DOD joins fight against 5G spectrum proposal, citing risks to GPS



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The Department of Defense has weighed in against a proposal before the Federal Communications Commission to open the 1 to 2 Gigahertz frequency range—the L band—for use in 5G cellular networks. The reason: segments of that range of radio spectrum are already used by Global Positioning System signals and other military systems.

In a letter to FCC Chairman Ajit Pai, Secretary of Defense Mark Esper pressed for the rejection of the proposal by Ligado Networks (formerly known as Lightspeed), saying, “There are too many unknowns and the risks are far too great to federal operations to allow Ligado’s proposed system to proceed… This could have a significant negative impact on military operations, both in peacetime and war.”

The FCC has already largely brushed aside similar opposition from NASA, the US Navy, and the National Oceanographic and Atmospheric Administration, among others, over another spectrum block in the 24GHz range—which is used by weather satellites for remote monitoring of water vapor. But comments are still being collected on the Ligado plan for sharing the 1675 to 1680MHz block of the L Band. Pai has been supportive of the plan because that range is adjacent to the existing 1670 to 1675MHz block already in use for wireless services.

GPS signals use several blocks of the L band, including a primary channel centered on 1575.42MHz. GPS uses L band signals because of their ability to penetrate cloud cover, rain, and vegetation. The L band is also used by the DOD for a number of other purposes, including tactical air navigation, landing assistance telemetry, Identify Friend or Foe (IFF) signals, and missile range and aircraft telemetry—though the DOD has already had to move some of these applications further up the spectrum range to make room for previous “commercial reallocation.”

Ligado’s request for bandwidth sharing is tied to the company’s planned collaboration with satellite communications company Inmarsat, which would provide satellite coverage for Legato’s 5G network. Inmarsat currently uses L band for mobile satellite communications services, including tactical satellite communications marketed to the military around the 1.5GHz range.

In an email to Bloomberg, Ligado spokesperson Ashley Durmer

criticized the DOD’s objections, citing the low power of the proposed 5G signals. “Can it really be true that our military operations are vulnerable to a 10-watt lightbulb?” she wrote. “We don’t think so. But that is what this letter suggests.”

But thanks to the inverse-square law, signals could be susceptible to even low-power signal interference, particularly those from GPS. This is why the original Lightspeed proposal for a blended satellite and 4G network in the 1.525 to 1.555 GHz range was opposed by DOD and others—GPS signals arriving from space could be overpowered by ground-based transmissions, as shown in tests performed in 2011. The tests “demonstrated there are significant detrimental impacts to all GPS applications assessed,” a report from the National Space-Based Positioning, Navigation, and Timing Systems Engineering Forum noted.

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