

From: Bob Crane [bobcrane@ccrane.com]  
Sent: Friday, March 15, 2002 5:03 PM  
To: dwilson@ce.org; dlayer@nab.org  
Subject: IBOC

Dave Wilson  
David Layer  
NRSC

Dear Committee members:

We have had time to go over some of the recent tests for IBOC. The following is a summary of our findings. We welcome your response.

The proposed IBOC digital standard will have a great impact on AM radio broadcasters and listeners. Certainly, IBOC could bring many benefits to the local listeners of a broadcast station, including FM quality sound on digital AM. Of concern to radio manufacturers, however, will be the potential loss of signal to areas beyond the local origin of the signal. With the current IBOC standards, listeners in remote areas will experience a severe reduction, or even elimination, of clear, audible signals. Currently, audio quality is already limited to 10 kHz. The introduction of IBOC will reduce audio quality and bandwidth to 5 kHz. Furthermore, the IBOC digital AM will be limited to a 2 mV (2000 microvolt) contour level. In practical terms, these two changes in AM broadcasts will result in clear digital signal near the broadcast station, but a tremendous loss in audio quality for distant listeners. The weaker IBOC digital AM signal will leave anyone outside the 2 mV (2000 micro volt) contour as well as sky wave listeners to rely on non-IBOC, analog receivers.

Presently, a good AM radio can easily receive a station with approximately 70 microvolts/M of sensitivity. Conservative field estimates measure the range of 70 microvolts to over 200 miles. The 2 mV (2000 micro-volt) contour proposed by the IBOC would, optimistically, have a reach of around 36 miles. In effect, at the 2 milli-volt contour required for good IBOC reception, the broadcast range would be roughly 1/40th of the current geographic AM analog broadcast range. According to estimates provided by the EDX division of Comarco Wireless Technology, IBOC DAB would also result in the elimination of nearly 99 % of sky wave, and introduce significant first and second adjacent channel noise problems. Consequently, thousands of people will be left with radios incapable of receiving broadcast signals they had listened to for years.

Listeners unaware of the IBOC changes, might experience poor quality audio on their analog radios, and assume that their equipment is at fault. Should they try to address their situation with an IBOC radio, they might still find themselves at a disadvantage. Listeners on the outskirts of the IBO digital AM range will find their reception switching back and forth between IBOC and analog, a choppiness that, together with the issues addressed above, could lead millions of AM listeners to switch to another format. AM radio is part of America's heritage. The popularity of AM talk radio, particularly in the last several years, has brought the country together to talk about issues as never before. AM Radio is, arguably, the glue that helps hold the country together – it is an essential tool of our American community and culture. It took almost one hundred years for AM radio to achieve its current place in the American home. A reduction in traditional sky wave and ground wave propagation, coupled with an increase in the cost of a simple receiver could have the adverse effect of quieting the voice of radio in homes across the country.

In this new century, the affordability and reliability of radio continues to make it the most common source of information in US homes. The power of radio is vastly underestimated. According to Arbitron's figures, "radio reaches nearly 95 percent of the U.S. 12+ population each week," and Americans spend at

least “20.5 hours a week listening to their favorite stations.”[1] Furthermore, during the morning drive time, from 6:00 am to 10:00 am, the majority of listeners tune to News, Talk and Information radio.[2] Since the talk radio format typically refers to AM Radio, this morning listener trend calls into the question the assumption that only 145 AM stations are among the top 10 radio stations in the top 100 U.S. markets.[3] Clearly, AM stations are pulling in many listeners during prime market times.

Outside the United States, the impact of inexpensive, reliable radios was witnessed in Eastern and Central Europe. News of the fall of the Berlin Wall was spread by radio, not by television – as was news of the Velvet Revolution in the former Czechoslovakia.

If radio listener concerns are not addressed upfront, and the industry focuses only on the audio quality of listeners in or near major broadcast markets, then IBOC digital radio could be the boondoggle of the decade. It should be noted that talk radio listeners are quite capable of acting as a unit if a new technology threatens their format.

Manufacturers welcome the possibilities of using the latest technology to enhance their products, and the newest technology should give listeners many choices on how they pick up their favorite stations. Unfortunately, the new radios capable of receiving IBOC digital radio broadcasts will require so much energy that they will effectively cancel out a large pool of radio listeners for quite some time. Unless the amount of power required by the IBOC processor chip is reduced dramatically, the portable radio, the most common and affordable type of receiver sold, will become unfeasible - and the radio market will suffer.

Radio manufacturers have only recently had access to actual contour levels of IBOC digital AM. We believe the use of a separate band for Digital audio broadcasts may be a more viable solution than IBOC and should be explored more fully.

Sincerely,

Robert C. Crane, President  
C. Crane Company Inc.

1001 Main Street  
Fortuna CA 95540

P 707-725-9000  
F 707-725-9060  
Email: bobcrane@ccrane.com  
Web: ccrane.com

[1] Arbitron, Inc., 2001 Radio Today Study (<http://www.arbitron.com/downloads/radiotoday01.pdf>).

[2] Ibid., (News/Talk/Information, page 2).

[3] Arbitron Inc., radio listening data reported in Radio and Records Online (<http://www.rronline.com>) July, 13, 2001. Cited by David Wilson, Consumer Electronics Association. “In-Band On-Channel Digital Audio Broadcasting: The Receiver Industry’s Perspective.”