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Via E-Mail

Senior Director, Space Services and International and
Senior Director, Terrestrial Engineering and Standards
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Re: Consultation on a Policy, Licensing and Technical Framework for Remotely Piloted Aircraft Systems (RPAS) in the 5030-91 MHz Band and Certain Bands Used to Provide Commercial Mobile Services (SMSE-016-25)

Dear Senior Directors:

Qualcomm is pleased to respond to the Innovation, Science and Economic Development Canada (“ISED”) consultation referenced above that seeks comment on a framework for remotely piloted aircraft systems (“RPAS”) operating in the 5030-91 MHz band, as well as certain commercial mobile bands.¹ The initiation of this consultation is timely as RPAS traffic is expected to increase significantly in the near to medium term and demands for spectrum resources will also increase. As detailed below, Qualcomm believes that a hybrid approach that leverages both cellular networks and aircraft-to-everything (“A2X”) technology provides a secure and complementary solution that will enhance the safety and efficiency of both crewed and uncrewed aircraft operating in the same airspace.

Discussion

Qualcomm has been at the forefront of wireless innovation for more than 40 years, connecting billions of people and devices around the world—from smartphones and PCs to connected vehicles, IoT devices, unmanned aircraft systems (“UAS”), and beyond. Qualcomm’s R&D efforts have resulted in the invention of foundational technologies underpinning 3G, 4G, and 5G mobile technologies, as well as high-performing and energy-efficient compute supporting data centers, edge cloud, and on-device AI. Our commitment to advancing the mobile ecosystem is further reflected by our participation and leadership in many global standards and industry organizations, including 3GPP and IEEE, that enable widespread, interoperable implementation of wireless communications technologies.

¹ *Consultation on a Policy, Licensing and Technical Framework for Remotely Piloted Aircraft Systems (RPAS) in the 5030-91 MHz Band and Certain Bands Used to Provide Commercial Mobile Services*, ISED (Dec. 2025) (“Consultation”).

For many years, Qualcomm has worked to integrate advanced wireless communications into the UAS ecosystem to support increasingly sophisticated and safe UAS operations. In 2021, we introduced the world's first artificial intelligence and 5G-enabled drone platform, designed to provide enhanced critical flying capabilities beyond-visual-line-of-sight ("BVLOS") to support evolving drone use cases across industries.² More recently, Qualcomm introduced the Dragonwing Q-8750, an advanced on-device AI platform for drones and other applications that enable real-time inference and support large language models up to 11 billion parameters, removing cloud dependency for critical applications.³

We also are involved with critical standards work aimed at applying advanced wireless communications standards to UAS communications. This includes participation in 3GPP, American Society for Testing and Materials ("ASTM") International working groups on aircraft-to-aircraft and aircraft-to-everything ("A2X") communications security, Radio Technical Commission for Aeronautics ("RTCA") working groups on command and control ("C2") minimum operational performance standards ("MOPS") and detect and avoid ("DAA"), and the Aerial Connectivity Joint Activity initiative established by GSMA and the Global Unmanned Traffic Management Association.⁴ Given our deep technical expertise and extensive experience in UAS communications, Qualcomm welcomes the opportunity to contribute our perspective on policies to advance RPAS operations and innovation in the 5030-91 MHz band.

RPAS technologies have the potential to deliver substantial societal and commercial benefits—from rapidly delivering medical supplies to remote communities and supporting public safety missions to enabling efficient infrastructure inspection and timely package delivery. Realizing these benefits requires that both crewed and uncrewed aircraft remain electronically conspicuous—that is, electronically "visible" to others in the airspace. To support safe and scalable operations, we urge ISED to adopt policies that promote a holistic electronic conspicuity ("EC") framework, leveraging existing cellular infrastructure for long-range, low-latency notifications, combined with short-range, ultra-low-latency A2X DAA communications.

² See Qualcomm Press Note, *Qualcomm Unleashes a New Era of Autonomous Drone Capabilities with World's First 5G and AI-Enabled Drone Platform – Qualcomm Flight RB5 5G Platform Accelerates and Scales Development for Drone Manufacturers to Deliver Powerful, Purpose-Built Enterprise and Industrial 5G Drones* (Aug. 17, 2021), available at: <https://www.qualcomm.com/news/releases/2021/08/qualcomm-unleashes-new-era-autonomous-drone-capabilities-worlds-first-5g>;

³ See Qualcomm Press Note: *Qualcomm's IE-IoT Expansion Is Complete: Edge AI Unleashed for Developers, Enterprises & OEMs* (Jan. 5, 2026), available at: https://www.qualcomm.com/news/releases/2026/01/qualcomm-s-ie_iot-expansion-is-complete--edge-ai-unleashed-for-d.

⁴ See, e.g., *Leveraging 3GPP Cellular Network Mechanism to Support UAS Operations*, ACJA Work Task 1 led by Stefano Faccin (of Qualcomm), available at: <https://gutma.org/acja/publications/>; *ASTM Standardization News: Security Framework for Uncrewed Aircraft Systems*, available at: <https://sn.astm.org/update/security-framework-uncrewed-aircraft-systems-mj23.html> (quoting Drew Van Duren of Qualcomm).

Responses to ISED Questions

Qualcomm's responses to certain Consultation questions are provided below:

Q2: ISED is seeking comments on whether there are other RPAS applications besides CNPC that could also be considered for use in the 5030-5091 MHz band under the AM(R)S and AMS(R)S allocations

While CNPC is essential for safety-critical communications, increasing low-altitude traffic where crewed and uncrewed aircraft will increasingly share the same airspace—will require higher-cadence, trusted position reporting to maintain safety and airspace efficiency. As detailed in Qualcomm's comments to the U.S. Federal Aviation Administration,⁵ a combination of network-based EC delivered over cellular networks and localized, ultra-low-latency A2X DAA communications (*i.e.*, non-networked aircraft-to-aircraft), provides the necessary performance, reliability, and security to support expanded RPAS operations.

Specifically, both crewed and uncrewed aircraft can achieve reliable, safety-enhancing EC through a layered framework consisting of:

- (1) **ADS-B Out** (for manned and large aircraft) delivering long-range, low-latency positional information to ADS-B In equipped aircraft, although its relatively low 1 Hz update rate makes it less suitable for rapid, close-range, high density collision avoidance needs.
- (2) **A network-enabled EC application** using an onboard cellular transceiver (*e.g.*, a mobile device with a peripheral antenna plug-in) that supports longer range, non-line-of-sight EC with low-latency, though similarly limited to lower-cadence updates (*e.g.*, 1 Hz).
- (3) **A complementary cellular A2X point-to-point capability** providing authenticated, ultra-low-latency, close-range situational awareness and intent messaging. A2X enables high-cadence EC within a short-range (up to 5 km), without network coverage. This capability enables the continuity of safety-critical awareness and collision avoidance in environments where ADS-B is degraded (or unallowed for certain aircraft types), or network coverage is limited, which could negatively impact C2 links.⁶

Together, these elements form a reinforced framework capable not only of supporting EC but also enabling advanced applications such as DAA. This multilayered design enhances operational safety through redundancy, diverse information sources, and reduced latency. As described below, tactical deconfliction solutions such as A2X, in particular, should be integral to the overall deconfliction strategy for RPAS operations in Canadian airspace in addition to strategic deconfliction and UAS Traffic Management ("UTM") solutions.

⁵ See Comments of Qualcomm, FAA Docket No. 2025-1908 (filed Feb. 11, 2026), *available at*: <https://www.regulations.gov/comment/FAA-2025-1908-3911>.

⁶ Qualcomm has developed a 3GPP-standardized commercial A2X chipset that will be ready in the near term for testing and evaluation by the aviation community.

Tactical deconfliction solutions must be part of a holistic approach to aviation safety. Strategic deconfliction and conformance monitoring are important for ensuring coordination of safe operations before and during a flight. However, strategic deconfliction alone will likely be insufficient to safely manage both crewed and uncrewed operations in low-altitude airspace, especially as low-flying drone operations begin to scale. Conformance monitoring of the aircraft is reliant on an active C2 link, raising significant safety concerns in the event C2 connectivity is lost or temporarily unavailable. Additionally, conformance monitoring is a high-latency activity that is unable to prevent rapid adaptation (*i.e.*, within a few seconds) by, or to, a lost-link drone in dynamic airspace environments. As such, tactical deconfliction solutions like A2X are necessary to provide a secure, reliable, and redundant communications solution for ultra-low-latency DAA and when C2 links are unavailable.

ISED should promote the use of tactical deconfliction solutions such as A2X in addition to strategic deconfliction and conformance monitoring. Qualcomm encourages ISED to support tactical deconfliction capabilities like A2X, which complement existing conflict monitoring and mitigation tools to enhance overall safety within Canadian airspace.

A2X provides always-available DAA communications for drones using a standardized, cooperative technology approach. It allows direct drone-to-drone communication—without relying on satellite links or commercial wireless networks—for collision avoidance among multiple drones or between drones and other A2X-equipped obstacles. As a 3GPP-supported standard, A2X is fully interoperable and provides a flexible foundation on which a variety of airborne applications can be deployed (*e.g.*, weather-related messaging). Indeed, A2X is based on the widely successful Cellular Vehicle-to-Everything standard being adopted worldwide for safety applications in the automotive field.

Because A2X operates independently of network coverage, it ensures continued collision-avoidance capabilities even when the C2 link is lost. Drones within range can exchange critical information—including altitude, speed, trajectory, intent, and location—enabling them to detect and avoid potential conflicts in any environment. By allowing RPAS to maintain continuous, direct communication, A2X strengthens situational awareness, reduces risk, and significantly enhances the safety and reliability of drone operations.

Spectrum Needs. Network-based EC can be supported by the commercial spectrum ISED seeks to enable for aeronautical use, as proposed in the Consultation.⁷ However, safety-critical A2X communications will require dedicated spectrum. As UAS operations are poised to expand significantly, it is essential to establish a dedicated spectral home for A2X that enables scalable, safety-critical communications across varying densities and operational ranges.

Specifically, a bandwidth of 20 megahertz is needed to support A2X DAA communications, ensuring reliable and efficient performance in metropolitan areas and other high-density operating environments. Qualcomm’s simulations show that, with this channel size in the 5030–

⁷ See Consultation at Section 6 (RPAS use in commercial mobile bands).

5091 MHz band, A2X communications can be sustained at ranges of up to 2.5 kilometers.⁸ We therefore urge ISED to allocate a 20 MHz channel for A2X communications in the 5030-91 MHz band or find a separate, dedicated spectrum home for this safety-critical communications technology.

* * *

Q22: ISED is seeking comments on other considerations it should take into account when identifying commercial mobile bands where the proposed RPAS framework will be applied.

Commercial wireless networks are well equipped to support a variety of RPAS communication needs because these networks have extensive coverage, can support millions of simultaneous users and devices, are meticulously engineered and maintained, and are constantly being upgraded to support increased capacity. ISED should recognize the importance of commercial wireless networks in supporting the growth of BVLOS use cases in Canada and prioritize licensed spectrum as the primary connectivity support for command-and-control operations. The extensive coverage and QoS mechanisms of these networks also can support longer range, non-line-of-sight EC for collision avoidance, particularly when the newly created RTCA C2 MOPS is widely adopted.

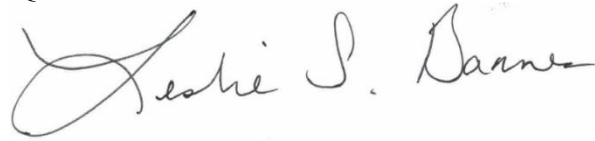
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⁸ The simulations assume a five UA per km² and account for expected 3-dimensional airspace densities, UAS velocities, message sizes, messaging frequency, necessary reliability, and broadcast range. See Qualcomm FCC Ex Parte Submission in RM-11798 (filed March 15, 2022), available at: <https://www.fcc.gov/ecfs/document/10315248704818/1>. Additional modifications are underway to enable a 5-km range.

Qualcomm applauds ISED for initiating this consultation to enable RPAS operations in the 5030-91 MHz band. Enabling tactical communications solutions like A2X, combined with network-based EC and ADS-B, is critical to ensuring safe and efficient scaled RPAS operations in Canadian airspace. We look forward to continuing our work with ISED, 3GPP, ASTM, and the broader UAS community to incorporate this important band into the UAS ecosystem as soon as possible.

Respectfully submitted,

QUALCOMM INCORPORATED

A handwritten signature in dark ink, reading "Leslie S. Barnes". The signature is fluid and cursive, with the first name "Leslie" being more prominent.

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