



# PUBLIC NOTICE

FEDERAL COMMUNICATIONS COMMISSION  
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DA 04-712  
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MM Docket No. 99-325

## USE OF SEPARATE ANTENNAS TO INITIATE DIGITAL FM TRANSMISSIONS APPROVED

### Special temporary authority must be requested

On October 10, 2002, the Commission authorized the commencement of interim operation with the iBiquity hybrid<sup>1</sup> IBOC systems.<sup>2</sup> Under these interim authorization procedures, stations may use only facilities similar to those evaluated by the National Radio Systems Committee. In particular, FM stations are restricted to transmission systems that combine the digital and analog signals into one antenna.<sup>3</sup> On July 24, 2003, the National Association of Broadcasters (NAB) submitted a report to the Commission regarding the use of separate antennas for the analog and digital components of the hybrid FM IBOC signal. The report<sup>4</sup> included field tests prepared by an *ad hoc* technical group, and recommends that the Commission permit certain FM stations implementing IBOC transmissions to use separate antennas for analog and digital signals, provided that the following criteria are met:

- The digital transmission must use a licensed auxiliary antenna;

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<sup>1</sup> The term “hybrid” refers to a system which transmits both the digital and analog signals within the spectral emission mask of a single AM or FM channel.

<sup>2</sup> See *Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Broadcast Service*, 17 FCC Rcd 19990, 20004 (2002) (“*IBOC Order*”).

<sup>3</sup> When a single antenna is used for IBOC, the analog and digital FM signals may be combined after amplification (high-level combining), a method which results in substantial power losses for the digital signal. Stations with lower effective radiated power may combine the analog and digital signals before amplification (low-level combining), in which case the transmitter efficiency is reduced.

<sup>4</sup> The NAB report is available electronically at <http://www.fcc.gov/cgb/ecfs> under MM Docket No. 99-325, or from the Commission’s duplicating contractor, Qualex International, 445 12<sup>th</sup> Street, SW, Room CY-B402, Washington, DC, 20554, 202-863-2893.

- The auxiliary antenna must be within three seconds of latitude and longitude of the main antenna; and
- The height above average terrain of the auxiliary antennas must be between 70 and 100 percent of the height above average terrain of the main antenna.

By *Public Notice* released December 8, 2003, the Commission sought comment on the conclusions and recommendations made by the NAB report. Comments were due on or before January 8, 2004, and reply comments on or before January 23, 2004.

Twelve comments and six reply comments were received.<sup>5</sup> With the exception of two filings which did not specifically address the dual antenna issue,<sup>6</sup> almost all commenters supported the adoption of the NAB recommendations. Most comments cited convenience, greatly reduced implementation costs, and increased operating efficiency as major advantages of the dual antenna approach. Several commenters suggested broadening of the NAB recommendations to include dual antenna systems at variance with the NAB recommendations; however, in the interest of expediting the initiation of dual antenna operation for systems which meet the recommended criteria, we defer consideration of such systems to a future *Further Notice of Proposed Rule Making*.

Based on our review of the NAB test report and the comments filed in this proceeding, we believe that the public interest would be served by permitting dual-antenna FM IBOC implementation at this time. Although the NAB report recommended expanding the notification procedures currently in place for combined antenna implementation, such operation does not fall within the scope of the notification procedures authorized by the *IBOC Order*, and thus will require separate action by the Commission. Consequently, in the interest of expediency, we will authorize conforming dual antenna FM IBOC transmissions pursuant to routine special temporary authorization ("STA") procedures<sup>7</sup>. The matter of expanded notification procedures will be deferred for consideration at a future date. The NAB report also recommends that the Commission authorize use of antennas specially designed with interleaved or stacked elements for analog and digital signals. Because such antennas clearly meet the horizontal and vertical distance criteria, the use of such antennas will be considered acceptable, provided that the interleaved antenna system is first licensed as an auxiliary antenna.<sup>8</sup>

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<sup>5</sup> Comments were received from Summit Media Broadcasting, LLC; Susquehanna Radio Corp.; Greater Media, Inc.; Educational Information Corporation; Cox Radio, Inc.; iBiquity Digital Corporation; National Public Radio; Infinity Broadcasting Corporation; National Association of Broadcasters; Ronald E. Russ; David Burnstein and Dielectric Communications - SPX Corp. Reply Comments were received from Shively Labs; Greater Media, Inc.; Walt Disney Company / ABC, Inc.; Cohen, Dippell and Everest, P.C.; Electronic Research, Inc.; and 42 Anti-IBOC Petitioners.

<sup>6</sup> Comments of David Burstein; reply comments filed by Don Schellhardt, Esq. on behalf of "42 Anti-IBOC Petitioners".

<sup>7</sup> See 47 C.F.R. § 73.1635.

<sup>8</sup> In most instances, the use of interleaved antennas will require the installation of filters and/or isolation equipment to prevent adverse interaction of the two transmitters. The installation of this equipment may require adjustments to the analog transmitter power in order to maintain the licensed analog effective radiated power.

We note that a debate has arisen recently in various technical fora as to the proper designation of so-called "dual-feed" systems, in which the digital and analog signals are introduced to the same set of active antenna elements through different input connections. Based on the information currently available to the staff, if, in a given system, the digital and analog signals are fed to the same set of active, radiating elements, that system is a combined system. Licensees may obtain authority to operate this kind of system in accordance with the notification procedures set forth in the IBOC Order. Where different sets of active, radiating elements are employed for the analog and digital signals, the system will be considered as a separate-antenna system, and subject to the STA procedures announced in this Public Notice.

Effective with the release of this Public Notice, FM stations may file requests for STA<sup>9</sup> to commence IBOC operations using dual antenna systems which meet the NAB recommended criteria. Specifications of iBiquity's FM hybrid IBOC system, known as HD Radio, are given in Appendix C of the *IBOC Order*. Stations implementing IBOC shall broadcast the same main channel program material in both analog and digital modes.

**Information required in the STA request.** Stations must request STA at least 10 days prior to the planned date of commencement of IBOC transmissions. The STA request shall contain the following information:

- the date that interim operation is planned to commence;
- a certification that the IBOC facilities conform to the iBiquity hybrid specifications;
- the name and telephone number of a technical representative the Commission can call in the event of interference;
- transmitter power output for the analog and digital transmitters;
- a certification that analog effective radiated power remains as authorized;
- a certification that the interim operation would not cause human exposure to levels of radiofrequency radiation in excess of Section 1.1310 of the Commission's rules and is therefore categorically excluded from environmental processing pursuant to Section 1.1306(b). Any station that cannot certify compliance must submit an environmental assessment (EA) pursuant to Section 1.1311 and may not commence interim operation until such EA is ruled upon by the Commission;<sup>10</sup>
- geographic coordinates, elevation data, and license file number for the auxiliary antenna to be employed for digital transmissions; and
- for systems employing interleaved antenna bays, a certification that adequate filtering and/or isolation equipment has been installed to prevent spurious emissions in excess of the limits specified in 47 C.F.R. Section 73.317.

For additional information, contact Edward De La Hunt, Charles N. Miller or Ann Gallagher at the Audio Division, Media Bureau at (202) 418-2700.

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<sup>9</sup> STA requests must be accompanied by the required fee payment (except for noncommercial licensees) and a certification pursuant to the Anti-drug Abuse Act of 1988 (except for governmental entities) *See* 47 C.F.R. § 1.2002. For fee payment and filing instructions, refer to the Application Fee Filing Guide for Media Bureau, available for download at [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/DOC-225457A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-225457A1.pdf).

<sup>10</sup> *See* 47 C.F.R. § 1.1312(b).

By: Chief, Media Bureau

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