



AT THE CENTER FREQUENCY

An e-Newsletter from Anatech Electronics

December 2018

A Word from Sam Benzacar

The RF and Microwave Industry in 2019: My Predictions



Since I first began writing this column in 2008 (no doesn't seem like "just yesterday"), so much has happened in the and microwave industry and high-tech in general. Back in 2008, the FCC just gave wireless carriers the green light to decommission their analog networks, Apple introduced the iPhone 3, Google released the Chrome browser, Windows 7 was about to be released, Amazon began selling the Kindle, and netbooks were the rage.

Now, the cellular industry is promising gigabit-per-second downstream speeds (and, incredibly, using millimeter wavelengths), the iPhone has reached its tenth generation with a flagship phone that costs as much as a decent laptop computer (an iPhone 3 with 16 Gbytes of RAM cost \$199), Chrome is now *the* browser, Windows 10 has been around for nearly 4 years, I'm on my second Kindle Paperwhite, and the netbook is, thankfully, dead. With a decade of end-of-the-year columns under my belt, I've decided that this time, I'm going to make some predictions rather than taking the easy route and summing up the previous year.

5G: Last year, I wondered if the huge challenges of using millimeter wavelengths would prove to be too much for the cellular industry. I'm still not sure about that, but we'll soon find out as the first "5G" smartphones with millimeter-wave capability are coming next year and the carriers are feverishly deploying small cells to serve them. I still haven't come to grips (no pun intended) with how well millimeter-wave signals are going to propagate with your hand around the phone. The most visible application for 5G will be fixed wireless access (FWA) as competition for cable with speeds of 1 Gb/s, maybe more. **My prediction:** The first 5G smartphones will roll out from some vendors (but not Apple, which is wisely waiting until 2020) with less-than-spectacular results, and FWA will be available in some places from Verizon and AT&T.

IoT: Home automation is spreading its tentacles beyond applications like HVAC, smart locks, and lighting: I was just at Home Depot and the shelves were full of Bluetooth-connected Christmas decorations that you control with an app, for what that's worth. Amazon and Google are on the IoT bandwagon in a big way, and it won't be long before every car will have Alexa, Google Assistant, or both as optional and ultimately standard features. But this is chump change for IoT because "smart" cities make this look like a science project, and they are already here. Interestingly enough, Spain seems to be leading this charge, with everything from garbage can sensors to parking and a lot more. **My prediction:** IoT will begin to deliver on its promise in a big way this year.

Defense: Until 1990, this was *the* market for RF and microwave components, and it's been steady business over the years. Now, DoD is in full-development mode owing to technological advances in Russia and China. The Army, in particular, needs a decent solution for battlefield communications as well as a huge investment in EW. **My prediction:** 2019 will be a very good year for field and waves.

Wi-Fi: 5G needs more backhaul and Wi-Fi is a (and perhaps the) solution. For the rest of us, routers for 802.11ax (now called Wi-Fi 6 with downstream rates 37% faster than 802.11ac) are already shipping and the technology should be in smartphones later next year. Not to be outdone at millimeter-wavelengths, there's 802.11ad (Wi-Gig) and 802.11ay that operate at 2.4, 5, and 60 GHz to deliver downstream rates of nearly 7 Gb/s. **My prediction:** 802.11ax products will be offered by all major router manufacturers in a few months, and later in 2019 or possibly 2020 it will be joined by Wi-Gig, which should actually be called Wi-Fi 7 as the Wi-Fi Alliance has finally decided to make various Wi-Fi permutations easier to understand



ATSC 3.0: The next generation of over-the-air TV broadcast is almost here, and it's nothing like what's available now. **My prediction:** Cord cutting will increasingly combine this with broadband, putting and even bigger dent in cable subscriptions.

Rural broadband: Millions of people in the U.S. and Canada have nothing approaching "real" broadband, except for services provided by Wireless Internet Service Providers (WISPs). **My prediction:** The government is throwing money at wireless carriers to make serving rural areas fairly profitable, FWA eliminates the need to lay huge amounts of fiber, and IoT is a new market opportunity. The result: More rural areas will finally have broadband service and WISPs will need to up their game.

There you have it. Next year at this time, we'll all be able to see how well my predictions hold up.

So... all of us here at Anatech Electronics wish everyone best wishes for a wonderful holiday season, and good health, happiness, and prosperity for the New Year!



Visit our website at www.anatechelectronics.com
Can't find what you're looking for? [Click here](#) to get a quote on custom filters to fit your specifications.



(973) 772-4242



Send us an [email](#)