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Standing:
GUEST COMMENTARY

Readout:
With IBOC, consumer radios will be operating with the first universal, mass-market data broadcasting standard on existing AM and FM stations.

Jump:
IBOC

Head:
IBOC Is Full of Possibilities

David Maxson

Thanks to Aaron Read for sharing what must be on the minds of many broadcasters regarding the benefits of in-band, on-channel digital radio in the Nov. 21 issue of Radio World.

His commentary is entertaining and, as the Brits say, cheeky, but unfortunately not tuned in to the technology.

The National Radio Systems Committee has recently completed its detailed evaluation of the independent lab and field tests of the Ibiquity FM IBOC system and released it to the public. There are impressive opportunities offered by IBOC technology.

At the top of my personal list of exciting possibilities is the fact that with IBOC, consumer radios will be operating with the first universal, mass-market data broadcasting standard on existing AM and FM stations.

All the digits a station transmits will go to all the IBOC receivers tuned to it. The possibilities for enhancing the listener experience are limited only to what the industry can conjure up with the manufacturers. Being a truly digital medium, IBOC offers economies of scale that RDS and digital subcarriers could not possibly hold a glowing LED to.

No-brainer

On the point of improving current analog services, it is hard to understand where the claim that digital radio "won't sound any better in the car" could have come from.

Automobile manufacturers know how particular people are about their analog radios, and spend tremendous resources developing clever analog ways to mask the artifacts of mobile reception, because the successful sale of each car depends on it.

In spite of all their techno jury-rigging, car companies still are not satisfied with the way analog car radios work today. With car dashboards going more digital every year, the auto manufacturers are hot to trot on satellite digital radio, GPS features, and

transportation telematics opportunities. Terrestrial digital radio is a no-brainer in this environment.

Meanwhile, home FM reception almost never relies upon the original plan — the 30-foot-high outdoor Yagi antenna on a rotator — and remains as susceptible to multipath and interference as reception on portable radios does.

Face it, while FM broadcasting has the specs to be as clean and dynamic as anyone needs for high-fidelity listening, the way people use FM radio exposes them to hostile channel conditions. Digital broadcasting promises to address the channel impairments of FM reception, and provide really good reception in places within a station's coverage area where reception today is less than stellar.

Mr. Read also challenges the benefits of in-car digital listening by suggesting the poor acoustical environment of the automobile trumps the need for audio quality. He says MiniDiscs sound fine in his car, but not at home. Yet he complains about the fatiguing audio processing on his favorite station.

So what's the point of going digital if the listening environments are awful and stations process their audio to the density of black holes? Consider the reasons stations process their audio hard. Loudness makes the station jump off the "dial" (remember the dial?) as you spin it to find a station. It's a competitive advantage with an analog radio with a tuning knob — much less important with digital.

Loudness, in the form of dense modulation, also helps mask the impulsive sounds of noisy reception conditions, another non-issue for digital radio. Finally, processing can be tailored to create a characteristic sound for a station, a sonic signature as it were, that helps maintain the brand.

Indeed, processing for this reason may still leave Mr. Read feeling like he ran 10 miles after listening to his local rocker for 20 minutes. However, digital radio may be able to offer a more open sound without penalty, even in the noisy automobile, because loudness in the digital world does not have to mask ~~transient multipath noise~~noises caused by multipath and other interference.

Without this factor in the domain of digital radio processing, other factors, such as dynamic range control and signature sound characteristics, can be less encumbered.

No penalty

Then there is the question of whether IBOC is the Death Star that will somehow kill Class D, LPFM and small Class A stations because they won't be able to "foot the bill" for a digital transmitter.

The good news about the whole IBOC concept is that stations that remain analog-only will still be receivable by the hundreds of millions of analog radios out there, and by all IBOC radios when they hit the market. The smaller-budget stations will not be penalized for waiting to upgrade.

At the time when IBOC receiver use is plentiful, these stations will wonder why they didn't upgrade sooner, because the choice is clear (thanks Sprint); clearer reception means more listening. Smaller stations may benefit disproportionately with IBOC because they often have rather low antenna heights that exacerbate multipath reception problems, which IBOC helps eliminate.

Also, Mr. Read does not have to worry that WBRS, the Class D Brandeis University station with which he works, would be forced off the dial by IBOC. This station, squarely

overlapping two third-adjacent stations in the Boston market, would remain unscathed if both of the third-adjacent Class Bs added IBOC.

Finally, AM IBOC ~~will get~~is getting its day in the sun ~~soon,~~ as the NRSC evaluates the independent tests of the Ibiquity AM IBOC system ~~are submitted to the NRSC for evaluation.~~

IBOC technology, a long time in coming, is close to fruition. Be sure to check it out and challenge it for yourself.

In addition to doing broadcast engineering work in Cambridge, the author is a member of the National Radio Systems Committee and technical consultant to Impulse Radio, the company that is developing with Ibiquity an open data protocol for IBOC. Opinions expressed in this letter are not the opinions of the NRSC or its sponsors.

RW welcomes other points of view.

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