What's at Risk?

- Developed for DoD, today the military is a minority user of GPS.

- GPS touches almost every part of the world economy; forecast to be a $146.4B industry by 2025.

How is GPS at Risk?

GPS infrastructure designed under ground rules intended for sharing with satellite operations and services (low power).

- Signals from space are extraordinarily weak; a Ligado base station is much stronger than GPS and overwhelms GPS signal

FCC wants to move the goal posts by allowing terrestrial transmitters in a space communications band despite unanimous Federal opposition.

- Federal agency testing and analysis prove interference with GPS receivers will occur.

National impact; ceding GPS world primacy and a $100+B industry to China and Russia.

- Replacement of U.S. GPS base is a huge opportunity.
- Adversary systems (BeiDou, GLONASS) unaffected.

Mythbusters

Myth: Ligado is critical to the U.S. 5G build-out.

- **Fact:** Ligado has < 3% of sub-6 GHz spectrum in use today; Ligado's presence or absence will make no significant difference in U.S. 5G.

Myth: DoT testing was flawed; it did not assess receiver performance against a Ligado transmitter.

- **Fact:** DoT testing addressed *protection of the assigned GPS band* for all receivers, not a scenario dependent, artificial environment of one receiver and one transmitter.

Myth: Ligado stations are like a 10 W bulb; cannot interfere with GPS.

- **Fact:** Power *in the assigned band* is what matters. A 10 W bulb is 350 dB brighter than objects the Hubble Telescope can see, and will totally blind it. To a GPS receiver, a 10 W in-band transmitter is 170 dB "brighter" than a GPS signal, and will "blind" it.

GPS Signal vs. Ligado Noise

Signal: Leaves Rustling. (0-10 dB)

Noise: Jet Takeoff (140-150 dB)

0 dB = barely audible sound
Every 10 dB increase = factor of 10 power increase; i.e., 20 dB = 10X the power of 10 dB, 30 dB = 100X the power of 10 dB, etc.

With GPS, We are Trying to Hear Rustling Leaves…

Through the Noise of 100 Jets

GPS Receiver

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