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# RT-LAMP Testing Expansion

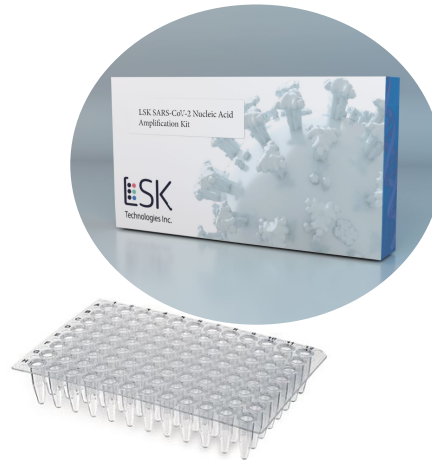
Low-cost Laboratory Nucleic Acid Amplification Platform

# PLUM Platform Overview

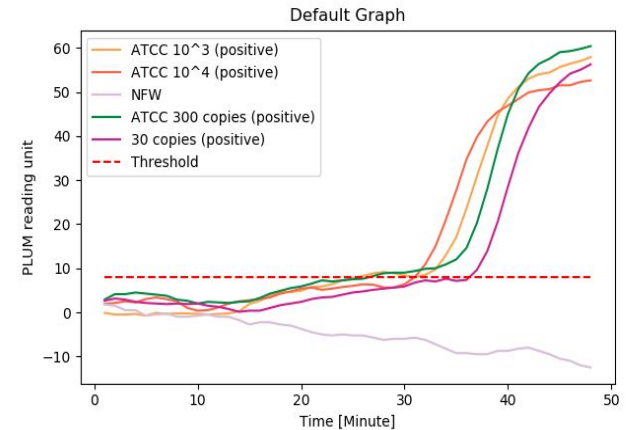
An affordable plate reader that utilizes camera vision to quantify optical reactions.



Portable Device  
\$3,500 USD



Room Temperature Stable  
All-in-one RT-LAMP Kit  
\$500 USD - 96 Reactions



Instant Quantitative  
Results

## PLUM Platform Overview

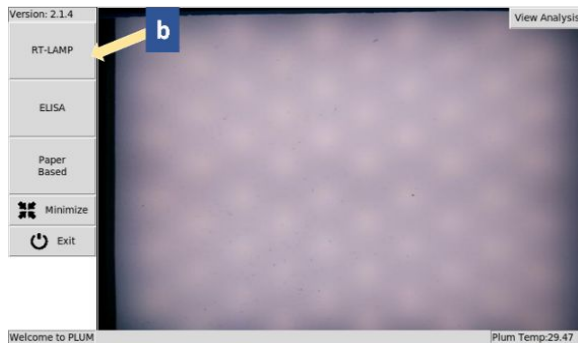
PLUM is an isothermal plate reader that quantifies optical reactions in high-throughput.

- Absorbance and fluorescence reading
- Isothermal incubation up to 70°C
- High-throughput format (96 well PCR plate)
- Instant and automated data analysis
- Stand-alone device
- Easy data transfer via USB/E-mail
- User-friendly interface
- Small footprint (19cm x 27cm x 27cm)
- Internet connection via Wifi and Ethernet

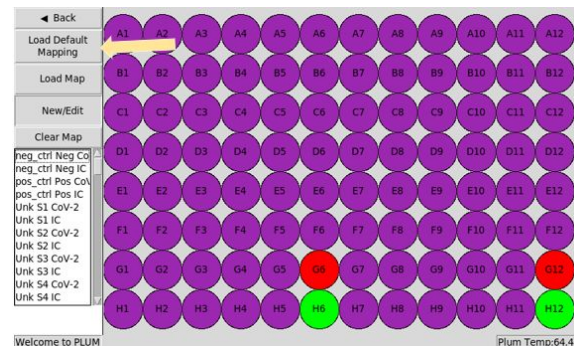


# PLUM User Interface

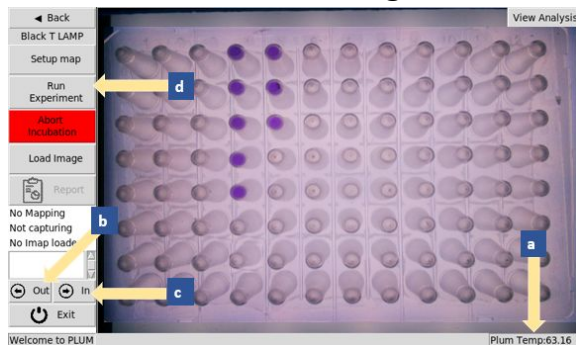
## Main Window



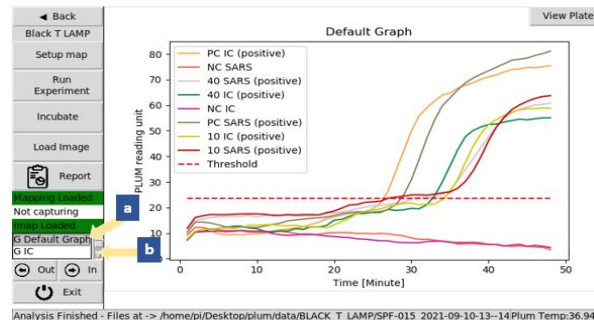
## Map Setup



## Reaction In Progress



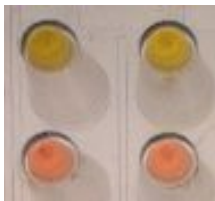
## Results



# PLUM Multi-Mode Detection: Fluorescence / Colorimetric

## Testing Principle (LAMP)

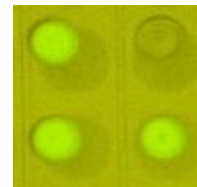
$\Delta\text{pH}$  Sensitive



$\Delta[\text{Mg}^{2+}]_{\text{free}}$



dsDNA Intercalation



## Output Signal

Pink-Yellow

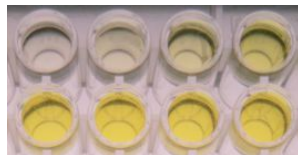
Blue-Purple

Fluorescence

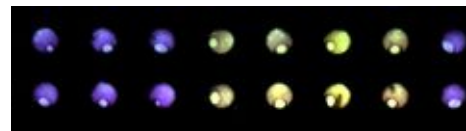
## Output Result

- Images
- Graphic Plot
- Raw Readings in Excel

## Additional Capacity



ELISA Reading



Paper-based, 384 well plate Reading

# SARS-CoV-2 Nucleic Acid Amplification Platform

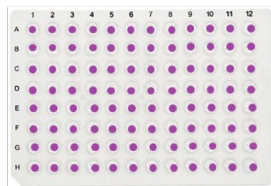
## Preparation



PCR Tubes/Strips

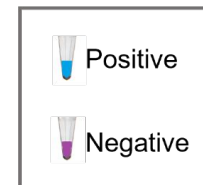
## Incubation

Incubate at 65°C  
for 50 min



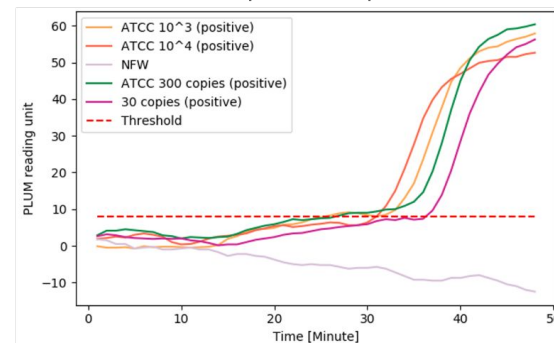
96 well plate

## Analysis



PLUM-HT™

## Graphical Output



For research use only.

# SARS-CoV-2 Nucleic Acid Amplification Kit

Reagents are shipped at **room temperature**. All the reagents except Nuclease Free Water (NFW) are in the lyophilized form.

Components	Description of Components
Master Mix	Reagents for LAMP Reaction.
SARS-CoV-2 Primer Mix	Primers amplifies ORF1a and E1 gene.
Internal Control Primer Mix (IC)	Primers amplifies Actin B gene.
Positive Control (PC)	Gene of SARS and Actin.
Lysis Additive	(Optional) Lysis the cells to release the nucleic acid for amplification.
Nuclease Free Water (NFW)	

**For research use only.**

Kit size: 96 reactions or 24 reactions

# SARS-CoV-2 Nucleic Acid Amplification Kit



Kit works both with extracted RNA samples and direct nucleic acid samples in UTM, VTM, PBS or Saline.

**EXTRACTED RNA:** Sample input could be an extracted RNA eluted in NFW, TE Buffer or RNA extraction kit's elution buffer.

**8 ul of extracted RNA + 8 ul of rehydrated reaction mix**

**DIRECT LAMP with direct samples:** For using samples with intact virus suspended in PBS, VTM, UTM or saline.

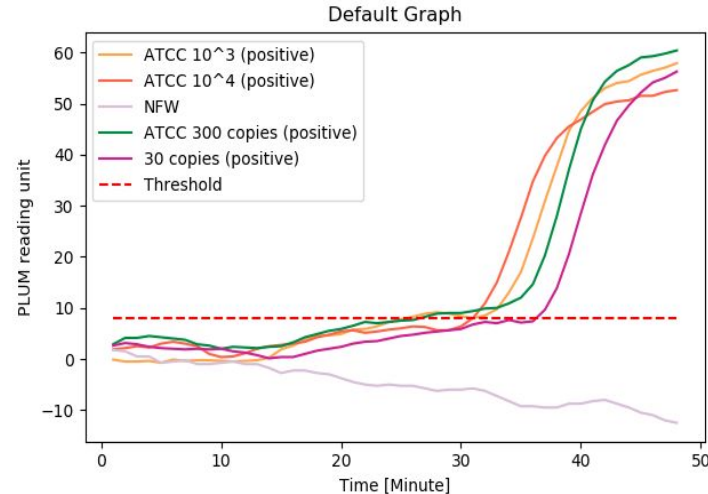
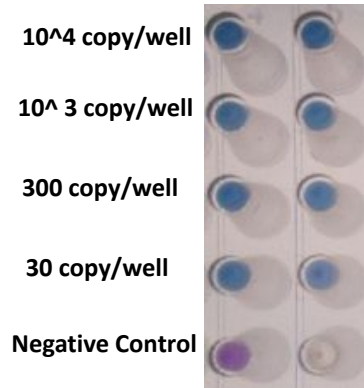
**4 ul of heat lysed sample + 12 ul of rehydrated Primer Mix**

**For research use only.**



# SARS-CoV-2 Nucleic Acid Amplification Kit

## I. For EXTRACTED RNA protocol



- RNA was extracted from commercial heat inactivated intact virus.
- Robust Sensitivity greater than many lab tests.

**For research use only.**

\* Pictures and graph generated by PLUM device developed by LSK.

\*\* Threshold for reference.

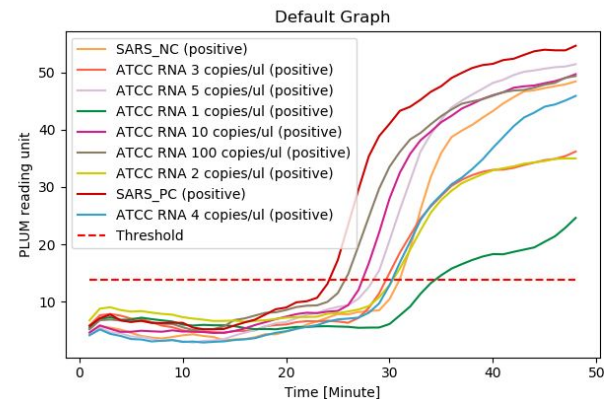
# SARS-CoV-2 Nucleic Acid Amplification Kit

## I. For EXTRACTED RNA protocol

Kit Performance on SARS-CoV-2 Detection using Extracted RNA

RT-qPCR cT	TTR	Copies/ul (8uL added)	
32.6	25	100 copies/ul	PC
36.3	27	10 copies/ul	*NC
37.1	28	5 copies/ul	
38.7	30	4 copies/ul	
38.5	30	3 copies/ul	
Not detected	30	2 copies/ul	
Not detected	34	1 copies/ul	

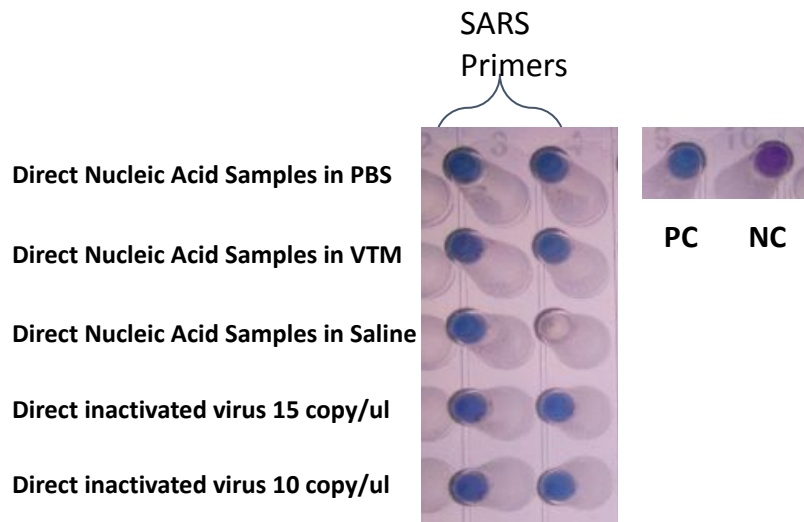
For research use only.



\*NC: invalid negative control

# SARS-CoV-2 Nucleic Acid Amplification Kit

## II. For DIRECT LAMP protocol



- Acceptable sample type include VTM, UTM, PBS and Saline.
- Robust sensitivity with LOD of 10 copy/ul for direct LAMP protocol and

**For research use only.**

\* Pictures generated by PLUM device developed by LSK.

## Platform Highlights

- **Affordable**
  - Portable device PLUM: \$3,500 USD
  - All in one RT-LAMP Test: \$500 USD / 96 reactions
- **No cold chain** storage required
- **Adaptable** - The device can detect pink-yellow, black-purple and fluorescent RT-LAMP, as well as other optical reactions such as ELISAs
- **High Performance**



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Questions?

Thank you for listening.