UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION

Airspace Systems, Inc.	)	
	)	Civil Action No.
	)	
Plaintiff,	)	
	)	
v.	)	
	)	
Dedrone Holdings, Inc.,	)	**JURY TRIAL DEMANDED**
	)	
Defendant.	)	

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, Airspace Systems, Inc. ("Airspace"), files this Complaint for patent infringement, damages, and injunctive relief against Defendant Dedrone Holdings, Inc. ("Dedrone") and alleges as follows:

THE PARTIES

1. Airspace is a Delaware corporation having its principal place of business at 221 Main Street, Suite 392, Los Altos, CA 64022. Airspace is the current owner and assignee of the Asserted Patents.

2. Dedrone is a Delaware corporation having a regular and established place of business in this District, including Dedrone's headquarters, which is located at 45662 Terminal Dr. Suite 110, Sterling, VA 20166.

AXON EXHIBIT 1004, Page 1

JURISDICTION AND VENUE

3. This civil action arises under the Patent Laws of the United States, 35 U.S.C. § 1 et seq., including without limitation 35 U.S.C. §§ 271, 281, 283, 284, and 285. Accordingly, this Court has subject matter jurisdiction under, *inter alia*, 28 U.S.C. §§ 1331 and 1338(a).

4. This Court has general and specific personal jurisdiction over Dedrone at least because Dedrone has committed acts in this District giving rise to this action, and Dedrone is present in and transacts and conducts substantial business activity in this District, including through Dedrone's substantial business activity conducted at its headquarters in this District.

5. Airspace's causes of action arise, at least in part, from Dedrone's contacts with and activities in this District. Dedrone has infringed the Asserted Patents within this District by making, using, selling, offering for sale, and/or importing in or into this District, products that infringe Airspace's Asserted Patents within this District. Dedrone makes, uses, sells, offers for sale, imports, distributes, advertises, promotes, and/or commercializes such infringing products in this District. Dedrone also regularly conducts business in, engages in other persistent courses of conduct in, and derives substantial revenue from its business activities in this District, including through Dedrone's substantial business operations conducted at its headquarters located in Sterling, Virginia, as reflected on Dedrone's website.[1] Because Dedrone has committed acts of infringement in this District giving rise to this action, and because it has established continuous and systematic operations in this District, exercise of personal jurisdiction over Dedrone would not offend traditional notions of fair play and substantial justice.

6. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b)-(c) and 1400(b) because Dedrone has committed and continues to commit acts of infringement within

[1] https://www.dedrone.com/about/contact-us.

this District giving rise to this action and maintains a regular and established place of business in this District, including Dedrone's headquarters, which is located at 45662 Terminal Dr. Suite 110, Sterling, VA 20166.

FACTUAL BACKGROUND

7. Airspace was founded by Jaz Banga, Noah Moore, and Earl Stirling in 2015 to ensure safe and secure skies as drones became more widely adopted. Airspace's founders all had by that time established track records of innovation in various industries relevant to the Asserted Patents including the communications/networking, consumer electronics, and aviation industries.

8. Airspace spent 10 years and over $47 million dollars on research and development efforts to create novel technologies to enhance drone safety and security. These technologies lie at the heart of Airspace's products, which it has deployed for many of America's most famous institutions including the United States Army, Major League Baseball, and Apple Inc. In addition to investments from some of Silicon Valley's leading venture capital firms, Airspace was awarded millions of dollars in contracts from the Department of Defense. Airspace was also awarded the largest civilian drone security contract in the United States to protect the airspace surrounding San Francisco International Airport from drone incursion.

9. Airspace's pioneering technologies are widely recognized and respected in the aerospace and security industries. For example, Airspace's groundbreaking Airspace Interceptor drone was the first fully autonomous artificial intelligence ("AI")-powered interceptor drone funded by the United States Army. The Airspace Interceptor drone was inducted into the Smithsonian National Air and Space Museum in Washington, D.C. as a pioneering achievement in artificial intelligence and aeronautics.

10. Airspace's founding team also have extensive experience working to regulate drone use in United States airspace. For example, Mr. Banga was a founding member and federal

appointee to the Federal Aviation Administration's ("FAA") Drone Advisory Committee ("DAC"), which was tasked with recommending new technologies that the FAA could use to protect United States airspace including the airspace over airports, stadiums, commercial buildings, power plants, and most any other public venue, from potential drone threats. Mr. Banga was one of the primary originators of drone safety recommendations generated by the DAC that were eventually incorporated into the Code of Federal Regulations ("C.F.R.") to secure America's skies.

11. Airspace's founders and scientists realized that although drones clearly had the potential to benefit the daily lives of Americans, not enough attention had yet been paid to safety considerations. Despite the myriad benefits that drones could offer, such as providing first responders crucial information in advance of their arrival at an accident scene, drones could also easily be leveraged for terrorist or criminal activity including attacks on public and private property, events, or gatherings, as evidenced by recent global wars and terrorist attacks such as in relation to the war in Ukraine.

12. One critical problem related to drone use that existed prior to Airspace's founding was the proliferation of anonymous drones that could be used for nefarious purposes, including the infliction of harm to Americans or their property. Before Airspace invented and patented its seminal drone security technologies, there was no easy way to detect, identify, authenticate, and if necessary, mitigate any of the many drones hovering over American communities.

13. Previously suggested solutions to this problem included tracking drones in the same way the FAA tracks fixed wing aircraft (and helicopters), which is by placing unique identifiers on the tail of aircraft so that a public official such as an air traffic controller can visually inspect the identification number on the aircraft, or by requiring such aircraft to carry

Automatic Dependent Surveillance—Broadcast ("ADS-B") transponders that periodically broadcast unique identifiers using a high powered signal that can travel hundreds of miles. Such fixed-wing aircraft tracking systems were predicated, however, on design assumptions that were wholly inapplicable to drones. For example, fixed wing aircraft cannot appear in large numbers in relatively confined airspaces such as the airspaces over stadiums or prisons.

14. By contrast, very large numbers of drones—some of which may be authorized and some of which may not be authorized—can operate over such spaces. In fact, as of the time of Airspace's inventions, it had become possible for swarms of drones to occupy such relatively small airspaces. Under another design assumption, fixed-wing aircraft have the on-board space and power to affix tail number markings that aviation officials could see from miles away, and to carry high-powered long-range ADS-B transponders that weighed up to thirty pounds. Drones by contrast have severely limited space and power budgets. For example, they cannot host affixed serial numbers that are any larger than a few square inches and cannot carry high-powered signal transmitters that weigh more than the drone itself. Fixed-wing aircraft are also almost always controlled by human pilots that are onboard those aircraft. Drones by contrast are either remotely piloted by humans that are often located more than a mile away from a drone, or by an AI computing system without the involvement of any human controller.

15. In short, just prior to the patenting of Airspace's inventions, airspace tracking systems then in existence were wholly unsuited to secure America's airspaces and the people and property below them from nefarious drones. As Dedrone itself suggested in its own patent applications – which were filed only a few months after the applications that gave rise to Airspace's patents – there was at that time a long-felt but unresolved need for a system, method,

apparatus, and/or device designed to detect, identify, track, and monitor unidentified autonomous vehicles in order to better protect airspaces and the areas they surround.

16. The new and novel improved drone discrimination system invented and patented by Airspace provided for a system, method, apparatus, and/or device designed to detect, identify, track, monitor and if necessary, mitigate any unidentified autonomous vehicles in order to better protect airspaces and the areas they surround. This system was beyond the design capabilities of one of ordinary skill in the art. Specifically, Airspace's patented system provided for a secure electronic license plate unique to each drone to be transmitted from each drone, and a specialized ground-based drone discrimination system for automatically detecting all such transmissions from all nearby drones, identifying each of the corresponding transmitting drones, for each of those drones determining whether each such drone is permitted to be in its current airspace, and disrupting the operation of drones that are not so permitted.

17. Specifically, under Airspace's patented security architecture, *each drone acts like a flying wireless network node* (e.g., a smartphone) in that much like a wireless network node transmits its own unique identifier for automatic processing by a network cybersecurity system before that remotely located node can access network resources that are protected by that cybersecurity system, an Airspace drone broadcasts its own identifier for automatic processing by an Airspace drone discrimination system before that remotely located drone can access airspaces (and the resources associated with those airspaces such as stadiums and prisons) that are protected by that discrimination system. In essence, Airspace treated drone security as a three-dimensional wireless network cybersecurity problem. This was a non-intuitive and ingenious approach to drone safety and security that was not obvious to anyone in the drone safety and security industry when Airspace patented its "remote ID" technology.

18. Under Airspace's patented security architecture, a drone transmits its own unique identifier, using the wireless transponder that is used to receive signals for controlling the drone's operation, so it can be cost-effectively tracked in a scalable manner along with other drones at a remotely located portable drone detection system. Airspace realized that such "remote ID" technology would be the key to building a system that could actively monitor and control incoming and outgoing drone traffic, and even swarms of such drone traffic, relative to a protected airspace. With remote IDs, the system could implement predetermined security permissions based on these remote IDs, and thus establish a barrier between an airspace from which a given drone is restricted and another airspace in which that drone can operate.

19. Airspace's patented remote ID technology was widely demonstrated, tested, and deployed between the time it was invented and the COVID pandemic. The need for drone identification was so great that the FAA Unmanned Aircraft Systems Identification and Tracking ("UAS ID") Aviation Rulemaking Committee ("ARC") recommended that the FAA require adoption of such "remote ID" technology by all drones except toy drones (i.e., drones weighing less than 0.55 pounds). The FAA responded by incorporating the recommendations into a number of regulations governing the remote identification of drones (e.g., specifically at 14 C.F.R. Part 89; *see also*, https://www.faa.gov/uas/getting_started/remote_id).

20. Another problem with drones that existed prior to Airspace's founding was implementing a beyond-visual-line-of-sight ("BVLOS") flight control system that could allow for a drone to detect and track an object of interest in its field of vision/detection, and to autonomously complete a desired flight control operation relative to the location of that object even when a trained human drone controller could not herself communicate with or see the drone or object. In the art of autonomous drone design, given the limited compute budget available

onboard a drone, there is a negative correlation between the robustness of a BVLOS flight control algorithm on the one hand, and the cost and latency of that algorithm per spacio-temporal frame it receives from its cameras or other sensors on the other, which is especially pronounced when the drone is trying to maneuver relative to another flying object. Just before Airspace began tackling the problem of BVLOS flight control systems, tight restrictions on the compute power available on drones meant that such systems suffered from latency that unacceptably limited the responsiveness of the flight control system of the drone under such circumstances.

21. The drone BVLOS flight system invented and patented by Airspace provides for using AI and specifically machine learning ("ML") programs to generate high-quality predictions to detect targets in images it captures in order for the drone to autonomously perform flight control operations based on the relative location of those targets, notwithstanding the limited compute budget available onboard a drone. By using AI and other techniques, Airspace's BVLOS flight system improved flight control outcomes under the tight compute restrictions typical of drones. This allowed for Airspace's flight system to enable a drone to autonomously and speedily perform BVLOS flight control operations under the tight compute restrictions typical of drones.

22. More specifically, as shown by a video demonstrating Airspace's BVLOS flight system causing a drone to perform a flight control operation (i.e., resulting in the capture of a targeted drone), that system could receive an image, apply ML to identify a portion of the image that represents a target, determine a three-dimensional location of that target relative to the system, and perform a flight control operation based on the relative location of the target including determining a speed adjustment factor based on the relative location / direction of the system and the target (e.g., to allow the drone to intercept or avoid the target). This was a non-

intuitive and ingenious approach to object detection and autonomous flight control by drones that was not obvious to anyone in the drone flight control and tracking industry when Airspace patented key aspects of its BVLOS flight system.

https://www.youtube.com/watch?v=1hbkfVeyYp0

23. Airspace's patented AI/ML BVLOS technology enabled Airspace to build the first fully autonomous AI-powered interceptor drone that was funded by the United States Army, and eventually earned Airspace its induction into the Smithsonian National Air and Space Museum for pioneering achievement in artificial intelligence and aeronautics.

THE ASSERTED PATENTS

24. On April 2, 2019, the USPTO issued United States Patent No. 10,249,199 ("the '199 patent"), titled "System and Method for Aerial System Discrimination and Action." A true and correct copy of the '199 patent is attached hereto as **Exhibit 1.**

25. On July 14, 2020, the USPTO issued United States Patent No. 10,713,959 ("the '959 patent"), titled "Low Altitude Aircraft Identification System." A true and correct copy of the '959 patent is attached hereto as **Exhibit 2**.

26. On December 24, 2019, the USPTO issued United States Patent No. 10,514,711 ("the '711 patent"), titled "Flight Control Using Computer Vision." A true and correct copy of the '711 patent is attached hereto as **Exhibit 3**.

27. The'199 patent, '959 patent, and '711 patent (collectively, the "Asserted Patents"), are each valid and enforceable.

28. The earliest-filed applications to which the '199 patent claims priority (No. 62/309,838) was filed on March 17, 2016. The earliest-filed applications to which the '959 patent claims priority (No. 62/175,153) was filed on June 12, 2015. The earliest-filed applications to which the '711 patent claims priority (No. 62/405,972) was filed on October 9, 2016.

29. Airspace is the owner and assignee of all rights, title, and interest in and to the Asserted Patents, and holds all substantial rights therein, including the right to grant licenses, to exclude others, and to enforce and recover past damages for infringement.

30. Dedrone's infringement of the'199, '959 and '711 patents is willful. Dedrone has been aware of the '199, '959, and '711 patents from multiple communications, presentations, and licensing negotiations between Airspace and Dedrone between at least 2020 and 2024, including at least a meeting between Airspace and Dedrone representatives on December 6, 2023, in which the Asserted Patents were identified to Dedrone as part of a list of patent assets that included descriptions of each such patent asset. As a result of at least these communications, presentations, and licensing discussions between Airspace and Dedrone beginning in at least 2020, Airspace has satisfied the notice requirement of 35 U.S.C. § 287 as to each of the Asserted Patents.

COUNT I

(Dedrone's Infringement of United States Patent No. 10,249,199)

31. Paragraphs 1-30 are reincorporated by reference as if fully set forth herein.

32. The claims of the '199 patent are directed to patent eligible subject matter. Particularly, the '199 patent claims and teaches, *inter alia*, a new and improved way to determine whether aerial systems (also referred to as unmanned aerial vehicles (UAVs), unmanned aircraft systems (UASs), low-altitude aircraft, aerial vehicles, autonomous robotic systems (ARSs), or drones) have permission to operate in a specific airspace and a preemptively enabled discrimination system for selective removal of aerial systems from an airspace when such aerial systems do not have permission to operate in the airspace. To accomplish this outcome, the inventions use a unique identifier signal transmitted from the aerial system to distinguish between aerial systems that are authorized to be in an airspace and aerial systems that are not so authorized. The identifier signal is received and utilized by an aerial system discrimination system and permissions module to determine whether the aerial system is authorized or unauthorized. Depending on whether the aerial system is authorized to be in the airspace, the

discrimination system can disrupt the aerial system in the airspace. The inventions represent a significant improvement on the then-existing conventional aerial system prevention and/or removal systems which were unable to identify and classify aerial systems and take a defensive action in a reliable and timely manner. The Airspace invention of the '199 thus addressed the growing need for a way to monitor the greatly increasing number of operating aerial systems and regulate their entry into a given airspace, which is highly useful in defending airspace against swarms of drones for example.

33. More specifically, the claims of the '199 patent include a discrimination system comprising an identifier transmission system coupled to an aerial system where the identifier transmission system is configured to broadcast an aerial system identifier signal that is unique to the aerial system. The system also includes an identification receiver and permission module, wherein the identification receiver is configured to receive the aerial system identifier signal and provide the aerial system identifier signal to the permission module. The permission module is configured to determine that the aerial system associated with the aerial system identifier signal is not permitted to be in an airspace. The system further includes a disruption system configured to disrupt an operation of the aerial system, wherein the disruption system is preemptively enabled based on the received aerial system identifier signal, which is important when defending airspaces against swarms of drones for example.

34. The system covered by the claims, therefore, differs markedly from the prior systems in use at the time of the invention in that the prior systems lacked the ability to effectively discriminate between authorized and unauthorized aerial systems because the existing systems were global in that they removed or permitted all aerial systems in a given airspace, or

manual and thus largely ineffective in that they required a person to visually distinguish between authorized and unauthorized aerial systems.

35. Thus, the claims of the ’199 patent focus on a specific system that improves the prior technology for selectively permitting aerial systems within a particular airspace. The claimed determination and deterrence of unauthorized aerial systems are neither laws of nature nor a mental process. These claims are not directed to a result or effect that can be characterized as an abstract idea, and the claim elements do not employ generic processes and/or machinery merely to implement such an idea. Rather, these claims are directed to a system that itself represents a tangible improvement in the above-described technology and technical field. At least for these reasons, these claims are patent eligible.

36. Dedrone has directly and indirectly infringed, and continues to directly and indirectly infringe, literally and/or by the doctrine of equivalents, at least claim 1 of the ’199 patent, annotated and reproduced below, by making, using, selling, offering for sale, and/or importing into the United States one or more Accused Products, e.g., DedroneTactical.[2] The following demonstration of infringement of the ’199 patent by DedroneTactical is exemplary.

No.	Claim Element
1.pre	A discrimination system comprising:
1.a	an identifier transmission system coupled to an aerial system, wherein the identifier transmission system is configured to broadcast an aerial system identifier signal unique to the aerial system;
1.b	an identification receiver;
1.c	a permission module, wherein the identification receiver is configured to receive the aerial system identifier signal and to provide the aerial system identifier signal to the permission module, wherein the permission module is configured to

[2] In this Complaint, the term “Accused Products” is defined to include, for each Asserted Patent in each Count, the products identified in that Count for that Asserted Patent.

No.	Claim Element
	determine that the aerial system associated with the aerial system identifier signal is not permitted to be in an airspace; and
1.d	a disruption system configured to disrupt an operation of the aerial system, wherein the disruption system is preemptively enabled based the received aerial system identifier signal.

A. Claim 1 Preamble [1.pre]

37. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 1 of the '199 patent because, *inter alia*, the Accused Products, e.g., DedroneTactical, include "*a discrimination system*" for detecting and tracking an aerial system (also referred to as an unmanned aerial vehicle ("UAV"), an unmanned aircraft system ("UAS"), a low-altitude aircraft, an aerial vehicle, an autonomous robotic system ("ARS"), or a drone). For example, Dedrone makes, uses, sells, offers for sale, and/or imports into the United States the following product:

DedroneTactical

Base Kit

Base Kit enables RF detect and defeat on one mast. It includes ruggedized laptop, several ruggedized radio frequency (RF) sensors, RF-based defeat capability, mast and associated peripherals.

- DedroneTracker.AI C2 for autonomous system performance with minimal false positives
- RF Detection with 360 Degrees Spatial Coverage
- Robust library of 250 protocols
- EW Defeat Capability
- Easily expandable to incorporate multiple remote nodes or other tactical sensors via a mesh network

DedroneTactical

Extended Kit

Extended Kit adds a second mast with radar and camera capabilities to enable both non-RF drone detection for autonomously navigated drones and visual threat confirmation.

- DedroneTracker.AI C2 for autonomous system performance with minimal false positives
- AI-enabled 360 degrees spatial radar detection with prioritized threat analytics
- AI-enabled 360 degrees spatial camera coverage with autonomous image recognition and threat confirmation

https://www.dedrone.com/solutions/dedrone-tactical

DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

https://www.dedrone.com/drone-remote-id

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

Does Remote ID ensure safe skies?

Not on its own. Remote ID is a significant step in creating safer airspaces, but despite the clear advantages of standard Remote ID over nothing at all, it is vital to acknowledge its two key limitations.

While Remote ID regulations are a necessary first step in enhancing drone accountability, they are insufficient for comprehensive airspace security. Criminal elements are unlikely to adhere to these rules, rendering a Remote ID-only detection system inadequate. Dedrone's proactive airspace monitoring system does not rely on pilot compliance, and presents a more robust and effective approach to airspace security, as it can detect all drones in the vicinity whether they are with or without ID active Remote ID broadcast modules.

https://www.dedrone.com/drone-remote-id

> Moving forward, most drones will need to continuously transmit its "license plate," which, in turn, links the drone to an owner/operator, transmits its position (longitude, latitude, and altitude), and other operational data, including the position of its controller/pilot.

https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration

B. Claim Element [1.a]

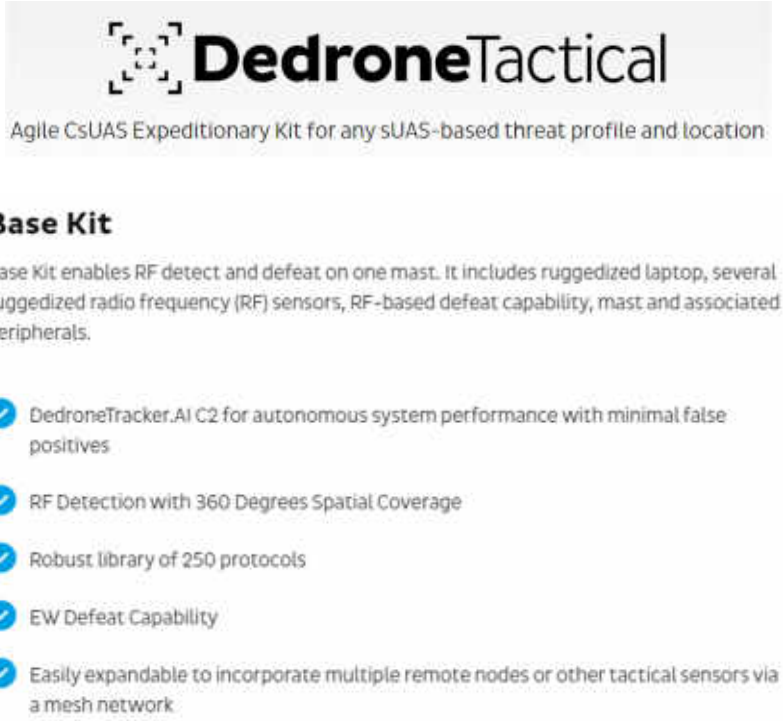
38. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 1 of the '199 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneTactical, because, *inter alia*, aerial systems that are operated with DedroneTactical, whether by Dedrone or by its customers and partners, include "*an identifier transmission system coupled to an aerial system, wherein the identifier transmission system is configured to broadcast an aerial system identifier signal unique to the aerial system*."

39. The "*identifier transmission system*" recited in this claim element is essential in any aerial system operated in the United States as of September 16, 2023,[3] because any aerial system flying in U.S. airspace as of that date is required by the applicable FAA regulations to so transmit a unique identifier. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320. The aerial systems that Dedrone and its customers use to test, train, and/or train using, e.g., DedroneTactical including DedroneTracker, are compliant with the applicable FAA regulations, and therefore practice this claim element (see above).

40. In particular, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneTactical, using FAA-compliant aerial systems that DedroneTactical is specifically designed to detect. Each such FAA-compliant aerial system has an in-built subsystem or an attached device that comprises *an identifier transmission system*

[3] Unless exempted by applicable FAA regulations.

coupled to an aerial system, wherein the identifier transmission system is configured to broadcast an aerial system identifier signal unique to the aerial system. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320. Dedrone indirectly practices this claim element by inducing its customers to test, train, and/or train using, e.g., DedroneTactical, to identify an FAA-compliant aerial system at least by detecting its broadcast of "*an aerial system identifier signal unique to*" such FAA-compliant aerial system, i.e., "*the aerial system*." The in-built subsystem or device attached to an aerial system each comprises an "*identifier transmission system*."



https://www.dedrone.com/solutions/dedrone-tactical#basekit

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https://www.dedrone.com/solutions/dedrone-tactical#extendedkit

Smart Airspace Security and Drone Detection Software

DedroneTracker.AI is the world's leading smart airspace security software. At the core of Dedrone's comprehensive solution is DedroneTracker.AI. This powerful detection software utilizes input from various sensors to detect the presence of a drone, and determine drone and pilot location. Sensors include:

- Radio frequency (RF)
- Radar
- Video
- Acoustics

https://www.dedrone.com/products/drone-detection-software

DedroneTracker - Future Proof Drone Detection

DedroneTracker.AI is a multi-sensor (RF, PTZ, radar) and countermeasure (jammer) platform that is scalable and customizable for any on-site requirements. DedroneTracker.AI can be cloud-managed or a hosted on-prem solution.

DedroneTracker.AI seamlessly integrates with a variety of sensing and threat mitigation technologies, enabling users to customize their platform and meet their specific needs and threat level.

https://www.dedrone.com/solutions

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.

Reporting and Forensic Evidence

A combination of forensic data is automatically captured by DedroneTracker.AI drone detection software including:

- Drone manufacturer
- Drone Model
- Time and length of drone activity
- Video Verification
- Flight history (including flight path)

Summary reports are automatically produced and available on-demand to easily analyze the most critical airspace security data. In short, the software can be used to detect drones in the form of a drone monitoring system and can also be used to prosecute offenders with data after the unauthorized drone has been mitigated.

https://www.dedrone.com/products/drone-detection-software

DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

https://www.dedrone.com/drone-remote-id

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While Remote ID regulations are a necessary first step in enhancing drone accountability, they are insufficient for comprehensive airspace security. Criminal elements are unlikely to adhere to these rules, rendering a Remote ID-only detection system inadequate. Dedrone's proactive airspace monitoring system does not rely on pilot compliance, and presents a more robust and effective approach to airspace security, as it can detect all drones in the vicinity whether they are with or without ID active Remote ID broadcast modules.

https://www.dedrone.com/drone-remote-id

Moving forward, most drones will need to continuously transmit its "license plate," which, in turn, links the drone to an owner/operator, transmits its position (longitude, latitude, and altitude), and other operational data, including the position of its controller/pilot.

https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration

Dedrone Delivers Remote ID Across Global Sensor Network

Can Remote ID only systems safeguard your airspace?

In recent years, the increasing popularity of drones has brought both tremendous advancements and significant challenges. One crucial challenge is ensuring the security of your airspace from potential threats posed by a nefarious and non-compliant uncrewed aircraft system (UAS or "drone").

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction, Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

However, relying solely on this technology is insufficient for complete airspace security. This overview explores the limitations of a drone monitoring system solely dependent upon a Remote ID broadcast system and highlights the necessity of Dedrone's more complete and proactive drone detection solutions to effectively safeguard our airspace.

CONTACT US

Solution check	Remote ID only system	Remote ID + Dedrone
Detect UAS with Remote ID	✓	✓
Detect UAS **without** Remote ID	✗	✓
Identify Friend vs. Foe	✗	✓
Identify Payload[1]	✗	✓
Image of Pilot[1]	✗	✓
Threat mitigation[2]	✗	✓
Doesn't rely on Pilot compliance	✗	✓

[1] If cameras are integrated, [2] If allowed

https://www.dedrone.com/drone-remote-id

41. Additionally, Dedrone has induced its customers to use aerial systems that include the claimed "*identifier transmission system*" regardless of the applicable FAA regulations. This is because without the "*broadcast* [*of the*] *aerial system identifier signal unique to the aerial system*" by an "*identifier transmission system*" of the aerial system, a "*discrimination system*," e.g., DedroneTactical, cannot be tested, trained, and/or used to train to "*determine that the aerial system … is not permitted to be in an airspace*" and "*to disrupt an operation of the aerial system*," as claim 1 further recites. As such, Dedrone induced its customers to use aerial systems that have the claimed "*identifier transmission system*."

DedroneTactical

Agile CsUAS Expeditionary Kit for any sUAS-based threat profile and location

Base Kit

Base Kit enables RF detect and defeat on one mast. It includes ruggedized laptop, several ruggedized radio frequency (RF) sensors, RF-based defeat capability, mast and associated peripherals.

- DedroneTracker.AI C2 for autonomous system performance with minimal false positives
- RF Detection with 360 Degrees Spatial Coverage
- Robust library of 250 protocols
- EW Defeat Capability
- Easily expandable to incorporate multiple remote nodes or other tactical sensors via a mesh network

DedroneTactical

Extended Kit

Extended Kit adds a second mast with radar and camera capabilities to enable both non-RF drone detection for autonomously navigated drones and visual threat confirmation.

- DedroneTracker.AI C2 for autonomous system performance with minimal false positives
- AI-enabled 360 degrees spatial radar detection with prioritized threat analytics
- AI-enabled 360 degrees spatial camera coverage with autonomous image recognition and threat confirmation

https://www.dedrone.com/solutions/dedrone-tactical#basekit

DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

Dedrone First to Offer Both United States and European Union Drone Remote ID Capability

FEBRUARY 2, 2021

Dedrone, the market leader in airspace security, now enables their customers to leverage both U.S. and E.U. government-provided drone remote identification standards, commonly known as Remote ID, to identify drones.

https://www.dedrone.com/press/dedrone-first-to-offer-both-united-states-and-european-union-drone-remote-id-capability

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.

https://www.dedrone.com/products/drone-detection-software

Dedrone to Test its Technology Protecting Military Installations from Adversarial Drones

https://www.dedrone.com/press/dedrone-to-test-its-technology-protecting-military-installations-from-adversarial-drones

"Ukraine has shown the world that all conflicts, now and in the future, will heavily feature drones for surveillance, combat, long-range strikes and more. DedroneOTM was created in response to this paradigm shift in warfare, offering a fully mobile cUAS kill chain to make ground movements safer," said Rob Campbell, General Manager of Dedrone Defense. "We continue to work closely with our defense partners to continuously test, develop and improve new technologies for the dynamic and complex environments in which today's forces operate."

https://www.dedrone.com/press/dedrone-launches-dedroneonthemove-for-fight-against-unauthorized-and-malicious-drones

C. Claim Element [1.b]

42. Dedrone infringes claim 1 of the '199 patent directly and/or indirectly (via inducement and/or contributorily) by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneTactical, because, *inter alia*, DedroneTactical includes "*an identification receiver*." In particular, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneTactical, and indirectly practices this claim element by inducing its customers to test, train, and/or train using DedroneTactical, which uses several sensors including a radio frequency ("RF") sensor to receive information about an aerial system, including the remote identifier thereof. In addition, DedroneTactical also includes DedroneTracker.AI – an AI system for detecting, tracking, and classifying aerial systems as friendly or unauthorized. This classification is based on, at least in part, receiving (e.g., via the RF sensor) the aerial system identifier transmitted by the aerial system. As such, DedroneTracker.AI and DedroneTactical comprise "*an identification receiver*."

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https://www.dedrone.com/solutions/dedrone-tactical#basekit

DedroneTactical

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- AI-enabled 360 degrees spatial radar detection with prioritized threat analytics
- AI-enabled 360 degrees spatial camera coverage with autonomous image recognition and threat confirmation

https://www.dedrone.com/solutions/dedrone-tactical#extendedkit

Smart Airspace Security and Drone Detection Software

DedroneTracker.AI is the world's leading smart airspace security software. At the core of Dedrone's comprehensive solution is DedroneTracker.AI. This powerful detection software utilizes input from various sensors to detect the presence of a drone, and determine drone and pilot location. Sensors include:

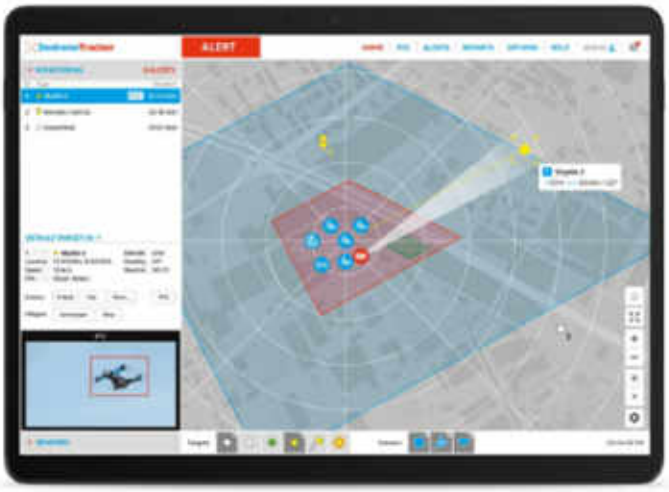
- Radio frequency (RF)
- Radar
- Video
- Acoustics

https://www.dedrone.com/products/drone-detection-software

DedroneTracker - Future Proof Drone Detection

DedroneTracker.AI is a multi-sensor (RF, PTZ, radar) and countermeasure (jammer) platform that is scalable and customizable for any on-site requirements. DedroneTracker.AI can be cloud-managed or a hosted on-prem solution.

DedroneTracker.AI seamlessly integrates with a variety of sensing and threat mitigation technologies, enabling users to customize their platform and meet their specific needs and threat level.



https://www.dedrone.com/solutions

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.

Reporting and Forensic Evidence

A combination of forensic data is automatically captured by DedroneTracker.AI drone detection software including:

- Drone manufacturer
- Drone Model
- Time and length of drone activity
- Video Verification
- Flight history (including flight path)

Summary reports are automatically produced and available on-demand to easily analyze the most critical airspace security data. In short, the software can be used to detect drones in the form of a drone monitoring system and can also be used to prosecute offenders with data after the unauthorized drone has been mitigated.

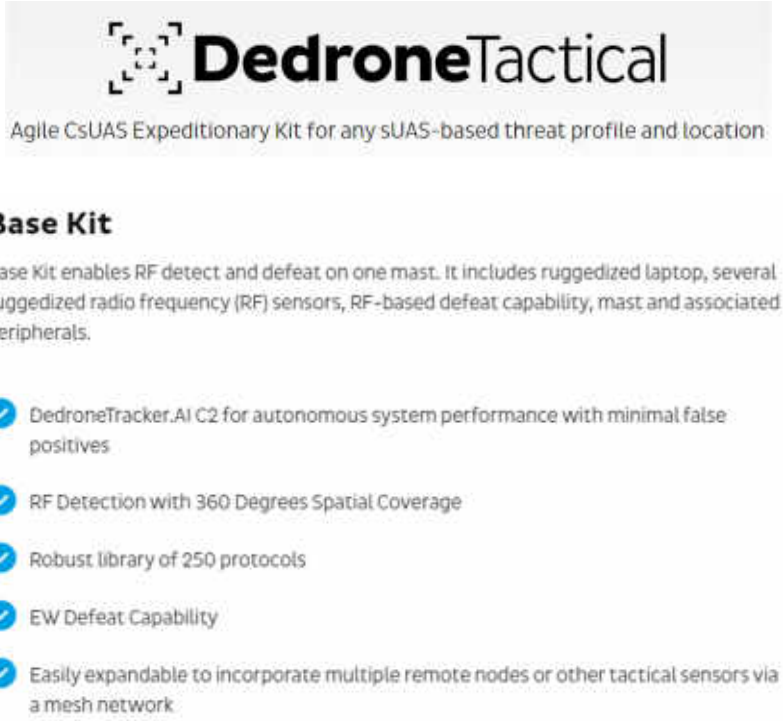
https://www.dedrone.com/products/drone-detection-software

D. Claim Element [1.c]

43. Dedrone infringes claim 1 of the '199 patent directly and/or indirectly (via inducement and/or contributorily) by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneTactical. In particular, Dedrone directly practices this claim element when it tests, trains, and/or trains using DedroneTactical, and indirectly practices this claim element by inducing its customers to test, train, and/or train using DedroneTactical because, *inter alia*, DedroneTactical includes "*a permission module, wherein the identification receiver is configured to receive the aerial system identifier signal and to provide the aerial system identifier signal to the permission module, wherein the permission module is configured to determine that the aerial system associated with the aerial system identifier signal is not permitted to be in an airspace*."

44. The discussion above of claim element [1.b], ¶ 42, *supra*, shows that DedroneTactical includes "*the identification receiver* [*that*] *is configured to receive the aerial*

system identifier signal." To facilitate classification if an identified aerial system, the "*identification receiver,*" *"provide*[*s*] *the aerial system identifier signal to the permission module*." Regarding "*a permission module*," DedroneTactical uses DedroneTracker.AI – an AI-based system, that receives aerial system identifier and additional aerial system information, and classifies the identified aerial system as friendly, and thus permitted to fly, or as unauthorized, and not permitted to fly. Thus, DroneTracker.AI comprises "*a permission module, … configured to determine that the aerial system associated with the aerial system identifier signal is not permitted to be in an airspace*."



DedroneTactical

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https://www.dedrone.com/drone-remote-id

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Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

Does Remote ID ensure safe skies?

Not on its own. Remote ID is a significant step in creating safer airspaces, but despite the clear advantages of standard Remote ID over nothing at all, it is vital to acknowledge its two key limitations.

While Remote ID regulations are a necessary first step in enhancing drone accountability, they are insufficient for comprehensive airspace security. Criminal elements are unlikely to adhere to these rules, rendering a Remote ID-only detection system inadequate. Dedrone's proactive airspace monitoring system does not rely on pilot compliance, and presents a more robust and effective approach to airspace security, as it can detect all drones in the vicinity whether they are with or without ID active Remote ID broadcast modules.

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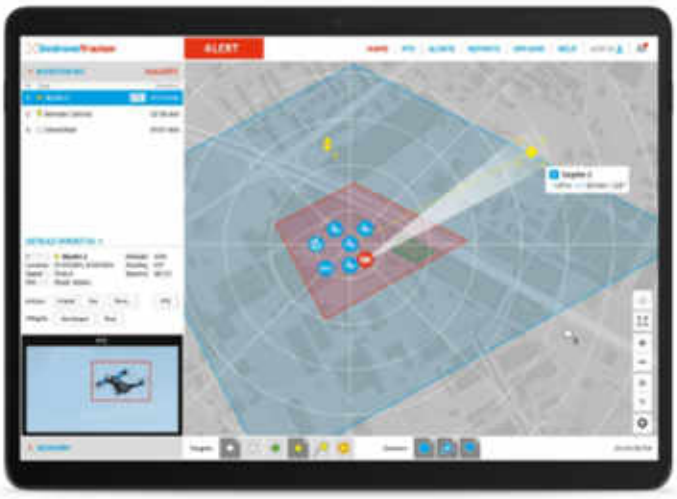

https://www.dedrone.com/solutions

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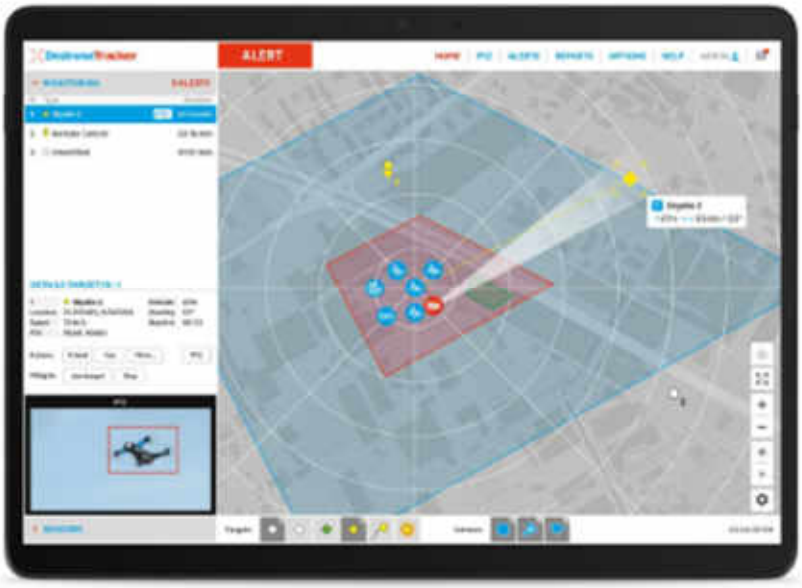
- Radio frequency (RF)
- Radar
- Video
- Acoustics

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.



https://www.dedrone.com/products/drone-detection-software

Autonomous Drone Threat Classification

Dedrone enhances radar and camera OEM classifiers to deliver highly accurate drone threat detection and virtually eliminate false positives. DedroneTracker.AI identifies biologic threats in real-time and filters out irrelevant anomalies. With unparalleled track accuracy and autonomous alert protocols, operators can effectively respond to confirmed threats and gain a heightened level of situational awareness.

https://www.dedrone.com/counter-drone-military

E. Claim Element [1.d]

45. Dedrone infringes claim 1 of the '199 patent directly and/or indirectly (via inducement and/or contributorily) by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneTactical. In particular, Dedrone directly practices this claim element when it tests, trains, and/or trains using DedroneTactical, and indirectly practices this claim element by inducing its customers to test, train, and/or train using DedroneTactical because, *inter alia*, DedroneTactical includes "*a disruption system configured to disrupt an operation of the aerial system, wherein the disruption system is preemptively enabled based [on] the received aerial system identifier signal.*"

46. For example, DedroneTactical includes "BlueHalo Titan™ for [Electronic Warfare, i.e.,] EW defeat of RF-based sUAS," i.e., a small unmanned aircraft system, i.e., an aerial system. *See* https://www.dedrone.com/press/dedrone-defense-launches-dedronetactical-to-meet-rising-demand-for-agile-expeditionary-multi-sensor-counter-suas-solutions. Additionally or in the alternative, DedroneTactical "can integrate with various sensors and defeat systems," such as, e.g., DedroneDefender. DedroneTactical includes DedroneTracker.AI and DedroneDefender "[i]ntegrates with DedroneTracker.AI to enable autonomous Pan-Tilt-Jamming (PTJ) with mounted DedroneDefender," e.g., on DedroneTactical. *See*

https://www.dedrone.com/solutions/dedrone-tactical; https://www.dedrone.com/solutions/dedrone-defender. At least EW defeat and DedroneDefender comprise active mechanisms that can "*disrupt the operation of the aerial system*" that is determined to be unauthorized. Upon the classification of an aerial system as unauthorized, these mechanisms (e.g., jammers, spoofers, guns, lasers, that for example engage in autonomous pan-tilt jamming and are effective against drone swarms, for example) are "*preemptively enabled*" based on the aerial system classification, which is based on, at least in part, "*the received aerial system identifier signal.*"

DedroneTactical

Agile CsUAS Expeditionary Kit for any sUAS-based threat profile and location

Base Kit

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https://www.dedrone.com/solutions/dedrone-tactical#basekit

DedroneTactical

Extended Kit

Extended Kit adds a second mast with radar and camera capabilities to enable both non-RF drone detection for autonomously navigated drones and visual threat confirmation.

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https://www.dedrone.com/solutions/dedrone-tactical#extendedkit

https://www.dedrone.com/solutions/dedrone-tactical

DedroneTactical's Base Kit supports several ruggedized RF sensors and BlueHalo Titan™ for EW defeat of RF-based sUAS across all protocols. All sensors are mounted on a single tactical mast and can be expanded to include additional remote DedroneSensors via wireless network links. The Extended Kit adds a second mast with radar and camera to enable both non-RF drone detection for autonomously navigated drones and as well as visual confirmation.

https://www.dedrone.com/press/dedrone-defense-launches-dedronetactical-to-meet-rising-demand-for-agile-expeditionary-multi-sensor-counter-suas-solutions

What does the DedroneTactical Base Kit include?

The Base Kit includes RF detection sensors, a ruggedized laptop with DedroneTracker.AI for command and control, and RF-based defeat capabilities, all packed into easily transportable cases.

Is DedroneTactical compatible with other systems?

Yes, DedroneTactical is hardware-agnostic and can integrate with various sensors and defeat systems, providing a flexible and adaptable solution for different mission needs.

https://www.dedrone.com/solutions/dedrone-tactical

USING ENGAGE CONTROLS

AUTO ENGAGE ENABLED:
System will automatically engage any FPV/RC/Wi-Fi threats that are detected.

BROADBAND JAM ENABLED:
System will actively broadband jam chosen frequency band(s) with/without an active drone detection.

https://bluehalo.com/wp-content/uploads/2023/02/Inventory_and_Tips_v9.A_BACK.pdf

N, DEFEAT CONTROLS

Titan has selectable countermeasure options (Auto and Manual) as well as broadband jam capability.

FOUR ENGAGE MODES

A **Auto Engage (recommended)** - Titan automatically transmits precision targeted engage waveforms when a drone is detected / reported. When signals are no longer detected the system will stop transmitting.

B **Broadband Jam** - If the targeted engage mode is not effective, RF energy will be transmitted throughout the selected band to overwhelm drone control signals. **The system will continue to jam until deselected** and nearby RF mobile devices will be negatively impacted. After 3 minutes of continuous operation Broadband Jam will stop automatically. Employ only when needed and disable when the threat is eliminated.

C **Manual (Targeted) Mitigation** – When multiple detections are present, selecting the **Engage** button will transmit a targeted engage signal for that specific protocol/detection.

https://bluehalo.com/wp-content/uploads/2023/02/Titan_UserGuide_01-17-23.pdf

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- **Airports –** Providing airspace security at international airports in seven countries around the globe, Dedrone enables customers like Newcastle International Airport and Perth, Scotland Airport, to protect passengers, airlines and airport employees against drone threats. In 2021, Dedrone was the first airspace security technology provider to announce both United States and European Union Remote ID capability, which will allow airports to monitor authorized or approved drone activity, and identify any unauthorized or noncompliant drone activity. Learn more from Chicago Department of Aviation (Chicago O'Hare International Airport, Chicago Midway International Airport) about establishing an airport airspace security program, here.

https://www.dedrone.com/press/dedrone-most-trusted-airspace-security-solution-worldwide

DedroneDefender

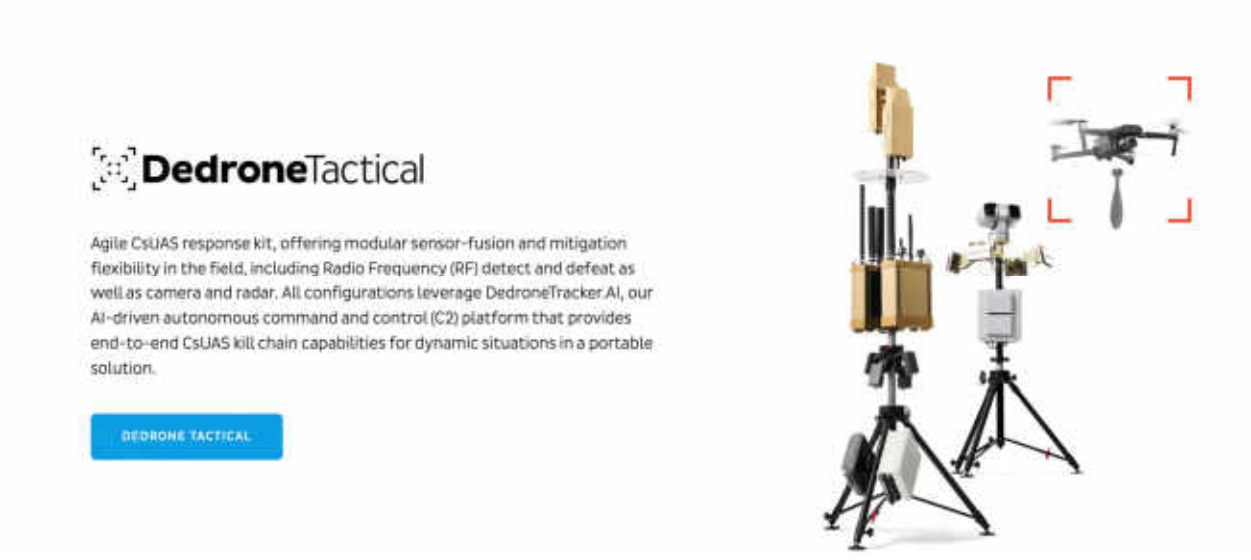
DedroneDefender is a lightweight, smart narrowband disruption device that is cloud-enabled for use with DedroneTracker.AI software, so users can detect, identify, locate, track, and mitigate drone threats.

Smart Drone Mitigation

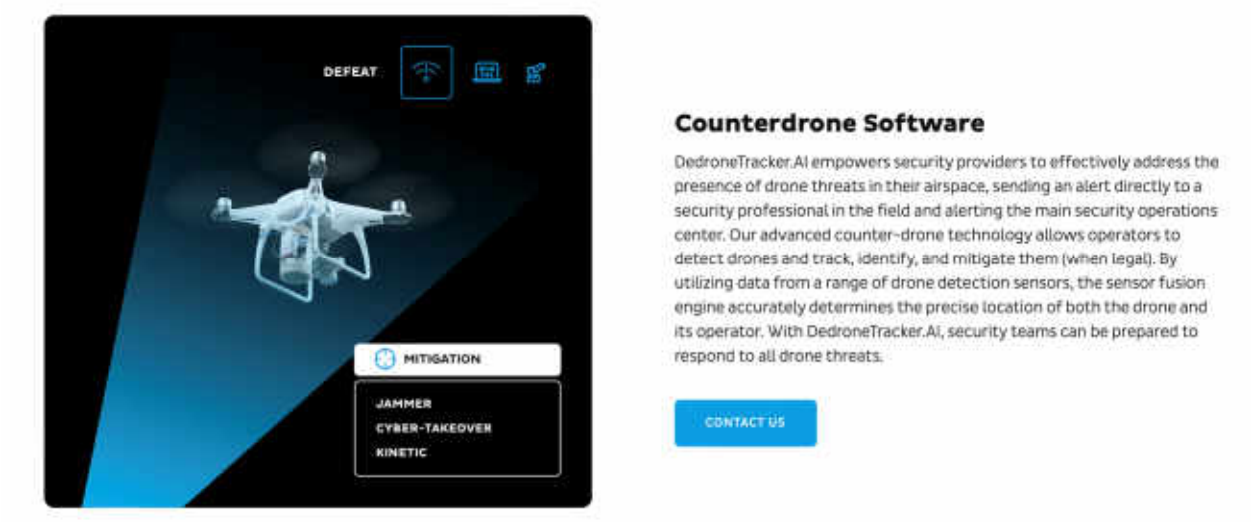
- Precision smart, narrow band jamming to minimize collateral damage
- Effective against drone swarms
- Part of complete C2 end-to-end kill chain
- Autonomous C2 with AI/ML enhanced sensor fusion
- Compact and lightweight design
- Receive target location through DedroneTracker.AI connected display
- Integrates with DedroneTracker.AI to enable autonomous Pan-Tilt Jamming (PTJ) with mounted DedroneDefender
- 30° effective cone angle
- Ruggedized to meet military standard MIL-STD-810H

GET A QUOTE

https://www.dedrone.com/solutions/dedrone-defender



https://www.dedrone.com



https://www.dedrone.com/products/drone-detection-software

47. Dedrone has been aware of the ’199 patent from multiple communications, presentations, and licensing negotiations between Airspace and Dedrone between at least 2020 and 2024.

48. Dedrone knew or should have known that Dedrone’s actions infringe one or more of the claims of the ’199 patent because Dedrone has the technical expertise to understand the scope and content of the ’199 patent, because Dedrone is an experienced provider of counter-

drone technology, and because Dedrone knows the design, function, testing, training, use for training, and/or operation of the Accused Products, e.g., DedroneTactical. At a minimum, Dedrone has knowledge of the ’199 patent at least as of the filing of this Complaint.

49. Further, upon information and belief, Dedrone has actively induced and/or contributed to infringement of at least claim 1 of the ’199 patent in violation of at least 35 U.S.C. § 271(b) and (c).

50. Users of DedroneTactical directly infringe at least claim 1 of the ’199 patent when they use DedroneTactical in the ordinary, customary, and intended way.

51. On information and belief, Dedrone’s inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use, e.g., DedroneTactical within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying the DedroneTactical to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use DedroneTactical in the ordinary, customary, and intended way by activities related to selling, marketing, advertising, promotion, support, and distribution of DedroneTactical, which Dedrone knew infringe at least claim 1 of the ’199 patent, or, alternatively, was willfully blind to the infringement.

52. On information and belief, Dedrone’s inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Dedrone’s customers to commit acts of infringement with respect to, e.g., DedroneTactical, within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to DedroneTactical in the United States by activities related to selling,

marketing, advertising, promotion, support, and distribution of DedroneTactical, which Dedrone knew infringe at least claim 1 of the '199 patent, or, alternatively, was willfully blind to the infringement. Defendant's inducement includes directions or instructions provided by Dedrone with DedroneTactical, including those instructions identified in the following links, the provision of which is ongoing as of the filing of this Complaint and the content of which is specifically illustrated above:

- https://www.dedrone.com/solutions/dedrone-tactical
- https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain
- https://www.dedrone.com/drone-remote-id
- https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration
- https://www.dedrone.com/solutions/dedrone-tactical#basekit
- https://www.dedrone.com/solutions/dedrone-tactical#extendedkit
- https://www.dedrone.com/products/drone-detection-software
- https://www.dedrone.com/solutions
- https://www.dedrone.com/press/dedrone-first-to-offer-both-united-states-and-european-union-drone-remote-id-capability
- https://www.dedrone.com/counter-drone-military
- https://www.dedrone.com/solutions/dedrone-defender

53. On information and belief, in violation of 35 U.S.C. § 271(c), Dedrone's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least claim 1 of the '199 patent, constituting a material part of the invention. On information and belief, Dedrone knows and has known the same to be especially made or especially adapted for use in an infringement of the '199 patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

54. Dedrone is not licensed or otherwise authorized to practice the claims of the '199 patent.

55. Thus, as a result of its acts, Dedrone has injured Airspace and is liable to Airspace for directly and/or indirectly infringing one or more claims of the ’199 patent, whether literally or under the doctrine of equivalents, including without limitation claim 1.

56. As a result of Dedrone’s infringement of the ’199 patent, Airspace has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Dedrone’s infringement, but in no event less than a reasonable royalty with interest and costs.

57. On information and belief, in addition to Dedrone’s knowledge of the ’199 patent as set forth above both prior to and as a result of the filing of this Complaint, Dedrone has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the ’199 patent by knowing that there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Dedrone aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the ’199 patent. On information and belief, discovery will reveal additional facts and circumstances from which Dedrone’s knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

58. Accordingly, Dedrone’s infringement of the ’199 patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damages and attorneys’ fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

59. Dedrone's infringement of Airspace's rights under the '199 patent will continue to damage Airspace, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

COUNT II

(Dedrone's Infringement of United States Patent No. 10,713,959)

60. Paragraphs 1-59**Error! Reference source not found.** are reincorporated by reference as if fully set forth herein.

61. The claims of the '959 patent are directed to patent eligible subject matter. Particularly, the '959 patent claims and teaches, *inter alia*, a new and improved device to provide identification information concerning low-altitude aircraft (also referred to as unmanned aerial vehicles (UAVs), unmanned aircraft systems (UASs), aerial systems, aerial vehicles, autonomous robotic systems (ARSs), or drones) to allow ground stations to identify the low-altitude aircraft. More specifically, the claims of the '959 patent include a device configured to communicate identification information associated with a low-altitude aircraft. The claimed device comprises a radio frequency communication antenna; and a radio communication module coupled to the radio frequency communication antenna and configured to transmit identification information associated with the low-altitude aircraft through a transmitted radio signal. The radio communication module is further configured to receive a received radio signal and store the information in a storage. The radio frequency communication antenna is further coupled to the low-altitude aircraft and the radio communication module is configured to utilize a secure identifier. The radio communication module is also configured for two-way communication with a remote portable detection system that includes a user interface configured to provide to a user information associated with a plurality of different low-altitude aircraft detected by the remote portable detection system.

62. By utilizing the claimed system, authorities can manage the increasing volume of low-altitude aircraft traffic, including when for example a swarm of drones suddenly occupies a single air space. The invention represents a significant improvement over the existing technology because prior to the invention, there was no device available to automatically and remotely identify and track increasing volumes of low-altitude aircraft. This patented invention addressed the critical need for authorities to track the increasing numbers of low-altitude aircraft being placed into operation.

63. The system covered by the claims differs markedly from the prior systems in use at the time of this invention in that prior to the invention, there existed no workable structure that permitted automatic remote identification of low-altitude aircraft. The ability to implement such a system is important given the increasing number of low-altitude aircraft in operation. Since these low-altitude aircraft can readily cause damage and/or injury due to their altitude, speed, and weight, there was a critical need at the time of the invention for a system able to automatically and remotely identify the increasing number of low-altitude aircraft.

64. Thus, the claims of the ’959 patent focus on a specific systems and devices that improve the relevant technology for effectively detecting and tracking various low-altitude aircraft within an air space of interest, and providing that information to a remotely located user. Various claimed features, including but not limited to the “radio communication module … configured to receive a received radio signal” and “for two-way communication with a remote portable detection system”, and “provid[ing] to a user, information associated with a plurality of different low-altitude aircraft detected by the remote portable detection system,” are neither laws of nature nor mental processes. These claims are not directed to a result or effect that can be characterized as an abstract idea, and the claim elements do not employ generic processes and/or

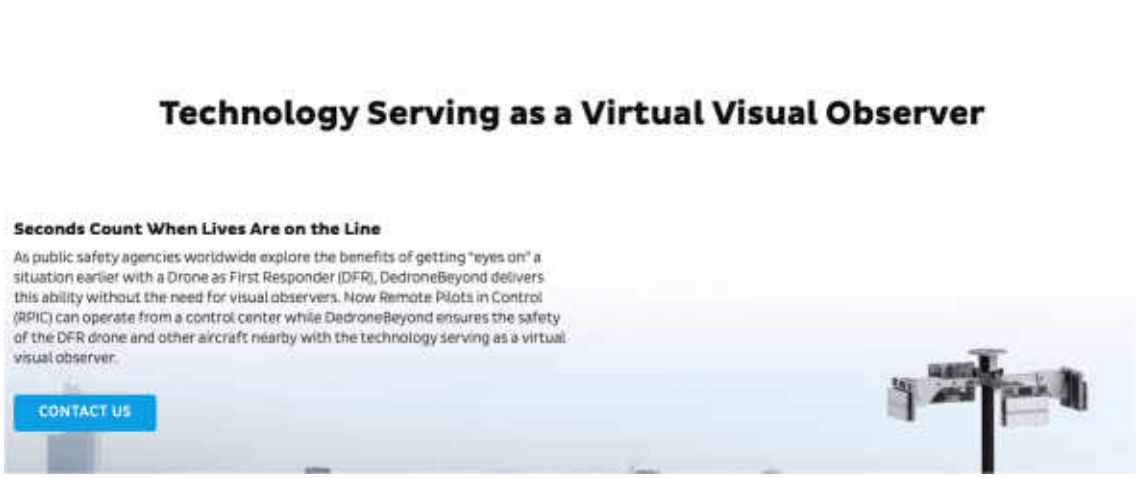
machinery merely to implement such an idea. Rather, these claims are directed to achieve an improvement in the above-described technology and technical field. At least for these reasons, these claims are patent eligible.

65. Dedrone has directly and indirectly infringed, and continues to directly and indirectly infringe, literally and/or by the doctrine of equivalents, at least claim 21 of the ’959 patent, annotated and reproduced below, by making, using, selling, offering for sale, and/or importing into the United States one or more Accused Products, e.g., DedroneBeyond. The following demonstration of infringement of the ’959 patent by DedroneBeyond is exemplary.

No.	Claim Element
21.pre	A device configured to communicate identification information associated with a low-altitude aircraft, the device comprising:
21.a	a radio frequency communication antenna;
21.b	and a radio communication module coupled to the radio frequency communication antenna and configured to transmit identification information associated with the low-altitude aircraft through a transmitted radio signal,
21.c	wherein the radio communication module is configured to receive a received radio signal and store the information in a storage,
21.d	wherein the radio frequency communication antenna is coupled to the low-altitude aircraft and
21.e	the radio communication module is configured to utilize a secure identifier, and
21.f	the radio communication module is configured for two-way communication with a remote portable detection system; and
21.g	wherein the device is coupled to the low-altitude aircraft and
21.h	the remote portable detection system includes a user interface configured to provide to a user, information associated with a plurality of different low-altitude aircrafts detected by the remote portable detection system.

A. Claim 21, Preamble [21.pre]

66. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the ’959 patent by making, using, selling, offering for sale, and/or importing into the United States one or more Accused Products, e.g., DedroneBeyond. This is because, *inter alia*, the low-altitude aircraft (also referred to as an unmanned aerial vehicle (“UAV”), an unmanned aircraft system (“UAS”), an aerial system, an aerial vehicle, an autonomous robotic systems (“ARS”), or a drone) that is operated with, e.g., DedroneBeyond, for testing, training, and/or training using DedroneBeyond, whether by Dedrone or by its customers and partners, comprises “*a device configured to communicate identification information associated with a low-altitude aircraft*.”



DedroneBeyond
Safely Enable Drones to Fly Beyond Visual Line of Sight (BVLOS)
Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.
Faster response times
Persistent observation of ongoing situations
Improved situational awareness
Track cooperative and non-cooperative Traffic
Get visual observers off roof tops and onto patrol
Resource efficient

https://www.dedrone.com/solutions/dedrone-beyond

DedroneSensor RF-300

The DedroneSensor RF-300 is a passive, network-attached radio sensor for the detection, classification, and direction finding (geolocation) of drones and their remote controls. The DedroneSensor detects consumer, commercial, and hobbyist drones.

Through internal digital signal processing of radio signals, the DedroneSensor RF-300 identifies the direction and in combination with one or more DedroneSensor RF-300 determines the position of signals from drones and pilots.

BENEFITS

- RF-based localization finds drones and pilots
- Automatically tracks and plots flight and pilot position on map
- Provides information on "hotspots" of drone activity

https://www.dedrone.com/products/drone-detection/rf-sensors/rf-300

Dedrone Announces DedroneBeyond To Enable Scalable Drones as First Responder Operations in Partnership with Axon Air

STERLING, Va., October 12, 2023-- Dedrone, the global leader in airspace security, today announced the launch of DedroneBeyond, its solution to enable drone operations to fly beyond visual line of sight (BVLOS) for state, local, territorial and tribal (SLTT) law enforcement and emergency services when deploying drone as first responders (DFR). Powered by the same computer-vision-enabled, sensor-fusion AI that currently protects over 500 sites around the world, DedroneBeyond delivers complete airspace situational awareness. This solution is being developed and tested in partnership with others, including Axon Air powered by DroneSense, for safe drone operation, providing an infrastructure for the positive drone economy to emerge.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

Does Remote ID ensure safe skies?

Not on its own. Remote ID is a significant step in creating safer airspaces, but despite the clear advantages of standard Remote ID over nothing at all, it is vital to acknowledge its two key limitations.

While Remote ID regulations are a necessary first step in enhancing drone accountability, they are insufficient for comprehensive airspace security. Criminal elements are unlikely to adhere to these rules, rendering a Remote ID-only detection system inadequate. Dedrone's proactive airspace monitoring system does not rely on pilot compliance, and presents a more robust and effective approach to airspace security, as it can detect all drones in the vicinity whether they are with or without ID active Remote ID broadcast modules.

https://www.dedrone.com/drone-remote-id

> Moving forward, most drones will need to continuously transmit its "license plate," which, in turn, links the drone to an owner/operator, transmits its position (longitude, latitude, and altitude), and other operational data, including the position of its controller/pilot.

https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration

67. The "*communicat*[*ion of*] *identification information*" recited in this claim element is essential in any low-altitude aircraft operated in the United States as of September 16, 2023,[4] because any low-altitude aircraft flying in U.S. airspace as of that date is required by the applicable FAA regulations to transmit a remote identification message associated with the low-altitude aircraft. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320. The low-altitude aircraft that Dedrone and its customers use to test, train, and/or train using, e.g., DedroneBeyond, are compliant with the applicable FAA regulations, and therefore practice this claim element.

68. In particular, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneBeyond, using low-altitude aircraft that DedroneBeyond is designed to detect, which involves the transmission of identification information associated with the low-altitude aircraft transmitted from such low-altitude aircraft. Each such low-altitude aircraft used in the testing, training, and/or training using, e.g., DedroneBeyond is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320. A low-altitude aircraft having such an in-built subsystem or attached device comprises "*a device configured to communicate identification information associated with a low-altitude aircraft*."

[4] Unless exempted per applicable FAA regulations.

69. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond to identify, track, and/or control (e.g., using the DedroneBeyond product) one or more low-altitude aircraft. DedroneBeyond implements BVLOS control of the flight of a low-altitude aircraft. This entails detection and tracking of the low-altitude aircraft, which is based on, at least in part, the low-altitude aircraft's identifier, i.e., the "*communication identification information*" received from the low-altitude aircraft. Each such low-altitude aircraft detected, tracked, and/or controlled by, e.g., DedroneBeyond, is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

70. Moreover, regardless of the compliance with the applicable FAA regulations, the transmission, i.e., "*communicat*[*ion of the*] *identification information associated with a low-altitude aircraft*" is necessary for the identification, tracking, and/or control of the low-altitude aircraft performed by, e.g., DedroneBeyond. Therefore, by supplying DedroneBeyond, Dedrone induces its customers and partners to use a low-altitude aircraft having an in-built subsystem or an attached device for transmitting the low-altitude aircraft identification information, i.e., "*a device configured to communicate identification information associated with a low-altitude aircraft*."

Technology Serving as a Virtual Visual Observer

Seconds Count When Lives Are on the Line

As public safety agencies worldwide explore the benefits of getting "eyes on" a situation earlier with a Drone as First Responder (DFR), DedroneBeyond delivers this ability without the need for visual observers. Now Remote Pilots in Control (RPIC) can operate from a control center while DedroneBeyond ensures the safety of the DFR drone and other aircraft nearby with the technology serving as a virtual visual observer.

https://www.dedrone.com/solutions/dedrone-beyond

Dedrone Announces DedroneBeyond To Enable Scalable Drones as First Responder Operations in Partnership with Axon Air

STERLING, Va., October 12, 2023-- Dedrone, the global leader in airspace security, today announced the launch of DedroneBeyond, its solution to enable drone operations to fly beyond visual line of sight (BVLOS) for state, local, territorial and tribal (SLTT) law enforcement and emergency services when deploying drone as first responders (DFR). Powered by the same computer-vision-enabled, sensor-fusion AI that currently protects over 500 sites around the world, DedroneBeyond delivers complete airspace situational awareness. This solution is being developed and tested in partnership with others, including Axon Air powered by DroneSense, for safe drone operation, providing an infrastructure for the positive drone economy to emerge.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

Recognizing the need to protect against the threat of unauthorized drones — and at the same time scale the ability of authorized drones to better support first responders — Axon has joined forces with Dedrone to accelerate the use of drone defense and DFR technologies as a force for good for public safety. As Axon Founder and CEO Rick Smith said, "Together, we can further our mission to Protect Life by enabling the good drones to fly and ensuring the bad ones don't."

Using proprietary AI/ML-driven algorithms that leverage machine learning techniques including behavior model filters, neural networks and imagery generated from over 18 million images, Dedrone is able to rapidly detect, track, identify and, where permitted, mitigate drones and locate their pilots — who, as the operators, are the true threat. AI plays a critical role in Dedrone technology by working autonomously to deliver a prioritized threat queue and virtually eliminate false positives. And their drone defense solutions range in scope and scale, from protection for fixed sites like stadiums to entire city-wide counter-drone systems, as well as rapid set-up/tear-down expeditionary kits.

https://www.axon.com/blog/protecting-more-lives-in-more-places

Smart Airspace Security and Drone Detection Software

DedroneTracker.AI is the world's leading smart airspace security software. At the core of Dedrone's comprehensive solution is DedroneTracker.AI. This powerful detection software utilizes input from various sensors to detect the presence of a drone, and determine drone and pilot location. Sensors include:

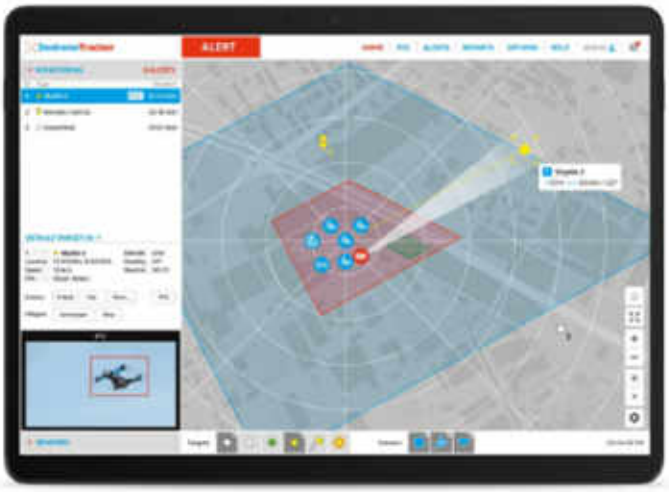
- Radio frequency (RF)
- Radar
- Video
- Acoustics

https://www.dedrone.com/products/drone-detection-software

DedroneTracker - Future Proof Drone Detection

DedroneTracker.AI is a multi-sensor (RF, PTZ, radar) and countermeasure (jammer) platform that is scalable and customizable for any on-site requirements. DedroneTracker.AI can be cloud-managed or a hosted on-prem solution.

DedroneTracker.AI seamlessly integrates with a variety of sensing and threat mitigation technologies, enabling users to customize their platform and meet their specific needs and threat level.



https://www.dedrone.com/solutions

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.

Reporting and Forensic Evidence

A combination of forensic data is automatically captured by DedroneTracker.AI drone detection software including:

- Drone manufacturer
- Drone Model
- Time and length of drone activity
- Video Verification
- Flight history (including flight path)

Summary reports are automatically produced and available on-demand to easily analyze the most critical airspace security data. In short, the software can be used to detect drones in the form of a drone monitoring system and can also be used to prosecute offenders with data after the unauthorized drone has been mitigated.

https://www.dedrone.com/products/drone-detection-software

Dedrone Delivers Remote ID Across Global Sensor Network

Can Remote ID only systems safeguard your airspace?

In recent years, the increasing popularity of drones has brought both tremendous advancements and significant challenges. One crucial challenge is ensuring the security of your airspace from potential threats posed by a nefarious and non-compliant uncrewed aircraft system (UAS or "drone").

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

However, relying solely on this technology is insufficient for complete airspace security. This overview explores the limitations of a drone monitoring system solely dependent upon a Remote ID broadcast system and highlights the necessity of Dedrone's more complete and proactive drone detection solutions to effectively safeguard our airspace.

CONTACT US

Solution check	Remote ID only system	Remote ID + Dedrone
Detect UAS with Remote ID	✓	✓
Detect UAS **without** Remote ID	✗	✓
Identify Friend vs. Foe	✗	✓
Identify Payload[1]	✗	✓
Image of Pilot[1]	✗	✓
Threat mitigation[2]	✗	✓
Doesn't rely on Pilot compliance	✗	✓

[1] If cameras are integrated, [2] If allowed

https://www.dedrone.com/drone-remote-id

71. In addition, DedroneBeyond comprises DedroneTracker.AI, to, *inter alia*, receive Remote IDs, i.e., the "*identification information associated with a low-altitude aircraft*" recited in this claim element, for identifying low-altitude aircraft.

> DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

> DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

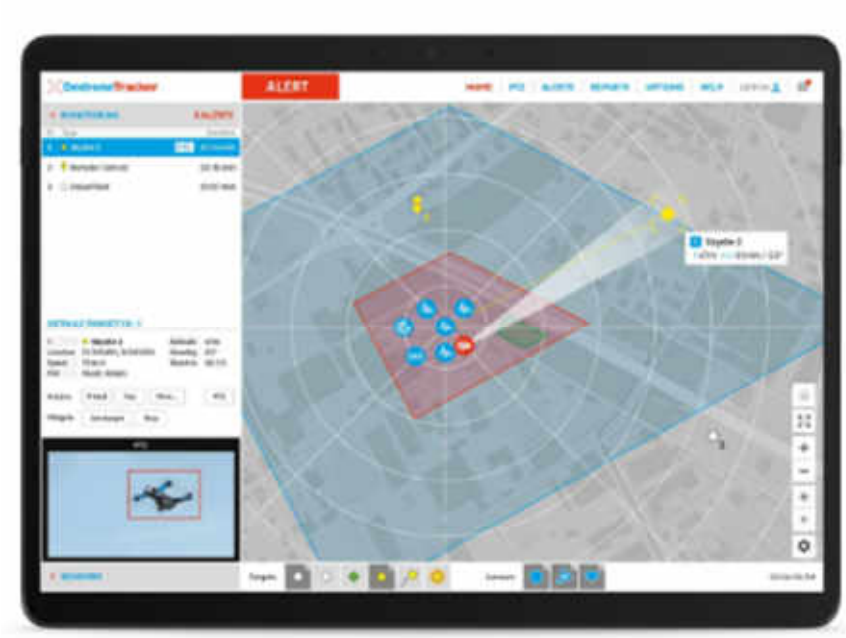
https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

> Dedrone First to Offer Both United States and European Union Drone Remote ID Capability
>
> FEBRUARY 2, 2021

Dedrone, the market leader in airspace security, now enables their customers to leverage both U.S. and E.U. government-provided drone remote identification standards, commonly known as Remote ID, to identify drones.

https://www.dedrone.com/press/dedrone-first-to-offer-both-united-states-and-european-union-drone-remote-id-capability

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.



https://www.dedrone.com/products/drone-detection-software

Dedrone to Test its Technology Protecting Military Installations from Adversarial Drones

https://www.dedrone.com/press/dedrone-to-test-its-technology-protecting-military-installations-from-adversarial-drones

"Ukraine has shown the world that all conflicts, now and in the future, will heavily feature drones for surveillance, combat, long-range strikes and more. DedroneOTM was created in response to this paradigm shift in warfare, offering a fully mobile cUAS kill chain to make ground movements safer," said Rob Campbell, General Manager of Dedrone Defense. "We continue to work closely with our defense partners to continuously test, develop and improve new technologies for the dynamic and complex environments in which today's forces operate."

https://www.dedrone.com/press/dedrone-launches-dedroneonthemove-for-fight-against-unauthorized-and-malicious-drones

B. Claim Element [21.a]

72. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the '959 patent by making, using, selling, offering for sale, and/or importing into the

United States, e.g., DedroneBeyond, because, *inter alia*, DedroneBeyond requires low-altitude aircraft operated by Dedrone or Dedrone's customers and/or partners each to comprise "*a radio frequency communication antenna*." In particular, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneBeyond, using low-altitude aircraft that DedroneBeyond is designed to detect using at least the identification information associated with the low-altitude aircraft that is transmitted from each such low-altitude aircraft. Each such low-altitude aircraft used to test, train, and/or train using, e.g., DedroneBeyond, is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft "using radio frequency spectrum compatible with personal wireless devices." *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

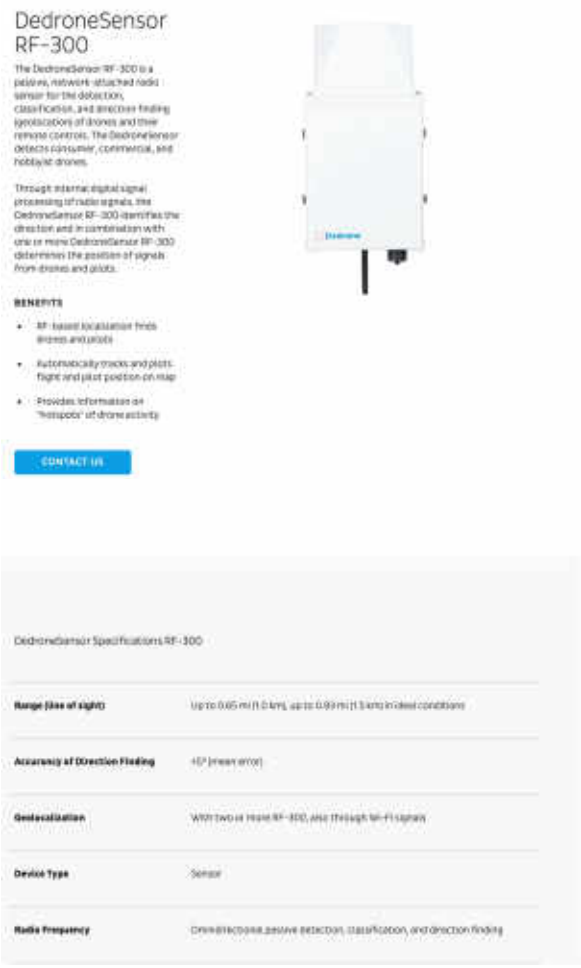
73. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond to identify, track, and/or control (using the DedroneBeyond product with BVLOS capabilities) one or more low-altitude aircraft, at least by detecting the identification information associated with the low-altitude aircraft broadcast from each such low-altitude aircraft. Each such low-altitude aircraft is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft "using radio frequency spectrum compatible with personal wireless devices." *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310 89.315, 89.320. The radio frequency broadcast is accomplished using "*a radio frequency communication antenna*." The low-altitude aircraft that Dedrone and its customers and partners use to test, train, and/or train using, e.g., DedroneBeyond, and which Dedrone's

customers detect, track, and/or control using, e.g., DedroneBeyond, are compliant with the applicable FAA regulations, and therefore practice this claim element.

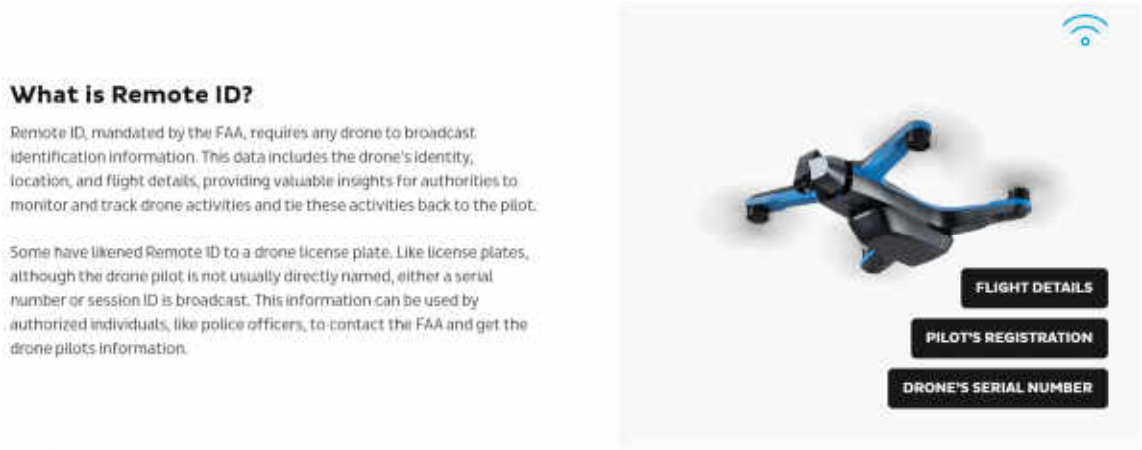
https://www.dedrone.com/solutions/dedrone-beyond

74. Regardless of the FAA regulations, the testing, training, training using, and/or operational use of, e.g., DedroneBeyond, by Dedrone customers requires the use of a low-altitude aircraft that can transmit information, e.g., the low-altitude aircraft identifier, and for the BVLOS control of the low-altitude aircraft, receive information. This is accomplished using a "*radio frequency communication antenna*." Therefore, for testing, training, training using, and/or operationally using, e.g., DedroneBeyond, Dedrone induces its customers to use a low-altitude aircraft that has a "*radio frequency communication antenna*." Moreover, as discussed for the preamble of claim 21, ¶¶ 66-71, *supra*, Dedrone has induced its customers and partners to include a "*radio frequency communication antenna*" in the low-altitude aircraft used to test, train, train using, and/or operate, e.g., DedroneBeyond, so that those low-altitude aircraft can be

identified, and further recognized as friendly and/or provided with BVLOS navigation guidance, by, e.g., DedroneBeyond.



https://www.dedrone.com/products/drone-detection/rf-sensors/rf-300



https://www.dedrone.com/drone-remote-id

Dedrone Delivers Remote ID Across Global Sensor Network

Can Remote ID only systems safeguard your airspace?

In recent years, the increasing popularity of drones has brought both tremendous advancements and significant challenges. One crucial challenge is ensuring the security of your airspace from potential threats posed by a nefarious and non-compliant uncrewed aircraft system (UAS or "drone").

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

However, relying solely on this technology is insufficient for complete airspace security. This overview explores the limitations of a drone monitoring system solely dependent upon a Remote ID broadcast system and highlights the necessity of Dedrone's more complete and proactive drone detection solutions to effectively safeguard our airspace.

CONTACT US

Solution check	Remote ID only system	Remote ID + Dedrone
Detect UAS with Remote ID	✓	✓
Detect UAS **without** Remote ID	✗	✓
Identify Friend vs. Foe	✗	✓
Identify Payload[1]	✗	✓
Image of Pilot[1]	✗	✓
Threat mitigation[2]	✗	✓
Doesn't rely on Pilot compliance	✗	✓

1 If cameras are integrated, 2 If allowed

https://www.dedrone.com/drone-remote-id

C. Claim Element [21.b]

75. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the ’959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, the low-altitude aircraft that are operated with DedroneBeyond, whether by Dedrone or by its customers and partners, comprises “*a radio communication module coupled to the radio frequency communication antenna and configured to transmit identification information associated with the low-altitude aircraft*

through a transmitted radio signal." In particular, as discussed above for the preamble of claim 21, [21.pre] and claim element [21.a], 66 ¶¶ 66-74, *supra*, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneBeyond, using low-altitude aircraft that DedroneBeyond is designed to detect, track, and/or control using at least the identification information associated with the low-altitude aircraft identification broadcast from each such low-altitude aircraft. Each such low-altitude aircraft is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

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While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

However, relying solely on this technology is insufficient for complete airspace security. This overview explores the limitations of a drone monitoring system solely dependent upon a Remote ID broadcast system and highlights the necessity of Dedrone's more complete and proactive drone detection solutions to effectively safeguard our airspace.

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Detect UAS with Remote ID	✓	✓
Detect UAS **without** Remote ID	✗	✓
Identify Friend vs. Foe	✗	✓
Identify Payload[1]	✗	✓
Image of Pilot[1]	✗	✓
Threat mitigation[2]	✗	✓
Doesn't rely on Pilot compliance	✗	✓

1 If cameras are integrated, 2 If allowed

https://www.dedrone.com/drone-remote-id

76. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond, to identify, track, and/or control (e.g., for BVLOS control of the low-altitude aircraft flight) one or more low-altitude aircrafts, at least by receiving the identification information associated with the low-altitude aircraft broadcast from each such low-altitude aircraft. Each such low-altitude aircraft is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft "using radio frequency spectrum compatible with personal wireless devices." *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

77. In general, the "*radio communication module*" recited in this claim element is essential in any low-altitude aircraft operated in the United States as of September 16, 2023, [5] because any low-altitude aircraft flying in U.S. airspace as of that date is required by the applicable FAA regulations to transmit identification information associated with the low-altitude aircraft. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320. The low-altitude aircraft that Dedrone uses to test, train, train using, and/or operate e.g., DedroneBeyond, and which Dedrone's customers detect using, e.g., DedroneBeyond, are compliant with the applicable FAA regulations, and therefore practice this claim element.

78. Regardless of the FAA regulations, the testing, training, training using, and/or operational use of, e.g., DedroneBeyond, by Dedrone customers requires the use of a low-altitude aircraft that can transmit information, e.g., the low-altitude aircraft identifier, and for the BVLOS control of the low-altitude aircraft, receive information. This is accomplished using "*a*

[5] Unless exempted per applicable FAA regulations.

radio communication module" as claimed, together with the "*radio frequency communication antenna*." Moreover, as discussed above for the preamble of claim 21, [21.pre] and claim element [21.a], 66¶¶ 66-74, *supra*, Dedrone has induced its customers and partners to use low-altitude aircraft having a "*radio communication module*" so that those low-altitude aircraft can be identified, and further recognized as friendly and/or provided with BVLOS navigation guidance, by, e.g., DedroneBeyond. For example, such a radio communication module can "*transmit identification information associated with the*" low-altitude aircraft as an RF transmission to, e.g., DedroneBeyond, that can receive RF transmissions. Therefore, for testing, training, training using, and/or for operational use of, e.g., DedroneBeyond, Dedrone induces its customers and partners to use a low-altitude aircraft that has "*a radio communication module*" as claimed.

Dedrone Delivers Remote ID Across Global Sensor Network

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While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

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Detect UAS with Remote ID	✓	✓
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Identify Friend vs. Foe	✗	✓
Identify Payload[1]	✗	✓
Image of Pilot[1]	✗	✓
Threat mitigation[2]	✗	✓
Doesn't rely on Pilot compliance	✗	✓

1 If cameras are integrated, 2 If allowed

Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

https://www.dedrone.com/drone-remote-id

D. Claim Element [21.c]

79. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the '959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, low-altitude aircraft that are operated with DedroneBeyond, whether by Dedrone or by its customers and partners, include "*the radio communication module* [*that*] *is configured to receive a received radio signal*." Specifically, the radio communication module aboard the low-altitude aircraft is configured to "*receive a received radio signal*" to, for example, navigate the low-altitude aircraft, e.g., cause it to hover over the location of a target (such as an accident, crime, or fire scene), or avoid a target such as a bird or another airborne vehicle. It also is configured to "*store the information in a storage*," which is to say the identification information discussed for claim clement 21.b, ¶¶ 75-78, *supra*, to comply with FAA regulations relating to identification information associated with the low-altitude aircraft. *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

https://www.dedrone.com/solutions/dedrone-beyond

STERLING, Va., October 12, 2023-- Dedrone, the global leader in airspace security, today announced the launch of DedroneBeyond, its solution to enable drone operations to fly beyond visual line of sight (BVLOS) for state, local, territorial and tribal (SLTT) law enforcement and emergency services when deploying drone as first responders (DFR). Powered by the same computer-vision-enabled, sensor-fusion AI that currently protects over 500 sites around the world, DedroneBeyond delivers complete airspace situational awareness. This solution is being developed and tested in partnership with others, including Axon Air powered by DroneSense, for safe drone operation, providing an infrastructure for the positive drone economy to emerge.

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

https://www.dedrone.com/solutions/dedrone-beyond

Why is Beyond Visual Line of Sight (BVLOS) crucial for a Drone as First Responder (DFR) program?

Beyond Visual Line of Sight (BVLOS) is crucial for a DFR program because it allows drones to operate beyond the operator's direct line of sight. This capability is vital for covering large areas rapidly, reaching incident scenes faster, and providing continuous situational awareness, which enhances the effectiveness and efficiency of emergency response efforts. BVLOS enables drones to deliver real-time data and aerial views, even when the operator is not near the incident location.

What are the benefits of using DedroneBeyond for public safety agencies?

DedroneBeyond enables faster response times, persistent observation, and improved situational awareness for police and fire departments, optimizing resources and ensuring efficient emergency responses.

How does DedroneBeyond ensure safety for DFR operations?

DedroneBeyond uses advanced AI, machine learning, and sensor fusion to detect and avoid other aircraft, allowing drones to operate BVLOS without visual observers, enhancing the safety and effectiveness of first responders.

How does DedroneBeyond assist in crash and crime scene management?

DedroneBeyond allows drones to quickly reach crash and crime scenes, providing critical incident overwatch and real-time data, aiding first responders in assessing the situation and coordinating their response more effectively.

What role does DedroneBeyond play in firefighting?

In firefighting, DedroneBeyond-enabled drones can assess fire scenes from the air, identify hotspots, and support firefighters with real-time aerial views, improving safety and efficiency in fire suppression efforts.

https://www.dedrone.com/solutions/dedrone-beyond

Beyond Visual Line of Sight (BVLOS)

Drones have the potential to revolutionize industries such as public safety, search and rescue, construction, and more. By allowing drones to fly Beyond Visual Line of Sight (BVLOS), their capabilities can be fully utilized. This is particularly important for use cases requiring drones to operate miles from the launch site. The Federal Aviation Administration (FAA) regulations require waivers for these types of drone flights to ensure safety measures are in place to prevent uncontrolled flying that jeopardizes lives and vital infrastructure. This BVLOS waiver enables drones to coexist safely with airplanes without midair collisions and that risks to people and property on the ground are minimized. DedroneTracker.AI offers the technology and capabilities to address these challenges, enabling drones to go beyond the visual line of sight and revolutionize industries.

https://www.dedrone.com/products/drone-detection-software

Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.

https://www.dedrone.com/solutions/dedrone-beyond

80. Moreover, the radio communication module is also configured to "*store the information*," i.e., the "*identification information*" "*in a storage*," e.g., for compliance with FAA regulation requirements of tamper resistance, error-corrected transmission of the remote ID of the low-altitude aircraft. 14 C.F.R. §§ 89.310(d) and (e), 89.320(d) and (e); *see also*, 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

E. Claim Element [21.d]

81. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the '959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, low-altitude aircraft that are operated with DedroneBeyond, whether by Dedrone or by its customers and partners, include a "*radio frequency communication antenna* [*that*] *is coupled to the low-altitude aircraft*."

82. In particular, as discussed above for the preamble of claim 21 [21.pre] and claim elements [21.a]-[21.c], ¶¶ 66-80, *supra*, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneBeyond. The testing, training, and/or training using DedroneBeyond uses low-altitude aircraft that DedroneBeyond is designed to detect, track, and/or control using at least the identification information associated with the low-altitude aircraft transmitted from each such low-altitude aircraft. Each such low-altitude aircraft used to test, train, to train using, and/or to operate, e.g., DedroneBeyond, is compliant with FAA regulations. This requires that the low-altitude aircraft include an in-built subsystem or have an attached device to transmit a remote identification message associated with the low-altitude aircraft "using radio frequency spectrum compatible with personal wireless devices," which requires a "*radio frequency communication antenna* [*that*] *is coupled to the low-altitude aircraft*." *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

83. Dedrone indirectly practices this claim element by at least inducing its customers and partners, including at least Dedrone partner Axon, to utilize, e.g., DedroneBeyond, to identify, track, and/or control (for BVLOS control of the low-altitude aircraft flight) one or more low-altitude aircraft, at least by receiving the identification information associated with the low-altitude aircraft transmitted from each such low-altitude aircraft. Each such low-altitude aircraft is compliant with FAA regulations requiring that the low-altitude aircraft include an in-built subsystem or have an attached device that utilizes a remote identification message associated with the low-altitude aircraft "using radio frequency spectrum compatible with personal wireless devices," which requires a "*radio frequency communication antenna* [*that*] *is coupled to the low-altitude aircraft*." *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

Dedrone Announces DedroneBeyond To Enable Scalable Drones as First Responder Operations in Partnership with Axon Air

STERLING, Va., October 12, 2023-- Dedrone, the global leader in airspace security, today announced the launch of DedroneBeyond, its solution to enable drone operations to fly beyond visual line of sight (BVLOS) for state, local, territorial and tribal (SLTT) law enforcement and emergency services when deploying drone as first responders (DFR). Powered by the same computer-vision-enabled, sensor-fusion AI that currently protects over 500 sites around the world, DedroneBeyond delivers complete airspace situational awareness. This solution is being developed and tested in partnership with others, including Axon Air powered by DroneSense, for safe drone operation, providing an infrastructure for the positive drone economy to emerge.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

Does Remote ID ensure safe skies?

Not on its own. Remote ID is a significant step in creating safer airspaces, but despite the clear advantages of standard Remote ID over nothing at all, it is vital to acknowledge its two key limitations.

While Remote ID regulations are a necessary first step in enhancing drone accountability, they are insufficient for comprehensive airspace security. Criminal elements are unlikely to adhere to these rules, rendering a Remote ID-only detection system inadequate. Dedrone's proactive airspace monitoring system does not rely on pilot compliance, and presents a more robust and effective approach to airspace security, as it can detect all drones in the vicinity whether they are with or without ID active Remote ID broadcast modules.

https://www.dedrone.com/drone-remote-id

Moving forward, most drones will need to continuously transmit its "license plate," which, in turn, links the drone to an owner/operator, transmits its position (longitude, latitude, and altitude), and other operational data, including the position of its controller/pilot.

https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration

84. To facilitate the radio frequency transmission, the radio frequency antennas of these low-altitude aircraft are built within or are attached to the low-altitude aircraft, i.e., the antennas are "*coupled to the low-altitude aircraft*." *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

85. Regardless of the FAA regulations, the testing, training, and/or training using, and/or the operational use of, e.g., DedroneBeyond, by Dedrone customers requires the use of a low-altitude aircraft that can transmit information, e.g., the low-altitude aircraft identifier, and for the BVLOS control of the low-altitude aircraft, receive information. This is accomplished

using a "*radio frequency communication antenna* [*that*] *is coupled to the low-altitude aircraft*." Moreover, as discussed for the preamble of claim 21 [21.pre] and claim elements [21.a]-[21.c], ¶¶ 66-80, *supra*, Dedrone has induced its customers and partners to use low-altitude aircraft having a "*radio frequency communication antenna*" featuring the limitations recited in this claim element so that those low-altitude aircraft can be identified, and further recognized as friendly. Accordingly, Dedrone induces its customers and partners to practice this claim element.

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Threat mitigation[2]	✗	✓
Doesn't rely on Pilot compliance	✗	✓

[1] Cameras are integrated, [2] If allowed

Complete Airspace Security

With Dedrone, security providers can confidently operate without disruption, regardless of whether the drone is registered and compliant or unregistered and potentially malicious.

CONTACT US

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If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

https://www.dedrone.com/drone-remote-id

F. Claim Element [21.e]

86. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the '959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, low-altitude aircraft that are operated

with DedroneBeyond, whether by Dedrone or by its customers and partners, include a "*radio communication module* [*that*] *is configured to utilize a secure identifier*." This is because, the communication module is configured to transmit the low-altitude aircraft ID that is secure, in compliance with the applicable FAA regulations, as discussed for the preamble of claim 21 [21.pre] and claim elements [21.a]-[21.d], 72 66¶¶ 66-85, *supra*.7981 *See* 14 C.F.R. §§ 89.105, 89.110, 89.115, 89.305, 89.310, 89.315, 89.320.

87. Moreover, DedroneBeyond uses sensors and AI-based tracking software DedroneTracker.AI that can decode transmissions from DJI drones. These transmissions include encrypted identifiers of a DJI low-altitude aircraft. Thus, the "*radio communication module*" of at least a DJI low-altitude aircraft detected, tracked, and/or controlled by, e.g., DedroneBeyond, "*is configured to utilize a secure identifier*."

Dedrone Officially Launches DedroneTracker.AI 6.0!

We are excited to announce the general availability of our latest major release v6.0 of DedroneTracker – now named DedroneTracker.AI. We have officially taken the DedroneTracker.AI platform to the next level!

In this blog, we offer a summary of what makes this release standout above and beyond the many general usability, security, and system stability improvements. All new capabilities in DedroneTracker.AI version 6.0 include:

- Risk Intelligence
- Built-in Mitigation Workflow
- Alert Consolidation
- Enhanced Map Display Options
- Full DJI Decoding Support – including Lightbridge

5. Full DJI Decoding Support – including Lightbridge

The RF DedroneSensor now has a new DJI LightBridge detector (requires DedroneDNA v6.0) to detect DJI LightBridge drones live with all details including GPS position, drone's home position, and more. Other important and noteworthy improvements of the RF DedroneSensor include:

- Reduced scanning time
- Improved Wi-Fi localization
- Expanded DJI drone library
- Improved drone tracking
- Enhanced DroneID decoding
- New RF detectors
- Enhanced OcuSync DroneID detection

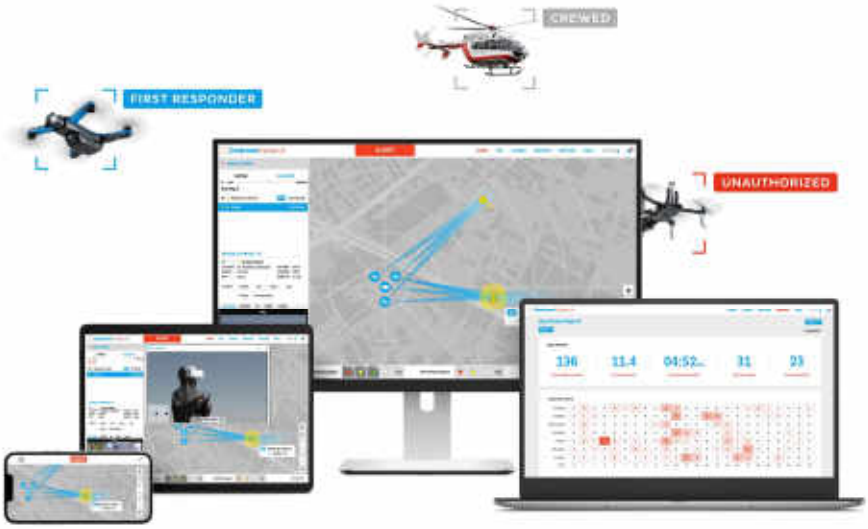
https://www.dedrone.com/blog/the-release-of-dedronetracker-ai-6-0

G. Claim Element [21.f]

88. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the '959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, low-altitude aircraft that are operated with DedroneBeyond, whether by Dedrone or by its customers and partners, include a "*radio communication module* [*that*] *is configured for two-way communication with a remote portable*

detection system." This is because, as noted above for claim element [21.c], ¶¶ 79-80, *supra*, DedroneBeyond for example, can navigate the low-altitude aircraft, e.g., cause it to fly to and hover over the location of a target (such as an accident, crime, or fire scene), or avoid a target such as a bird or another airborne vehicle. To this end, the radio communication module aboard the low-altitude aircraft is "*configured for two-way communication with a remote portable detection system*."

89. In particular, the communication module can transmit the low-altitude aircraft ID, as discussed for the preamble of claim 21 [21.pre] and claim elements [21.a]-[21.d], ¶¶ 66-85, *supra*. Moreover, as discussed for claim element [21.c], ¶¶ 79-80, *supra*, that communication module is configured to comply with FAA regulations relating to transmission of identification information associated with the low-altitude aircraft, and also navigate the low-altitude aircraft, e.g., cause it to hover over the location of a target (such as an accident, crime, or fire scene), or avoid a target such as a bird or another airborne vehicle. DedroneBeyond installed in and/or operating with, e.g., DedroneTactical, is used to send the required navigation signals. As such, the communication module aboard a low-altitude aircraft operated using DedroneBeyond is "*configured for two-way communication with"* DedroneBeyond, which comprises "*a remote portable detection system*."



The World's Leading Airspace Security Solution Is Trusted By

https://www.dedrone.com/solutions/dedrone-beyond

Dedrone Announces DedroneBeyond To Enable Scalable Drones as First Responder Operations in Partnership with Axon Air

STERLING, Va., October 12, 2023-- Dedrone, the global leader in airspace security, today announced the launch of DedroneBeyond, its solution to enable drone operations to fly beyond visual line of sight (BVLOS) for state, local, territorial and tribal (SLTT) law enforcement and emergency services when deploying drone as first responders (DFR). Powered by the same computer-vision-enabled, sensor-fusion AI that currently protects over 500 sites around the world, DedroneBeyond delivers complete airspace situational awareness. This solution is being developed and tested in partnership with others, including Axon Air powered by DroneSense, for safe drone operation, providing an infrastructure for the positive drone economy to emerge.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

DedroneTracker.AI Version 6.0 also delivers a comprehensive list of US government CsUAS pre-configured integrations, enabling any government customer to rapidly field a "System-Of-Systems" capability with DedroneTracker.AI as the Single Pane of Glass for complex CsUAS systems. Version 6.0 also includes bi-directional integration between the DedroneTracker.AI platform and the Aerial Armor software platform, representing the first step in complete integration between Dedrone and the recently purchased Aerial Armor. In advance of Federal Aviation Administration (FAA) regulations requiring the use of Remote ID enabled drones or broadcast modules becoming effective in September 2023, the new version of DedroneTracker.AI supports the latest US, EU, and Japanese Remote ID standards, and offers improved integration and consolidation of Remote ID detections with non-Remote ID detections.

https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

While the recent Federal Aviation Administration (FAA) implementation of Remote Identification, also known as "Remote ID" regulations is a step in the right direction. Remote ID helps to provide security teams with detailed information, including the drone's serial number, pilot's registration number, and location. This data empowers companies and law enforcement agencies to efficiently target and address unauthorized flights. The information can be easily integrated into the Dedrone system, allowing known friendly drones to operate without triggering an alert (whitelisting), while additional Remote ID data enables users to better assess potential risks posed by unknown drones.

Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

Does Remote ID ensure safe skies?

Not on its own. Remote ID is a significant step in creating safer airspaces, but despite the clear advantages of standard Remote ID over nothing at all, it is vital to acknowledge its two key limitations.

While Remote ID regulations are a necessary first step in enhancing drone accountability, they are insufficient for comprehensive airspace security. Criminal elements are unlikely to adhere to these rules, rendering a Remote ID-only detection system inadequate. Dedrone's proactive airspace monitoring system does not rely on pilot compliance, and presents a more robust and effective approach to airspace security, as it can detect all drones in the vicinity whether they are with or without ID active Remote ID broadcast modules.

https://www.dedrone.com/drone-remote-id

Moving forward, most drones will need to continuously transmit its "license plate," which, in turn, links the drone to an owner/operator, transmits its position (longitude, latitude, and altitude), and other operational data, including the position of its controller/pilot.

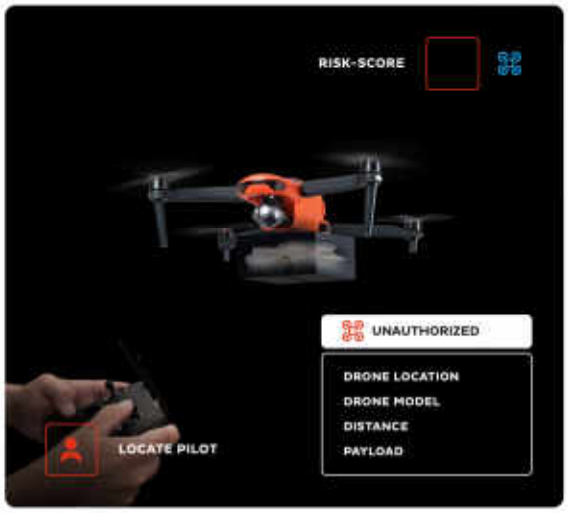
https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration

Smart Airspace Security and Drone Detection Software

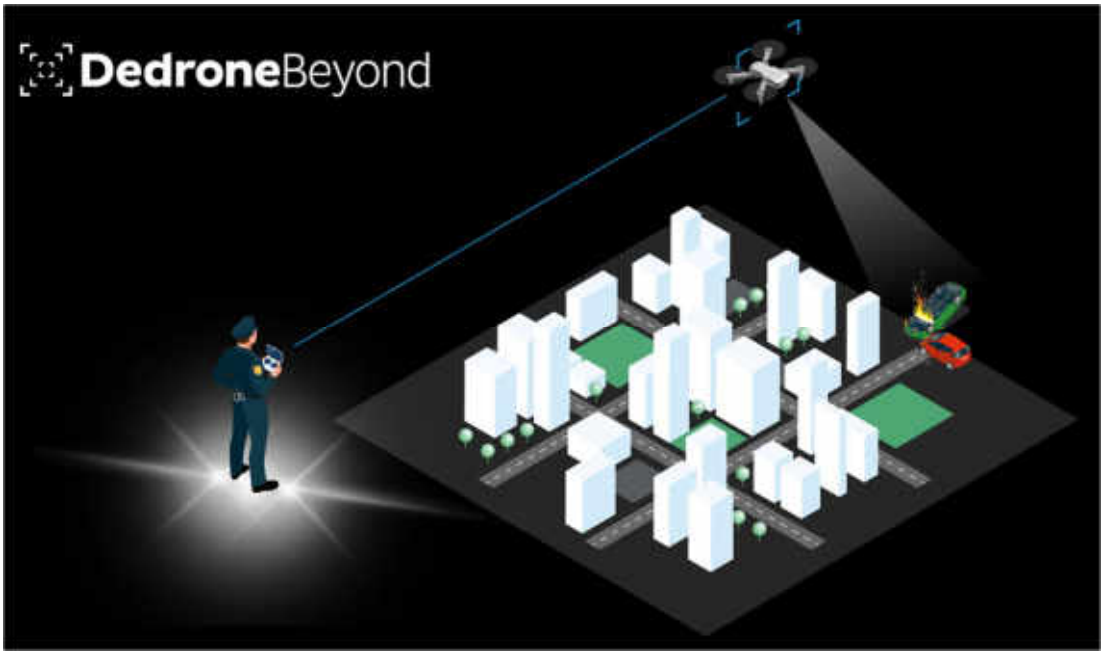
DedroneTracker.AI is the world's leading smart airspace security software. At the core of Dedrone's comprehensive solution is DedroneTracker.AI. This powerful detection software utilizes input from various sensors to detect the presence of a drone, and determine drone and pilot location. Sensors include:

- Radio frequency (RF)
- Radar
- Video
- Acoustics

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.



https://www.dedrone.com/products/drone-detection-software



Safely Enable Drones to Fly Beyond Visual Line of Sight (BVLOS)

Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.

https://www.dedrone.com/solutions/dedrone-beyond

H. Claim Element [21.g]

90. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the '959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, low-altitude aircraft that are operated with DedroneBeyond, whether by Dedrone or by its customers and partners, include a "*device* [*that is*] *coupled to the low-altitude aircraft*." This is because, as discussed above for claim 21, preamble [21.pre] and claim elements [21.a]-[21.c], ¶¶ 66-80, *supra*, the claimed "*device*" includes the claimed "*radio frequency antenna*" and the claimed "*communication module*" that are aboard the low-altitude aircraft. As such, "*the device is coupled to the low-altitude aircraft*."

Who must transmit Remote ID?

Starting December 16, 2022, all new drone manufacturers were required, by the FAA, to equip their drone with a standard Remote ID "beacon".

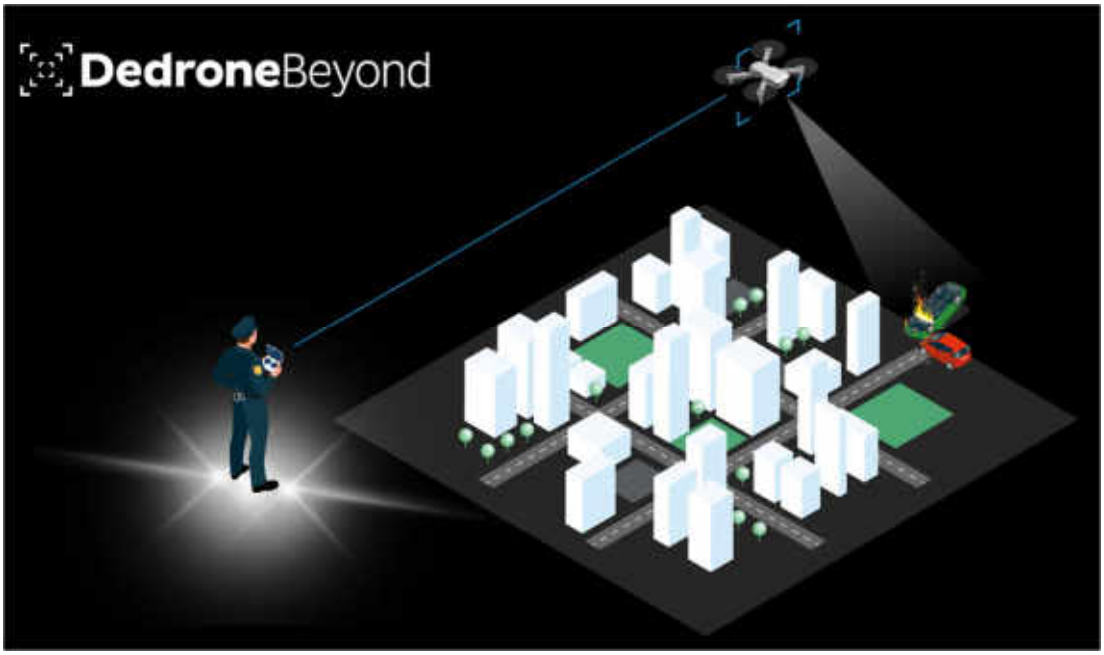
The FAA will be enforcing Remote ID on all drones that are equipped with a RemoteID beacons. For older drones that are not already equipped with a broadcasting beacon, operators have until March 16, 2024 to equip their older drones with the broadcasting module. All Uncrewed Aerial Systems (UAS / aka drones) already equipped with the Remote ID braodcasting beacon must be transmitting. This regulation applies to any drone over 250 grams and all non-recreational drones, even if the drone is under the weight limit. Similarly, pilots who want to operate recreational drones under the weight limit do not have to register their drone nor have their drone broadcast a remote identification beacon.

If your drone does not have pre-built-in standard Remote ID capabilities, a pilot can simply affix a piece of hardware called a "broadcast module" to the UAS, to ensure FAA compliance.

https://www.dedrone.com/drone-remote-id

I. Claim Element [21.h]

91. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 21 of the ’959 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because, *inter alia*, DedroneBeyond, individually or with, e.g., DedroneTactical, comprises “*the remote portable detection system* [*that*] *includes a user interface configured to provide to a user, information associated with a plurality of different low-altitude aircrafts detected by the remote portable detection system.*” This is because, e.g., DedroneBeyond, is a handheld device that includes one or more display screens that display / report information about a plurality of tracked and/or navigated low-altitude aircraft, i.e., the claimed “*user interface*.”



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https://www.dedrone.com/solutions/dedrone-beyond

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

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https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain

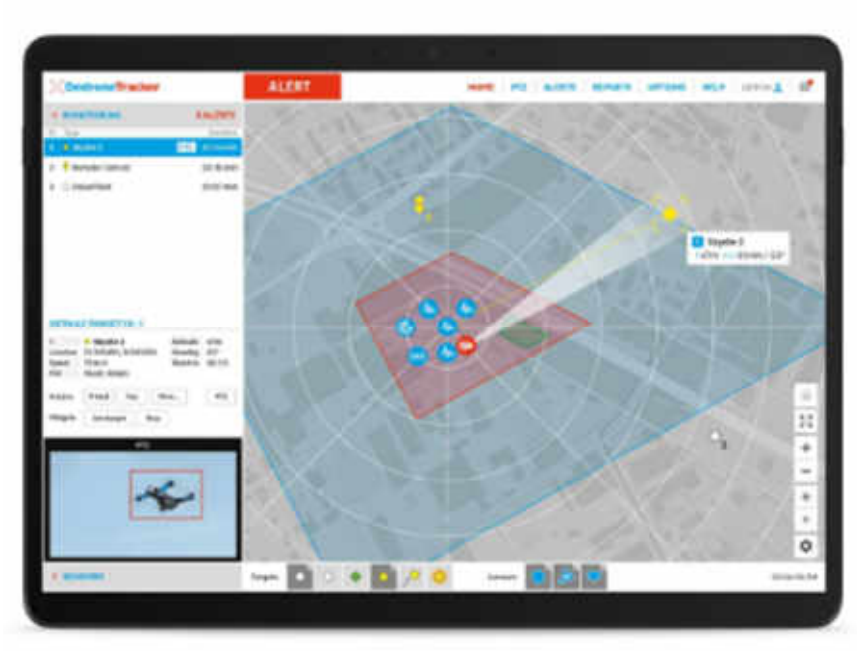
Dedrone First to Offer Both United States and European Union Drone Remote ID Capability

FEBRUARY 2, 2021

Dedrone, the market leader in airspace security, now enables their customers to leverage both U.S. and E.U. government-provided drone remote identification standards, commonly known as Remote ID, to identify drones.

https://www.dedrone.com/press/dedrone-first-to-offer-both-united-states-and-european-union-drone-remote-id-capability

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.



https://www.dedrone.com/products/drone-detection-software

Dedrone to Test its Technology Protecting Military Installations from Adversarial Drones

https://www.dedrone.com/press/dedrone-to-test-its-technology-protecting-military-installations-from-adversarial-drones

DedroneTracker - Future Proof Drone Detection

DedroneTracker.AI is a multi-sensor (RF, PTZ, radar) and countermeasure (jammer) platform that is scalable and customizable for any on-site requirements. DedroneTracker.AI can be cloud-managed or a hosted on-prem solution.

DedroneTracker.AI seamlessly integrates with a variety of sensing and threat mitigation technologies, enabling users to customize their platform and meet their specific needs and threat level.

https://www.dedrone.com/solutions

Smart Airspace Security and Drone Detection Software

DedroneTracker.AI is the world's leading smart airspace security software. At the core of Dedrone's comprehensive solution is DedroneTracker.AI. This powerful detection software utilizes input from various sensors to detect the presence of a drone, and determine drone and pilot location. Sensors include:

- Radio frequency (RF)
- Radar
- Video
- Acoustics

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.

Reporting and Forensic Evidence

A combination of forensic data is automatically captured by DedroneTracker.AI drone detection software including:

- Drone manufacturer
- Drone Model
- Time and length of drone activity
- Video Verification
- Flight history (including flight path)

Summary reports are automatically produced and available on-demand to easily analyze the most critical airspace security data. In short, the software can be used to detect drones in the form of a drone monitoring system and can also be used to prosecute offenders with data after the unauthorized drone has been mitigated.

https://www.dedrone.com/products/drone-detection-software

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

Why is Beyond Visual Line of Sight (BVLOS) crucial for a Drone as First Responder (DFR) program?

Beyond Visual Line of Sight (BVLOS) is crucial for a DFR program because it allows drones to operate beyond the operator's direct line of sight. This capability is vital for covering large areas rapidly, reaching incident scenes faster, and providing continuous situational awareness, which enhances the effectiveness and efficiency of emergency response efforts. BVLOS enables drones to deliver real-time data and aerial views, even when the operator is not near the incident location.

https://www.dedrone.com/solutions/dedrone-beyond

To fly a drone BVLOS in the United States, the Federal Aviation Administration (FAA) must issue a certificate of authorization (COA)to the end user. To acquire a COA, an agency must show that its technology can reliably detect other aircraft to prevent mid-air collisions. DedroneBeyond layers Automatic Dependent Surveillance-Broadcast (ADS-B) detection into Dedrone's existing premier detection and sensor-fusion technologies, technologies that have placed the company in a global leadership position for airspace security. By using a drone to assess a situation, law enforcement agencies can respond faster and be more resource efficient.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

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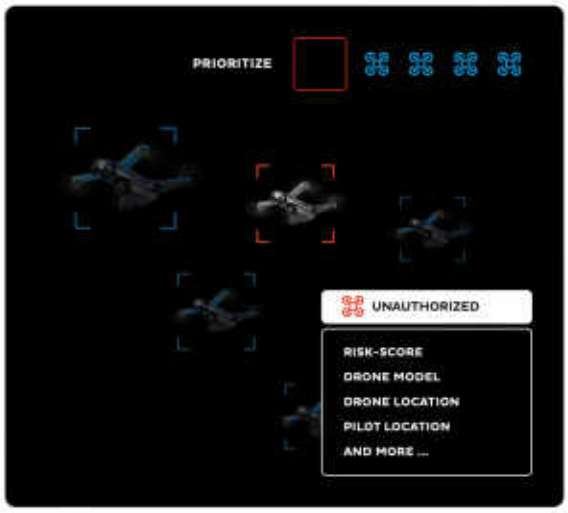
Multiple Drone Detection Capabilities

DedroneTracker.AI can detect, track and identify multiple drones at once. The drone detection application can categorize friendly drones and only prioritize and show the flight path for unauthorized drones to stay one step ahead in the face of complex scenarios like drone swarms.

CONTACT US



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Summary reports are automatically produced and available on-demand to easily analyze the most critical airspace security data. In short, the software can be used to detect drones in the form of a drone monitoring system and can also be used to prosecute offenders with data after the unauthorized drone has been mitigated.

CONTACT US

https://www.dedrone.com/products/drone-detection-software

92. Dedrone has been aware of the ’959 patent from multiple communications, presentations, and licensing negotiations between Airspace and Dedrone between at least 2020 and 2024.

93. Dedrone knew or should have known that Dedrone’s actions infringe one or more of the claims of the ’959 patent because Dedrone has the technical expertise to understand the scope and content of the ’959 patent, because Dedrone is an experienced provider of counter-drone technology, and because Dedrone knows the design, function, and operation of one or more Accused Products, e.g., DedroneBeyond. At a minimum, Dedrone has knowledge of the ’959 patent at least as of the filing of this Complaint.

94. Further, upon information and belief, Dedrone has actively induced and/or contributed to infringement of at least claim 21 of the ’959 patent in violation of at least 35 U.S.C. § 271(b) and (c).

95. Users of, e.g., DedroneBeyond, directly infringe at least claim 21 of the ’959 patent when they use DedroneBeyond in the ordinary, customary, and intended way.

96. On information and belief, Dedrone’s inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use, e.g., DedroneBeyond, within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying, e.g., DedroneBeyond, to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use, e.g., DedroneBeyond, in the ordinary, customary, and intended way by activities related to selling, marketing, advertising, promotion, support, and distribution of, e.g., DedroneBeyond, which Dedrone knew infringe at least claim 21 of the ’959 patent, or, alternatively, was willfully blind to the infringement.

97. On information and belief, Dedrone’s inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Dedrone’s customers to commit acts of infringement with respect to, e.g., DedroneBeyond, within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, other otherwise commit acts of infringement with respect to, e.g., DedroneBeyond, in the United States by activities related to selling, marketing, advertising, promotion, support, and distribution of, e.g., DedroneBeyond, which Dedrone knew infringe at least claim 21 of the ’959 patent, or, alternatively, was willfully blind to the infringement. Defendant’s inducement includes directions or instructions provided by Dedrone with, e.g., DedroneBeyond, including those identified in the following links, the provision of which is ongoing as of the filing of this Complaint and the content of which is specifically illustrated above:

- https://www.dedrone.com/solutions/dedrone-beyond
- https://www.dedrone.com/products/drone-detection/rf-sensors/rf-300
- https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air
- https://www.dedrone.com/press/dedrone-launches-dedronetracker-ai-the-ai-driven-command-and-control-platform-enabling-the-complete-counterdrone-kill-chain
- https://www.dedrone.com/drone-remote-id
- https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration
- https://www.dedrone.com/products/drone-detection-software
- https://www.dedrone.com/solutions
- https://www.dedrone.com/press/dedrone-first-to-offer-both-united-states-and-european-union-drone-remote-id-capability
- https://www.dedrone.com/blog/dedrone-first-to-offer-compliance-with-u-s-and-e-u-standards-for-remote-id-integration
- https://www.dedrone.com/blog/the-release-of-dedronetracker-ai-6-0

98. On information and belief, in violation of 35 U.S.C. § 271(c), Dedrone's contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least claim 21 of the '959 patent, constituting a material part of the invention. On information and belief, Dedrone knows and has known the same to be especially made or especially adapted for use in an infringement of the '959 patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

99. Dedrone is not licensed or otherwise authorized to practice the claims of the '959 patent.

100. Thus, as a result of its acts, Dedrone has injured Airspace and is liable to Airspace for directly and/or indirectly infringing one or more claims of the '959 patent, whether literally or under the doctrine of equivalents, including without limitation claim 21.

101. As a result of Dedrone's infringement of the '959 patent, Airspace has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to compensate for Dedrone's infringement, but in no event less than a reasonable royalty with interest and costs.

102. On information and belief, in addition to Dedrone's knowledge of the '959 patent as set forth above both prior to and as a result of the filing of this Complaint, Dedrone has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement of, alternatively, through tis willfully blind disregard of the '959 patent by knowing that there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Dedrone aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '959 patent. On information and belief, discovery will reveal additional facts and circumstances from which Dedrone's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

103. Accordingly, Dedrone's infringement of the '959 patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damaged and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

104. Dedrone's infringement of Airspace's rights under the '959 patent will continue to damage Airspace, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

COUNT III

(Dedrone's Infringement of United States Patent No. 10,514,711)

105. Paragraphs 1-104 are reincorporated by reference as if fully set forth herein.

106. The claims of the ’711 patent are directed to patent eligible subject matter. Particularly, the ’711 patent claims and teaches, *inter alia*, a new and improved way for reference aerial vehicles (also referred to as unmanned aerial vehicles (UAVs), unmanned aircraft systems (UASs), aerial systems, aerial vehicles, low-altitude aircraft, autonomous robotic systems (ARSs), or drones), that are beyond the visual line of sight of a user operating the reference aerial vehicle, to perform flight operations in response to targets it detects that mandate such operations. Reference aerial vehicles increasingly need to operate out of view of their operator and thus to operate autonomously.

107. The claimed invention provides a new and improved way for reference aerial vehicles to operate autonomously by the utilization of computer instructions stored on a non-transitory medium on the reference aerial vehicle that receive an image captured by image sensors on the reference aerial vehicle and identify a target within the image using a machine learning model. With this information, the system can determine the relative three-dimensional location of the target in space as compared to the location of the reference aerial vehicle, including determining a distance to the target based at least in part on the size of the target in the image. The system then directs the reference aerial vehicle to perform a flight operation in relation to the relative location of the target, including by adjusting speed relative to the target based on the location and current flight direction of the target.

108. The Airspace inventions represent a significant improvement over the then existing technology, as given the limited compute budget available onboard a reference aerial vehicle and the negative correlation between the robustness of a BVLOS flight control algorithm on the one hand, and the cost and latency of that algorithm per spacio-temporal frame it receives from its cameras or other sensors on the other (which is especially pronounced when the

reference aerial vehicle is trying to maneuver relative to another flying object), reference aerial vehicles were not previously able to reliably operate beyond the visual line of sight of the operator. Given the increased prevalence of reference aerial vehicles, including for use by law enforcement and emergency services to be first on scene to guide emergency response, the Airspace invention addressed a critical need for reference aerial vehicles to be able to operate autonomously outside the visual line of sight of their operators.

109. More specifically, the claims of the ’711 patent include a computer program product for performing a flight control operation of a reference aerial vehicle, embodied in a non-transitory computer readable storage medium and comprising computer instructions for: receiving an image captured by an image sensor of the reference aerial vehicle; detecting a target in the image including by applying a machine learning model to the image to identify a portion of the image that includes the target; determining a three-dimensional relative location of the target with respect to the reference aerial vehicle based on the image including by determining a distance to the target based at least in part on a size of the target detected within the image; and performing the flight control operation based on the three-dimensional relative location of the target with respect to the reference aerial vehicle, wherein performing the flight control operation includes determining a speed adjustment factor based on a magnitude of deviation of a direction of the three-dimensional relative location with respect to a current flight direction of the reference aerial vehicle.

110. The system covered by the claims, therefore, differs markedly from the prior systems in use at the time of the invention in that the invention allowed reference aerial vehicles to implement BVLOS flight control systems, notwithstanding the tight restrictions on the compute power available on drones that had caused such reference aerial vehicles to suffer from

latency that unacceptably limited the responsiveness of the previous BVLOS flight control system of the reference aerial vehicle. This in turn enabled reference aerial vehicles to operate beyond the visual line of sight of an operator where, prior to the claimed invention, reference aerial vehicles were typically operated by a human user with continuous visual line of sight to the reference aerial vehicle such that the user could fully observe the aerial maneuvering of the reference aerial vehicle.

111. The claimed invention also allowed reference aerial vehicles to operate in their intended manner even where communication with a human operator was lost, such that the reference aerial vehicle could complete a desired flight operation even where communication with a human operator is interrupted. Moreover, in the prior systems, while a user / operator may have a visual line of sight to the reference aerial vehicle, the user may not be able to see various obstacles such as other aerial vehicles and may not be able to determine whether and when a reference aerial vehicle under the user / operator's control may collide with another airborne object such as another aerial vehicle that can be manned or unmanned, or a bird. The systems disclosed and claimed in the '711 patent facilitate detection and avoidance of such obstacles, increasing the safety of both the reference aerial vehicle of intertest and other airborne objects.

112. Thus, the claims of the '711 patent focus on a specific method and aerial vehicle that improves the relevant technology for effectively detecting and avoiding objects while in flight and/or reaching a specified destination of interest. Various claimed features, including but not limited to "detecting a target in the image including by applying a machine learning model," "determining a three-dimensional relative location of the target with respect to the reference aerial vehicle," and "performing the flight control operation" are neither laws of nature nor a

mental process. These claims are not directed to a result or effect that can be characterized as an abstract idea, and the claim elements do not employ generic processes and/or machinery merely to implement such an idea. Rather, these claims are directed to achieve an improvement in the above-described technology and technical field. At least for these reasons, these claims are patent eligible.

113. Dedrone has directly and indirectly infringed, and continues to directly and indirectly infringe, literally and/or by the doctrine of equivalents, at least claim 20 of the ’711 patent, annotated and reproduced below, by making, using, selling, offering for sale, and/or importing into the United States one or more Accused Products, e.g., DedroneBeyond. The following demonstration of infringement of the ’711 patent by DedroneBeyond is exemplary:

No.	Claim Element
20.pre	A computer program product for performing a flight control operation of a reference aerial vehicle, the computer program product being embodied in a non-transitory computer readable storage medium and comprising computer instructions for:
20.a	receiving an image captured by an image sensor of the reference aerial vehicle;
20.b	detecting a target in the image including by applying a machine learning model to the image to identify a portion of the image that includes the target;
20.c	determining a three-dimensional relative location of the target with respect to the reference aerial vehicle based on the image including by determining a distance to the target based at least in part on a size of the target detected within the image; and
20.d	performing the flight control operation based on the three-dimensional relative location of the target with respect to the reference aerial vehicle, wherein performing the flight control operation includes determining a speed adjustment factor based on a magnitude of deviation of a direction of the three-dimensional relative location with respect to a current flight direction of the reference aerial vehicle.

A. Claim 20, Preamble [20.pre]

114. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 20 of the ’711 patent by making, using, selling, offering for sale, and/or importing into the United States one or more Accused Products, e.g., DedroneBeyond, because DedroneBeyond, and/or reference aerial vehicles used by Dedrone and/or its customers and partners with DedroneBeyond, comprise *inter alia*, “*[a] computer program product for performing a flight control operation of a reference aerial vehicle, the computer program product being embodied in a non-transitory computer readable storage medium and comprising computer instructions*.” For example, Dedrone directly practices this claim element when it makes, uses, sells, tests, trains, and/or trains using DedroneBeyond, using reference aerial vehicles the operation of which is controlled, at least in part, by DedroneBeyond.

https://www.dedrone.com/solutions/dedrone-beyond

DedroneSensor RF-300

The DedroneSensor RF-300 is a passive, network-attached radio sensor for the detection, classification, and direction finding (geolocation) of drones and their remote controls. The DedroneSensor detects consumer, commercial, and hobbyist drones.

Through internal digital signal processing of radio signals, the DedroneSensor RF-300 identifies the direction and in combination with one or more DedroneSensor RF-300 determines the position of signals from drones and pilots.

BENEFITS

- RF-based localization finds drones and pilots
- Automatically tracks and plots flight and pilot position on map
- Provides information on "hotspots" of drone activity

https://www.dedrone.com/products/drone-detection/rf-sensors/rf-300

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air

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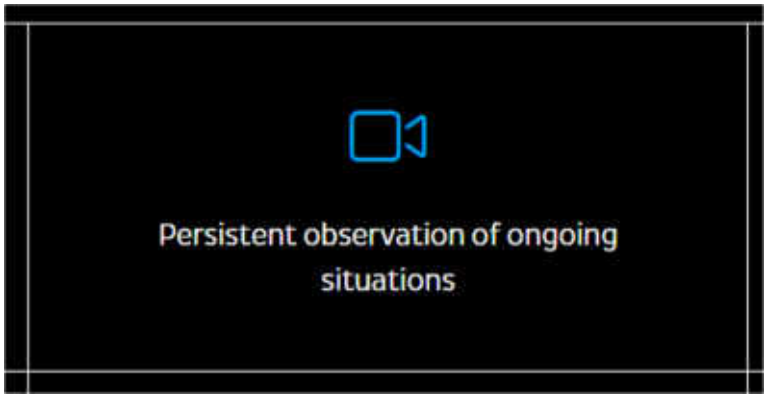

https://www.dedrone.com/solutions/dedrone-beyond

Why is Beyond Visual Line of Sight (BVLOS) crucial for a Drone as First Responder (DFR) program?

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What are the benefits of using DedroneBeyond for public safety agencies?

DedroneBeyond enables faster response times, persistent observation, and improved situational awareness for police and fire departments, optimizing resources and ensuring efficient emergency responses.

How does DedroneBeyond ensure safety for DFR operations?

DedroneBeyond uses advanced AI, machine learning, and sensor fusion to detect and avoid other aircraft, allowing drones to operate BVLOS without visual observers, enhancing the safety and effectiveness of first responders.

How does DedroneBeyond assist in crash and crime scene management?

DedroneBeyond allows drones to quickly reach crash and crime scenes, providing critical incident overwatch and real-time data, aiding first responders in assessing the situation and coordinating their response more effectively.

What role does DedroneBeyond play in firefighting?

In firefighting, DedroneBeyond-enabled drones can assess fire scenes from the air, identify hotspots, and support firefighters with real-time aerial views, improving safety and efficiency in fire suppression efforts.

https://www.dedrone.com/solutions/dedrone-beyond

Beyond Visual Line of Sight (BVLOS)

Drones have the potential to revolutionize industries such as public safety, search and rescue, construction, and more. By allowing drones to fly Beyond Visual Line of Sight (BVLOS), their capabilities can be fully utilized. This is particularly important for use cases requiring drones to operate miles from the launch site. The Federal Aviation Administration (FAA) regulations require waivers for these types of drone flights to ensure safety measures are in place to prevent uncontrolled flying that jeopardizes lives and vital infrastructure. This BVLOS waiver enables drones to coexist safely with airplanes without midair collisions and that risks to people and property on the ground are minimized. DedroneTracker.AI offers the technology and capabilities to address these challenges, enabling drones to go beyond the visual line of sight and revolutionize industries.

https://www.dedrone.com/products/drone-detection-software

Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.

https://www.dedrone.com/solutions/dedrone-beyond

115. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond, with reference aerial vehicles, for testing, training, and/or training using, and/or for on-going use of, e.g., DedroneBeyond. Each such reference aerial vehicle uses DedroneBeyond to perform BVLOS flight operations of the reference aerial vehicle, including but not limited to aerial vehicles operated by Dedrone partner Axon. The software used by and/or included with, e.g., DedroneBeyond, is provided as stored on "*a non-transitory*

computer readable storage medium," and includes computer program code, i.e., "*instructions,*" to facilitate BVLOS flight control.

STERLING, Va., October 12, 2023-- Dedrone, the global leader in airspace security, today announced the launch of DedroneBeyond, its solution to enable drone operations to fly beyond visual line of sight (BVLOS) for state, local, territorial and tribal (SLTT) law enforcement and emergency services when deploying drone as first responders (DFR). Powered by the same computer-vision-enabled, sensor-fusion AI that currently protects over 500 sites around the world, DedroneBeyond delivers complete airspace situational awareness. This solution is being developed and tested in partnership with others, including Axon Air powered by DroneSense, for safe drone operation, providing an infrastructure for the positive drone economy to emerge.

"Eliminating the need for human visual observers is the key to unlocking the value of DFR and bringing its benefits to a larger number of communities," said Aydin Ghajar, General Manager of Axon Air. "We're incredibly excited to add DedroneBeyond to the Axon Air offering and the value it can bring in combination with all the hardware, software, and professional services we offer to agencies to operate a lifesaving drone program successfully."

To fly a drone BVLOS in the United States, the Federal Aviation Administration (FAA) must issue a certificate of authorization (COA)to the end user. To acquire a COA, an agency must show that its technology can reliably detect other aircraft to prevent mid-air collisions. DedroneBeyond layers Automatic Dependent Surveillance-Broadcast (ADS-B) detection into Dedrone's existing premier detection and sensor-fusion technologies, technologies that have placed the company in a global leadership position for airspace security. By using a drone to assess a situation, law enforcement agencies can respond faster and be more resource efficient.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

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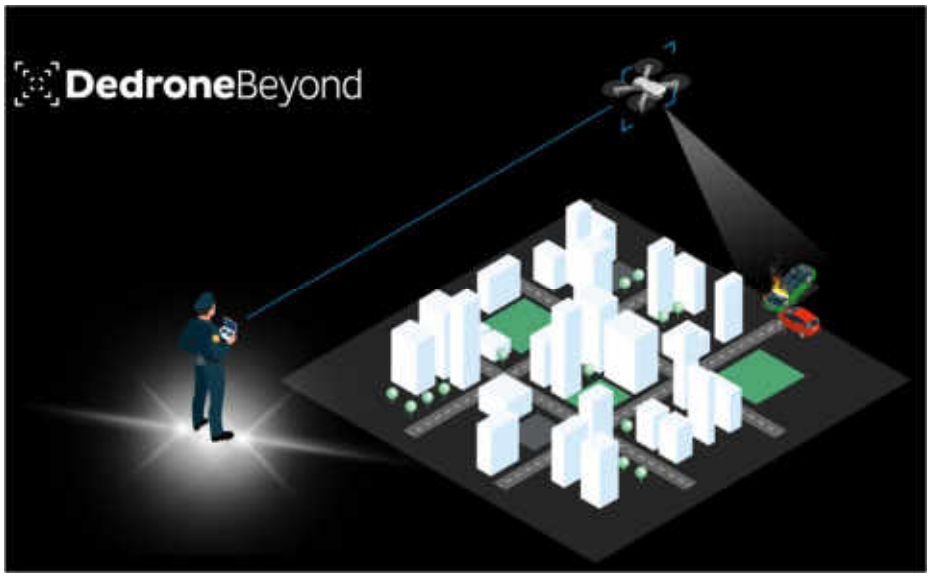

Safely Enable Drones to Fly Beyond Visual Line of Sight (BVLOS)

Dedrone to Test its Technology Protecting Military Installations from Adversarial Drones

https://www.dedrone.com/press/dedrone-to-test-its-technology-protecting-military-installations-from-adversarial-drones

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How does DedroneBeyond ensure safety for DFR operations?

DedroneBeyond uses advanced AI, machine learning, and sensor fusion to detect and avoid other aircraft, allowing drones to operate BVLOS without visual observers, enhancing the safety and effectiveness of first responders.

https://www.dedrone.com/solutions/dedrone-beyond

Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.

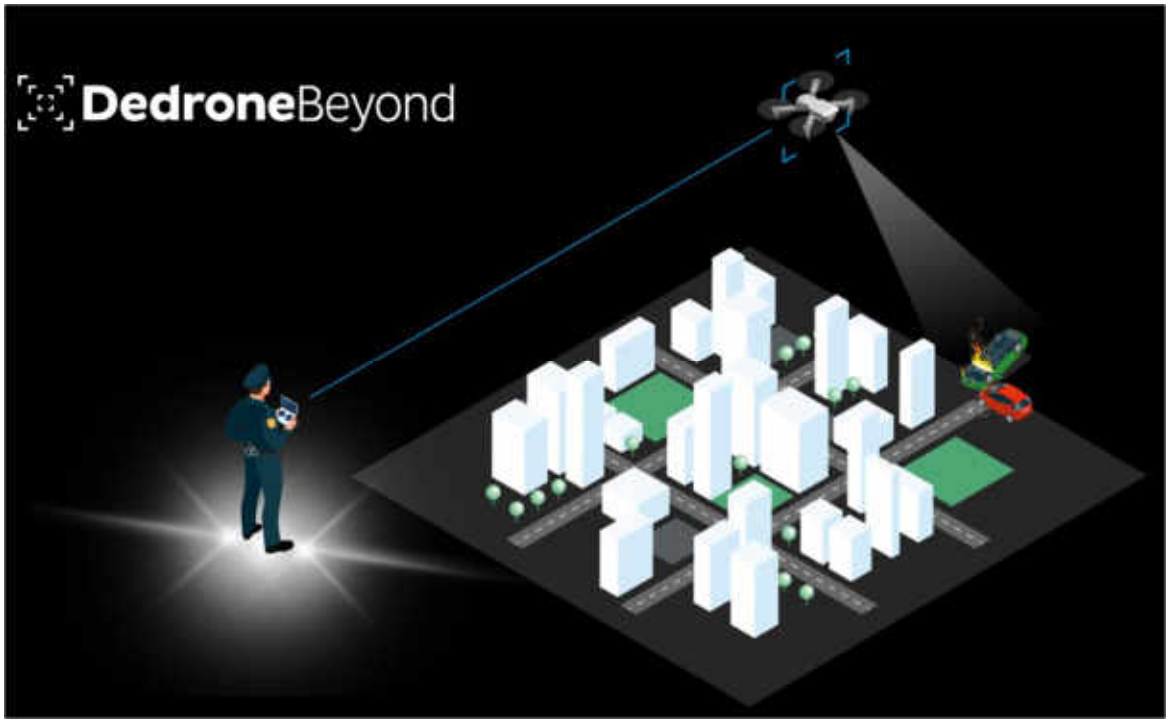
https://www.dedrone.com/solutions/dedrone-beyond

B. Claim Element [20.a]

116. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 20 of the '711 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond because DedroneBeyond, and/or reference aerial vehicles used by Dedrone or its customers and partners with DedroneBeyond, *inter alia,* "*receiv[e] an image captured by an image sensor of the reference aerial vehicle*." For example, Dedrone directly practices this claim element when it makes, uses, sells, tests, trains, and/or trains using DedroneBeyond, using reference aerial vehicles whose BVLOS operation of which is controlled, at least in part, by DedroneBeyond.

How DedroneBeyond Enables Drone as First Responder (DFR) | Dedrone

https://www.youtube.com/watch?v=E3deOz-aO94



Safely Enable Drones to Fly Beyond Visual Line of Sight (BVLOS)

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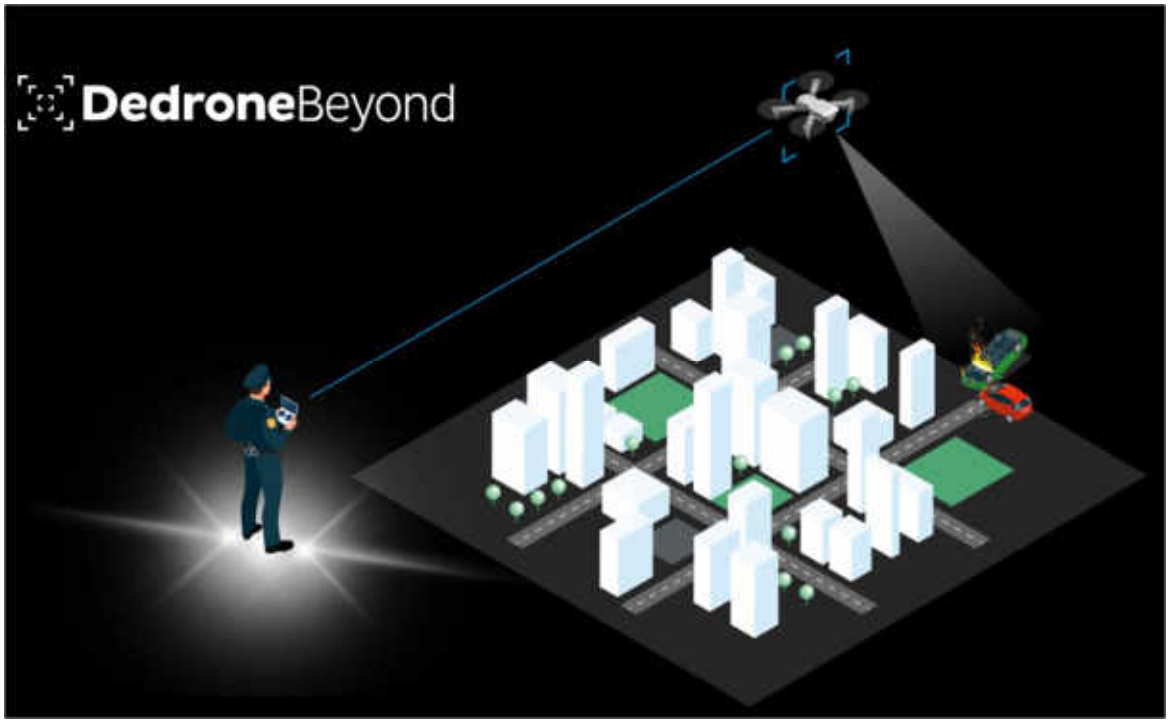
https://www.dedrone.com/solutions/dedrone-beyond

117. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond, with reference aerial vehicles for testing, training, training using, and/or for on-going use of DedroneBeyond. To perform BVLOS flight, DedroneBeyond and/or each reference aerial vehicle operated with DedroneBeyond performs "[p]ersistent observations of ongoing situations," and "intelligently identif[ies] birds, drones and crewed aircraft, even when the aircraft is non-cooperative," where these observations can be images/videos captured by a camera mounted on a reference vehicle and/or sent to DedroneBeyond. Thus, the reference aerial vehicles and/or e.g., DedroneBeyond "*receiv[e] an image captured by an image sensor of the reference aerial vehicle*."

How DedroneBeyond Enables Drone as First Responder (DFR) | Dedrone

https://www.youtube.com/watch?v=E3deOz-aO94



Safely Enable Drones to Fly Beyond Visual Line of Sight (BVLOS)

https://www.dedrone.com/solutions/dedrone-beyond

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How does DedroneBeyond ensure safety for DFR operations?

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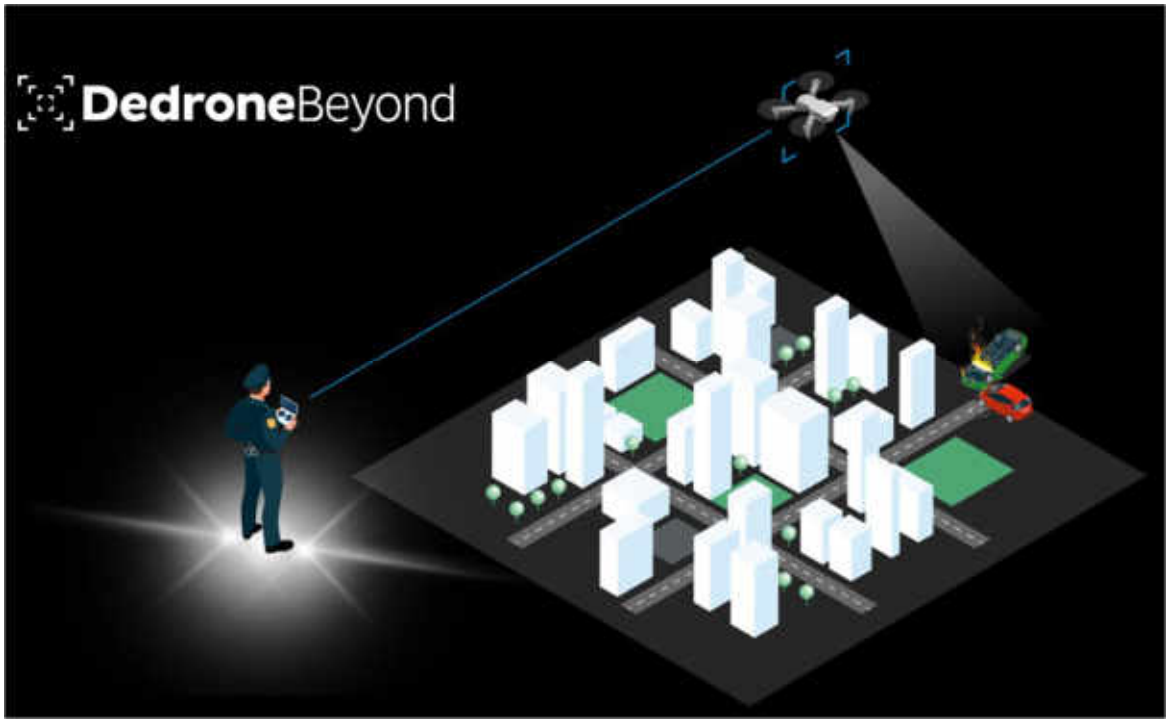
https://www.dedrone.com/solutions/dedrone-beyond

C. Claim Element [20.b]

118. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 20 of the ’711 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond because DedroneBeyond, and/or reference aerial vehicles used by Dedrone or its customers and partners with DedroneBeyond, *inter alia*, “*detect[] a target in the image including by applying a machine learning model to the image to identify a portion of the image that includes the target*.” For example, DedroneBeyond directly practices this claim element when it makes, uses, sells, tests, trains, and/or trains using DedroneBeyond, using reference aerial vehicles whose BVLOS operation of which is controlled, at least in part, by DedroneBeyond.



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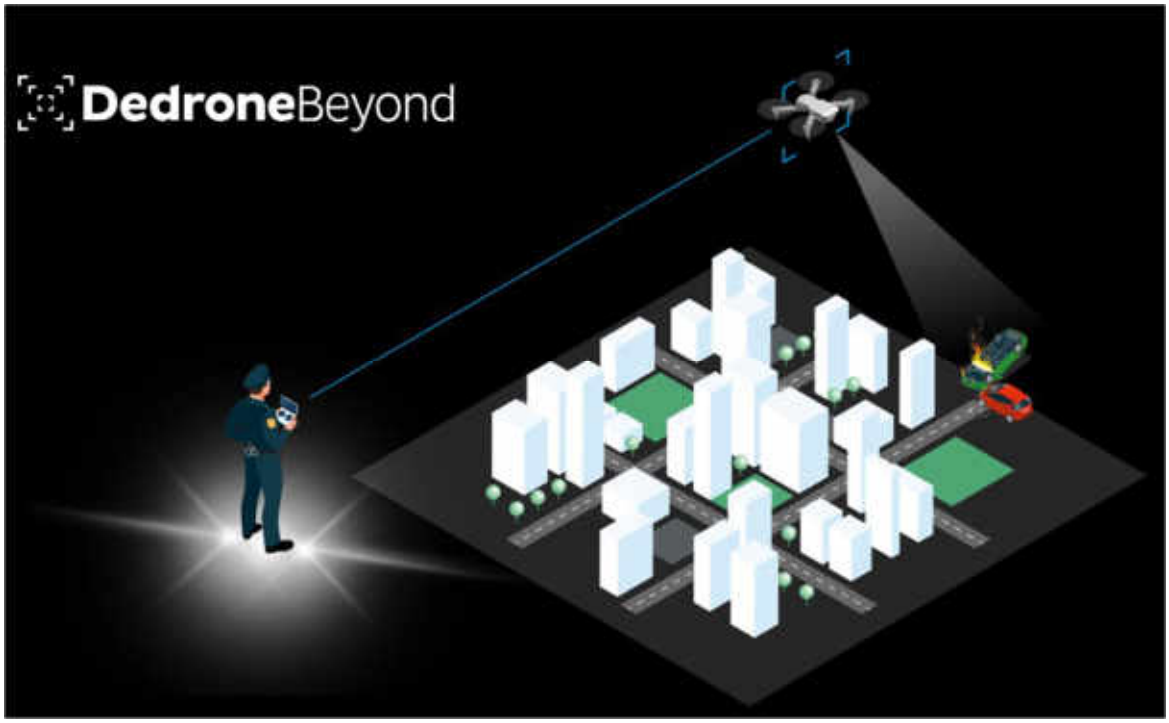
https://www.dedrone.com/solutions/dedrone-beyond

119. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond, with reference aerial vehicles, for testing, training, training using, and/or for on-going use of DedroneBeyond. Each such reference aerial vehicle uses DedroneBeyond to perform BVLOS flight operations.

120. DedroneBeyond, comprising DedroneTracker, uses AI/ML and multiple types of sensors, including vision / image sensors, to detect and avoid obstacles such as birds and other unmanned or manned aerial vehicles, where a reference aerial vehicle deployed as a first responder can reach and hover over a specified destination that may be beyond the visual line of sight from where the reference aerial vehicle was launched. Thus, reference aerial vehicles and/or DedroneBeyond "*detect[] a target in the image including by applying a machine learning model to the image to identify a portion of the image that includes the target*."



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D. Claim Element [20.c]

121. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 20 of the '711 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond, because DedroneBeyond, and/or reference aerial vehicles used by Dedrone or its customers and partners with DedroneBeyond, *inter alia*, "*determine[e] a three-dimensional relative location of the target with respect to the reference aerial vehicle*

based on the image including by determining a distance to the target based at least in part on a size of the target detected within the image."

122. The discussion above of claim element [20.b], ¶¶ 118-120, *supra*, shows that, e.g., DedroneBeyond, and/or the reference aerial vehicles operated utilizing DedroneBeyond, use video and images for BVLOS flight. DedroneBeyond also uses artificial intelligence to facilitate BVLOS flight to a target such as an accident, crime, or fire scene. Additionally, using AI/ML, DedroneBeyond can safely detect and avoid other manned or unmanned aerial vehicles and/or objects. Hovering over a target such as an accident, crime, or fire scene, and avoiding a target such as another aerial vehicle or object all entail image-based "*determining a three-dimensional relative location of the target with respect to the reference aerial vehicle*" and *"determining a distance to the target based at least in part on a size of the target detected within the image*."

> To fly a drone BVLOS in the United States, the Federal Aviation Administration (FAA) must issue a certificate of authorization (COA)to the end user. To acquire a COA, an agency must show that its technology can reliably detect other aircraft to prevent mid-air collisions. DedroneBeyond layers Automatic Dependent Surveillance-Broadcast (ADS-B) detection into Dedrone's existing premier detection and sensor-fusion technologies, technologies that have placed the company in a global leadership position for airspace security. By using a drone to assess a situation, law enforcement agencies can respond faster and be more resource efficient.
>
> DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

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Smart Airspace Security and Drone Detection Software

DedroneTracker.AI is the world's leading smart airspace security software. At the core of Dedrone's comprehensive solution is DedroneTracker.AI. This powerful detection software utilizes input from various sensors to detect the presence of a drone, and determine drone and pilot location. Sensors include:

- Radio frequency (RF)
- Radar
- Video
- Acoustics

By analyzing behavior, imagery, flight data, and more, the AI engine provides operators with a queue of risk-prioritized targets. This drone threat analysis is achieved through autonomous background interrogation of unauthorized drones, while seamlessly tracking multiple friendly drones. Dedrone has the world's largest customer base, enabling security teams, law enforcement and military professionals to protect 500+ sites from drone threats.

Counterdrone Software

DedroneTracker.AI empowers security providers to effectively address the presence of drone threats in their airspace, sending an alert directly to a security professional in the field and alerting the main security operations center. Our advanced counter-drone technology allows operators to detect drones and track, identify, and mitigate them (when legal). By utilizing data from a range of drone detection sensors, the sensor fusion engine accurately determines the precise location of both the drone and its operator. With DedroneTracker.AI, security teams can be prepared to respond to all drone threats.

CONTACT US

Beyond Visual Line of Sight (BVLOS)

Drones have the potential to revolutionize industries such as public safety, search and rescue, construction, and more. By allowing drones to fly Beyond Visual Line of Sight (BVLOS), their capabilities can be fully utilized. This is particularly important for use cases requiring drones to operate miles from the launch site. The Federal Aviation Administration (FAA) regulations require waivers for these types of drone flights to ensure safety measures are in place to prevent uncontrolled flying that jeopardizes lives and vital infrastructure. This BVLOS waiver enables drones to coexist safely with airplanes without midair collisions and that risks to people and property on the ground are minimized. DedroneTracker.AI offers the technology and capabilities to address these challenges, enabling drones to go beyond the visual line of sight and revolutionize industries.

CONTACT US

https://www.dedrone.com/products/drone-detection-software

How does DedroneBeyond ensure safety for DFR operations?

DedroneBeyond uses advanced AI, machine learning, and sensor fusion to detect and avoid other aircraft, allowing drones to operate BVLOS without visual observers, enhancing the safety and effectiveness of first responders.

https://www.dedrone.com/solutions/dedrone-beyond

Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.

https://www.dedrone.com/solutions/dedrone-beyond

123. Therefore, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneBeyond, using reference aerial vehicles the operation of which is controlled, at least in part, by DedroneBeyond. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond, with reference aerial vehicles, for testing, training, training using, and/or for on-going use of DedroneBeyond. Each reference aerial vehicle operated with DedroneBeyond uses the DedroneBeyond software

solution to perform BVLOS flight operations. Thus, the reference aerial vehicles and/or e.g., DedroneBeyond, "*determinin*[*e*] *a three-dimensional relative location of the target with respect to the reference aerial vehicle*" and *"determine*[*e*] *a distance to the target based at least in part on a size of the target detected within the image*."

> To fly a drone BVLOS in the United States, the Federal Aviation Administration (FAA) must issue a certificate of authorization (COA)to the end user. To acquire a COA, an agency must show that its technology can reliably detect other aircraft to prevent mid-air collisions. DedroneBeyond layers Automatic Dependent Surveillance-Broadcast (ADS-B) detection into Dedrone's existing premier detection and sensor-fusion technologies, technologies that have placed the company in a global leadership position for airspace security. By using a drone to assess a situation, law enforcement agencies can respond faster and be more resource efficient.
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How does DedroneBeyond assist in crash and crime scene management?

DedroneBeyond allows drones to quickly reach crash and crime scenes, providing critical incident overwatch and real-time data, aiding first responders in assessing the situation and coordinating their response more effectively.

What role does DedroneBeyond play in firefighting?

In firefighting, DedroneBeyond-enabled drones can assess fire scenes from the air, identify hotspots, and support firefighters with real-time aerial views, improving safety and efficiency in fire suppression efforts.

Our systems intelligently identify birds, drones and crewed aircraft, even when the aircraft is non-cooperative. DedroneBeyond fuses multiple sensor modalities and applies machine learning trained by years of experience in Airspace Awareness. Advanced sensor fusion, tracking, and artificial intelligence safely Detect and Avoid (DAA) crewed aircraft without unnecessarily interrupting the mission due to false alarms.

https://www.dedrone.com/solutions/dedrone-beyond

E. Claim Element [20.d]

124. Dedrone directly and indirectly (via inducement and/or contributorily) infringes claim 20 of the ’711 patent by making, using, selling, offering for sale, and/or importing into the United States, e.g., DedroneBeyond because DedroneBeyond and/or reference aerial vehicle used by Dedrone or its customers and partners with DedroneBeyond, *inter alia*, “*perform[] the flight control operation based on the three-dimensional relative location of the target with respect to the reference aerial vehicle, wherein performing the flight control operation includes determining a speed adjustment factor based on a magnitude of deviation of a direction of the three-dimensional relative location with respect to a current flight direction of the reference aerial vehicle*.”

125. The discussion above of claim element [20.b], ¶¶ 118-120, *supra*, shows that, e.g., DedroneBeyond facilitates, and/or the reference aerial vehicles operated utilizing DedroneBeyond, perform BVLOS flight operations. DedroneBeyond uses AI/ML to facilitate BVLOS flight to an accident, crime, or fire scene, and hover over such a scene, and can safely

detect and avoid during flight other manned and/or unmanned aerial vehicles and/or objects. These operations entail "*performing the flight control operation based on the three-dimensional relative location of the target with respect to the reference aerial vehicle*." These operations also entail "*performing the flight control operation includes determining a speed adjustment factor based on a magnitude of deviation of a direction of the three-dimensional relative location with respect to a current flight direction of the reference aerial vehicle*," so that the reference aerial vehicle can hover over a target, e.g., an accident, crime, or fire scene, or avoid a target, e.g., an obstacle such as a building, a bird, or another reference aerial vehicle.

To fly a drone BVLOS in the United States, the Federal Aviation Administration (FAA) must issue a certificate of authorization (COA)to the end user. To acquire a COA, an agency must show that its technology can reliably detect other aircraft to prevent mid-air collisions. DedroneBeyond layers Automatic Dependent Surveillance-Broadcast (ADS-B) detection into Dedrone's existing premier detection and sensor-fusion technologies, technologies that have placed the company in a global leadership position for airspace security. By using a drone to assess a situation, law enforcement agencies can respond faster and be more resource efficient.

DedroneBeyond joins Dedrone's suite of smart airspace security solutions, all of which leverage DedroneTracker.AI, the company's global-leading command and control (C2) airspace security platform. With sophisticated AI models, the platform performs true sensor fusion to accurately monitor a drone's flight path and behavior. Dedrone additionally offers this C2 capability across

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126. Therefore, Dedrone directly practices this claim element when it tests, trains, and/or trains using, e.g., DedroneBeyond, using reference aerial vehicles the operation of which is controlled, at least in part, by, e.g., DedroneBeyond.

127. Dedrone indirectly practices this claim element by at least inducing its customers to utilize, e.g., DedroneBeyond, with reference aerial vehicles, for testing, training, training using, and/or for on-going use of, e.g., DedroneBeyond. Each reference aerial vehicle operated with DedroneBeyond uses the DedroneBeyond software solution to perform flight BVLOS operations. Thus, the reference aerial vehicles and/or e.g., DedroneBeyond, "*perform[] the flight control operation based on the three-dimensional relative location of the target with respect to the reference aerial vehicle, wherein performing the flight control operation includes determining a speed adjustment factor based on a magnitude of deviation of a direction of the three-dimensional relative location with respect to a current flight direction of the reference aerial vehicle*."

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128. Dedrone has been aware of the ’711 patent from multiple communications, presentations, and licensing negotiations between Airspace and Dedrone between at least 2020 and 2024.

129. Dedrone knew or should have known that Dedrone’s actions infringe one or more of the claims of the ’711 patent because Dedrone has the technical expertise to understand the scope and content of the ’711 patent, because Dedrone is an experienced provider of counter-drone technology, and because Dedrone knows the design, function, and operation of one or

more Accused Products, e.g., DedroneBeyonf. At a minimum, Dedrone has knowledge of the ’711 patent at least as of the filing of this Complaint.

130. Further, upon information and belief, Dedrone has actively induced and/or contributed to infringement of at least claim 20 of the ’711 patent in violation of at least 35 U.S.C. § 271(b) and (c).

131. Users of, e.g., DedroneBeyond, directly infringe at least claim 20 of the ’711 patent when they use DedroneBeyond in the ordinary, customary, and intended way.

132. On information and belief, Dedrone’s inducements in violation of 35 U.S.C. § 271(b) include, without limitation and with specific intent to encourage infringement, knowingly inducing businesses and consumers to use, e.g., DedroneBeyond, within the United States in the ordinary, customary, and intended way by, directly or through intermediaries, supplying e.g., DedroneBeyond, to businesses and consumers within the United States, and instructing and encouraging such businesses and consumers to use e.g., DedroneBeyond, in the ordinary, customary, and intended way by activities related to selling, marketing, advertising, promotion, support, and distribution of, e.g., DedroneBeyond,, which Dedrone knew infringe at least Claim 20 of the ’ 711 patent, or, alternatively, was willfully blind to the infringement.

133. On information and belief, Dedrone’s inducements in violation of 35 U.S.C. § 271(b) further include, without limitation and with specific intent to encourage the infringement, knowingly inducing Dedrone’s customers to commit acts of infringement with respect to, e.g., DedroneBeyond, within the United States, by, directly or through intermediaries, instructing and encouraging such customers to import, make, use, sell, offer to sell, or otherwise commit acts of infringement with respect to, e.g., DedroneBeyond, in the United States by activities related to selling, marketing, advertising, promotion, support, and distribution of, e.g., DedroneBeyond,

which Dedrone knew infringe at least claim 20 of the ’711 patent, or, alternatively, was willfully blind to the infringement. Defendant’s inducement includes directions or instructions provided by Dedrone with, e.g., DedroneBeyond, including those identified in the following links, the provision of which is ongoing as of the filing of this Complaint and the content of which is specifically illustrated above:

- https://www.dedrone.com/solutions/dedrone-beyond
- https://www.dedrone.com/products/drone-detection/rf-sensors/rf-300
- https://www.dedrone.com/press/dedrone-announces-dedronebeyond-to-enable-scalable-drones-as-first-responder-operations-in-partnership-with-axon-air
- https://www.dedrone.com/products/drone-detection-software
- https://www.youtube.com/watch?v=E3deOz-aO94

134. On information and belief, in violation of 35 U.S.C. § 271(c), Dedrone’s contributory infringement further includes offering to sell or selling within the United States, or importing into the United States, components of the patented invention of and/or a material or apparatus for use in practicing at least claim 20 of the ’711 patent, constituting a material part of the invention. On information and belief, Dedrone knows and has known the same to be especially made or especially adapted for use in an infringement of the ’711 patent, and such components are not a staple article or commodity of commerce suitable for substantial noninfringing use.

135. Dedrone is not licensed or otherwise authorized to practice the claims of the ’711 patent.

136. Thus, as a result of its acts, Dedrone has injured Airspace and is liable to Airspace for directly and/or indirectly infringing one or more claims of the ’711 patent, whether literally or under the doctrine of equivalents, including without limitation claim 20.

137. As a result of Dedrone’s infringement of the ’711 patent, Airspace has suffered monetary damages, and seeks recovery, in an amount to be proven at trial, adequate to

compensate for Dedrone's infringement, but in no event less than a reasonable royalty with interest and costs.

138. On information and belief, in addition to Dedrone's knowledge of the '711 patent as set forth above both prior to and as a result of the filing of this Complaint, Dedrone has had, and continues to have, the specific intent to infringe, through its deliberate and intentional infringement or, alternatively, through its willfully blind disregard of the '711 patent by knowing that there was a high probability of infringement but taking deliberate actions to avoid confirming that infringement. The filing of this action has also made Dedrone aware of the unjustifiably high risk that its actions constituted and continue to constitute infringement of the '711 patent. On information and belief, discovery will reveal additional facts and circumstances from which Dedrone's knowledge and intent to infringe (or willful indifference), both before and after the filing of this action, may be inferred.

139. Accordingly, Dedrone's infringement of the '711 patent has also been and continues to be deliberate, intentional, and willful, and this is therefore an exceptional case warranting an award of enhanced damaged and attorneys' fees and costs pursuant to 35 U.S.C. §§ 284 and 285.

140. Dedrone's infringement of Airspace's rights under the '711 patent will continue to damage Airspace, causing irreparable harm for which there is no adequate remedy at law, unless enjoined by this Court.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment and seeks relief from Defendant as follows:

A. For judgment that Dedrone has infringed and continues to infringe the claims of the '199, '959 and '711 patents;

B. For a permanent injunction against Dedrone and its respective offers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in concert therewith from infringement of the ’199, ’959 and ’711 patents;

C. For an accounting of all damages sustained by Plaintiff as a result of Dedrone’s acts of infringement;

D. In the event Dedrone is not permanently enjoined, for a mandatory future royalty payable on each and every future sale by Dedrone of a product or service that is found to infringe one or more of the Asserted Patents and on all future products and services which are not colorably different from products and services found to infringe;

E. For a judgment and order finding that Dedrone’s infringement is willful and/or egregious and awarding to Plaintiff enhanced damages pursuant to 35 U.S.C. § 284;

F. For a judgment and order requiring Dedrone to pay Plaintiff’s damages, costs, expenses, and pre- and post-judgment interest for its infringement of the ’199, ’959 and ’711 patents as provided under 35 U.S.C. § 284;

G. For a judgment and order finding that this is an exceptional case within the meaning of 35 U.S.C. § 285 and awarding to Plaintiff its reasonable attorneys’ fees; and

H. For such other and further relief in law and in equity as the Court may deem just and proper.

DEMAND FOR JURY TRIAL

Pursuant to Rule 38(b) of the Federal Rules of Civil Procedure, Plaintiff demand a trial by jury in this action for all issues triable by a jury.

Dated: September 13, 2024

Respectfully submitted,

/s/ Craig C. Reilly

Craig C. Reilly (Va. Bar No. 20942)
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ATTORNEYS FOR AIRSPACE SYSTEMS, INC.