



Case Study

High Bandwidth Wireless Solution for HD Radio
Clear Channel Radio, USA



Application
Broadcast Radio

Challenge
To find a reliable and cost-effective microwave radio solution that supports the high bandwidth requirements of HD radio

Solution
RAD's Airmux-200 broadband wireless multiplexer

- Benefits
- Rock solid link reliability/uptime
 - Extremely competitive price/performance ratio
 - Easy installation
 - Works well in populous areas

Major Broadcaster Rolls Out High Definition Radio using RAD's Airmux-200 Wireless Multiplexer

Clear Channel Radio owns and operates more than 700 radio stations in 160 markets in the United States, making it the nation's largest radio broadcaster. Each week, more than 110 million listeners tune in to Clear Channel programming.

In recent years, increasing competition from satellite radio spurred traditional analog radio broadcasters like Clear Channel to seek new ways to retain listeners. The development of HD, or "High Definition" radio created a tremendous opportunity to expand and enhance broadcasts by supplementing analog transmission with digital. Recognizing the potential benefits to listeners in terms of sound quality and programming variety, along with the promise of a new advertising revenue stream, Clear Channel committed itself to being among the first to deliver HD radio technology.

The high profile Detroit, Michigan market, which includes major radio stations WNIC, WJLB, WKQI, WDTW, and WMXD, was selected for the initial roll-out. Programming for each station originates at a studio in Farmington Hills, just under 16 miles from WNIC's transmitter, which serves as a hub between the studio and three other station towers.

HD radio was initially launched in Detroit using existing infrastructure, which was based on a standard 950 MHz broadband radio system. But when throughput limitations quickly became evident, Clear Channel realized the relatively low bandwidth point-to-point Studio-to-Transmitter links were not enough to support HD's high bandwidth requirements.

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Dan Mettler, Clear Channel's Senior VP of Engineering – Central Region



data communications



Dan Mettler, Clear Channel's Senior VP of Engineering – Central Region, explained, “HD radio is very bursty and requires much higher bandwidth than what we had available. Because the IP link was constantly overwhelmed by the bursts, we experienced intermittent service with frequent holes in the audio.”

Mettler turned to TESSCO, a company known for its wireless expertise, for help in identifying a higher bandwidth wireless solution to serve as an additional stream. Since broadcast leaves no room for error in regard to transmission drops and “dead air,” link stability was the most critical requirement. Put simply by Mettler, “We needed this solution to be 100% rock solid.”

TESSCO carefully considered Clear Channel's requirements and then recommended the 5.8 GHz Airmux-200 broadband wireless multiplexer from RAD Data Communications. Kevin Fitzgibbons, Category Manager at TESSCO, said, “Clear Channel ultimately needed a reliable IP link to deliver transmissions without disruption. Having worked with RAD's Airmux on several previous projects, we knew it was the right radio to make this happen.”

Four links were installed in a star-configuration with Airmux units. A redundant studio-to-hub link doubles the bandwidth and ensures 100% uptime. Hub-site synchronization at the WNIC tower connects the outdoor units to a single clock for further uptime assurance. The primary analog stations are transmitted over the older system and the HD stations over the Airmux-200 links.

Mike Dault, a Clear Channel engineer for the Detroit market, admits he was originally skeptical about using the unlicensed spectrum in such a populous area. Nonetheless, he says, “Installation was easy, our audio problems were solved.” Adds Mettler, “I don't even have to think about it.”

Clear Channel has since purchased Airmux units for HD radio and other applications in several additional markets, including Pittsburgh, Pennsylvania, New Orleans, Louisiana, Indianapolis, Indiana, Dover, Delaware, and Winchester, Virginia, and the list is rapidly expanding.

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