



OFFICE OF AIR QUALITY PLANNING AND STANDARDS
RESEARCH TRIANGLE PARK, NC 27711

09/30/2025

Mr. Etai Fiedelman
Percepto Corporation
8310 N Capital of Texas Highway,
Bldg 1, Suite 170
Austin, Texas 78731

Dear Mr. Fiedelman:

We are writing in response to your submission on behalf of Percepto Corporation (Percepto), located in Austin, Texas, dated March 26, 2025, and subsequent correspondence dated September 1, 2025. In that request Percepto seeks approval of an “Alternative Test Method for Methane Detection Technology” under the New Source Performance Standards for Crude Oil and Natural Gas Facilities for which construction, modification or reconstruction commenced after December 6, 2022 (40 CFR Part 60, Subpart OOOOb). EPA is considering this request under 40 CFR [60.5398b\(d\)](#), based on the information Percepto has submitted (as described below). The EPA’s Office of Air Quality Planning and Standards has been delegated certain authorities under this provision, including authority to consider and/or approve alternative test methods for methane detection technology.

As EPA understands, Percepto has developed a measurement solution which consists of an unmanned aerial system (UAS) equipped with a mid-wave infrared optical gas imaging camera (OGI), called the Air Max OGI (Air Max). The Air Max leverages the Percepto Autonomous Inspection & Monitoring (AIM) cloud-based software to execute flights, and view and retrieve collected data. The Air Max is deployed to the field via a permanently installed weather-proof solution near the equipment to be surveyed, from which it may be operated autonomously or manually by a US Federal Aviation Administration (FAA) certified pilot who is also trained to identify potential emissions.

EPA also understands that prior to deployment, in collaboration with their client, Percepto optimizes the location of their device to maximize the area of coverage of the methane detection solution. Additionally, Percepto develops a flight plan for each site, pinpointing specific points of interest (POIs) for inspection. Each POI can be configured with various parameters, including distance, angle, camera mode, and observation time, contingent on

meeting specific data quality objectives. This approach allows for tailored inspections and reduces the risk of missing potential leaks due to adverse weather conditions. Once the data are collected from the Air Max, a certified OGI inspector reviews the collected survey footage to identify any emissions, triggering a follow-up inspection.

To support the submittal, Percepto provided the following documents through [EPA's publicly facing portal](#) or through EPA's Confidential Business Information (CBI) Office:

- Executive Summary documents (March 26, 2025): Submission information and technical summary of the technology, a summary of all submitted documents, and additional contextualizing information. See [§60.5398b\(d\)\(2\)](#) and [§60.5398b\(d\)\(3\)\(i\)-\(ii\)](#).
- "Description of Technology" document (March 26, 2025): Detailed information on the measurement technology, including the sensors used to collect the measurement, practices for treating sensor data, method workflow, and quality control measures to determine the accuracy of reported data from the technology. Percepto supplemented publicly facing documents with additional documentation claimed as CBI (March 27, 2025), further contextualizing product specification and operations. See [§60.5398b\(d\)\(3\)\(iii\)](#), [§60.5398b\(d\)\(3\)\(v\)](#), and [§60.5398b\(d\)\(3\)\(vi\)\(C\)](#).
- Internal report and associated raw video files from a controlled release study conducted at Colorado State University's Methane Emissions Technology Evaluation Center (METEC) (March 27, 2025): The study was conducted on July 22- 25, 2024. The report was transmitted as CBI. This report included sufficient meta data to allow EPA to reconstruct the result. . The report serves as supporting evidence that the Air Max can appropriately detect methane emission at the 1 kg/hr probability of detection threshold, as applied in the field. This report and associated raw data files also support Percepto's component-level spatial resolution. See [§60.5398b\(d\)\(3\)\(vi\)\(A\)](#) and [§60.5398b\(d\)\(3\)\(vii\)\(C\)](#).
- Sampling protocol (alternative test method) titled "*Percepto Autonomous OGI UAS & AI Software Alternative Test Method*" (March 26, 2025, updated September 1, 2025): All required procedures and applicable quality assurance and control requirements, consistent with Percepto's operation of the solution, and consistent with the requirements in [§60.5398b\(d\)\(3\)\(vi\)\(C\)](#).

EPA conducted an initial review of the submitted material. Based on this review and receipt of additional information, and consistent with the requirements in [§60.5398b\(d\)\(1\)\(i\)](#), EPA determined Percepto's submission complete on June 25, 2025.

Based on a review of the provided material and recognizing that Percepto meets the criteria found in [§60.5398b\(d\)\(2\)](#) to submit an alternative test method for consideration, EPA has determined that Percepto's Air Max OGI System meets the periodic screening requirements for the 1 kg/hr detection threshold. Additionally, EPA is approving Percepto's solution for use by an owner or operator, on an affected facility, for the alternative periodic screening process as

described in [§60.5398b\(b\)](#), subject to the statements below. t The alternative test method may be used as an alternative to fugitive emissions monitoring under the New Source Performance Standards for Crude Oil and Natural Gas Facilities for which construction, modification or reconstruction commenced after September 18, 2015, and on or before December 6, 2022 (40 CFR Part 60, Subpart OOOOa) provided the owner or operator using the solution complies with [§60.5398b](#), including the notification, recordkeeping, and reporting requirements outlined in [§60.5424b](#).

EPA has created a docket EPA-HQ-OAR-2024-0619 and is making the relevant documents publicly available there. Additional material developed by EPA to justify these decisions is also attached to this letter.

Because the alternative method may be used by owners and operators subject to the monitoring of fugitive emissions components affected facilities, and inspection and monitoring of covers and closed vent systems subject to 40 CFR part 60, Subparts OOOOa and OOOOb, we will post this letter as **MATM-011** on the EPA website at <https://www.epa.gov/emc/oil-and-gas-alternative-test-methods> for use by interested parties.

This approval letter is not an implied or express endorsement by EPA of any specific companies or products, as EPA does not promote the products, services, or enterprises of non-federal entities. This letter may be freely distributed and used for non-commercial, scientific and educational purposes. The use of the official EPA Seal and Logo is intended for US Government purposes only and may only be reproduced and used with the express, written permission of EPA's Office of Public Affairs. Further, the EPA Seal or Logo may not be used in a way that implies an EPA endorsement.

If you should have any questions or require further information regarding this approval, please contact my staff at MethaneATM@epa.gov.

Sincerely,

Steffan M. Johnson, Group Leader
Measurement Technology Group

cc:

Greg Fried, OECA/AED
Elizabeth Leturgey, OECA/OC
Ned Shappley, OAQPS/AQAD
Karen Wesson, OAQPS/AQAD
Regional Testing Contacts

Attachments (2)

Percepto Alternative Test Method (MATM-014).pdf

Acceptance Justification: Percepto UAS

MEMORANDUM TO:

EPA-HQ-OAR-2025-TBD

FROM: Ned Shappley and Dave Nash EPA, OAQPS/AQAD/MTG

DATE: September 30, 2025

Subject: Acceptance Justification: Percepto Air Max OGI (Technology)

This memorandum summarizes EPA's consideration of the technical basis of Percepto's Unmanned Aerial System (UAS) for detecting methane emissions using an Optical Gas Imaging (OGI) camera from a Unmanned Aerial Vehicle (UAV) , which they call the Air Max UAS, documented in ALTTECH-102. Percepto initially submitted their application on March 26, 2025, as part of the Advanced Methane Detection Alternative Test Method program (40 CFR 60.5398b(d)). EPA's consideration of this technology under this program and its application to the Advanced Methane Detection Alternative Test Method program is further described in EPA's approval letter dated September 30, 2025. This Memorandum also includes a summary of meetings between the company and EPA staff related to the company's request for approval of this technology.

Background

Based on Percepto's submittal to EPA's Advanced Methane Technology Alternative Test Method Portal¹, Percepto is a company based in Modi'in, Israel and Austin, Texas that builds and supports autonomous UAS' for use in multiple industries, including the upstream oil and gas sector. For purposes of their submission to EPA, Percepto requested their technology be broadly applicable across the oil and gas sector within the periodic screening program, and at a sensitivity of <1 kg/hour. Based on the information provided in their submittal to EPA, referenced above, they were eligible to apply under §60.5398b(d)(2). Additionally, the submittal was clear as to the applicability of the request and provided the EPA all information

¹ [Supporting Information #1](#)

included in §60.5398b(d)(3)(i-ii).

Technology Description

According to Percepto's description of the technology document², consistent with §60.5398b(d)(3)(iii), the Air Max UAS is equipped with a fully integrated optical gas imaging ("OGI") camera, specifically the Sierra Olympia Ventus OGI™ 640 x 512 resolution mid-wave infrared ("MWIR") camera. The Ventus OGI is a commercially available optical gas imaging camera designed to detect and visualize hydrocarbon gases. OGI cameras are based on the principle of thermal imaging. They detect and visualize gases by sensing the specific infrared wavelengths that gases absorb or emit, which is proportional to their temperature and concentration. OGI cameras leverage the unique spectral signatures of different gas molecules in the infrared range, which are characteristic of each gas type. By isolating and capturing these distinct wavelengths, OGI cameras create a clear visual representation of gas presence and movement. This is achieved through the camera's ability to detect the subtle changes in infrared radiation emitted or absorbed by the gas molecules, allowing it to accurately identify and track the gas.

The OGI cameras are sensitive to various environmental factors that can affect their ability to detect and visualize gas emissions, for example wind speed and direction influence plume behavior, and strong winds may impact the OGI camera's effectiveness. Additionally, the ambient temperature affects the thermal contrast between the gas and its surroundings, with higher temperatures increasing the camera's sensitivity to certain gases. To address these limitations, Percepto does not deploy the technology in adverse conditions that would impact the ability for the OGI camera to detect methane emissions.

The Air Max UAS is also equipped with a day camera and a landing camera. The Air Max UAS is flown autonomously under the supervision of a certified flight controller and is equipped with a telemetry communication system and Graphics Processing Unit (GPU) processor for communications. The UAS is powered by Percepto Autonomous Inspection & Monitoring (AIM)

² [Supporting Information #2](#)

software and carries out ad hoc or pre-assigned missions, autonomously returning to the fixed Percepto Base recharge which is maintained near the equipment to be surveyed. Percepto is allowed to operate their UAS autonomously through an FAA waiver, which requires that each flight is performed under the supervision of an FAA-certified pilot. During each deployment, the video feed is continually monitored, and when the UAS returns to the Percepto Base all pertinent data is uploaded to a cloud-based platform for further analysis by trained OGI operators.

Note: Since the UAS is maintained near the equipment to be surveyed, it typically will only be deployed in optimal weather conditions to ensure the sensitivity of the measurement solution.

Percepto supplemented their description of technology document with additional documentation, claimed as Confidential Business Information (CBI). This information further contextualizes the components of the UAS and Percepto's practices for processing information and determining when to alert an owner or operator of an emission event. These documents, along with the description of technology document, are also consistent with the regulatory requirements in §60.5398b(d)(3)(vi) and §60.5398b(d)(3)(v).

Method Sensitivity and Spatial Resolution

Percepto claims a solution sensitivity of <1 kg/hr for the Air Max UAS. This is supported by Section 13.0 of Percepto's test method, which describes the results from a blind controlled release study conducted at Colorado State University's Methane Emissions Technology Evaluation Center (METEC). This study was conducted July 22-25, 2024. Percepto provided the results from the complete testing to EPA, claimed as CBI, including further information on the release rates, the raw OGI video files used by the panel of third-party OGI operators to identify releases, and the results of the testing.

The blind release study attempted to mimic a real deployment at an upstream production, with methane release rates from 60 g/hr to 1,166 g/hr. The Air Max UAS was operated within the tested vertical range of 40 to 100 feet and horizontal range of 20 to approximately 250 feet from the observation point. The probability of detection was calculated based on the

proportion of leaks identified at various emission rates and distances and verified by a third-party certified OGI inspector, and the 90 % probability of detection was established at approximately 0.1 kg/hr. EPA reviewed the same video files viewed by the certified OGI operators, and determined that the information used to calculate the probability of detection appear to be appropriate, EPA therefore agrees with the 0.1 kg/hr assumption. Furthermore, EPA acknowledges that Percepto's method sets a conservative operating envelope—Percepto requires testing to take place within 20 horizontal feet and within 40 vertical feet to further ensure a 90% probability of emission detection in most environmental conditions.

Percepto also requested a component-level spatial resolution with the Air MAX UAS. Percepto's application supported this through video files and the operating limitations provided in Section 9.0 of the test method. The submitted video files indicate the Air Gas UAS could identify the approximate source of emissions within 0.5 meters of a release point, which satisfies the component-level spatial resolution requirements

Consistent with the requirements in §60.5398b(d)(3)(vi)(A) and §60.5398b(d)(3)(vii), Percepto's data has provided sufficient evidence to support the requested detection threshold and spatial resolution.

Testing Protocol

The alternative test method, developed by Percepto and refined based on feedback from EPA, reasonably matches EPA's understanding of how data will be collected. The application of the Air Max UAS is also consistent with the operation of the system in the validation report. The alternative test method includes all the information as required in §40 CFR 60.5398b(d)(3)(vi)(B) and (C), and appears to be adequate for use for in the alternative monitoring standards identified in §40 CFR 60.5398b(b).

The method describes the unique process performed through Percepto's automated system under supervision of a trained UAV pilot. Additionally, the method sets sufficient obligations on

the UAV pilot and/or certified OGI inspectors to ensure the method is performed correctly, and that any emissions are observed. Additionally, the method sets requirements for training, recordkeeping, and operation which should help maintain consistent implementation. The method identifies interferences and potential weather conditions that are either be unsafe to operate in, or would be outside the envelope of operation, affecting the technology's probability of detection. The method also describes additional equipment checks to ensure the system is in proper operation prior to deployment, and is written to include sufficient recordkeeping of their procedures that would allow a third-party (e.g., state regulatory authority) to audit Percepto's processes.

Applicability

Percepto requested their Air Max UAS be approved broadly across all basins in the continental United States, including but not limit to, production basins in Colorado, Louisiana, New Mexico, Texas. Consistent with previous approvals in this program, EPA agrees with the broad approval request since the primary technology, OGI, is the accepted measurement approach for fugitive, covers, and closed vent systems in § 60.5397b and §60.5416. Also, the detection principle of OGI is not as dependent on the topography or the background as other approaches.

Meeting Summary between EPA Measurement Technology Group and Percepto

Date	Venue	Scheduled Participants	Topics
October 3, 2025	Microsoft Teams	Chris Duncan, Etai Fieldman and Nadav Rosenberg – Percepto Dave Nash and Ned Shappley – US EPA	Pre-submittal meeting, discussion of process and data needs.
April 30, 2025	Microsoft Teams	Emily Kimball, Nata Glikman, Udi Zohar, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	Alt-tech intake call continued discussion of process.

Date	Venue	Scheduled Participants	Topics
May 6, 2025	Microsoft Teams	Emily Kimball, Nata Glikman, Udi Zohar, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	Supporting Data Review and Technology Descriptions
May 17, 2025	Microsoft Teams	Emily Kimball, Nata Glikman, Udi Zohar, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	Supporting Data Review, Standard Operating Procedure, and Method Walkthrough
June 11, 2025	Microsoft Teams	Emily Kimball, Nata Glikman, Udi Zohar, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	Method Walkthrough
June 26, 2025	Google Meet	Nata Glikman, Udi Zohar, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	Method Walkthrough
July 17, 2025	Google Meet	Glikman, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	EPA Method Revisions
August 11, 2025	Google Meet	Emily Kimball, Nata Glikman, Etai Fieldman and Chris Duncan – Percepto Dave Nash and Ned Shappley – US EPA	Continued Method Revisions Discussions

Date	Venue	Scheduled Participants	Topics
August 28, 2025	Google Meet	<p>Nata Glikman, Udi Zohar, Etai Fieldman and Chris Duncan – Percepto</p> <p>Dave Nash and Ned Shappley – US EPA</p>	Discuss EPA revisions and clos-out steps