



AT THE CENTER FREQUENCY

An e-Newsletter from Anatech Electronics

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What's News...

FCC auction nets \$22.5 billion

AT&T, Dish, and T-Mobile were the major bidders in the FCC's latest auction. AT&T spent \$9 billion, Dish spent \$7.3 billion, and T-Mobile spent \$2.9 billion. Total bids reached about \$22.5 billion, the third-largest FCC spectrum auction to date, following last year's \$80 billion C-band auction (half going to Verizon), and 2015's \$44.9 billion AWS-3 auction. Collectively, the 3.45 GHz band and the neighboring 3.5 GHz and 3.7 GHz bands represent 530 MHz of mid-band spectrum for 5G. Thirteen of the 23 companies with winning bids qualified as small businesses or as entities serving rural communities. Compared to the prior 5G auction, this one showed an increase in the number of winning bidders per market: More than one-third of the top 100 markets have at least four winning bidders, compared with 10% of the top 100 markets in the last auction.



A Word from Sam Benzacar

AM radio is not dead. Yet.

By Sam Benzacar



The most surprising thing about AM radio broadcasting is that it is still here. It's battled regulations that mandate power reductions after sundown, unfavorable propagation conditions, extreme sensitivity to electrical noise, limited audio bandwidth, and truly mediocre AM sections in vehicle radio receivers. Nevertheless, it has a strong following for those interested in news, weather, traffic, and sports, but these can increasingly be found on FM as well.



However, the most potent factor that will lead to its demise is the dwindling number of people who listen to it. The average age of an AM radio listener is approaching 60, and according to the FCC among people aged 25 to 34, AM accounts for about 7% of radio listening. In fact, I'd bet that most people under the age of 30 have never even clicked the AM button on their vehicle infotainment display to see what's available.

Demographics like this do not bode well for AM in the future, regardless of efforts such as HD Radio to make it more appealing

Verus get DARPA high-power microwave contract

Verus Research has been awarded a \$5 million Waveform Agile RF Directed Energy (WARDEN) contract from the Defense Advanced Research Projects Agency (DARPA) that if all options in the 48-month contract are exercised, will develop hardware, theory, and computational models to extend the range and effectiveness of high-power microwave (HPM) systems. The contract focuses on electromagnetic interactions with electronics contained within enclosures and the effects on system operation. Verus Research will focus on researching and modeling the fundamental physical factors that govern the nonlinear back-door interaction of high-power radio frequency energy with complicated electronic systems of interest.



Space X launches latest smallsat salvo

SpaceX is set to double its cadence of dedicated rideshare missions this year, beginning with the latest Falcon 9 rocket launch from Cape Canaveral with 105 spacecraft destined for customers in 20 countries. The company's first mission, Transporter 1, deployed 143 small satellites in January 2021, and Transporter 2 carried 88. The payloads on Transporter 3 consist of those about the size of a soda can to that over washing machine, the biggest of which is the Ukrainian Sich 2-1 satellite, a 375-lb. Earth-imaging spacecraft. The Sich 2-1 satellite, also named Sich 2-30, was built by the Ukrainian company Yuzhnoye and hosts a medium-resolution imaging payload to image Earth's surface at visible and near-infrared wavelengths, collecting data useful in urban planning, crop management, and environmental monitoring. Radar remote sensing satellites are also part of the Transporter 3 payload package.

and better suited to music, and a variety of efforts to "save AM radio" by radio talk show hosts over the years. Tesla even went as far as to remove both AM and FM radio and even Sirius XM from its Model S and Model X model when it upgraded its master computer unit on older models to accommodate company's Tesla Theater (video streaming), Tesla Arcade (video games), and TeslaCam and Sentry Mode. To get it back you'd need to cough up \$500 for a "radio retrofit".

But Tesla is not alone because during the ongoing supply chain crunch, some automakers toyed with the idea of leaving out the AM radio receiver on new models, which gives you an idea of how "ancient modulation" is viewed by the auto industry. Not only that, but AM radio reception appears problematic for the future as vehicles become entirely electrical and electronic, as noise is one of the primary factors that make AM radio annoying.

Let's face it, AM radio reception has always been terrible, which is why it's best suited for talk but not music. I've had three vehicles with digital HD radio, none of which provided reception much better than analog version and the HD effect dropped in and out periodically. And I doubt any automaker spends much time thinking about how to improve its AM radio receivers.

In addition, nothing can defy the disastrous effect of propagation after dark that reduces ground wave transmission. Worse still, the FCC remains firm in requiring AM stations to reduce their output power after sundown, which makes low-power stations such as National Public Radio all but unlistenable.

So, is AM radio on its way out? I'd be willing to wager that by 2030 it may be gone from almost all vehicles. The auto industry is focusing on EVs and by that time the average age of listeners will have risen even further, reducing the total number of people who are interested. Time, and technology, marches on.

We can always find a solution!

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DoD completes ballistic missile detection radar

The Missile Defense Agency, Northern Command, and Space Force I've completed construction of the long-range discrimination radar (LRDR) site at Clear Space Force Station, Alaska. The multi-mission LRDR is designed for initially improving incoming ballistic missile tracking and combines lower frequency radars that can track multiple objects in space at long range with higher-frequency radars that are better able to discriminate between multiple objects. Ballistic missiles remove portions of their structure throughout their trajectory including decoys and other countermeasures, and LRDR will help determine those required to be targeted. When the system becomes fully operational, the 220-deg. field of view provided by arrays 60 ft. high by 60 ft. wide will allow search, track, and discrimination of small objects, including all classes of ballistic missiles. In the future, the radar will be able to track hypersonic missiles as well.





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