ANATECH ELECTRONICS INC

AT THE CENTER FREQUENCY

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What's News...

Windows Gets Wi-Fi 7

Microsoft has begun integrating Wi-Fi 7, formally known as (IEEE 802.11be Extremely High Throughput (EHT), into Windows 11, starting with the company's Windows Insider program members. Wi-Fi 7 support for all Windows 11-enabled devices will arrive in Version 24H2 later this year. The Wi-Fi Alliance released Wi-Fi 7 in January. Wi-Fi 7 includes support for 2.4 GHz, 5 GHz, and 6 GHz simultaneously and provides a usable bandwidth of 320 MHz, double that of Wi-Fi 6, and supports 4096-QAM modulation to deliver speeds up to four times faster than Wi-Fi 6 and Wi-Fi 6E and almost six times faster than Wi-Fi 5.

Source: Wi-Fi Alliance

U.S. Counters Potential Russian Space Nuke Threat

The Missile Defense Agency has placed six missile-detection satellites in orbit as some sources have claimed that Russia intends to deploy space-based nuclear weapons designed to destroy other satellites. A SpaceX Falcon 9 rocket launched the DoD satellites into orbit. Russian officials say they do not have any intention of launching such spacecraft, which would violate the 1967 Outer Space Treaty that states no nation can place nuclear weapons or other weapons of mass destruction in orbit. The White House clawed back the media attention this generated, noting that although Russia is working on anti-satellite capability, there has been no indication the country has yet deployed it.

A Word from Sam Benzacar

Amateur Radio: Still Thriving in the Digital Age?

By Sam Benzacar

Although I'm not among them, many design engineers got their first taste of RF and microwave technology through amateur radio, and many still do. However, that number appears to be declining. For example, the International Amateur Radio Union (IARU), the global federation of national amateur radio organizations, says there are about 3 million hams worldwide.

But this number has been static since 2000, when the IARU stopped counting when the amateur radio population began to decline. The only exception may be in the U.S., where licenses remain about 781,000. But this may or may not reflect how many of these licenses are held by people who are active rather than simply retaining their licenses. Japan's ham radio population has dropped by more than 600,000 over the past 20 years and as of 2015 it was 435,581, China has more than 174,000 radio amateurs as of 2021, and Thailand has 101,763 hams, the UK has 75,660, and Canada has 70,198.

It doesn't take much thought to see why this decline is occurring. A few decades ago, it was possible to build a formidable HF transceiver from scratch because the electronics industry had not yet fully transitioned from discrete devices to systems-on-chip (SoCs). In addition, software-defined radios didn't yet exist, nor did direct-to-RF sampling, in which the over-the-air signal is converted from analog to digital form at (or near) the antenna. In short, digital technology has reduced or even eliminated some analog components that were formerly required.

So, should we assume, as the number may suggest, that amateur radio is just not as appealing or useful as it once was? After all, virtually anyone can contact virtually everyone else on a smartphone by voice, text, or email, and social media extends to everyone the ability (for better or worse) to share their thoughts with hundreds of thousands or even millions of people.

Source: SpaceX

That said, from my perspective, it's far too soon to write off amateur radio as archaic for several reasons. First, you can still build a transceiver yourself. With Raspberry Pi at the core, receiver and transmit modules from companies like NiceRF, and various other components, a transceiver for various frequencies can be built cheaply. There's plenty of help available from various websites that provide step-by-step instructions. In fact, building something like this is not all that different from how you'd put a HealthKit together back in the day.

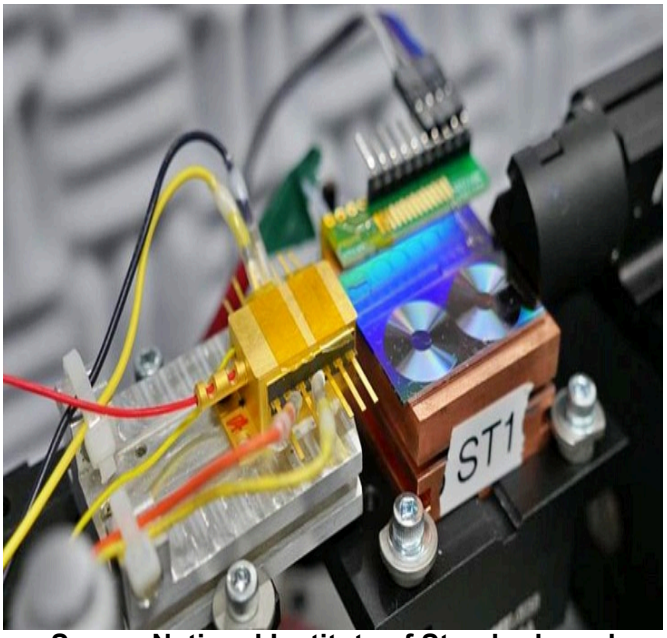
Second, even though wireless communication technology and networks are ubiquitous, hams continue to be the go-to solution during natural disasters when both wired and wireless commercial networks can crash and burn. Hams are also instrumental in coordinating relief efforts and working closely with government agencies and humanitarian organizations during these situations.

The most recent example in the U.S. occurred on May 3 when strong storms and at least 60 tornadoes wreaked havoc in the Central U.S. for nearly two weeks. The Amateur Radio Emergency Service (ARES) worked with municipal, county, and state agencies to provide critical services well beyond restoring communications. ARES has done the same during hundreds of other disasters, from 9/11 to Hurricane Katrina.

In short, while amateur radio may not get all that much media attention, it's still alive and well and, hopefully, always will be.

NIST Chips Increase Precision Timing

The National Institute of Standards and Technology (NIST) and its collaborators have developed chips that convert light into microwave energy. The chips could improve GPS, the quality of phone and internet connections, the accuracy of radar and sensing systems, and other technologies that rely on high-precision timing and communication. The technology reduces timing jitter, which is small, random changes in the timing of signals. The researchers have reduced them to only15 femtoseconds, which is a significant improvement from what has been achieved with traditional microwave sources



Souce: National Institute of Standards and Technology

Source: Wikipedia

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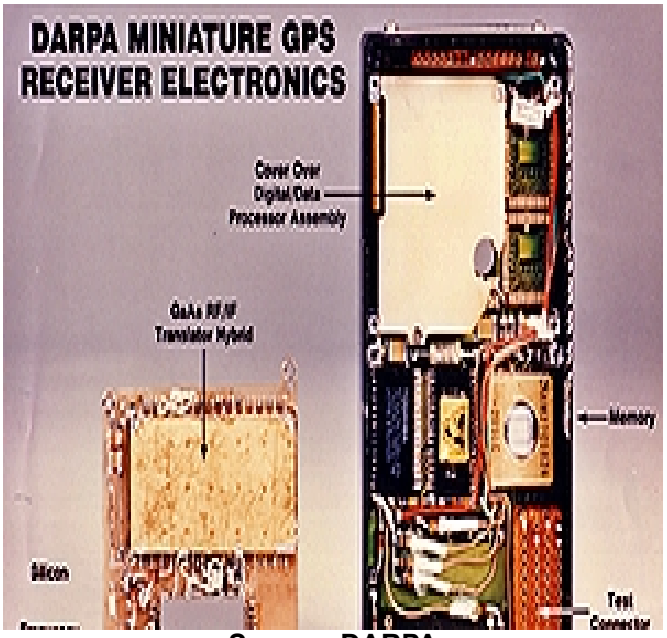
DARPA Contract Focuses on Smaller Microwave ICs

RF and microwave experts at HRL Laboratories and SRI International are collaborating on a project to develop small RF receivers, transmitters, and antennas for space-constrained applications in sensors and communications. Under a $23.2 million contract from DARPA for its “Macaroni” program, the team will develop RF receivers and transmitters much smaller than the wavelength of the sent and received radiation. The researchers will focus on improving receiver sensitivity, link closure, systems integration, and increased transmit power and system ruggedization.



Source: DARPA

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