

**Before the
Federal Communications Commission
Washington, D.C. 20554**

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

**REPLY COMMENTS OF
iBIQUITY DIGITAL CORPORATION**

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EXECUTIVE SUMMARY

The comments submitted in response to the Commission's Further Notice of Proposed Rulemaking in this proceeding demonstrate a strong consensus among radio broadcasters, equipment manufacturers and the public that IBOC technology will benefit the public interest. Given this sentiment, the commenters strongly urged the Commission to expeditiously adopt the proposed IBOC rules. All the principal parties in the radio industry demonstrated a comfort with IBOC technology and excitement over the new advanced features that can be provided with IBOC including the supplemental audio channel and datacasting capabilities. In light of the consensus that exists for IBOC and the Commission's proposed rules, iBiquity urges the Commission to expeditiously adopt its proposed IBOC rules.

With regard to specific issues raised in the FNPRM and the initial comments, iBiquity has the following views. First, iBiquity urges the Commission to immediately authorize AM nighttime broadcasts. This issue has been dealt with in a separate set of comments but the record firmly establishes the need and viability of nighttime AM broadcasting. Second, iBiquity believes that it is necessary for the Commission to revise the spectral emission's mask for the AM and FM digital signals. In an attachment to these Reply Comments, iBiquity provides its proposed revised emission mask.

Third, iBiquity urges the Commission to develop interference rules of general applicability rather than narrow based rules designed to meet specific interference situations. iBiquity believes that the record does not provide any basis for imposing onerous limits on the IBOC service. Any interference issues should be solved on a case-by-case basis between the affected radio stations with assistance from the Commission, only if necessary. iBiquity rejects

the comments of several parties urging a more draconian approach to potential interference issues.

Fourth, iBiquity remains committed to insuring that vital services, such as the radio reading services, will be apart of radio's digital future. However, it does not support proposals for special regulatory burdens to be placed on digital broadcasts to insure the availability of radio reading service. The imposition of new and potentially expensive regulations on the design and features of digital receivers will create a strong disincentive for manufacturers to introduce digital devices. Likewise, iBiquity can not support the proposal that the Commission mandate that digital stations offer capacity to reading services or require a dedicated 20 or 24 kbps channel to meet the needs of the reading services community. Adoption of these proposal will have a deleterious impact on the roll-out of IBOC technology.

Fifth, iBiquity encourages the Commission to decline to address issues about consolidation in the radio industry in this proceeding. This is the wrong proceeding to address consolidation issues. The issue is better dealt with in other FCC proceedings that specifically raise the consolidation issue.

Sixth, iBiquity strongly disagrees with the characterization of the HD Radio system as a means for radio broadcasters to acquire new spectrum. The HD Radio system is "refarming" otherwise unuseable spectrum in both the AM and FM bands which is now used to protect an individual station from adjacent channel interference.

The Commission in the NOI portion of its recent IBOC order seeks comment on whether there is a copyright problem associated with the introduction of the HD Radio system. In these Reply Comments, iBiquity reiterates its view that there is insufficient evidence of an immediate copyright problem to warrant Commission action at this time. To the extent the Commission has

any concerns about the issues raised by the Recording Industry Association of America, Inc. (“RIAA”), the Commission should continue to monitor developments as the digital radio transition progresses.

iBiquity believes that RIAA’s argument that the Commission should impose restrictions on digital broadcasts in order to carry out the underlying intention of the Digital Performance Right in Sound Recordings Act and the Digital Millennium Copyright Act is directly contrary to the plain wording of the Copyright Act. In the Copyright Act, Congress granted an express exemption from performance rights fees for nonsubscription over-the-air broadcasts.

iBiquity also urges the Commission to avoid any regulatory steps that would obsolete existing IBOC receivers in use by consumers or in production. Any change in regulations that would obsolete receivers at this early stage in the digital transition will severely impact consumer attitudes toward IBOC and will encourage receiver manufacturers to stop production of digital receivers for fear that additional regulatory changes will obsolete the next generation of receivers.

Finally, iBiquity believes the RIAA has failed to establish a justification for singling out IBOC for an onerous regulatory structure. There is no restriction on storage and manipulation of music obtained through Internet streaming or satellite radio. It remains unclear why restrictions are necessary for IBOC. Given the lack of record on this issue, iBiquity urges the Commission to refrain from considering any copyright rules for IBOC.

TABLE OF CONTENTS

I. RESPONSE TO ISSUES RAISED IN THE FURTHER NOTICE2

A. There is a Consensus that the Commission Should Adopt Flexible IBOC Rules2

B. The Commission Should Authorize AM Nighttime Broadcasts3

C. iBiquity Concur that the Commission Should Revise the Spectral Emissions Mask for the AM and FM Digital Signals3

D. The Commission Should Not Use This Proceeding to Address Individual Station Interference Issues4

E. iBiquity Agrees There Must Be a Digital Future for Radio Reading Services.....6

F. Concerns About Consolidation in the Radio Industry Should Not be Considered in this Proceeding.....9

G. The HD Radio System Does Not Involve Grant of New Spectrum to Broadcasters...10

II. RESPONSE TO ISSUES RAISED IN THE NOI11

A. There is Insufficient Consensus of a Problem to Support Commission Imposition of Content Control Regulations11

B. The Commission Does Not Have the Authority to Impose Performance Rights Fees on Broadcast Radio.....12

C. The Commission Must Take Into Account the Existence of IBOC Receivers.....13

D. The RIAA Has Failed to Explain Why IBOC Should Be Subject to Unique and Onerous Regulations15

III. CONCLUSION.....16

Attachment A -- Revised Emissions Limits for AM and FM IBOC

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**REPLY COMMENTS OF
iBIQUITY DIGITAL CORPORATION**

iBiquity Digital Corporation (“iBiquity”), by its attorneys, hereby submits these reply comments concerning the FCC’s proposals on IBOC DAB. iBiquity was gratified by the strong support for and excitement about its HD Radio™ technology in the comments filed in response to the Commission’s recent Further Notice of Proposed Rulemaking and Notice of Inquiry.¹ These comments demonstrate a strong consensus for prompt Commission adoption of final IBOC rules. In particular, the comments show strong support for iBiquity’s view that the final IBOC rules should offer broadcasters flexibility to develop innovative new service offerings using the HD Radio system and that the final IBOC rules should not impose more regulatory requirements on the new digital service than currently exist for analog AM and FM service. iBiquity takes this opportunity to respond to several issues that were raised in the comments.

¹ *Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Broadcast Service*, MM Docket No. 99-325, *Further Notice of Proposed Rulemaking and Notice of Inquiry* (Apr. 20, 2004) (The portions of the item relating to the Further Notice of Proposed Rulemaking are referred to herein as “Further Notice”. The elements that relate to the Notice of Inquiry are referred to as the “NOI”).

I. RESPONSE TO ISSUES RAISED IN THE FURTHER NOTICE

A. There is a Consensus that the Commission Should Adopt Flexible IBOC Rules

The comments demonstrate a strong consensus among broadcasters, equipment manufacturers and the public that IBOC technology will benefit the public interest and that the Commission should expeditiously adopt its proposed IBOC rules. The comments contain several consistent themes. First, there is tremendous comfort with IBOC technology as the basis for the future of the radio industry. The vast majority of the comments demonstrate great familiarity with IBOC and a desire that the radio industry continue to proceed with the conversion to a digital world. Second, the comments contain a high level of enthusiasm about the advanced features that will be introduced using IBOC technology. Numerous broadcasters emphasized the benefit of the supplemental audio channel and how that IBOC feature will ensure an upgraded digital future for critical services such as radio reading services² as well as enhance the ability of broadcasters to offer more niche programming and public affairs broadcasts.³ Finally, the comments contain strong support for advanced datacasting services. Overall, the comments encourage the Commission to authorize these new features and avoid excessive regulation that would disadvantage these new digital services or create unnecessary regulatory burdens that would inhibit innovation in development of this exciting new technology.⁴ iBiquity strongly supports these views and encourages the Commission to use these guidelines when developing its final IBOC rules.

² See e.g. Comments of the International Association of Audio Information Services dated June 15, 2004.

³ See e.g. Comments of American University (WAMU) dated June 16, 2004 at 3.

⁴ See e.g. Comments of Cox Radio, Inc. dated June 16, 2004 at 3-4.

B. The Commission Should Authorize AM Nighttime Broadcasts

As iBiquity noted in its reply comments filed in response to the Media Bureau's Public Notice concerning AM nighttime digital service,⁵ Commission authorization of nighttime AM IBOC broadcasts is required if the AM band is to reap the benefits of IBOC technology. iBiquity urged the Media Bureau to immediately expand the existing interim authorization for IBOC service to include nighttime AM broadcasts. In these reply comments, iBiquity renews its request that the Commission include in its final IBOC rules authorization for permanent nighttime AM IBOC broadcasts.

C. iBiquity Concurs that the Commission Should Revise the Spectral Emissions Mask for the AM and FM Digital Signals

iBiquity concurs with the comments of Harris Corporation that the Commission should adjust the emissions limits for the AM and the FM digital signals.⁶ Since the adoption of the First Report and Order in this proceeding,⁷ both iBiquity and the transmission equipment manufacturers have had additional experience with the commercial deployment of the HD Radio system. The manufacturers and iBiquity are in a better position to determine the attainable emission limits that best protect against unwanted interference. These emission limits have been vetted with the major manufacturers of transmission equipment for the U.S. market. The manufacturers have concluded that the revised limits are attainable based on the state of the art of transmission equipment and will provide the necessary protection against unwanted interference. iBiquity's proposed revised emission limits are set out in Attachment A to these reply comments.

⁵ *Comment Sought on Use of Digital AM Transmissions During Nighttime Hours*, Public Notice, DA 04-1007, MM Docket No. 99-325 (rel. April 14, 2004).

⁶ Comments of Harris Corporation dated June 16, 2004 at 8-9.

⁷ *Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Broadcast Service*, 17 FCC Rcd 19990 (2002).

D. The Commission Should Not Use This Proceeding to Address Individual Station Interference Issues

Several of the comments raise concerns about the impact that IBOC conversions will have on particular stations. iBiquity encourages the Commission to refrain from developing IBOC rules of general applicability based on the individual situations of several stations. To the extent that there are individual, unanticipated interference situations presented by the conversion to IBOC, the Commission's existing rules afford the Commission the authority to address these situations. The Commission's First Report and Order already encouraged broadcasters to work cooperatively to address any interference issues that arise in the digital conversion.⁸ In the event broadcasters are not able to adequately address interference concerns through bilateral discussions, stations have the ability to use the Commission's complaint process to obtain relief. Moreover, the Commission retains the authority to order power reductions or other mitigation techniques to address unacceptable levels of interference, if they arise. However, the Commission should refrain from establishing overall limits on IBOC service. Rather, it should address unique situations on a case-by-case basis. Certainly, the record in this proceeding on the performance of the HD Radio system does not provide any basis for imposing limits on the IBOC service.

iBiquity does not agree with some of the interference concerns that were expressed in a few of the comments. Specifically, Press Communications' concerns about both FM and AM IBOC are not supported by the evidence in the record. Press asserts that IBOC will significantly impact short-spaced stations.⁹ The NRSC test program and the overall public record on IBOC do not support this conclusion. In many cases, short spaced stations already receive significant

⁸ *Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Radio Broadcast Service*, 17 FCC Rcd 19990 (2002) at ¶¶ 17, 29.

⁹ Comments of Press Communications, LLC dated June 16, 2004 at 1-3.

levels of analog interference that restrict analog coverage. The high level of analog interference in many situations will mask any impact from IBOC.¹⁰ Similarly, Press Communications' concerns about AM IBOC are inconsistent with the studies and test results iBiquity submitted to the FCC. The studies iBiquity conducted in conjunction with the National Association of Broadcasters ("NAB") indicated that stations with limited analog coverage due to crowded local channels already suffer large scale degradation due to analog interference. As is the case with short-space FM stations, that analog interference will mask much of the additional digital energy being introduced.¹¹

iBiquity also disagrees with the suggestion of Livingston Radio Company and Taxi Productions Inc. that the Commission should limit the digital power of particular classes of stations.¹² Livingston suggests that the Commission should limit the digital power of "superpower" Class B FM stations. iBiquity disagrees that this proceeding or IBOC technology was intended to be used to change the relative position of different classes of stations. To the extent that Livingston's stations receive harmful interference from adjacent channel IBOC operations, iBiquity believes Livingston will have adequate means to address those concerns without the need for the Commission to impose over inclusive restrictions impacting an entire class of stations.

¹⁰ National Radio Systems Committee DAB Subcommittee, Evaluation of the iBiquity Digital Corporation IBOC System, Part 1 – FM IBOC, adopted November 29, 2001 at Appendix I. A first adjacent channel study Denny & Associates, P.C. conducted for the NRSC found that short spaced WKKJ-FM, Chillicothe, Ohio would experience 0.12% decrease in total potential population served within its protected contour and 0.24% decrease in population out to the 40 dBu contour. When analyzed in terms of listening area, the study found a decrease of 0.42% within the protected contour and 1.17% out to the 40 dBu contour with the addition of IBOC. This level of interference cannot justify a nationwide restriction on IBOC service.

¹¹ See Letter from Jack N. Goodman to Ms. Marlene H. Dortch dated March 5, 2004 at 3; AM Nighttime Capability Study Report, iBiquity Digital Corporation dated May 23, 2003 at 7 (for local channels, the "impact of IBOC is not measurable. This is due to the limited coverage each station has at night and the number of stations on each channel. The existing co-channel undesired stations produce more analog ground and skywave interference than all the first adjacent IBOC signals.").

¹² Joint Comments of the Livingston Radio Company and Taxi Productions Inc., dated June 16, 2004.

E. iBiquity Agrees There Must Be a Digital Future for Radio Reading Services

iBiquity supports the comments that note the important role played by existing radio reading services.¹³ The radio reading services offer a vital service that cannot be readily duplicated using other technology. iBiquity has committed to work with the International Association of Audio Information Services (“IAAIS”) and National Public Radio (“NPR”) to ensure there is a digital future for these vital services.

As several of the comments note, authorization of supplemental audio services, scaling of the audio codec and the extended hybrid mode¹⁴ will ensure that broadcasters have sufficient flexibility to find a digital future for reading services.¹⁵ Some stations may find it easier to accommodate a reading service by activating the extended hybrid mode. Others may be more concerned about host interference and may prefer to use scaling of the codec to find sufficient capacity to accommodate the reading services. iBiquity encourages the Commission to allow broadcasters to select the best technical means to accommodate the reading services.

iBiquity is working diligently to complete plans for the digital solution for reading services. iBiquity has been developing a conditional access solution for the HD Radio system to ensure that reading services are able to maintain their copyright exemption. iBiquity is supplying software, hardware and laboratory facilities to facilitate additional testing by NPR and IAAIS to determine the appropriate low bit rate codec that can be used for reading services. Even though iBiquity has engineered the HDC codec to function at bit rates low enough to

¹³ See e.g. Comments of the International Association of Audio Information Services dated June 15, 2004.

¹⁴ iBiquity notes there was no support in the record for the suggestion of Kenwood Corporation that the Commission require STAs or experimental authorizations for some types of extended hybrid operations. Comments of Kenwood USA Corporation at 5. As iBiquity discussed in its comments, extended hybrid mode operations present a risk of host interference. The Commission should authorize broadcasters to adopt all three extended hybrid modes and allow broadcasters to make the appropriate operational decisions based on the needs of their listeners.

¹⁵ See e.g. Comments of National Public Radio, Inc., National Association of Broadcasters, Microsoft Corporation, Kenwood USA Corporation, Harris Corporation and Clear Channel Communications, Inc.

accommodate reading services, iBiquity has consistently assured the reading services that the HD Radio system will operate compatibly with any low bit rate codec the reading services select for inclusion in reading service devices.

Although iBiquity strongly supports the role of reading services, it cannot support the IAAIS' call for special regulatory burdens to be placed on digital broadcasts.¹⁶ The reading services community expresses two separate concerns about digital receivers. First, the reading services have a goal of eliminating their dependence on specialty receivers by requiring that all digital receivers include reading services capabilities. Second, the reading services want to require that certain tactile controls and other accessibility features be built into every digital receiver.¹⁷ Although iBiquity strongly believes accessibility is a laudable goal to ensure access to radio services for all members of society, iBiquity is concerned that the imposition of the regulations proposed by IAAIS will impair the development of digital radio. The imposition of new and potentially expensive regulations on the design and features of digital receivers will create a strong disincentive for manufacturers to introduce digital devices. Moreover, to the extent that these accessibility features would require significant development work or redesign of radio receivers, any mandates in this area would slow the introduction of digital receivers and the entire IBOC transition. These regulations will also increase the costs of digital radio for end users.

iBiquity also is concerned about the reading services' suggestion that all digital receivers should be capable of being used for reading services. iBiquity supports the widespread

¹⁶ IAAIS based some of its requests on Section 255 of the Telecommunications Act of 1996. 47 U.S.C. § 255. This section relates to the responsibilities of telecommunication manufacturers and service providers to meet the needs of the disabled. It applies only to entities regulated under Title II of the Communications Act. It does not impose any requirements on broadcasters regulated under Title III of the Communications Act or on manufacturers of broadcast related equipment. *See Report and Order and Further Notice of the Inquiry*, in WT Docket No. 95-198, 16 FCC Rcd 6417 (1999).

¹⁷ IAAIS Comments at 3-4.

availability of low cost receivers for reading services. However, iBiquity cannot ensure that all receivers can be used for reading services without the need for specialized auxiliary components. iBiquity can ensure that its HDC codec is included in HD Radio receivers. To the extent the reading services community selects a different codec for reading services, it is likely that iBiquity will not hold the intellectual property rights to that technology and that use of that technology may require payment of additional license fees by receiver manufacturers. It also is important to note any separate codec for reading services will need to reside on a different chip in the receiver from the chip used for the HD Radio system. Designing the receiver to accommodate an additional chip and the cost of the chip itself will increase the production costs for reading service enabled receivers in addition to any codec license fees that are required. iBiquity believes the Commission will severely impact the digital transition if it imposes these costs on all 70 million radios sold in this country every year. Even with large scale production, it would be difficult to envision low cost digital radios in the future if these costs are imposed on every digital receiver.

iBiquity also cannot support IAAIS' request that the Commission mandate that digital stations offer capacity to reading services.¹⁸ Again, although iBiquity supports the goal of increasing the number of reading services broadcasting to their listeners, special burdens imposed only on digital services will create a disincentive to convert from analog to digital and will work against the digital transition. Requiring that stations contact the IAAIS to inquire about introducing new reading services before the commencement of any secondary services would give the IAAIS unnecessary control over the digital transition, would create additional

¹⁸ *Id.* at 5.

work and documentation requirements on broadcasters, and would create another disincentive to convert to digital operations.

iBiquity also disagrees that the radio reading services need a dedicated 20 or 24 kbps channel to match their current service.¹⁹ iBiquity's internal testing has indicated that high quality voice channels can be attained using 8 or 10 kbps codecs designed for those low bit rates. In some cases, those codecs can support voiceover programming with background music. Although this class of codec is not designed for higher quality music, it is iBiquity's understanding that high quality music programming would be beyond the mission of the reading service stations. iBiquity looks forward to the completion of low bit rate codec tests NPR and IAAIS are conducting and remains confident they will identify a suitable solution that can function at 12 kbps. Both IAAIS and the Commission should be assured that iBiquity will continue to work with the reading services to develop a viable approach as radio migrates to a digital future.

F. Concerns About Consolidation in the Radio Industry Should Not be Considered in this Proceeding

iBiquity encourages the Commission to decline to address issues about consolidation in the radio industry in the context of this proceeding. Several of the comments seek regulation of IBOC based solely on concerns about consolidation in the radio industry.²⁰ iBiquity expresses no view on the merits of these arguments nor on the issues of consolidation, localism or diversity in broadcasting. At the same time, iBiquity submits that there are other active proceedings at the Commission where parties can express their views on these issues. The Public Interest Coalition provides a detailed accounting of the various proceedings where it has asked the Commission to

¹⁹ Comments of Communication Center of Minnesota State Services for the Blind

²⁰ Comments of Alliance for Better Campaigns, *et al.* dated June 16, 2004 (hereinafter referred to as Comments of Public Interest Coalition).

address its concerns about localism, program diversity and consolidation in the radio industry.²¹ iBiquity submits that those numerous proceedings before the FCC have afforded the Public Interest Coalition and others the opportunity to raise their concerns about the radio industry. This proceeding has never been the appropriate means for addressing these issues, and iBiquity urges the Commission to refrain from unnecessarily expanding the scope of this proceeding.

G. The HD Radio System Does Not Involve Grant of New Spectrum to Broadcasters

iBiquity disagrees with the characterization in some of the descriptions of the HD Radio system that imply broadcasters will be acquiring new spectrum.²² The HD Radio system is “refarming” otherwise unusable spectrum in both the AM and FM bands. Under the Commission’s existing rules for analog service, stations are separated by frequency in order to minimize adjacent channel interference. The Commission’s emission limits on analog signals create what is essentially a “guard band” between stations. This band cannot be used for any purpose or the technical integrity of the existing adjacent station would be compromised. Even though broadcasters do not “occupy” this band, they effectively “use” it by precluding anyone else from using that spectrum. It is this delicate balance that has insured the technical viability of the U.S. radio industry.

IBOC technology allows broadcasters to use that otherwise unusable spectrum. In essence, IBOC technology makes more efficient use out of currently used frequency but does not involve grant to broadcasters of rights to use new spectrum. It is important to note that this right to more efficiently use their existing spectrum comes at a cost to the broadcasters. Collectively the broadcast industry is agreeing to accept additional interference to existing services in limited

²¹ *Id.* at 22-24.

²² *Id.* at 18.

cases in order to facilitate an industry-wide upgrade to digital service. iBiquity objects to the Public Interest Coalition's characterization of this as a spectrum grant. iBiquity also disagrees that there is an opportunity for the Commission to take back any of this analog spectrum.²³ The HD Radio system will occupy the full bandwidth of the channel, even in the all digital mode, so there is no spectrum available for reassignment.

II. RESPONSE TO ISSUES RAISED IN THE NOI

A. There is Insufficient Consensus of a Problem to Support Commission Imposition of Content Control Regulations

The comments demonstrate a strong disagreement about the fundamental issue of whether there is any copyright problem associated with the introduction of the HD Radio system that the Commission needs to address. iBiquity supports the views of the Home Recording Rights Coalition, Public Knowledge/Consumers Union/Consumer Federal of America and the Electronic Frontier Foundation that there is insufficient evidence of an immediate copyright problem to warrant Commission action at this time. As iBiquity noted in its comments, the Commission adopted the television broadcast flag, a much less draconian measure than the RIAA's attempts to limit consumer recording of over-the-air broadcasts, based on an industry consensus supporting an industry recommendation of a compromise solution. There is no similar consensus about even the existence of a problem for digital radio, let alone a potential solution to any problem. To the extent the Commission has any concerns about the issues raised by the RIAA and others supporting the RIAA, the Commission should continue to monitor developments as the digital radio transition progresses. These content control issues, however, should not delay the Commission's adoption of final IBOC rules.

²³ *Id.* at 18.

B. The Commission Does Not Have the Authority to Impose Performance Rights Fees on Broadcast Radio

Several of the comments clarify that the content control concerns of the RIAA and its supporters are based on the lack of performance rights fees for music broadcast over the radio.²⁴ The RIAA's concerns about a consumer's ability to record and store music from radio broadcasts is an attempt by the RIAA to revisit the Supreme Court's *Betamax* decision²⁵ and to encourage the Commission to impose performance rights fees on radio broadcasts. Even if the Commission were to accept the RIAA's arguments that there is a need for regulation in this area, the Commission must recognize that Congress has already spoken to this issue and that the Commission is precluded from adopting the relief the RIAA requests.

The RIAA's arguments that the Commission should impose restrictions on digital broadcasts in order to carry out the underlying intention of the Digital Performance Right in Sound Recordings Act and the Digital Millennium Copyright Act²⁶ is directly contrary to the plain wording of the Copyright Act. In the Copyright Act, Congress granted an express exemption from performance rights fees for nonsubscription over-the-air broadcasts.²⁷ Congress balanced the interests of performers in obtaining compensation for their performances with the existing right of broadcasters and the listening public to enjoy broadcast music unburdened by performance rights fees. Congress chose to impose fees on certain services such as Internet streaming and subscription based radio services. However, Congress explicitly placed digital radio outside the scope of the performance right fee structure. The Commission does not have

²⁴ See e.g. Comments of American Federation of Musicians, American Federation of Television and Radio Artists and Future of Music Coalition dated June 16, 2004 at 3; Comments of the Recording Industry Association of America, Inc. dated June 16, 2004 at 16 ("RIAA Comments").

²⁵ *Sony Corp. v. Universal City Studio, Inc.*, 464 U.S. 417 (1984).

²⁶ RIAA Comments at 4-5.

²⁷ 17 U.S.C. §114.

the authority to overrule the express Congressional determination embodied in the plain wording of the Copyright Act. Nor can the Commission conclude that Congress was unaware of digital audio broadcasting when it amended the Copyright Act in 1995 to include an explicit exemption for digital radio broadcasts. By 1995, iBiquity's predecessor USA Digital Radio, L.P. had already field tested early IBOC systems, the National Radio Systems Committee had commenced its evaluation of IBOC technology and the Commission itself had discussed the status of terrestrial digital radio development.²⁸ The Commission does not have the authority to use its ancillary jurisdiction to override the unambiguous determinations of Congress that nonsubscription over-the-air digital radio broadcasters were not to be burdened with performance rights fees.²⁹

C. The Commission Must Take Into Account the Existence of IBOC Receivers

Several of the comments ignore the fact that there already are IBOC receivers in the marketplace. There are several thousand digital receivers in use by the public or in production.³⁰ As was detailed in iBiquity's comments, Kenwood Corporation, Panasonic Corporation and JVC are marketing aftermarket automobile receivers.³¹ IBOC receivers can be purchased from Crutchfield Corporation (including crutchfield.com) and at electronics retailers in numerous markets around the country. They also have appeared for sale on eBay. Home receivers are

²⁸ See Notice of Inquiry, Gen. Docket No. 90-357, 5 FCC Rcd 5237 (1990) and Notice of Proposed Rulemaking and Further Notice of Inquiry, Gen. Docket No. 90-357, 7 FCC Rcd 7776 (1992).

²⁹ It is particularly ironic that the RIAA argues that failure of the Commission to impose copy restrictions on broadcast radio will leave radio in an advantageous position when compared with digital television. RIAA Comments at 8. The RIAA's argument completely ignores the Commission's decision in the broadcast flag proceeding where the Commission noted repeatedly that it did not intend to limit a viewer's ability to record digital television broadcasts. *Digital Broadcast Content Protection*, MB Docket No. 02-230, *Report and Order and Further Notice of Proposed Rulemaking* (rel. Nov. 4, 2003) at ¶ 9.

³⁰ See Comments of Nathan J. Franzen dated June 16, 2004. Mr. Franzen purchased the first commercial IBOC receiver at an Ultimate Electronics store in Cedar Rapids, Iowa in January 2004.

³¹ iBiquity comments at 4-5.

scheduled for sale in the fall, and additional units are fully designed and scheduled for introduction throughout 2005.³²

iBiquity urges the Commission to avoid any regulatory steps that would obsolete existing IBOC receivers in use by consumers or in production. Any change in regulations that would obsolete receivers at this early stage in the digital transition will severely impact consumer attitudes toward IBOC and will encourage receiver manufacturers to stop production of digital receivers for fear that additional regulatory changes will obsolete the next generation of receivers. At this early stage in the rollout of IBOC, interrupting the production cycle or imposing regulations that have the effect of penalizing the early adopters (either consumers or manufacturers) may have irrevocable repercussions on the digital transition.

For this reason, iBiquity strongly encourages the Commission to reject any suggestion that copy control concerns can be addressed through the imposition of a requirement to commence encryption at the source.³³ Although encryption at the source may have been an option for the Commission to consider at an earlier stage in this proceeding, adoption of this type of requirement would render useless the digital portion of all existing IBOC receivers. Although the Business Software Alliance is correct that those hybrid receivers might still be able to operate in an analog mode,³⁴ this would be little consolation for the consumers that have invested in these premium receivers for the digital capabilities. Obsolescing these receivers will lead to consumer confusion about the sudden absence of the digital signal, mistaken perceptions that IBOC technology is flawed as well as tarnishing of the HD Radio brand and the brands of the

³² Manufacturers have either established production lines necessary to produce HD Radio receivers or are currently in the process of establishing such production lines. Any Commission proposal to change the technology would put a freeze on the production process.

³³ See e.g. Comments of the Business Software Alliance dated June 16, 2004.

³⁴ *Id.* at 4.

receiver manufacturers that produced the actual receivers. iBiquity submits that there is insufficient evidence in the record that encryption at the source is an appropriate requirement to support a draconian measure such as this.

D. The RIAA Has Failed to Explain Why IBOC Should Be Subject to Unique and Onerous Regulations

iBiquity believes the RIAA has failed to establish a justification for singling out IBOC for this type of onerous regulatory structure. Even if the Commission accepts the RIAA's concerns, the RIAA does not explain why it has failed to seek similar restrictions on other forms of digital distribution. There is no restriction on storage and manipulation of music obtained through Internet streaming. Similarly, the RIAA pays little attention to the threat of storage of music from satellite radio. iBiquity finds it odd that the RIAA expresses such urgency in developing a content protection scheme for IBOC before there is a large base of receivers. The RIAA seems to feel there is no constraint on its ability to create a content control scheme for satellite radio at some time in the future notwithstanding the existence of several million SDARS receivers. If content control can be implemented so easily for satellite receivers, why is the RIAA in need of urgent regulation of IBOC devices before any recording capability even exists? Based on the absence of commercials in satellite radio programming, iBiquity would assume those broadcasts would be a more attractive source of music for building a personal music library.

iBiquity also notes that the RIAA has failed to explain why IBOC should be subject to greater restrictions than digital television. The RIAA appears not to see a threat of consumers using digital television broadcasts to download music from MTV or VH1 to build a personal jukebox or music library. The recording and manipulation functionality the RIAA anticipates for IBOC already exists or could be created for devices working in all these services. In the event

the Commission finds a need for regulations to address the RIAA's concerns, iBiquity submits there is insufficient justification for uniquely burdening IBOC.

III. CONCLUSION

iBiquity is encouraged by the support for IBOC demonstrated by the comments in this proceeding. Based on the foregoing comments, iBiquity urges the Commission to expedite its implementation of final rules eliminating the interim status of its IBOC authorization and permanently authorizing digital broadcasting using iBiquity's HD Radio system.

Respectfully submitted,

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Date: August 2, 2004
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Attachment A

Revised Emissions Limits for AM and FM IBOC

FM Out of Band Spectral Emissions Limits for Hybrid Transmissions

For hybrid transmissions, measurements of the combined analog and digital signals shall be made by averaging the power spectral density of the signal in a 1 kHz bandwidth over a 30-second segment of time. Compliance will be determined by measuring the composite power spectral density of the analog and digital waveforms. 0 dBc is defined as the total power of the unmodulated analog FM carrier.

Noise and spuriously generated signals from all sources, including phase noise and intermodulation products, shall conform to the limits as described in the following paragraph and shown in Figure 1 and Table 1.*

The measured power spectral density of the hybrid analog and digital signals at frequencies removed from the center of the channel between 100 kHz and 200 kHz shall not exceed -40 dBc/kHz.

The measured power spectral density of the hybrid analog and digital signals at frequencies removed from the center of the channel by 200 – 215 kHz shall not exceed $[-61.4 - (|\text{frequency in kHz}| - 200 \text{ kHz}) \cdot 0.867]$ dBc/kHz. The measured power spectral density of the hybrid analog and digital signals at frequencies removed from the center of the channel between 215 kHz and 540 kHz shall not exceed -74.4 dBc/kHz. The measured power spectral density at frequencies removed from the center of the channel by more than 540 – 600 kHz shall not exceed $[-74.4 - (|\text{frequency in kHz}| - 540 \text{ kHz}) \cdot 0.093]$ dBc/kHz. The measured power spectral density at frequencies greater than 600 kHz from the center of the channel shall not exceed -80 dBc/kHz.

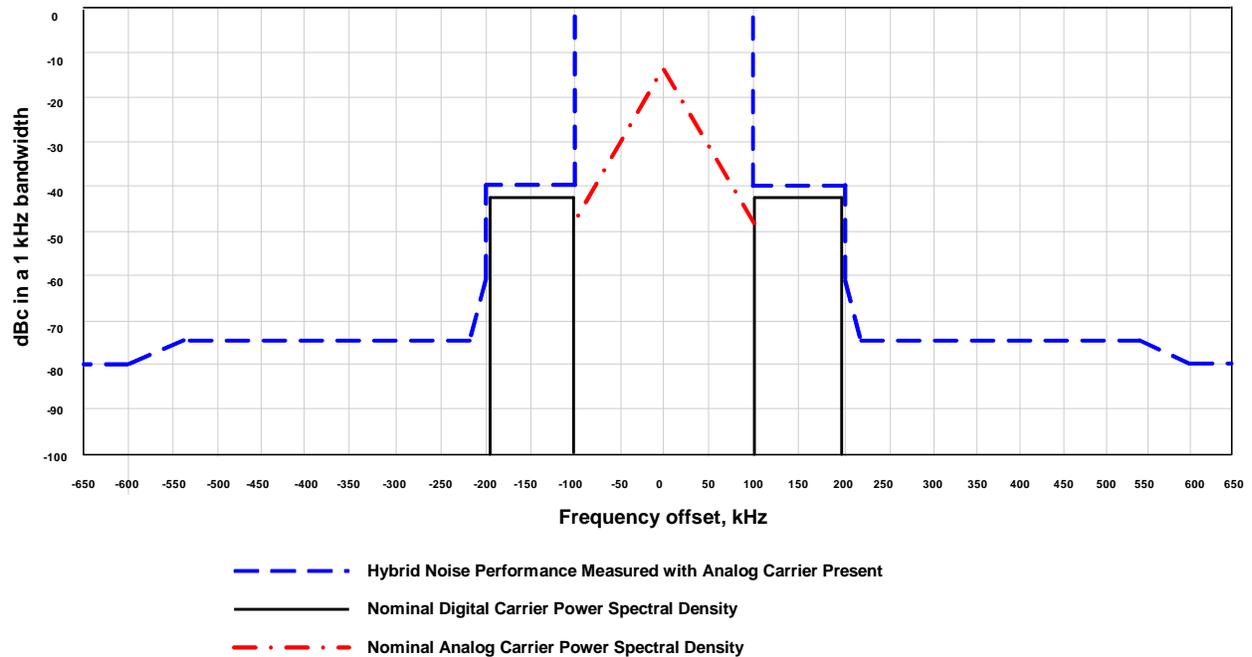


Figure 1 HD Radio FM Hybrid Waveform Noise and Spurious Emissions Limits

Table 1 HD Radio FM Hybrid Waveform Noise and Spurious Emissions Limits

| Frequency Offset Relative to Carrier | Level, dBc/kHz |
|--------------------------------------|---|
| 100-200 kHz offset | -40 |
| 200-215 kHz offset | $[-61.4 - (\text{frequency in kHz} - 200 \text{ kHz}) \cdot 0.867]$ |
| 215-540 kHz offset | -74.4 |
| 540-600 kHz offset | $[-74.4 - (\text{frequency in kHz} - 540 \text{ kHz}) \cdot 0.093]$ |
| >600 kHz offset | -80 |

* The requirements for noise and spurious emission limits defined in this subsection reflect acceptable performance criteria. In certain circumstances, additional measures (filtering, active emissions suppression, etc.) may be needed to reduce the spectral emissions below the limits given in this subsection in order to reduce mutual interference between broadcast stations.

AM Out-of-Band Spectral Emissions Limits for Hybrid Transmissions

0 dBc is defined as the total power of the unmodulated analog AM carrier. Measurements of the hybrid analog and digital signals will be made by averaging the power spectral density of the signal in each 300 Hz bandwidth over a 30 second segment of time. Refer to Figure 2 for an illustration of the spectral emissions limit.

The measured power spectral density of the hybrid analog and digital signals at frequencies removed from the carrier frequency by more than 5 kHz up to and including 10 kHz must not exceed -32 dBc/300 Hz. The measured power spectral density at frequencies greater than 10 kHz, up to and including 15 kHz, from the carrier frequency must not exceed -25 dBc/300 Hz. The measured power spectral density at frequencies greater than 15 kHz, up to and including 15.2 kHz, from the carrier frequency must not exceed -28 dBc/300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 15.2 kHz, up to and including 15.8 kHz must not exceed $-39 - (|\text{offset frequency in kHz}| - 15.2) * 43.3$ dBc/ 300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 15.8 kHz, up to and including 25 kHz must not exceed -65 dBc/ 300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 25 kHz, up to and including 30.5 kHz must not exceed $-65 - (|\text{offset frequency in kHz}| - 25) * 1.273$ dBc/ 300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 30.5 kHz, up to and including 75 kHz must not exceed $-72 - (|\text{offset frequency in kHz}| - 30.5) * 0.292$ dBc/ 300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 75 kHz, must not exceed -85 dBc/300 Hz.

If discrete components exceed the limits established in Table 2 and in Figure 2, the following conditions shall be met when averaging the power spectral density of the signal in each 300 Hz bandwidth over a 30 second segment of time:

1. No more than two discrete components within 75 kHz of the carrier frequency shall exceed the spectral emission limits by more than 10 dB.
2. No more than four discrete components removed from the carrier frequency by more than 75 kHz shall exceed the spectral emission limits by more than 5 dB.

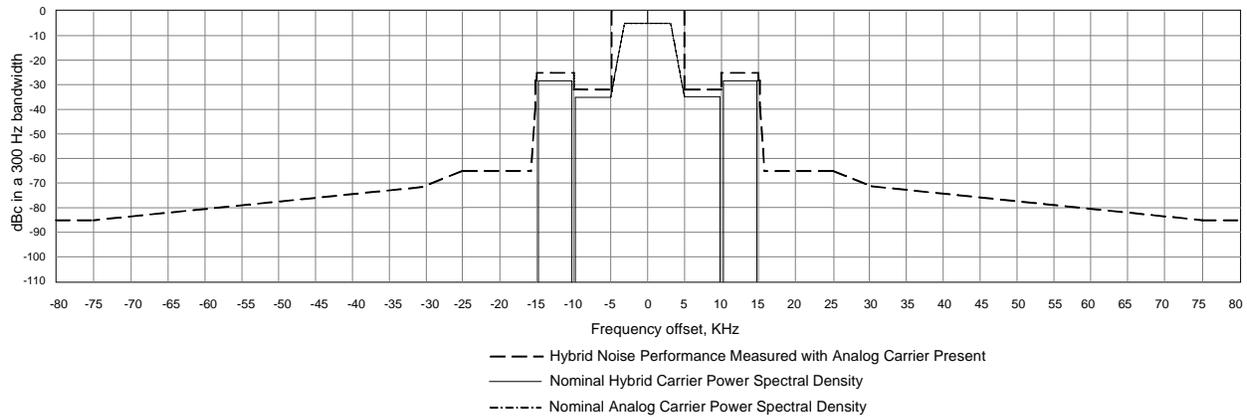


Figure 2 Recommended Spectral Emissions Limit for Hybrid Transmissions

Table 4-2 HD Radio AM Hybrid Mode Spurious Emissions Limits

| Offset from Carrier Frequency, F | Level Relative to Unmodulated Carrier (dBc per 300 Hz) |
|----------------------------------|--|
| 15 to 15.2 kHz | -28 |
| 15.2 to 15.8 kHz | $-39 - (F - 15.2) * 43.3$ |
| 15.8 to 25 kHz | -65 |
| 25 kHz to 30.5 kHz | $-65 - (F - 25) * 1.273$ |
| 30.5 kHz to 75 kHz | $-72 - (F - 30.5) * 0.292$ |
| > 75 kHz | -85 |

Alternative Spectral Emissions Limit for All Digital Mode

Measurements of the all digital signal will be made by averaging the power spectral density in a 300 Hz bandwidth over a 30-second segment of time. 0 dBc is defined as the allocated power of the unmodulated AM carrier. Refer to Figure 3 for an illustration of the spectral emissions limit. The digital waveform will be measured to determine compliance with this section for transmitter type. Measurements of operating station emissions shall be made by a sample loop on a suitable reference tower.

The measured power spectral density of the all digital signal at frequencies removed from the carrier frequency by more than 300 Hz up to and including 5 kHz must not exceed -10 dBc/300 Hz. The measured power spectral density of the all digital signal at frequencies removed from the carrier frequency by more than 5 kHz up to and including 9.8 kHz must not exceed -25 dBc/300 Hz. The measured power spectral density of the all digital signal at frequencies removed from the carrier frequency by more than 9.8 kHz, up to and including 10.5 kHz must not exceed $-28 - (| \text{offset frequency in kHz} | - 9.8) * 42.86$ dBc/ 300 Hz. The measured power spectral density of the all digital signal at frequencies removed from the carrier frequency by more than 10.5 kHz, up to and including 11.5 kHz must not exceed $-58 - (| \text{offset frequency in kHz} | - 10.5) * 7.0$ dBc/ 300 Hz. The measured power spectral density of the hybrid signal at

frequencies removed from the carrier frequency by more than 11.5 kHz, up to and including 15 kHz must not exceed -65 dBc/ 300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 15 kHz, up to and including 20.5 kHz must not exceed $-65 - (|\text{offset frequency in kHz}| - 15) * 1.273$ dBc/ 300 Hz. The measured power spectral density of the hybrid signal at frequencies removed from the carrier frequency by more than 20.5 kHz, up to and including 75 kHz must not exceed $-72 - (|\text{offset frequency in kHz}| - 20.5) * 0.239$ dBc/ 300 Hz. The measured power spectral density of the all digital signal at frequencies removed from the carrier frequency by more than 75 kHz, must not exceed -85 dBc/300 Hz.

If discrete components exceed the limits established in Table 3 and in Figure 3, the following conditions shall be met when averaging the power spectral density of the signal in each 300 Hz bandwidth over a 30 second segment of time:

1. No more than two discrete components within 75 kHz of the carrier frequency shall exceed the spectral emission limits by more than 10 dB.
2. No more than four discrete components removed from the carrier frequency by more than 75 kHz shall exceed the spectral emission limits by more than 5 dB.

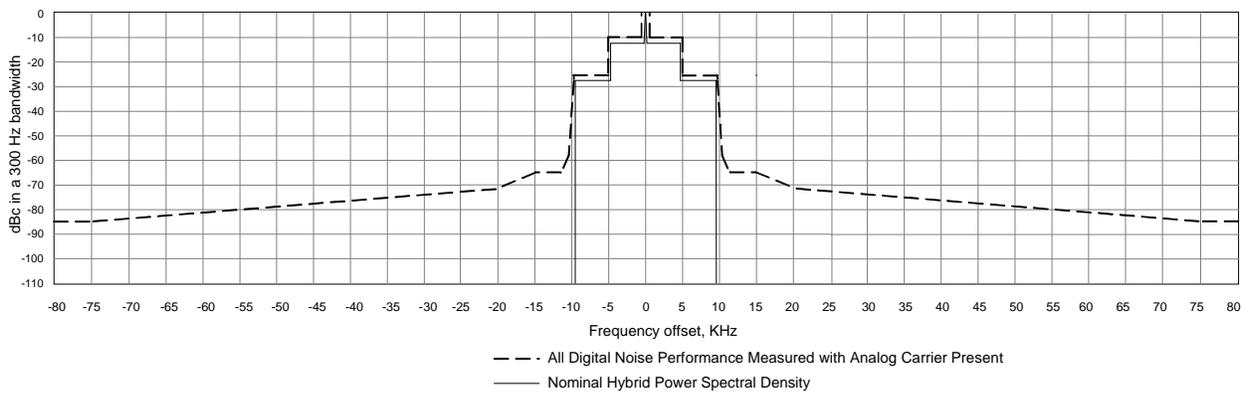


Figure 3 Recommended Spectral Emissions Limit for All Digital Transmissions

Table 3 HD Radio AM All Digital Mode Noise and Spurious Emissions Limits

| Offset from Carrier Frequency | Level Relative to Unmodulated Carrier (dBc per 300 Hz) |
|-------------------------------|--|
| 9.8 to 10.5 kHz | $-28 - (F_c - 9.8) * 42.86$ |
| 10.5 to 11.5 kHz | $-58 - (F_c - 10.5) * 7.0$ |
| 11.5 to 15 kHz | -65 |
| 15 to 20.5 kHz | $-65 - (F_c - 15) * 1.273$ |
| 20.5 to 75 kHz | $-72 - (F_c - 20.5) * 0.239$ |
| > 75 kHz | -85 |