

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
Amendment of Part 73 of the)
Commission's Rules To Permit)
the Introduction of Digital AM)
and FM Broadcasting)

RM-9395

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

**REPLY COMMENTS OF
USA DIGITAL RADIO, INC.**

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Executive Summary

USA Digital Radio, Inc. ("USADR"), in these reply comments, responds to the December 23, 1998 comments in this proceeding. USADR was pleased that the comments contained tremendous support for digital audio broadcasting ("DAB") and most of the proposals contained in USADR's Petition for Rulemaking ("Petition"). USADR encourages the Commission to adopt quickly a Notice of Proposed Rulemaking ("NPRM") to implement DAB and to identify system proponents for the necessary standard setting process.

The overwhelming majority of commenters addressing the issue agree with USADR that the American public would derive substantial benefits from DAB. There also is an emerging consensus that in-band on-channel ("IBOC") technology is the best means to implement DAB in the United States. USADR discusses herein the support that the majority of broadcasters have expressed for the implementation of IBOC DAB. The proposals of a few commenters to use the Eureka-147 system or to adopt an out-of-band approach are not viable due to the unavailability of suitable spectrum or the incompatibility of those proposals with existing broadcasting in the United States.

USADR also notes in these reply comments that commenters addressing the issue of transmission standards were unanimously in favor of USADR's proposal that the Commission adopt a single standard. The comments as a whole show that no debate or doubt remains among radio industry players about the need for the Commission to adopt a single DAB transmission standard.

USADR addresses herein the few comments which encourage the FCC to adopt a Notice of Inquiry or another preliminary approach rather than initiating a rulemaking proceeding. USADR agrees full laboratory and field test results will be required to designate an IBOC DAB standard; however, there are several steps the FCC can take in the context of a rulemaking even without full

test results. For example, the Commission can use a rulemaking to establish the public interest in IBOC DAB, to provide guidance as to the need for both an AM and FM solution, to identify system proponents and to establish procedures for submission of data and for Commission evaluation of systems. Prompt action adopting a NPRM would advance the public interest by expediting the implementation of IBOC DAB, would provide further guidance to system proponents and would be consistent with Commission precedent.

These reply comments also endorse suggestions from commenters that IBOC DAB must take into account the actual listening patterns of stations, that analog radio must be protected in order to create a rational transition period and that a consumer education campaign should be implemented. USADR notes, however, that its all-digital system will create substantial additional public interest benefits in terms of increased robustness and enhanced features and that the need to protect analog should not continue indefinitely, thereby undercutting the option of an all-digital system.

Finally, USADR encourages the Commission to move forward with the process articulated in the Petition. USADR believes there is an important role for many parties, including the National Radio Systems Committee, but encourages the Commission to recognize that the FCC is better positioned to make the necessary comparative evaluations of systems needed to set a standard. USADR encourages the FCC to adopt expeditiously the approach detailed in the Petition.

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USA Digital Radio, Inc.¹ ("USADR"), by its attorneys, hereby submits these reply comments in the above-referenced proceeding. USADR was gratified by the overwhelming support for digital audio broadcasting ("DAB") contained in the December 23, 1998 comments in this proceeding. The Commission now has clear and current evidence that implementation of DAB will benefit the public. USADR submits that the Commission should move expeditiously to adopt a Notice of Proposed Rulemaking ("NPRM") to address the implementation issues raised in the comments and to identify the IBOC DAB proponents to be included in the necessary standard setting process.

In its October 7, 1998 Petition for Rulemaking ("Petition"), USADR requested that the Commission initiate a proceeding to amend Part 73 of the Commission's Rules to permit the introduction of DAB in the AM and FM radio bands. Specifically, USADR sought modification of the Commission's Rules to permit existing AM and FM licensees to upgrade their analog broadcast transmissions to digital transmissions using in-band on-channel ("IBOC") DAB technology. The

¹ USA Digital Radio, Inc. is the successor in interest to USA Digital Radio Partners, L.P. which filed the Petition for Rulemaking in this proceeding. See Letter from Robert A. Mazer to Magalie R. Salas dated Jan. 8, 1999.

Petition was placed on public notice on November 6, 1998.² On December 23, 1998, a significant number of parties filed comments on the Petition. The commenters represent a broad cross section of the radio industry, including other IBOC DAB system proponents, trade associations, broadcasters, equipment manufacturers and other interested parties. As discussed below, the majority of parties commenting support the principal goals set forth in the Petition. Most significantly, the commenters strongly affirm USADR's assertions concerning the public benefits of DAB, and unanimously endorse USADR's call for the Commission to set a DAB transmission standard.

I. Commenters Agree that the Introduction of DAB is in the Public Interest

In its Petition, USADR requested that the Commission make a finding that the public interest would be served by the introduction of DAB. The overwhelming majority of commenters addressing this issue agreed with USADR that the American public would derive substantial benefits from DAB. The Consumer Electronics Manufacturers Association ("CEMA") states that "it is now the radio broadcasting industry's turn to enter the digital revolution" along with other digital services and products.³ CEMA also notes that its consumer research shows that, while radio remains a strong medium, "consumers desire improved service and enhanced audio quality."⁴ Lucent Technologies Inc. ("Lucent") similarly discusses a study it commissioned that provides strong evidence of high consumer demand for DAB.⁵ Commenters also refer to several of the Commission's previous statements explicitly recognizing the benefits of DAB and the Commission's ongoing commitment

² Public Notice, DA 98-2244 (Nov. 6, 1998).

³ Comments of CEMA at 5.

⁴ *Id.* at 3.

⁵ Comments of Lucent at 5.

to fostering its growth.⁶ Based on the record already developed, the Commission has more than enough support to adopt USADR's position that DAB is in the public interest.

II. There is An Emerging Consensus that IBOC is the Best DAB Solution

The comments also reflected an emerging consensus that an IBOC approach is the best means to implement DAB in the United States.⁷ The commenters echo the benefits of the IBOC approach set forth in the Petition. Clear Channel, for example, highlights the many pragmatic advantages that are integral to IBOC, namely the use of existing radio spectrum:

a broadcaster could go digital without losing the goodwill it has built up in its existing dial position. Second, the industry saves the resources that would need to be expended in building a new broadcasting infrastructure that would accompany any spectrum move. Under an IBOC approach, the broadcaster remains on the same channel. Finally, because the IBOC solution allows for a long transition period, the costs to a broadcaster to move to digital are minimized as equipment is upgraded during the normal replacement schedule.⁸

Gannett also outlines the important advantages that IBOC provides from a consumer's perspective, stating that "a consumer's cost to upgrade will be minimized by the fact that replacement in an IBOC world will not be driven, primarily, by the technology, but rather by the fact that it is time to replace equipment."⁹

⁶ See e.g., Statement of National Public Radio, Inc. ("NPR") at 2.

⁷ In addition to the two other IBOC DAB system proponents, Lucent and Digital Radio Express ("DRE"), broadcasters such as Greater Media, Inc. ("Greater Media"), Bonneville International Corporation ("Bonneville"), CBS Corporation ("CBS"), Clear Channel Communications, Inc. ("Clear Channel"), Cumulus Media, Inc. ("Cumulus"), Gannett Co., Inc. ("Gannett"), Hefel Broadcasting Corporation ("Hefel"), Radio One, Inc. ("Radio One"), Susquehanna Radio Corp. ("Susquehanna"), and Walt Disney Company on behalf of ABC ("ABC") all support the implementation of IBOC DAB.

⁸ Comments of Clear Channel at 6.

⁹ Comments of Gannett at 7.

In addition, both the National Association of Broadcasters (“NAB”) and the Radio Operators Caucus (“ROC”)¹⁰ support the introduction of IBOC DAB. The NAB cites the benefits to consumers of higher quality within a familiar framework:

With IBOC DAB signals residing adjacent in frequency to analog signals, listeners will continue to be able to employ their existing radios to receive analog FM and AM broadcasts. As listeners to IBOC DAB, they will be able to hear their local stations with heightened satisfaction due to the increased fidelity and consistent quality of digital broadcasting.¹¹

The comments show that the majority of broadcasters support the implementation of IBOC DAB. Indeed, evidence that broadcasters have confidence in the ultimate success of the IBOC approach and USADR’s IBOC DAB system is shown in the recent decision of several broadcasters to invest in USADR.¹²

A few commenters in this proceeding have suggested alternatives to IBOC such as placing DAB in a different spectrum band or implementing DAB based on the Eureka-147 system.¹³ These general comments do not provide any technical or legal support for such positions and overlook the numerous problems that make such out-of-band proposals not viable.

Both the Commission and the National Telecommunications and Information Administration (“NTIA”) have concluded other frequency bands which have been proposed for DAB simply are not available. The Eureka-147 system is being implemented in Canada and several European countries

¹⁰ Comments of ROC at 3-4.

¹¹ Comments of the NAB at 6-7.

¹² See Letter from Robert A. Mazer to Magalie R. Salas dated Jan. 8, 1999.

¹³ See Comments of National Lawyers Guild Committee on Democratic Communications; Reply Comments of Citizens Media Corps.; and Written Comments of the Amherst Alliance.

in the L-band at 1452-1492 MHz.¹⁴ According to the Table of Frequency Allocations, this band is set aside in the United States for “aeronautical telemetry and associated telecommand operations for flight testing of manned or unmanned aircraft and missiles, or their major components.”¹⁵ The United States explicitly stated in its agreement with Canada for coordination of the L-band, “[t]he U.S. has current and continuing firm requirements for use of the full 90 MHz of spectrum, 1435-1525 MHz, for Aeronautical Telemetry.”¹⁶ The other European systems use VHF frequencies in the 220-240 MHz band.¹⁷ These frequencies lie within the 225-400 MHz band which has been allocated to the military for tactical operations, and air-ground, air-air and ground-ground communications, and are unavailable for DAB in the United States.¹⁸ Because both the L-band and VHF frequencies used by Eureka-147 systems are used domestically for important military activities, the Commission and NTIA have consistently opposed requests to reallocate any portion of these frequencies for any other use. Based on the unavailability of these bands, the need for spectrum with propagation characteristics similar to the AM and FM bands and the large amount of spectrum that would be

¹⁴ Terrestrial and Satellite Digital Sound Broadcasting to Vehicular, Portable and Fixed Receivers in the VHF/UFH Bands, ITU-R Special Publication (1995) at 212.

¹⁵ 47 C.F.R. § 2.106, note US78.

¹⁶ Agreement on Coordination of Canadian Terrestrial Broadcasting at 1452-1492 MHz and U.S. Aeronautical Telemetry at 1435-1525 MHz, effective Sept. 1, 1998. *See Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band*, 12 FCC Rcd 5754 at ¶ 79 (1997) (noting the U.S. selected the S-band over the L-band for DARS due to use of the L-band for aeronautical telemetry). *See also Amendment of the Commission's Rules with Regard to the Establishment and Regulation of New Digital Audio Radio Services*, 10 FCC Rcd 2310 at ¶ 26 (1995).

¹⁷ ITU-R Special Publication at 248 (U.K. system).

¹⁸ *See Interim Report, FCC Industry Advisory Committee for the 1995 World Radiocommunication Conference* dated Dec. 30, 1994 at 81 (“These bands are heavily used throughout the U.S. for critical military air traffic control and tactical training communications.”); *Final Report Industrial Advisory Committee, IWG-2 Mobile Satellite Service Below 1 GHz*, dated April 17, 1995 at 11. *See also* 47 C.F.R. § 2.106 at note G27 (“In the bands 225-328.6 . . . fixed and mobile services are limited to the military services.”).

required to accommodate all existing broadcasters, it is unlikely that the Commission could identify alternative spectrum for DAB.

Even if the technical issue of spectrum availability could be addressed, the Eureka-147 system is nonetheless incompatible with the structure of the broadcast industry in the United States.¹⁹ USADR has analyzed Eureka-147 systems in both Canada and Europe. The Eureka-147 system is designed to support centralized broadcasting of all stations in a metropolitan area from a master antenna, with a series of repeaters used to provide extended coverage. In Canada, this provides acceptable service only in a limited area in the downtown core. Moreover, it would be prohibitively expensive in the United States to build the cellular-like network of repeaters that would be required to extend coverage to suburban and rural areas. In the case of the Canadian system, building propagation losses at L-band frequencies decrease signal levels and limit indoor reception to higher signal contours. Although the use of VHF frequencies in some European systems has resulted in better range, those systems still require the construction of an expensive new broadcasting infrastructure, significant changes in listener behavior because all stations must change to a new dial location, and have not been accepted by consumers because of the extremely high cost of Eureka-147 receivers. IBOC DAB, which will operate within the existing AM and FM frequency bands and use the existing infrastructure, has been designed to avoid these problems. Thus, USADR submits that these proposed alternatives do not provide viable options for Commission consideration.

¹⁹ Because Eureka-147 cannot avoid harmfully interfering with existing AM and FM broadcasting, it could not be implemented in the existing broadcast radio bands without severe disruptions.

III. A Single DAB Standard is Required

Commenters that addressed the issue of transmission standards were unanimously in favor of USADR's proposal that the Commission adopt a single DAB standard. This unanimity is striking in light of the fact that most of the commenters gave detailed consideration to this issue.

In its Petition, USADR requested that the Commission make a finding that it will adopt a DAB transmission standard that will insure that all DAB radios are compatible with all DAB transmitters, thereby enabling the continuation of the current structure of radio in the United States. USADR argued that a government-mandated single standard is required by virtue of the ubiquitous nature of radio, the technical characteristics of IBOC DAB systems, as well as the non-integrated structure of the U.S. radio market.

Several commenters in their expressions of support for the USADR Petition shared their perspectives on the importance of a single standard. CEMA notes that a required standard is critical because it "will protect consumers against losses by assuring them that their investments in [digital radio] equipment will not be made obsolete by a different technology."²⁰ The commenters also argue that a required standard will stimulate consumer acceptance of the new technology. Lucent notes that "the unique universality of advertiser-supported broadcasting and the reliance that most Americans place on receiving news, information and entertainment through broadcasting indicate that adopting a digital standard for radio broadcasting, as the Commission did for television broadcasting, would benefit the public."²¹

Other commenters cite to the beneficial impact of the Commission's adoption of a single standard in other broadcasting contexts. CBS, for example, contrasts the quick acceptance of color

²⁰ Comments of CEMA at 12.

²¹ Comments of Lucent at 23.

television by both broadcasters and consumers following the Commission's adoption of a standard to the comparatively slow acceptance of AM stereo following the Commission's decision not to mandate a standard for that service.²²

Many broadcasters express concern that the fragmented interests of the many players in the radio industry will prevent a *de facto* standard from developing.²³ As Greater Media stated, "[t]he Commission must not refrain from prudent regulation in this regard out of a misplaced reliance on the marketplace to sort out 'winners' and 'losers' at the expense of the public interest."²⁴ The comments as a whole thus show that no debate or doubt remains among radio industry players about the necessity for the Commission to adopt a single DAB transmission standard.

IV. The Development of IBOC DAB is Sufficiently Advanced to Warrant Commencement of a Rulemaking Proceeding

The Petition and the comments in this proceeding establish a substantial record on both the development of IBOC and the public interest in the implementation of DAB. Many commenters support USADR's position that the time is ripe to institute a rulemaking to implement IBOC DAB. Specifically, CEMA, Bonneville, CBS, Clear Channel, Cumulus, Gannett, Heftel, Radio One, Susquehanna, and ABC all encourage the Commission to institute a rulemaking to implement IBOC

²² Comments of CBS at 10.

²³ *See, e.g.*, Comments of Clear Channel at 5; Comments of CBS at 12.

²⁴ Comments of Greater Media at 10.

DAB.²⁵ The ROC calls upon the Commission to issue a NPRM as soon as it is feasible.²⁶ The NAB also “urges the Commission to initiate a proceeding” to develop IBOC DAB standards.²⁷

Several commenters suggest the Commission initiate a Notice of Inquiry before commencing a rulemaking proceeding. USADR disagrees.²⁸ Use of a Notice of Inquiry at this late stage of the development of IBOC DAB would only lead to delays in implementing digital. The comments which endorse the use of a Notice of Inquiry, or another preliminary step, base their arguments on the absence of field test data and the continued development work required to complete IBOC DAB systems. USADR believes these commenters have misinterpreted USADR’s Petition and that initiation of an inquiry proceeding will only serve to delay the introduction of DAB.

USADR agrees that it must complete laboratory and field testing of its IBOC DAB technology in a wide range of geographic and interference environments in order to demonstrate the viability of its system. Extensive field testing was contemplated in the Petition and has always been part of USADR’s technology development program. USADR also recognizes that many of the specific rule changes contemplated in the Petition cannot be finalized until field tests are complete. Nonetheless the Commission is able to address many of the issues USADR has highlighted at the same time the laboratory and field testing are being completed. For example, the Commission can

²⁵ Susquehanna, for example, notes that in order to bring DAB to the American public, it is important to begin the rulemaking now, because such a process is necessarily long and complicated. Comments of Susquehanna at 5.

²⁶ Comments of ROC at 3.

²⁷ NAB Comments at 15. Other parties also support immediate Commission action in connection with the implementation of DAB. NPR supports a rulemaking proceeding to “further the development of an effective DAB transmission standard.” Comments of NPR at 2. Ford Motor Company (“Ford”) recommends that the Commission create a Federal Advisory Committee to develop a DAB standard. Comments of Ford at 14. Lucent proposes that the Commission initiate a process to permit it to specify a standard in 2000. Comments of Lucent at 24.

make the following determinations, in the context of a rulemaking proceeding: (i) DAB is in the public interest, (ii) due to spectrum limitations, IBOC is the preferred means of implementing DAB; (iii) there needs to be both an AM and FM DAB solution; (iv) there needs to be a transition plan that protects analog radio for a to-be-determined interim period; (v) new interference criteria will need to be adopted; (vi) the FCC will need to adopt a transmission standard; and (vii) the process for evaluating IBOC DAB systems set forth in the Petition should be adopted. The Commission is also in a position to use the rulemaking proceeding to identify all system proponents and to collect test data. To the extent the field test data is not complete before the conclusion of the rulemaking proceeding, more specific determinations such as the length of the transition plan and the specifics of new interference criteria can be deferred until a further rulemaking proceeding.

Immediate adoption of a NPRM would advance the public interest by expediting the implementation of IBOC DAB and would be consistent with Commission precedent. All the DAB proponents have announced intentions to complete system testing by the end of 1999.²⁹ Interposing an inquiry proceeding with such a short timeframe for testing and system completion would slow development of a timely and complete record. Moreover, issuance of a NPRM and commencement of a rulemaking proceeding on many of these issues will give proponents further guidance and help focus their test efforts. The evaluation of IBOC DAB systems will be advanced if the proponents know early in their test programs what information will need to be submitted and the timeframes for submission of information.

²⁸ See Comments of Lucent; Statement of NPR and Comments of Big City Radio, Inc. USADR notes that, although those entities seek a preliminary step before commencement of a rulemaking, these commenters do support continued development of the Commission's record on DAB.

²⁹ See e.g. Comments of Lucent at 3.

In the past, the Commission has used inquiry proceedings to establish sufficient interest in a new technology or service to warrant a rulemaking or to build a record to justify moving forward with international or domestic frequency allocations.³⁰ Neither situation applies in this case. The Commission has already conducted an inquiry proceeding on digital radio and has had multiple opportunities to establish the public interest in IBOC DAB.³¹ Moreover, no frequency allocation is required.

In the past, the Commission has been hesitant to move forward with a rulemaking when the technology is in a very preliminary stage or where there are numerous competing technological approaches being pursued. For example, in the digital television proceeding the Commission used multiple inquiry proceedings to address preliminary issues while the technology developed. In that case, however, the inquiry proceeding commenced at a very early stage of the technology development and at a time when multiple technologies were being considered. At the beginning of the proceeding the Commission was still considering the relative merits of an analog versus a digital approach. In this case, USADR has invested many years and conducted tests on multiple generations of IBOC DAB systems to bring its technology to an advanced stage of development prior to filing the Petition. All DAB proponents are working on IBOC solutions which are based on similar concepts.³² The technology is in a final stage of development and there is a consensus on

³⁰ For example, in the DARS proceeding, the Commission used its Notice of Inquiry to establish a record for the 1992 World Administrative Radio Conference. *See Notice of Inquiry* 55 Fed. Reg. 34940 (1990).

³¹ *Notice of Proposed Rulemaking and Further Notice of Inquiry*, 7 FCC Rcd 7776, 7780 (1992) (“We continue to support efforts to implement terrestrial in-band DARS technology. We believe that existing radio broadcasters can and should have an opportunity to take advantage of new digital radio technologies, and we are optimistic that technical advances will, in the near future, permit both FM and AM broadcasters to offer improved digital sound.”).

³² As USADR has discussed, the Eureka-147 system is not a viable option for the United States. Moreover, satellite DARS will not provide an alternative because it does not permit the upgrade of terrestrial analog radio.

an IBOC approach. Hesitation on the part of the Commission is unnecessary and will prolong the wait for digital radio.

Lucent's comments emphasize the digital television field tests.³³ It is important to note, however, those field test results were submitted in 1994, three years *after* the Commission's first NPRM in the DTV proceeding.³⁴ Similarly, in the DARS proceeding, the Commission moved forward with an NPRM while the technology continued to advance. This is consistent with the approach the Commission has taken outside the area of broadcast services.³⁵ The Commission does not need field test results to initiate a rulemaking. It needs those results only to select a standard.

V. Analog Radio Does Not Need to Be Protected in Perpetuity

Parties that commented on issues related to the transition from analog to digital radio were generally supportive of USADR's transition plan proposal. USADR requested that the Commission establish a transition plan that provides appropriate protection for analog radio for an interim period, but also fosters the transition to an all-digital environment. The NAB supports USADR's proposal for an integrated transition plan for all FM and AM broadcasters; for the protection of analog during this transition; that no new service proposals should be allowed to degrade the current interference climate; and that the Commission should initiate a proceeding as soon as possible.³⁶ DRE also supports aspects of USADR's proposed transition plan. Specifically, DRE supports USADR's

³³ Lucent Comments at 18.

³⁴ *Notice of Proposed Rulemaking*, 6 FCC Rcd 7024 (1991).

³⁵ For example, in the satellite area, the Commission routinely proceeds with rulemakings and even issues licenses while the technology development work continues. In the Mobile Satellite Service Above 1 GHz proceedings, Iridium had not demonstrated the viability of the intersatellite links which were a key component of that system before the Commission proposed service rules in a 1994 notice of proposed rulemaking.

³⁶ Other broadcasters that specifically endorse USADR's proposed transition plan include Radio One, Susquehanna, Greater Media, and Cumulus.

proposal to permit IBOC DAB broadcasting once a standard has been adopted by the Commission, and to permit broadcasters to increase their digital signal after some period of time without mandating that other broadcasters shut off analog transmission.

USADR endorses the numerous comments which place a high priority on ensuring that IBOC DAB is compatible with existing analog broadcasting.³⁷ If DAB is to gain consumer acceptance, compatibility with existing analog broadcasting must be demonstrated clearly through extensive field testing in diverse geographic and interference environments. USADR has designed its system to include a hybrid mode which protects analog broadcasting during the transition to an all-digital environment and has proposed rule changes which would ensure analog broadcasting is fully protected from harmful digital interference for 12 years.³⁸ USADR does not believe, however, that analog radio requires protection in perpetuity.³⁹ The all-digital mode provides substantial public benefits in terms of increased robustness and features. The transition to the all-digital mode should not be inhibited in an effort to protect analog indefinitely.

USADR believes that calls to protect analog indefinitely are based on a misinterpretation of the proposed transition plan. USADR proposes a 12-year transition plan based on the normal equipment replacement cycles for receivers and transmitters. It is USADR's assumption that by the end of the transition period, the vast majority of listeners and broadcasters will have converted to digital as a result of normal equipment replacements. A recent study of broadcasters has shown that with the availability of IBOC DAB technology, approximately 30% of radio stations are likely to convert to digital broadcasting within the first two years, with 56% likely to convert within the first

³⁷ See e.g. Comments of NAB at 10.

³⁸ See Petition at 87-92.

³⁹ See Comments of ROC at 6.

five years.⁴⁰ Thus, any impact resulting from the elimination of protection for analog will be greatly reduced after most users and broadcasters have converted to digital. USADR also anticipates that as the transition period progresses, equipment manufacturers will no longer find it cost-effective to support the production of analog-only equipment and will alter production to support digital broadcasting. This shift will increase the rate of conversion and penetration of digital equipment. Nonetheless, USADR's technology has been designed to give the marketplace tremendous flexibility. The Commission retains the ability to monitor the transition period and can delay or accelerate the end of analog protection based on the rate of penetration of digital equipment in the marketplace.

The ROC appears to be concerned about the cost to broadcasters of converting to digital. Unlike the case of digital television, USADR projects only modest cost increases for the conversion to digital. USADR finds it unlikely that broadcasters would opt, based on cost, never to upgrade their equipment. At the same time, it is important to note that the Commission would be undermining the public interest by requiring permanent protection for analog broadcasting. USADR's all-digital system provides substantial benefits in terms of increased robustness of the digital signal and the introduction of new auxiliary services. Retaining protection for analog permanently would prevent the public from enjoying the full range of benefits to be gained from DAB.⁴¹

⁴⁰ Study conducted by Taratec Corporation (Nov. 1998).

⁴¹ USADR also notes that the elimination of protection for analog broadcasting does not mean broadcasters will be required to cease analog transmissions. Stations which continue to broadcast in an all-analog mode will simply experience increased interference from adjacent all-digital stations in certain instances. The result would be to reduce the range of coverage at the edge of coverage for the remaining all-analog stations.

VI. IBOC DAB Must Address Existing Listening Patterns

USADR agrees with the comments of Ford that any DAB system must consider actual listening patterns rather than simply a station's legally protected coverage contour.⁴² Ford correctly notes that improvements in receiver technology allow many listeners to receive an FM station's signal well beyond the protected coverage contour recognized by the FCC. Although these stations have no legal expectation of protection beyond the protected contour, consumer acceptance of IBOC DAB will be greatly diminished if listeners in those areas suddenly lose coverage of their favorite stations. USADR agrees that IBOC DAB must address what Ford calls the "geography" of today's radio.

The USADR IBOC DAB system has been designed to address directly Ford's concern. USADR has extensively studied not just the protected contours of thousands of existing stations, but also the actual coverage areas based on interference and other factors.⁴³ USADR's simulations indicate that even in the hybrid mode, the digital signal of its FM system exceeds the threshold of audibility well beyond the relevant protected contour, and even in the presence of adjacent channel interference.⁴⁴ USADR's laboratory and field test programs are in the process of confirming these simulation results. Moreover, even in areas at the edge of coverage, where the digital signal may be impaired, USADR's use of blend to analog will ensure that coverage continues to extend as far as today's analog signal. In the all-digital system, the back-up digital will play the same role extending the range of the primary digital signal. Thus, USADR anticipates that implementation of its IBOC DAB system will not interfere with the "geography" of analog radio.

⁴² Ford Comments at 7-10.

⁴³ *See, e.g.* Petition at App. D.

⁴⁴ *See* Petition at App. E.

VII. Proposals for Microradio Should Not Slow Commission Action on DAB

Proposals to the Commission for a new “microradio” or “low power” radio service should not be used to impede the Commission’s initiation of a rulemaking proceeding concerning DAB. The public interest in promoting DAB and enhancing terrestrial radio broadcasting is sufficient to justify proceeding with a rulemaking. USADR agrees with Chairman Kennard’s comments to last Fall’s NAB Radio Show that in its consideration of microradio proposals, the Commission “will not do anything to prevent the conversion to digital.”⁴⁵

USADR has studied the various petitions that have been submitted to the Commission concerning microradio and has provided comments on those petitions.⁴⁶ The microradio petitions present the Commission with a wide range of incompatible requests. In the event that the Commission chooses to initiate a rulemaking proceeding and propose specific rule changes concerning microradio, USADR will conduct a comprehensive analysis of any such proposal and the impact it would have on IBOC DAB. At that time, USADR will provide the Commission with a technical analysis of the compatibility of these two proposed uses of the existing radio bands.⁴⁷ Any such analysis before there is an actual microradio proposal from the Commission would be premature.

The USADR Petition proposes an upgrade of an existing service that is designed to enhance and improve that service. Although USADR acknowledges it must demonstrate the compatibility of its proposal with existing users of this spectrum, USADR notes that in their comments, incumbent

⁴⁵ Remarks by William E. Kennard, Chairman, FCC to NAB Radio Convention, dated Oct. 16, 1998.

⁴⁶ See Consolidated Comments of USA Digital Radio Partners, L.P., RM No. 9246, RM No. 9208 and RM No. 9242, dated April 27, 1998.

⁴⁷ USADR assumes microradio proponents would also provide technical analyses of the impact of microradio on both existing broadcasters and USADR’s IBOC DAB technology.

users that will be affected by the implementation of IBOC DAB overwhelmingly support the USADR Petition and encourage the FCC to initiate a rulemaking proceeding.

VIII. USADR Agrees A Public Information Campaign Will Help Consumers

USADR agrees with Ford that a public information campaign will help consumers understand the impact that the introduction of IBOC DAB will have on AM and FM broadcasting.⁴⁸ USADR encourages the Commission to include this issue in its NPRM on IBOC DAB.

Although USADR is working with receiver manufacturers to minimize the impact of IBOC DAB on existing receivers, it is true that any actual impact cannot be fully assessed until wide-scale field tests are complete.⁴⁹ USADR's tests to-date have indicated that the vast majority of receivers will not be impacted by the transmission of the digital signal. In those cases where the digital signal does affect the analog receiver, the analog signal typically masks those effects. Nonetheless, the impact, if any, of the digital signal will vary depending on the characteristics of the different receivers.

In order to address any concerns among manufacturers, broadcasters or consumers, USADR agrees that a public information campaign should be considered at the time the Commission implements its final rules on IBOC DAB. Experience in recent years has shown that the Commission's use of consumer bulletins, news releases and the extensive resources on the Commission's web site have helped consumers gain a greater understanding of the significant

⁴⁸ Comments of Ford at 11.

⁴⁹ Ford expresses concern that the digital signal may reduce the range of reception for the system. *See Id.* USADR is confident the digital signal, even in the hybrid mode, will provide coverage in a station's existing protected contour. The digital signal will also extend to areas beyond the protected contour, as does today's analog signal. Although the digital signal may have some limitations on range outside the protected contour and at the edge of coverage, USADR's system will maintain coverage over the existing listening area by blending to analog. Because listeners at the edge of coverage currently receive an impaired analog signal, the loss of digital coverage in some of these areas should not result in degraded service.

changes that have taken place in telecommunications. The same approach could help eliminate questions or confusion stemming from the introduction of IBOC DAB.

IX. The CEMA Technical Analysis Raises Issues for Lab and Field Tests

The CEMA Comments include an Appendix containing CEMA's "Views on Performance Objectives and Analysis and Assessment of Technical Showings in USADR Petition for Rulemaking."⁵⁰ Although the CEMA analysis raises a number of issues which USADR believes will be resolved by lab and field test results, the analysis does not demonstrate any significant problems with IBOC DAB.

USADR agrees with CEMA that audio quality and compatibility are the key elements of any DAB system and must be the focus of a system's test program. The USADR Petition provides a significant discussion of the importance of these elements.

The CEMA Appendix also contains an assessment of the technical appendices in the Petition. In large part, this material summarizes portions of the Petition and highlights issues CEMA would like to see addressed in lab and field tests. USADR agrees that lab and field test results are the critical material that will be needed to fully assess IBOC DAB systems. USADR believes it is premature to engage in a discussion of CEMA's preliminary and selective analysis of USADR's simulation results at this time. USADR's initial testing has indicated many of the issues CEMA discusses will be clarified with full test results, and USADR is confident its lab and field tests will adequately address the issues CEMA raises.

⁵⁰ Comments of CEMA at Appendix A.

X. The Commission Should Move Forward with the Process Articulated in the USADR Petition

USADR continues to support the process it suggested in the Petition. USADR encourages the FCC to (i) initiate a rulemaking proceeding; (ii) establish timelines for submission of system information and tests results; (iii) establish procedures for evaluating that information; and (iv) select an IBOC DAB transmission standard. This approach received substantial support in the comments.

Many of the commenters also highlighted the National Radio Systems Committee (“NRSC”) and its active participation in the development of IBOC DAB.⁵¹ In fact, some commenters have suggested that the Commission allow the NRSC to evaluate the system test results as a “precursor to FCC final action.”⁵²

USADR agrees there is an important role for the NRSC, and that the most effective role is the collection of data and the evaluation of IBOC DAB systems as suitable replacements for analog radio. USADR has actively participated in the NRSC through its DAB Subcommittee and various task groups. As both CEMA and the NAB note in their comments, the NRSC (i) has developed model lab test guidelines; (ii) is developing model field test guidelines; (iii) will examine system proposals to determine whether IBOC DAB systems will offer significant improvements over existing analog AM and FM radio; and (iv) is available to provide advice to proponents.⁵³ USADR agrees this is an appropriate scope of work for the NRSC and is supporting the NRSC’s activities in these areas. USADR has helped develop the NRSC model test guidelines and intends to incorporate those guidelines in its own test plan. The NRSC has not, however, agreed to perform

⁵¹ See e.g. Comments of CEMA at 6.

⁵² See Comments of NAB at 15.

⁵³ See e.g. Comments of CEMA at 6-7.

comparative evaluations of the IBOC DAB systems, and the comments in this proceeding do not suggest the NRSC should assume this role. As USADR explained in greater detail in the Petition, the Commission is in the best position to undertake that critical activity.

Ultimately, as the commenters agree, the Commission will need to adopt formally an IBOC DAB transmission standard. Although it will require dedication of some Commission resources, the most efficient way to set a standard is for the Commission to conduct the full system evaluations that will be required. In this proceeding, the demands on the Commission's resources will be limited by the small number of proponents and the fact that all three systems are based on similar concepts and adopt similar solutions. No other body has the expertise, the authority, or the resources to complete this task as efficiently as the Commission. USADR welcomes input from the NRSC as well as other commenters. However, the Commission should move forward to adopt the process outlined in USADR's Petition.

XI. Conclusion

For the foregoing reasons, USADR encourages the Commission to adopt the proposals in the USADR Petition and to quickly issue a Notice of Proposed Rulemaking to implement IBOC DAB.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Robert A. Mazer", with a long horizontal flourish extending to the right.

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Reply Comments of USA Digital Radio, Inc. was sent by first-class mail, postage prepaid, this 25th day of January, 1999, to each of the following:

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