

Trouble Ahead for Military Radars at S-Band

 10  2  Save



Kim Shiflett/NASA



By Rebecca Grant

11/12/2024 Updated: 11/12/2024

   Print

Commentary

The U.S. military is heading for a big, new problem with its radars. To meet soaring demand for TikTok videos and other apps running on 5G, Congress is under pressure to sell off prime slices of the radio wave spectrum at a frequency location called S-band—thereby forcing military defense systems to cozy up and “share” with commercial wireless companies.

S-band radars are already part of the missile warning for Alaska and the new system in Hawaii. Guam’s enhanced 360-degree defense, now under construction, also depends on S-band. As threats grow, S-band radars will be integral to protecting the continental United States, too.

If Congress authorizes the FCC to sell licenses for the segments of S-band used by the military, the results could be catastrophic—and very costly to remedy.

Military radars have been integral to operations since early in World War II, and they’ve gotten better with each decade. Major types of military equipment use different frequency bands on the electromagnetic spectrum. High-power, low-frequency radars track distant objects. Shorter waves at higher frequencies take over for finesse tasks like fire control. All bands have their functions. C-Band is medium range, X-Band is for short range, Ku-Band is for close-in support, and so on.

S-Band band (2000—4000 MHz) is for long range, precise tracking. On any given day, S-band radars are tracking real threats to the U.S. forces and our allies. S-band was involved in tracking [the latest North Korean ICBM launch](#) on a lofted trajectory on Oct. 31. In the Middle East, S-band systems on Navy ships are at work intercepting Houthi attack drones. Of course, the S-band Aegis radar systems also helped track the 300 missiles and drones fired by Iran at Israel back on Apr. 13, and the salvo of almost 200 more on Oct. 1. Don’t forget the [Russian warships in Cuba](#) in June and the [first-ever Chinese-Russian joint bomber patrol near Alaska](#) in July.

The S-band radars are vital, and the need to fence off the military spectrum has been lost in the clutter for too long.



Sharing wireless spectrum is a fact of life, but there is a backstory to this current problem. For the past 30 years, the Federal Communications Commission has made billions by auctioning spectrum rights. (Sometimes the revenue even gets applied to the national debt.) Over time, more segments of the spectrum have been licensed for everything from mobile phones to high-definition video.

There are plenty of cases where DoD and commercial providers co-exist quite well in the spectrum, such as when DoD purchases communications services, for example.

This is not one of those cases.

Experts will tell you the S-band is particularly coveted for two reasons: First, it operates well in bad weather. Yes, raindrops and atmospheric conditions can weaken radio waves in some frequencies, degrading radar performance. Using the S-band avoids weather problems. After all, “you can’t control the weather in a war zone,” [explained one radar manufacturer](#).

Second, sensors operating in the S-band can detect smaller targets than sensors operating in other frequencies while maintaining precise resolutions. This makes S-band radars effective at what the military calls discrimination: spotting the lethal missile warhead in the midst of junk, debris, and clutter. Bottom line: S-band operates in all-weather performance conditions and [it can tell apart](#) between different threats.

Of course, the technical selling points for S-band make it very attractive to commercial ventures, too. When these military high-tech systems were designed, S-band was just for the military. Hence, several commercial companies want to cut in and operate their systems in S-band. Videos and social media apps eat up 80 percent of wireless data usage. Commercial wireless companies are seeking out more room on the spectrum to run 5G, while keeping costs down.

The assault on S-band takes a soft-sell approach. Advocates point to the need to “share” and stimulate new innovation. “New approaches to spectrum allocation are allowing 4G/5G networks to coexist with

existing incumbents—especially the military, which is a major user of the spectrum most desirable for commercial use,” [wrote one expert](#).

Another highly sophisticated argument first acknowledges the ridiculous and prohibitive costs of compelling the military to vacate spectrum, [estimated at \\$120 billion](#) or more, just to reconfigure the Aegis systems, if it could even be done. Next, advocates make the case for a form of spectrum sharing that would nonetheless put commercial companies in the military bands, with the expectation that military radars can just move over and make room, as though they were hogging two seats on Amtrak.

Of course, it isn't that simple. Inserting commercial users into the military wavelengths of S-band would significantly degrade the long-range tracking and discrimination function by squeezing the functionality of the smaller spectrum slice. The military radars wouldn't have the “room” they need to function at full capacity, if restricted from a chunk of their required spectrum band due to new commercial users operating there. In this case, full capacity means range resolution and field of view, both quite essential for missile defense. Think of it as setting back American radars by forty years.

American economic prosperity does not depend on clearing S-band for commercial uses. Commercial wireless firms can cope with military radars in S-band by shifting their attention to other parts of the spectrum.

It's time for more awareness of the true costs of tampering with S-band. Fortunately, Senators Mazie Hirono (D-Hawaii), Angus King (I-Maine) and Deb Fischer (R-Nebraska) in a [letter asked the Biden Administration](#) not to run roughshod over the critical band.

As China is building up its nuclear arsenal and experimenting with hypersonic weapons, the full abilities of S-band are becoming even more important. Said another way, the worse the threat gets, the more America will rely on unimpeded S-band military radars. Choking off part of the spectrum could limit the ability for radars to see multiple missiles and warheads aimed at the American homeland or at U.S. forces overseas.

China knows full well how important S-band is to U.S. military operations. China reserves crucial S-band spectrum for its own use, but is pushing an international standard that, conveniently, would interfere with U.S. military systems.

Considering the unprecedented threats to global security posed by Russia, China, and North Korea, this is no time to endanger national security with a misplaced S-band sale.

From [RealClearWire](#)

Views expressed in this article are opinions of the author and do not necessarily reflect the views of The Epoch Times.

Sign up for the Morning Brief newsletter. Join 200,000+ Canadians who receive truthful news without bias or agenda, investigative reporting that matters, and important stories other media ignore. [Sign up with 1-click >>](#)



Rebecca Grant

Author

Rebecca Grant, Ph.D., is a national security analyst and vice president, defense programs for the Lexington Institute, a nonprofit public-policy research organization in Arlington, Virginia. She has held positions at the Pentagon, in the private sector and has led an aerospace and defense consultancy.



Author's Selected Articles

Congress Shouldn't Compromise a Key Missile Defense Program

Jul 29, 2014



Cookies Settings