dronetag Helsinki

HELSINKI CASESTUDY DRONE MONITORING

Dronetag Scout Pilot Test

City of Helsinki - FINLAND
December 2024 – March 2025

Introduction

During the four-month winter trial, Scout captured 150 distinct flights, providing Helsinki with its first quantitative baseline of low-altitude drone traffic. The dataset revealed clear temporal hotspots, typical distance bands, and compliance gaps. These findings equip city stakeholders with actionable evidence for future U-space planning, targeted outreach, and regulatory enforcement.

This report summarizes the findings from a joint pilot project between Dronetag and the City of Helsinki, conducted between December 2024 and March 2025. The primary objective of this pilot was to gain operational insights into drone activity across Helsinki's urban airspace. By passively monitoring Remote ID broadcasts, the project aimed to assess the scale, behavior, and patterns of drone traffic in a real-world city environment.

The deployment used a single Dronetag Scout unit equipped with dual omnidirectional antennas, installed in a coastal area near the city center - a zone characterized by mixed-use airspace and relevant to both municipal operations and private drone activity. While the winter season saw lower-than-average drone usage due to weather, the data still offered valuable indicators of usage density, pilot behavior, and typical flight zones.

The pilot test confirmed that continuous airspace monitoring yields the essential data needed to understand real-world drone activity. Over the four-month winter trial, Dronetag Scout captured 150 distinct flights - Helsinki’s first quantitative baseline of low-altitude drone traffic. Analysis of the dataset uncovered clear temporal hotspots, typical distance bands, and notable compliance gaps, with 87 % of flights missing a UAS Operator ID. These insights equip city stakeholders with actionable evidence for future U-space planning, targeted outreach, and regulatory enforcement.

This case study is intended for municipal authorities, infrastructure operators, and aviation stakeholders seeking to better understand low-altitude drone activity and evaluate practical Remote ID detection strategies at the city level.

Key Insights from Drone Testing in Helsinki During the Winter Months

150
total flights
were detected

~2 FLIGHTS
were detected
per a winter day

Tuesdays & Wednesdays
were the days when most drone
flights were detected

8:00 & 9:00 AM
was the time when most
flights occurred

231.5 METERS
was the height reached
by the highest flight

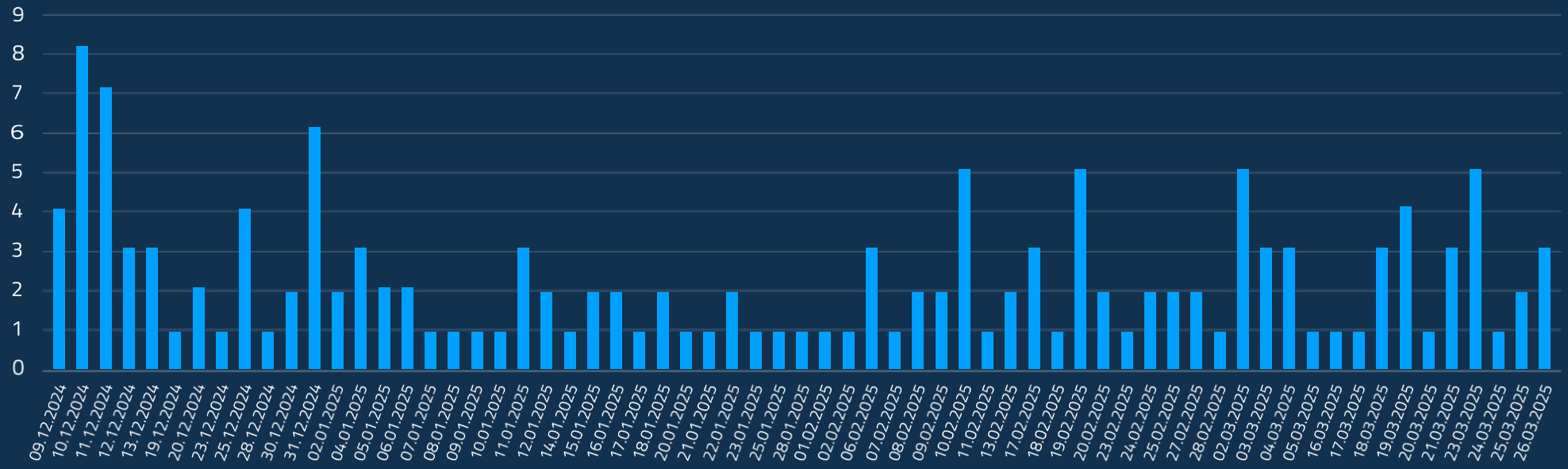
7014 METERS
from the Scout was the distance at which
the farthest flight was detected

13%
of flights were
above 120 meters

98%
of detected drones
were DJI

Overall Analysis of Drone Movement

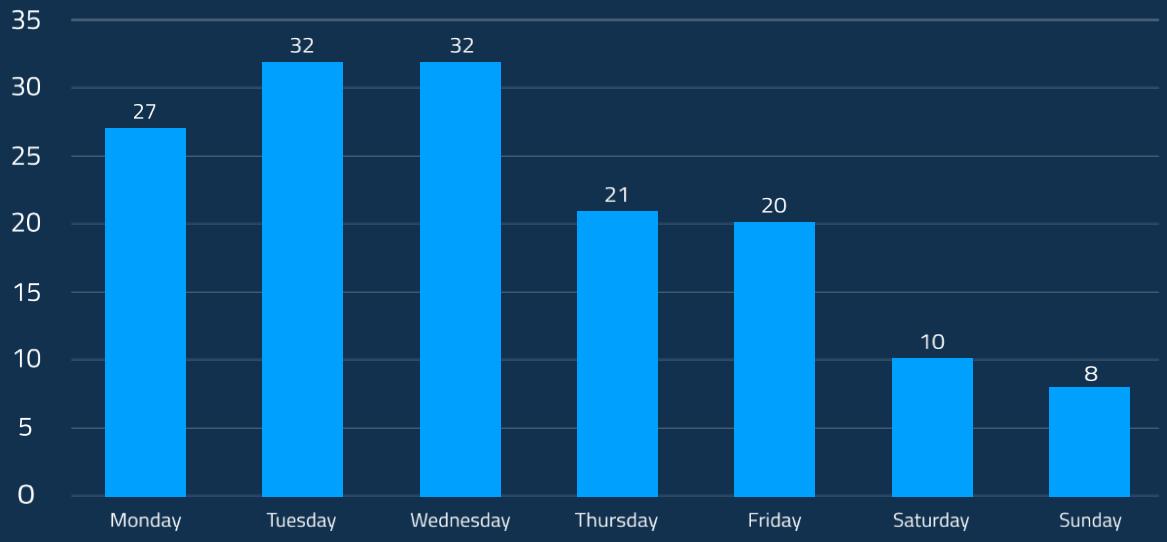
The data was collected using the Dronetag Scout for nearly four months. During this period, a total of 150 drone flights were recorded. The testing took place during the winter months, yet the average number of flights per month was 38. On average, 2 drones were detected each day. On the busiest day as many as 8 drone flights were recorded.



Number of detected flights across individual days

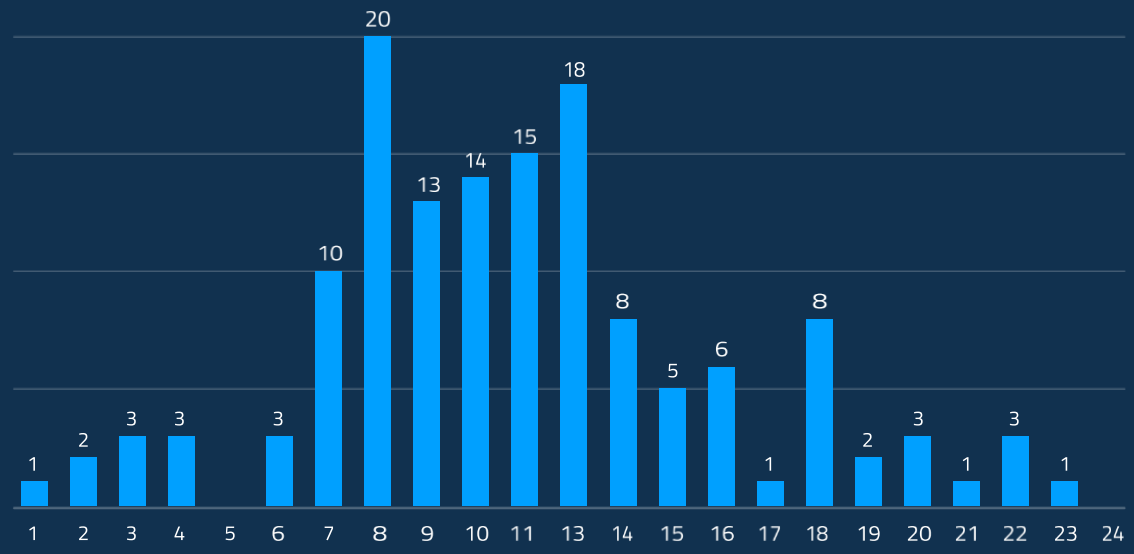
To verify the proper functionality of the Dronetag Scout, the Dronetag Beacon device was used. This device was also provided for testing purposes. The detections captured by this device were excluded from the analysis.

Busiest Days and Hours for Drone Flights



Number of detected flights across days of the week

The highest drone activity in Helsinki was observed on Tuesday and Wednesday, and the most popular time of day was between 8:00-9:00 in the morning.



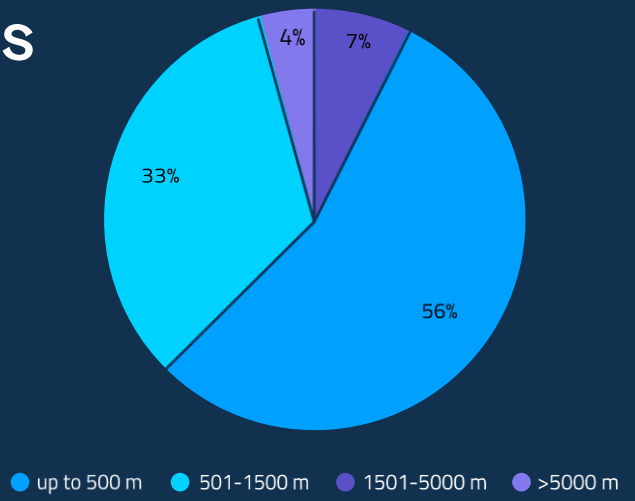
Distribution of detected flights by hourly time intervals

Most flights in Helsinki were detected between 8:00 AM and 2:00 PM, with the highest number observed between 8:00 and 9:00 AM. No flights were recorded during the time intervals between 12:00-1:00 AM and 5:00-6:00 AM.

Distances and Altitudes of Detected Drones

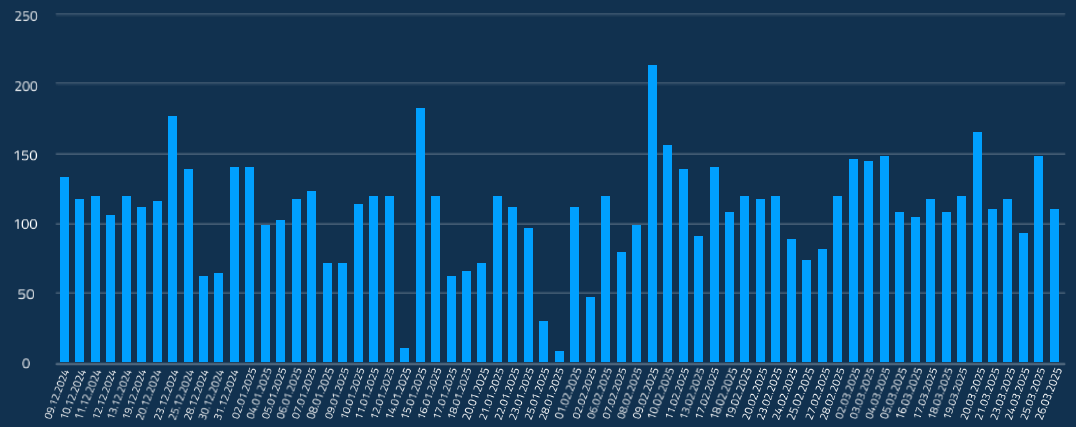
During testing, we were also interested in verifying the detection range of the Dronetag Scout. The device was placed in an urban area of Helsinki, but in a part of the city located near a bay, not entirely surrounded by buildings. The farthest detected drone was recorded at a distance of 7014 meters, while the closest drone flew only 46 meters from the building where the Dronetag Scout was installed.

The majority of flights (56%) took place at a distance of 500 to 1500 meters from the detection device. One third of all flights were detected at a distance of 1500 to 5000 meters.

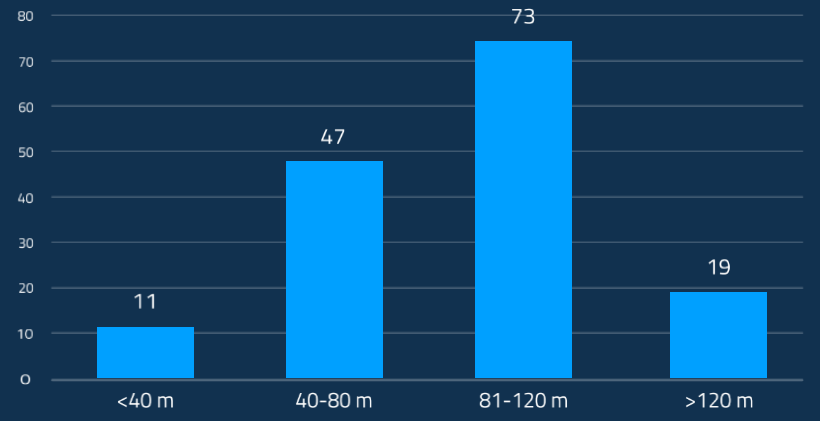


Detected flight distances categorised by range

The detected flight altitudes were also noteworthy. In the EU, the maximum permitted flight altitude is 120 meters. The highest recorded flight was detected at 231,5 meters. When analysing how many drones exceeded the 120-meter limit, they accounted 19 drones, witch means 13% of all recorded flights.



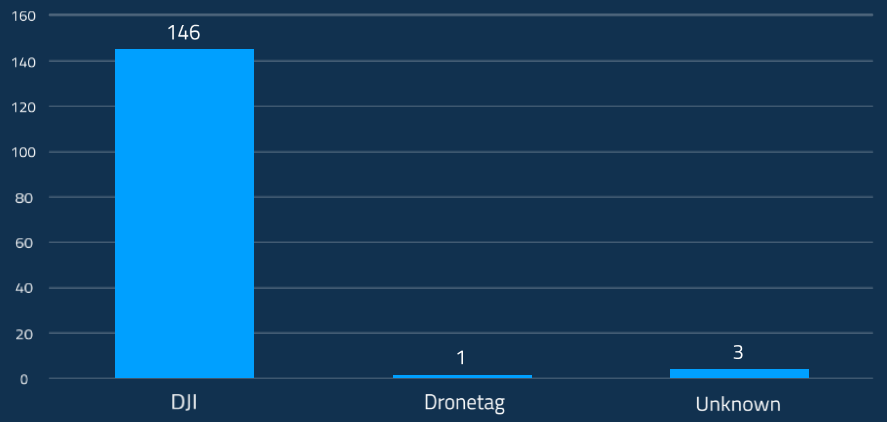
Maximum detected altitudes across individual days



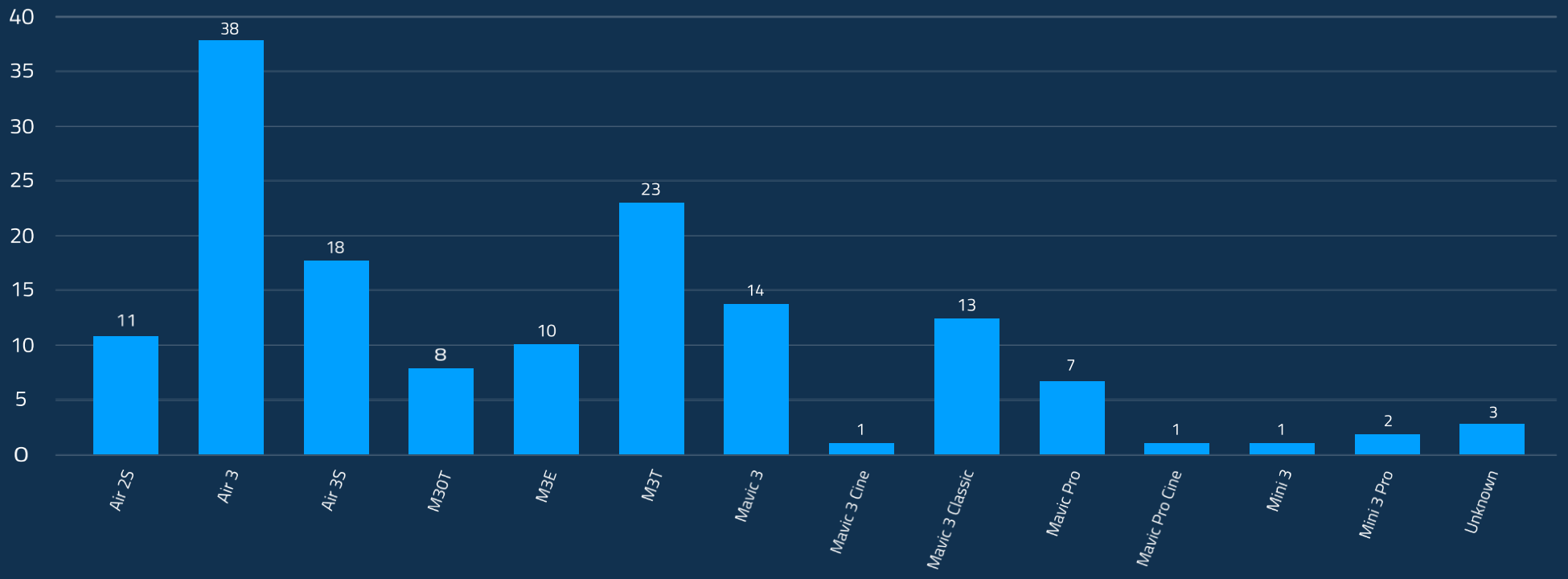
Number of detected flights categorized by altitude range

Most Common Drone Types

As of January 1, 2024, all newly marketed drones weighing over 250g and drones operating in the specific category must broadcast Remote ID. Since we only detect Remote ID, the range of drone types we can identify during testing is limited, typically covering newer drone models. The most frequently detected drone type was DJI Air 3. We were able to determine the drone type in 98% of detections. The smallest detected drone was DJI Mini 3 and Mini 3 Pro, while the largest was Matrice 30 T.



Number of detected drones/Remote ID devices by manufacturer

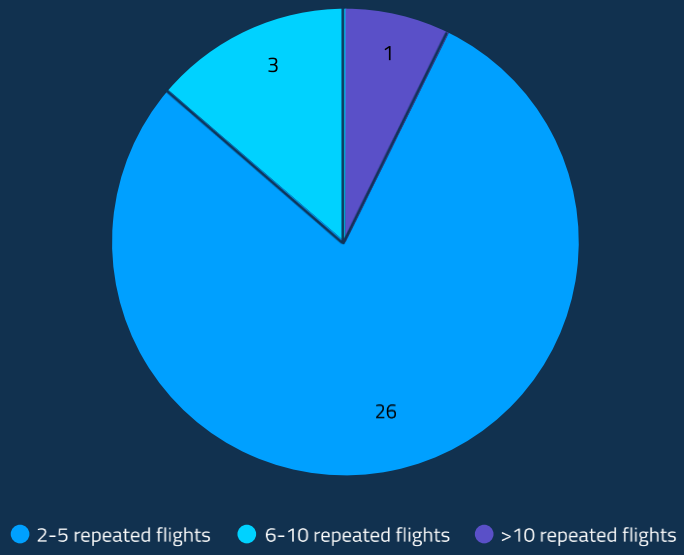


Number of detected drones by drone type

Repeated Flights

We also aimed to determine whether certain drones were repeatedly flown or if the flights were mostly isolated occurrences. Our analysis showed that 30 flights (20%) were performed by the same drone multiple times. On the other hand, 80% of drones were detected in the monitored area only once.

Most often, the same drone was observed conducting 2-5 flights, which accounted for 87% of all cases. The highest number of flights recorded by a single drone was 13.



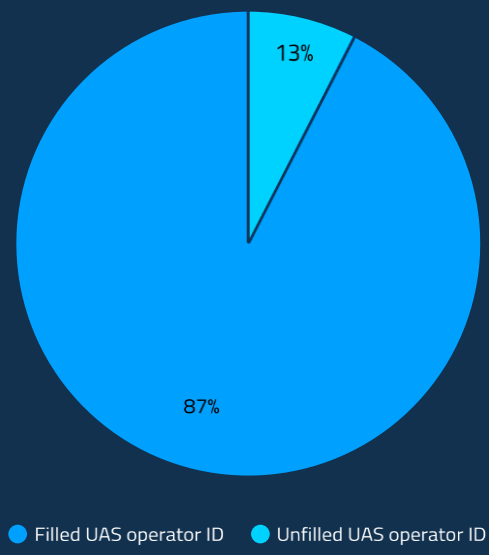
Repeated flights by the same drone categorized by frequency

Use of UAS Operator ID

According to European regulations, drones that are required to broadcast Remote ID (i.e., new drones over 250g introduced after January 1, 2024, and drones in the specific category) must have a UAS Operator ID. However, this ID needs to be manually entered into the drone or the Remote ID transmitter.

Therefore, we were interested in how many drones had the Operator User ID filled in. Only 13% of drones had the UAS Operator ID, while a significant 87% were flying without it.

Among the detected drones were DJI Mini 3 and Mini 3 Pro models, which weigh under 250 grams and are not required to transmit Remote ID.



Filled UAS Operator IDs among detected drones

Conclusion

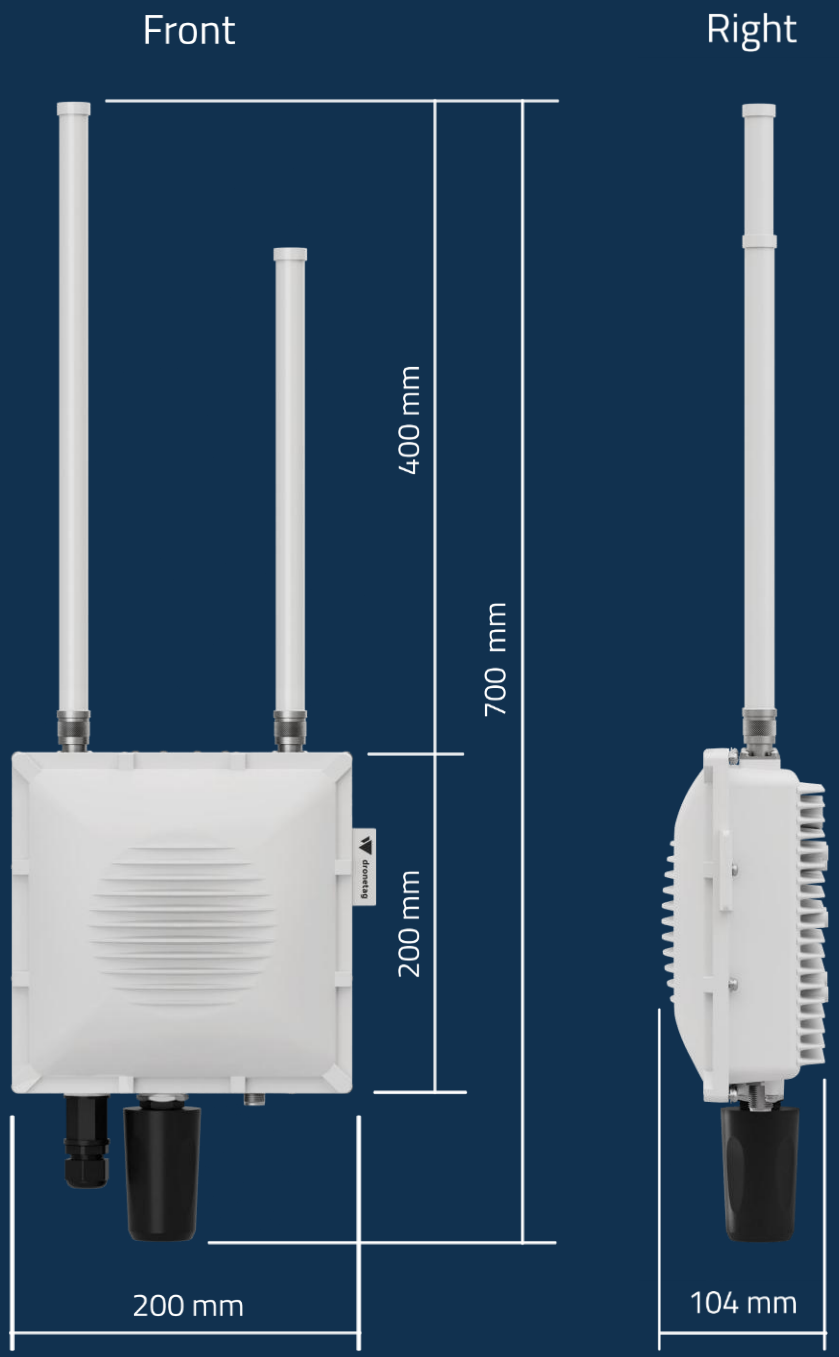
Although the testing of the Donetag Scout detection device was carried out during the winter months, a total of 150 drone flights were recorded.

The testing highlighted areas of interest where drone activity is most concentrated. Drone pilots in Helsinki rarely fly above 120 meters. The most frequent activity is likely carried out by construction companies.

Night flights may have been attributed to drones operated by emergency services.

The data indicates trends in pilot behavior, showing that the highest number of flights takes place during the workweek, particularly on Tuesdays and Wednesdays, and during working hours, between 8:00 AM and 2:00 PM.

Scale 1:4 | 2.2 kg (4.8 lbs) without antenna



dronetag | Helsinki

Making Drones Digitally Visible

dronetag.com

sales@dronetag.com