

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

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**

iBiquity Digital Corporation (“iBiquity”) hereby submits these reply comments concerning the proposal to allow FM broadcasters to implement asymmetric sidebands for digital operations. The comments demonstrate a broad industry consensus that the use of asymmetric sidebands will allow broadcasters to enhance their digital service and that the FCC should authorize this mode of operation. The National Association of Broadcasters, National Public Radio, Nautel Maine, Inc., Crawford Broadcasting Company and a coalition of companies operating more than 315 commercial radio stations and equipment manufacturers all offered unqualified support for the asymmetric sideband proposal.¹ iBiquity encourages the FCC to accept these recommendations and expeditiously authorize broadcasters to use asymmetric sidebands.

As is explained in greater detail below, iBiquity also takes this opportunity to reply to the comments Jonathan E. Hardis filed in this proceeding.² The Hardis Comments reflect Mr.

¹ Comments of the National Association of Broadcasters, MM Docket No. 99-325 (Dec. 19, 2011); Comments of National Public Radio, Inc., MM Docket No. 99-325 (Dec. 19, 2011); Comments of Nautel Maine, Inc., MM Docket No. 99-325; Comments of Crawford Broadcasting Company, MM Docket No. 99-325, Comments of Joint Parties, MM Docket No. 99-325 (Dec. 19, 2011).

² Comments of Jonathan E. Hardis, MM Docket No. 99-325 (Dec. 19, 2011) (“Hardis Initial Comments”) and Supplementary Comments of Jonathan E. Hardis, MM Docket No. 99-325 (Jan. 3, 2012) (“Hardis Supplementary Comments”) (collectively referred to herein as “Hardis Comments”).

Hardis' long-standing opposition to all aspects of IBOC technology rather than any valid criticism of the asymmetric sideband proposal. The comments of a single individual relying on a misreading of the Commission's Rules and the information in this docket should not stand in the way of advancing a sound technical proposal with unanimous industry support.

The Hardis Comments focus on two incorrect technical arguments.³ First, the Hardis Comments assert that iBiquity's power measurement methodology misstates digital power and that IBOC transmissions at power levels above -20 dBc violate Section 73.317 of the Commission's Rules.⁴ Second, the Hardis Comments take issue with current industry practice, which does not include extended hybrid carriers when calculating digital power.⁵ In both cases, the IBOC operations in use throughout the radio industry comply with the Commission's Rules and good technical practices that broadcasters have endorsed through open industry standards setting activity. Mr. Hardis' concerns should be dismissed.

Although Mr. Hardis' complaints about compliance with Section 73.317 of the Commission's Rules relate to the 2010 Order rather than the asymmetric sideband proposal, iBiquity is compelled to address this issue due to Mr. Hardis' misreading of the Commission's Rules and his claim that iBiquity has knowingly provided false information to the Commission.

³ The Hardis Comments also reargue topics Mr. Hardis first presented in a pending Application for Review, Application for Review of Jonathan E. Hardis, MM Docket No. 99-325 (April 8, 2010) ("Hardis Application for Review"), of the Media Bureau's 2010 Order authorizing FM stations to increase their digital power. *Digital Audio Broadcasting Systems And Their Impact on the Terrestrial Radio Broadcast Service*, MM Docket No. 99-325, Order (Jan. 29, 2010) ("2010 Order"). Because appropriate responses to Mr. Hardis' criticism of the 2010 Order are already included in the Commission's record for the Application for Review, iBiquity will not repeat those responses in these reply comments. See e.g. Opposition of iBiquity Digital Corporation, MM Docket No. 99-325 (May 25, 2010). Moreover, any new criticism of the 2010 Order that that was not included in the Hardis Application for Review and that Mr. Hardis now raises is untimely and should not be consider in this context.

⁴ 47 C.F.R. §73.317. See Hardis Initial Comments at 3.

⁵ Hardis Initial Comments at 25.

His conclusions are incorrect, and iBiquity is confident the record demonstrates iBiquity has been forthcoming and truthful in its statements to the Commission.

A. iBiquity's Power Measurement Methodology Complies with Section 73.317

Mr. Hardis correctly points out that Section 73.317 of the Commission's Rules requires that FM stations conform to the FM emissions mask:

Any emission appearing on a frequency removed from the carrier by between 120 kHz and 240 kHz inclusive must be attenuated at least 25 dB below the level of the unmodulated carrier.⁶

However, the Hardis Comments go on to conclude incorrectly that Section 73.317 requires the Commission to examine the total integrated power of the digital sidebands when considering compliance with that rule. Mr. Hardis appears to take issue with iBiquity's methodology, which measures the digital signal level in a 1 kHz bandwidth.⁷ Mr. Hardis' demand that broadcasters measure the total integrated power across the entire 70 kHz digital sideband bandwidth would be inconsistent with the wording of Section 73.317, long-standing industry and FCC practice and iBiquity's approach since the Commission initiated this docket in 1999.

The plain wording of Section 73.317 says "any" emission. It does not say "all", "the aggregate" emissions or "total integrated power". Thus, the actual wording of the rule does not support Mr. Hardis' contention that the total integrated power of the digital sideband must fall under the Section 73.317 limit. In fact, iBiquity believes its methodology, which examines emissions with greater specificity, is much more consistent with Section 73.317's requirement to restrict "any" emission.

⁶ *Id.* at 3, citing 47 C.F.R. §73.317(b).

⁷ *Id.* at 5.

In addition to an examination of the plain wording of Section 73.317, it is useful to consider the reason the Commission adopted an FM emissions mask such as Section 73.317. The Commission wanted to protect stations from both continuous and intermittent interference from adjacent channel stations. If Section 73.317 were to be interpreted as Mr. Hardis suggests and only requires stations to consider the total integrated power output of the station, Section 73.317 would be useless to prevent stations with a complying total station power output from causing interference through spurious emissions. Stations generally can demonstrate that total power output fell below the threshold specified in Section 73.317. The more challenging (and important) aspect of Section 73.317 is to ensure that a station does not transmit spurs or individual spikes in power that would cause intermittent but annoying interference to adjacent channel stations. Section 73.317 is designed to address both forms of interference. Thus, the only reasonable interpretation of Section 73.317 is that the Commission wants stations to examine individual emissions rather than total integrated station power.

iBiquity's methodology, which requires scanning the digital signal in a 1 kHz bandwidth, is consistent with industry practice and has been consistently applied for digital transmissions. iBiquity's selection of the 1 kHz bandwidth for this measurement was not arbitrary. In 1998, when iBiquity developed the IBOC Petition for Rulemaking, analog spectrum analyzers commonly in use among broadcasters scanned emissions across the broadcast band using a 1 kHz bandwidth measurement. The iBiquity methodology was the only practical way for stations equipped for measuring analog broadcasts to measure digital power without investing in development of new measurement devices. Although equipment manufacturers ultimately developed and introduced more modern digital spectrum analyzers in subsequent years and now afforded the option of other measurement techniques, iBiquity has continued to use the 1 kHz

bandwidth measure for consistency with its initial proposals in this proceeding and all the testing that was conducted for the NRSC prior to adoption of NRSC-5.

It is also important to note that Mr. Hardis' criticism of iBiquity's measurement methodology ignores the fact that there have been no valid claims of first adjacent channel interference from digital FM stations, including those operating at power levels above -20 dBc consistent with the 2010 Order. If Mr. Hardis' assertion that HD Radio operations do not comply with Section 73.317 were correct, there should be numerous complaints about adjacent channel interference. The HD Radio system has been in commercial operation for ten years without harmful first adjacent channel interference. The nationwide operation of HD Radio stations without interference by itself disproves Mr. Hardis' concerns about digital operations. He has not presented any evidence that the introduction of asymmetric sidebands will somehow create new interference where it does not currently exist.

B. iBiquity's Statements to the Commission Have Been Truthful and Accurate

The Hardis Comments next accuse iBiquity (and others) of making knowingly false statements to the Commission about how to measure compliance with Section 73.317.⁸ iBiquity has been truthful concerning its method for calculating the power of the digital sidebands and has used the same measurement technique throughout this proceeding. iBiquity consistently has used a 1 kHz bandwidth for measuring the digital signal power level and has not concealed that methodology from the National Radio Systems Committee ("NRSC") or the FCC. In fact, the NRSC explicitly endorsed the iBiquity methodology as the correct approach to use for measuring digital transmissions when the NRSC adopted NRSC-5 and the G201 Guideline.⁹

⁸ *Id.* at 11.

⁹ National Radio Systems Committee, NRSC G201-A, NRSC-5 RF Mask Compliance: Measurement Methods and Practice (April 2010). iBiquity notes Mr. Hardis was an active participant at the NRSC representing the

In support of his argument that iBiquity has made knowingly false statements, Mr. Hardis relies on three patents that are identical derivatives of a single patent application filed in 1993.¹⁰ The three inventors listed in the application were contractors to USA Digital Radio Partners, L.P. (“USADR LP”), a predecessor in interest to iBiquity. At the time of the patent application, IBOC¹¹ was still a concept that had not yet been proven or reduced to working equipment. USADR L.P. had no more than two or three employees and no thought had been given to the correct way to measure digital signals. As Mr. Hardis correctly points out, by the time USADR L.P. initiated this proceeding with the Commission in 1998, it had adopted the current power measurement methodology using 1 kHz bandwidth that Mr. Hardis now objects to.¹² USADR LP incorporated the now accepted measurement methodology based on its experience with the technology between 1993 and 1998. USA Digital Radio submitted that Petition for Rulemaking thirteen years prior to Mr. Hardis’ objections and has consistently used the same methodology since that time. It is difficult to understand how Mr. Hardis interprets any of iBiquity’s actions to constitute giving knowingly false statements. iBiquity always has believed it has correctly interpreted Section 73.317 and that its methodology is the best application of Section 73.317 to digital broadcasts.

National Institute of Standards and Technology at the time the NRSC adopted NRSC-5 and the G201 Guideline. He did not raise any objections to the iBiquity mask calculations or measurement techniques used in either of those documents.

¹⁰ Hardis Initial Comments at 11. It is important to note that because the three patents are divisionals or continuations from the same original filing, they were required by patent law to have disclosures identical to the original application they were based on. Thus, while these three patents have different filing dates, they should be viewed collectively as a single disclosure originating in 1993.

¹¹ iBiquity did not introduce the HD Radio brand in common use today until almost one decade after the 1993 patent filing.

¹² Hardis Initial Comments at 12.

C. Stations Should Not Include Extended Hybrid Carriers In Power Measurements

The second technical issue in the Hardis Comments involves the correct methodology for measuring power when stations are operating in an extended hybrid mode. iBiquity encourages the Commission to reject Mr. Hardis' request that broadcasters be required to examine extended hybrid carriers when determining a station's compliance with power limitations. As iBiquity noted above, Section 73.317 protects against adjacent channel interference. The extended hybrid carriers extend inward, closer to the host analog signal and away from adjacent channel analog signals. By definition, these carriers will not increase the risk of adjacent channel interference. Thus, there is no need to include the extended hybrid digital carriers in any power measurement designed to limit adjacent channel interference. The NRSC correctly recognized this when adopting the G202 Guideline.¹³ There is no need for the Commission to overrule the industry consensus on this issue.

¹³ National Radio Systems Committee, NRSC-G202, FM IBOC Total Digital Sideband Power for Various Configurations (Sept. 2010) at 15.

D. Conclusion

The broadcast industry has forcefully endorsed asymmetric sideband operations for digital FM stations. iBiquity Digital Corporation urges the Commission to dismiss the concerns raised in the Hardis Comments and to authorize digital broadcasters to use asymmetric sidebands as discussed above.

Respectfully submitted,

/s/

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