

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)	
)	
Digital Audio Broadcasting Systems)	MM Docket No. 99-325
And Their Impact On the Terrestrial Radio)	
Broadcast Service)	

To: The Commission

REPLY COMMENTS OF NATIONAL PUBLIC RADIO, INC.

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Reply Comments of National Public Radio, Inc.

Introduction and Summary

Pursuant to Section 1.415 of the Commission’s Rules, 47 C.F.R. § 1.415, National Public Radio, Inc. (“NPR”) hereby responds to the comments filed in response to the Commission's Public Notice regarding the iBiquity Digital Corporation ("iBiquity") IBOC FM system.¹

In reviewing the initial comments, it is clear the vast majority of the parties to this proceeding support the adoption of the iBiquity IBOC FM system. We, along with other stakeholders recognize, however, that there are a number of significant issues the Commission must first resolve before the iBiquity IBOC FM system can be implemented. We certainly

¹ Public Notice, Comment Sought on National Radio Systems Committee DAB Subcommittee's "Evaluation of the Ibiquty Digital Corporation IBOC System", MM Docket 99-325, rel. Dec. 19, 2001 [hereinafter "Public Notice"]. Unless otherwise noted, all references to Comments are to Comments filed in this Docket in response to the Public Notice.

appreciate the desire to expedite the transition to digital audio broadcasting ("DAB"), but, as NPR and other parties noted:

- additional testing must be conducted and evaluated to assure the protection of subcarrier ("SCA") services, particularly radio reading services for the print-impaired;
- the Commission must satisfy interference concerns and assure itself and broadcasters that the cost of implementing the system will be reasonable;
- and, perhaps most importantly, the Commission must develop, with appropriate public comment, the technical and service parameters to govern IBOC DAB.

In resolving these issues, NPR again urges the Commission to ensure an opportunity for broadcast stations to utilize the proposed IBOC FM system to offer additional audio program services. We envision a host of new public interest-oriented audio services, such as assisted living, public safety, and Spanish or other foreign language services. We also believe the availability of additional audio services will propel the deployment of IBOC radio receivers and the public's acceptance of IBOC DAB. Indeed, we have demonstrated how the necessary receiver functionality might appear to the listener -- through a software program accessible at www.npr.org/impulse2/npr.exe. Particularly given the more limited service opportunities inherent in the IBOC approach relative to digital television ("DTV"), we therefore agree with Impulse Radio that the Commission needs to examine carefully, and maximize, the audio program service opportunities under the proposed IBOC FM system.

With respect to other issues, the Commission should reject the suggestion that it require each broadcast station to resolve at its own expense any interference complaints that any consumer may lodge at any time after the station implements the iBiquity IBOC FM system. Such an obligation would impose open ended liability, thereby greatly increasing the cost of

converting to IBOC DAB. There is also no basis for comparing the limited interference that is predicted to occur with the Commission's existing blanketing interference rules. In fact, the likelihood and severity of interference is more properly addressed as a threshold issue of whether to approve the iBiquity IBOC FM system.

The Commission should also refrain from mandating the conversion to IBOC FM, including by setting a sunset date for the termination of analog operations, as a few parties advocate. There is no need for such a mandate because, unlike in the case of the DTV transition, IBOC is designed for a gradual approach: it reutilizes the existing broadcast spectrum for both analog and digital operations, and it does not render existing receivers obsolete in its hybrid analog/digital mode. Accordingly, stations should be able to make the conversion as their resources and the public's demand for digital services dictate.

Finally, in the interest of both serving the public's interest in more audio program services and promoting the DAB transition generally, NPR reiterates its support for the Commission's original proposal to reallocate new spectrum to radio. While iBiquity and a few others urge the Commission to declare its intention not to pursue any out-of-band solutions to DAB, the desire to end "speculation" is misplaced, and the request is not inconsistent with the allocation of new spectrum for DAB. The Commission has never suggested that the successful development of an IBOC approach obviates the need for new spectrum. In addition, stations utilizing reallocated spectrum -- especially spectrum contiguous to the current FM band such as the 82-88 MHz spectrum -- would logically want to use the iBiquity IBOC FM system to take advantage of the emerging base of iBiquity-ready receivers. The reallocation of spectrum to radio, moreover, is likely to hasten the adoption of IBOC DAB. We therefore urge the Commission to continue to pursue the allocation of new spectrum, include the spectrum at 82-88 MHz.

I. NPR Reiterates Its Support For the iBiquity IBOC FM System, But, As Other Parties Recognize, A Number of Issues Must Be Resolved Prior to Authorizing the Implementation of the iBiquity IBOC FM System

Measured by the overwhelming consensus among the initial Commenters, the National Radio Standards Committee ("NRSC") report endorsing the iBiquity IBOC FM system represents a significant milestone. Indeed, it has been almost fifteen years since NPR first raised the issue of a DAB transition in the context of the Commission's early consideration of digital television,² and it has also been more than ten years since the Commission first began encouraging the broadcast industry to pursue an IBOC approach to DAB.³ Despite the passage of time and the importance of the DAB conversion, however, the Commission must take appropriate care in adopting an IBOC FM standard to ensure the maximum public benefit.

A. In Developing the Technical and Administrative Rules to Govern the Implementation and Deployment of the iBiquity IBOC FM System, the Commission Should Seek to Ensure that Broadcasters Have the Opportunity to Provide Secondary Audio Program Services

Notwithstanding the near-universal acclaim for the iBiquity IBOC FM system, important stakeholders recognize there are significant issues associated with adopting the standard to govern that system.⁴ As iBiquity itself notes, "the Commission will need to adopt an IBOC standard and make decisions about what should be included in that standard and who should

² Comments of National Public Radio, Advanced Television Systems and Their Impact on the Existing Television Broadcast Service, MM Docket No. 87-268, at 2-7, filed Nov. 18, 1987.

³ Notice of Inquiry in GEN Docket No. 90-357, 5 FCC Rcd 5237 (1990).

⁴ Cf. Comments of Cox Radio at 2 ("urg[ing] the Commission to select the proposed IBOC system promptly as the new FM radio standard"); Comments of Susquehanna Radio Corp. at 4 ("urg[ing] the commission [sic] to take whatever action it deems appropriate to adopt the iBiquity FM IBOC system as the standard form of digital broadcasting in the United States and authorize the commencement of this new service at the earliest possible date").

maintain the standard."⁵ NAB, in turn, asks whether there should be a single standard for IBOC radio and, in authorizing IBOC, whether the Commission should do so "pursuant to a standard or a complete system specification" and whether that task should be undertaken by the Commission, the NRSC, or by some other body.⁶ Finally, Impulse Radio asks important questions concerning the auxiliary capacity of the iBiquity IBOC FM system and the standards that should govern the utilization of that capacity.⁷

NPR agrees that these important questions must be addressed and resolved prior to authorizing broadcast stations to implement the iBiquity IBOC FM system. In the course of resolving these questions, moreover, we again urge the Commission to pursue appropriate measures to ensure that broadcasters have the opportunity to offer, and listeners the ability to receive, secondary audio program services.

As we described in our initial comments, the transition to IBOC DAB promises an opportunity for radio broadcasters to offer a host of new services.⁸ Among the audio services we envision are

- **public safety services**, offering weather alerts, traffic safety information, national security notifications, and other audio programming matter directed to local, regional, or national events or emergencies
- **assisted living services**, including radio reading services for the print-impaired and even "live captioning" for the hearing impaired⁹

⁵ Comments of iBiquity Digital Corporation at 17.

⁶ Comments of the National Association of Broadcasters at 10-11.

⁷ See Comments of Impulse Radio, Inc. at 9-12.

⁸ NPR Comments at 5-7.

⁹ As we discussed on our initial Comments, the need for audio services targeted to the print-impaired community will only increase with the aging of the "baby boomer" generation due

- **foreign language services**, serving a broader range of ethnic groups than can possibly be reached by existing SCA-based services
- **services to un-served and underserved areas and populations**, including niche services, such as *National Native News*, and even general interest services, such as NPR's *Tavis Smiley Show*, which, because of a lack of stations or station transmission capacity, are not universally or even generally available to the public
- **audio-on-demand**, enabling listeners to access newscasts, traffic reports, school closings and specialty business, agriculture, and other news on a non-real-time/as-needed basis.

The iBiquity IBOC FM system offers the technical means for providing such services, and NPR has demonstrated -- through a software program accessible at www.npr.org/impulse2/npr.exe -- how such services might be received by a listener through a typical mass market receiver.¹⁰ We are also mindful of the transition from AM broadcasting to AM/FM broadcasting that the success of the IBOC DAB transition will similarly depend in large measure on the availability of

to macular degeneration, glaucoma, cataracts, and diabetic retinopathy. *Id.* at 6. Indeed, a just-published report of the National Eye Institute and Prevent Blindness America, predicts that the number of older (over age 40) Americans with age-related eye disease and the vision impairment that results will double (from 3.4 million) during the next 3 decades. National Eye Institute, National Institutes of Health and Prevent Blindness America, "Vision Problems in the U.S.: Prevalence of Adult Vision Impairment and Age-Related Eye Disease in America" 1, 10 (2002) *reprinted at* <http://www.nei.nih.gov/eyedata/pdf/VPUS.pdf>.

¹⁰ See NPR Comments at 9.

To launch the demonstration from www.npr.org/impulse2/npr.exe, double click on the "npr.exe" file to download the file. Download the file to your computer's "desktop." Once the file is downloaded, click on the "npr.exe" icon on the desktop. To exit from the program, hit the ESC key twice.

To navigate the demonstration, the "3" button located to the left of "Menu" allows for scrolling through the menu options. Click on the "3" button to chose NPR A/B, Traffic or Weather. Click on "Select" or the "6" button to activate the chosen option.

compelling new audio program services.¹¹ The only missing ingredient is the availability of mass market receivers capable of offering multiple program services broadcast by a given broadcast station.

Significantly, CEA recognizes the direct causal relationship between the availability of audio content, on one hand, and the purchase of IBOC receivers and a successful IBOC transition, on the other.¹² While we see less of a need to mandate the continued offering of a primary audio service, we do not dispute CEA's comments regarding the radio broadcast industry generally:

The FM radio broadcasting service is an audio service established by the Commission for the public's 'convenience, interest, or necessity.' In the transition to IBOC DAB this service must retain its principal characteristic -- audio broadcasting.¹³

Like CEA, NPR believes that digital radio should first and foremost serve the public's *listening* needs.

It is not entirely clear, however, that individual radio receiver manufacturers will produce radio receivers capable of accessing a given station's multiple program services. Indeed, we fear that text-based and data services may be the only auxiliary services available to the public if they are less expensive to produce and more lucrative. The comments of one prominent receiver manufacturer are noteworthy:

IBOC . . . has the potential to transform the nature and use of radio receivers. The auxiliary datacasting capacity of the IBOC system will introduce the possibility of

¹¹ NPR Comments at 9-10.

¹² See Comments of the Consumer Electronics Association at 2-3 ("If some broadcasters were to forego audio programming and use their IBOC DAB signals to transmit non-audio content, then consumers would have little reason to purchase IBOC DAB audio receivers, and receiver manufacturers would therefore have little reason to produce them.").

¹³ Id. at 3.

new services that Kenwood's research indicates consumers want. For example, IBOC will facilitate the introduction of traffic, weather, emergency and other information services for radio listeners. IBOC also will provide a more universal platform for transmitting station identification information as well as song and title information that consumers find useful and informative. These datacasting services are consistent with Kenwood's view of the future uses of radio receivers, and Kenwood is actively supporting development of receivers capable of supporting and enhancing these service offerings.¹⁴

Likewise, iBiquity's discussion of the matter focuses almost exclusively on the datacasting capabilities of the IBOC FM system.¹⁵

While the public should ultimately decide which mix of services best serves its interests, the public will not have a choice if the only available receiver options permit each station's primary audio program service plus whatever text-based services stations may provide. If, as proposed, the iBiquity IBOC FM system is adopted as a government mandated standard, iBiquity will be the exclusive provider of the IBOC FM transmission technology. iBiquity is also a vertically integrated company whose investors include the predominant commercial broadcast and consumer electronics interests.¹⁶ In these circumstances, the Commission needs to consider the likely functioning of the marketplace for IBOC services and receiver equipment.

For all these reasons, we again urge the Commission to consider all appropriate measures to assure individual radio broadcast stations a meaningful opportunity to offer, and the public the ability to receive, multiple audio program services.

¹⁴ Comments of Kenwood Corporation at 3.

¹⁵ Comments of the iBiquity Digital Corporation at 9-10. This emphasis is also apparent from the "Experience Digital Radio" section of iBiquity's website. See www.ibiquity.com ("iBiquity Digital's IBOC technology will allow for new wireless data services to be delivered from AM and FM radio stations, such as station information, artist and song identification, scrolling of traffic, weather, news and sports scores, and much more.")

¹⁶ See Comments of the iBiquity Digital Corporation, Appendix A (identifying iBiquity's investors and other "Strategic Partners").

B. Proper Resolution of a Number of Ancillary Issues Is Critical to a Successful IBOC Implementation

As the Public Notice points out, additional testing of the iBiquity IBOC FM system remains to be completed and evaluated.¹⁷ While an early analysis of the SCA interference testing looks promising, we look forward to a subsequent opportunity to comment, as promised,¹⁸ on the testing and its results to assure the adequate protection of SCA services, particularly including radio reading services for the print-impaired. We also look forward to an opportunity to evaluate and comment on the testing of the iBiquity IBOC FM system based on the substitution of the iBiquity PAC audio coding algorithm for the open-standard AAC/MPEG algorithm.¹⁹

As a related matter, NPR again urges the Commission to consider the cost of implementing the iBiquity IBOC FM system and not merely the extent to which the public may benefit from its implementation. Since the iBiquity system is a proprietary one, the cost to license the technology could be unreasonably burdensome, particularly for noncommercial broadcasters.²⁰ We agree with the CEA that the technology should be licensed without charge to

¹⁷ See Public Notice at 2; Comments of the International Association of Audio Information Services at 3.

¹⁸ Public Notice at 2.

¹⁹ Id.

²⁰ As we noted in our initial Comments:

Noncommercial stations, in particular, have a limited pool of resources from which to fund station operations, produce and acquire programming, and engage in other related activities. In addition, statewide broadcast networks are common in public radio, and it is not clear whether each licensed facility would be assessed a separate fee or whether the fee would be recurring.

See NPR Comments at 5 n. 6.

applicants desiring to use the intellectual property for the purpose of implementing the standard or under terms and conditions that are reasonable under the circumstances.²¹

We part ways with CEA, however, with regard to its suggestion that each broadcast station should be compelled to resolve at its own expense any interference complaints that any consumer may lodge at any time after the station implements the iBiquity IBOC FM system.²² Given the unfortunately common occurrence of interference for a variety of reasons, CEA's proposal would impose open ended liability and thereby greatly increase the cost of implementing the iBiquity IBOC system.

CEA's attempt to analogize its proposal to the Commission's existing blanketing interference rules, moreover, is misplaced. Blanketing interference is caused by the mere operation of a radio transmitter and can result in the complete impairment of all radio reception and other electronic equipment in the immediate vicinity of the transmitter.²³ The interference

²¹ See Comments of the Consumer Electronics Association at 3-4 (citing the standard setting requirements of the American National Standards Institute).

²² Id. at 4-5.

²³ A broadcast receiver is considered to be blanketed whenever a station's signal strength or signal power density is of such magnitude that it causes the receiver near the transmitting antenna to be partially or completely blocked from receiving other broadcast stations. In many cases, the signal from a nearby transmitter can be so strong that it not only desensitizes radio frequency receivers, but also interferes with and adversely affects other electronic equipment operating on a wide band of frequencies. The high signal level may also produce intermodulation products which may interfere with the reception of other stations at the receiver and obstruct or interrupt the intended operation of other electronic devices.

In the Matter of Amendment of Parts 73 of the Commission's Rules to More Effectively Resolve Broadcast Blanketing Interference, Including Interference to Consumer Electronics and Other Communications Devices, Notice of Proposed Rulemaking, MM Docket No. 96-62, 11 FCC Rcd 4750, at ¶ 2 (1996) (citations omitted).

contemplated in the NRSC Report is limited to the channels immediately adjacent to a given IBOC station, occurs some distance from the IBOC station's transmitter, and, most importantly, would likely be indistinguishable from interference caused by terrain, environmental "noise", other radio-frequency devices, and a host of other factors beyond the control of the radio broadcast station.²⁴ In that regard, one of the principal reasons consumers suffer impaired reception of over-the-air broadcast signals of the sort described in the NRSC Report is the lack of interference immunity standards governing the manufacture of radio receivers.²⁵

More fundamentally, while CEA couches the matter in terms of an implementation issue, the potential breadth of its proposal calls into question whether the Commission should even approve the iBiquity IBOC FM standard. The Commission should therefore assess whether the interference that may occur following implementation of the iBiquity IBOC FM system is sufficiently great to warrant rejection of the system or require further development of the system prior to adoption. In any event, the Commission should not impose open ended liability on broadcast stations to resolve all future "interference" complaints.²⁶

²⁴ In fact, the studies submitted to the NRSC indicate that the presence of an IBOC signal results in, at most, only a negligible amount of interference. See National Radio Standards Committee, DAB Subcommittee, Evaluation of the iBiquity Digital Corporation IBOC System, Appendix I (adopted Nov. 29, 2001) (maps showing analog interference in red and digital interference in blue).

²⁵ See In the matter of Changes in the Rules Relating To Noncommercial, Educational FM Broadcast Stations, Memorandum Opinion and Order Proceeding Terminated, Docket No. 20735, 1985 FCC LEXIS 3064; 58 Rad. Reg. 2d 629, at ¶¶ 13-14 (1985); In the Matter of FM Broadcast Station Blanketing Interference, Report and Order Termination of Proceeding, BC Docket No. 82-186, 1984 FCC LEXIS 1711; 57 Rad. Reg. 2d 126, at ¶¶ 23-24 (1984).

²⁶ Likewise, the comments of some low power FM ("LPFM") advocates are unfounded. See Comments of the Amherst Alliance et al. at 4-5 (suggesting that full power stations should have to obtain the permission of adjacent channel LPFM stations, including at the expense of purchasing new transmission systems for the LPFM stations). They appear to have forgotten that LPFM is a secondary service established based on the FCC's assumption, seconded by many

Finally, the Commission should not adopt a mandatory transition obligation or a fixed date for the sunset of analog service, as suggested by a few parties.²⁷ Because an IBOC system, by its nature, utilizes the existing spectrum to both maintain analog service and provide digital service, and it does not obsolete existing analog receivers in its hybrid analog/digital mode, there is no current need to mandate a conversion to all digital or even hybrid digital operation, as was the case with the DTV transition.²⁸ Thus, the transition to digital will depend, as it should, on the public acceptance of IBOC.²⁹ In these circumstances, the marketplace, not regulation, should determine the pace of the transition, and individual stations should be able to make the transition based on their listeners' demand for digital service and on their available resources.

LPFM advocates, that no interference or other issues were implicated by the establishment of LPFM and the then-pending development of IBOC. See In the Matter of Creation of Low Power Radio Service, Memorandum Opinion and Order, MM Docket No. 99-25, at 57 (Sept. 28, 2000) (declining to adopt, as technically unnecessary, NPR's request that the Commission "authorize LPFM stations 'on a secondary basis to all full power, translator, and booster stations operating pursuant to a DAB authorization.'"). See also Reply Comments of the United Church of Christ, Office of Communications, Inc., et al, MM Docket No. 99-25, at 21-24 (filed Nov. 15, 1999) (in dismissing concerns regarding LPFM and its effect on IBOC, arguing that "[t]he proposed LPFM service will not significantly alter the interference landscape").

²⁷ See Comments of Cox Radio at 3; Comments of the International Association of Audio Information Services at 2.

²⁸ Eventually, some mandate may be required if, for instance, market penetration of IBOC receivers stalls.

²⁹ That is not to say that the Commission should not seek to maximize the potential public benefits of IBOC digital radio by, for instance, assuring the availability of additional audio program services, see Section I.A., supra, and otherwise seeking to *facilitate* its adoption. See Section II, infra.

II. The Commission Should Allocate New Spectrum to Digital Radio

In NPR's initial Comments, we reiterated our support for the Commission's prior proposal to reallocate new spectrum to DAB, including the spectrum at 82-88 MHz.³⁰ Demand for spectrum to provide audio program services continues to far outpace existing available spectrum, despite the Commission's efforts to increase the number of radio broadcast stations through the establishment of additional classes of radio broadcast facilities.³¹ We believe, moreover, that the allocation of new spectrum can facilitate the transition to DAB.

Thus, the Commission might designate all or a portion of any new spectrum for all-digital use. Since the IBOC approach to DAB relies on the gradual replacement of analog receiver equipment with hybrid analog/digital and all-digital equipment, the transition is otherwise likely to take place over a number of years. All-digital broadcast stations could take advantage of the more than 300 kb/s of digital throughput to extend existing services to new audiences, create a demand for new services, and enable new, public safety and other public interest services.³² Thus, we believe, the existence of these stations could be critical to spurring the digital transition by catalyzing demand for DAB services generally.³³

³⁰ NPR Comments at 11-13.

³¹ See *id.* at 11 & n.21. The need for spectrum to provide noncommercial audio program services is now particularly at issue, given the Commission's recent proposal to restrict the ability of nonprofit entities to apply for non-reserved spectrum to construct noncommercial educational stations. See In the Matter of Reexamination of the Comparative Standards for Noncommercial Educational Applicants Association of America's Public Television Stations' Motion for Stay of Low Power Television Auction (No. 81), Second Further Notice of Proposed Rulemaking, MM Docket No. 95-31 (rel. Feb. 25, 2002).

³² See NPR Comments at 12-13.

³³ *Id.* at 12. See also *id.* at n.23 (noting, for instance, the popular demand for Dolby Surround audio). Cf. Comments of iBiquity Digital Corporation at 15-16 (noting the importance of even first generation IBOC radio receivers having the capability of receiving all-digital mode

While no Commenter specifically opposed the proposal to reallocate the 82-88 MHz spectrum, iBiquity and several of its investors and "strategic partners" urged the Commission to declare its intention not to seek any out-of-band solutions for implementing DAB now and in perpetuity.³⁴ As a threshold matter, we doubt the usefulness of such a categorical declaration. The Commission has also never considered the development of an effective IBOC system and the allocation of new spectrum to be mutually inconsistent.³⁵

Moreover, the desire to end "speculation" regarding IBOC does not justify forever limiting radio broadcasters to the existing FM band. We believe the speculation will end, as it should, with the final testing, adoption, and implementation of the iBiquity IBOC FM system. We also expect that broadcasters operating on reallocated spectrum would employ an iBiquity approach to DAB. Given the Commission's goal of spectrum efficiency,³⁶ the limited amount of spectrum available at 82-88 MHz and elsewhere is unlikely to permit a more spectrum-intensive approach. Broadcasters operating on adjacent, reallocated spectrum would also need to rely on an emerging base of iBiquity receivers to reach and serve their listening audience.

For all these reasons, we believe the reallocation of new spectrum is as essential to the future of DAB as is the adoption of the iBiquity IBOC FM system itself.

broadcast signals.)

³⁴ See Comments of iBiquity Digital Corporation at 15; Comments of Clear Channel at 2; Comments of Toko America, Inc. at 3; Comments of Victor Company of Japan Ltd. at 2; Comments of Kenwood Corporation at 5.

³⁵ See In the Matter of Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Broadcast Service, MM Docket No. 99-325, 15 FCC Rcd. 1722, at ¶ 41.(1999) ("We note that the IBOC and new-spectrum DAB options need not be mutually exclusive and, in fact, could be complementary.").

³⁶ Id. at ¶¶ 26-28.

Conclusion

NPR supports the adoption of the iBiquity IBOC FM system, subject to the proper resolution of a number of technical and policy matters, as well as the Commission's broader initiative to facilitate the DAB transition, including through the allocation of additional spectrum. Accordingly, we urge the adoption of appropriate measures consistent with NPR's initial Comments and the foregoing Reply Comments.

Respectfully submitted,

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