April 24, 2015

BY ELECTRONIC SUBMISSION

Docket Operations, M-30
U.S. Department of Transportation
1200 New Jersey Avenue SE
Room W12-140
West Building Ground Floor
Washington, D.C. 20590-0001

RE: Federal Aviation Administration; Operation and Certification of Small Unmanned Aircraft Systems; Notice of Proposed Rulemaking; Docket No. FAA-2015-0150

Dear Sir or Madam:

CTIA—The Wireless Association® (“CTIA”) respectfully submits these comments on the Federal Aviation Administration’s (“FAA”) Notice of Proposed Rulemaking (“NPRM”) on Operation and Certification of Small Unmanned Aircraft Systems (“UAS”).\(^1\) UAS is a groundbreaking technology with limitless applications. The NPRM is a significant step toward unleashing the potential of small UAS for commercial purposes. CTIA and its members applaud the FAA’s efforts to draft flexible, workable rules that will enable the deployment of small UAS.

CTIA is an international nonprofit organization that has represented diverse interests in the wireless communications industry since 1984. CTIA’s members include wireless carriers and their suppliers, as well as providers and manufacturers of wireless data services and products. CTIA advocates for its members at all levels of government and coordinates voluntary industry initiatives to establish best practices guidelines and provide consumer transparency and accessibility with respect to wireless products and services, among other goals.

On behalf of its members, CTIA submits these comments in response to the FAA’s NPRM noting that (i) wireless technology today improves users’ experiences by enabling innovation in industries such as healthcare, commerce, education, transportation and utilities; (ii) small UAS will require some level of wireless connectivity and the wireless industry envisions that existing wireless networks can be seamlessly leveraged to support small UAS; and (iii) a robust testing regime of small UAS operations utilizing the wireless networks will ensure the

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safety and reliability of those networks. CTIA and its members are committed to working with the FAA to foster the integration of small UAS in the national airspace system.

I. WIRELESS TERRESTRIAL NETWORKS PLAY AN INTEGRAL ROLE IN TODAY’S MOBILE, INTERCONNECTED WORLD.

American consumers are witnessing an explosion of innovation in connectivity and mobility. For example, the Internet of Things ecosystem, in which information-linked networks comprised of sensors and other wireless technologies are embedded in physical objects such as electronic meters, shipping crates, and appliances is growing at a rapid rate. The Internet of Things will provide greater efficiency by automating tasks, exchanging information, and performing updates that improve end-user quality of life and enhance safety. Another advance in connectivity and mobility is the development of connected vehicles. Through wireless technology, connected vehicles ranging from cars and trucks to buses and trains will be able to communicate safety and mobility information to one another that help save lives, prevent injuries, ease traffic congestion, and transform the way Americans travel. These new technologies are excellent examples of the U.S. wireless industry’s leadership in innovation.

Technological advances in wireless communication makes this dynamic ecosystem of connected devices possible. These advances are achieved through investment and innovation by the entire wireless ecosystem, which includes carriers as well as manufacturers, operating system providers, application developers and many others. These diverse contributors – large and small – spark innovation and help invent the future. Their impact is significant and only expected to grow. From banking and healthcare to connected homes and cars, industry forecasters predict that there will be globally 25 billion connected devices sharing information with each other to the benefit of consumers by 2020.

These innovative applications and services are supported by secure, ubiquitous and reliable mobile services. As in these examples, wireless technology can be expected to have a role to play in the emerging small UAS industry. Small UAS on the market today use unlicensed spectrum networks for communications links and to transmit images and videos. In addition, small UAS manufacturers and operators alike are actively engaged in exploring UAS possibilities and how terrestrial connectivity could be used in assisting to implement small UAS, operating below 400 feet, where commercial wireless networks are available today.

II. THE WIRELESS INDUSTRY ENVISIONS THAT EXISTING WIRELESS NETWORKS COULD BE LEVERAGED TO SUPPORT SMALL UAS.

Small UAS technology is a potentially transformative technology, offering benefits to a variety of sectors. Hundreds of applicants in industries such as agriculture, motion picture and television filming, insurance, and infrastructure, among many others, have petitioned the FAA to

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permit them to use small UAS for commercial purposes to increase safety and capture images from a striking new viewpoint.\(^4\) Hundreds more interested parties will likely comment in this proceeding. Small UAS are poised to change the world around us, bringing benefits to society, individuals, and the economy.

Terrestrial wireless networks could potentially be directly leveraged to help realize the potential of small UAS by complementing the communications functions of small UAS. Terrestrial wireless networks could provide an efficient method for small UAS aircraft to deliver payload communications (such as video streams, diagnostics, and telemetry data) to UAS operators or other ground-based receivers. Furthermore, it is possible that terrestrial wireless networks could also support communications links that can assist with control and traffic management functions for small UAS.

Terrestrial wireless networks have numerous positive attributes that potentially make them capable of supporting small UAS communications requirements. First, the wireless industry has a proven track record of supporting emerging technologies by leveraging its existing communications network. For example, the wireless industry has been the key driver in the development of the Internet-of-Things, and wireless carriers are on the leading edge of developing telematics powered by commercial wireless broadband networks for industrial automation. Further, the industry is adept at developing and using technological solutions to ensure that mission-critical communications are delivered. This industry is responsive to addressing the technological needs of its users and has experience handling public safety considerations.

Second, the wireless industry has demonstrated its strong commitment to investing in its networks and delivering a premium user experience. Indeed, the industry has invested more than $398 billion in infrastructure in the last twenty years.\(^5\) Last January the Federal Communications Commission reported that 98.5 percent of the U.S. population was covered by at least one wireless carrier offering latest generation of advanced broadband service using Long Term Evolution (“LTE”) technology.\(^6\) Wireless investment in infrastructure and new technologies can only be expected to continue to increase as the nation becomes more interconnected and mobile.

Third, the wireless industry has developed heterogeneous networks that integrate different frequency bands in a seamless fashion. Small UAS are likely to require a similar effort, using a variety of technologies over the course of their evolution. The presence of overlapping coverage and roaming arrangements combine to create networks that provide maximum capacity and continuity of service.


Fourth, the global mobile ecosystem has experience with relying on standards-setting groups to resolve technical differences, foster efficiencies, and ensure interoperability and harmonization. In addition, wireless networks’ backward compatibility with previous generations of broadband technologies will maximize signal availability in rural, suburban, and urban environments, which could also prove very useful in the UAS context. Backwards compatibility will also ensure that operation of end user equipment is uninterrupted as new technologies are rolled out. Finally, the wireless industry is already subject to strict security of the wireless transport level and to security standards. Security expertise will also be required for UAS implementation and wireless carrier knowledge would be beneficial. These strengths of the wireless industry illustrate how apt terrestrial wireless networks are for supporting small UAS capabilities.

III. TESTING WILL DEMONSTRATE THAT TERRESTRIAL WIRELESS NETWORKS CAN BE USED TO OPERATE SMALL UAS BEYOND LINE OF SIGHT SAFELY AND SECURELY.

In light of all the benefits of wireless networks, the FAA should encourage and support efforts by commercial wireless carriers and manufacturers to test the notion that terrestrial wireless networks can provide reliable communication links to small UAS operating at low altitudes. Indeed, the FAA should task willing participants to demonstrate that commercial networks can help support the safe operation of small UAS for both visual line-of-sight and beyond visual line-of-sight flights. The FAA should expeditiously grant any request from the commercial wireless industry to test its technologies with small UAS at any of the FAA’s six designated UAS test sites as well as in various geographic locations pursuant to the FAA’s Section 333 exemptions and experimental aircraft certification processes. Researchers can collect data on the networks’ reliability and robustness of signal and submit their findings to the FAA and its supporting committees. The FAA should incorporate the results of this testing when considering spectrum to support small UAS operating both within and beyond visual line of sight.

IV. CONCLUSION

The wireless industry could potentially have an impactful role to play in the future of small UAS development, testing, and implementation and looks forward to facilitating innovation and appropriate, rapid deployment of this exciting new technology. The FAA should foster a regulatory environment where further testing of this technology can more readily occur.

Respectfully Submitted,

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7 Small UAS connectivity to terrestrial wireless networks may rely upon existing global industry standards including those promulgated by the 3rd Generation Partnership Project (3GPP). See 3GPP, About 3GPP, available at [http://www.3gpp.org/About-3GPP](http://www.3gpp.org/About-3GPP). There are other standards that will likely come into play, including the support of global industry standards—about which the wireless industry has significant understanding and experience.
CTIA—The Wireless Association

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