Freedom to Operate — Preliminary Report

Thanks for using **FTO Checker**! Our goal is to help you kick-start your freedom to operate search with modern AI and prepare meaningful discussions with patent professionals.

This report highlights existing patents that may be technically relevant to your invention, using multiple, complementary search strategies.

It also includes a short summary of recent **scientific** and **general web** publications related to your invention, so you can stay aware of emerging trends, opportunities, or concerns in the technical landscape.

We have attached a CSV file listing all currently active patents surfaced by FTO Checker based on their overlap with your invention — beyond the top 10 detailed in this report.

Enjoy the read!

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Your invention description

"A portable diagnostic device for rapid detection of respiratory viruses such as COVID-19 and influenza from a saliva sample. It uses loop-mediated isothermal amplification (LAMP) combined with fluorescence detection. The sample is placed in a disposable cartridge, inserted into a handheld reader that runs the reaction and displays results on a built-in screen. Results are available in under 20 minutes, with optional Bluetooth sync to a mobile app for data logging."

Bluetooth sync to a mobile app for data logging.

Executive summary

- **Total patents searched:** 163.6 million (The Lens database)
- **Jurisdiction(s) of focus:** EP, US, KR
- **Potentially relevant patents:** 85
- **Currently active patents:** 56
- **Patents listed below:** 10 most relevant to your invention
- **Search methods:** keywords, patent language, IPC-CPC codes, semantic analysis, inventors
- **Report date:** 2025-06-30

Our patent search identified 85 potentially relevant patents for your portable diagnostic device, with 56 still active. The results highlight key themes such as disposable cartridge design, isothermal amplification techniques, and portable diagnostic systems. The space appears moderately crowded, with several patents originating from a few key players, indicating concentrated innovation efforts. Notably, patents were often detected by multiple search methods, underscoring their relevance. This comprehensive analysis provides a strategic overview of the current IP landscape, helping you identify potential competitors, collaborators, or licensing opportunities. Understanding these technical overlaps and market dynamics will be crucial as you refine your invention and strategize its development and commercialization.

Your top 10 most similar patents

1. **FLOW CONTROL SYSTEM FOR DIAGNOSTIC ASSAY SYSTEM**
   View patent
   Publication number: 072-693-132-613-56X
   Jurisdiction: US
   Similarity score: 56%
   Search methods: keywords, semantic analysis, inventors
   Why we selected this patent: The patent was selected using semantic similarity, showing a strong connection with your invention's disposable cartridge feature. Both involve preventing cross-contamination in fluid sample handling, crucial for accurate diagnostic results. This aligns with your device's need for reliable sample processing in a portable format.
   Share patent overview

2. **SYSTEM FOR ACCELERATING REAGENT ACTIONS IN A DISPOSABLE CARTRIDGE**
   View patent
   Publication number: 071-633-459-732-201
   Jurisdiction: US
   Similarity score: 56%
   Search methods: keywords, semantic analysis, inventors
   Why we selected this patent: This patent was selected using semantic similarity, showing a strong connection to your invention. Both involve portable diagnostic systems using disposable cartridges for rapid testing. The patent's heating mechanism to accelerate reactions aligns with your LAMP-based approach.
   Share patent overview

3. **Multiple rotor disposable cartridge for portable diagnostic assay system**
   View patent
   Publication number: 032-064-671-604-918

Jurisdiction: US
Similarity score: 56%
Search methods: keywords, semantic analysis, inventors
Why we selected this patent: The patent was selected using the keyword method due to its focus on a disposable cartridge for diagnostic testing, which aligns with your invention's cartridge-based design. Both involve fluid manipulation for diagnostic purposes.
📤 Share patent overview

4. **MULTIPLE ROTOR DISPOSABLE CARTRIDGE FOR PORTABLE DIAGNOSTIC ASSAY SYSTEM**
View patent
Publication number: 029-163-970-028-549
Jurisdiction: US
Similarity score: 56%
Search methods: keywords, semantic analysis, inventors
Why we selected this patent: The patent was selected using the keyword method due to its disposable cartridge design, which aligns with your invention's use of a cartridge for diagnostic testing. Both involve fluid manipulation within a cartridge for assay purposes, suggesting a functional similarity in sample processing.
📤 Share patent overview

5. **Method for POC-based detection of pathogenic infection via nucleic acid based testing**
View patent
Publication number: 039-995-383-682-946
Jurisdiction: US
Similarity score: 56%
Search methods: patent language
Why we selected this patent: The patent was selected due to its method of using isothermal reactions for nucleic acid-based pathogen detection, similar to your device's LAMP technique. Both inventions focus on portable, rapid diagnostics outside laboratory settings. This conceptual overlap in technology and application makes the patent relevant to your invention's development.
📤 Share patent overview

6. **Point of care (POC) device for facilitating nucleic acid based testing and method thereof**
View patent
Publication number: 111-871-689-732-672
Jurisdiction: US
Similarity score: 44%
Search methods: patent language
Why we selected this patent: The patent was selected due to its method of integrating nucleic acid-based testing in a portable device, similar to your invention's LAMP and fluorescence detection. Both involve isothermal reactions and user-friendly interfaces for pathogen detection outside a lab. The patent's smartphone-app integration also aligns with your Bluetooth sync feature for data logging.
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7. **A METHOD FOR POC-BASED DETECTION OF PATHOGENIC INFECTION VIA NUCLEIC ACID BASED TESTING**
View patent
Publication number: 105-859-574-960-879
Jurisdiction: US
Similarity score: 44%
Search methods: patent language
Why we selected this patent: The patent was selected for its method of using nucleic acid-based testing in a portable device, similar to your invention's LAMP and fluorescence detection approach. Both focus on rapid, user-friendly pathogen detection outside a lab. The patent's integration with smartphone analytics parallels your Bluetooth sync feature for data logging.
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8. **POINT OF CARE (POC) DEVICE FOR FACILITATING NUCLEIC ACID BASED TESTING AND METHOD THEREOF**
   View patent
   Publication number: 001-676-331-206-027
   Jurisdiction: US
   Similarity score: 44%
   Search methods: patent language
   Why we selected this patent: The patent was selected due to its method of using isothermal reactions for pathogen detection, similar to your invention's LAMP technique. Both involve portable devices for rapid, user-friendly diagnostics outside a lab setting. The patent's integration with smartphone analytics parallels your Bluetooth sync feature, highlighting a conceptual overlap in user interface and data management.
   Share patent overview

9. **LOOP-MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) ON A SOLID-PHASE MEDIUM**
   View patent
   Publication number: 190-831-298-154-341
   Jurisdiction: EP
   Similarity score: 44%
   Search methods: patent language
   Why we selected this patent: The patent was selected due to its focus on the loop-mediated isothermal amplification (LAMP) method, which is central to your device's operation. This connection suggests potential relevance in how LAMP is applied in diagnostic contexts. Claim 1 specifically addresses a LAMP reaction assembly, aligning closely with your invention's core technology.
   Share patent overview

10. **DEVICE AND METHODS FOR DETECTING ANALYTES IN SALIVA**
    View patent
    Publication number: 036-946-761-866-647
    Jurisdiction: US
    Similarity score: 33%
    Search methods: keywords
    Why we selected this patent: The patent was selected due to the keyword method, highlighting its relevance to saliva-based detection devices. It shares a conceptual similarity with your invention, as both involve analyzing saliva samples for specific targets. While the patent focuses on detecting analytes like drugs, the underlying principles of sample preparation and detection are pertinent to your diagnostic device.
    Share patent overview

Additional insights

Dominant keywords and concepts:

- flow control
- diagnostic assay
- reagent acceleration
- disposable cartridge
- multiple rotor
- portable diagnostic
- POC detection
- nucleic acid testing

Key semantic concepts:

- Bluetooth sync
- LAMP
- disposable cartridge
- fluorescence detection
- handheld reader
- portable diagnostic
- respiratory viruses
- saliva sample

- nucleic acid testing
- pathogenic infection
- saliva sample

Relevant IPC codes:

- B01L3/00
- B01L7/00
- C12Q1/68
- G01N33/543
- C12Q1/70

Relevant CPC codes:

- B01L3/502
- B01L3/502715
- C12Q1/6844
- B01L2300/0816
- C12Q1/701

Notable inventors or assignees:

- wescott nathaniel e
- murante richard s
- integrated nano tech inc
- integrated nano-technologies inc
- connolly dennis m

What the world is saying

Recent developments in the field of salivary diagnostics have seen a surge in the use of portable, point-of-service (POS) devices for the detection of respiratory viruses, including SARS-CoV-2. These devices leverage smartphone technology to read ultrasensitive and quantitative saliva tests, with some capable of diagnosing COVID-19 cases and quantifying viral load within 15 minutes. The use of Loop-Mediated Isothermal Amplification (LAMP) techniques in these devices allows for the rapid detection of infections from easily collected saliva samples. Scientific publications further highlight the integration of bioinformatics and Bluetooth or LoRaWAN communications in these devices for real-time, portable testing. They also note the potential for colorimetric detection of SARS-CoV-2 in saliva samples and the use of lab-on-chip cartridges for sample pretreatment. These advancements collectively represent a significant trend towards more accessible, rapid, and accurate at-home testing for respiratory viruses.

Selected scientific publications

- A cross-disciplinary view of testing and bioinformatic analysis of SARS-CoV-2 and other human respiratory viruses in pandemic settings
  ieeexplore.ieee.org
- Virus detection: from state-of-the-art laboratories to smartphone-based point-of-care testing
  advanced.onlinelibrary.wiley.com
- Smartphones as a platform for molecular analysis: concepts, methods, devices and future potential
  pubs.rsc.org
- Portable real-time colorimetric LAMP-device for rapid quantitative detection of nucleic acids in crude samples
  www.nature.com
- Smartphone-based point-of-care testing of the SARS-CoV-2: A systematic review
  www.sciencedirect.com

We searched the following journals and databases: Nature, Science Direct, Springer, IEEE, Science, Cell Press, The Lancet, PLOS, JAMA Network, NEJM, Frontiers, MDPI, ACS, RSC, Wiley, BMJ, bioRxiv, IEEE Xplore, Cambridge UP, Oxford UP, Taylor & Francis, JSTOR

Wiley, BMJ, bioRxiv, IEEE Xplore, Cambridge UP, Oxford UP, Taylor & Francis, JSTOR, Sage, Karger, Hindawi, AACR Journals, Ash Publications, Blood Journal, Neurology, Annual Reviews, JAMA Network, The Lancet, Scientific Research, Liebert, De Gruyter, Ingenta Connect, PNAS, BMC Anesthesiology, BMC Bioinformatics, Biomed Central, Europe PMC, MedRxiv, ChemRxiv, Emerald, Springer Nature, Thieme, MIT Press, SPIE Digital Library.

Recent popular sources

- Salivary diagnostics using a portable point-of-service ...
  National Institutes of Health (NIH) | (.gov)
- A smartphone-read ultrasensitive and quantitative saliva test ...
  National Institutes of Health (NIH) | (.gov)
- At-home testing for respiratory viruses: a minireview of the ...
  ASM Journals (Mar 4, 2024)
- Saliva-STAT: Sample-to-answer saliva test for COVID-19
  ScienceDirect.com
- Point-Of-Need One-Pot Multiplexed RT-LAMP Test For ...
  bioRxiv (Mar 11, 2025)

Next steps

Recommended Lens or Google Patents queries:

- *flow control diagnostic assay disposable cartridge*
  Search on Lens — Search on Google Patents
- *multiple rotor portable diagnostic assay system*
  Search on Lens — Search on Google Patents
- *POC nucleic acid testing pathogenic infection*
  Search on Lens — Search on Google Patents

Run a new FTO Checker search:

Try again with a modified description to explore other patent families or technical variants.

Start new search →