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.	)	

COMMENTS OF iBIQUITY DIGITAL CORPORATION

iBiquity Digital Corporation ("iBiquity"), by its attorneys, hereby files these Comments in response to the Commission's recent Public Notice concerning use of separate antennas for iBiquity's FM HD Radio™ system.[1] The Commission released its Public Notice in response to a report from the National Association of Broadcasters ("NAB") encouraging the Commission to allow radio station operators greater flexibility in the conversion to digital radio broadcasting. As is explained in greater detail herein, iBiquity strongly encourages the Commission to adopt the NAB's recommendations and expeditiously authorize stations meeting the NAB's criteria to convert to HD Radio broadcasts using separate antennas.

I. Background

iBiquity is the inventor of IBOC technology. It developed the HD Radio system to allow broadcasters to upgrade both AM and FM radio stations to digital broadcasting. The Commission's 2002 Report and Order authorizing broadcasters to commence digital broadcasts limited broadcasters to common antenna implementations that iBiquity refers to as a "combined"

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[1] Public Notice, DA 03-3898 (Dec. 8, 2003).

implementation.[2] In both the "high level combined" and "low level combined" implementations, the analog and digital signals are combined for transmission using a single antenna. As the Commission's Public Notice and the NAB report discussed, antenna manufacturers have developed a method whereby the analog and digital signals are transmitted through separate antennas. This approach has the advantage of offering broadcasters a lower cost and more flexible approach for converting stations to digital broadcast technology.

In response to these technical developments, the NAB requested that a group of industry experts analyze the separate antenna approach and develop an appropriate test program for the technology. iBiquity activity participated in these efforts and provided logistical assistance and equipment for the three test stations selected by the NAB. As the NAB's report to the FCC details,[3] the test results confirm the viability of the separate antenna approach. Based on these results, the NAB has recommended that the Commission authorize separate antenna implementations.

II. The Commission Should Authorize Separate Antenna Implementations

iBiquity strongly encourages the Commission to allow broadcasters the option to convert to digital using a separate antenna approach. The NAB test program addressed two critical issues concerning the separate antenna configuration. First, the testing demonstrated the viability and feasibility of the separate antenna operations. iBiquity has been involved in the conversion of dozens of stations involving a wide range of conditions and implementations. The NAB tests confirmed iBiquity's experience that separate antenna implementation is feasible, it can be easily implemented and does not cause greater risk of disruption to station operations than a combined

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

3 *See* Letter from Henry L. Bauman to Marlene H. Dortch in MM Docket No. 99-325; July 24, 2003.

antenna approach. Second, the tests also demonstrated that the separate antenna configuration does not measurably increase the risk of host interference from the digital signal. Therefore, the separate antenna implementation will not result in unwanted degradation to existing analog broadcasts.

Based on these test results, the NAB recommended that the Commission authorize separate antenna implementations. iBiquity supports this recommendation because the increased level of flexibility for IBOC conversions will encourage the implementation of digital radio broadcasting services. The separate antenna approach will allow a number of broadcasters to implement HD Radio at lower cost and with greater ease. The 10dB combined implementation creates certain inefficiencies which increase operating expense. The injector/combiner wastes 90% of the energy for the digital signal and 10% of the analog. This requires an analog transmitter output 11% above the existing power level and a digital transmitter ten times the antenna input power to overcome the injector/combiner losses. Low level combined implementation, affords the broadcaster a less complex hardware installation. However, it too requires the linearization of the common amplifier element, resulting in increased inefficiency and higher operating expense.

The separate antenna approach addresses these issues. The broadcaster can use a separate transmitter for the digital signal that is appropriately sized for the need rather than adding capacity to account for the combiner loss. In dollar terms, the difference can be significant. To produce a 100 Watt digital signal for a 10kW station, a broadcaster would pay approximately $60,000 for a 1000 Watt TPO digital transmitter, injector/combiner, and filter for the combined approach. With a separate antenna implementation, a $10,000, 150 Wattt TPO, digital transmitter could provide the required power for the digital signal. Even if the broadcaster

spends $10,000 for a separate antenna, a total cost of $20,000 is much less than a $60,000 transmitter investment.

The separate antenna approach also offers benefits in terms of lower ongoing operating costs. In addition to the inefficiencies of running oversized transmitters, the combiner loss generates considerable heat in the transmitter room in the form of energy in the reject load. The separate antenna implementation eliminates the cost associated with extra air conditioning due to this heat as well as the extra electricity costs for the larger combined transmitter. The separate antenna implementation also offers the benefit of eliminating the requirement to find space for the combiner in the frequently very crowded transmitter rooms.

Reducing implementation costs and increasing broadcaster flexibility will help encourage broadcasters to expedite their conversion to digital broadcasting. The HD Radio system offers listeners higher quality and more reliable audio broadcasts. Commission efforts to foster the availability of digital broadcasts through different antenna configurations will serve the public interest by accelerating the introduction of this exciting new technology.

III. Broadcasters Fulfilling the NAB Criteria Should Be Eligible for Automatic Separate Antenna Authorization

The NAB recommendation sets out criteria for horizontal and vertical spacing of the analog and digital antennas which the NAB concluded would avoid host interference and maximize performance from the separate antenna implementation. Stations meeting the eligibility criteria should receive automatic authorization to pursue a separate antenna approach. At the same time, the Commission should continue to consider on a case-by-case basis requests for separate antenna implementations that fall outside the criteria set out in the NAB recommendation.

IV. Conclusion

For the foregoing reasons, iBiquity Digital Corporation encourages the Commission to accept the NAB's recommendations and expeditiously authorize broadcasters to adopt separate antenna implementations for conversion to digital broadcasting.

Respectfully submitted,

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