclude, let me say that this is not a wise balance of interests. Nor does it comply with our fundamental statutory charge to make available a rapid—let me emphasize efficient—nationwide and worldwide wire and radio communications service.

Thank you, Mr. Chairman.

[The prepared statement of Hon. Harold W. Furchtgott-Roth follows:]

PREPARED STATEMENT OF HON. HAROLD W. FURCHTGOTT-ROTH, COMMISSIONER, FEDERAL COMMUNICATIONS COMMISSION

Thank you Chairman Tauzin, distinguished members of the Telecommunications, Trade and Consumer Protection Subcommittee, for inviting me to testify on the Federal Communications Commission's recent decision to create a new class of "low power" radio service—or, put another way, to degrade the quality of radio service on the FM band for listeners nationwide.

As you know Mr. Chairman, I dissented from both the Notice of Proposed Rulemaking (NPRM) and the Order adopting final rules on this matter. At the outset of the low power proceeding, however, I made clear that I was not—nor am I today—opposed to the creation of a low power radio service *per se*. Whatever new service could have been provided within the range of existing interference regulations would have been worth considering. But I did not believe that we should create new stations at the expense of those interference protection standards. That, unfortunately, is precisely what the Commission did last month.

Under the well established protection standards in place at the time of the NPRM, the Commission could have authorized so few new stations—not more than a handful across the country—that the results would hardly have warranted the effort of printing the new regulations. In order to create any marginal amount of new service, protection standards had to be loosened so as to eliminate long-standing third adjacent channel safeguards.

In my view, this action represents a severe incursion on the rights of current FM band licenseholders, as well as on the value of their licenses. These licensees reasonably expected that the Commission would protect the integrity of the band on which they were licensed to operate, and they invested heavily in their businesses based on this reasonable expectation.

Perhaps more importantly, this action also impairs the ability of current licensees to serve their *listeners*, who must not be forgotten. While a few new people may be able to broadcast, others may lose their ability to receive and listen to existing stations due to interference. I do not think that radio listeners will be pleased to find out that their favorite station is no longer listenable on their radio. Troublingly, however, the Commission never made any effort to assess, much less quantify, the effect on existing stations and listeners of eliminating these well established interference protections.

Clearly, the Commission's action harms existing license holders and their listeners. On the other side of the ledger—the "benefits" side—let's consider what the Commission has actually achieved.

According to the NPRM in this proceeding, elimination of third adjacent channel protections for 100 watt stations will allow for the creation of *one* such station—in Houston, Texas—in the top five American cities. No such stations will be created in New York, Los Angeles, Chicago, Philadelphia, San Diego, Dallas, San Francisco, Washington, Charlotte, or Miami.

At the very last minute—in fact, the evening before the final vote took place, and without the knowledge of this Commissioner—these numbers were rejiggered so as to produce slightly more stations. Current and final estimates are that in the five largest cities there will now be a total of *three* stations. And, where there were previously no stations, there will now be one station in Philadelphia, four in Dallas, two in San Francisco, three in Washington, and four in Miami. But there will still be no stations in New York, Los Angeles, San Diego, or Charlotte. Of course, the extra stations that were created between the NPRM stage and the final Order were bought at the price of dropping proposed spacing requirements that would have protected low power from full service stations.

So while there may be a few more stations now than originally thought, they are still very few in number, and those stations are defenseless in terms of interference from regular power stations, further decreasing the utility of these stations. So

much for the goal of creating low power stations to serve urban communities; there will be precious few new licensees in urban markets, and these small-scale licensees will have to contend with a sea of interference from full power broadcasters.

In fact, the bulk of new licensees will be in smaller markets. In many of these areas, full power stations likely could already be dropped in *without* changing third-adjacent channel standards at all. (At least, there is no indication of an effort on the part of the Commission even to consider such an alternative approach.) Given that there is little existing demand for additional full-power stations in these markets, there is no evidence of commercial viability. Indeed, the evidence suggests that such stations are not capable of existence as going concerns.

Perhaps there is a demand for lower power noncommercial stations. Theoretically, however, any such actual demand could be met by the dispensation of licenses within our previous rules—*i.e.*, by giving out 101 watt licenses consistent with the 100 watt minimum requirement. Notably, the rationale for the 100-watt minimum was efficiency in spectrum distribution. It was thought inefficient, unwise, and unmanageable to license radio stations at operating powers any less than this. The Commission has never explained why it is any less inefficient today than it has been for decades to allocate radio spectrum at lower levels.

In any event, we receive few if any applications for 101 watt licenses, even in the noncommercial arena. Similarly, if somebody really wanted to operate a 50-watt station, they might file a request for waiver of the 100-watt minimum rule. As far as I can tell, though, no such waiver has ever been filed, again suggesting a lack of any real demand for such licenses. In short, there is no evidence in the behavior of license applicants that suggests any pent-up demand for the stations in question.

After creating this new class of licensees, the Commission then loaded them up with the same heavy regulatory burdens that most broadcasters must shoulder. For instance, the newly recreated Equal Employment Opportunity rules will apply to low power stations to the same extent that they apply to all broadcasters. Also applicable are all the political programming rules, cross-ownership restrictions, special ownership limits for low power stations, and a slew of other FCC regulations.

The required actions and paperwork for compliance with these regulations may well prove overwhelming for the operators of low-power radio stations. If these duties are taken seriously by operators and enforced by the Commission, low power operators will spend more time attempting to figure out what Title 47 of the Code of Federal Regulations requires of them than they will spend broadcasting.

The net result of the foregoing is that there is very little evidence—in the form of applications for, say, 101 watt stations or waivers of the 10-watt minimum—indicative of current market demand for the stations now being created. Layered on top of the apparently low state of demand for these licenses today are the many regulations to which the stations will be subject. Any current demand for 100 and 10 watt stations will only be dampened by these regulatory burdens.

In short, the Commission has, at the expense of established service quality and existing radio listeners, created: a handful of new stations in primarily non-urban areas, failing to fulfill one of its own chief goals; stations that themselves may well be unlistenable due to interference from high power stations; a threat to the development of digital radio services; a heavy regulatory scheme, including ownership, cross-ownership, political programming, and EEO rules, to govern these very small operators; and more enforcement and administration burdens for the Commission.

To conclude, this is not a wise balance of interests. Nor does it comply with our fundamental statutory charge to "make available . . . a rapid, *efficient*, Nation-wide and world-wide wire and radio communication service." 47 USC section 151 (emphasis added).

Thank you.

Mr. TAUZIN. Thank you very much, Mr. Commissioner.

Our final witness is Mr. Kevin Klose, President and CEO, National Public Radio.

STATEMENT OF KEVIN KLOSE

Mr. KLOSE. Good morning, Mr. Chairman, Congressman Markey and distinguished members of the subcommittee.

Thank you for allowing me to speak to you today on behalf of National Public Radio and the hundreds of public radio stations across the country that air both their own innovative local programming

as well as NPR programming reaching audiences estimated at close to 15 million listeners each week in the United States.

NPR is a private, nonprofit corporation that produces and distributes award winning programming such as Morning Edition, All Things Considered, Performance Today and Car Talk. It was founded 30 years ago this month under the aegis of the 1967 Public Broadcasting Act. We are very pleased to say we will be marking that 30th anniversary within a few weeks.

At the outset, let me say firmly that we favor in principle, diversity of voices and access to the radio space. We acknowledge the intent of the FCC to expand diversity in adopting the recent report and order for a new service of low power FM radio stations to encourage such diversity.

While recognizing that LPFM will never be a viable substitute for the services provided now to millions of listeners by the public radio community, we nevertheless believe there can be compatibility between a new LPFM service and public radio. However, there are several significant, unresolved issues that need to be addressed in order to ensure a compatible environment for the benefit of listeners. We seek the following actions and we make the following points. We are concerned that public radio listeners may be adversely affected by the new LPFM stations due to signal interference caused by the insertion of LPFM transmitters into existing radio spectrum. We note there are different opinions on the possibility of potential interference which underscores the uncertainty about this crucial matter. Unfortunately, this issue is not adequately addressed in the FCC's recent LPFM decision.

We take the position that it is reasonable to address this issue in order to ensure that audiences to existing public radio stations can continue to receive our services without interference and that potential new audiences not be denied that opportunity. In addition, the radio reading services that predominantly rely on public radio's subcarrier channels are much more susceptible to this kind of interference.

David Noble, President of the International Association of Audio Information Services is with us here today. Mr. Noble and the IAAIS represent hundreds of radio reading services for the print impaired and blind serving and estimated 1 million-plus listeners every day across the country.

We seek timely creation of a swift, fair process at the FCC to adjudicate cases of interference to full service stations, translator inputs and radio reading services for the print impaired. We seek protection of translators that are generally used to broadcast to underserved areas. In our view, the FCC order provides secondary and inadequate protection for these areas.

The LPFM decision was announced just days before comments were due on the FCC Notice of Proposed Rulemaking on the transition of analog radio stations to digital audio broadcasting, DAB. This is a very complex transition for public radio with many technical matters still to be resolved. Having both initiated the DAB process and having acknowledged the potential effect of LPFM on this process, the FCC proceeded with its plan without, in our opinion, carefully analyzing the impact on DAB, digital audio broadcasting.

We believe it imprudent to act on LPFM without fully exploring the potential adverse consequences of these actions on DAB or without considering the comments of broadcasters, receiver manufacturers and digital audio broadcast proponents prior to acting on LPFM.

There are various reasonable remedies to these problems to assure compatibility and to do no harm to existing services. We are considering appropriate administrative and/or judicial processes to resolve these issues. NPR and our member stations also are prepared to seek appropriate and timely legislative redress.

We will continue working regularly with stations and other professional and industry organizations on this matter. We seek a reasonable, rational outcome that assures compatibility by creating the practical means to guarantee compatibility.

Thank you, Mr. Chairman.

[The prepared statement of Kevin Klose follows:]

PREPARED STATEMENT OF KEVIN KLOSE, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NATIONAL PUBLIC RADIO

Good morning Chairman Tauzin, Congressman Markey and distinguished Members of the Subcommittee. Thank you for inviting me to speak to you on behalf of National Public Radio (NPR) and the hundreds of public radio stations that air NPR programming across the country. As you know, NPR is a private, nonprofit corporation that produces and distributes award-winning programming such as *Morning Edition*®, All Things Considered®, Talk of the Nation®, Performance Today®, and Car Talk. NPR is also a membership organization. NPR Member stations are independent entities, licensed to a variety of non-profit organizations, local communities, colleges, universities and other institutions. The majority of NPR Member stations are licensed to educational institutions such as the University of Houston and The Ohio State University. In addition, a number of states have established state-wide networks to provide universal access to public radio service.

Thank you also for the opportunity to comment on the Federal Communications Commission's (FCC) decision to implement a new service of low power FM radio (LPFM) stations. At the outset, let me say firmly that NPR favors, in principle, diversity of voices and access to the radio space. We applaud the *intent* of the FCC in adopting the recent Report and Order (Order) regarding LPFM to encourage such diversity. While recognizing that LPFM will never be a viable substitute for the services provided now to millions of listeners by the public radio community, we nevertheless believe there can be compatibility between a new LPFM service and public radio. LPFM stations can only provide service to narrow geographic segments of a community since the largest stations covering 3.5 miles and the smallest stations covering 1 mile.

However, there are three significant unresolved issues that need to be addressed in order to insure a compatible environment for the benefit of our listeners. We seek the following actions:

1—*Timely creation of a swift, fair process at the FCC to adjudicate cases of interference.* The FCC has overturned long-standing policy of providing protection on "third adjacent" frequencies and now will permit LPFM stations to acquire frequencies that may disrupt radio stations in their extended coverage areas. In addition, the radio reading services that rely on FM subcarrier channels are much more susceptible to this kind of interference. We recognize that the FCC has chosen to rely on its own engineering studies rather than the evidence submitted by NPR, the NAB and others, and we do not intend to argue that issue in front of the Subcommittee. However, what is deeply troubling to public radio is that the FCC has chosen to commit to this course without providing a more complete remedy to radio stations or their audiences if in fact interference does occur.

2—*Protection of translators.* Many areas, especially in the West and the Midwest, depend upon translator stations to receive public radio broadcasts that repeat full service stations in the heart of the community. In rural and other under-served areas, with relatively fewer radio and television signals available, translators have a heightened meaning to listeners of public radio. But, the FCC Order provides secondary and inadequate protection for these services.

3—*Assuring the transition to Digital Audio Broadcasting.* The LPFM decision was announced just four days before comments were due on the FCC Notice of Proposed Rulemaking on the transition of analog radio stations to Digital Audio Broadcasting (DAB). Having both initiated the DAB process and acknowledged the potential effect of LPFM on this process, the FCC proceeded with its plan without analyzing the impact on DAB. We believe it imprudent of the FCC to act on LPFM without fully understanding the consequences of its actions to DAB or considering the comments of broadcasters, receiver manufacturers and DAB proponents.

We are considering appropriate administrative and/or judicial processes to resolve these issues. NPR and our Member stations also are prepared to seek an appropriate and timely legislative solution. Millions of Americans listen to and support public radio. We ask that that support be honored by a positive response to our presentation of the need for assuring the compatibility of this powerful, yet fragile public radio space.

PUBLIC RADIO'S LONG-STANDING SERVICE TO UN-SERVED AND UNDER-SERVED AUDIENCES

NPR and its Member stations appreciate and value the public policy objective of fostering a diversity of broadcast voices to ensure programming that is responsive to local needs and interests. Since its origins in the first part of this century, public radio has pursued a mission of producing and disseminating programming to meet the needs of audiences un-served and under-served by commercial media. In fact, one of public radio's greatest strengths derives from a proven record of producing high quality public service broadcasting that both celebrates the individual community and welcomes national programming. This powerful local-national amalgam has created a broadcast space greater than the sum of its parts.

NPR's devotion to presenting ideas, whether news or cultural, engages audiences and enhances the connections between people in local communities and across the nation. For example:

- *Morning Edition* is the premier national/local program on public radio, with 10 million weekly listeners, larger than the Today Show. The program is designed to encourage local stations' news departments to report on community news and events by inserting these stories into the national feed.
- *All Things Considered* is NPR's award-winning, flagship program. It produced the *Lost and Found Sound* series that included the "Quest for Sound," a call to listeners to send in their home recordings of sounds of the last one hundred years. This is a prime example of local contact that creates national content.
- *Weekend All Things Considered* invites listeners to collaborate with novelist Paul Auster by submitting true stories to be re-worked and read on air as part of *The National Story Project.*
- *Talk of the Nation* is a distinctive news program providing opportunities for listeners to call into national and international experts to discuss the issues of the day and the issues behind the headlines. The show also takes to the road on the last Thursday of each month as part of a year long series, *The Changing Face of America.* This series also allows a studio audience to share local concerns with a national audience and allowing the national audience to compare and contrast local views with its own.

In addition, local public stations complement and strengthen this noncommercial, educational service by producing programs particularly relevant to their communities:

- WABE-FM in Atlanta, Georgia, produces *The New South Radio Drive-In,* drawing together some of Georgia's best talent in theater, comedy, oral tradition storytelling, and folk music for a live, half-hour show devoted to a celebration of Georgia's historic culture.
- WCPN-FM in Cleveland, Ohio, produced a four-month special in collaboration with public television station WVIZ-TV called *Your Land, My Land.* This special focused on urban development and its impact on the citizens of northeast Ohio. WCPN-FM produced a series of special news reports on all issues surrounding development, while WVIZ-TV produced local TV programs. WCPN also hosted call-in programs that featured local, state and national organizations on all sides of the development issue.
- WWNO-FM in New Orleans, Louisiana, records and broadcasts 16 or more concerts of the Louisiana Philharmonic Orchestra and other classical music concerts each year. In 1997, the station won special recognition at the Big Easy Awards Tribute to the Classical Arts for its role in the broadcast and promotion of classical music.

The value of public radio goes beyond its own broadcasts. Public radio stations are working directly with communities. Some examples:

- KSMU-FM in Springfield, Missouri, works with fifth grade students in the Springfield Public School system to produce and edit a monthly news program about issues and activities at their school. KSMU-FM both broadcasts and webcasts the program on the station's web site.
- KPCC-FM in Pasadena, California, works with inner-city kids by sponsoring essay contests and arranging for students to tour the station. In past years, young people from Heart of LA Youth (HOLA) have worked with a KPCC-FM and a NPR reporter to create radio documentaries that aired locally. Similar collaborations involved African-American students from All Saint's Episcopal Church in a program called *Brothers Making a Difference.*

As a result, Americans have come to rely on public radio to provide thought-provoking, in-depth programming that addresses national, regional and local issues.

THE SUBSTANTIAL LOCAL, STATE AND FEDERAL SUPPORT FOR PUBLIC RADIO

Consistent with this public service record, the federal government has a long-standing policy of promoting the development and expansion of locally oriented public radio. Congress has made a substantial federal investment through the Corporation for Public Broadcasting (CPB) to support the basic operations of public radio and television stations and to foster the production of programming. Congress has also invested in the construction of public broadcast facilities through the Public Telecommunications Facilities Program (PTFP) since 1962. Moreover, Congress established the Public Radio Satellite System (PRSS) in 1978, the first of its kind. This nationwide interconnection system is a lifeline that provides universal access to programming.

Although federal support is important, the majority of funding comes from local and state governments and from community sources, including listeners. The fundamental element underlying the public's support for public radio has been the role of public radio stations as community resources and as outlets of community expression. Indeed, the history of public radio has been the evolution of public radio stations as sources of locally responsive programming. It has accomplished these important public service objectives as the result of concerted federal policies and with the assistance of a substantial investment of resources over the past half-century.

THE LPFM ORDER

In several important respects, the Commission's Order accommodated concerns expressed by public radio. Although NPR appreciates these accommodations and the spirit in which they were intended, we are deeply concerned that the Order may diminish the service public radio provides to the American people. As the record demonstrates, public radio is an invaluable community resource, and it makes little sense to implement the LPFM plan in such a way as to undercut public access to public radio.

INTERFERENCE: In eliminating 3rd adjacent protection for FM radio stations, the FCC has departed from its long-standing and traditional standard of measuring interference. It has done so despite substantial evidence presented by NPR, the NAB and others. We recognize that the FCC may disagree with that evidence, but we believe it to be imprudent for the Commission to fail to provide an adequate remedy if, in fact, interference does occur. The consequence of error by the Commission in this technical debate will fall directly on existing radio services and the communities which long and faithfully have supported these stations with substantial voluntary financial support and growing audiences.

Full Service Stations: If the Commission is incorrect in its predictions about the likelihood and severity of interference, there is no apparent means to remedy or even minimize the harm.

As a related matter, we request clarification that mutually exclusive applications, which in many cases have been held up for years, are indeed protected. Public radio stations are making a substantial financial investment in gaining access to spectrum in order to expand public service to the American people.

Radio Reading Services: The potential harm also extends to radio reading services offered by public radio stations across the country to the visually-impaired and others such as paraplegics whose disability prevents them from using print media. This service is unique. No other source adequately satisfies these citizen's needs. Approximately one hundred radio reading services use public radio stations' sub-carrier channels, which operate closer to other signals and thus are more likely to engender interference, for broadcast information and programming to commonly available receivers.

For instance, the radio reading service in Pittsburgh, Pennsylvania, serves 6,500 people, 24 hours, seven days-a-week with readings from local newspapers, geographic and ethnic community newspapers such as the *Jewish Chronicle, Pittsburgh Catholic* and *The Pittsburgh Courier* which serves the African-American community. Moreover, the radio reading service provides daily grocery and shopping information. In addition, community organizations such as Lion's Clubs help purchase subchannel receivers, and WDUQ-FM and its licensee, Duquesne University, donate engineering assistance and the subcarrier frequency on which the service is broadcast.

Translator Inputs & Outputs: Although the Commission required LPFM stations to protect existing translator/booster facilities, it did not expressly require the protection of translator/booster input signals. Because translator/booster facilities operating on non-reserved frequencies must be ″fed″ by an over-the-air signal, disruption of the input signal could eliminate the service of that translator/booster facility as well as every translator/booster facility that depends on a clear signal to and from the affected facility.

Particularly in more rural areas of the United States, networks of translator and booster facilities are typically the only means by which public radio stations can cover large, sparsely populated areas. For example, KUWR-FM in Laramie, Wyoming, has seven translators that carry the station's signal to approximately 45,000 people in underserved areas. Similarly, the translators in Rawlins and Dubois, Wyoming, provide the only public radio service in these areas.

This problem may also impact other regions of the United States. For instance, public radio station WKMS-FM in Murray, Kentucky, has translators in Paducah, Kentucky, and in Paris, Tennessee. These translators bring the only public radio service to about 43,213 persons. In Southwest Virginia, WVTF-FM is in the process of constructing a translator in Lynchburg on 89.5. If its input is not protected, the service it will provide may be entirely negated.

PROTECTING FUTURE TRANSLATORS AND BOOSTERS: While the FCC grand-fathered existing translator/booster facilities, it required future translator and booster stations to protect previously authorized LPFM stations. Since there has been a freeze on translator applications since 1997, this aspect of the LPFM decision is likely to further undermine the extension of public radio services to under-served and un-served areas.

In addition, translator and booster stations are considered a secondary service to full powered stations. As a result, a translator or booster station that is forced to relocate to accommodate a new or newly modified full power station will likely have an even harder time relocating the facility and maintaining service once significant numbers of LPFM stations have begun operations. If the dislocated translator is part of a network of such facilities, service may be lost over a wide area.

DIGITAL AUDIO BROADCASTING: The LPFM decision was announced just four days before comments were due on the FCC's Notice of Proposed Rulemaking regarding the transition of analog radio stations to digital audio broadcasting (DAB). Having initiated a proceeding to address the transition of existing full power radio broadcasters to DAB, and acknowledged the potential impact of LPFM interference to DAB, the FCC's Order essentially ignores the issue. Given the uncertainty regarding the transition to DAB, we believe the potential affect of LPFM stations on full powered stations warrants further analysis.

CONCLUSION

Although public radio supports a multitude of voices over the nation's airwaves and the general principle of empowering communities to make their voices heard, we do not believe that it constitutes sound public policy to implement LPFM in such a way as to interfere with the educational and community mission of public radio. Our belief in this proposition is only strengthened by the realization that the LPFM proposal, as currently constructed, could have the greatest harm on public radio audiences in rural and traditionally underserved areas, the exact audience who may be in the greatest need for access to public radio programming. We thus seek an adequate remedy for existing stations in case of actual interference, greater protection for translator services in rural and under-served communities, and reevaluation of the LPFM plan in concert with the ongoing DAB proceeding.

Mr. TAUZIN. Thank you very much, Mr. Klose.

The Chair will recognize himself for a round of questions.

Let me first observe a couple of things. As I observed the testimony of the Commissioner, you, Mr. Franca, and others, what we are really talking about is an order that relaxes standards of inter-

ference that have been in place a long time to accommodate the new stations, relaxing standards of interference.

As I understand, the office used distortion to test for interference rather than signal to noise ratios which has been the standard used by the FCC in setting interference protection rules for a long, long time. Am I wrong about that?

Mr. FRANCA. One of the difficulties here and one of the reasons why people came up with different standards is the way FM service was started. It started as a monophonic service. We established mileage separations among stations but the Commission never defined what level of service or what grade of service that meant for FM service.

Mr. TAUZIN. Hasn't the international standard always used signal to noise ratios?

Mr. FRANCA. There is an international ITU standard.

Mr. TAUZIN. Isn't that the standard they have always used?

Mr. FRANCA. It is not the standard that we use.

Mr. TAUZIN. It is not the standard that has been used by the FCC?

Mr. FRANCA. Absolutely not, and in fact, the reports cited by the NAB in their comments to this proceeding in which they said they cite the ITU standard of 50 db should be used for our standard——

Mr. TAUZIN. But you are saying you did not abandon a long-held standard by the FCC in measuring interference?

Mr. FRANCA. Absolutely not.

Mr. TAUZIN. Second, I was puzzled by why a Walkman was used in Mr. Jackson's test and then it dawned on me what is going on here. Here is the question I want to ask you. Portable, personal, clock radios make up 65 percent of the radios sold in the year 1998, according to our numbers, hundreds of millions of them out there. What I think I am hearing is that the rationale of the Commission is that because these radios are always likely to be subject, susceptible to interference because people use them anyhow, it is okay to have more interference on them? Is that the rationale upon which this decision was based?

Mr. FRANCA. I think the rationale is that those radios provide limited service today. In fact, if you look at the NAB test data and their 50 db number, the Walkman radio performance, their 50 db number, at the edge of service is 1,000 times less than that.

Mr. TAUZIN. The point I am making is that we are talking about radios that hundreds of millions of Americans have bought and use. These are the low cost radios that people use for the clock radios, the Walkman we just saw demonstrated and I hear the Walkman being described as a poor performance radio today, that these so-called poor performance radios are going to be poorer in performance as a result of some of this interference that you now will permit as acceptable interference.

Let me start with Harold's premise that the idea of diversity, of public radio, letting more people into the business of the airwaves, Mr. Koning made very strong and convincing arguments for that and I think it is something we have always accepted. But in doing so in a rule that is premised upon the notion that the radios most Americans buy and use are going to be poorer quality performers now because you are going to allow more interference on those ra-

dios and the rationale is, well, you bought a poor radio to start, you deserve a little more interference. Has that rationale been behind this decision? It is pretty disturbing to us.

Mr. FRANCA. I think the rationale is always the benefits of a service versus the interference it cause.

Mr. TAUZIN. What you are saying is, in order to get a few—if Harold is right about this, if we are only talking about four, five, six, eight stations in the major metropolitan areas of America, if you are telling hundreds of millions of Americans that you are going to have poorer quality radios because you can't afford the highest quality radios, you are buying these Walkmans, you thought you got a great product, but now you are going to have a less quality product because we want to accommodate for the good, eight to ten new radio stations in these metro areas and heaven knows what else?

What I am telling you though, I want you to hear this, is that many of us who are concerned that kind of subjective balancing of American values is something perhaps you should have talked to us about. We get elected by those Americans who buy those radio stations as well as the Americans who would like to own a radio station. All the Americans who bought those Walkmans are going to be calling us, if Mr. Jackson's demonstration is correct, wondering why they have all this backtalk on the radio they used to listen to.

Mr. FRANCA. Well, I think you have to look at where that interference will occur. What we are saying is that the interference area will be right around the low power station.

Mr. TAUZIN. A square mile in the metro area. Do you know how many people drive through that square mile on a daily basis?

Mr. FRANCA. If they are driving through, their car radios are going to operate perfectly.

Mr. TAUZIN. Do you know how many people use Walkmans in those square miles? What concerns me, sir, is that you are saying for the first time I think in the history of the Commission, No. 1, that this is a good and efficient use of the spectrum and it doesn't matter, for the good of this rule, that all of these products that Americans have bought will now serve them in a poor capacity. Your argument is, well, you should have known it when you bought those cheap, old products? That is a pretty nasty way to treat the American public, sir.

Mr. FRANCA. Sir, every service that we authorize—and we think it is good spectrum management policy—is interference limited. So when we put in a new service and a new station, such as a full power FM station, someone is going to lose service. They are, however, going to be gaining service from that new station.

Mr. TAUZIN. Let me ask you the tough question. You eliminated third adjacent channel protection for the LPFM station but you kept it for the full power station. If your arguments are as you concluded, that you reject third channel interference, why keep it for the full stations? If you are creating all these new low power stations that can receive all this horrible interference from the full power station, you are creating new stations that are going to be horrible to listen to on the one hand because you are not protecting them against adjacent interference and at the same time saying it

is okay to establish these because, in our opinion, third adjacent interference is not significant for the public good. That seems a bit inconsistent. Would you please explain that to me?

Mr. FRANCA. I think the difference there is looking at where the interference would occur. Generally, it is a very small area. The reason why you don't do it for the full power stations is basically because the higher power of those stations would cause a much greater service area loss to the public.

In most instances, the loss of service in the LPFM case will be on the property of the low power station owner.

Mr. TAUZIN. I just have real problems. I am like the Commissioner, I don't start from the notion that what you tried to do is all bad. I supported low power television and still do for a lot of the reasons that low power television has added a component to our communications marketplace. I think it has been good for this country.

I don't necessarily think low powered FM is a bad concept to start with, but the notion that the order is based on a premise that it is okay to have more interference on the radios that most Americans buy and use because they are low cost radios is a very disturbing premise to me. We will have more discussions of this.

My time has expired. The chairman recognizes the gentleman from Massachusetts for a round of questions.

Mr. MARKEY. Thank you, Mr. Chairman.

I would like to begin by first congratulating Mr. Franca for his historic testimony today. Usually when the Federal Communications Commission is testifying before this committee, it is to receive a round of bitter criticism for dragging its feet and not moving quickly enough. Today, Mr. Franca, you have been able to elicit criticism from those same people for moving too quickly and trying to get the process completed in an area of important national policy. For that, you are to be congratulated because you demonstrate to a very large extent much of the criticism of the FCC has nothing to do with speed, it has to do with result, the conclusion to which they come on issues with which they are dealing.

Today what we are talking about is a obviously a huge deregulation issue—how do we deregulate the third adjacent station. As part of the deregulatory agenda of the Congress, we are obviously moving forward. Sometimes there are realignments on deregulatory issues. That is just the way it is but clearly there is a real intent here to move forward.

We begin, of course, by noting the limited nature of this interference. It is a significant issue but with limited consequences, so all of the FM car radios, 150 percent of all listenership is that. Home stereos, they are out. People who use Sony Walkmans or cassettes, which I would say is a very high percentage of people out there jogging using these Sony Walkmans, are also out as well.

So we come down to the Sony Walkman issue which is an important issue, I don't deny that. I think most of us begin with a pretty low quality portable radio, although they may not be the highest target audience for advertisers in terms of generating revenues.

I guess what I would like to know, Mr. Franca, is, first of all, is there a disagreement about the underlying data between you and Mr. Jackson, for example, or is there a debate over the inter-

pretation of the data? Which is it? Is it the data or the interpretation of the data that we are discussing here?

Mr. FRANCA. We believe the primary differences here are in the interpretation.

Mr. MARKEY. So you agree with Mr. Jackson's conclusions?

Mr. FRANCA. We certainly think their tests provided good information that we used to make our decision.

Mr. MARKEY. Do you agree with Mr. Franca, Mr. Jackson, in terms of his evaluation that the data you both are working from is identical?

Mr. JACKSON. I wouldn't say identical but what Professor Picholtz and I did in our study was we tried to reconcile the four studies and make adjustments. We were able to find that they all came pretty close and that the difference between the people who thought the third adjacent channel interference was going to be a real problem and those who thought it wasn't, came from how people defined interference and how badly a signal had to be degraded before a consumer suffered.

Mr. MARKEY. So we debate then not over the technical conclusions which you reached. Do you agree with that Mr. Rappaport?

Mr. RAPPAPORT. Yes.

Mr. MARKEY. Anyone here disagree that it is a debate over data rather than interpretation of data?

[No response.]

Mr. MARKEY. Is there an appeal process here, Mr. Franca?

Mr. FRANCA. We have a reconsideration process at the Commission.

Mr. MARKEY. Are all of the panelists here and all others in the country free to participate in that appeal process?

Mr. FRANCA. Yes.

Mr. MARKEY. What is that process? Can you explain it to us in terms of its length and the process that interests would use in order to testify or have their views heard?

Mr. FRANCA. Thirty days after publication of the rules in the Federal Register, people can file petitions to ask us to reconsider the adopted rules.

Mr. MARKEY. Then what happens after that, Mr. Franca?

Mr. FRANCA. The Commission looks at that information and puts out a Memorandum Opinion and Order either agreeing with the petitioner or upholding the rules.

Mr. MARKEY. So how long a period has yet to elapse? Can you give us an idea as to the duration of that period of time that everyone will have a chance—Mr. Jackson and others—in order to present their information and contest the conclusions you have reached with regard to your interpretation?

Mr. FRANCA. I believe the rules were published in the Federal Register yesterday, so the 30-day period started yesterday.

Mr. MARKEY. In terms of the comment period and then how long after that before the FCC would then rule on those additional comments?

Mr. FRANCA. That depends on what gets filed but we certainly try to look at this information relatively quickly and the staff would present a recommendation to the Commission.

Mr. MARKEY. So the process has not concluded yet with regard to modifications that could be made taking into account the concerns which have been raised by this panel and others in the country?

Mr. FRANCA. That is correct.

Mr. MARKEY. So at this point we are kind of at the halfway point in the process in terms of your initial conclusions and now the commentary coming from the public and other interested parties.

Thank you.

Mr. TAUZIN. I might note for the record that Associated Press carries the story today that the National Broadcasting Association has filed a petition in U.S. District Court of Appeals asking the court to set aside this rule. So we also have a court proceeding commenced in the matter.

The Chair recognizes the vice chairman of the committee, Mr. Oxley, for comments.

Mr. OXLEY. Thank you, Mr. Chairman.

Commissioner Furchtgott-Roth, welcome. I take it from your comments that you support my bill?

Mr. FURCHTGOTT-ROTH. Mr. Oxley, I have a longstanding position of not taking positions on legislation before Congress. I am not sure it is the appropriate role of commissioners to be out lobbying Congress.

Mr. OXLEY. We would welcome you as an ally at any point.

Your testimony was interesting, and I was thinking initially when this whole issue came up, why would my broadcasters back home be concerned? I thought there would be more angst perhaps in urban areas as opposed to rural and semi-rural areas and yet, as you indicated and others indicated, the bulk of these new licenses would be in the smaller markets. Then I realized that a station in Delphos, Ohio that has been there for a long time, family owned, that is why they would be concerned about a low power license.

Could you characterize and give us some idea why apparently there is very little, if any, demand for existing low power licenses? Is it not that people don't realize they are out there? Why is there apparently a lack of demand for the existing licenses out there?

Mr. FURCHTGOTT-ROTH. Mr. Oxley, I think in smaller markets, anyone could come in and apply for a license and in most small and mid-size markets, get a license, a full power license. If they want to operate at a low level, they could. The reason they don't is they would lose a lot of money. Presumably in small markets, anyone who could make a penny at this business is already in the business and there are a lot of folks who are in the business who are losing a lot of money. So it is not very attractive to enter a market where you are probably going to lose money.

Where there is demand is in the major urban markets where even the smallest, lowest power station in a major market can sell for a lot of money. No one can come in and get a license today for free in those markets, but those are precisely the markets where few, if any, new licenses will be created for low power FM. The only ones that will be created will be created at the cost of new interference.

Mr. OXLEY. As I understand it, in 1998 over 65 percent of radios sold were portable, personal and clock radios, a rather substantial number. I have a shower radio, a great invention. If I want to sing along with the oldies station, I should be able to do that without interference. You listen to news, music and everything. There are a lot of those out there, and I would think that I ought to be entitled to a clear signal, the same with the Walkman user or anybody else.

Mr. Franca, would you acknowledge that there are literally millions and millions of those kinds of radios out there, the shower and Walkman radios?

Mr. FRANCA. Absolutely and I think the numbers and distances that were presented here were based on the NAB test results and a very, very high level of performance that these radios don't meet. We think that the interference areas would be much, much smaller than were presented based on the NAB tests.

The only issue, if you actually look at the data, is with regard to the Walkman-type radios which really were an anomaly of all the radios tested.

Mr. OXLEY. Would you put the Walkman and the shower radio all in the same category?

Mr. FRANCA. No.

Mr. OXLEY. You wouldn't? Why is that?

Mr. FRANCA. We didn't test the shower radio but I would assume it would be more like a clock radio or the portables which offered much better performance.

Mr. OXLEY. My time has expired.

Thank you.

Mr. TAUZIN. The gentleman from Tennessee, Mr. Gordon, is recognized.

Mr. GORDON. Thank you, Mr. Chairman.

Thank you also for having this important and timely hearing. This is a subject we need to be discussing now. I have a couple of questions.

Mr. Franca, if there is a need for the low power stations, can that not be met on the noncommercial band?

Mr. FRANCA. I am with the Office of Engineering and Technology. That is really outside my area of expertise how many allotments are available there. We really just looked at the interference issues. I can certainly go back and get that information.

[The following was received for the record:]

Of the 100 FM radio channels, 20 are reserved for noncommercial use. Noncommercial stations are not assigned channels in the FM Table of Allotments, for which protection is based on minimum separations between stations assumed to be operating at the maximum facilities for their class. Rather, noncommercial FM stations are fit into the broadcast landscape on the basis of protecting the service contours of earlier-authorized stations, based on the licensed facilities. As a result, the noncommercial band is intensely utilized in many areas. Restricting LPFM stations to the noncommercial band would further preclude or limit opportunities for LPFM service, especially in urban areas where there are few opportunities for LPFM stations on commercial and noncommercial channels. For these reasons, we do not believe that the substantial interest in LPFM service could be accommodated in the noncommercial band.

Mr. GORDON. I would like you to do that.

Two people can see an accident and view it differently and sometimes who hires an expert has an impact on those. I have to say that you were very persuasive here today.

As a proponent of the low power stations, you are still saying there is going to be interference. It is really a question of what is acceptable interference and how large an interference. In your testimony, you said there was going to be interference, it would be acceptable. Can you better define for me what is the high level of your acceptability?

Mr. RAPPAPORT. Sure. That unfortunately as you can see with this panel is a bit subjective. We can all measure the same data, but what is and is not interference can differ between two parties.

Mr. GORDON. Proximity is one major element?

Mr. RAPPAPORT. Yes, that is the major impact. In radio propagation, the closer you are to a transmitting source, the more interference you will experience for a given transmitter power. These low power FM stations are orders of magnitude weaker in power from the antenna than any of the other commercial broadcast stations.

Mr. GORDON. In a quarter of a mile of a low power station, would that be unacceptable interference?

Mr. RAPPAPORT. In a quarter of a mile, which is longer than the 125 meter blanketing region, my estimation is you would have no interference to virtually every radio that exists today.

Mr. GORDON. What about three blocks?

Mr. RAPPAPORT. If three blocks are about 300 meters, that again is well outside of the 125 meter footprint of the maximum power-low power FM station, so I would say you would have virtually no interference whatsoever.

Mr. GORDON. What about a ham operator?

Mr. RAPPAPORT. I am glad you mentioned that because there are about 250 to 300,000 amateur radio operators in schools, apartments, houses all across the country transmitting ten to twenty times the power.

Mr. GORDON. So if you have one of these in your home, how many next door neighbors do you bother?

Mr. RAPPAPORT. It depends on the proximity of the neighbor.

Mr. GORDON. Typical.

Mr. RAPPAPORT. If it is a typical quarter acre lot, probably two to three neighbors might be impacted to some of the stations depending on their make of radio, maybe no stations, maybe two or three stations. If it is a very inexpensive radio, possibly all of the stations.

If I could just mention the FCC I think was very responsible because they enforced the same ruling on low power FM.

Mr. GORDON. Again, I don't have time. The gentleman next to you on your left, what is your proximity issue? Is it going to be more than two or three neighbors, two or three houses down the block?

Mr. JACKSON. It is going to depend on the consumer's receiver and that is an issue I haven't spent a lot of time on, so I am going to beg off on that. I would like to make one observation which is Professor Rappaport said the interference would be acceptable, it was a good tradeoff. That is not what engineers are for. Engineers

are to tell you how bad things are, how good things are and what the choices are.

Mr. GORDON. So you are an engineer and you can't tell me this? What I am trying to ask you is whether you are going to affect one neighbor or two neighbors.

Mr. JACKSON. Mr. Franca had an exhibit showing the range which was fairly substantial.

Mr. GORDON. From what you know, can you not interpolate the information?

Mr. JACKSON. I apologize, sir. I have not looked at that issue and I can't give you a number.

Mr. GORDON. That is fine. Thanks.

With my time running out, let me say, Mr. Chairman, we need to have more hearings and take more information. My quick thought for what it is worth, probably not much and if anyone cares, is that I certainly understand the FCC's interest in trying, in this period of consolidation and concentration, to have more diversity, more access. Is there going to be a new Spike Lee or Bob Dylan or someone out there who wants to bring in something new that might catch on, I think has some merit. But, I think there is a price that we have to consider here. It is this inference.

I certainly want to know the answer to this noncommercial band question. We really haven't talked much but it doesn't seem there is an outpouring for these stations right now. Potentially, the noncommercial band could take care of that until there is an increase, as there will be, in technology for Walkmans and others that can better accept this interference.

I want to hear more about that and I would hope that the Commission, during this comment period, would go slow, let us learn a little more about it. I certainly would very unfavorable to wholesale getting into this without knowing more than we do. If there is the potential to do two or three experiments, I want to know. I want to know more about the FCC, whether it is an open door, if we are going to have lots of these if no turning back or whether there is a way to do it incrementally as we learn more.

Again, Mr. Chairman, thanks for bringing this open. We need to study this more. I would assume even with good cause, as I think the FCC has, anytime you are going to bring about this kind of change, the burden of proof is on you in terms of this matter of interference. My feeling at home has been that everybody wants gravel on their roads but they don't want the rock quarry next door. Everybody wants the garbage picked up but they don't want the landfill next door. You may want these extra stations but you don't want them next door to you if they are going to cause interference. I think we really do have to answer the question of what happens to those neighbors. I just want to learn more about that.

Thank you.

Mr. TAUZIN. Thank you.

Mr. Klose wanted to respond. We will allow that and move on to the next.

Mr. KLOSE. Thank you, Mr. Chairman.

Mr. Gordon, I would like to point out that the reserve portion of the FM band, which is the noncommercial part that we are most concerned about, as we are noncommercial, is more subject to inter-

ference for engineering reasons. We can submit information to the record to detail those problems. They have to do with the way our signals are processed to give full, dynamic range of our particular program matter and the sound we give is processed differently from the sounds you hear and the way sound is processed in the nonreserve portion.

Mr. GORDON. Is it as crowded?

Mr. KLOSE. It is extremely susceptible to interference because it is a much higher range.

Mr. GORDON. Is it as crowded now, the noncommercial?

Mr. KLOSE. I can't say comparatively. We view it as a fill part of the spectrum.

Mr. TAUZIN. The record will stay open. We would appreciate a submission that details why you have a special problem with this.

The Chair recognizes the gentleman from Florida, Mr. Stearns.

Mr. STEARNS. Thank you, Mr. Chairman.

I appreciate your having this hearing today.

I was intrigued that my colleague from Massachusetts talked about how quickly the FCC reacted and his commendation of the Commission. I would bring to his attention that our vice chairman, Mr. Oxley, was very instrumental in acting quickly when the FCC had a ruling on December 29, 1999 in which the FCC said noncommercial television stations, as a part of their 50 percent allocation for education programming, could not count religious programming. Mr. Oxley and a few of us quickly got a bill and as a result the FCC rescinded its decision that it made last December. This decision was made without any hearings or any information from the religious community. So I was glad to see the FCC acted to rescind what it did so quickly on December 29.

I bring that because lots of things that happen in Washington—and I am not saying this was one of them—happen for political reasons.

Mr. TAUZIN. Will the gentleman yield for a second?

Mr. STEARNS. Yes.

Mr. TAUZIN. The gentleman might be aware that we submitted a very extensive list of questions to the Commissioners regarding that decision that was pulled, one of which asked how was Handel's Messiah considered cultural when it was performed at the Kennedy Center but not on a religious broadcast station? I must tell you that we got no answers to those questions. We did get a response from the Chairman saying that it was now moot since they had withdrawn the rule but it is a good example of how moving too fast has created some real problems out there.

Mr. STEARNS. It is a good example of what is the basic motivation sometimes for moving so quickly without public input.

Let me ask Mr. Franca, say I get this spectrum allocation and I guess the assumption is that I will have full integrity, that I am going to build my station, build my towers and spend a lot of money, go to the banks and put my name on a mortgage. Then I am going to find out that this spectrum you gave me has interference. I am going to complain to you. Aren't you going to have to go ahead and hire a lot of people to enforce all these low power stations to make sure they are in the proper performance? My first question I guess is, have you done an analysis of this? How many

more people are you going to hire to administer these new licenses and to make sure there is enough personnel to prevent interference and to give the full integrity to the person that is obligated to building the tower, mortgages, and has put all the capital out there?

Mr. FRANCA. Congressman, again, I am from the Office of Engineering and Technology. That is a little outside my area but certainly that was an issue that was discussed before the Commission. The Commission felt comfortable that it had the resources to do that.

We do that today. We have an Enforcement Bureau, we have offices around the country. We do investigate causes of interference and we find those cases and correct those cases.

We think having the rules and regulations that we are adopting for this low power service really will minimize the interference.

Mr. STEARNS. Have you done an analysis of this? Is this analysis available for the committee?

Mr. FRANCA. Analysis of the interference or analysis of the enforcement effort?

Mr. STEARNS. Enforcement?

Mr. FRANCA. I don't believe an analysis was done, not a formal one.

Mr. STEARNS. A formal one, okay.

Let me ask Mr. Jackson, how do you respond to the criticism that FM receivers used in your study could not even meet the NAB's high performance standard before the simulation of low power radio stations?

Mr. JACKSON. There are two points—that is a criticism that has been raised not at my study but of a study that the NAB filed. There are two responses to that. One, it involves a misreading of the criterion that the NAB used. The NAB's criterion did apply to every radio and basically the criterion they used was if it is a very high performance radio, say 70 db signal and noise ratio, it is not degraded until interference drives the performance all the way down to 50 db. I am using db's and I apologize.

If it is a lower performance radio, then if interference degrades it enough that it would bug a consumer a little bit, according to the research, that is harmful interference and that is the definition the NAB used in their study and it applies to all radios. What is done to take the part of that definition that applies to the highest performance radios that says that was the definition and that is unreasonable.

I will observe, by the way, that the Commission did earlier use signal to noise ratios in their analysis in FCC Docket 8090. If you look at their report, we had some dispute on this before saying the FCC had never used signal to noise ratio in their analysis of FM but if you look at report in Docket 8090, paragraph 36, you will find such an analysis.

Mr. FRANCA. If I might respond?

Mr. TAUZIN. I think he needs to since we have two conflicts in testimony. Mr. Franca?

Mr. FRANCA. What I said is that the Commission has never defined a specific signal to noise ratio as acceptable FM service. We,

in fact, measured signal to noise even when we did our testing in this——

Mr. STEARNS. My question to you was have you used that standard previously?

Mr. FRANCA. There is no standard signal to noise.

Mr. STEARNS. You said you had not used it as a standard?

Mr. FRANCA. We have not used signal to noise as a standard.

Mr. STEARNS. You are saying, Mr. Jackson, they have?

Mr. JACKSON. I will let you judge for yourself, Mr. Chairman. I will read a couple of sentences from their 1984 order, "A 50 db, audio frequency signal to noise ratio was used to represent the high quality stereophonic service referenced by the comment. We developed the following table based on the receiver having the performance characteristics" and then it goes on and shows characteristics of different signal to noise ratios. It is paragraph 36 and the order is FCC 83-259.

Mr. TAUZIN. The record will speak for itself. The Chair will extend the gentleman's time.

Mr. STEARNS. You are saying the FCC has never used signal to noise as a criteria? Notwithstanding what he just said, you are just saying as a general practice?

Mr. FRANCA. I was saying that one of the difficult things in this proceeding was that we could not point to a specific signal to noise reference as a criteria for acceptable FM service. That is why the CEA folks came up with the value used by NPR. The study funded by NPR said 45 db signal to noise is what they believe should be high quality service; NAB said 50 db should be the appropriate level of FM service. Nobody pointed to an FCC rule that says this level of signal to noise is what we have determined should be used to define service area or interference.

Mr. STEARNS. Mr. Chairman, it just seems to me, since this is very controversial, there should be established signal to noise ratios. The NAB says it is 50 and you don't agree. Let me ask the panel, am I wrong in assuming that there is a signal to noise ratio as a criteria that we should use, that we should all agree upon? Mr. Jackson?

Mr. JACKSON. I think this is where some of the problem in the engineering studies came from. The FCC said tell us whether today's receivers provide satisfactory—I think the words in the Notice of Inquiry were "satisfactory rejection of interference," but they didn't define what satisfactory was.

Mr. STEARNS. They gave no signal to noise criteria?

Mr. JACKSON. Right. So on one side, you had the parties coming in, the interference had to knock the receiver completely off the air before it is impaired and other people said, if it is the level that subjective tests have shown bugs consumers, that is an impairment. If the Commission had chosen one or the other of those standards in advance, then I think the studies would have been much closer. That is what the debate is about. Is interference to be defined as something that harms consumers or does it have to be something that knocks the radio station completely away from the consumer's availability?

Mr. STEARNS. Mr. Chairman, I think it is pretty clear that some of this controversy is hinging on the question that there is no established signal to noise ratio.

Mr. TAUZIN. The gentleman's time has expired but you have a couple of people who want to respond. Why don't we let them?

Mr. FURCHTGOTT-ROTH. Mr. Stearns, I am not an engineer but I am reminded that we have another major proceeding that has gone on at the Commission for about a decade on digital television. On digital television, the Commission spent years doing detailed engineering studies, new service, very controversial, years and years and years of study.

At the end of the day, the service went on and despite years of preparation, we haven't worked out all the bugs yet. Digital television is a very important service but the Commission waited until we had years of engineering studies before we moved forward.

Low power FM, we went to a Notice of Proposed Rulemaking without a single engineering study. Within a year and with all due respect to the engineers present at the table, if I as an economist went to a referee journal and said, I have a study based on a handful of receivers, I want this published, I would be laughed at. If I said, I can tell you about interference across America based on laboratory experiments, I wouldn't have confidence.

We have had what can only be described as a rush to judgment, a judgment that was predetermined before we had a single engineering study.

Mr. TAUZIN. Mr. Franca, you wanted to respond?

Mr. FRANCA. Yes. What we have in our rules in terms of standards of interference are separation distances between stations. If I might, basically this is an NAB report that was cited by NAB in its comments. It says "The FCC's allocation technical standards are based, to a large degree, on a co-channel signal to inference ratio of 20 db." It then goes on and talks about the 50 db signal to noise and the international matters. It says "For stereophonic transmission, a 20 db signal to interference ratio, the FCC rules, yields an aural signal to interference ratio of only 30 db."

What the NAB was saying in this report is that our separation standards do not yield a 50 db audio signal to noise ratio that the NAB now advances as a performance standard. That is based on the distance separation among stations as defined in our rules.

Mr. TAUZIN. Let me see if we can move to the last and those who want to respond, I will give you time.

Thank you, gentleman.

Mr. Markey is asking consent for 30 seconds. Any objection?

[No response.]

Mr. MARKEY. Thank you, Mr. Chairman, very much. I apologize to the gentleman from Maryland.

I think we are at half-time. Obviously there are disagreements. NAB is seeking relief in court halfway through the process. I think it is good to have called the hearings, Mr. Chairman, so that we can air all of these issues. Obviously we have reached a level now where it has become very contentious.

My hope is that out of this over the next 30 days and the period beyond, that we can have intensive negotiations and try to resolve this issue. I think it would be best for all parties if that was the

case. I would rather have a reconciliation than escalation of the issues. I hope this hearing has made it possible to give all the parties incentive to get together.

Mr. STEARNS. Will the gentleman yield?

Mr. TAUZIN. The gentleman has about 10 seconds. He yields.

Mr. STEARNS. Wouldn't you agree though that based upon what Commissioner Furchtgott-Roth has said that there should have been a lot more analysis of this before they rushed to judgment?

Mr. MARKEY. The experts are here. It is beyond my technical knowledge. That is why I went to law school rather than engineering school. I think the experts can definitely telescope the timeframe to resolve the complex issues you have raised.

Mr. TAUZIN. Thank the gentleman.

I am going to give each of you just a minute to sum at the end but I want to yield to my friend from Maryland, Mr. Wynn.

Mr. WYNN. Thank you, Mr. Chairman.

I would like to yield 20 seconds to my colleague from Tennessee.

Mr. GORDON. That is very generous, Al. I am late for a meeting also and I am sure you are too. I just have one thing I want to quickly ask to receive more information.

There seems to be a consensus, although there is lots of conflicting testimony, that there is going to be some interference. The question is what is acceptable and what is unacceptable.

One element that really hasn't been discussed that much is the question of proximity. I would like to know whether there can be some matrix with proximity and acceptable and unacceptable so that in conjunction with getting a license, there may be a proximity requirement. That is, if you are on a campus, a church that has a little bit of property so that a part of the license would mean that you had enough proximity that you wouldn't be interfering with your neighbors. At a later date, I would like to hear more about that.

Thank you.

Mr. WYNN. Mr. Jackson, you said in your last statement I think that there really isn't a subjective level for interference, what really disturbs the consumer. Mr. Franca, my question is, do you agree with that and if so, can't we use that as a starting point as to what is the level of interference that annoys the general public, the average consumer? Do you agree with him and can we get a consensus?

Mr. FRANCA. There is technical literature that suggests—this is the reason why we chose 1 percent distortion—that a 1-percent change is the minimal amount the expert listener can hear. So you can't hear less than 1 percent.

Mr. WYNN. Mr. Jackson, do you agree with that?

Mr. JACKSON. I am very troubled by the fact that the FCC continues to conflake distortion and signal to noise. Typically distortion can be heard at about the 1 percent to 3 percent level depending on the kind of distortion it is and things like that. I believe consumers can tell the difference between a 60 db signal to noise ratio and 50 db signal to noise ratio and FM and that is well below the 1 percent level. I am sorry about the jargon.

Mr. WYNN. Mr. Franca, it seems to me that FCC should address that issue with some consumer-based studies that either say it is

this or that level. I don't speak the jargon, so I won't attempt to. That should be the threshold for having this discussion.

Mr. FRANCA. Absolutely.

Mr. WYNN. Everyone is talking about what we do from here. One of the things I hope we will do from here is have the FCC come up with a definitive consumer-based analysis of what level of distortion or interference is acceptable.

Mr. TAUZIN. Will the gentleman yield?

Mr. WYNN. Were you here when the demonstration was made?

Mr. WYNN. I missed the Jackson demonstration. I heard the demonstration by Mr. Franca.

Mr. TAUZIN. It might be good for you to hear both. Could you just do one of those so you get the flavor of why we are having an argument and what is the difference in the demonstration?

Mr. RAPPAPORT. Mr. Chairman, may I say one word about this demonstration?

Mr. TAUZIN. Sure.

Mr. RAPPAPORT. This is just an example of how interference was used as scare tactics in this entire proceedings.

Mr. TAUZIN. Mr. Rappaport, you are giving an opinion but I simply want Mr. Wynn to have the advantage of hearing it and then you can criticize it if you like, but let him hear it first.

Mr. JACKSON. This is a short cut. It is a cut from WGMS, a local classical station here in Washington, DC. It was recorded off the air. First, you will hear WGMS as it was recorded and then you will hear a recording with cross-talk added at a level that the FCC's test procedure would regard as acceptable if a consumer had a Sony Walkman.

Mr. WYNN. That is the same 1 percent Mr. Franca referred to in his test?

Mr. JACKSON. No. This is actually just under 3 percent which the FCC said was the boundary of harmful.

Mr. TAUZIN. Let us hear it.

[Playing of sample.]

Mr. JACKSON. This is the interfered one.

[Playing of sample.]

Mr. WYNN. It is pretty evident that is unacceptable. It is also pretty evident that Mr. Franca's test at 1 percent was acceptable and so it seems to me we are still passing in the dark with respect to what is acceptable to the consumer.

Mr. TAUZIN. To be fair to the witness, the disagreement to whether this would happen or could happen, I just wanted you to hear both of them because that's the way the hearing started with these two demonstrations. These two gentlemen have a disagreement about their demonstrations.

Mr. WYNN. First of all, thank you, Mr. Jackson. That was helpful, but I still think what the consumer would need in order to make a judgment would be something that has not occurred yet. I would like to see that. I would like you to be able to say—because I guess you have the burden of proof—this is what the consumer would hear and this is what we think is acceptable or unacceptable and then give it some numerical designation that makes some sense.

Mr. FRANCA. Yes, sir. The point I only wanted to make is that the presumption that we used the 3 percent level as a determination of our judgment here is just incorrect and the item is very clear about saying when we measured, we said we used the 1 percent level in all of our receivers. In fact, the reason why we measured at 3 percent, our initial testing, is that we talked to Carl T. Jones, the contractor for NAB. In fact, this was the reason why we actually started with distortion measurements.

Mr. WYNN. Mr. Franca, I don't have a lot of time but I think there ought to be a better consensus than I am hearing. I want to go back to another issue. It seems that you and Mr. Maxon, and to some extent, Mr. Rappaport, all agree that the Sony Walkman example is problematic, that if someone has a Walkman or, in my case a clock radio, that we would have problems under a scenario in which we introduced low power. Is that true, is there consensus on that or not? You disagree, Mr. Maxon?

Mr. MAXON. Yes. I think one thing we are doing is we are generalizing the specific to the whole case. We are saying that because one Walkman in one room in one house near one LPFM transmitter might, might get interference on one radio station that we are assuming whatever it is, 65 million radios get it, and that is where I think the leap in thinking is going.

What we have is a circumstance where if you are within the blanketing radius or one of these interference radiuses that has been calculated by a number of the different parties involved, there is a greater likelihood that the proper conditions of an interfering level from the LPFM and an interfered level of the desired station will combine to cause you to perceive interference.

That doesn't mean in every room in your house or for every moment or every Sony Walkman you have, that you will have that problem.

Mr. WYNN. I think we need more tests then, something from which we can draw some broader conclusions. Is it four out of ten, six out of ten. There ought to be some averages. I agree with you, you can't say one Walkman makes a case but by the same time, if this is one of the more popular brands and argument is being made that this brand is affected or similar products are affected, it seems to me that is a concern.

I want to move on because I know time is limited. The Commissioner made a pretty persuasive argument about a lack of demand and Mr. Koning actually kind of suggested humorously that you might be the poster child for why there is a lack of demand. I put to you and to Mr. Schellhardt, how do you respond to the Commissioner's argument that there is really not legitimate demand for this type of low power station?

Mr. KONING. I briefly mentioned that in the 20 years I have been involved with various forms of micro radio, I was unaware of the ability to apply for the smaller licenses. We have held two hearings now in Grand Rapids where we have five potential licenses under the current FCC guidelines, five potential new licenses. We have had over 100 citizens participate in these forums.

It is a matter, in my opinion and in our community, for lack of awareness of availability. Now that it has become public and now that people are discussing it, we do have a groundswell of interest,

especially in the Hispanic community that is very underserved in our market.

Maybe it is ignorance in some cases or a practical ability with new technology now to very inexpensively launch these low power stations.

Mr. WYNN. Mr. Schellhardt, and then I would like to come back to the Commissioner for his response.

Mr. SCHELLHARDT. I think low profile visibility including very low profile and visibility for the possibility of getting waivers has been a contributing factor but I want to stress that there has been an enormous amount of public interest in this. The proceedings at the Commission on this proposed rule drew over 3,000 comments from the public, most of them from individuals and groups supporting low power radio. That set a record comfortably for the highest public participation in any FCC proceeding in the 65 years the Commission has been operating.

The year before they started the rulemaking process, they received 13,000 unsolicited inquiries from the public about whether or not low power licenses were available and how to apply for them. So there is a tremendous interest and it is spreading.

If you look at the metropolitan Detroit area where we have some activists at the Michigan Music Is World Class campaign, they have the city of Detroit and virtually every community in metropolitan Detroit to pass resolutions calling for low power radio. Portraying this as a minor concern of a few people is totally inaccurate.

I will say one thing about the 101 licenses. The higher the wattage, the more it is going to cost you to set up the station. A lot the reason people want something below 100 watts is because they are middle-class, lower middle-class and in some cases, they are even poor and if they can't get it down to 50, 20, 10 watts, they can't afford to get on the air, 101 watts is just above their budget.

Also, the higher the wattage, the bigger your coverage area. Believe it or not, there are some folks in the movement who feel that their coverage area should be self-limited, so that they are forced to concentrate on specific neighborhoods or specific towns, specific communities that are just lost in the demographic background noise today.

Mr. WYNN. I think you have made a good argument.

Commissioner, I think that is pretty persuasive. What would be your response?

Mr. FURCHTGOTT-ROTH. Mr. Wynn, let me respond to both sets of comments. I think Mr. Koning makes a good point, that there may not have been a great deal of awareness. When people want to go into the broadcast business, they want to do it despite the fact that all their friends tell them they are crazy. They want to do it despite the fact their parents say they are going to disinherit them. They want to do it because they love to do it. They want to get into the business because only a crazy person would dare to do this.

It takes a great deal of initiative, it takes an incredible amount of commitment. It takes a willingness to take risks that ordinary people rationally choose not to do. Part of that is saying I am going to find out what is out there. There are people who come to the

Commission every day, applying for licenses. We get lots of requests. What is amazing is all of those requests are for high power wattage because that is the only way these people think they have any chance of ever breaking even, even though they know the chances are when they apply for a full power license, the odds are against them.

I think the point about Detroit is very instructive. Where we do have a shortage of licenses today, where if you came to the Commission and you couldn't get a 50,000 watt station, you couldn't get a 10,000 watt station, you couldn't get a 1,000 watt station, you couldn't get a 101 watt station, you couldn't get a 10 watt station, are in major urban areas.

There is a lot of demand. I have no idea how many of the thousands of inquiries that were made were from urban areas. I suspect a great many. The Commission gets a lot of reaction on issues that are very hot at the time. I can attest that in the past month I have probably gotten and have saved over 2,000 emails on the religious broadcaster issue. The American public is aware when things become hot at the Commission.

What continues to surprise me is if there really is a demand for low watt radio stations, why have we not seen people come forward before the fact and apply? It is there.

Mr. WYNN. Thank you.

Thank you, Mr. Chairman.

Mr. TAUZIN. The ranking minority member of the full committee, Mr. Dingell, submitted a list of five questions he would like the FCC to respond to and ask that I read them into the record. I am going to do that as a courtesy.

One, I understand the FCC used harmonic distortion as a primary standard for measuring harmful interference. How many field tests were performed in the real world to ensure this standard was proper? He has in parentheses, "No field tests, just laboratory," is what he understands happened. He would like an explanation as to whether or not that is true.

Two, did you perform any lab tests to determine the degree of cross-talk interference that might exist within the FCC susceptible levels of harmonic distortion?

Three, let us assume the standard you chose was the right one, you know that laboratory and real world test results often differ. Why did the Commission reject a phase-in approach to putting the stations on the air in order to mitigate potential disruption to existing stations? He understands at last one of the Commissioners suggested this approach during the process.

Four, what are the enforcement procedures and remedies available to help broadcasters who may be harmed by any inaccuracies in your assumptions?

Five, history shows that the FCC has been slow to address the problem of unlicensed operators, the so-called pirates. It would appear that not enough resources were devoted in the past to pursuing violators and shutting them down. Now some of these pirates will be operating legally. What specific new and improved plan does the FCC have in place to ensure that new licensees do not boost their power levels above the legal limit.

If the Commission would please respond in writing to the committee that Mr. Dingell might have an answer?

[The response appears at the end of the hearing.]

In conclusion and I will give each of you a chance to say one final thing if you would like, the vice president of NBC Broadcasting is quoted as saying that Gutenberg made us all readers and that television made us all viewers and the Internet has made or can make us all broadcasters.

An interesting observation and one of the questions that Mr. Schellhardt, Mr. Koning and others who have come before us have talked about this issue, I would like to sort of leave hanging out there, is will the Internet, as it becomes predominantly distributed among the citizens of the country and the planet, assume a role whereby anyone can become a broadcaster, can establish a talk show, can establish a cultural program to reach the citizens that otherwise would have been reached over the air processes?

Let me give each one of you a chance to have a last word, the last thing you would like us to remember and I will ask you to do it in as quick a manner as you can because I too have to run.

Commissioner?

Mr. FURCHTGOTT-ROTH. Mr. Chairman, I simply would like to thank you for holding these hearings. I have spoken many times on this topic and I am glad there is yet another chance to get this information.

Thank you.

Mr. TAUZIN. Mr. Klose?

Mr. KLOSE. Mr. Chairman, I would like to say that under paragraph 64 of the LPFM report and order, there is no process to address actual interference that could result from the elimination of the third adjacency protection.

The Commission also has not proposed to protect the input signals of translators and boosters, it has required future translators to protect LPFM stations, even when the translator is necessary to replace one that was dislocated by a full power station.

Also, we believe that greater protection of translators is essential and that a process to handle interference issues must be put in place for this to work.

Thank you.

Mr. TAUZIN. Mr. Koning?

Mr. KONING. I really appreciate the chance to speak. We had cleared a videotape through Congressman Markey's office. It is 2 minutes. Is it possible to have that cued and at the end of the comments, that would be the final statement?

Mr. TAUZIN. Actually not. I won't have time for it. We will accept it to the committee record.

Mr. KONING. Let me briefly say then that I do hope the technical interference questions can be answered; that when you do talk about the ratio of these broadcast properties, that 10 watts and 100 watts are exponentially smaller and have so much less potential for interference than 50,000 and greater watt stations. So I think the benefits for community uses and free speech activists to have a local voice in a local community with programming of, for and about that community have to be paramount and that the technical questions can be answered and must be.

Mr. TAUZIN. Mr. Schellhardt?

Mr. SCHELLHARDT. One, Amherst will be filing a supplemental statement on some of these matters. I am sure Christopher Maxwell and Wesley Dimick will do the same.

Two, I want to say hello to those who are listening to the webcast. Amherst does have a web site and you can find me, Don Schellhardt, in the phonebook of Bridgewater, Virginia.

Third, substantively, we have had a lot of talk about how much interference there might be with the Sony Walkman and how horrible it might be if some degree of interference occurred. I just want to close by pointing out what is at stake on the other side.

Look at what happens if we don't act, if we allow the status quo to remain. As of 1997, according to Radio World, 90 percent of the dollars spent on radio advertising in America went to just four companies. That is an awful lot of market concentration.

On the publishing side, according to Professor Stephen Barber of Princeton, six companies own 50 percent of the publishing capacity in the entire world. Now with the loosened cross ownership restrictions, you could theoretically have a new AOL-Time Warner that owned half of the Internet, owned the biggest TV station in the biggest five cities and owned several of the biggest radio stations in the biggest five cities and owned the largest newspaper in the largest five cities and on and on and on. It is legally possible for one company or a handful of companies to control the lion's share of media across the board.

That is extremely dangerous and if I have to take a few chances with reception on a Sony Walkman to stop that from happening, I think it is a price worth paying.

Mr. TAUZIN. Mr. Jackson?

Mr. JACKSON. I also thank you for the opportunity to be here today. I have a lot of points but I will be very brief and I will skip them all.

I would like to observe that engineering should inform democratic choice and that the standards of interference that are chosen should reflect how consumers will be affected, not cooked to provide support for the position of the proponents. I think that is a problem in this proceeding.

Second, I think your closing comment about the Internet was directly on target. When we try to think about this choice, the Internet is going to open doors, we are going to see very rapid, continuing development in the Internet, we are going to have consumers with wireless access to the Internet, so when we think of the choices before us, you must keep the Internet in mind and understand that gives you more tradeoffs than you would otherwise have.

Mr. TAUZIN. Mr. Rappaport?

Mr. RAPPAPORT. I agree engineering should be used to make intelligent choices. What I fear has happened here is that the engineering facts have not been properly communicated. The fact is that there is a lot of scare tactics being used on the interference.

We all agree Walkman radios work but in the filing of public comments from NAB and others, they claim by their own standard, without any interference in a perfect test chamber, Walkman radios and over half the other radios tested would not work. This was

then multiplied into maps that show a very scary impact of interference throughout cities across the Nation which won't happen.

We just heard an audio rendition of what cross-talk would occur but that would never happen in the commercial FM service. In fact, the low power FM service is usually the exact same co-channel and first and second adjacent spacings that all FM licenses are happening today, so you would never hear that co-channel interference as demonstrated. It would never happen. It doesn't happen today in FM radio and it would never happen with low power FM.

Furthermore, if we were scared of every little bit of interference and didn't look at the impact it would have in improving our lives, we would put our head in the sand. Increased interference has allowed keyless entry to our cars, baby monitors in our houses, more and more millions of subscribers in the cellular telephone service by allowing more and more towers and when engineered responsibly, we can accommodate many, many more users with intelligent and proper management of the spectrum.

In my technical opinion, the FCC has been very thorough and very careful to address all of the current concerns in their rulemaking. I think it is a very responsible action and as a citizen just on the technical issue, forget the political debate, they have done a very, very good job of taking into consideration all of the concerns voiced in the extensive public filing comment.

Mr. TAUZIN. Mr. Reese?

Mr. REESE. I think your closing comment was the one I would make. There is a solution, it doesn't involve the creation of new interference for existing radio listeners and for existing radio stations. It is the Internet, it will be wireless, it will be wireless soon. It is not bandwidth limited. We do not need to mess up the FM band in order to provide all of the benefits that the FCC purports to be pushing here.

Mr. TAUZIN. Mr. Fritts?

Mr. FRITTS. Congress established the FCC and entrusted it as the guardian for spectrum integrity. I think what we have seen here today is somewhat appalling. What we have seen is that the FCC has turned its back on spectrum integrity and for 10 years, the FCC studies the transition to digital television. Now we are talking about adding new FM radio services and the FCC was told—quite frankly, Chairman Kennard told the FCC engineering staff to find a way to make this happen. What we have ended up with is interference by the FCC's own admission.

How much is subjective? I would submit that any additional interference is too much and that we should stop where we are in terms of that. There is plenty of diversity on the air today. There is plenty of opportunity as enunciated by Commissioner Furchtgott-Roth for various groups to get on the air. I would hope we would go forward by moving the legislation which Vice Chairman Oxley has introduced.

Mr. TAUZIN. Mr. Maxon?

Mr. MAXON. I would just like to say that we have a track record in this Nation already with low power FM stations, called translators and Class D stations. Many of those are already exceeding the third adjacent channel protections quite successfully and quite

safely. I made an example in my introductory remarks about a station outside of Boston that does so.

We have evidence that the interference these things cause, if they cause any interference at all, is de minimis. The low power FMs are simply an extension of what we are already familiar with in translators and Class D.

Mr. TAUZIN. Mr. Franca?

Mr. FRANCA. I would just like to say Chairman Kennard did not ask us to make this happen in any way. He basically asked us to make sure that we preserved the integrity of the FM band.

Seventy-five radios were tested during this proceeding. I believe signal to noise versus distortion and the discussions about them are really red herrings. Whether you measure somebody's height in inches or feet, they are the same height. Whether you measure with signal to noise or distortion, you can determine whether interference is caused. You heard what 3 percent distortion sounds like. It sounds like interference.

I believe we have taken a very conservative approach here. We didn't adopt low power proposals for 1,000 watt stations. We didn't abandon second adjacent channel restrictions. We also added extra protections on both co-and first adjacent separations for full power stations to allow those stations additional flexibility. I believe we have taken a very conservative and reasonable approach and that there will not be significant interference from LPFM operations.

Mr. TAUZIN. Thank you all very much. I think we have added to the understanding of the issue if nothing else today and I cannot yet predict the next step of the subcommittee other than to tell you that I would deeply appreciate the request I have made for you to follow up with additional information.

You have seen the questions raised by members on both sides of the aisle. You have seen the request of the ranking minority member that the concerns we have heard expressed today be considered by the Commission. Hopefully in the time that remains before final judgment is made on this at the Commission level, those concerns can be thoroughly vented and hopefully addressed to the satisfaction of members of this committee before we are called upon to take congressional action or before the courts are called upon to consider the matter.

That is always the best result and I would join my colleague from Massachusetts in encouraging all of you to continue these discussions so that we can have an outcome that gets you the advantages you want without the disadvantages we are hearing may be present in this operation.

To that end, I commend your attention going from this meeting and appreciate your other submissions and certainly your testimony today.

The hearing is adjourned.

[Whereupon, at 12:40 p.m., the subcommittee was adjourned.]

[Additional material submitted for the record follows:]

RESPONSES OF THE FEDERAL COMMUNICATIONS COMMISSION TO QUESTIONS SUBMITTED BY REPRESENTATIVE DINGELL

Question 1: I understand the FCC used "harmonic distortion" as the primary standard for measuring harmful interference. How many field tests were performed in the real world to ensure that this standard was proper?

Answer: The FCC Laboratory tested a sample of 21 FM radio receivers. Distortion measurements were used to measure the effects of interference from low power FM (LPFM) stations on those sample radios. The FCC Laboratory used a measuring instrument called a distortion analyzer, which measures Total Harmonic Distortion plus Noise (THD+N). All interference impairments to the desired audio signal appear as either distortion or noise; thus the THD+N measurement captures all interference effects. Interference was deemed to occur when the receiver's unimpaired THD+N level (i.e., the level with no interference present) increased by 1%. For example, if the receiver had a THD+N level of 0.2% with no interference present, interference was assumed to occur in the FCC tests when the interfering signal caused the THD+N of the receiver to be 1.2% or greater. A harmonic distortion value of 1% was chosen based on scientific literature that suggests that a 1% level is the minimum that can be perceived by listeners. For example, NAB, in its reply comments, notes that that "(I)t is generally accepted that harmonic distortion has to rise to about 1 to 2% before people find it objectionable" and that "(S)ome people would find 1% harmonic distortion hard to notice."

The FCC Laboratory staff also measured a small sample of radios, including one of the receivers tested by the Consumer Electronics Association, using both signal-to-noise (S/N) ratio and harmonic distortion measurements. Having performed both distortion and S/N measurements, the FCC stated that both S/N and harmonic distortion can be used to satisfactorily measure interference to FM receivers. It further stated that both of these techniques quantify in an accurate and repeatable manner the amount of energy produced by the interfering signal in the receiver's audio output. In this regard, the FCC considered data from all of the tests in making its decision. For example, in paragraphs 101 and 102 of the decision, the FCC computed interference areas based on NAB's test results. It further stated that even using this NAB data for its three "worst" FM radio categories, the area where such receivers could experience degradation from interference would be small, generally 1 km or less from the LPFM antenna site.

No field tests were performed by the FCC or any of the other entities that tested FM receivers. However, there is no reason to believe that the results in the field would vary from those in the laboratory. In fact, defining radio performance and subjective matters such as when interference occurs that involve human hearing and perception are best quantified in a controlled laboratory environment.

Question 2: Did you perform any lab tests to determine the degree of "crosstalk" interference that might exist within the FCC's acceptable levels of harmonic distortion?

Answer: No lab tests were performed "to determine the degree of 'crosstalk' interference." As indicated above, the 1% distortion level was chosen based upon scientific literature that suggests that this level of distortion or interference would not be perceived by listeners as objectionable.

Crosstalk interference is a term that is generally associated with voice and wireline networks. Crosstalk can be classified as intelligible and unintelligible. Intelligible crosstalk can be understood by the listener and, because it diverts his or her attention, it is more objectionable and therefore has a more interfering affect than unintelligible crosstalk. NAB demonstrated a simulation of intelligible crosstalk at the February 17, 2000 hearing using audio mixing of two recorded signals.[1]

As pointed out by Dr. Rappaport of Virginia Tech at the hearing, that type of intelligible crosstalk "would never happen in the commercial FM service . . . It doesn't happen today in FM radio and it would never happen with low power FM." The crosstalk or interference from a 3rd adjacent channel LPFM station would be unintelligible and would appear as an increase in the noise level in the receiver. As was shown in the FCC demonstration, such noise is much less objectionable to the listener. See, for example, *Reference Data for Radio Engineers* at 35-1, "crosstalk due to incomplete suppression of sidebands, to intermodulation of two or more carrier channels, or . . . between carrier channels having offset frequency spectra is generally unintelligible. Such crosstalk is often classified as miscellaneous noise."

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[1] According to NAB staff, their demonstration was made by recording two off-air FM radio signals and then combining those signals using an audio mixer at different signal strengths to represent the 1% and 3 % distortion levels. In other words, they merely recorded the two signals (one loud and one soft) on the same audio track. This does not represent accurately the way interference occurs in the FM radio service or would occur from LPFM stations. In the real world, an FM receiver "captures" the strongest signal appearing at the channel to which the receiver is tuned and only this signal is intelligible. Any lower level interfering signals are heard as noise. The FCC demonstration, on the other hand, used the exact same test set up that was used to measure interference and recorded the actual interference effect of a 3rd adjacent channel signal.

Question 3: Let's assume the standard you chose was the right one. We know that laboratory and real world test results often differ. Why did the Commission reject a phase-in approach to putting the stations on the air in order to mitigate potential disruption to existing stations?

Answer: A "phase-in" of LPFM stations was believed to be unnecessary given the technically conservative approach taken in the LPFM Report and Order. The Commission chose to limit LPFM stations to a radiated power level of 100 watts, deciding not to create a 1000-watt station class. It established minimum distance separations between LPFM and full-service FM stations on the same channel and first and second adjacent channels, based on the assumption that all FM stations operate at the maximum permitted antenna height and power for their station class. Also, a 20-kilometer buffer zone was added to the required minimum separations to protect co- and first adjacent channel stations, thereby permitting FM operators the flexibility to relocate their stations in the direction of an LPFM station without a loss of interference protection. The Commission concluded, based on a careful review of the record, that LPFM would be unlikely to cause unacceptable levels of interference to FM stations operating on third adjacent channels and, therefore, found a third adjacency protection requirement to be unnecessary. The Commission remains confident that its various interference requirements for LPFM are conservative and will adequately protect existing and future FM service requirements.

Question 4: What are the enforcement procedures and remedies available in your Order to help broadcasters who may be harmed by any inaccuracies in your assumptions?

Answer: The Order contemplates that enforcement procedures and remedies for LPFM stations will be similar to those for all FCC licenses. Specifically, LPFM stations are required to eliminate interference caused by operations that violate the terms of the station's authorization or the Commission's Rules. LPFM stations also must respond to complaints of blanketing interference. Further, they are subject to international agreements regarding the elimination of interference to primary Canadian and Mexican broadcast stations. *LPFM Report and Order,* FCC 00-19, 1, 27 ¶64. LPFM stations also must not cause actual interference within the principal community contour of subsequently authorized full-power FM stations. Within 24 hours of receiving a complaint of actual interference to a subsequently authorized FM station's principal community contour, LPFM stations must suspend operations unless the interference has been eliminated by application of suitable techniques and to the satisfaction of the complainant. The LPFM station may resume operations only at the direction of the Commission. *LPFM Report and Order*, at ¶67.

Parties experiencing harmful interference from any source, including LPFM operations, may file a formal or informal complaint with the FCC Enforcement Bureau's Technical & Public Safety Division or one of the FCC's Field Offices. Consistent with the regular practice of the agency, the FCC may take a number of actions to address harmful interference. Possible actions by FCC agents in Washington, D.C. and around the country include identifying the source of interference, assisting the parties to eliminate the interference, and requiring licensees to eliminate interference. In addition, the FCC may issue a notice of violation against a licensee causing interference in violation of FCC rules, issue a monetary forfeiture or, in extreme cases, institute a license revocation proceeding.

Question 5: History shows that the FCC has been slow to address the problem of unlicensed operators—the so-called "pirates." It would appear that not enough resources were devoted in the past to pursuing violators and shutting them down. Now some of these "pirates" will be operating legally. What specific new and improved plan does the FCC have in place to ensure that new licensees do not boost their power levels above the legal limit?

Answer: We have no basis at this time to conclude that LPFM licensees will be any more likely than other broadcast station licensees to operate their stations in a manner not authorized by their licenses or the FCC's Rules. Our experience in general has been that broadcast licensees are diligent in attempting to comply with the rules and we anticipate that LPFM licensees, which will include schools, community groups, churches, etc., will do so as well. The LPFM rules specifically preclude former "pirate" operators who did not comply when directed by the FCC or after a date certain from receiving LPFM licenses. Moreover, LPFM licensees who operate at power levels beyond that authorized will be subject to enforcement action, including assessment of monetary forfeitures and possible license revocation.

As noted in response to Question 4, parties believing that a LPFM licensee is operating in a manner inconsistent with their license or the FCC's Rules may file a formal or informal complaint with the Enforcement Bureau's Technical & Public Safety Division or one of the FCC's Field Offices. Further, as is the case with all

FCC-licensed radio station operators, LPFM stations will be subject to periodic inspection by FCC agents.

Quite apart from LPFM enforcement, we should comment briefly on the FCC's enforcement against unlicensed "pirate" operators. The FCC takes the issue of enforcement actions against pirate broadcasters very seriously. In 1998, the FCC shut down 153 pirate radio operations through seizure of their equipment or through issuance of warning letters. In 1999, the FCC shut down 154 pirate radio operations. So far, this year, from January 1, 2000 to February 23, 2000, the FCC has shut down 25 pirate radio operations. In addition, the Commission has issued numerous monetary forfeitures against pirate operators. It has also worked with the U.S. Attorneys' Offices for injunctions and arrests. The Commission is continuing active enforcement in this area, with several matters pending, including several with the U.S. Attorneys' or U.S. Marshals' Offices.

PREPARED STATEMENT OF THE MICHIGAN MUSIC IS WORLD CLASS CAMPAIGN

Mr. Chairman, and Members and Staff of the Subcommittee: I am the founder and representative of the Michigan Music is World Class Campaign. We are an informal coalition of thousands of musicians, music-related business owners and music fans based primarily in Southeastern Michigan.

The Michigan Music Campaign has far exceeded any other party in measuring and demonstrating the will of the public when it comes to low power "community" FM radio. We have gathered approximately 10,000 constituent letters in support of the new service (copies of over 4,000 on file and available for inspection). We have gathered 45 supporting resolutions from Michigan cities, townships and county commissions representing about three million Michigan citizens. Every single one has passed unanimously (with the exception of just two votes)! We gathered over 1,200 endorsements of our Comments filed with the F.C.C. We have held weekly public meetings for over three years, along with many other public forums, to give residents of our area an opportunity to express their support or opposition to community radio. We have given dozens of presentations to community groups in our area about the subject.

No other party in the entire country, either in support or opposition to community radio, has come close to matching our efforts to gauge public opinion about community radio.

What did we find? Consistently, wherever we turned, we found virtually unanimous support for opening up access to the public airwaves through community radio. In all sincerity, it was very difficult to find anyone who was opposed to the new service (who wasn't already a broadcaster). We found overwhelming support from labor, religious, ethnic, civil rights and educational institutions. We even found considerable support from existing licensed broadcasters who expressed disgust with the National Association of Broadcasters' manner of opposition to LPFM.

Particularly striking to us was the contrast between the unanimous support for community radio at the local governmental level (who will be directly affected by the new stations), the substantial but weakening support at the state level—and the almost total absence of visible support in the U.S. Congress! The city governments we worked with are very well informed of the technical ramifications, much more so than the Congressional offices we visited. So how can one explain the extraordinary divergence in support between the local, state and federal governments—except as a clear demonstration of the undue, excessive and anti-democratic influence of the powerful broadcast lobby which is non-existent at the local level, strong at the state level and nearly tyrannical in Washington.

For 66 years, Congress has wisely maintained a clear mandate in regards to the public airwaves: they must be administered in a way which serves the "public interest, necessity and convenience."

But who is to say what is really in the public interest? Should we listen to the broadcasters?

Should we listen to the F.C.C.? Should Congress be the final arbiter? Or should we not consult the public directly?! We maintain that to ignore the overwhelming public demand for LPFM community radio would be a direct betrayal of our democracy.

Let the public use our public airwaves! We are not prepared to suffer anything less.

These comments are offered with the greatest respect.

SUMMARY & GUIDING PRINCIPLES:

1. The fundamental issue with which Congress must concern itself in the matter of H.R. 3439 is that of determining and fulfilling public interest and demand. It is impossible to square with the "public interest" (which Chairman Kennard accurately refers to as the F.C.C.'s "bedrock principle") a ruling which fails to abide by the virtually unanimous public demand for LPFM. We point out the absolute failure of the broadcast industry to demonstrate opposition to LPFM from the public itself, and that a significant part of the broadcast industry itself favors LPFM.

2. Congress, through the F.C.C., is obligated to institute a system of license allocation which does not discriminate on the basis of economic standing; where the rights of one are not held superior to the rights of others and; where those rights are not held in perpetuity such that the rights of others are never recognized. Such a system now exists with the creation of LPFM, albeit in a dramatically limited fashion.

3. We express concern for: A. Fundamental issues of fairness regarding the allocation of public resources. B. The twin threats to democracy of i. Media consolidation and ii. Rising economic thresholds barring access to public resources; C. Cultural homogenization; D. Local economic issues.

4. In contrast to other forms of public property where use and participation is encouraged, access to the public airwaves has been held in elitist reserve, despite the historic role played by amateurs and hobbyists in the development of radio technology.

5. The broadcast industry exerts an excessive, undue and anti-democratic influence over the regulatory process at the F.C.C. and in Congress itself.

6. We dispute our opponents' claims that existing stations already serve "the myriad needs" of our communities.

7. We regret the reckless endangerment of our democracy by those who advocate lifting further or even altogether media ownership limits. And we criticize the nonsensical and argumentative ploy of suggesting that less owners are ever likely to produce greater diversity.

8. We draw attention to Canadian and Mexican provisions which allow LPFM broadcasting without harm.

9. Actual broadcast industry studies conclude that existing commercial stations continue to lose listeners every year because listeners want more local content, more diversity and fewer commercials. These conclusions strongly suggest that N.A.B. opposition to LPFM is really due to fear of competition. In fact, the broadcasters are on the record admitting that they oppose LPFM because they seek to avoid additional competition.

10. In terms of communication options available to the public, there are no serious alternatives that stand equivalent to LPFM. And even the existence of such alternatives fails to justify the granting of broadcast licenses to some but not others, including, as is apparently the case, when such discrimination is based essentially on economic standing. This argument against LPFM clearly represents unconstitutional prior restraint.

11. We are deeply concerned about IBOC terrestrial digital, and how it is being foisted on the American public with barely a pretense of public debate. There is an almost complete lack of public demand for digital broadcasting of any kind, in contrast with powerful demand for LPFM.

12. The need and demand for LPFM did not begin with the Telecom Act of 1996 nor was it inspired solely by the ensuing consolidation. These factors merely aggravated the need and demand for LPFM.

13. We suggest that a more meaningful definition for the term "spectrum efficiency" would be based on the quality and level of public interest, necessity and convenience; that "efficiency" should refer to how *well* the spectrum is used, rather than simply how much.

14. The *Michigan Music Campaign* has documented long-term, consistent interest and activity in this issue. As well, we have documented overwhelming and essentially unanimous public support for LPFM.

15. Locally-based independent musicians and composers are effectively shut out of commercial broadcast outlets, thus making it impossible for them to "display their wares" in the music industry marketplace. This has a detrimental ripple effect on entire local music economies. It also carries negative cultural ramifications.

16. We should not continue to allow transnational media empires to act as our nation's cultural gatekeepers, with such comprehensive authority not only over what we hear on our airwaves, but also what we read, see and hear elsewhere.

17. We have documented a consistent effort to work with existing license holders towards resolution of our concerns and a consistent record of being rebuffed, with some substantial hostility, by the broadcast industry. We have documented their ef-

forts to restrain debate about this subject over the public airwaves, and a consistent pattern on the part of licensed broadcasters of arrogance, hypocrisy and callousness towards both their listeners and their public interest responsibilities.

18. We have demonstrated how unlicensed broadcasters have filled the public-interest gap left by the licensed broadcasters in our area. We offer an alternative perspective on who are the real "pirates" in the broadcast industry—in our opinion it is those who exploit the public airwaves for tens of billions of dollars annually while flaunting their contempt for their public interest obligations. We point to the respect and admiration our society often gives to acts and practitioners of non-violent civil disobedience, and invoke the historic role such action has played in nurturing our nation's democracy. We cast doubt about the character deficiencies of some licensed broadcasters, in light of their words and deeds.

19. We have documented a need for at least 120 LPFM stations in an area such as Metro Detroit in order to serve the myriad ethnic, political, cultural, religious and other communities. The F.C.C.'s newly approved LPFM service fails miserably in providing for this urgent need. We have suggested several ways to increase the potential number of licenses available. However, under no circumstances should the insufficiency of the new service be used as an excuse to abandon LPFM altogether—even a single crumb is better than nothing. We draw attention to the spectrum-inefficient nature of IBOC, which only further hampers LPFM.

20. We support primary service status for LPFM stations. We support the creation of the LP-10 micro-radio service, which we believe will be especially critical for the urban underclass. We agree with the F.C.C.'s view that the LPFM service can and should serve a wide range of purposes; can and should allow access to the public airwaves to a wide range of Americans; can and should serve a myriad of unique and diverse interests; can and should provide service to currently unserved communities.

21. We criticize the underlying assumptions behind the broadcast industry's stated concerns about potential interference. And we support the F.C.C.'s position that "small amounts of potential 2nd and 3rd channel interference . . . are counter-balanced by substantial service gains." It is disingenuous for the industry to protest the elimination of second channel interference protections for LPFM stations when the industry favors such practices for their own existing translator stations.

22. We urge the F.C.C. to explore tighter bandwidth allocations, and higher standards for receiver manufacturers in terms of selectivity.

23. We regret the failure of Congress to consult with the American public while the broadcast industry drafted the '96 Telecom Act.

24. We challenge the principle of renewal expectancy for both low power and full power stations.

26. We support calls for anti-trust investigations into the broadcast industry.

27. We are in profound disagreement with Commissioner Furchtgott-Roth, and note several subtle signals which we find greatly alarming; especially his tendency to twist the very benefits of LPFM into arguments against its implementation, but also his consistent arguments in favor of *limiting* rather than *fostering* communication between Americans. We express serious concern about his elitist attitude that the general public is simply not up to broadcasting, and his apparent disdain for the public's own expression of the public interest. We share his concerns that the agency has acted as "an advocate instead of a neutral decision-maker"—however, this has happened with IBOC, not LPFM!

> "Increased competition could over-saturate the market. Profits could deteriorate."
>
> *From a letter from the Michigan Association of Broadcasters stating their reasons for opposing LPFM community radio.*

> "We're the landlords of the public airwaves, the broadcasters are the tenants. Yet they pay us no rent, they decide who plays what 24 hours a day, and they laugh all the way to the bank. Isn't it time we made a national political issue out of this enormous anomaly that we own the public airwaves but don't control anything?"
>
> *Ralph Nader, August 1996*

PREPARED STATEMENT OF DAVID NOBLE, PRESIDENT, INTERNATIONAL ASSOCIATION OF AUDIO INFORMATION SERVICES

Thank you for the opportunity to submit a written statement for the record on behalf of the member stations of the International Association of Audio Information Services (IAAIS), a group of non-profit services for blind, legally blind, visually impaired, and other disabled populations.

In the United States alone there are more than 100 services offering print access to an estimated 1.2 million Americans. These subcarrier services are typically low budget, non-profit organizations that engaged volunteers in every aspect of operations and management. They are true, grassroots organizations that listen carefully to the voice of their community.

Thank you for the opportunity to comment on the Federal Communications Commission's (FCC) plan to establish a new low power FM radio service. While we support the goals contained in the Report and Order establishing LPFM stations, we remain concerned that the introduction of LPFM may be detrimental to the people who depend on radio reading services. Specifically, we believe that interference may disrupt service and we seek a process to resolve potential interference.

Daily services from our member stations keep elderly blind and visually impaired residents in touch with their communities. They are better able to live in their own homes, maintain independent lifestyles, and contribute to rather than live off of society. With daily news they can initiate conversations and offer opinions rather than sit at home alone and lonely. Editorial pages encourage them to be involved in the community. With local event listings, they can plan trips for themselves or their family. At election time, they hear the candidates' qualifications read and make informed choices in the voting booth. When interference makes listening impossible, all these benefits are gone. There is no other service available.

Because subcarrier delivered reading services are at 92 or 67khz they are more fragile and more subject to interference. Since 1976 when C. Stanley Potter founded the first reading service in Minnesota, interference and poor reception in the secondary contour has been a part of subcarrier services history. The Association remains greatly concerned that its members will not have the ability or means to have interference acted upon quickly enough in a low power FM world without appropriate protections.

IAAIS members are for the most part, unable to keep an engineer on staff for budgetary reasons. As the Commission knows, the subcarrier stations do not hold a broadcast license. They provide programming to main channel operators who hold the license. What standing will a reading service have in an interference situation? Most main channel operators are also non-profit, public stations. The cost to hire appropriate personnel to monitor and prosecute interference would bankrupt a typical reading service and threaten the financial health of the main channel public station.

It has been argued that reading services should avail themselves of the low power opportunity and "snap up" LPFM licenses to replace their fragile subcarrier signals. This is not economically feasible. The cost to operate the low power station and the range restrictions low power imposes are both detrimental to the listeners, and that's where IAAIS concerns come full circle.

The FCC has long recognized that reading services for the blind need protections and in fact, the FCC has helped to create regulations that make reading services possible. Now reading services need continued protection, especially in a FM band that is "tighter" than ever before. IAAIS is relieved that 1st and 2nd channel protections remain intact and thanks the Commission for hearing IAAIS members' concern and acting accordingly. However, we are concerned that future FM subcarrier would not have the same protections from LPFM as existing services. In grade "B" contours, where no protections exist at all, reading services and other subcarrier services will be the first to experience interference from neighboring LPFM stations.

Although increasing diversity of programming and ownership is important, the FCC must not pursue these goals to the detriment of existing service for the blind and print-impaired.

PREPARED STATEMENT OF PENGUINRADIO, INC.

Mr. Chairman, thank you for the opportunity to address the Committee today.

Today's hearing addresses the FCC's recent ruling in favor of low-powered radio. However, from the perspective of PenguinRadio, the debate over low-powered FM will soon become a moot point.

Because of the emergence of Internet audio technology, "radio" is no longer a small allocation of frequencies that must be divvied up in fair and equitable portions, incurring review after review by the FCC and tremendous costs on the broadcasters. People should stop thinking about radio stations in terms of large broadcast towers, mixing boards, and government licenses.

That is the radio of old.

Today, the Internet is already bringing radio back to the people, and the amount of programming available on the Internet will soon exceed the number of programs

available via traditional radio broadcasts. In addition, in the very near future, people will be able to tune into Internet radio programming using a wide variety of low cost, easy-to-use net appliances.

Our company, PenguinRadio, and other Internet appliance companies such as Sonicbox and Kerbango, are developing low cost Internet audio receivers that will play thousands of radio stations from all over the world without the need for a personal computer. We plan to work with the broadband community, including Northpoint Communications, which just announced plans to create a high-speed streaming audio service that will be delivered over its network. We will also work with our partners at Ellipso satellite to bring Internet radio to mobile locations, such as cars, and isolated rural areas where traditional radio cannot penetrate.

Using a technology called streaming media, anyone with a personal computer and an Internet connection can open their own radio station, broadcasting over the Net to anyplace on earth. These low barriers to entry have led to hundreds of "radio stations" opening every day on the Internet. To date, nearly 4,000 commercial radio stations have their feeds on the Internet, and several thousand "Internet-only" radio stations broadcast everything from local neighborhood news, to high school radio, to many other forms of radio that could not compete in the commercial market.

The growth of Internet radio is astounding. Arbitron reports that in 1998, approximately 18% of American's online regularly listened to the Internet using personal computers. In July of 1999, that number had jumped to 30% of those online. This represents millions of households tuning to this new medium to listen to the radio. The convergence of broadband, Internet appliances and wireless net connectivity is accelerating the revolutionary development of Internet radio. We are moving so fast in this market that even we cannot predict how prevalent it will become in the next few months. Mr. Chairman, we have trademarked the saying "One day every radio will work this way" (referring to Internet radio) because it makes sense, both technologically and financially.

So while this Committee debates the problems and merits of low-power radio, and lobbyists and grass roots activists harass you on both sides of this issue, we'll be out changing the world by making Internet radio available to everyone.

I thank you for this opportunity to speak today.

PREPARED STATEMENT OF SALIDA RADIO CLUB

Dear Committee Members: We are a small non-profit group representing Salida, a small mountain community in Central Colorado. We have actively followed the LPFM issue, and have submitted formal comments to the FCC on the LPFM docket 99-25. It is our intention to apply for a LPFM license, when they become available, to serve our community in a way that no out of town or commercial radio outlet can. We have widespread public support, including resolutions passed unanimously by our City Council, as well as local School Board R-32J, supporting the civic, educational, and cultural benefits of Low Power FM to our city. Ours is a relatively poor rural community—we do not have the resources available to license and fund a full power station. A service such as LPFM is the only realistic way to bring community radio to our area.

We are very disturbed by the content of HR 3439, which we see as a blatant attempt to not only keep the status quo in radio from any potential competition (we trust you'd agree that this would be illegal), but to pave the way for an expanded commercial potential with the introduction of IBOC digital broadcasts. There is strong suspicion in the Low Power radio community that the real issue here is preserving and potentially increasing bandwidth for ancillary (and highly profitable) operations by full power licensees, after the possible (and contentious) introduction of on-band digital broadcasting, such as advertising and beeper/pager services. To deny the public, who own the spectrum and are effectively shut out from participation, is an egregious mishandling of a public resource that the FCC is mandated to efficiently and fairly manage.

Studies, including those of the FCC, have shown that the much ballyhooed interference problems that the NAB and their friends at NPR have touted will not adversely affect reception. Indeed, what about the 300-plus short-spaced full-power stations that the FCC has grandfathered? if those are acceptable, and have not received too many complaints of unacceptable interference (which they have not), then the industry's arguments are moot. We are particularly disturbed by the stance of National Public Radio on the Low Power rulemaking; NPR is an organization that supposedly stands for community radio. Their opposition to LPFM (as well as the now unavailable Class D licenses) is not compatible with "community service": our

nearest NPR station is 2½ hours and two mountain passes by car, and still calls itself a "community service" (KRCC-FM). This is not our community.

As you are no doubt aware, this rulemaking received more formal positive public comments than any other in FCC history (over 3000 total), most from individuals and groups (such as ours), who have absolutely no financial stake in the passage of LPFM. To pass a bill such as HR 3439 would plainly show the undemocratic power of highly financed special interests in our government. Please do the right thing and listen to the people and not the lobbyists on this issue: do not pass this bill. We are serious, voting, every-day citizens, not "insiders"; we hope this fact will make our point of view ever more valuable to you.

Thank you.

PREPARED STATEMENT OF CHRISTOPHER MAXWELL, SECRETARY/TREASURER, THE VIRGINIA CENTER FOR THE PUBLIC PRESS

Dear Honored Representatives of the House, you have a tough job ahead of you today.

The historic choices you make today could either revive participatory democracy by creating competitive opportunities for new programming *OR* could destroy the FM dial as we know it.

Which result is predicted depends on *who* you talk to.

So let us consider the testimony of those who many consider the most qualified to speak on such technological issues: Industry and their engineers.

The NAB themselves said that the current rules were "in some cases" overly restrictive. In 1996, The National Association of Broadcasters (NAB) argued in docket 99-120 that 3rd *and* even 2nd adjacent frequency "Short Spaced Grandfathered FM Radio Stations" should have greater flexibility of movement for their transmitters and towers. The FCC agreed!

Then came those who claimed that their voices, their news and their cultures were not heard on stations already on the air.

They wanted a chance at the American Dream—to be who you want to be and to share your story with those whose choices and votes affect your life.

They saw that these 30,000 watt stations were transmitting on third and even on second adjacent frequencies, AND HAD DONE SO FOR OVER 30 YEARS!

There were no complaints found on file at the FCC of citizen's radios unable to separate the signals of these 3OkW short spaced stations.

So the supporters of competition effectively said, what's good for the NAB is good for the us. If they can, then so can we.

The NAB naturally disagreed. The Federal Communication Commission (FCC) wished that all the petitioners would all go away. We did not go away, and the FCC received more comments on the LPFM proposal THAN ANY PROPOSAL IN FCC HISTORY. Over 3000 comments were mostly favorable to creating competition using the same rules (but at less power) that the Short Spaced Full Power stations had been allowed to use for 30+ years.

Then the NAB said they needed that space to be competitive.

Competitive how?

To create Digital Audio Broadcasting (DAB).

And why would digital make the NAB stations more competitive than their 35+% profits indicated?

The NAB consortium claims is that they were losing listeners to the Internet, which is digital and therefore they needed to be digital.

There were only two wrinkles in that argument.

Wrinkle one is that *Now* the NAB had to make a 180 degree change in argument. Now the argument is that the space is needed for additional energy, only *their* energy, to be placed on the FM spectrum and that this additional energy *and bandwidth* and that *furthermore* placing digital carriers immediately adjacent analog carriers would cause no interference!

This adds energy sources and places them closer together on the FM dial. When the LPFM wanted to do this, the NAB claimed that Physics don't change for politics, but now it is OK for *NAB* to add energy to the FM dial.

Both of the In-Band variants of DAB (IBOC and IBAC) have substantial industry support for expanding the stations footprint from 200kHz to 400kHz.

The IBAC (In Band Adjacent Channel) variant places (in-effect) two multi-thousand watt digital stations on the FIRST adjacent frequencies on both sides of the "host" analog station.

The IBOC (In Band On Channel, uses expanded and modified subcarriers)

In both cases, *doubling* the bandwidth to 400kHz (and at multi-thousand watt levels) will cause the same *and likely worse* trouble than if we had *doubled* the number of stations on the FM dial with LPFM 100 watt stations!

This argument appears to contradict NAB testimony earlier that *same year* that THIRD and even SECOND adjacent *sub 1000 watt* 200kHz LPFM stations WOULD cause interference.

So it appears that additional energy sources closer together on the FM dial are only interference when they are new entrants.

The NAB contradict themselves *AGAIN* with support for their own membership's Short Spaced 3rd and 2nd adjacent multi-thousand watt "short spaced" FM stations.* Which is it? The laws of physics don't work differently for us than them!

The second wrinkle is the strange assumption (once explicitly stated) that Americans switched to CDs and the Internet *merely because they are digital.*

Would Americans want the slight increase in sound quality and RDS style banner ad services that digital claims to offer *enough* to *sacrifice* all their millions of radios, especially car radios and antique radios?

Will Americans gladly sacrifice their ability to hear more different stations?

Will America put up with the buzzing that some studies claim that *first adjacent digital signals* would cause for the analog signal?

Apparent NAB flip-flopping could be incompetence, but that seems unlikely.

The immediate obvious alternative possibility is that the NAB is not actually concerned about TECHNICAL interference. The interference that the NAB is worried about is the FACT that they have lost 12% of their listenership.

To the Internet, CDs, Tapes and to *noncommercial broadcasters.*

Their own industry's consultants, such as Duncan American Radio cite the 12% loss of listenership and blame "villains [such as] increased spot loads [ads] and lack of programming innovation."

Sony themselves said in the IBAC proceedings (docket 99-325):

> "The players [of Internet Audio files such as MP3] themselves are offering high quality digital audio and are increasingly becoming a more desirable alternative, in some cases, to the limited variety of music offered on the radio.

AND

> "Sony has seen a very slow market penetration in Europe with DAB, which employs the Eureka-147 standard. The disappointing ramp-up is attributable to a service that offers little more than improved audio."

THEY EVEN REPEAT THIS ADMISSION:

> "In Europe, Eureka-147 sales have been very slow. This is largely due to there not being enough incentive for consumers to buy a more expensive radio for simply getting digital quality and very limited data services.

AND MOST TELLINGLY:

> . . . needs to be more of an impetus for the average consumer to adopt DAB. This impetus is either derived from a variety of new channels or new value-added services. S-DARS in the U.S. has chosen both methods. A value-added service offered by S-DARS, as an example, is *commercial free* radio broadcasting."

AND THE FINAL BLOW:

> "Sony also recognizes the potential benefit of a fixed analog "sunset" date to foster a transition to an all-digital service and, believes one should not preclude the other. In fact, *both may be necessary to stimulate the market to fully adopt the digital transition.*"

Sony is as much as admitting that few will buy in unless *forced* to by taxpayer funded government agency edict! Only then would we abandon our Billion$ inve$ted in analog FM receiver equipment.

Technology Investor magazine in discussing *Worldspace* (the Satellite Direct radio service already implemented in South Africa) said, "The only complaint: customers want *more* radio *stations, more niche* stations."

So *WHAT* potential benefits is Sony referring to when they demand "encouragement" of the purchase of their products?

If you look at Duncan American Radio analysis, there is no mention of a desire for "near CD quality" nor for the banner ads and artist IDs proposed as a variant of the Radio Data Systems (RDS) style radios *that have already been available since 1979 and have always been a crashing market failure!*

And what is "near CD quality"? Lucent cites in appendix F.1 of their 99-325 comments that:

> ". . . result of the first test indicates that audio compressed by the FM IBOC system has a quality rating of 4.23 which is better than best FM (4.05) by approximately 0.2 points on the MOS scale . . . the CD source [on the MOS scale is (4.32)]."

When *that slight* an increase in sound quality (mostly in reduced noise) has to compete with road noise, wind noise, office noises or is on a walkman or a clock radio . . . would anyone notice or care enough to spend hundreds of dollars and lose access to the only station that had their favorite programming? Significantly, roughly 20% of listeners can only find their desired programming on smaller noncommercial stations.

The NAB stations have largely fired the staff that would have created that programming innovation or Sony's "variety of new program channels" and show no sign of rehiring.

But the NAB doesn't want us to step in and create a new service *in the finest American Tradition.*

The NAB wants you to approve laws to protect their declining ability to serve the public.

I can almost sympathize with the NAB stations that must cut staff for an unrelenting Wall Street demand for greater and greater profits in a mature industry—even 35% is not enough.

In 1992, the NAB supported the *world accepted standard* for a *proven* technology, pure digital called Eureka 147 on the "L-Band" at 1400mHz. The world has moved forward without us. We could do the same, but for the reluctance of the military to allow the constitutional government of, by and for the people that they are sworn to protect, to use that L-Band for Eureka 147 and create new broadcast opportunities.

The Eureka 147 at 1400mHz standard was not accepted and so in desperation, the NAB wants you to allow them to FORCE a standard for technology (IBAC, of unproven value and functionality) that will likely destroy smaller church, community and NPR stations ENFORCED AT TAXPAYER EXPENSE!!

In other words, the NAB consortium and NPR want you to chase the listeners back into their commercials and national underwriters such as Phizer and Archer Daniels Midland by destroying our refuge from crass commercial and commercialized NPR programming still provided by local noncommercial religious, civic and college radio.

So you have a hard choice ahead of you today.

If you allow the NAB to stop LPFM, but *then* allow the creation of FIRST adjacent digital stations, the voters may come down on you when their old radios no longer receive anything. This government edict would mean voters could hear even fewer stations than they can now.

If on the other hand, you allow LPFM to create competition, then you will likely feel the immediate wrath of the Wall Street funders of reelection campaigns that pay for the ads on the stations *they* own. I do not envy your position.

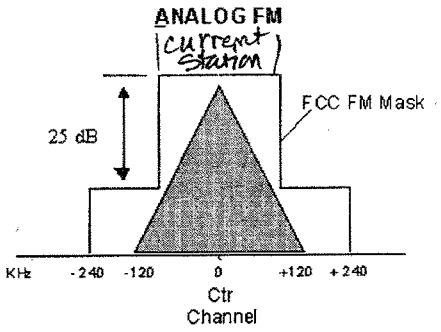
Notice in this graphic taken from the Lucent Website, that the digital carriers are in-effect, two first adjacent stations . . . but they would like you to think there will be no bleed into the analog station in the middle or stations next door. This suggestion is partially graphic—they show the analog as a triangle (actually should be a bell curve) and the digital as a block (nature is not that sharp-edged!)

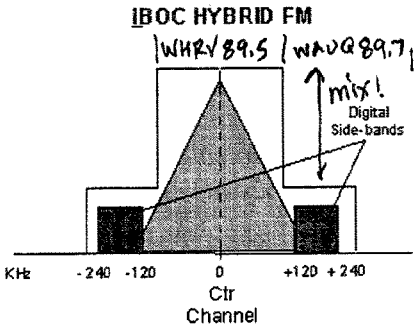
Notice that the proposed station mask takes up considerably more room than it currently does (now goes from -100 to +100) . . . and that the energy level further out is just the same as if two weaker first adjacent stations were there.

Now reinvision those blocks as they should be, bell curves with the tails extending to the right and left.

FM Digital Transition Plan

FM Digital Transition Plan





That mixing of signals is why I will likely lose the ability to hear 100 Watt WDCE90.1FM when WCVE88.9FM at 17.5kW goes from 200kHz (and already periodically stomping their signal until they get around to maintenance) to 400kHz.

What happens if WDCE (with an annual budget of about $20,000) cannot afford the brand-new $60,000 to $200,000 DAB transmitters by the "Mandatory Sunsetting" (prohibition) date?

Will *fewer* stations *increase* my choices of programming?

It is clear between the IBOC DAB and LPFM, there is no doubt that I WILL be losing access to some stations in the coming years. But will the programming variety be replaced?

I will lose the ability to hear some Washington stations as far south as my friend's farm in Ashland, Va. But will I lose reception because IBAC Digital Audio Broadcasting destroyed my favorite signal with twin first adjacent glorified fax machines (the mobile packet digital data delivery a.k.a. "auxiliary services" like CUE corporation's SCA voicemail beepers)...or...

...will I lose reception of those distant and weaker stations because there are hundreds of new stations with all kinds of niche programming that are informed by the many different programming values of many different owners?

And why is it suddenly *your* job to save industry profits from competition? The cost of campaigning on the same electronic media that has less and less competition.

Which will save the FM dial's value to its owners, the American Public; more different programs such as Sony admits the Internet offers, or fewer programs that sound slightly better but cost hundred's of dollars more for a *required* purchase of new radios?

In conclusion and as a hint to that answer, allow me to note that when Howard Steam was taken off the air in Richmond, the *Norfolk* station that carried Steam earned a THREE SHARE IN THE *RICHMOND* RADIO MARKET!!! Lack of competition in Richmond is causing a dramatic loss of service and economic opportunity so that a few anointed elite can tell us what is best for us.

It is no exaggeration to say that you have the future of the American Dream in your hands today.

Thank-you for allowing me the opportunity to witness this moment in the history of American Freedom of the Press, economic opportunity, and the fundamental democratic right to have your story heard by those whose decisions affect your life.

February 25, 2000
102-B Weeping Willow Lane
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(H) 540/828-1727
DonSunburst@aol.com

Representative W.J. "Billy" Tauzin
Chairman
House Subcommittee on Telecommunications,
Trade and Consumer Protection
2125 Rayburn HOB
Washington, DC 20515

Dear Chairman Tauzin:

I want to thank you and Representative Markey, once again, for the opportunity to testify at the February 17 Hearings on H.R. 3439, Representative Oxley's bill to de-authorize Low Power Radio.

SUPPLEMENTAL STATEMENTS FOR THE RECORD

Per your invitation and request, I intend to submit a Supplemental Written Statement, on behalf of THE AMHERST ALLIANCE, before the record closes on Friday, March 19.

As I stated during the Hearings, I believe that Suppplemental Written Statements will also be submitted by Wesle AnneMarie Dymoke, on behalf of Providence Community Radio (Providence, Rhode Island) and Christopher Maxwell, on behalf of the Virginia Center for the Public Press (Richmond, Virginia). Both individuals submitted initial Written Testimony before the February 19 Hearings.

SUPPORT FOR REPRESENTATIVE MARKEY'S REQUEST

During the February 19 Hearings, Representative Markey conveyed to you his belief that additional Hearings should be held. THE AMHERST ALLIANCE is in strong agreement with Representative Markey's assessment – and we join in his request for additional Hearings.

Additional Hearings would offer the Subcommittee an opportunity to obtain information from two additional sources.

First, additional Hearings will provide an opportunity for testimony by FCC Chairman William Kennard, who was out of town on business on February 19. If Chairman Kennard has another schedule conflict, perhaps he could send Commissioner Gloria Tristani, or Commissioner Susan Ness, in his stead.

Since the Subcommittee has now heard testimony from Commissioner Harold Furchtgott-Roth, who voted against the new Low Power Radio rule, it should balance the record by hearing from a Commissioner who voted in favor of the rule. We acknowledge that Chairman Kennard was represented on February 19 by Bruce Franca, Deputy Chief of the FCC's Office of Engineering and Technology, who ably presented the Commission's views on the various technical issues. Unfortunately, however, Commissioner Furchtgott-Roth raised major policy issues, which Mr. Franca had not been authorized to address.

Such policy issues can be, and should be, addressed by FCC Commissioners, with knowledge of -- and responsibility for -- all of the Commission's activities. Additional Hearings will allow the Subcommittee to gain the benefit of this unique perspective.

Second, additional Hearings will present an opportunity to hear from individuals who are actually planning to apply for LPFM licenses. The panel of witnesses on February 19 was very well balanced between experts and advocates on both sides of the LPFM divide: an achievement for which you, and Representative Markey, are commended. Nevertheless, there is no substitute for the perspective of someone who is actually planning to enter the world of LPFM.

To this end, I can suggest four possible witnesses for the next round of Hearings.

All of these individuals are aspiring Low Power broadcasters -- and all of them have expressed a willingness to testify, if asked.

ASPIRING LPFM BROADCASTERS
WHO ARE WILLING TO TESTIFY
ON H.R. 3439 AND THE FCC'S LOW POWER RADIO RULE

This is hardly an exhaustive list. Please regard these names as a starting point.

The names of AMHERST ALLIANCE Members have been capitalized.

In addition, since you have expressed an interest in Internet broadcasting, as a possible alternative to Low Power Radio, I have placed an asterisk after the name of Bill Doerner, who is already engaged in Internet broadcasting. He is also, like yourself, a Republican -- as are roughly half the Members of Amherst.

Our fourth recommended witness is Steven Provizer, a former unlicensed broadcaster who is now operating a LEGAL Low Power Radio station under Part 15 of the FCC regulations. Steven's station, Allston-Brighton Free Radio, serves two compact neighborhoods in Boston's urban core -- and the City Council of Boston has voted, unanimously, to support his efforts to obtain an LPFM license.

Here are the addresses of the four witnesses we hope you will consider:

1. WESLE ANNEMARIE DYMOKE
   Executive Director
   Providence Community Radio
   [First legal entity in America to be incorporated to file for an LPFM license]
   P.O. Box 2646 East Side
   Providence, RI 02906-2346
   WesDym@yahoo.com
   ao780@osfn.org

2. Christopher Maxwell
   Secretary/Treasurer
   Virginia Center for the Public Press
   817 China Street
   Richmond, Virginia 23220
   804/225-8981
   wrfr@aol.com

3. BILL DOERNER **
   President
   Palmsradio
   3803 Waldron Road
   Corpus Christi, TX 78418
   (361) 937-7226
   bdoerner@palmsradio.com
   URL: www.palmsradio.com

4. Steven Provizer
   Executive Director
   Citizens' Media Corps
   Allston-Brighton Free Radio
   [Currently broadcasting as a legal, Part 15 station]
   107 Brighton Avenue
   Allston, MA 02134
   (617) 232-3174
   improviz@gis.net
   URL: www.citizensmedia.org
   [Boston area activist group]
   URL: www.radfrall.org
   [Allston-Brighton Free Radio]

OTHER POTENTIAL WITNESSES
WHO ARE WILLING TO TESTIFY

We can recommend two other potential witnesses. Their testimony would also be of great interest to the Subcommittee.

The first such witness is Tom Ness, publisher of JAMRAG Magazine, as well as founder and leader of the MICHIGAN MUSIC IS WORLD CLASS! Campaign. In both capacities, he has led an extraordinary effort to mobilize "grassroots" support for Low Power Radio among the citizens of metropolitan Detroit.

If Commissioner Furchtgott-Roth questions the level of public support for Low Power Radio, he should talk with Tom Ness. Community by community by community, Tom and his hardworking allies have persuaded more than half of the jurisdictions in metropolitan Detroit to enact Resolutions calling for the establishment of Low Power Radio. The list of jurisdictions includes Detroit itself, Ann Arbor, Clinton Township, Dearborn, Dearborn Heights, Farmington, Ferndale, Grosse Pointe Woods, Hamtramck, Lincoln Park, Livonia, Royal Oak, Warren, Washington Township, Washtenaw COUNTY, Waterford, Wayne, Wayne COUNTY, Wyandotte, Ypsilanti and 23 others. As those who know Michigan can quickly confirm, this list encompasses urban areas, suburban areas and rural areas ... Democratic areas, Republican areas and "swing precincts" ... poor neighborhoods, middle class neighborhoods and affluent neighborhoods. This is truly a BROAD coalition -- and we believe it can be assembled in any metropolitan area where a Tom Ness can be found to energize the underlying public discontent.

Tom Ness, incidentally, has just been drafted by the Michigan Green Party to run as its candidate for the U.S. Senate.

The second witness we recommend is Ted Coopman, a founding partner of Rogue Communication. He studied the birth of the Low Power Radio movement for his Master's Thesis at San Jose State University (where he earned an M.S. degree in Mass Communication in 1995). Ted has published scholarly articles on the subject in academic journals and presented papers on it at various academic conferences.

Ted started Rogue Communication, a communication consulting firm, with his wife Stephanie Coopman, a professor of communication at San Jose State University, Their consulting firm offers expertise in Internet communication as well as more traditional communication technologies. The husband-and-wife team also maintains an electronic library about mass communications, including (but not limited to) Low Power Radio, at www.roguecom.com.

Ted is also the primary author of "The Joint Statement On Microradio". This document, which was submitted to the FCC during the comment period in Docket MM 99-25, expresses general points of agreement within the vast majority of the Low Power Radio movement. The Joint Statement was developed primarily through negotiations between the Committee for Democratic Communications of the National Lawyers' Guild, representing most of the Left of the movement, and THE AMHERST ALLIANCE, speaking for the movement's Center and most of its Right. Ted was the "broker" and wordsmith who pieced the Joint Statement together, thereby giving a common voice to at least 80% of the movement.

The addresses of these gentlemen are set forth below:

5. TOM NESS
Editor & Publisher
JAMRAG Magazine
P.O. Box 20076
Ferndale, MI 48220
(248) 542-8090
jamrag@glis.net

6. Ted M. Coopman
Founding Partner
Rogue Communication
2501 Friesland Court
Santa Cruz, CA 95062
(831) 477-7780
rogue@roguecom.com
URL: www.roguecom.com

As for myself -- Don Schellhardt, National Coordinator and Co-Founder of THE AMHERST ALLIANCE -- I am willing to testify again if asked. Should a choice be necessary, however, I believe it is more important for the Subcommittee to hear these ADDITIONAL voices.

FINANCIAL IMPACT OF
COMMITTEE REQUIREMENTS FOR TESTIMONY

Many of these individuals have modest incomes. Their incomes will be stretched enough by the cost of travel to Washington, without adding on the extra cost of printing and shipping 150 copies of their Written Testimony.

Therefore, if any of these individuals are invited to testify, I request that they be offered a waiver of the normal Committee requirement for 150 copies of their Written Testimony. In addition, if at all possible, I request that they be provided with at least two weeks' notice of their testimony date.

In my own case, I received my official invitation to testify on Friday, February 12: only 5 days (3 workdays) before the testimony date of Thursday, February 17. Since I was also asked to assure that at least 75 copies of my Written Testimony would be RECEIVED by the morning of Tuesday, February 15, I was forced to ship my statements by Federal Express. The result was a shipping bill of $64.00 plus a printing bill (for 170 copies of a 31-page statement) of $323.00. This was a total of $387.00, before travel expenses.

With my present salary, Mr. Chairman, I can afford this (although it still stings). However, some of these possible witnesses cannot. If you invite them to testify, please do not require them to provide more than 10 or 20 copies of their Written Testimony -- and please give them enough time to let them ship those copies through the U.S. Mail.

CONCLUSION

In any event, Mr, Chairman, I hope this letter has provided you with useful information. I also hope you will indeed proceed with additional Hearings.

Sincerely,

Don Schellhardt

Don Schellhardt

National Coordinator and Co-Founder,
THE AMHERST ALLIANCE

Co-Petitioner, FCC Docket RM-9208

Cc: Representative Edward Markey
Representative Tom Bliley
Representative John Dingell

FCC Chairman William Kennard
FCC Deputy Chief Bruce Franca

Cliff Riccio
Andy Levin
Linda Bloss-Baum

Ted Coopman (Santa Cruz, California)
Bill Doerner (Corpus Christi, Texas)
Wesle AnneMarie Dymoke (Providence, Rhode Island)
Christopher Maxwell (Richmond, Virginia)
Tom Ness (Ferndale, Michigan)
Steven Provizer (Allston, Massachusetts)

March 16, 2000
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Representative W.J. "Billy" Tauzin
Chairman
Subcommittee on Telecommunications,
Trade and Consumer Protection
U.S. House of Representatives
Washington, DC 20515

RE: Supplemental Statement
On H.R. 3439

Dear Chairman Tauzin:

As you know, THE AMHERST ALLIANCE is a nationwide citizens' advocacy group, organized and mobilized primarily over The Internet, which champions media reform in general and Low Power Radio in particular. We are, at present, a 100% volunteer organization: we receive no funding from the Federal Government or anyone else.

Amherst presented oral and written testimony during the February 17, 2000 Hearings on H.R. 3439, which would override the recent establishment of a Low Power Radio Service by the Federal Communications Commission (FCC). Today we submit, in this letter format, a Supplemental Statement.

To insure brevity, we limit ourselves to points we have not presented previously.

In addition, we focus on THE SINGLE, CENTRAL ISSUE of alleged interference.

Opponents of Low Power Radio have vastly overstated the risks of unacceptable radio interference.

At the Hearings, the National Association of Broadcasters (NAB) showcased a professionally prepared audio "demonstration tape", illustrating the purported impact of 3% radio interference on selected Washington area radio stations. Largely lost in the outcry were the vigorous objections of Dr. Theodore Rapoport of Virginia Tech, an INDEPENDENT technical expert. Also largely overlooked was the statement by Bruce Franca, the FCC's Deputy Chief of Engineering and Technology, that interference from Low Power Radio will never exceed 1%.

We urge the Subcommittee to review, carefully, this COMPETING EVIDENCE regarding radio interference -- as well as all of the other competing evidence which has been, or will be, brought to the Subcommittee's attention.

We further urge the Subcommittee to remember that ALL of the predictions of unacceptable radio interference have been made by individuals and/or institutions with a vested financial interest in the status quo. To the best of our knowledge, NO dire predictions have been made by ANY of the technical experts who lack such a vested financial interest in the radio status quo.

We also offer the following additional information on the interference issue:

(A) The NAB appears to be enjoying the benefits of a "double standard" for radio interference. That is: When the NAB alleges (over the strong objections of independent technical experts) that a station of 100 watts or less, run by a tiny non-profit organization, might POSSIBLY interfere with the reception of signals from a 50,000 watt megacorporate "blowtorch" -- over the cheapest, lowest quality "boombox" on the market -- pulses rise and foreheads sweat in many corners of Capitol Hill. However, when the NAB announces that 50,000 watt megacorporate "blowtorches" plan to shift to In Band On Channel (IBOC) Digitalization, many a legislator cheers them on -- even though the universally predicted "interference" from IBOC Digitalization will put entire stations off the air.

Amherst is not against IBOC Digitalization, provided that it can be achieved without jeopardizing Low Power Radio. We ARE, however, against a double standard for radio interference.

So far as we can tell, few if any of the decision-makers in Washington are troubled by the virtual certainty that megacorporate monoliths, "chains" of evangelical stations and the empire of National Public Radio (NPR) will be precluding the very survival of smaller stations in the name of moderate improvements in signal clarity. Why, then, do so many powerful people tremble visibly at the mere thought that reception MIGHT be MARGINALLY eroded, on $15.00 "junk" radios, as a possible tradeoff for boosting communities and reviving democracy?

These are the priorities of Babylon -- NOT of the America we know.

(B) The NAB has also enjoyed a "free ride" in the sense that -- to the best of our knowledge -- no one on the House Telecommunications Subcommittee has questioned a glaring gap in the NAB's logic.

That is: So far as we can tell, no one on the Subcommittee has questioned the NAB's unarticulated assumption that a risk of radio interference ANYWHERE justifies a ban on Low Power Radio EVERYWHERE.

If presented as a syllogism, the NAB's apparent logic is this:

Low Power Radio will cause unacceptable interference in some places.

Therefore, Low Power Radio should be banned in all places.

Hopefully, it is obvious that the NAB's conclusion does not follow from the NAB's premise. The syllogism below makes much more sense:

Low Power Radio will cause unacceptable interference in some places.

Therefore, Low Power Radio should be banned in those places where it would cause unacceptable interference.

If the NAB were truly concerned with interference alone -- rather than inflating the real risks, in order to justify the continued use of government power to assure the artificial protection of corporate profits -- then the NAB would be applying the second syllogism, not the first.

At Amherst, we do not accept the NAB's premise. Our point here is that the NAB does not really believe it, either. If it did, the NAB's agenda on Low Power Radio would be tailored more narrowly – so that its proposed solution would actually match the stated problem.

For example, in the case of H.R. 3439, the NAB would be willing to narrow the Oxley bill's TOTAL ban on Low Power Radio down to a ban on Low Power Radio where accommodating a new station would require relaxation of any existing channel spacing standards.

Of course, Amherst would OPPOSE this approach -- because, for no good reason, this policy would virtually eliminate opportunities for Low Power Radio in many metropolitan areas. However, this approach would resolve the STATED concerns of the NAB about interference -- while still leaving ample opportunities for Low Power Radio to establish footholds in small cities and rural areas.

If the NAB is truly concerned about radio interference ALONE, it should be willing to convert the Oxley bill into a ban on Low Power Radio in cases where the third or second adjacent channel spacing standards would have to be relaxed. ... Period.

In fact, if the NAB is truly concerned about radio interference ALONE, it should call for a legislative ban on ANY relaxation of channel spacing standards for ANYONE. After all, radio interference is radio interference -- whether it comes from a 10-watt transmitter, owned by a Salvation Army chapter in an aging urban neighborhood, or from a 50,000 watt outpost of Jaccor in a plush facility in an upscale suburb. If the NAB cannot tolerate even the remote POSSIBILITY that Low Power Radio can erode reception, even if only on the cheapest radios in the largest cities, then why does the NAB ignore the very same risk of interference from large COMMERCIAL stations ... or from centrally controlled NPR "affiliates" ... or from automated armies of satellite-linked, evangelical translator stations?

In short:

We will be more inclined to accept the NAB's sincerity when the NAB proposes to ban ANY stations that might cause interference, whether those stations are part of the Low Power Radio Service or not -- AND when it also proposes to leave alone those stations that will NOT cause interference, whether those stations are part of the Low Power Radio Service or not.

Until that day, we will continue to believe that the only interference which TRULY concerns the NAB is interference with cash flow.

Of course, corporations have a right to be concerned with cash flow -- but CONGRESS has no obligation to do their work for them.

In any event, we reiterate our strong support for the request by Representative Edward Markey of Massachusetts, Ranking Minority Member of the House Telecommunications Subcommittee, for additional Hearings on H.R. 3439.

As we noted in a letter to the Subcommittee of February 25, 2000, such Hearings should include testimony by FCC Chairman William Kennard or, failing that, by another Commissioner who supports the FCC's new rule on Low Power Radio. At present, the only Commissioner to testify on H.R. 3439 has been the single Commissioner who voted against the Low Power Radio rule.

The new Hearings should also include testimony from those who actually intend to apply for Low Power Radio licenses under the new rule. The referenced February 25 letter contains a list of individuals who have already agreed to testify if asked.

This list of volunteer witnesses includes Wesle AnneMarie Dymoke, of Providence Community Radio in New England, as well as Christopher Maxwell of the Virginia Center for the Public Press in Richmond. Ms. Dymoke and Mr, Maxwell have already submitted WRITTEN Testimony at the February 17 Hearings and each of them will be filing a Supplemental Statement today.

The FCC's Low Power Radio rule is a vital first step toward the kind of media reform -- and political reform -- that our nation desperately requires at this point in its history. If Congress cannot leave alone even this modest, halting attempt to re-open those institutions which carry the lifeblood of our representative democracy, then the future of the Republic is in very grave doubt. Conversely, if Congress is willing to encourage, or at least tolerate, the birth and growth of a Low Power Radio Service, then the energies of the people can be liberated on our airwaves -- for the ultimate good of all.

Sincerely,

Don Schellhardt

Don Schellhardt

National Coordinator and Co-Founder,
THE AMHERST ALLIANCE

Cc: Representative Tom Bliley
Representative Edward Markey
Representative John Dingell

FCC Chairman William Kennard
FCC Deputy Chief Bruce Franca

Cliff Riccio
Linda Bloss-Baum
Andy Levin

Dr. Theodore Rapoport
Wesle AnneMarie Dymoke
Christopher Maxwell

Wednesday, 15 March 2000

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HOUSE SUBCOMMITTEE ON TELECOMMUNICATIONS
2125 Rayburn House Office Building
United State House of Representatives
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ATTENTION: C. RICCIO

Supplemental Remarks of Wesle AnneMarie Dymoke of Rhode Island

Regional Coördinator for New England and Vicinity of the Amherst Alliance,
and an Aspiring Microbroadcaster

On behalf of herself and Providence Community Radio, Inc.

to the House Subcommittee on Telecommunications

in the Matter of H.R. 3439, Radio Broadcasting Preservation Act of 1999,
and FCC Publ. 00-19, *Report and Order* in the Matter of FCC Docket No. MM 99-25

These Supplemental Remarks are submitted per special provision of Chairman Billy Tauzin, per his generous admission of outside remarks in the matter of the above bill. I submit these Supplemental Remarks on behalf of myself and persons known to me with an interest in the issues relevant to this bill. I thank Chairman Tauzin for his gracious extension of this opportunity, and I thank the Subcommittee for its consideration of these Supplemental Remarks.

AUTHOR and Associate Opinions included

Wesle AnneMarie Dymoke is Regional Coordinator for New England and Vicinity for the Amherst Alliance, a national media reform group currently focused on the issue of low power and other community radio, particularly LPFM, as outlined in MM Docket No. 99-25 and authorised in FCC Publ 00-19, *Report and Order* on LPFM. She is also the founder of Providence Community Radio, Inc. (NPO), believed to be the first group incorporated specifically for the purpose of mounting an LPFM facility. Members of the Board of Directors of ProComRad have contributed to these Supplemental Remarks, and deserve mention: Matt Obert (of AS220, a Providence-based artspace and arts community center), Cara Hyde (founder of P-Squared, a Providence-based musicians' organisation), Christopher Judge (a Rhode Island community organiser and leader, and former candidate for State-level office), Christopher Schultz (an instructor at the Johnson and Wales School of Hospitality, and founder of the Rhode Island Concierges Association), Serena Andrews (founder of Wink! Artists Mgt., a nonprofit musicians' cooperative), and Jed Arkley (of Improv Jones, a local performance troupe).

Also consulted and supplying input were John Murphy, General Manager of WHUS-FM at the University of Connecticut at Storrs, Harry Minot, GM of WPKN-FM, Bridgeport, Conn., and other persons working in radio currently. Numerous persons contributed to these Supplemental Remarks, and so, in deference to the fact that I here present my views and those of many others whom I have consulted, I feel it is only fair to reference these remarks as a group, by which means we explain the repeated use of "we" in a document otherwise ostensibly representing the views of one person, which would be misleading.

REQUEST FOR ADDITIONAL HEARINGS ON H.R. 3439

We request further hearings on the Matter of H.R. 3439, as necessary to adequately clarify the issues in dispute. At the initial hearing, each witness was given only a few minutes to discuss their perspective on a very complex issue with some very controversial elements. The response periods likewise were far too brief to permit adequate rebuttal by witnesses. As someone who has been deeply involved in the LPFM debate for years, I can say with absolute authority that this issue cannot be adequately discussed in two hours.

With the current testimony in the possession of the Subcommittee, it should be possible to discuss these issues more fully with one or two followup hearings of only slightly longer duration, allowing individual witnesses more time to describe their positions. The extreme contraction of complex positions and arguments in the initial hearing, in order to fit them into five minutes, may, in fact, have done as much to confuse the issues as clarify them.

A followup hearing is also necessary in order to allow both sides to more fully address the arguments brought forward at the initial hearing. The evidentiary audio demonstrations beg for the opportunity of those disputing their value and validity to analyse and respond accordingly, with sufficient detail to make clear their reasons, that the Subcommittee Members may be more fully informed and have a more complete understanding of what these demonstrations really mean in the LPFM debate.

We would further enjoy the participation of FCC Chairman William F. Kennard, who, due to a schedule conflict, was unavailable to testify at the initial hearing. While we appreciate the participation and testimony of Commissioner Harold Furchtgott-Roth,

we note that his was the only fully dissenting vote of five Commissioners, and that he was the only Commissioner in attendance at this hearing. While his views are no less valuable than those of other Commissioners, a fair review of the FCC's ruling calls for the views of more than one Commissioner, and should include the views of at least two Commissioners, preferably with different perspectives and arguments, the better to describe the full scope of the FCC's consideration of this issue.

We also note that the range of witnesses at the initial hearing was, in our strong opinion, overly representative of those with the greatest financial stake in the matter of LPFM: Three out of ten Panel Witnesses submitted their testimony under the aegis of the National Association of Broadcasters. Not a single actual prospective LPFM broadcaster was allowed to provide testimony, leaving the Subcommittee and Panel alike to speculate about who LPFM hopefuls are and how we expect to set up and operate this new service.

We therefore urge the Subcommittee to prosecute further hearings in the Matter of H.R. 3439, so that all of the Members may be fully informed about these issues.

We further ask the Subcommittee to widen the panel of witnesses by at least half, to allow a greater variety of perspectives and arguments, and to better represent the people who will conduct LPFM, and who will be affected by it.

SUPPLEMENTAL REMARKS AND RESPONSE TO TESTIMONY IN H.R. 3439

In view of the goal of prosecuting this Matter towards a substantive comprehension by Subcommittee Members of the issues involved in LPFM, I shall structure these Supplemental Remarks along the lines of the Testimony provided in writing and as delivered by Panel Witnesses at the initial hearing, thus allowing a better sense of the

relationship of my remarks to the viewpoints of others whose testimony is already on record. In view of the major points of the hearing, we concentrate on the technical interference issues, somewhat to the exclusing of other microradio issues, which are being discusses separately by other persons in this Matter. Order of response is random.

(1) Mr. Bruce Franca, Deputy Chief, Office of Engineering and Technology (OET), Federal Communications Commission (FCC)

Mr. Franca confirmed the OET's responsibility to supply technical data and interpretation to the policy-making members of the FCC in order to ensure the FCC's obligation to maintain overall spectrum integrity. The OET was charged with reviewing and evaluating proposals in respect to spectrum allocation for LPFM, and the possible effects of different allocation schemes.

The FCC decided to implement LPFM in accordance with its established policies for station placement, with two modifications:

1: LPFM stations are not required to maintain third-channel adjacency separation, meaning that they may be placed one band closer on the dial to other stations in the same area than is allowed for full-power broadcasters. The first and second band separation requirements were maintained.

2: LPFM stations must add 20km to existing geographical separations, this to afford greater protection to existing broadcasters.

The FCC estimates that the combination of the very low power levels of LPFM, together with the increase in physical separation, will afford interference protection equivalent to existing tolerance criteria for current broadcasters. Simply put, LPFM

stations are so small that applying current restrictions to them which are intended for stations that are orders of magnitude larger is not necessary, and so some relaxation of existing policies is appropriate without adding increased risk of interference.

Mr. Franca played a short tape intended to demonstrate the level of signal interference, in the form of harmonic distortion (fuzz, hiss, hum) representing the maximum allowable level of interference the FCC feels is acceptable for all broadcasters.

In questioning by Subcommittee Members, Mr. Franca acknowledged that some inferior receivers may experience additional interference due to LPFM implementation. He did not, however, take this opportunity to explain that the level of potential additional interference is far too small to be noticeable in almost all cases, or that his response was purely logical, not substantive: The chance for additional interference, according to the OET's own study, is very small, and additional interference, though possible, would not be noticeable even at the maximum predicted levels in worse-case scenarios.

[OET Study, cited in FCC Publ 00-19, *Report and Order* in the Matter of MM Docket No. 99-25, Creation of a Low Power Radio Service, hereafter "*Report and Order*" or "R&O", supra at para 84, para 100; Testimony of Bruce Franca in re H.R. 3439]

(2) Mr. David Maxson, Founder, Broadcast Signal Lab, on behalf of The Lawyers Guild Committee on Democratic Communications (NLG)

Mr. Maxson was commissioned to conduct a study to research the potential effects of LPFM. Mr. Maxson's study determined that existing radios have much greater interference tolerance than assumed when current polices were drafted and implemented

half a century ago, and that such restrictions could be relaxed without significant increased interference; he further asserts that 3rd channel restrictions are no more significant than 4th channel restrictions would be, if they existed, meaning that 2nd channel is about where channel separation value ends, and that any resulting additional interference would be below noticeable levels, and well within existing tolerances.

Mr. Maxson's testimony also notes that there already exist stations much more powerful than any proposed LPFM stations that are operating at channel separations much narrower than allowed under current rules. These grandfathered short-spaced stations, he reports, have not produced any significant interference, and that it therefore stands to reason that LPFM stations operating at somewhat higher separation restrictions and at much lower power levels could produce no significant risk of interference.

Mr. Maxson goes on to refute interference studies which did not study actual signal reception, but only local interference rejection, noting that some radios studied could not satisfy any requirements even in ideal circumstances with no signals present.

Mr. Maxson's testimony is similar to that of others who find current FCC policies not merely adequate, but in fact conservative, given the current state of technology. He further notes that some radios are so poor that they can never receive a good signal, and so their data is not worthwhile in a study of real-world interference, no more than a very bad car could be reasonably considered in evaluating a new kind of tire or pavement. And finally, he considers that less stringent restrictions have been found adequate for a large number of existing broadcasters operating at many times the power levels of LPFM, so it is not reasonable to argue that much tinier stations would demand restrictions more stringent than that afforded much larger stations which have created no unacceptable

interference in many years of service. All of these arguments are simply logical, and based upon existing obvious evidence, not wild speculations of the unknown.

[*R&O*, supra at para 81; testimony of Mr. David Maxson in re H.R. 3439]

(3) and (4) Mr. Eddie Fritts, CEO, National Association of Broadcasters (NAB), and Mr. Bruce T. Reese, President and CEO, Bonneville International Corporation, on behalf of NAB. Mssrs. Friits' and Reese's testimony are here considered together, as their written testimony was contained in the same document, and, offering no indications within of whom had contributed which points, is assumed to be identical to both and so may be considered the testimony of a single party in full mutual agreement.

NAB's testimony notes the responsibility of the FCC to maintain spectrum integrity, and expresses profound concerns that LPFM will unacceptably imperil existing integrity and degrade the listenable quality of radio due to unacceptably high levels of signal interference. NAB claims this will result due to relaxation of 3rd channel restrictions, as described in the *R&O*. They further argue that the FCC and other studies lack validity and interpretability, particularly in respect to comparability, due to the absence of a single standard of unacceptable interference.

On the whole, NAB's concerns are entirely valid as stated. Indeed, these are the same concerns which nearly all witnesses placed at the center of their testimony. Unfortunately, NAB engages in not a little hyperbole in an effort to make their points, and perhaps this even is not wholly in error of judgement on their part. Some of us consider the possibility that they "doth protest too much", in fact, to be fully credible. While such colourful diction is not unusual from individual, impassioned commenters

and witnesses, it seems to us suspiciously misplaced in the mouths of such a large and dignified entity as NAB. We note that we are not the only ones to make note of this, as even more than one other Panel witness also brought attention to NAB's use of hyperbole, those persons further suggesting that NAB is engaging in "scare tactics", and focusing on the relatively obscure area of signal interference for this purpose.

We do not here make such accusation, but we do not dismiss the possibility, and note with disappointment that NAB's overall testimony is clouded and cluttered by seemingly unnecessary insubstantive and subjective commentary, making it difficult to isolate their substantive points, and we must question how such a well-organised group could produce, as their final testimonial submission, such a second-rate statement, when they are clearly capable of producing a much more informative and useful document.

These concerns aside, however, we must also ponder why it is that NAB claims such strong support for uniform maintenance of existing separation and protection criteria for all broadcasters, in view of their public testimony to the contrary in respect to the same grandfathered short-spaced stations found acceptable by the FCC years ago, and noted by several other witnesses and commenters. NAB could not reasonably claim to be unaware of this apparent violation of their interpretation of the laws of physics in respect to radio propagation, given their testimony on it only four years ago. We submit that this discrepancy is of very great significance, and calls into question NAB's entire testimony in the Matter of H.R. 3439, and, indeed, in the Matter of MM Docket No. 99-25. There seems no way to explain it besides the possibility that NAB has not done a sufficient study in these Matters, including a wholly inadequate review of their own records. Other interpretations may be available, but would be purely speculative at this point. [MM

Docket No. 96-120, *Report and Order* in re Grandfathered Short-spaced Class-D Stations; Comments of NAB in re MM Docket No. 96-120]

NAB's testimony goes on to challenge FCC's applied standards of interference criteria, and specifically FCC's definitions of interference. Under questioning by Subcommittee Members, three witnesses—Mr. Franca (OET), Mr. Maxson (NLG), and Dr. Theodore S. Rappaport (commissioned by Media Access Project [MAP], *q.v.* (4), below)—all testified that FCC's definitions of interference, though different from those used by NAB and some other entities conducting interference studies and making reports, are nevertheless as valid as any other conventional definitions used in such studies and reports; Mr. Franca noted that interference as considered in these proceedings is essentially the same no matter how it is defined specifically, and that NAB's attempts to invalidate others' findings because their definitions, although valid on its face, is not a valid argument in these proceedings because of the nature of radio interference under the conditions which would occur in the United States.

NAB further challenges the value of findings in other studies because of the types and numbers of different radio receivers employed, and argues that because their study used more radios of more different types, their findings are more valid and accurate. Dr. Rappaport and others, however, argue that NAB's study is flawed in this reasoning by two considerations: First, that NAB's study did not consider the 44% of radio receivers in the US which are placed in cars and other vehicles, and Second, that many of the receivers used in NAB's study could not, under ideal, signal-free laboratory conditions, meet even the NAB's own minimum acceptable levels of interference rejection.

We note that mobile receivers, such as those designed for automobiles, are engineered at a high standard of signal rejection, and tend to experience little or no interference. This is necessary in a mobile application, where signal strength constantly varies because of the listener's constantly changing distance and aspect to the transmitter, and these high-end rejection provisions are often of lower standard or omitted altogether in fixed and general use receivers. Dr. Rappaport and others noted that fixed radios may be adjusted for interference rejection by simply moving or rotating them. The omission of mobile receivers ignores 44% of all receivers in regular use in the US, and, we argue, ignores in particular the use of radio in cars, where many listeners may consider reception more important than when not driving, when they are doing other things and not listening so intently to the radio. We feel this omission from any study is unfortunate.

We also argue that very poor receivers cannot produce useful interference data, as they are wholly incapable of discriminating between different levels of minor interference, and usually experience unacceptable interference all the time, regardless of conditions, and so their inclusion in any study is unwarranted and without value in determining the effects of interference by active transmitting facilities of the type described in the rules pertaining to LPFM. We liken it to using a very old car to evaluate the efficacy of a new kind of car wax, as a car with a poor finish will always look bad, no matter what kind of wax may be applied, and so cannot reasonably be considered to prove a new wax good or bad by virtue of the car looking bad.

We further argue that although Americans purchase and possess many of these poor receivers, they do not represent the sole or even primary receiver used by the average listener. Most of us own a number of receivers of varying cost and quality, and

experience different levels of reception and interference rejection more or less commensurate to their respective cost. Yet we do not rate the quality of broadcast signals based upon the performance of our cheapest and worst receivers, and have other receivers of better quality which we may use instead, if we choose, to listen to signals not well received by our cheaper units. As a personal example, I posed to Dr. Jackson the fact that I have one radio which clearly receives only one station, and asked him what kind of evidence that provides about the broadcast services in my area. Obviously, to suggest that such a receiver can be used to evaluate broadcast signals defies common sense, and it is for this reason that NAB's technical study and conclusions lack credible scientific strength as presented in a formal engineering report.

We argue that most Americans who own radios own more than one or two, and that they own and use their cheaper units for less important listening activities, such as when jogging or performing tedious tasks. We may liken this to the difference in the quality of shoes of different cost: Though cheaper shoes do not perform as well as costlier ones, we do not use our cheapest shoes for our more important and demanding walking tasks, and we do not demand that the federal government hold sidewalk performance standards to meet the profound limitations of the cheapest shoes, nor do we assert that poor shoes prove that any kind of sidewalk is faulty and inadequate.

In overall consideration of NAB's entire testimony, we are unable first to escape the sense that it simply does not add up, given their previous testimony and commentary in this and other Matters. Second, we find their test methods, arguments and reasoning faulty, and, therefore, their findings must be held in question pending substantive explanation or clarification. In fact, we cannot put it better than the FCC has stated in

their assessment of NAB's Comments and Reply Comments in 99-25: "We find NAB's argument in this regard specious and unpersuasive." [*R&O*, footnote 148 at para 95]

NAB has raised very important concerns about LPFM interference, the same concerns as those discussed by almost all the Panel witnesses. However, NAB has utterly failed to make its case against LPFM. Their remarks on channel and distance separation are inconsistent with their own previous testimony on the same issues, and their test methodology and interpolative reasoning was rejected by the majority of engineers testifying, including the FCC's OET.

[R&O, supra at para 78 (through 103); testimony of Mr. Eddie Fritts and Mr. Bruce T. Reese in re H.R. 3439; spoken testimony in hearing of Mr. Franca (OET), Mr. Maxson (NLG), Dr. Rappaport (MAP), and others, as pertaining to NAB testimony and spoken testimony in hearing]

(5) Dr. Theodore S. Rappaport, Professor, Virginia Tech, on behalf of Media Access Project (MAP).

Dr. Rappaport's study was twofold: First, he and his staff performed a combination of analyses to determine the potential levels of interference which might result from LPFM. Second, they reviewed the available studies and comments which had already been submitted in MM 99-25.

Their conclusions are that LPFM, as outlined under current rules, does not pose a significant threat of unacceptable interference, as defined by FCC criteria. They further determined that a number of studies were flawed or inadequate, particularly NAB's, the only study that he takes time to discuss in detail in his Summary Testimony. Dr.

Rappaport concludes that such studies "would not meet the objective standards necessary for peer review or publication acceptance in the engineering community."

In specifically addressing NAB's study, Dr. Rappaport claims that they adopted "unrealistic performance standards" for receivers: "To 'prove' that LPFM would harm current broadcasters, the NAB needed to 'prove' that most radios do not work today. This clearly defies common sense." Dr. Rappaport also concurs with Mssrs. Franca and Maxson in determining that the FCC's current protection criteria is so far beyond merely adequate as to be described as conservative and "overly cautious", and so a minor relaxation is still well within acceptable tolerances.

Though acknowledging, as did OET's Mr. Franca, that some receivers (Dr. Rappaport estimates 1.6% of listeners within LPFM range, "in the absolute worst case") *might* receive some sort of noticeable interference, this can probably be corrected by moving or turning the radio, in the manner that most of us are already familiar with and find suitable. [Emphasis Dr. Rappaport]

Dr. Rappaport concurs with the majority of testifying engineers that LPFM poses no significant risk of interference, significant or otherwise, to broadcasters or listeners.

[Testimony of Dr. Theodore Rappoport in re H.R. 3439; R&O, supra at para 85, supra at para 94]

(6) Mr. Don Schellhardt, National Coordinator, The Amherst Alliance

Mr. Schellhardt is a longtime proponent of LPFM, but is not an engineer or other radio professional, and has no direct radio experience. His stated intent is to promote a form of media service which will effectively serve community interests, charging that existing

radio broadcasters do not adequately serve the needs of the majority of their listeners, and that his support of LPFM is "a step in the right direction" towards greater media reform.

Mr. Schellhardt's testimony covers much of the nontechnical issue areas relating to radio in general and LPFM in particular; his remarks on technical issues are those of a nonprofessional and nonengineer, and so consist largely of highlighting the main points of the written and stated commentary and testimony of actual engineers, in much the manner that we do here. As neither Mr. Schellhardt nor myself are qualified engineers, and as the main issues brought forth in these hearings relate to technical issues suitable for engineers, I will not relate the content of Mr. Schellhardt's testimony on technical issues here. As Mr. Schellhardt and I are both Members of Amherst Alliance and know each other well personally, it is inappropriate and a compromise to the integrity of his and my own remarks to comment specifically on each other's nontechnical testimony, and so I recuse myself from further commentary on Mr. Schellhardt's testimony, beyond the simple and fairly obvious statement that I do support his testimony, both personally and in my capacity as a Regional Coordinator for Amherst. By this, my remarks here should not be considered except as acknowledgement of my general views as they relate to Mr. Schellhardt's, nor should these remarks imply the opinions of my associates.

(7) Mr. Kevin Klose, President and CEO, National Public Radio (NPR)

Mr. Klose addresses three specific areas: FCC adjudication of interference issues, protection of translators, and protection of Digital Audio Broadcasting (DAB). Mr. Klose's concerns closely follow those of NAB, but address issues which are special (though not unique) to NPR's place in broadcasting.

NPR depends heavily upon the services of translators, also known as repeaters or satellitors. These are typically small stations with no signal origination facilities; their primary function and purpose is to receive a signal originating elsewhere and retransmit it, thus permitting the broadcast of remote signals over very large areas and to areas far outside major population centers. This allows NPR to provide public radio services to listeners in sparsely populated regions which do not have radio service of their own, or which are too far from major communities to receive public radio programs. The efficiency and effectiveness of NPR's enormous nationwide network of translators is without equal anywhere in the world, and NPR is well served by Mr. Klose's years of prior experience with *Voice of America* radio in Europe and other applications of remote transmission repropagation, to provide radio service to those who otherwise would not have that service.

NPR has a very real and well-founded concern in LPRM, in that the rules pertaining to LPFM do indeed present a kind of threat to NPR, and particularly to translator services. In brief, translators are the only non-LP radio service which cannot bump—that is, displace—existing LPFM service. Whereas a full-power FM station may move in and kick an existing LPFM station off the air (known as primary service status), translators may not do this; LPFM service is protected from displacement by proposed translator services—if the translator cannot fit in where the LPFM station is, too bad. NPR is rightfully disturbed by this, as it limits the expansion of existing translator services and the placement of new ones. We feel for Mr. Klose and NPR.

In response, however, we note that NPR already operates an awesome number of translators, serving nearly all communities in the US. There is practically nowhere in the

US where one cannot find NPR programming, save for areas where there are practically no people to hear it. We have to ask, seriously, how critically damaging it really is to NPR to not be able to squeeze new translators into the few remaining pockets where some handful of listeners may not be getting "A Prairie Home Companion" already. (A program which I deeply love, by the way, and would sorely miss if I could not get it.)

Let me say that I deeply appreciate NPR and the Corporation for Public Broadcasting. I was raised on "Sesame Street", "Electric Company", and "Zoom", and listened to "Morning Pro Musica" every morning before high school. In college I almost never missed "Car Talk", and these days, my weekends are not complete without my weekly dose of Ellen Kushner's "Sound and Spirit", Ira Glass' "This American Life", and NPR's "Rewind". I am also a regular contributor to WGBH Boston.

It's all wonderful and enriching programming. But we would not want to hear it at the expense of other noncommercial, educational programming. NPR has its place in radio, and deserves to keep it. They do not, however, possess the moral, legal, or any other right to restrict radio access to other prospective noncommercial, educational broadcasters. As wonderful as NPR is, it still only reflects one particular corner of the radio community, and, unfortunately, whether intentional or not, has, in recent decades, gained a voice so large that it has begun smothering other voices, ones which were not repeated across the country, but were unique to their locales. This we consider a tragic loss, and no amount of "Marketplace" will ever make up for the silencing of those unique voices. And so, as much as we sympathise with Mr. Klose in his testimony, we are unable to support the continued expansion and proliferation of NPR at the expense of denying access to new, entirely local voices. Mr. Klose's argument is not so much

against LPFM as for NPR and as such, in consideration of NPR's already disturbingly large collection of nonoriginal programming facilities, is not a valid argument against LPFM.

Likewise, Mr. Klose's concerns about the effects of LPFM on the development of Digital Audio Broadcasting (DAB) are also primarily about how NPR will be limited in the future, and might not be able to put whatever they want wherever they want. In fact, DAB, as proposed right now, would be treated as a conversion or hybrid of existing conventional services, and so would enjoy the same primary service privileges over LPFM that current full power broadcasters enjoy; Mr. Klose's concerns regarding DAB, therefore, are unwarranted. He may rest assured that any time an NPR station wants to go digital, it can kick out any LPFM station in its way, as conventional NPR stations may do now.

Mr. Klose's concerns about adjudication of interference issues is similarly unwarranted; we have to wonder if NPR has actually reviewed the *Report and Order*, since all of their concerns are addressed in it. At para 63-67, the FCC lays out strict rules specifying that no interference to existing services will be tolerated, and provides more than adequate protection by means of allowing full-power broadcasters to suspend the operation of an interfering LPFM by means of a single complaint, and placing the burden of remediation upon the LPFM operator. This would seem to constitute adequate protection. And at para 115, the FCC discusses secondary services such as radio reading services, noting that it has added a 20km buffer to existing geographical separation requirements specifically to protect these services. The FCC further notes that as secondary services must be conducted by all broadcasters within their existing broadcast

bandwidth, such services are already protected by the same rules which protect the entire facility, so Mr. Klose's concernsin this area are entirely without basis. We must wonder how familiar he is with the basic rules which apply, as this does, to every single broadcaster in the country.

[Testimony of Mr. Kevin Close in re H.R. 3439; R&O, supra at para 63, supra at para 115]

(8) Dr. Charles L. Jackson, CEO, Jackson Telecom Consulting (Though listed as "Mr." Jackson on the Panel, Charles Jackson actually has a PhD in electrical engineering from MIT.)

Mr. Jackson's company was commissioned by NAB for its interference study on LPFM.

Dr. Jackson began his testimony with a brief demonstration ostensibly illustrating what the FCC's acceptable limit of 3% interference would actually sound like, compared to the same audio sample without interference. The sample broadcast was from a DC-area station and had a good, clear signal in the 'clean' portion which began the demonstration. The 3% interference was, by anyone's criteria, unacceptable. Dr. Jackson's demonstration was made to dramatically illustrate his point, that it is not merely the overall level of interference, but the specific nature of interference, which determines what is unacceptable.

The FCC's acceptable limit of interference is defined as harmonic distortion, usually heard as hum, buzz, fuzz, hiss, or "hair"—a definably rough but generally homogenous background sound which detracts from the desired signal by some degree. All signals, no matter how good, have some distortion; it is a simple rule of physics that

when a signal travels, a portion of it breaks down, and it also picks up distortion from other sources, such as terrain, solar radiation, and other signals. The overall level of distortion is described as signal-to-noise ratio (S/N). When we speak of interference criteria, we are speaking of acceptable levels of this noise, not the absence or presence of it, since there is always at least some.

Dr. Jackson's demonstration showed how a different kind of interference, called crosstalk, is clearly unacceptable at 3% levels, the maximum level of overall interference considered acceptable by the FCC, and it was certainly unlistenable. His point was well made, as illustrated by the universally negative reactions about the hearing chamber.

Unfortunately, it was also impossible. Crosstalk is a very specific kind of interference which can only occur on co-channel or first channel adjacency. That is, the interfering signal must be on the same frequency as the affected signal, or must be on the next broadcast band. The FCC requires that stations in the same area be separated from each other on the radio dial by a minimum of three adjacent bands (in some cases of larger grandfathered stations and for LPFM, second adjacency is acceptable). Except on the same band or immediately next to it, an interfering radio signal is not discernible as speech, music, or whatever it started out as on it's own band Beyond first channel, all signals quickly break down into ordinary, homogenous harmonic distortion.

Harmonic distortion is much more listenable than a discernible signal, which is why the FCC sets the acceptable limit at 3%; no one will argue that 3% crosstalk is ever acceptable, because it is much more annoying and distracting to hear. Dr. Jackson himself says in his own written testimony, "Noise and cross-talk are far more objectionable to listeners than is [harmonic] distortion." However, crosstalk is

impossible in the US, because co-channel and first-channel broadcasting is illegal. The type of interference Dr. Jackson demonstrated has not been tolerated on American radio since 1934, when the Communications Act was originally passed, and could never occur with LPFM or any other kind of broadcasting implemented since then.

Furthermore, even crosstalk generates some distortion, but Dr. Jackson's demonstration contained none. This is because his demonstration is not even a laboratory reproduction of even first-channel crosstalk. He later admitted that the demonstration was assembled from separate "clean" elements using a computerised audio mixing process. I used to work in the music industry, and I am very familiar with this process; it is the same process used to mix audio recordings for production into compact discs. Dr. Jackson used this entirely artificial process to create an example of a radio sound that could never occur in real life. We all recognised this immediately, and we were all quite upset about this dramatic—but meaningless—demonstration.

It was disturbing and scary to listen to, and that was its intent, I'm sure. But it is no more real or likely than *Jurassic Park*, and just as transparently phoney. I will stake my thirteen years' real-world radio experience, as a radio instructor and teacher, and production recordist, and state definitively that Dr. Jackson's demonstration is not only a fabrication, but is entirely unlike any possible kind of real-life radio interference. Since Dr. Jackson's arguments center around his claims about crosstalk—indeed, they are entirely dependent upon such claims—then his entire argument is rendered immediately invalid, even pointless. Dr. Jackson wasted our time. He got everyone wound up over nothing. Even Dr. Rappaport was practically jumping out of his seat, so incensed was he at the absurdity of this pointless fright gag. "Radio doesn't work this way in the real

world," he implored to the Subcommittee Members; "This would never happen in real life." Then, to Dr. Jackson, "You *know* this isn't how radio works! Why are you doing this?!" Dr. Rappaport's remarks are as plainly as we can ourselves respond.

After the hearing, Dr. Rappaport, Mr. Maxson, myself, and Christopher Maxwell (Virginia Center for the Public Press) confronted Dr. Jackson about his demonstration, but he refused to speak to any of us, beyond acknowledging that it was a computerised mix of samples from different origins. We am at a complete loss to explain either the meaning and ostensible value of the demonstration or Dr. Jackson's reasons for presenting it to us.

I can, however, say from my own knowledge of radio interference that crosstalk does not exist in America, and cannot exist until and unless almost every single existing rule on signal origination is removed entirely. Dr. Jackson's demonstration certainly did appear to reinforce the NAB's already invalid claims about how LPFM will cause all sorts of problems with existing broadcasters, and I am profoundly upset and disappointed with it, in more ways than one.

[Testimony of Dr. Charles Jackson in re H.R. 3439; Testimony of Dr. Rappaport in re same; "Rappaport Study": R&O, supra at para 85; R&O, § (II)(E)(4) Second and Third Adjacent Channel Protection]

(9) Mr. Dirk Koning, Executive Director, Grand Rapids Community Media Center Mr. Koning's testimony is entirely devoted to the broad and very vital social and political issues relating to community radio in general and LPFM in particular. He does not address technical interference issues as discussed in the main controversy which emerged

in the initial hearing, and which remains the central issue of debate in this Matter. As I have elected to dedicate these Supplemental Remarks to this central issue, I will not comment specifically upon Mr. Koning's testimony, beyond providing my complete support of his statements as delivered in his written testimony to the Subcommittee.

(10) The Honorable Harold Furchtgott-Roth, Commissioner, FCC

Commissioner Furchtgott-Roth is the only fully dissenting Commissioner in the Matter of LPFM. His entire spoken testimony was merely a recitation of his Statement as appended to the *Report and Order*, and so need not be detailed here, as it should already be familiar to all parties to this Matter.

Commissioner Furchtgott-Roth also makes spooky noises about interference, but apparently also does not understand that not all interference is noticeable; if it rains, there will be more water upon the ground, but it may or not be at all a significant or even noticeable amount. The notions of degrees of noticeability and degrees of acceptability seem lost on some of the witnesses and commenters in this Matter, and Commissioner Furchtgott-Roth seems to be one of them. The FCC's own OET predicted interference well within existing tolerances, and this prediction is supported by the majority of engineers on the Panel (all except Dr. Jackson), as well as the majority of FCC Commissioners in the Matter of LPFM. The Commissioner provides neither discrete nor evidence to support his fears, merely reporting that the FCC study is inadequate and rushed, and that some other studies say that interference will result. We are unimpressed with this apparently lax approach to literature review on an important matter before the FCC, particularly from a sitting Commissioner.

Commissioner Furchtgott-Roth goes on to say that very few stations will be created by the ruling, noting one in Houston—the only one, according to the NPRM, in any of the top five US radio markets—and very few in most of the other top radio markets. He laments that "the bulk of new licenses will be smaller markets", and he says that ordinary full-power stations could be placed in those areas instead.

Again, Commissioner Furchtgott-Roth appears to have missed some of the literature, and is also missing the larger point of LPFM. It was never the goal of LPFM proponents that LPFM must be available to serve all markets; any reasonable person understands that this is not a realistic expectation, and this understanding was reflected in the NPMR, at the very beginning of this entire proceeding. One stated goal was to place LPFM stations to serve communities in remote areas which are too small to mount a full-power station. The main reason those communities don't have stations is because they can only afford to build very small ones, ones illegal until this new ruling came along.

Commissioner Furchtgott-Roth also continually insists upon discussing and debating LPFM in economic terms. While no one disputes that radio in any form and size costs money, his assertions that only large radio can make enough money to survive is a statement which only makes sense in context of total ignorance of noncommercial, educational broadcasting. There is no reason that a very small station cannot survive financially by any of many different means of attracting income; small nonprofits of every kind abound in America, and small radio is no different. How the Commissioner can keep talking about the inviability of LPFM is inexplicable to any of us, unless we note that Commissioner Furchtgott-Roth's background is in economics, not radio. His knowledge of the former may be astute, but his knowledge of the latter seems lacking. In

his spoken remarks, he estimated that stations below 6000 Watts could not make enough money to survive. Yet my college radio station was less than this, and commanded a six-figure annual budget, pretty respectable for a noncommercial, educational college station. The available and obvious evidence of countless small broadcasters currently operating in this country calls into doubt Commissioner Furchtgott-Roth's entire reasoning and conclusions. The Commissioner's entire testimony in this Matter is thus in doubt.

[Testimony of Commissioner Harold Furchtgott-Roth in re H.R. 3439; Dissenting Statement of Commissioner Furchtgott-Roth in MM Docket No. 99-25 (LPFM)]

CONCLUSIONS

We conclude that this Matter has not been fully vetted in the Subcommittee and that further hearings are therefore demanded. We insist that further hearings must include more witnesses, and must include witnesses actually involved in LPFM application.

We conclude that the testimony of Dr. Charles Jackson is based upon irrelevant assertions and employs demonstrative methods inconsistent with the physical laws in question, and is therefore without value in this Matter. We stress that interference in the form of crosstalk is not possible under current broadcast rules in the US, and would not possibly occur under the rules for LPFM either; it is therefore specious and meaningless to present any argument considering crosstalk.

We conclude that the testimony of the National Association of Broadcasters is subjective, self-serving, and hyperbolic, and lacks substantive value in this Matter. We conclude that

NAB's test methodology in MM 99-25, as consistently regarded by all other testifying parties, is fundamentally flawed, ignored a great deal of vital data, and utilised flawed logic, thus rendering their conclusions insubstantive and without credible merit in this Matter. We conclude that NAB's significant financial stake in current broadcasting colours their perceptions and testimony to an extent which damages their overall credibility, so that their testimony must be subject to outside review by all parties. We conclude that NAB's prior testimony in MM 96-120 directly contradicts the central arguments presented in their testimony here and in MM 99-25, rendering their entire body of testimony and commentary in this Matter and in MM 99-25 highly questionable. We conclude that all of NAB's testimony and commentary in regards to LPFM must be weighed against outside review and interpretation.

We conclude that National Public Radio's testimony is based upon valid concerns, but is self-serving and ignorant of the obligation of all broadcast entities to share the public airwaves with others. We conclude that NPR's testimony and concerns regarding adjudication of interference issues and the effects of LPFM upon secondary broadcast services are suitably and adequately addressed in the *Report and Order* and in existing FCC rules and regulations and US Code, and so are wholly unwarranted in this Matter.

We conclude that the FCC's Office of Engineering and Technology has correctly and adequately fulfilled and carried out its role responsibilities in regards to LPFM, and that its test methodology is sound and its conclusions valid. We conclude that a standard of

3% overall interference, in the form of harmonic distortion, is an entirely valid measure of tolerable radio interference as experienced in US radio propagation and reception.

We conclude, based upon the testimony of the majority of engineers reporting in this Matter, and based upon the body of commentary in MM 99-25, that the FCC's current interference protection criteria and restrictions are not merely adequate, but in fact overly conservative. We conclude that a minor relaxation of these rules is well within tolerance, and will not create unacceptable levels of interference. We stress that there are already numerous current facilities in the US broadcasting well outside the current restrictions without incident, and at many times the maximum power of the largest LPFM, thus providing ample evidence that the FCC's scheme for LPFM is entirely suitable.

We conclude that the technical issues in MM 99-25 have been suitably and fully vetted, and that Congressional review, while entirely appropriate in any action of this scale, need not depend upon the speculation of the available witnesses; the existing body of commentary and other evidence already in the public record will clearly show that LPFM is viable and does not pose a threat to existing or future broadcast services.

Respectfully submitted,

Wesle AnneMarie Dymoke and Providence Community Radio, Inc.

Regional Coordinator for New England and Vicinity, The Amherst Alliance

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March 6, 2000

The Honorable W.J. "Billy" Tauzin
Chairman
Subcommittee on Telecommunications, Trade and Consumer Protection
Committee on Commerce
US House of Representatives
2125 Rayburn HOB
Washington, DC 20515

Re: Hearing on "FCC's Spectrum Management Responsibilities in addition to H.R. 3439, the 'Radio Broadcasting Preservation Act'"

Dear Mr. Chairman:

Thank you for the opportunity to testify at the February 17th hearing concerning the FCC's spectrum management and H.R. 3439, the Radio Broadcasting Preservation Act. I am writing at your invitation to supplement the hearing record. Specifically, I would like to add to my brief remarks during the hearing regarding the suggestion made by Representative Bart Gordon — that the reserved FM band spectrum where most public radio stations are located could be used also for the licensing of new, low power FM (LPFM) stations.

This suggestion is unsuitable to the realities of public radio operations in the reserved band. Allow me to summarize the problems briefly in this letter, and more extensively in a separate memorandum (Enclosure).

While public radio stations are permitted to, and do, operate throughout the FM band, the reserved portion of the FM band (Channels 201-220) is particularly unsuited to the introduction of new, low power stations for a number of reasons:

-First, because of FCC allocation methodologies, stations operating on reserved FM band channels are already "packed" more closely together than stations operating on the non-reserved spectrum. This "packing" of the reserved spectrum means there would be far less separation between existing public radio stations and new LPFM stations, with a great rise in potential interference from the new stations.

-Second, where spectrum may be available, LPFM stations threaten to interfere with statewide networks operating on reserved FM channels.

-Third, interference from and the need to avoid interference to adjacent television channel 6 stations reduces the amount of reserved FM-band spectrum that might otherwise be available. This reduction intensifies the interference potential.

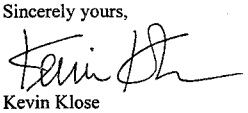
-Fourth, public radio signals are "lightly processed" to enable listeners to hear the full dynamic range of the particular program matter, and lightly processed signals are particularly vulnerable to interference. This processing is substantially different from the way signals are typically processed by commercial stations in the non-reserved band.

-Fifth, public radio station transmitters in the reserved band generally are less powerful than commercial stations' transmitters in the non-reserved band. Thus, public radio signals are more prone to the type of interference posed by LPFM stations.

-Finally, public radio stations rely on translator stations to extend their reach to sparsely populated areas, and new translators will be required to protect LPFM stations, thereby limiting the amount of useable reserved FM band spectrum.

Further presentation of these points accompanies this letter. In closing, I appreciate the opportunity to address the matter of low power FM service on behalf of NPR and its Member stations across the country. If I can be of any further assistance, please do not hesitate to contact me.

Sincerely yours,



Kevin Klose
President and CEO

Enclosure (1)

cc: The Honorable Tom Bliley
The Honorable John D. Dingell
The Honorable Edward J. Markey
Members of the House Commerce Committee

MEMORANDUM OF NATIONAL PUBLIC RADIO
TO SUPPLEMENT THE RECORD OF THE HEARING TO
"A REVIEW OF THE FCC'S SPECTRUM MANAGEMENT
RESPONSIBILITIES IN ADDITION TO H.R. 3439,
THE 'RADIO BROADCASTING PRESERVATION ACT'"

1. Stations operating on reserved FM-band spectrum are more tightly "packed" together. The Commission historically has employed different frequency allocation methodologies in the reserved and the non-reserved portions of the FM band. Noncommercial educational stations in the reserved band are protected according to signal strength contour methodology. Stations in the non-reserved portion of the FM band are generally protected according to a distance separation methodology. As a result of this difference, reserved spectrum stations are generally packed more closely together, resulting in fewer opportunities to place LPFM stations.

2. Where spectrum may be available, LPFM stations may interfere with statewide networks operating on reserved FM channels. Statewide networks are common in public radio because many public radio stations are licensed to state governments and such networks provide an efficient means of providing services throughout the state. Individual stations in a statewide network are typically sited to achieve maximum signal coverage to the maximum population based on actual receipt of a quality signal rather than predicted contour overlap. Introducing new LPFM stations, particularly based on the elimination of the third-adjacency protection and particularly in the reserved portion of the FM band, is likely to pose significant interference to existing public radio service.

3. Interference from and the need to avoid interference to adjacent television channel 6 stations reduces the amount of reserved FM-band spectrum that might otherwise be available. Adjacent channel interference between noncommercial FM stations and analog channel 6 TV stations is a long-standing problem. While LPFM stations would have to avoid causing interference to television channel 6 stations, the presence of new LPFM stations further reduces the amount of reserved FM band spectrum that might be used for full-powered public radio services.

The Commission has not addressed the issue of television channel 6 to reserved FM band radio interference, and, in particular, such interference in the case of DTV channel 6 stations. NPR commissioned a laboratory analysis of this issue and submitted the resulting test report in the Advanced Television proceeding. That report details the potential for increased interference between noncommercial FM and new digital television ("DTV") Channel 6 stations. According to the DTV Channel 6 Interference To FM Band Reception Report, the mask density of a DTV signal presents an even greater risk of interference to noncommercial FM stations sharing the lower FM channels. Thus, adding LPFM stations to the reserved band is likely to increase the interference potential between analog TV/DTV and noncommercial FM stations.

4. Public radio stations are particularly vulnerable because their signals are "lightly processed". NPR's technical facilities and those of its Member stations typically utilize minimum loudness processing to preserve the natural dynamic range of the programming, particularly in the case of jazz and classical music, news/talk, and special programming that is rich in natural, on-location sound recordings. Heavily processed Top 40 stations limit the dynamic range to emphasize loudness. Lightly processed signals are much more vulnerable to interference.

5. Public radio stations rely on translator stations to reach sparsely populated areas, and the presence of LPFM stations on reserved FM band channels will limit the availability of reserved FM band spectrum for translator use. Particularly in the rural areas, a network of translator facilities is typically the only means by which public radio stations can cover large, sparsely populated areas. Translator facilities are secondary to full-powered stations and must discontinue operation if they would pose interference to a new full powered station. While the Commission grandfathered existing translator facilities that pose interference to LPFM stations, it required future translator stations to protect previously authorized LPFM stations. As a result, it will be harder to establish translator service on reserved FM-band channels, and a translator station that is forced to relocate to accommodate a new or newly modified full power station will likely have even a harder time relocating the facility and maintaining service to the extent LPFM stations are operating on reserved FM band spectrum.

As a general concern, NPR would like to reiterate the importance of maintaining a high signal-to-noise level and minimal cross-talk from an interfering signal as the true indicators of acceptable radio reception. NPR noted that the FCC did not provide written testimony or any written documentation of the methodology used for its audio demonstration before the Subcommittee. Absent this documentation, the FCC's demonstration was flawed in that harmonic distortion effects of LPFM signals were presented rather than cross-talk effects. As presented, it could not be determined what cross-talk might occur from a modulated (station broadcasting voice or music) interfering LPFM signal. Again, cross-talk from a modulated LPFM station is more annoying to listeners of public radio stations as noted in item number 4 above.

Representative W.J. Tauzin
Chair of Subcommittee on
Telecommunications,
Trade and Consumer Protection
Committee on Commerce

C/o Cliff Riccio
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Original for record in color

COUNTER-REPLY TESTIMONY

TO THE NATIONAL ASSOCIATION OF BROADCASTERS

TESTIMONY

OF

Christopher Maxwell,

Secretary/Treasurer

The Virginia Center for the Public Press

BEFORE THE

U.S. HOUSE OF REPRESENTATIVES

SUBCOMMITTEE ON

TELECOMMUNICATIONS,

TRADE AND CONSUMER PROTECTION

Hearings On

THE FCC'S RADIO SPECTRUM MANAGEMENT,

INCLUDING H.R. 3439

March 17th, 2000

WASHINGTON, DC

Dear Honored Representatives of the House,

My name is Christopher Maxwell. I was invited to accompany Mr. Don Schellhardt of the Amherst Alliance to provide testimony regarding the claim by NPR and the National Association of Broadcasters (NAB) that the LPFM stations would cause unacceptable levels of interference.

The title of the hearings actually suggested a much broader related issue, "radio spectrum management." As a potential future LPFM broadcaster, it is certainly in my interest that my listeners be able to hear me. Contrary to suggestions otherwise, we are not devoting thousands of dollars of our own money, time and trouble just to jam the signal of the nearest Rock station. We also want to have an effective signal unhampered by significant interference.

Therefore we also hope that you will be as informed as reasonably possible as you are empowered to help express the needs of the American Public through your vote.

The HR3439 hearings held January 17th, 2000 quickly bogged down into a discussion as to whether the testimony of the FCC or the testimony of the NAB was the more realistic and believable. The Federal Communication Commission (FCC) engineer testified that they measure potential interference of a new proposed set of rules under laboratory conditions using *harmonic distortion* as their measure. The NAB testified that the proper measure of interference is *dB of crosstalk.* The NAB engineer then played two soundtracks mixed so that one audio track was 1% of the volume of the other, and purported that this represented what 1% crosstalk interference would sound like.

This went on for slightly over an hour as the audience grew agitated at what is widely perceived to be misleading testimony until Dr. Rappaport nearly jumped from his chair exclaiming, "That's not how FM radio works!"

At this point the Chairman of the hearings, Mr. "Billy" Tauzin (R-La) adjourned the meeting with no resolution to the issue.

Thus this counter-reply testimony focuses on the issue:
whose testimony is the more believable?

Is the NAB's testimony using crosstalk as a keystone to their argument the more believable, or is the FCC's testimony, using harmonic distortion the more believable?

The reason this is of paramount importance is not just because of the obvious difference in their motivations,the NAB gains or loses money if LPFM stations create competition.

The reason that we want to decide whether the FCC's testimony is more or less credible than the NAB's is twofold:

1. In general, if you can show that misleading testimony was given in one part of an argument, this then calls into question the rest of their argument.

2. In general, a group that stands to gain a lot of money by convincing congress to act on the group's testimony is more likely to give misleading testimony than those who don't have anything to gain one way or the other. This puts the burden of proof firmly on those who do stand to gain money.

It is our contention that the testimony of the National Association of Broadcasters* (NAB) *IS MISLEADING.

How? Let us count the 3 ways:

1) The NAB *themselves* defended third-adjacent broadcasting in 1996.

You can verify the results for yourself.
WAVA105.1 in Northern Va. is one of the "Short Spaced Grandfathered" stations cited by the NAB in their comments in the FCC's *official record* (docket 96-120). [Enclosed]

The NAB cited stations such as 40,000watt WAVA105.1FM and the lack of any interference complaints in the official record for that or any of the other 300+ "short spaced" stations.

The NAB claimed that the increased quality of FM receivers in the last 30+ years since the spacing rules were instituted made the rules "overly restrictive."

Since there were *no* complaints of interference in the 30+ years since the tightening of spacing rules caused these stations to be in 'violation', the FCC agreed.

The FCC allowed the "Short Spaced" stations such as 40,000 watt WAVA105.1FM in Arlington VA. to continue broadcasting in violation of the spacing rules that made WAVA "Short Spaced" to the other relatively local station 3rd adjacent frequency, 50,000 watt WQSR105.7 a mere 43

[NOTE:] *An LPFM station is nothing but exactly what WAVA is: a third adjacent station. But unlike WAVA, an LPFM station will not be allowed to transmit at 40,000 watts. An LPFM station uses the same spacing rules allowed to WAVA but only at 100 watts.*

[NOTE:] *Please see for yourself. Drive around between "Short Spaced" WAVA 105.1 in Northern Va. And WQSR in Catonsville MD., see for yourself that it is not interfering with reception of any other station.*

[NOTE:] *In fact, you can also drive around and see if these other pairs* (see table below) *of short spaced Washington area stations interfere with each other either.* There are more listed in the enclosure.

[NOTE:] Low Power FM uses the same rules as the officially short spaced 3rd adjacent stations, such as examples as is shown in the table here. Try tuning them in, see for yourself what an LPFM station would sound like KEEPING IN MIND that these stations are many thousands times larger in wattage than an LPFM radio station. WAVA is 40,000watts. **In contrast, a 100watt LPFM has 0.0025 the power of WAVA and just 1/15th the power of your hair-dryer.**

miles away in Catonsville MD.

These stations in the table and in the NAB's own supporting documentation [see attachment list] are close on the dial *and* are *geographically* very near each other. Do they interfere significantly with each other? A drive through test has shown that they do not. Compare their large signal wattage with a 100 watt LPFM station. Would you expect any interference in that case? Under these circumstances, it's obvious you would not.

If we were to take the NAB argument seriously; that HR3439 is designed to prevent an alleged disaster resulting from allowing radio stations to broadcast with only a 400kHz buffer in-between,then HR3439 *also* should *retroactively* ban WAVA, WTOP, as well as hundreds of other short spaced stations and hundreds if not thousands of translators as well!

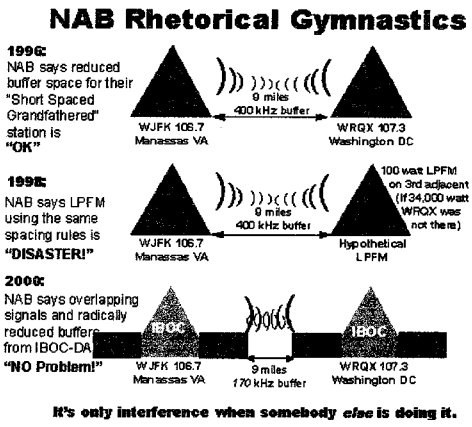
Furthermore, if the alleged interference caused by less-than-600kHz buffers between station signals are *really* the issue, HR3439 should *also* ban the proposed In-Band On-Channel Digital Audio Broadcasting (IBOC-DAB) proposals that are *already* causing interference and reduced buffers! (see item #3). For that reason, you may hear some interference between WJFK106.7 and WRQX107.3 because of the *additional* bleed-over from the IBOC digital carriers. Try some of the other short spaced pairs of stations listed in the table and attachment and listen for yourself.

Selected Washington DC Short Spaced Grandfathered FM Pairs	
First Station	Second Station
WAVA 105.1FM 41,000 watts Arlington VA	**WQSR105.7** 50,000 watts Catonsville MD 43 mi NE of WAVA
WTOP107.7FM 29,000watts Warrenton VA	**WRQX107.3FM** 34,000 watts Washington DC 43 mi ENE of WTOP
WROG 102.5FM 3500 watts Winchester VA	**WUSQ102.9FM** 32,000 watts Cumberland MD 44 mi SE of WROG
WJZW 105.9FM 28,000 watts Woodbridge VA	**WWMX 106.5FM** 7400 watts Baltimore MD 44 mi NE of WJZW
WJFK 106.7FM 22,500 watts Manassas VA	**WRQX 107.3** 34,000 watts Washington DC 9 mi NE of WJFK
Source: NAB Comments in FCC official record for Docket 96-120 Appendix 1 pages 15 &35	

(For the larger list and our source for this information, see the enclosed page 35 of 36 excerpted from the NAB comments in the official FCC record on Docket 96-120)

Also check the list of enclosures in the electronic version for hot links to the documents.

Looking at the graphic representation of the NAB's rhetorical gymnastics over the last four years, we see that not only do reduced buffers *not appear* to be the NAB's *real* motivation (since the buffers have *not* changed!) but the NAB themselves are pressuring the FCC to reduce buffers to nearly zero, and even pressuring to allow *overlapping* signals with a "*negative* "buffer in some cases.



In 1996, in FCC Docket # 96-120 (enclosed) , the NAB argued that due to advances in receiver technology, the current rules were "overly restrictive." While the NAB is not as glowingly supportive as broadcasters who serve more diverse audiences, such as WCPE, the NAB notably *did not suggest that their own existing short spaced stations be taken off the air either!*

Public broadcaster WCPE also stated in 96-120 (enclosed) support for the proposed relaxation of third adjacent restrictions to simply let the rest of us use the bent rules have allowed hundreds of stations such as WCPE to coexist peacefully on third adjacent frequencies.

Then in 1998, since the FCC agreed there was no problem in 1996 activists for greater *democratic* efficiency (more different voices on the public airwaves) argued we should *also* be able to use third adjacent frequencies, and even offered to come down from WAVA's 40,000 watts to under 3000 watts! LPFM was further bargained down to 100 watts.

Only two years later in 1998 and the NAB claims it will be a disaster.

And now two years again later (2000) than that and the NAB is arguing that buffers are beside the point with digital IBOC technology. (see below for more information).

2) "FM radio stations don't work like that!!" said Dr. Rappaport, nearly leaping from his chair at the hearings in response to the NAB engineer's testimony.

Dr. Rappaport is the James S. Tucker professor of electrical engineering at Virginia Tech, Blacksburg, and has been on the faculty for 12 years. In 1990, he founded Virginia Tech's Mobile and Portable Radio Research Group, one of the world's first research and education centers to specialize in the field of wireless communications. He also serves as Chairman of Wireless Valley Communications, Inc. in Blacksburg, VA.

Dr. Rappaport does not stand to gain or lose any money based on the outcome of these debates. He studied the NAB and the FCC studies and even agreed that there would be *very limited* interference.

Dr. Rappaport testified that :

> "My analysis concluded that LPFM will not cause unacceptable levels of interference to existing FM broadcast stations or their listeners. My computer simulations demonstrate that under the conservative proposal adopted by the FCC, in the absolute *worst* case, if all new LPFM stations used 100 Watts, then *at most*, 1.6 percent of listeners who could hear a new LPFM station might be unable to receive a currently existing broadcast station.
>
> "More importantly, the large majority of the affected listeners would actually be able to receive all current stations, and other affected listeners would be able to receive an incumbent station by simply moving their radios a few feet or by rotating them on their nightstands.
>
> "My analysis found that, by *using worst case interference assumptions* and by relaxing the second and third adjacent channel protections, 626 new LPFM stations could be added in 60 US cities. My recommendations would have allowed over 81 million new citizen-channels on the FM airways, with a worst case potential interference of 1.2 million citizen-channels (however, since the analysis was worst case, only a small fraction of the 1.2 million citizen-channels actually would have experienced interference of some kind).
>
> "However, the FCC adopted a more conservative approach, and insisted that all LPFM stations must obey the existing second adjacent channel projection rule, which reduces the number of new LPFM stations to 247 in the same 60 US markets. This reduces the number of citizens-channels by almost 300%, and decreases the number of potential interference events by the same factor."

SO Dr. Rappaport agreed *in limited part* with NAB testimony that there would be *some extremely limited* interference.

And *in spite* of that *very limited agreement*, Dr. Rappaport expressed very strong opposition to the representation of what interference sounds like as provided by the NAB engineer. Dr. Rappaport nearly stood up in the proceedings from his chair, interrupting the NAB engineer only after it became amply obvious that the hearings would not *politely* allow a competent technical challenge to the NAB testimony. Furthermore others who would NOT gain money from ending the LPFM competition were not allowed to properly address this issue, as Mr. Tauzin adjourned the meeting.

SO THE QUESTION STILL REMAINS. Does the NAB testimony accurately reflect the performance of real FM receivers actually picking up two FM signals simultaneously?

I invite the Congressmen to test whether FM interference is smooth or distorted for yourselves. Does the real world sound anything like the NAB "samples"?

Once again, as with WAVA105.1FM, if you drive west on I-66, and turn south on I-495, you can pick up two stations for this test.

WPLC94.3FM is a very small station at only 2,000 watts in Warrenton VA. WARW94.7FM in Bethesda MD is 20,500 watts. This test radio only experienced interference for a few hundred feet along I-495 at the Highway 50 exit.

As you listen to the sample recorded interference, or repeat this test for yourself on your radio, ask yourself, does this sound like the samples that the NAB have in their testimony? Does this interaction sound like two smoothly mixed sound tracks? Or is there distortion?

As you listen to this sample of *actual* FM interference in the *real world*, notice a few things:

Is the interaction of the two signals a smooth clean mixing of the two audio tracks?

Our target sample station, the one that the radio is tuned to, the distant 94.3 is playing the Modern Contemporary Music (the foreground music, the guitar strumming).

The strong local station 94.7 is playing the *Classic Rock* song you hear only briefly.

Notice that the pop music is *replaced* in brief bursts by the *distorted* oldies rock soundtrack. The first recorded incursion appears at 37 seconds into this clip. This demonstrates the "capture effect" of FM demodulators. The FM receiver will lock onto one signal until the other signal absolutely overwhelms it and "jumps" to decoding the other signal, *not both signals at the same time.*

This jumping can also be rapid like the vibrato on a musical instrument creating a "shimmering" effect that shows *distortion,* not a smooth crosstalk.

This sample does *not* sound anything like the "evidence" sample that the NAB provided. You can see from this example (which we urge you to go out and verify with your own radio) that there is significant *distortion.* Note that it is levels of *harmonic distortion* that the FCC used as their measure of alleged interference.

Notice the samples provided by the NAB were smooth like a studio mixture *as if both signals were of equal strength,* AND *as if both signals were coming from down the block.*

In this *real* example, our target station's signal, the pop music (strumming guitar) on 2000 watt 94.3FM 40+miles away *is so weak as to be nearly unlistenable even without the brief incursion* of signal bleed over from 94.7FM..

This recorded sample of *actual* interference experienced by a radio is available by clicking the speaker.

[NOTE:] This sample was taken from a $25 flea-market purchased third-party car radio tuned to 94.3FM in a moving car heading south on I-495 at the Hwy 50 exit.

[NOTE:] This radio's performance is way below that of most name-brand car radios, and about that of a regular boom box. So a normal car radio would not experience this interference and a boom box user would simply alter the angle of the antenna to tune out the incurring signal. Anything less than a boom box would not be sufficiently sensitive to hear 94.3FM *at all* thus making it a moot point for radios like a walkman.

This station had been continuously monitored from the Centreville VA exit of I-66 and south of this location and the *brief* incursion of classic rock (starting at 37 seconds into the clip) you hear on the clip was the only significant interference recorded during the entire time monitoring the station, even after continuing south on I-495.

Note that 94.3 is so weak, it often cancels itself, or falls just below the threshold of the radio to detect and creates the intermittent hisses. These are *not* interference, that would happen regardless of any other stations in the area at the limits of the signal's reach.

And so you can hear for yourself that the testimonial "samples" mixed together on the NAB engineer's laptop PC are misleading. As Dr. Rappaport said, "That's not how FM radio works!"

This also speaks to one of the questions asked by the Congressmen and never answered, "What *is* 'acceptable interference'?"

Nature is not a binary world, it is not day and suddenly completely night. Nature is not completely "on" or "off". Radio is no different.

If you then accept that there is no such thing as no interference, then it is *always* a matter *levels of acceptable* interference.

This recording shows that our favored signal, the weak contemporary music station at 94.3FM was so weak and full of noise as to be unlikely to have any significant audience at the point on Highway 495 where 94.7's signal briefly interfered!

And indeed, *nobody is on record complaining of interference between short-spaced stations to the FCC!!*

Therefore since Warrenton VA's 2000 watt 94.3's signal was *already too weak to maintain a consistent delivery* regardless of interference from Bethesda MD's 94.7FM, the geographically very limited interference you hear on this clip constitutes and example of "acceptable interference".

This clip also illustrates that the NAB testimony involving two sound tracks mixed in a sound PC was misleading, that indeed, "that's not how FM radio works" does best describe the best thing you can say about the NAB testimony.

3) Last but very much *not* least, if it can be shown that the NAB coalition is pressuring the FCC for changes in the rules that would create *massive* interference *by their own* stations *on others* ... might not the NAB's expressed interest in "spectrum integrity" be in serious doubt?

For more information on IBOC please visit this link and view some of the other Virginia Center for the Public Press comments and reply-comments regarding IBOC-DAB before the FCC and Congress (FCC Docket 99-325)

As you will see (and hear) in the graph and sound recorded from actual signals from WJFK106.7FM in Northern Virginia, this is exactly what is happening.

WJFK106.7FM in Northern Va. is a test station for a new kind of broadcasting called IBOC-DAB (In-Band, On-Channel Digital Audio Broadcasting).

This new kind of broadcasting sends out sound the same way a fax machine sends out a picture, by converting the sound into little blocks that are on or off. IBOC means that they plan to "hang" the digital signals like saddlebags on the two outer sides of an existing station.

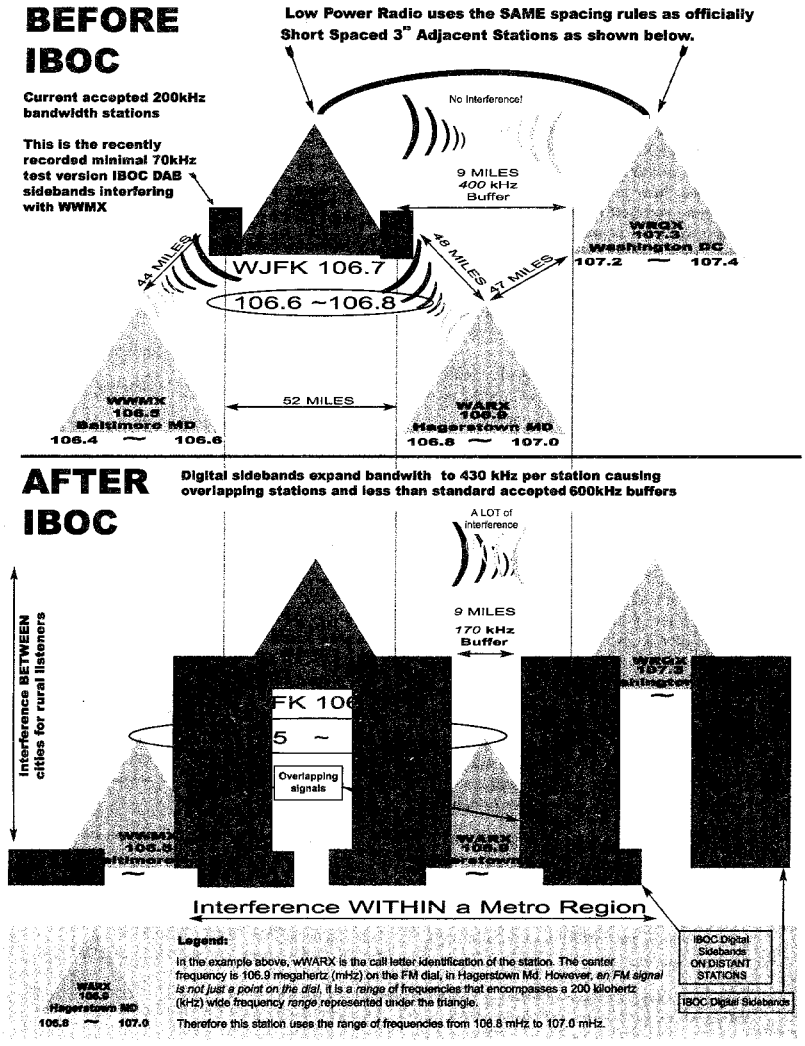
I urge you to test this for yourself, drive West on I-66 again. While in downtown DC, tune your radio into 106.5FM from Baltimore.

At first you will just hear WJFK occasionally stomping the Baltimore signal. Then as you go west, you will hear a distinct "buzz saw" sound. Now *from* 106.5 tune the radio up past 106.7 to and through 106.9FM. You will notice *very distinctively* that it sounds as if two fax machines were transmitting on two new stations on either side of WJFK.

Actually, that is almost exactly what *is* happening. There are two digital transmitters (the red blocks in the IBOC graphs) that are transmitting on the immediate adjacent frequencies of WJFK. The analog portion of the signal is represented by the green triangle.

[NOTE:] Analog LPFM station would never cause this interference because it would be required to operate no closer than the third adjacent FM frequency or "channel" on the FM dial.

> You can hear for yourself what this *already* means for listeners of WWMX106.5FM out of Baltimore. If you do not hear that buzz ... inquire as to whether the test has been terminated or paused at the time you listened. Also try 90.9 FM for the same reston 90.5FM 90.9FM's IBOC sidebands are 'buzzing' 90.5 FM.


BEFORE IBOC
Low Power Radio uses the SAME spacing rules as officially Short Spaced 3rd Adjacent Stations as shown below.
Current accepted 200kHz bandwidth stations
This is the recently recorded minimal 70kHz test version IBOC DAB sidebands interfering with WWMX
No Interference!
9 MILES
400 kHz
Buffer
WJFK 106.7
106.6 ~106.8
44 MILES
48 MILES
47 MILES
WRQX
107.3
Washington DC
107.2 ~ 107.4
WWMX
106.5
Baltimore MD
106.4 ~ 106.6
52 MILES
WARX
106.9
Hagerstown MD
106.8 ~ 107.0
AFTER IBOC
Digital sidebands expand bandwith to 430 kHz per station causing overlapping stations and less than standard accepted 600kHz buffers
A LOT of Interference
9 MILES
170 kHz
Buffer
Interference BETWEEN cities for rural listeners
Overlapping signals
Interference WITHIN a Metro Region
Legend:
In the example above, wWARX is the call letter identification of the station. The center frequency is 106.9 megahertz (mHz) on the FM dial, in Hagerstown Md. However, an FM signal is not just a point on the dial, it is a range of frequencies that encompasses a 200 kilohertz (kHz) wide frequency range represented under the triangle.
Therefore this station uses the range of frequencies from 106.8 mHz to 107.0 mHz.
IBOC Digital Sidebands ON DISTANT STATIONS
IBOC Digital Sidebands
WARX
106.9
Hagerstown MD
106.8 ~ 107.0

Even *more* amazing, what you are hearing is only the *tip* of the impending NAB-sponsored interference iceberg of IBOC-DAB! The NAB coalition is pressuring the FCC to allow that buzz saw to EXPAND, to *double* in size to 430kHz in bandwidth. But the sample you hear and the buzz you will hear if you yourself repeat the test mentioned above is only the 70kHz version that theoretically stays within the currently allowed 200kHz bandwidth! Please realize the vitally important point here that WJFK is testing the absolute most *minimal* version of the IBOC sideband digital carriers comprising only 70kHz of bandwidth and *supposedly* positioned to exist *within* the space on the FM dial normally legally allowed WJFK. Wait until the full 430kHz bandwidth version is rolled out!! Those stations above and below WJFK are going to have a rough time reaching anyone.

Not only will you *never* hear WWMX106.5FM from Baltimore again you may not even hear several DC stations either! What is to happen to the listeners of WRQX and WJFK in downtown Washington? WRQX-DC and WJFK-VA are only 9 miles apart geographically. And if a buffer space of only 400kHz is going to be a disaster for 100 watt LPFM stations and listeners, imagine what a disaster the 22,500 watt WJFK and 34,000 watt WRQX stations will be *with only 170kHz of buffer in-between.*

You can *hear* the square waves of IBOC on-off-on" carriers as represented by the red blocks as you tune up through WJFK and through to the other side.

By Clicking The Speaker Here, you can also hear a recorded clip of a radio tuning through the three stations:

- Starting at 107.3FM playing contemporary music
- and through the *upper* IBOC "saddlebag"
- then 106.7's *analog* signal (the talk program)
- then though the *lower* IBOC digital "buzz saw" sounding "saddlebag"
- to 105.9FM
- and back up thru WJFK returning to the contemporary music on 107.3FM.

[NOTE: What to listen for.] This was recorded several miles west of the intersection of Hwy 66 and I-495 where the digital IBOC carriers are extremely strong and destroy 106.5 WWMX completely so you are hearing stations on each side that would normally have empty buffer space in between them and WJFK's signal. Instead you hear their signal is now nearly contiguous to WJFK's spread-out signal.

For this reason, the Virginia Center for the Public Press has submitted [enclosed] a request for extension of Reply-Comment period in the FCC Docket 99-325 (impact of IBOC-DAB) proceedings. We requested a full publicized test of the full 430kHz IBOC test signal on *both* WJFK106.7 and WRQX 107.3FM with proactive involvement of the population of listeners.

In other words, the LPFM *as well as the other already existing 300+ "Short Spaced" third adjacent stations* (like WAVA105.1FM and like WRQX-WJFK) must maintain a "buffer" of two

channels in between themselves and other stations on the local FM dial. Thus an LPFM would only be allowed at 106.1FM or 107.3 and then only if there are *another* two unoccupied buffer spaces on the other outer sides of those two slots *as well.*

This means that Washington DC listeners of WWMX 106.5FM from Baltimore would still hear their station with LPFMs, but *not* with the *NAB's proposed* IBOC-DAB in place.

In Conclusion:

The rhetorical gymnastics the NAB are performing for you should win the Olympics. They claim that LPFM is a threat to "spectrum integrity", that is my ability to hear what I want.

Thirty percent of the CDs sold are of musical genres rarely heard on most radio stations such as Techno, Jazz, Classical, Folk. There are more moderate and liberal listeners of news-talk, yet most talk *hosts* are conservative. Thirty percent of American's interests are provided by the small independent commercial, noncommercial college, religious and community radio stations that account for 20% of the listenership. Thus 20% of America stands to lose access to the smaller stations that would be utterly destroyed by the brain-child of the *NAB* (IBOC-DAB) ... *reducing* the variety of choices for consumers ... while *LPFM* would *open vistas* of *new* programming opportunities. The tradeoff under the *worst* case scenarios show a loss of about 1% of access in exchange for nearly DOUBLING the number of choices.

The NAB is willing to create misleading testimony and "samples" of hypothetical third adjacent stations when there are plenty of real-world third adjacent stations right there in your neighborhood.

Furthermore there are a plethora of options that the NAB could have suggested, they could have suggested a law requiring the incumbent broadcasters to open their Subcarriers to nonprofits as are done for many cable companies with "Cable Public Access." The NAB could have offered a compromise to do the same with the SAP channel on MTS encoded TV sound signals and also for the new multiplexed signals available under digital.

But did they make these suggestions and offers? No. Instead they cook up a harebrained scheme to sell us something we don't want (IBOC-DAB) by *forcing* it upon us in the form of "mandatory sunsetting of analog" broadcasting.

DAB has been a market FLOP in Europe where they have a *choice*, and yet ironically in America, supposed land of the free, we may lose that market choice and about half of the smaller niche market stations available now!

Even while NAB stations transmit on third adjacent frequencies thus creating room for *themselves*, they would *deny us equal treatment under the law and regulation.*

Their *only* answer is "There's No Room At The Inn."

Attachments:

[NOTE This is also available as an electronic web-enabled document with these items available on the website: http://wrfr.pibc.com/dab/HR3439-counter.html]

1) NAB July 22, 1996 Motion for Extension of Docket 96-120.
Look on page 2 where the NAB cites, " ... progress in radio receiver design that, in some cases, provides better rejection of second and third-adjacent channel interference."

2) WCPE (classical music public broadcaster entirely funded by listeners only) comments received August 1, 1996.
Look on page 2 where WCPE notes, "yesteryear's vacuum tube sets pale to today's receivers and their ability to tolerate very strong second and third adjacent signals. Forty years of advancements provide greatly improved performance."
WCPE also notes on page 3 that they are already operating in two short spaced situations with no apparent problems. One of these is a SECOND ADJACENT CHANNEL station.
Also in WCPE's statements on page 5, the FCC is quoted:
"We believe that licensees of certain classes of FM stations should not be unnecessarily constrained by an inconsistent technical standard, while others, operating under a less restrictive standard, do not appear to have experienced any significant problems over the years."
ALSO in a conversation on 3/17/00 with Christopher Maxwell of the VCPP, Deborah S. Proctor, GM of WCPE said that "WCPE also is supporting a power upgrade for a nearby short spaced station in Chapel Hill NC."
Proctor also stressed the need for a serious study of ways to "optimize" the FM spectrum for the equitable addition of new radio stations. Proctor suggested that she could offer a fleet of five stations for just such a detailed test. Proctor recommended strong public involvement where the public is alerted and then surveyed as the stations change power levels for the tests.
Proctor also suggested that in some cases, moving a constellation of stations up or down frequencies, like moving parallel parked cars, could also create new opportunities as well.

3) NAB October 4th, 1996 Comments:
Page i Executive Summary, "The current rules as they relate to these affected stations, are in certain instances overly-restrictive."
Page 3 "NAB commissioned the first study to explore the thesis that improvements and refinements to radio receiver design have resulted in better rejection of second and third adjacent channel interference."
Page 4 "And though NAB would support improvements/modifications of facilities that might resulting some increased short-spacing to second and third adjacent channel stations (footnote 9), it is our expectation that such increases would be minimal -- and that many modifications actually would result in a net decrease in the interference caused to these other stations.
Footnote 9 shows the NAB's double standard that it is only interference when somebody ELSE does it stating, "NAB's support of granting measures of needed modification flexibility to certain grandfathered, short-spaced stations blocked by second-adjacent and third-adjacent channel operations does not stand for the proposition that second and third-adjacent channel protections should be revisited for purposes of station allocations in general. "
In other words, we have already broken the law, but we can't let you break the law, even if the law is "overly restrictive."
Page 8 NAB admits that their study is fatally flawed for the current consideration of THIRD adjacent LPFM stations, "Due to limited time and resources, including the fact that second adjacent-channel data -- but not third adjacent-channel data-- were readily available, Mr. Keller's analysis does *not* include *3rd* adjacent channel interference tests." If their *worst case study of second adjacent-only* stations did not convince the NAB to take their own short spaced stations off the air ... then why would a mere 100watt *third* adjacent LPFM cause a problem?
Page 15 (22 in Adobe ver second collection) and Page 35 (17 of 25 in Adobe version, third collection) show 13 instances of short spaced station in the Washington DC area that could be directly sampled by the Members of Congress with various radios they own to see for themselves.
KEEP IN MIND that these stations are MUCH MUCH MORE POWERFUL THAN 100watts that LPFM is restricted to.

4) **VCPP request for extension of Reply-Comment period for FCC Docket 99-325** due to failure of ECFS system and the lack of tests of the *full 430kHz bandwidth* version of the IBOC-DAB system promoted by the NAB-CEMA coalition. As of 3/17/00, the ECFS system still does not display our submissions for February 2000 on IBOC-DAB.

5) Sound File 1 of 2 attached in electronic version. A sample of the brief interference recorded from a lower-performing car radio on I-495 at the Hwy 50 exit. Please see body of text for more information. Demonstrates that interference involves DISTORTION, not a smooth mixing of signals. This throws the validity of the NAB testimony samples in doubt. This sample also demonstrates the "capture effect" of FM technology that prevents a smooth mixing of two audio tracks as the NAB sample suggested.

6) Sound file 2 of 2 attached in electronic version. This sample is a recording of the IBOC digital carriers (minimal 70kHz version) showing what it sounds like and that it spreads the signal of WJFK further out on the dial, utterly destroying 106.5FM from Baltimore's signal and using up much of the buffer between 105.9 and 107.3FM.

As you hear these samples, ask yourself, "what happens to those surrounding stations when the IBOC sidecarriers expand to DOUBLE the bandwidth (430kHz bandwidth station)"??

ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Grandfathered Short-Spaced	)	MM Docket No. 96-120
FM Stations	)	RM 7651
	)	

MOTION FOR EXTENSION OF TIME IN REPLY COMMENT DEADLINE

Today the National Association of Broadcasters ("NAB")[1] filed initial comments in response to the *Notice of Proposed Rule Making* in the above-captioned proceeding.[2] This proceeding explores possible changes in the Commission's rules that would allow certain "grandfathered" (authorized prior to 1964) now "short-spaced" FM broadcast stations to modify facilities and/or relocate transmitter sites. Under current regulations these facilities generally are barred from making any such improvements/changes.

The genesis of this proceeding is a petition for rule making submitted in 1991.[3] Embodied in the petition were several recommendations for modifying the FM interference protection standards found in Section 73.213 of the Commission's Rules.

In comments filed April 8, 1991, NAB generally opposed the petitioners' request. The basis for the NAB comments was concern over the increased interference -- to other FM stations and to the FM medium as a whole -- were the FCC to adopt petitioners' plan.

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[1] NAB is a nonprofit, incorporated association of television and radio stations and networks which serves and represents the American broadcast industry.
[2] *Notice of Proposed Rule Making* in MM Docket No. 96-120 (FCC 96-236), released June 14, 1996.
[3] The petition was filed on February 1, 1991, by three consulting engineering firms and was assigned file number RM-7651 by FCC Public Notice (Report No. 1839), released March 6, 1991.

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Nonetheless, in the comments filed today in the instant rule making, NAB has observed that there *may* be ways that *some* grandfathered FM stations could be allowed to modify facilities in a fashion that would not result in significant new interference nor would be at odds with related FCC policies applicable to such changes. The reasons for NAB's further review of these matters are many -- including the new dynamics of the radio marketplace brought about by the Commission's newly-revised ownership rules, along with the progress in radio receiver design that, in some cases, provides better rejection of second and third-adjacent channel interference.

However, and with interference protection and the technical integrity of the FM band being prime considerations, NAB is commissioning an independent technical study designed to determine whether changes in the FCC's rules could meet the twin goals of: (1) affording new facility latitude to certain grandfathered, short-spaced FM stations; and (2) creating no increased interference to short-spaced co-channel, first, second or third-adjacent channel stations.

Because of the importance of these issues and the need for such a technical assessment to be thorough and detailed -- and for it and other initial comments to be evaluated exhaustively by the NAB staff -- an additional complement of time is needed for the preparation and submission of NAB's reply comments in this proceeding. Therefore, NAB urges the Commission to grant a 60-day extension of time for the filing of reply comments in this proceeding. With such additional time for the development and submission of reply comments the record in this proceeding will be so enhanced as to give

the Commission a much stronger technical and factual foundation upon which to base a decision.

Respectfully submitted,

NATIONAL ASSOCIATION OF BROADCASTERS
1771 N Street, N.W.
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July 22, 1996

July 31, 1996

Office of the Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Secretary Caton,

Enclosed please find fourteen copies of our formal comments in reference to FCC 96-236, MM Docket No. 96-120, RM-7651, titled "Grandfathered Short-Spaced FM Stations".

Thank you for consideration of our opinions and suggestions.

Sincerely,

Deborah S. Proctor
General Manager

1928 State Road 2054 □ Post Office Box 828 □ Wake Forest, North Carolina 27588-0828 □ 919/556-5178

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of:	)	FCC 96-236
	)	
Grandfathered Short-Spaced FM Stations	)	MM Docket No. 96-120
	)	RM-7651

Reply Comments of EDUCATIONAL INFORMATION CORPORATION

The commentor operates noncommercial educational station WCPE in Raleigh, North Carolina, and feels well versed in the matter of short spaced second and third adjacent experience. In fact, Educational Information Corporation is referenced several times in the Notice of Proposed Rulemaking under consideration.

We feel it is a major oversight not to include in the present proceeding the noncommercial stations which are similarly grandfathered. There is no technical justification not to do so. Despite the fact that some may feel the matter of second and third adjacent noncommercial overlap has been adequately dealt with (see Note 25 of the NPRM) we do not. We are the reference cited in Note 25.

Commercial and noncommercial FM signals travel, interact, and are received identically, using identical transmitters, transmission line, towers, antennas, and receivers. FCC noncommercial overlap ratios date from the 1950's and were not updated pursuant to the Institute for Telecommunications Sciences of the National Telecommunications and Information Administration (NTIA) study which concluded that the FCC standards for second channel interference are overly restrictive (see Haakinson and

Adams, "Coverage and Interference for Second-Adjacent Channel FM Broadcast Stations", IEEE Transactions on Broadcasting, Volume BC-26, No.4, December 1980).

Although good for their vintage, yesteryear's vacuum tube sets pale to today's receivers and their ability to tolerate very strong second and third adjacent signals. Forty years of advancements provide greatly improved performance. The NTIA study recommended relaxing the second channel adjacent overlap ratio by 30 dB. The commercial ratio was updated by 20 dB as a result of the NTIA study, but the noncommercial ratio remains as it was almost half a century ago. This is illogical.

Good regulatory practice should attempt to eliminate inequalities and achieve uniform regulation while allowing flexibility in specific situations. The role of the FCC should be to take a stand for efficiency, fairness, and the public interest. This enhances the ability to regulate reasonably and prudently in deserving cases.

This rulemaking proposes setting the protected contour at the 1 mV/m (60 dBu F[50,50]) contour with the interfering co-channel signal limited to the 0.1 mV/m (40 dBu F[50,10]) contour. This is identical with the noncommercial standard.

This rulemaking proposes limiting the interfering first adjacent channel signal at the 0.5 mV/m (54 dBu F[50,10]) level at the protected station's 1 mV/m (60 dBu F[50,50]) contour. This is identical with the noncommercial standard.

Currently, the second adjacent channel overlap for noncommercial stations is limited to the 10 mV/m (80 dBu

F[50,10]) contour at the protected station's 1 mV/m (60 dBu F[50,50]) contour, but for commercial station this has been updated to the 100 mv/m (100 dBu F[50,10]) at the protected station's 1 mV/m (60 dBu F[50,50]) contour. This is an obvious discrepancy of 100 times (20 dB) and is technically unjustified.

However, this is moot for this argument as this rulemaking proposes eliminating the interfering second adjacent channel signal restraint for commercial grandfathered stations. (The basic question of why this difference exists is quite justified but will not be addressed in this particular forum.)

Currently, the third adjacent channel overlap for noncommercial stations is limited to the 100 mV/m (100 dBu F[50,10]) contour at the protected station's 1 mV/m (60 dBu F[50,50]) contour. This is identical with the commercial standard.

This rulemaking proposes eliminating the interfering third adjacent channel signal restraint for grandfathered stations.

WCPE has operated in two short spaced situations. Our original facility operated with an ERP of 12,500 watts and was short spaced with a 3,000 watt third adjacent station causing theoretical overlap to the original WCPE facility. In order to obtain the original waiver, the Corporation only needed to acknowledge the potential for overlap and state in writing to accept any actual overlap. The Commission accepted our cognizance of potential overlap and granted a construction permit (BMPED-1,234) without concern on June 21, 1977. The grant was prudent and proved uneventful.

WCPE began accepting potential second adjacent channel overlap when it began broadcasting on September 15, 1993 pursuant to the facilities granted under permit EPED-840328CA which was granted on May 31, 1991. The grant of the permit took seven years and a Petition for Reconsideration accompanied by thirty-six thousand signatures.

The view of the Commission on the impact of second and third adjacent overlap to life as we know it changed drastically from tolerance to suppression between 1977 and 1991. Whereas one might feel the 1977 Commission was overly lenient from the standpoint of the ease of obtaining a waiver, similarly, the 1991 Commission stance was overly strict to the point of catatonic rigidity.

Such is not appropriate to a federal agency charged with serving the public interest and convenience.

Regulatory flexibility is called for in the case of noncommercial stations like WCPE who are already involved in second and third channel overlap situations and who wish to upgrade service to their listeners. This rulemaking proceeding is the correct forum for this argument -- ensuring equity and equality of the FM overlap rules.

It is time for the pendulum to swing towards center and come to rest at a proper balance.

We wish to stand in support of the proposed rulemaking -- with an amendment to include the noncommercial FM stations which

are similarly short spaced. The FM rules should be equalized by adding to the noncommercial FM section of the rules a parallel to the proposed paragraph 73.213; to wit: "Noncommercial stations at locations authorized prior to June 1, 199 that did not meet the separation distances required by paragraph 73.509 and have remained short-spaced since that time may be modified ..." etc.

The overlap rules for grandfathered noncommercial stations should not and need not in any way be different from the rules for commercial stations insofar as grandfathering overlap is concerned. The laws of physics don't change when crossing a state line or a country border -- or when crossing "92" on the FM dial.

> *"There is no technical justification for the disparate treatment of similar situations. We have seen nothing in the record to persuade us otherwise. We believe that it is good public policy for our technical allotment and assignment requirements to be based upon reasonably derived and consistently applied technical standards. We believe that licensees of certain classes of FM stations should not be unnecessarily constrained by an inconsistent technical standard, while others, operating under a less restrictive standard, do not appear to have experienced any significant problems over the years."*

Review of Technical Parameters of the FM Allocation Rules of FM Broadcast Stations, FCC Report 89-62, Adopted 2/15/89

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Grandfathered Short-Spaced	)	MM Docket No. 96-120
FM Stations	)	RM 7651
	)	

REPLY COMMENTS OF THE NATIONAL ASSOCIATION OF BROADCASTERS

NATIONAL ASSOCIATION OF BROADCASTERS
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October 4, 1996

EXECUTIVE SUMMARY

This proceeding addresses the need for transmitter site flexibility for a specific "class" of FM stations. The affected stations are so-called "grandfathered" stations that became short-spaced with respect to the Commission's minimum mileage separations prior to November 16, 1964. The current rules, as they relate to these affected stations, are in certain instances overly-restrictive, generally making it impossible for these stations to move their transmitter sites. Many of these facilities are Class A facilities located within the 60 dBu coverage pattern of larger Class B stations -- the former currently "locked" to their present site coordinates.

In response to the Commission's *Notice of Proposed Rule Making*, and with the additional time granted NAB for the completion and analysis of two special studies -- one showing the probable number of stations that could be affected by this rule making; the other depicting current FM receiver performance in the presence of second adjacent channel interference -- NAB herein submits its reply comments in this proceeding. By these reply comments NAB supports a number of alternative ways in which grandfathered, short-spaced FM stations may be given the opportunity to improve/modify their technical facilities.

NAB's support for revised FCC rules and policies to aid such grandfathered, short-spaced FM stations is based on notions of fairness and equity -- but also with a view toward the need to ensure the continued technical integrity of the FM radio service. NAB's position also is founded on the recognition that scores of FM stations -- not just the grandfathered, short-spaced FM stations that are the focus of this proceeding -- may soon be required to seek new antenna sites. Thus, there is a present and growing need for

channel interference[3]; and (2) determine the number and identity of FM stations that might fall into this class of "grandfathered, short-spaced" facilities.

NAB commissioned the first study to explore the thesis that improvements and refinements to radio receiver design have resulted in better rejection of second and third-adjacent channel interference, which would lessen concern over facility changes creating significantly increased technical interference to other stations. The second study was conducted to determine the scope of the controversy, in terms of the numbers of stations affected and the extent to which the grant of relief to this class of grandfathered, short-spaced FM operators might create increased interference to listeners' reception of other stations. Importantly, NAB had these studies conducted in order to provide a factual foundation which could support an NAB position aimed at the FCC's granting needed relief to some or all of these grandfathered, short-spaced FM stations. Additionally, NAB convened three meetings of an *ad hoc* group of consulting engineers and in-house engineers at broadcast group-owned companies. This group helped NAB determine the methodology of these studies and, following the receipt of the studies, aided NAB staff in the interpretation of the studies' results.

NAB's approach to the issues involved in this proceeding is not a novel one. In 1979, the NAB Board of Directors passed a resolution supporting a national radio allocations policy whereby daytime-only radio stations would be authorized to provide full-time service, so long as the changes to these facilities would not significantly diminish the service provided by other classes of stations. That policy -- advanced in NAB's

[3] As further explained in Appendix II, *FM Receiver Performance in the Presence of Second Adjacent Channel Interference*, NAB's consultant employed readily available data on second adjacent channel interference -- data developed during the process of evaluating digital audio broadcasting. Also, the focus was on second adjacent channel interference because of the greater potential for it to affect FM service negatively than does third adjacent channel interference.

comments[4] resulted in ule changes[5] allowing many former daytime-only AM stations to increase hours of operation.

NAB took a similar position in the late 1980s, when the issue was the increase in power by Class A FM stations.[6] Here we again supported a policy whereby the majority of Class A stations was given the ability to increase facilities to an extent which did not create significant new interference to the service provided by stations operating on co-channels or adjacent channels.[7]

In the instant proceeding involving grandfathered, short-spaced FM stations, we believe a similar approach should be taken. It is our view that reasons of equity support an FCC position that will provide these heretofore "trapped" stations[8] with a series of tools for demonstrating eligibility for improved/modified facilities. These tools would take the form of various, alternative showings that would be accepted by the Commission -- under revised rules and policies -- as supporting a change in long-frozen facilities.

These new FCC regulations would not involve any changes in the interference protection afforded co-channel or first adjacent channel stations. And though NAB would support improvements/modifications of facilities that might result in *some* increased short-spacing to second and third adjacent channel stations,[9] it is our expectation that such

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[4] *See* NAB Comments in BC Docket No. 82-538, filed January 14,1983.
[5] *See First Report and Order* in BC Docket No. 82-538, 54 RR 2d (P&F) 951 (1983).
[6] *See Notice of Proposed Rule Making* in MM Docket No. 88-375, 3 FCC Rcd 5941 (1988).
[7] *See Second Report and Order* in MM Docket No. 88-375, 4 FCC Rcd 6375 (1989).
[8] Among all the stations currently considered to be "grandfathered, short-spaced" facilities, the ones which generally present, in our view, the most persuasive "equity" case for technical improvement are the so-called "donut" stations, as described in the second half of ¶ 26 of the *Notice*.
[9] As will be further emphasized below, NAB's support of granting measures of needed modification flexibility to certain grandfathered, short-spaced stations blocked by second-adjacent and third-adjacent channel operations *does not* stand for the proposition that second and third-adjacent channel protections should be revisited for purposes of station allocations in general. On the contrary, the receiver study conducted by NAB -- as well as reasoned communications policy considerations -- support continued use of current second and third adjacent channel protection standards for station allocations and other, related regulatory purposes.

increases would be minimal -- and that many modifications actually would result in a net *decrease* in the interference caused to these other stations.[10]

II. NAB'S NEW STUDIES PROVIDE USEFUL INFORMATION RELATING TO THE ISSUES INVOLVED IN THIS PROCEEDING.

NAB presents, as appendices to these reply comments, the results of two studies conducted to determine how the removal of all separation requirements for grandfathered short-spaced second and third adjacent channel stations would impact radio broadcasters and listeners. It has been the view of NAB and the *ad hoc* engineering group which we convened for these purposes (*see* discussion *supra*) that two general topics needed to be considered. The first is the number of radio stations that would be impacted by such a change in the Commission's rules. The second is what impact the resulting increase in interference (in certain portions of station coverage areas) would have on today's radio receivers. The results of the former study are contained in Appendix I; the results of the latter study are contained in Appendix II.

A. Number of impacted radio stations

To determine how many radio stations would be impacted by the removal of all separation requirements for grandfathered, short-spaced, second and third adjacent channel stations, NAB produced an analysis of *probable* grandfathered second and third adjacent short-spaced stations (*see* Appendix I). This analysis shows that there are currently 312 FM stations that: (1) do not meet the second and/or third adjacent channel

[10] As interfering signals are brought closer together, approaching co-location, actual interference areas *may* decrease -- depending upon signal strength variations due to natural and man-made signal shadowing, antennas pattern aberrations, signal polarization, etc.

that the automotive receivers. (Due to limited time and ...rces, including the fact that second adjacent-channel data -- but not third adjacent-channel data -- were readily available, Mr. Keller's analysis does not include 3rd adjacent channel interference tests.)

The following table summarizes Keller's test results. It shows the desired signal to undesired signal (D/U) ratios, in dB, that resulted in a 35 dB signal-to-noise (S/N) ratio in the radio receiving the desired signal. The S/N ratio used was quasi-peak. A 35 dB quasi-peak S/N ratio is generally similar to a 45 dB root-mean-square (RMS) S/N ratio. Five different radios were tested. The table compares the test results with the D/U ratios that are the basis for the Commission's FM separation requirements.

Radio	*2nd Adjacent D/U at -35 dB S/N in Desired Signal*
Delco Model 16192463 (car)	< -48*
Denon Model TU-380RD (hi fi)	-40
Panasonic Model RX-FS430 (portable)	
Pioneer Model SX-201 (hi fi)	
Ford Model F4XF-19B132-CB (car)	< -48*
FCC Allocation Standard	*-40*

*No specific value could be obtained for these interference conditions because the radio under test rejected interference well enough to prevent signal degradation to 35 dB at the 48 dB D/U testbed limit.

The shaded area in the above table indicates all of the instances where a radio, under the given interference condition, does not meet the interference-rejection assumptions embodied in the Commission's current FM separation requirements. Thus, these receiver data do not support general relaxation of second adjacent-channel separation requirements.

	Class	Freq	State	City	Licensee	Latitude	Longitude	Directional Antenna?	Spacing (km) Actual	73.208	Short
DC	B	102.7	Maryland	Baltimore	Infinity of Chesapeake License Corporation	N 39 23 11	W 76 43 52		59	69	10
	A	102.3	Maryland	Bethesda	Radio One Inc.	N 38 56 9	W 77 5 33	Directional Antenna			
	B	104.3	Maryland	Baltimore	Capitol Broadcasting Company of Baltimore Inc	N 39 25 46	W 76 27 1		32	74	42
	B	103.7	Maryland	Havre De Grace	Prettyman Broadcasting Company	N 39 33 55	W 76 7 8	Directional Antenna			
DC	B	106.5	Maryland	Baltimore	WWMX Inc	N 39 20 16	W 76 38 59		72	74	2
	B	105.9	Virginia	Woodbridge	Viacom Broadcasting East Inc.	N 38 52 26	W 77 13 24	Directional Antenna			
DC	B	94.7	Maryland	Bethesda	CBS INC	N 38 57 49	W 77 6 16		50	74	24
	B	95.1	Maryland	Baltimore	Peter & John Radio Fellowship Inc.	N 39 15 21	W 76 40 29	Directional Antenna			
DC	A	102.3	Maryland	Bethesda	Radio One IncY	N 38 56 9	W 77 5 33	Directional Antenna	59	69	10
	B	102.7	Maryland	Baltimore	Infinity of Chesapeake License Corporation	N 39 23 11	W 76 43 52				
DC	B	106.7	Maryland	Catonsville	American Radio Systems License Corp.	N 39 19 26	W 76 32 56	Directional Antenna	70	74	4
	B	105.1	Virginia	Arlington	Beltway Media Partners	N 38 53 44	W 77 8 4				
DC	B	102.9	Maryland	Cumberland	Tschudy Communications Corp.	N 39 34 56	W 78 53 53		71	74	3
	B	102.5	Virginia	Winchester	Benchmark Radio Acquisition Fund II Ltd Partnshp	N 39 10 38	W 78 15 53				
DC	B	99.9	Maryland	Frederick	Jim Gibbons Radio Inc	N 39 29 59	W 77 29 59		66	74	8
	B	99.5	District of Colu	Washington	Greater Washington Radio Inc.	N 38 57 49	W 77 6 16				
	A	96.9	Maryland	Glen Burnie	Radio One of Maryland Inc.	N 39 12 16	W 76 34 7		48	69	21
	B	96.5	Maryland	Morningside	Infinity Broadcasting Corporation of Maryland	N 38 51 48	W 76 54 36				
DC	A	96.9	Maryland	Glen Burnie	Radio One of Maryland Inc	N 39 12 16	W 76 34 7		52	69	17
	B	96.3	District of Colu	Washington	The Howard University	N 38 57 1	W 77 4 47				
	B	103.7	Maryland	Havre De Grace	Prettyman Broadcasting Company	N 39 33 55	W 76 7 8	Directional Antenna	32	74	42
	B	104.3	Maryland	Baltimore	Capitol Broadcasting Company of Baltimore Inc.	N 39 25 46	W 76 27 1				
	B	103.7	Maryland	Havre De Grace	Prettyman Broadcasting Company	N 39 33 55	W 76 7 8	Directional Antenna	66	74	8
	B	103.3	Pennsylvania	York	Susquehanna Radio Corporation	N 40 1 38	W 76 36 0				
	B	96.5	Maryland	Morningside	Infinity Broadcasting Corporation of Maryland	N 38 51 48	W 76 54 36		48	69	21
	A	96.9	Maryland	Glen Burnie	Radio One of Maryland Inc.	N 39 12 16	W 76 34 7				

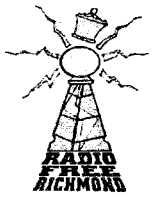
	Class	Freq	State	City	Licensee	Latitude	Longitude	Directional Antenna?	Spacing (km) Actual	73.209	Short
	C	**102.5**	**Texas**	**Hillsboro**	**Sonora Waco License Subsidiary Inc**	**N 31 49 29**	**W 97 9 33**		86	105	19
	C	102.9	Texas	Dallas	Nationwide Communications Inc.	N 32 34 54	W 96 58 32				
	C	**93.3**	**Texas**	**Killeen**	**Gensis Broadcasting Inc.**	**N 30 43 34**	**W 97 59 23**		50	105	55
	C	93.7	Texas	Austin	The LBJ Company	N 30 18 36	W 97 47 33				
DC	**B**	**105.1**	**Virginia**	**Arlington**	**Beltway Media Partners**	**N 38 53 46**	**W 77 5 5**		70	74	4
	B	105.7	Maryland	Catonsville	American Radio Systems License Corp.	N 39 19 26	W 76 32 56	Directional Antenna			
DC	**B**	**106.7**	**Virginia**	**Manassas**	**Infinity Broadcasting Corp. of Washington DC**	**N 38 52 28**	**W 77 13 24**	**Directional Antenna**	15	74	59
	B	107.3	District of Colu	Washington	WMAL Inc.	N 38 57 1	W 77 4 47				
	C	**94.9**	**Virginia**	**Roanoke**	**James L. Gibbons**	**N 37 11 59**	**W 80 9 11**		97	105	8
	C	94.5	North Carolina	Eden	REP Florida GP.	N 36 20 48	W 79 54 30	Directional Antenna			
	C	**99.1**	**Virginia**	**Roanoke**	**Mel Wheeler Inc.**	**N 37 11 41**	**W 80 9 22**		95	105	10
	B	99.5	West Virginia	Beckley	Personality Stations Inc.	N 37 35 23	W 81 6 51				
DC	**B**	**107.7**	**Virginia**	**Warrenton**	**First Virginia Communications Inc**	**N 38 44 31**	**W 77 50 7**		70	74	4
	B	107.3	District of Colu	Washington	WMAL Inc.	N 38 57 1	W 77 4 47				
DC	**B**	**102.5**	**Virginia**	**Winchester**	**Benchmark Radio Acquisition Fund II Ltd Partn**	**N 39 16 38**	**W 78 16 53**		71	74	3
	B	102.9	Maryland	Cumberland	Tschudy Communications Corp.	N 39 34 56	W 78 53 53				
DC	**B**	**106.9**	**Virginia**	**Woodbridge**	**Viacom Broadcasting East Inc.**	**N 38 52 28**	**W 77 13 24**	**Directional Antenna**	72	74	2
	B	106.5	Maryland	Baltimore	WWMX Inc.	N 39 20 10	W 76 38 59				
	B	**99.5**	**West Virginia**	**Beckley**	**Personality Stations Inc**	**N 37 35 23**	**W 81 6 51**		95	105	10
	C	99.1	Virginia	Roanoke	Mel Wheeler Inc.	N 37 11 41	W 80 9 22				
	B	**102.7**	**West Virginia**	**Charleston**	**Ardman B/Ctng Corp of West Virginia**	**N 38 21 28**	**W 81 40 5**		64	74	10
	B	103.3	West Virginia	Huntington	CRB B/Casting of West Virginia Inc.	N 38 25 11	W 82 24 5				
	B	**103.3**	**West Virginia**	**Huntington**	**CRB B/Casting of West Virginia Inc**	**N 38 25 11**	**W 82 24 5**		64	74	10
	B	102.7	West Virginia	Charleston	Ardman B/Ctng Corp of West Virginia	N 38 21 28	W 81 40 5				
	B	**98.1**	**Wisconsin**	**Kenosha**	**Independence Broadcasting Corporation**	**N 42 33 10**	**W 87 53 38**		60	74	14
	B	95.7	Wisconsin	Milwaukee	Shockley Communications Corporation	N 43 5 25	W 87 54 54				

primary stations (bold) sorted by: state, city, frequency

Before the
FEDERAL COMMUNICATIONS
COMMISSION
Washington, DC 20554

In the Matter of Digital Audio
Broadcasting Systems and Their
Impact On the Terrestrial Radio

MM Docket No. 99-325
Broadcast Service.



From: Christopher Maxwell
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MOTION FOR EXTENSION OF REPLY-COMMENT PERIOD FOR 99-325 DUE TO POSSIBLE COMPROMISE OF COMMENT PROCESS PURPOSE

Please Accept this motion as Accepted for Timely Filing

Dear FCC Commissioners,
I understand that normally a request for an extension of a Comment-Reply period is expected seven days in advance of the deadline.

Unfortunately, we gave the ECFS system the benefit of the doubt and that did not pay off, we were never able to follow-up our research that required reading the Adobe Acrobat files from the organizations referenced in the other Motion for Extension we have filed with the Secretary of the FCC.

Additionally, following the 2/17/00 debate on HR3439 that concentrated on the alleged interference that the NAB and NPR maintain will be caused by the LPFM reducing the buffer from 600kHz to 400kHz ... the issue of interference possibly caused by 430kHz bandwidth hybrid IBOC DAB stations with only 170kHz buffers was not covered at all! So that Friday a quick field test was performed and significant interference from the test IBOC station was recorded. Furthermore, it turns out that the IBOC signals causing the recorded interference was the *most minimal* of the versions proposed by NAB, CEMA, Sony, etc. This was all discovered last Friday. And so being just a volunteer citizen who has helped train people in Cable programming for years ... but is not paid to defend the interests of volunteer programmers of community media ... I fear that time simply ran out before we could assemble the resources needed for our defense.

REASONING AND DETAIL BACKING UP THIS REQUEST FOR EXTENSION OF REPLY-COMMENT PERIOD FOR THREE MONTHS:

The *purpose* of Comments and Reply-Comments is to get as much feedback on a proposed new set of regulations and technologies and services so that disaster is averted *before* a service is implemented. This purpose has been subverted by a test that only tests the *least* intrusive version of the proposal, rather than the *conservative* approach of testing the *most* intrusive version. Current IBOC-DAB field tests at WJFK 106.7FM are measuring the performance of a *proposed* 430kHz bandwidth service with a 70kHz test! This is like testing a new race car at 25mph when people will be using it at 200mph.

A full test of the 430kHz bandwidth version of IBOC would in this case, spread WJFKs bandwidth from 106.6--106.8mHz *now* to a signal that will cover 106.485--106.915mHz.

Already two receivers (in this case, a handheld digitally tuned AM-FM shortwave and Broadcast Band receiver and an automobile radio) in Northern Virginia or Southern DC attempting to tune in WWMX 106.5FM from Baltimore can pick up a distinct "buzz saw" noise from the IBOC digital carriers on WJFK 106.7FM. This 'buzz saw' interference was evident for about 20 *miles* around the WJFK antenna.
What will happen to listeners of Northern Va. WJFK and Washington D.C. WRQX 107.3FM if *both* stations are running 430kHz hybrid IBOC carriers? This would increase WRQX's signal bandwidth to 107.085-- 107.515. There would only be a buffer of 170kHz between the edges of their signals instead of the standard accepted 600kHz minimum buffer for full power stations.

Considering that opponents of LPFM have claimed that even the 400kHz buffer provided by the LPFM service rules is too small for a 100 Watt LPFM station to operate without interference, one has to wonder what happens with 20,000+ watt stations with only 170kHz of buffer!! A *full* test would confirm what would happen.
The Small Business Administration comments on 99-325 also recommend an *active* involvement of the public and the 95% of small business stations that may not realize what is at stake. An *ample advertising campaign* to the public to come and hear for themselves and comment on their experiences can head off adverse reactions later.

Thus the Reply-Comment period for Docket 99-325 should receive consideration to be extended at least three full months *during* a full test of WJFK *and* WRQX with the *full* proposed system in place.

Sincerely,
Thank-you for your consideration of our concerns,
Christopher Maxwell

Chris Maxwell
Chris Maxwell