Federal Communications Commission
Washington, D.C. 20554

July 31, 2009

Jonathan E. Hardis
356 Chestertown Street
Gaithersburg, MD 20878-5724

Re: Motion to Accept Filing as Timely
Filed in MM Docket No. 99-325

Dear Mr. Hardis:

The Office of the Secretary has received your request for acceptance of the document you filed in the above-referenced proceeding as timely filed, due to technical difficulties with the Commission's Electronic Comment Filing System.

In accordance with 47 C.F.R. Section 0.231(i), I have reviewed your request and your assertions. After considering the relevant arguments, I have determined that this filing will be accepted as timely filed on Friday, July 17, 2009. If we can be of further assistance, please contact the Office of the Secretary.

Sincerely,

Marlene H. Dortch

Marlene H. Dortch
Secretary

MHD/gt

cc: Media Bureau (Audio)

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554–0005

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

To: The Commission

MOTION TO ACCEPT THE FILING AS TIMELY FILED

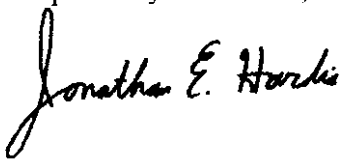
Attached, please find Reply Comments Re: DA 09-1127, Comments Sought on Specific Issues Regarding Joint Parties' Request for FM Digital Power Increase and Associated Technical Studies, MM Docket No. 99–325. During the 11 PM hour on Friday, July 17, I made multiple, unsuccessful attempts to upload these Reply Comments via the Electronic Comment Filing System (ECFS). The first phase of the process would apparently work, but the system was unresponsive and would eventually "time out" when I clicked the button to proceed to generate a receipt.

As per the instructions of Mr. Bill Caton, with whom I discussed the matter this morning by telephone, please find enclosed five (5) paper copies the filing. Since the original, electronic PDF document contains active hyperlinks, and because the Commission continues to experience delays in the delivery of U.S. Mail, I will also upload the electronic version for the convenience of the reader when the ECFS is functional again.

According to the information on the web page http://www.fcc.gov/cgb/ecfs/ this motion is standard procedure for times when the ECFS is down. I was unable to file via e-mail because my filing was a PDF document, not plain text.

Thank you very much for your consideration and acceptance of this filing.

Respectfully submitted,



Jonathan E. Hardis
356 Chestertown St.
Gaithersburg, MD 20878–5724

Dated: July 20, 2009

July 17, 2009

VIA ELECTRONIC FILING

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
236 Massachusetts Ave. NE, Suite 110
Washington, DC 20002–4980

Re: DA 09-1127, Comments Sought on Specific Issues Regarding Joint Parties' Request for FM Digital Power Increase and Associated Technical Studies, MM Docket No. 99–325

To Whom It May Concern:

Thank you for the opportunity to reply to comments filed in connection with the above-referenced notice. My name is Jonathan Hardis, and I submit these reply comments as an individual citizen interested in the development of digital broadcasting.

1. **My experience with new, portable IBOC radio receiver does not indicate urgency for digital power increase.**

A number of comments made reference to a forthcoming portable IBOC radio receiver. As it happens, this product was introduced for public sale last Monday, July 13.[1] I have purchased one of these receivers, and my experience is generally positive. My observations do not support any claim of special exigency that would require a rush to decision on a power increase.

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[1] *See* "Best Buy® Releases First-Ever Portable HD Radio Receiver," http://www.bestbuyinc.com/news_center/07-13-09/best-buy®-releases-first-ever-portable-hd-radio-receiver, accessed July 15, 2009.

The observations that follow were made indoors, in my single-family home in Gaithersburg, MD, approximately 14 to 17 miles north-northwest of FM broadcasting facilities in Upper Northwest Washington, DC, and Merrifield, VA. My observations must be considered anecdotal, not scientific, because of my limited ability to quantify data and to repeat tests under a greater variety of conditions prior to the due date for these comments.

In my comments, I wondered if performance complaints could be attributed to poor receiver design, as opposed to insufficient broadcast power. This concern now appears to be largely misplaced. I compared the new IBOC digital receiver to two analog receivers of similar form-factor, one with the same store brand, and one with a well-known, high-quality brand. Of the three, the new IBOC receiver was best able to pick up fringe stations (albeit poorly) including WFLS-FM (93.3 MHz, Fredericksburg, VA, 56.6 miles), WZRV (FM) (95.3 MHz, Front Royal, VA, 52.8 miles)[2], and WLTF (FM) (97.5 MHz, Martinsburg, WV, 50.2 miles).[3] This indicates that its front-end performance was at least as good as other receivers of its class.

The new receiver's ability to receive and stay locked to Washington, DC, IBOC stations was generally good, if imperfect. Where available, I tuned to "HD-2" stations and listened for audio "drop-outs." WAMU (FM) (88.5 MHz), WETA (FM) (90.9 MHz), WKYS (FM) (93.9 MHz), and WHUR-FM (96.3 MHz), had excellent signals at current power levels. WCSP-FM (90.1 MHz), WTGB-FM (94.7 MHz), WASH (FM) (97.1 MHz), WMZQ-FM (98.7 MHz),

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[2] First adjacent to WPGC-HD (95.5 MHz, Morningside, MD, 24.7 miles).
[3] WYCR (FM) (98.5 MHz, York-Hanover, PA, 53.6 miles) was intermittently barely audible above background noise. This station is first-adjacent to WMZQ-HD (98.7 MHz, Washington, DC, 15.9 miles).

WIHT (FM) (99.5 MHz), WBIG-FM (100.3 MHz), WWDC (FM) (101.1 MHz), WTOP-FM (103.5 MHz), WJZW (FM) (105.9 MHz), and WRQX (FM) (107.3 MHz) were received well in much of the house, but suffered drop-outs in the corner of the house opposite the direction of the transmitters. Digital reception of WPGC-FM (95.5 MHz, Morningside, MD, 24.7 miles), WLZL (FM) (99.1 MHz, Annapolis, MD, 27.3 miles), WFRE (FM) (99.9 MHz, Frederick, MD, 30.1 miles), and Baltimore stations (30 to 35 miles) was problematic.

These results are typical of a first-generation product that can improve over time. For example, this product was supplied with ear buds rather than headphones, as were sold with the two analog receivers. As was reported in comments, the cord of the ear buds serves as the antenna, though it is not clear whether it is a monopole (like a stick antenna on a car) or a dipole (the two separated earpieces detecting horizontal polarization). In any event, reception clearly improves when the cord is held horizontally, rather than being draped vertically in the normal mode of operation. Perhaps reception could be improved by incorporating a better antenna into the structure of headphones. NAB commented that, "Because of the constraints on power consumption, compromises are often necessary in the circuit design of portable radios compared to larger implementations, resulting in reduced performance."[4] If necessary then, engineers could decide to apply a bit more of the power budget to allow an even better front end.

In the transition to digital television, the Commission surely noticed the steady improvement in

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[4] Comments of the National Association of Broadcasters, MM Docket No. 99–325, July 6, 2009, page 4; http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=7019808310.

the performance of DTV tuners from the first generation to those available today.[5] It would be imprudent to decide regulatory policy based on the first generation of any consumer product.

Here, this product should perform reasonably well in most urban and suburban areas at current broadcast power levels. Claims that a power increase is necessary for the success of this product—and thus IBOC radio in general—appear to be overstated.[6]

2. Alternative solutions must be considered.

I thank NPR for again pointing out in their comments that the Commission should consider all alternative solutions, not just a blanket power increase. "For example, the development of asymmetrical sideband transmission will permit the level of IBOC power to be limited on the channel critical to a neighboring first adjacent FM, independent of the other first-adjacent channel. ... Moreover, NPR has presented several papers for broadcast engineering organizations on the subject of single frequency networks for HD Radio. This technology has the potential of filling digital coverage deficiencies inside the service contour of the IBOC station."[7]

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[5] *See*, e.g., "LG Electronics Launches Sixth-Generation ATSC Digital TV Broadcast Receiver Chipset," at http://news.thomasnet.com/companystory/516849, accessed July 16, 2009.

[6] *See*, e.g., "Expeditious grant of the requested increase in FM digital power is critical to ensuring a successful transition to HD Radio technology." Comments of the "Joint Parties," MM Docket No. 99–325, July 6, 2009, at page 2; electronically at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=7019808316. I do not understand how these commenters, and others, can boast on the one hand that "more than 100 HD Radio receiver models are commercially available, and automobile manufacturers have made HD Radio equipment available in 70 vehicle lines" while at the same time saying that more power is "critical" for making the system viable.

[7] Comments of National Public Radio, Inc., MM Docket No. 99–325, July 6, 2009, at page 6; electronically at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=7019808354.

Also, I applaud NPR's comments in answer to the Commission's third question (on ensuring lack of interference). This subject was not addressed in my own comments—I was out of town for the July 4th weekend and frankly ran out of time. I did have a mental outline of what I would have written. Fortunately, NPR presented the same facts extremely well.[8]

3. The NPR Advanced IBOC Coverage & Compatibility Study is more open and collaborative than I had previously realized.

In my comments, I questioned whether NPR testing should be regarded as impartial and unbiased given that NPR is the principal advocate for a particular segment of spectrum users. While I continue to believe that—ideally—representation and dispassionate engineering analysis are best practiced by separate actors, information in NPR's comments has gone a long way to assuage my concerns.[9]

NPR explained, and I had not been previously aware, that they "convened a Peer Review Group of other interested radio industry parties, such as the Association of Public Radio Engineers ('APRE'), the International Association of Audio Information Services ('IAAIS'), and the National Federation of Community Broadcasters ('NFCB[']), for purposes of obtaining suggestions and observations regarding the Project." Elsewhere, I have now read that, "The tests are being done in a 'collaborative and open fashion' with commercial broadcasters and iBiquity

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[8] Comments of National Public Radio, Inc., (*Id.*), first paragraph on page 16.
[9] Comments of National Public Radio, Inc., (*Id.*), at page 6.

Digital. In some cases, commercial facilities and their technical personnel may participate."[10] These are important keys for the success of the project and for the ultimate acceptance of its conclusions.

4. The path forward is to rely upon the consensus standards process.

It is likely that the NPR study will find that some degree of digital power increase is appropriate in some circumstances, but that the tradeoff between increased digital power and increased analog interference will be a value judgment. This is a situation for which the consensus standards process is well suited. Indeed, the Commission recognized early in this proceeding that, "We believe that it is necessary and appropriate to rely to some degree on the expertise of the private sector for DAB system evaluations and, ultimately, recommendations for a transmission standard. ... Moreover, the Commission would give great weight to any industry compromise the NRSC may achieve."[11]

To date, the Commission has relied on the consensus process to develop an IBOC transmission standard.[12] While Commission consideration of the product of this work, NRSC-5, is still

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[10] L. Stimson, "*More IBOC FM Elevated Power Level Test Details Emerge*," Radio World online, April 9, 2009; electronically at http://www.radioworld.com/article/78044, accessed July 16, 2009.
[11] Notice of Proposed Rule Making in the Matter of *Digital Audio Broadcasting Systems And Their Impact On the Terrestrial Radio Broadcast Service* (FCC 99-327), November 1, 1999, at 58; available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6010350379.
[12] Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Radio Broadcast Service, *First Report and Order*, FCC 02-286, 17 FCC Rcd 19990, released October 11, 2002, at 44; available electronically at http://www.fcc.gov/fcc-bin/audio/FCC-02-286A1.pdf.

continuing,[13] it is worth noting that the standards body has voted three times for –20 dBc digital subcarriers, most recently in April 2008.[14]

Out of respect and deference to the consensus standards process, it would be wise to see what revised standard the NRSC might adopt following release of the NPR report. In his Reply Comments, Dr. Messer discussed this at length and concluded with a recommendation to, "insist that the NRSC be the primary venue for developing a modification, if warranted, of NRSC-5."[15]

The question of what an appropriate level for digital subcarriers might be, given varying circumstances, would thus become the second major issue surrounding NRSC-5 since its adoption. The first issue is that NRSC-5, as it stands today, is fundamentally incomplete. It does not contain sufficient information to allow someone skilled in the art to which it pertains to design and manufacture working, compatible IBOC equipment. This is contrary to iBiquity's offer to disclose this information in return for having their system adopted as the U.S. digital radio standard. I have commented on this at length,[16] and the lack of public information on this subject, in

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[13] Digital Audio Broadcasting Systems and Their Impact on the Terrestrial Radio Broadcast Service, *Second Report and Order, First Order on Reconsideration and Second Further Notice of Proposed Rulemaking*, 22 FCC Rcd 10,344 (2007), at 12 and 28; available electronically at http://fjallfoss.fcc.gov/edocs_public/attachmatch/FCC-07-33A1.pdf.

[14] Letters of June 2 and 3, 2008, from the Consumer Electronics Association and the National Association of Broadcasters, MM Docket No. 99–325; available electronically at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520012101 and http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520012281.

[15] Reply Comments (Late Filed) by H. Donald Messer, Dr. Eng., January 18, 2009; available at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6520193873.

[16] Comments of Jonathan E. Hardis, July 14, 2005, MM Docket No. 99–325; available electronically at http://gullfoss2.fcc.gov/prod/ecfs/retrieve.cgi?native_or_pdf=pdf&id_document=6518010460.