

IEEE P2520.2.1

Machine Olfaction Devices and Systems used for General Outdoor Odor Monitoring  
(SEN/SC/TMODS/OOM/2520.2.1)

Working Group Meeting Minutes  
08 MARCH 2021 / 10:00 AM – 12:00 PM (EST)

WG Chair: Ehsan Danesh

WG Secretary: H. Troy Nagle

Teleconference Meeting link:

<https://ieeesa.webex.com/ieeesa/j.php?MTID=m4c647cca8fef235b8d25de77adc17d21>

Password: cC2D3ZAKKD7

**1. Call to Order**

Chair called meeting to order at 10:05 AM EST. He also announced that the meeting is being recorded for the purpose of preparing minutes.

**2. Roll Call and Disclosure of Affiliation**

*Affiliation FAQs:* <http://standards.ieee.org/faqs/affiliation.html>

The Chair directed participants to a Google Docs link in the Chat window. All participants were asked to register into a Google form their names, email, affiliation, and WG membership request. A few minutes were allowed for participants to access and complete the registration process. Those participating in the meeting are listed in Attachment A.

**3. Approval of Agenda**

The Chair displayed the announced agenda and asked for a motion to approve. Troy Nagle made the Motion to approve. Susana Palma seconded. The motion was approved without objection.

**4. Approval of Previous Meeting Minutes**

The Chair received a motion to approve from Susana Palma and a second from Susan Schiffman. The motion passed without objection. However, the Secretary later determined that a quorum had not been achieved so this item will appear on the next WG meeting agenda.

**5. IEEE Patent & Copyright Policies**

**a. Call for Patents**

[https://development.standards.ieee.org/myproject/Public/mytools/mob/slide\\_set.pdf](https://development.standards.ieee.org/myproject/Public/mytools/mob/slide_set.pdf)

Per standard IEEE-SA WG meeting practice, the Chair reviewed the required policy regarding potentially essential patents. No one raised concerns for consideration.

b. Copyright Policy

<https://standards.ieee.org/ipr/copyright-materials.html>

Per standard IEEE-SA WG meeting practice, the Chair reviewed the required policy regarding copyrights. There were no questions or concerns.

## 6. Technical Presentation(s) and Discussion

a. **Presentation by Anton van Harreveld:**

Anton is the CEO of Odornet and Convenor of CEN/TC264/WG41. WG41 was established in 2015 for standardization to define Instrumental Odour Monitoring systems. The presentation was given without slides. Anton gave some background on previous work in WG41. Their focus has been on “How far do the responses of devices under test inform us about potential experiences of people exposed to environmental odors”? How do you allow manufacturers to make claims? How do the devices impact people? They have concentrated on three ambient-air odor applications: 1) at a distance; 2) at the fence line, and 3) at the source. They undertook three Tasks at each location: 1) detect the odor (is the odor present or absent); 2) classify the odor (is the odor class A, class B, or unknown); and 3) quantify the odor (how much odor is present). They have made good progress on Task 1 and 2. Task 3 has been more difficult. They treat the device under test as a black box, so any sensors and training algorithms may be used by the manufacturer. The validation will be done over a 6-month period in the field, including summer and winter if possible. They got bogged down in determining the statistical validation methods that could be generally used. They have an extensive elaboration of the terms and definitions that are needed to correlate the machine performance to the human response. Anton has shared that document with our Chair to help speed-up our progress. The CEN WG41 timeline has expired, so they are waiting for renewal to restart in the Fall. After that they will have 18 months to submit a draft standard. Their project is not mandated, has no funding, and is completely volunteer work. They have about 15 regular contributors at their meetings. They will keep in close contact with our Chair to help make both groups more successful. Some of our WG members have participated in previous CEN standards. CEN has a WG42 that is focusing on regulated air-pollutant sensors.

b. **Formation of subgroups:**

The Chair opened the discussion period by offering a first proposal for four working Subgroups (SGs). See Attachment B.

*SG1 (Device Under Test)* was thought to be closely aligned with P2520.1 (Baseline Performance). A consensus emerged that the P2520.1.WG would work with P2520.2.1 to cover this focus area. P2520.2.1 members who are interested in the DUT details were encouraged to join the P2520.1 WG.

*SG2 (Odors and Concentrations)* was deemed to be of general concern to all the P2520 standards. P2520.1 has chosen some non-toxic, readily available bottled gases for its tests. P2520.2.1 might add its own family of test gases for general outdoor odor applications. A further extension might occur for specific later standards in the P2520.2 series (e.g., P2520.2.2 – Landfill Odors). Can we find examples of synthetic odor generation of outdoor test gas mixtures? Previous standardization efforts failed to adopt specific synthetic test gases and that was detrimental to the progress. Food, perfume, and indoor-air monitoring companies often have their own proprietary test mixtures but are unwilling to share. Our WG should address this problem early in our milestone timeline. The problem is challenging. An offending odor in Scandinavia might be acceptable in the Mediterranean Basin, and vice-versa.

*SG3 (Performance validation)* was supported as a major portion of this standard. To validate performance goals, both laboratory and field tests are needed over specified time intervals. The standard should define specific tests that are clearly defined (step by step).

*SG4 (Data manipulation)* was also supported as a major focus of this standard. How will the sensor data be processed and what reports will be generated? P2520.1 will provide data reporting formats for baseline performance evaluation and instrument comparison. These formats might be adopted and/or extended for use in P2520.2.1.

### ***c. General discussion:***

It was recommended that we conduct a review of progress in other standards organizations (such as IEC and ISO) for overlap with our focus. We might benefit from their industrial experience. Human perception will be the focus in our standard and this differentiates us somewhat from previous standardization efforts.

The Chair encouraged the WG members to add their suggestions to the Subgroup document posted on iMeet Central. What lab tests are needed? What field tests are needed? What gases and concentration levels should be specified? Please add any other suggestions. We need a quick start if we are to meet our August milestone for generating a draft outline of the standard using the IEEE SA Standard Template.

## **7. Unfinished Business/Action Item Review**

The Chair announced that we are still soliciting a volunteer WG Secretary. Please contact the chair if you are interested in the officer position. The discussion of the formation of Subgroups will continue at the next meeting.

**8. New Business**

The chair announced that the Call for Participation in P2520.3.1 (General Indoor Odor Monitoring) is also ready for distribution. Many of the members of this WG will also want to join that one. It may be possible to have some joint meetings between these two WGs.

**9. Future Meetings**

The Chair announced that WG meetings will be once per month (on the 2<sup>nd</sup> Monday at 10 AM ET). The next meetings of the WG will take place at 10 AM EDT on April 12, May 10, and June 14, 2021. The WebEx link for the next meeting will be the same one used for this one.

**10. Adjourn**

The WG Chair asked for a motion to adjourn. Susan Schiffman made the motion, Troy Nagle seconded. Without objection, the Chair adjourned the meeting at 11:52 AM.

- a. Minutes submitted by: H. Troy Nagle (08 Mar 2021)

**Attachment A:** Meeting Participants

First Name	Last Name	Affiliation	Country
Sandrine	Bernardini	Aix-Marseille University	France
Félix	Borner	Aryballe	France
Etienne	BULTEL	Aryballe	France
Debejyo	Chakraborty	General Motors	USA
Domenico	Cipriano	RSE	Italy
James	Covington	University of Warwick	UK
Ehsan	Danesh	Alphasense Ltd	UK
Jean-Michel	GUILLOT	IMT Mines Ales	France
Louis-Ray	Harris	The University of the West Indies, Mona	Jamaica
Cyril	Herrier	Aryballe	France
Sandrine	Isz	Alpha MOS	France
Cyntia	Izquierdo	<a href="http://Olores.org">Olores.org</a>	Spain
David	Johnson	South Coast Science	UK
Fabio	Leccese	Dipartimento di Scienze - _Università degli Studi Roma Tre	Italy
Thierry	Livache	aryballe	France
Leszek	Majewski	The University of Manchester	UK
Michael	McGinley	St. Croix Sensory	USA
Troy	Nagle	NC State University	USA
Susana	Palma	NOVA University of Lisbon	Portugal
Wolfhard	Reimringer	3S GmbH	Deutschland
Avid	Roman-Gonzalez	BE Tech	Peru
Yasser	Sabry	Faculty of Engineering, Ain Shams University	Egypt
John	Saffell	Alphasense Ltd.	UK
Susan	Schiffman	North Carolina State University	USA
Anna	Staerz	Massachusetts Institute of Technology	USA
George	Suciu	BEIA	Romania
Anton	van Harreveld	Odournet Group	The Netherlands
Ko Chung	Wong	Oxford Technology	Japan

**Attachment B:** IEEE P2520.2.1 Subgroups Proposal

## Introduction

Due to the large number of members in this working group (WG), and the broad range of questions to answer, following subgroups (SG) are suggested with a focus on delivering specific tasks. Each SG will consist of 10-15 people. Each WG member shall participate in at least one SG. Each WG member can participate in up to two SGs. Non-members could be invited to participate in SG meetings at the discretion of SG Chair.

### P2520.2.1 Subgroups

- SG1: Device Under Test (DUT)
  - Scope: Specify attributes for the DUT (e.g., online vs offline, size/ weight, single sensor vs network, ...)
  - Note: this subgroup will work closely with other WGs in P2520 series
  - Chair: TBD
- SG2: Odors and concentrations
  - Scope: Establish qualitative and quantitative information about odorous chemicals in outdoor environments to be included in this standard (e.g., analytes that may cause odor nuisance or impose safety risks, regulations- vs human perception-based targets, ...)
  - Chair: TBD
- SG3: Performance validation
  - Scope: Define stepwise test methodologies for performance measurement in lab and field, and assess correlation with human perception (e.g., permeation tubes for lab calibration, sample preparation/ delivery for field trials, sensory panel for perception, ...)
  - Chair: TBD
- SG4: Data manipulation
  - Scope: Set out procedures to validate data analysis and reporting (e.g., raw data storage, signal processing algorithms, report template, ...)
  - Chair: TBD
- Any other subgroups?