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ALERT

As D2D Deployment Increases, NTIA Seeks Comment on Potential Risks to GPS

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The National Telecommunications and Information Administration (NTIA) has published a Notice and Request for Comment (RFC) on the potential impact of the increasing deployment of satellite-enabled direct-to-device (D2D) services in the 1610-1660.5 MHz (L-band) on GPS operations at 1575.42 MHz (the GPS L1 Signal). While inviting comment on interference risks generally, NTIA raises specific concerns regarding D2D interference with GPS systems onboard aircraft that support aircraft navigation and safety operations. The RFC includes a technical analysis by the U.S. Department of Transportation (DOT) detailing aviation safety concerns and seeks comment on potential mitigation strategies. Comments are due on February 10, 2025.

Technological Advances Have Enabled the Growth of D2D Services

The use of satellites to support consumer mobile devices and Internet of Things (IoT) enabled devices has grown in recent years with technological advances. While acknowledging that "[t]here have been [Mobile-Satellite Service (MSS)] operations in the L band for over two decades now," NTIA identifies several reasons that the new wave of D2D services offered in the L-band have prompted the present inquiry:

- Legacy L-band mobile earth stations (MESs) are far less prevalent compared to anticipated deployments, particularly the integration of D2D services on consumer cellular devices.
- Legacy L-band MESs typically include a GPS tracking capability and are therefore designed to operate in a manner that facilitates coordination between L-band MSS and GPS operations. NTIA is concerned that "[i]t is not clear that IoT device manufacturers would have the same incentive to

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achieve far better [out-of-band emissions (OOBE)] performance than required by the FCC rules, especially considering the market motivation to make IoT devices extremely low-cost."

- FCC rules prohibiting MESs from transmitting onboard aircraft and commensurate labelling requirements may be insufficient to ensure compliance, particularly by consumers that may be unaware that they cannot utilize L-band MSS D2D services onboard aircraft.

NTIA and DOT Study Warn of Interference

NTIA's chief concern is the risk of interference to GPS navigation and safety services on commercial airlines by airline passenger use of cell phones or other portable D2D-enabled devices with L-band MSS. The RFC includes a technical analysis prepared jointly by NTIA and DOT concluding that D2D or IoT devices operating in compliance with FCC Rules for L-band MESs could cause interference at distances up to 50m from aircraft GPS receivers. The technical analysis also finds that some newly authorized MESs, operating with EIRP of up to 10W and at frequencies closer to those operated on by aircraft navigation GPS, "could cause GNSS receiver degradation at distances exceeding 1 km."

Section 25.285 of the Commission's rules forbids the operation of MSS equipment capable of transmitting in the 1.5 – 1.6 GHz range onboard aircraft "unless the device is installed in a manner approved by the Federal Aviation Administration (FAA) or is used by the pilot or with the pilot's consent," and requires that any MES operating in these bands warn users that the device must be turned off at all times while onboard an aircraft. However, NTIA expresses skepticism that the rule is sufficient to prevent interference, including because the E-LABEL Act and the FCC's implementing rules allow for such warnings to be included electronically rather than on the exterior of smartphones and certain other electronic devices. NTIA fears that many consumers are unlikely to be aware that it is illegal to operate certain D2D equipment onboard a commercial aircraft.

RFC Seeks Comment on Deployment Effects, Mitigation Opportunities

NTIA's RFC asks for information on a variety of aspects of L-band D2D operations, including (1) information about the OOBE of existing and future L-band D2D devices, and the potential to limit those emissions; (2) the expected geographic deployments based on initial D2D service offerings, and any planned and/or potential service expansions; (3) the ability to restrict L-band operations when on an airplane or near other critical GPS receivers; and (4) options for educating users of the risks of operating near critical GPS receivers, including the use of on-screen warnings.

The RFC also seeks for information regarding (1) instances of harmful interference from MSS L-band D2D devices; (2) concerns regarding the probability of increased interference; (3) mitigations that may reduce the risk of harmful interference, while minimizing impact on L-band D2D services; and (4) GPS receiver performance, including separation distances and overload limits.

Finally, the RFC seeks comment generally on the DOT/NTIA technical analysis and invites commenters to submit alternative technical analysis.

Comments on the RFC are due February 10, 2025. For more information, please contact any of the authors listed on this alert.