

RAB RADIO
ADVERTISING
BUREAU

 **Radio**[®]
Digital AM & FM

Prepared by
RAB Research

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HD RADIO TECHNOLOGY: A Primer into Radio's Digital Technology

About HD Radio

HD Radio Technology enables AM and FM radio stations to broadcast digitally, enhancing the listener's audio experience. HD Radio Technology delivers a higher quality audio broadcast to listeners, allows stations the ability to transmit additional programs on the same frequency, send album art, station and advertiser logos, transmit data services, and more. The benefits of an HD Radio broadcast can only be experienced via one of the many HD Radio Receivers available to consumers via tabletop, portable, aftermarket, or in their vehicle. HD Radio broadcasts are subscription-free. Best of all, radio listeners without HD Radio receivers still continue to receive the analog portion of their favorite station's signal unchanged.

HD Radio Technology offers numerous advertising and marketing opportunities already in use by hundreds of stations large and small:

- Advertiser's custom text and/or logo delivered over-the-air to HD Radio receivers (ex. *"Call John's Florist @800.668.8888 for special deals"*, with the client's logo appearing on the car radio's display).
- Dedicated client content channels on HD1/HD2/HD3 channels (ex. *"You're listening to the Joe's Automall channel on 103.1 HD2"*). These new customized channels can be focused around a specific client (ex. an Easy Listening channel with limited breaks that offered tips on Car Maintenance, Car Buying, etc.). This channel could be sold to an Auto Dealer Group and aired in all of their showrooms.
- Station clusters with AM frequencies can expand the reach of that AM by simulcasting on a sister FM-HD2/HD3/HD4, as over 300 stations do already.
- Leasing HD2/HD3/HD4 channels to content providers (ex. foreign language online content providers or religious groups looking for over-the-air opportunities). Stations can and do lease these content providers an HD2/HD3/HD4 channel to give them an over-the-air outlet at a tiny fraction of the cost of owning and operating a radio station. This is "found money" to stations, generating new revenue at virtually no cost.
- Simulcasting an HD2/HD3/HD4 channel on an analog translator to, in effect, get another unique radio signal in a market. Stations can program a hyper-targeted version of their existing programming or introduce an entirely new format to fill a format gap in the market.

There are also programming opportunities for radio stations:

- Unique over-the-air content
 - Playing music from local artists, foreign language programming, religious programming;
 - Formats that complement a station's main channel;
 - Formats that can garner a local audience tied-in with natural sponsorship possibilities (ex. a Comedy Channel, sponsored by local comedy clubs).

In addition, many stations have incorporated professional sports team partnerships. In markets large and small across the country, professional sports teams are offering LIVE game simulcasts, recap coverage, archived game replays, player music playlists, etc. Some teams currently broadcasting include: the Dallas Cowboys, Pittsburgh Penguins, Philadelphia Phillies, Detroit Pistons, D.C. United Soccer and many, many more.

To date, there are over 2,400 stations that have upgraded their primary signal with HD Radio Technology, including stations in virtually every market. As of February 2019, there are more than 2,100 multicast channels being broadcast, giving consumers more choices of new, diverse programming.

HD Radio Capabilities

Features of HD Radio Technology available on today's receivers:

- Digital Sound – HD Radio broadcasts deliver crystal clear, CD-like digital audio quality. FM is CD-like quality; AM sounds like FM.
- HD2/HD3/HD4 – adjacent to traditional main stations are up to 3 additional channels, providing new original formats on the FM dial (ex. 100.3-HD2, 100.3-HD3, 100.3-HD4).
- Program Info – provides song name, artist, station ID, and other relevant data (availability varies on the individual receiver).
- Artist Experience® -- visual images, such as album art and station logos, of over-the-air broadcasts from HD Radio station (availability varies on the individual receiver).



- Traffic – HD Radio Traffic delivers more in-depth traffic data and travel conditions – as much as 10X faster than other broadcast methods.
- Emergency Alerts – delivers critical and lifesaving messages to the public during emergency situations.
- Bookmark – a music & product discovery feature that enables users to store information about content on the radio and delivers interactive information via QR codes.

- Station Guide – displays all the HD Radio stations available in the current market, enabling the listener to discover all the digital programs available in the local area.

HD Radio Programming

Multicasting, the ability to broadcast multiple channels on one radio frequency, has been a primary driver in broadcaster as well as consumer adoption, and a tremendous growth factor for the medium. Highly specialized programming on alternate channels of the same station deliver tightly targeted audiences, creating more opportunities for advertisers to integrate their brand with program content, and connect on an even deeper level with their customers.

With the ability to offer unprecedented new content, HD Radio channels bring fresh sounds to the airwaves. Formats currently on HD Radio HD2/HD3/HD4 channels include (but are not limited to):

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|------------------------------|---------------------------|
| • AAA | • Jazz |
| • AOR | • Latin |
| • Alternative | • News / Talk |
| • Bluegrass | • Oldies |
| • CHR | • Pop |
| • Christian / Gospel | • Public Radio |
| • Classic / Progressive Rock | • R&B |
| • Classical | • Rap |
| • Comedy | • Reggae |
| • Country | • Religion |
| • Dance / EDM | • Rhythmic |
| • Deep Tracks | • Rock |
| • Easy Listening | • Soul |
| • Electronic | • Soundtrack |
| • Folk | • South Asian programming |
| • Foreign Language | • Sports |
| • Gay Pride | • Top 40 |
| • LGBTQ | • Urban |
| • Hip-Hop | • Vocal |
| • Holiday | • World |

There are also opportunities for broadcasters to expand an AM station’s reach by multicasting it on one of an FM station’s multicast channels – providing an additional avenue for advertisers to extend their product messaging further and stations to generate more income by reaching a wider audience.

Listeners can discover new programming through the station guide on HDRadio.com. Just enter your city or zip code and get a list of all the local radio broadcasters transmitting in digital.

HD Radio In-Car

HD Radio Technology is currently available on 278 different vehicle models from ALL 40 major automakers that sell cars in the U.S., with over 60% of those models having HD Radio Technology as a standard feature. In 2018, almost 51% of new cars sold in the U.S. were equipped with HD Radio Technology.

The teams at HD Radio continue to work with automakers every day to develop new ways for consumers to enjoy free over-the-air radio in their vehicle. For more details on progress and efforts that are being made to keep radio’s pride of place in the dash, please visit HDRadio.com.

Where to Find HD Radio Receivers

HD Radio Receivers can be found in new vehicles, tabletop and portable receivers. These products are available at local car dealerships, local audio installers, retailers like Crutchfield, Best Buy, Kmart, Walmart, Costco, Amazon.com and many other online and brick-and-mortar vendors. Go to <http://hdradio.com/get-a-radio> for a list of available retailers with HD Radio Receivers and the various styles and types available.

HD Radio Technology By The Numbers Recap

- Almost 51% of new cars sold in 2018 came factory-equipped with HD Radio Technology.
- HD Radio Technology is available in 278 different vehicle models.
- 168 individual vehicle models offer HD Radio Technology as standard.
- There are over 56 million HD Radio receivers currently in the U.S. marketplace (auto, home, portable).
- Currently over 2,400 digital stations on-air in the U.S.
- Over 2,100 HD2/HD3/HD4 digital-only channels available to consumers with HD Radio receivers.
- 95% of the U.S. population lives within reception distance of an HD Radio station.
- 79% of U.S. radio listening is to stations that have already upgraded to HD Radio Technology.
- Of the top 10 rated-stations in the top 10 markets, 98 of those 100 stations broadcast using HD Radio Technology.

In October of 2015, DTS Inc. acquired iBiquity Digital, developer of HD Radio Technology. In October 2016, DTS itself was acquired by Tessera Inc. The combined new entity was renamed Xperi – a technology company with global reach.

About Xperi Inc.

The company's combined portfolio of products and technologies uniquely positions it to deliver smart sight and sound solutions and next-generation 3D semiconductor interconnect solutions for mobile devices, consumer electronics and automotive markets – while also addressing the growing potential of emerging technologies such as IoT and AR/VR. The company's team of world-class engineers will focus on the vision of creating core technologies that power intelligent immersive and personalized digital experiences. For more information please visit www.xperi.com.