toroivd® One Test One Health

TOROUNIT®

qPCR Cycler Plus

Instruction Manual

Version 1.0

TOROIVD TECHNOLOGY COMPANY LIMITED.

Head Office: Building #C1, 880 JiangYang Nan Road, Baoshan,Shanghai,China.

Factory: Building #20, 888 Zhujiang Road, Rudong ,Jiangsu,China. 226400

The instruction manual must be properly placed in the product box during shipment.
The user is required to keep this manual in a safe place so that it can be consulted when needed.

Thank you for choosing our products.

Please read this instruction manual carefully before use.

Content

Declaration

TOROIVD guarantees that the TOROUNIT® qPCR Cycler Plus have passed all the comprehensive tests and meet the requirements of the specification.

The use of instruments must comply with the instructions and safety warning given in this user manual, otherwise it is not covered within the scope of guarantee.

Built-in software: any software related to the instruments is free of charge to the customer as a service. The software is a necessary tool for operating the instruments.

Software ownership: TOROIVD holds the copyright of the software and grants the clients the power to use the software.

Software change: In order to improve its performance and reliability, TOROIVD reserves the right to modify function or design prior to or subsequently failing to notify the customer. TOROIVD owns all intellectual property rights ofthe modified versions.

Responsibility: TOROIVD is not responsible for the failure to comply with the instructions given in the instruction manual or the direct or indirect and incidental losses arising from the incorrect use of the TOROUNIT® qPCR Cycler Plus . The responsibility of TOROIVD is limited to the maintenance of equipment and replacement of accessories.TOROIVD will not undertake any responsibility for the interpretation of the results of the experiment and the consequences arising from the application.

Before using the TOROUNIT® qPCR Cycler Plus , please be sure to read the manual carefully so that you can get the best experimental results.

Chapter 1 Safety Instructions

△ Before using the TOROUNIT® qPCR Cycler Plus,

Users must read the safety tips carefully!

1.1 Definition of Symbols

The following symbols may appear in the instruction manual.

Symbol	Title	Description
	Warning	This symbol is used to indicate the following information: if don't follow the prescribed procedure or instruction , it may result in physical injury or damage to the instrument.
	Attention to high temperature	This symbol is used to identify potential heat damage on the surface of the instrument.
	Biohazard	This symbol is used to express the following information: must be careful when contacting a substance that is potentially dangerous

The following symbols may appear on the instrument.

Symbol	Title	Description
	Read the Manual carefully.	Sign on the instrument's nameplate
	Attention to high temperature	The symbol is next to the metal module
	Biohazard	Sign on the instrument's nameplate and is next to metal module

1.2 Operating Requirements

TOROUNIT® qPCR Cycler Plus can only be operated by skilled personnel .

► The instrument is mechanical and electrical equipment, if it is not strictly used according to the manual, it may cause electric shock or physical damage and other potential dangers to the user.

► Operation should be in strict accordance with the instrument safety tips;

► The user can replace the fuse according to the manual. However, the user can not open the instrument or replace other accessories, and in this way the damage to the instrument is not included in the scope of warranty;

► Only the professional personnel of this instrument manufacturer can allow to repair the instrument;

► Do not push the heat cover when the instrument is running;

► The instrument must be installed in clean indoor ventilation, avoid corrosive gas and strong magnetic field interference, avoid sunlight and strong direct light, and used in the specified temperature and relative humidity conditions;

► According to the product technical standard, working conditions of the instrument for indoor air temperature is between 4 ℃ and 35 ℃, relative humidity should be below 85%.

► Safety goggles and gloves must be taken when dealing with toxic, corrosive or infectious substances；

► Although highly purified nucleic acids are in contact, be careful to guard against the potential hazards of all biological substances. The disposal or discard of these wastes must comply with local safety regulations. If the spatter or leak occurs carelessly, it should be disinfected immediately with appropriate disinfectant to prevent the contamination of laboratory personnel and instrument;

► The damaged instrument must be returned to the manufacturer for repair; the surface of the instrument must be disinfected before repair.

►It is strictly forbidden to touch metal module to avoid scald when the instrument is running and when it is finished.

1.3 Electrical Safety

► The electrical safety design protection level of TOROUNIT® qPCR Cycler Plus is Class I（IEC）；；

► In order to prevent the shock hazard, the instrument must be connected to a three-core grounding socket, the voltage is 100 ~ 240V (50 / 60Hz).

► Before the instrument is connected to the power line, it is necessary to ensure that the voltage, frequency is consistent with the requirements of the instrument. When the power cord is connected,power supply must be closed；

► Do not touch the power switch and power cord with wet hand;

► Do not remove the power cord when the instrument is not cut off;

► Do not clean the instrument when the instrument is not cut off;

► Do not replace the fuse when the instrument is not cut off;

► Please turn off the power when the instrument is not in use;

Chapter 2 Product Introduction

2.1 Product features

1. Small size, light weight and easy to carry. Easy to meet the needs of the experiment.

2. The function is powerful and can be used for quantitative, melt curve, negative/positive analysis and so on.

3. Built-in 7-inch capacitive screen PDA, touch screen operation, simple and quick.

4. 16x0.2ml reaction module, which is compatible with 8-strip tubes and single-tube.

5. Marlow'shigh quality of PeltierTEC, combining with the temperature control mode of the German high-end PT1000 temperature sensor and electric resistance heating compensation edge.

6. Simple and intuitive software guidance, easy to run PCR experiment.

2.2 Intended Use

The TOROUNIT® qPCR Cycler Plus are used to run Real-Time Quantitative Thermal Cycler experiments, and analyze the experimental data； The instruments can be operated in the laboratory, as well as in the wild scientific experiments with corresponding reagents, having a rapid and accurate qualitative and quantitative detection or melt curve of target nucleic acid on the sample to be detected or other analysis.

The operator is required to take specialized training of PCR laboratory technology and instrument, software operation and has a good command of relevant operation skills.

2.3 Application field

□Basic science research

□Pathogen detection

□Meat adulteration

□Transgenic detection

□Food safety testing

□Drug development and rational use

□Gene expression

□Water monitoring

2.4 System Performance Parameters

Basic performance	
Overall dimensions	320*240* 177mm
Weight	4.5Kg
Power supply	100-240V， 50-60Hz
Noise level	45db
Communication interface	USB
Operating environment parameters	
Operating ambient temperature	4～35℃
Operating environment relative humidity	≤85%
The temperature of transportation and storage	-20～55℃
Transport and storage relative humidity	≤85%
Performance of PCR system	
Sample throughput	16-well *0.2ml
Sample volume	25～120ul
Apply consumables	0.2ml single pipe/ 0.2ml 8-strip tubes
Temperature control range	4～99℃
Temperature accuracy	±0.2℃
Temperature uniformity	±0.25℃
Maximum heating rate	4.5℃/s
Maximum cooling rate	3.8℃/s；

Fluorescent detection system performance	
Light source	High brightness LED
Detector	PD
The transmitting medium to excite and emit	High temperature professional optical fiber
Sample linear range	10-10^{10}copy
Sample linearity	R≥0.99
Channel I	Excitation: 525nm±10nm Detection：570nm±10nm Dye of probe：VIC，HEX，TET，JOE
Channel II	Excitation: 570nm±10nm Detection：620nm±10nm Dye of probe： ROX,Texas Red
Channel III	Excitation: 470nm±10nm Detection：520nm±10nm Dye of probe： FAM,SYBR Green I,Eva Green

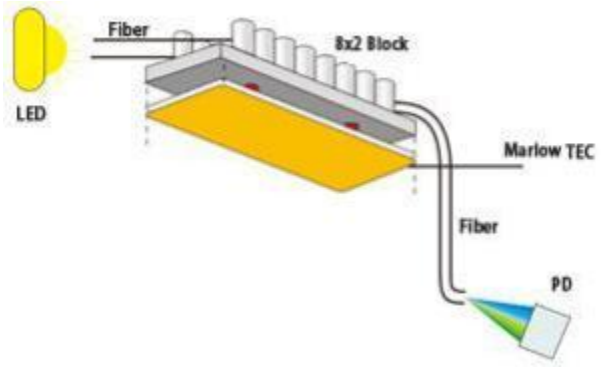


Figure 1. The Optical system of TOROUNIT® qPCR Cycler Plus

Chapter 3 Opening and Installation

The installation of TOROUNIT® qPCR Cycler Plus is quite easy, it can be installed and debugged by the user. Follow these following steps.

3.1 Packing list

1. The TOROUNIT® qPCR Cycler Plus instrument
2. Power cord and adaptor
3. Operational manual
4. Warranty card and quality certificate

3.2 Hardware installation

3.2.1 Working conditions

1. The environment temperature：4℃~35℃
2. The environmental humidity：≤85%
3. Voltage range：100～240V

3.2.2 Instrument working platform

1. Put the TOROUNIT® qPCR Cycler Plus instrument on the horizontal bench.
2. The TOROUNIT® qPCR Cycler Plus instruments are cooled by fan， so there should be no obstruction in 15cm around the instrument. When multiple instruments are used at the same time, the distance between each instrument should be no less than 50cm.

3. Please do not place the instrument in an area of excessive humidity, high temperature or direct sunlight, which may affect the performance of the instrument.

4. Do not share the same power socket with other large power devices such as centrifuge and air conditioner to avoid power supply voltage fluctuation.

5. Connect the adapter to the instrument, connect the adaptor to the power socket, and turn on the instrument.

6. The USB interface is used to connect the U disk for software upgrade or copy data. Please do not insert the U disk irrelevant to the work of the device to prevent virus intrusion or data loss.

7. When the LAN port is connected to the PC, only the internal network of the hospital should be used, and the external network should not be connected to prevent the intrusion of viruses or the loss and leakage of data and information.

7. The TOROUNIT® qPCR Cycler Plus are easy to operate. See the instructions below for detailed steps.

8. In order to prevent the shock hazard, the instrument must be connected to a three-core grounding socket.

9. Do not place the device in a location where it is difficult to access the disconnect device.

3.2.3 Note

1. Available single tube, 8-strip tubes， the consumable's side wall needs to be transparent. Recommend using flat cover. After the operation of the instrument, the disposal of waste samples and consumables shall comply with the safety rules and regulations formulated by the local health and related departments. Infectious waste should be autoclaved before transferring to a designated location. Consumables cannot be reused, and the expiry date on the package should be confirmed before use.

2. Do not plug in the USB flash drive during the experiment.

3. During the operation of the experiment, it is forbidden to turn off the power switch directly. If you need to stop the experiment

in advance, please click on the touch screen to stop running and then turn off the power.

4. During the experiment, the heated-lid temperature is high, and it is forbidden to touch the lid position when the instrument is running.

5. When copying files from the instrument, please wait 2 minutes to ensure that the files are fully pasted and then pulled out of the USB flash drive.

6. The volume of each tube reaction system is at least 25ul.

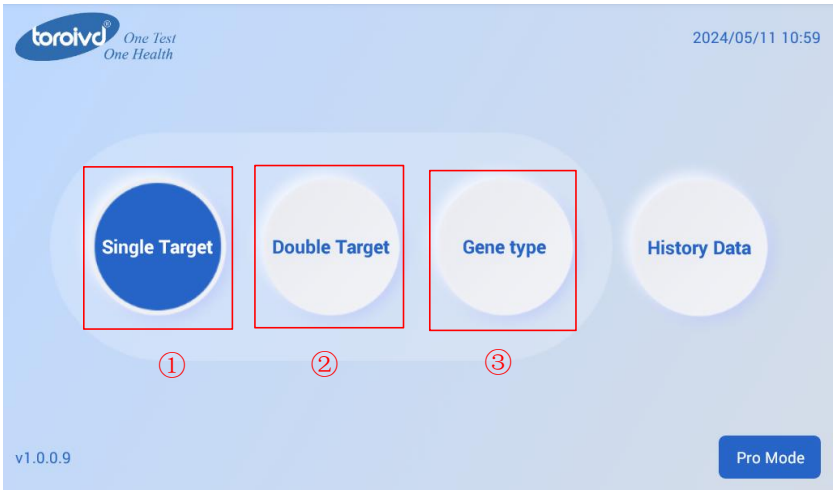
7. During the operation of the experiment, make sure that there is no obvious change of light intensity around the instrument.

Chapter 4 Quick Settings Manual

When using POCT bircks of Dropper PCR reagent system from TOROIVD, the following Quick Settings Manual can be directly used.

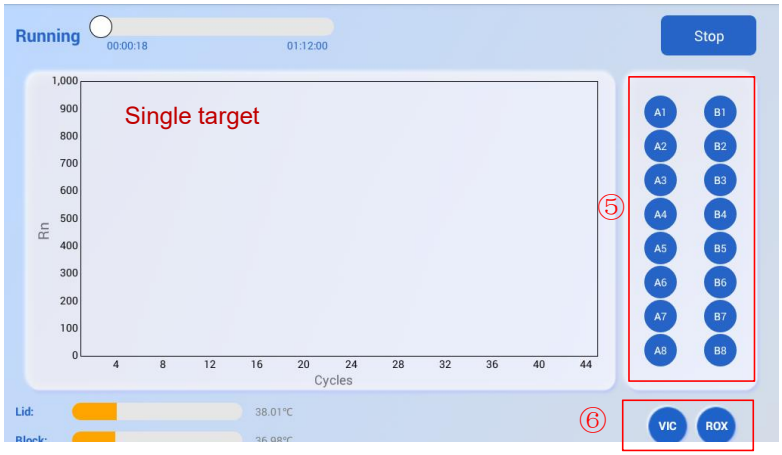
4.1 Software Operation

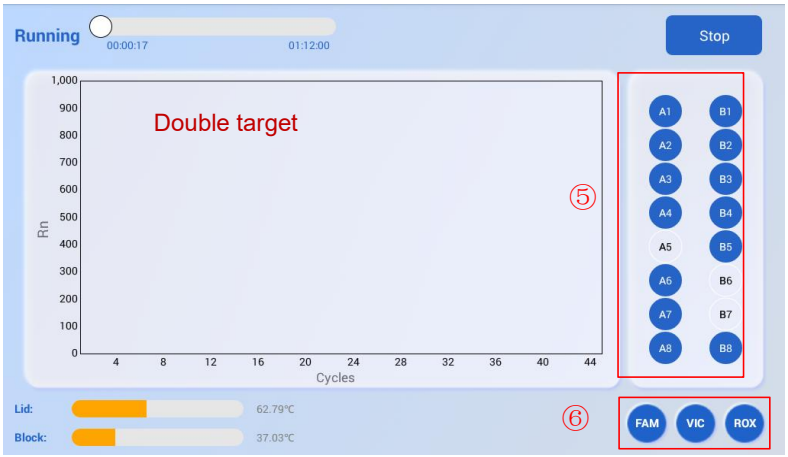
1. After turning on the power, directly enter the software main interface; Display three shortcut buttons: "Single target" ①, "Double target" ②, and "Gene type" ③.



2. According to the type of 7G One ® PP Mix(or TOROIVD ® Gene test tube)，please select the corresponding button to enter the “Sample Confirm” interface. You can input "Experiment Name" and "Sample name"，and click the "Start test" button ④ directly to run.

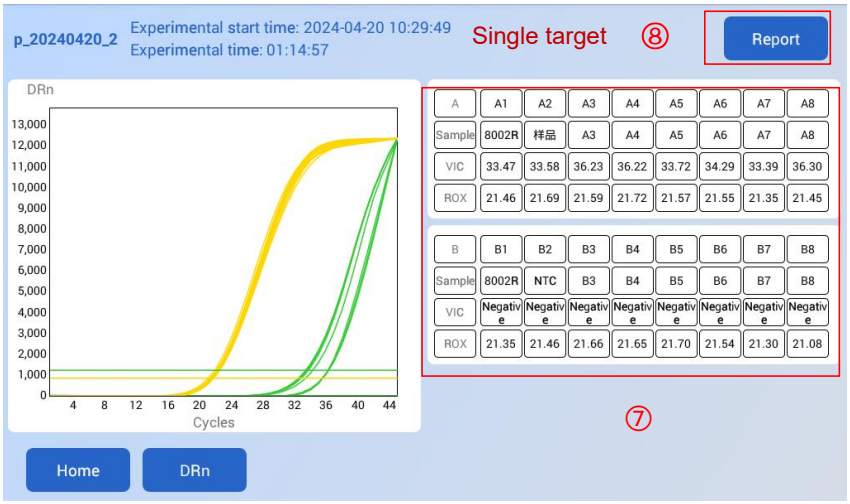
3.Under the three running states, the corresponding "Sample button" ⑤ and "Fluorescence channel" button ⑥ can be selected for display.

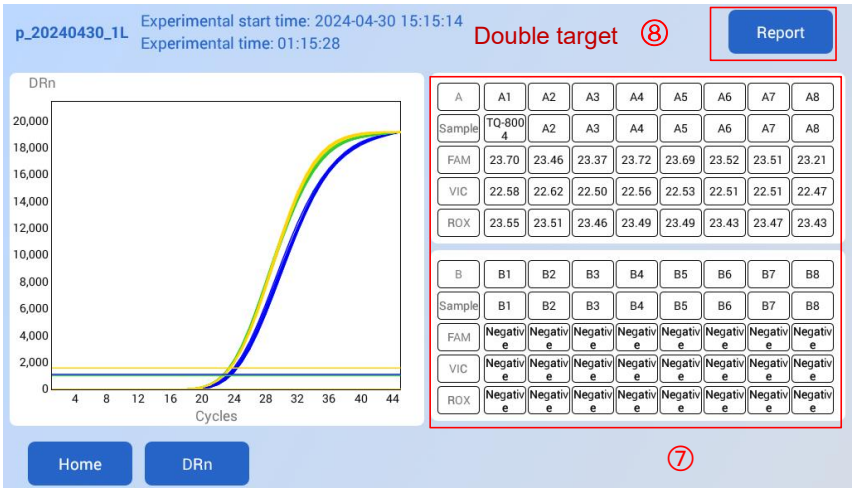


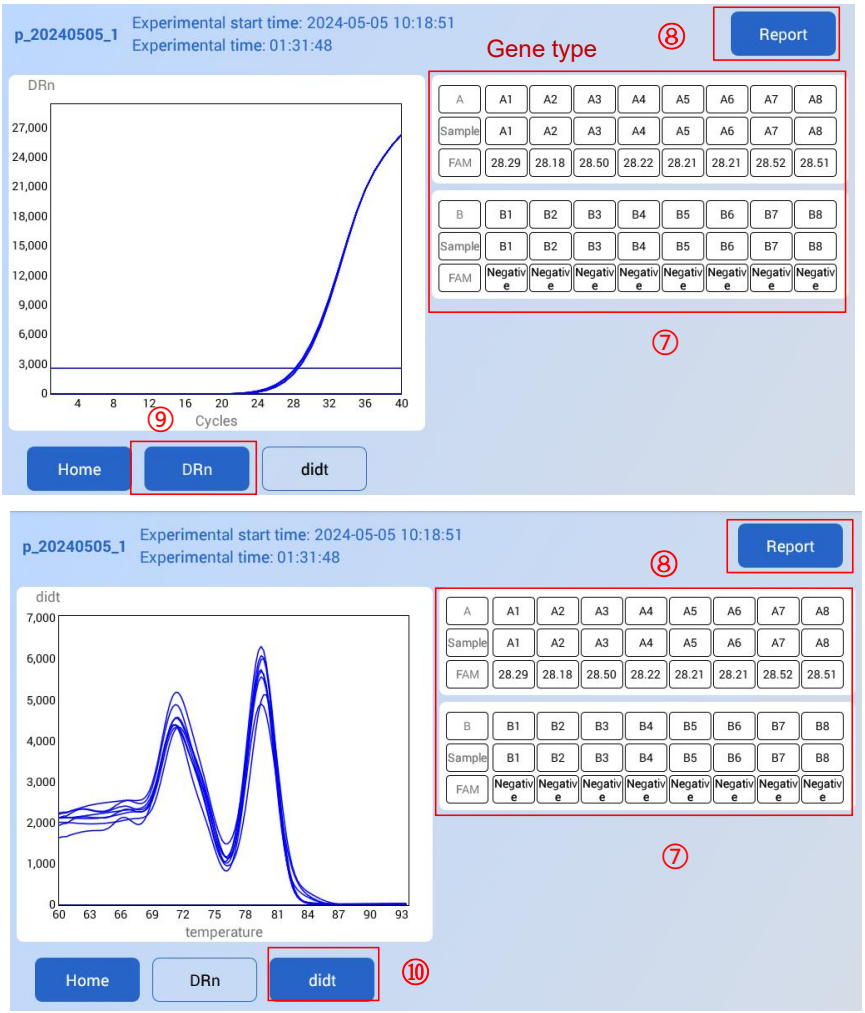


4.2 Result analysis

1. After running, enter the result analysis interface, which is divided into three types of interfaces: "single target", "dual target", and "gene type". Click on the "wells and Channels" section ⑦ to select and display each well corresponding to the fluorescent channel.







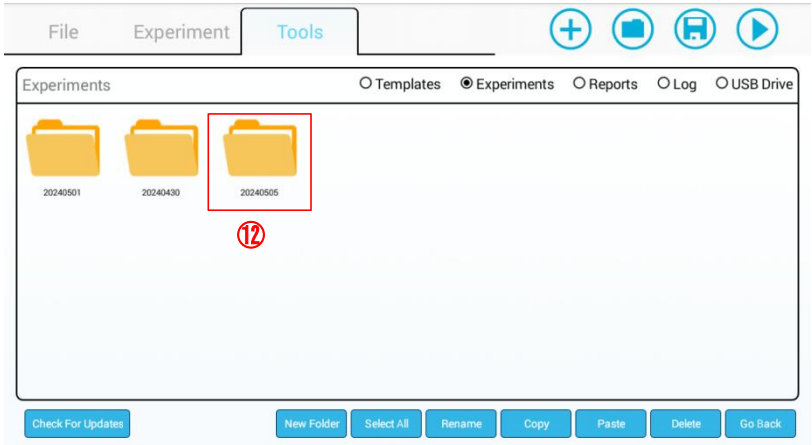
2. Under the "Gene type" result analysis interface, select the "DRn " button ⑨ to display the amplification plot or "didt" button ⑩ to melting curve respectively.

3. Under the result analysis interface, you can click the "Report" button ⑧ to enter the PDF version of the report preview interface..

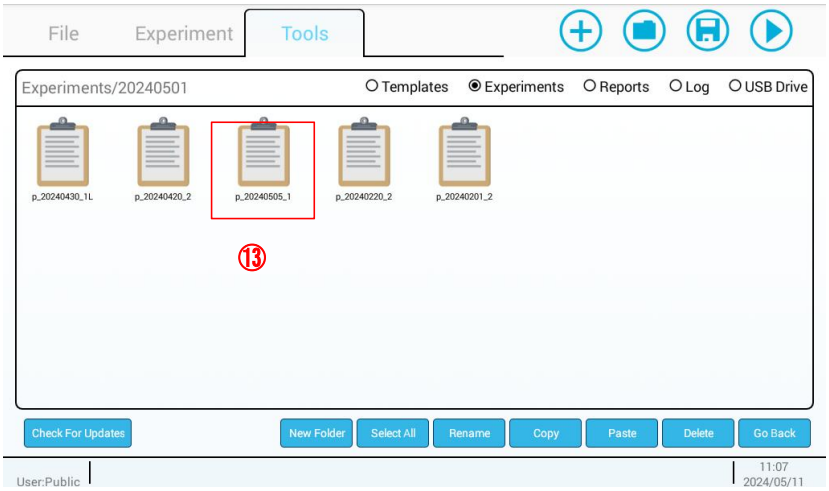
4.3 History Data

1. If you need to view history data, click the "History Data" button on the main interface to enter the experimental data folder interface.

2. The experimental data folder is sorted by date. Click on the desired folder to enter the file list interface.

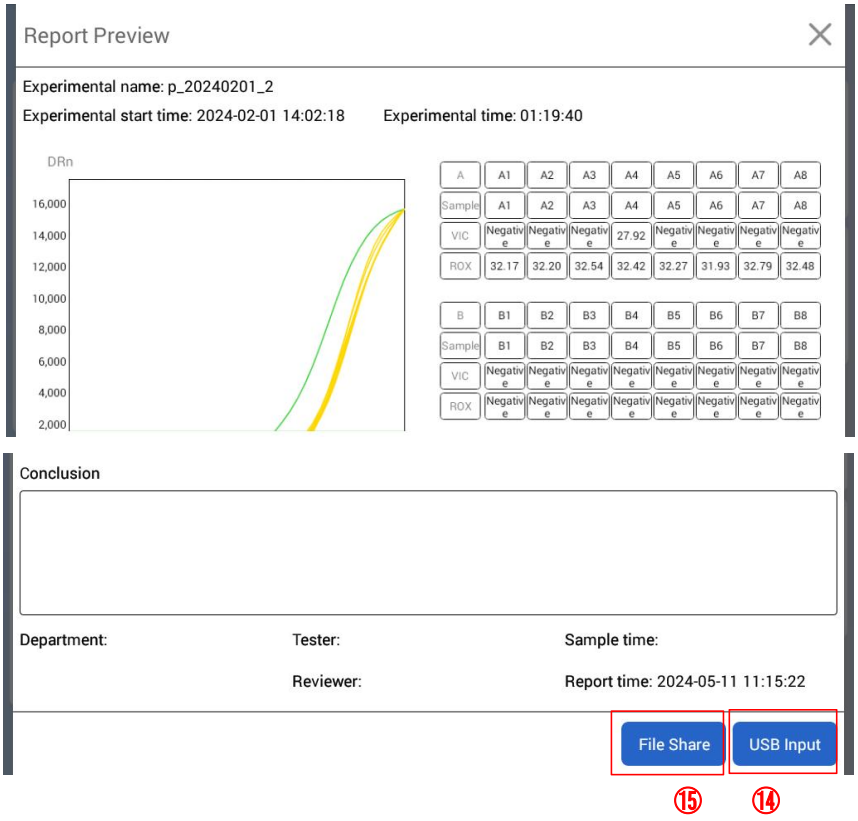


4. Select the file you want to view in the file List" and click the file to directly enter the result analysis interface.



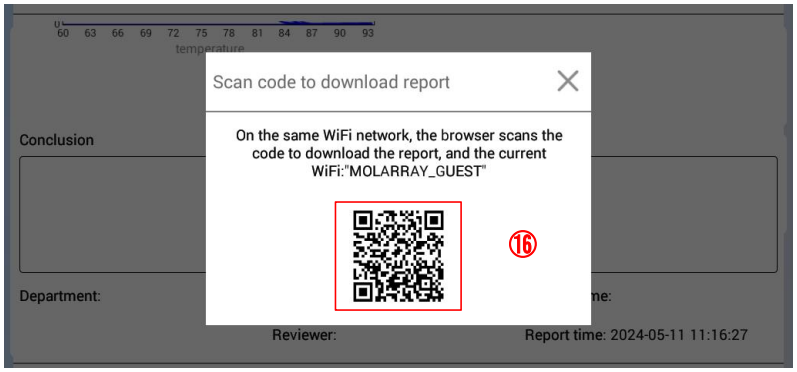
4.4 Export Report

1. Under the result analysis interface, you can click the "Report" button ⑧ to enter the PDF version of the report preview interface. There are two forms of report export: "file share" and "USB input".



2. USB input: Insert a USB drive, click the "USB input" ⑭button, and the PDF version of the report will be directly exported to the USB drive.

3. File share: With WiFi connection settings, click the "File Share" button to generate a QR code.

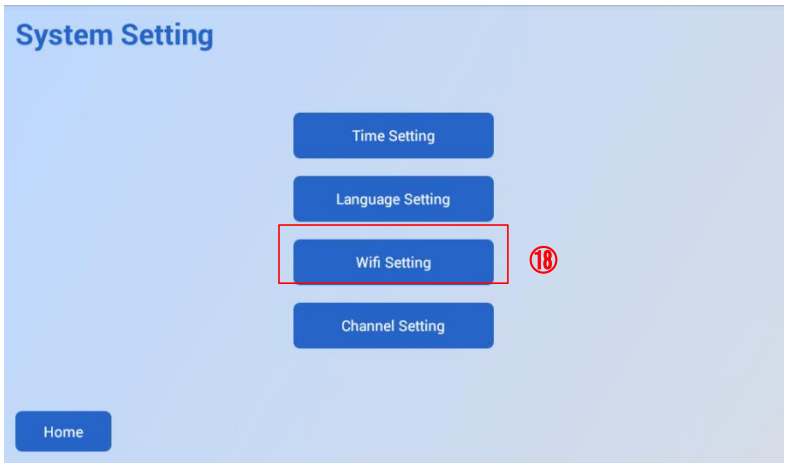


4. Scan the QR code ⑯ with your phone to download the PDF version of the report.

4.5 WiFi Settings

1.Click on the logo of TOROIVD⑰ in the main interface icon to directly enter the system settings interface.

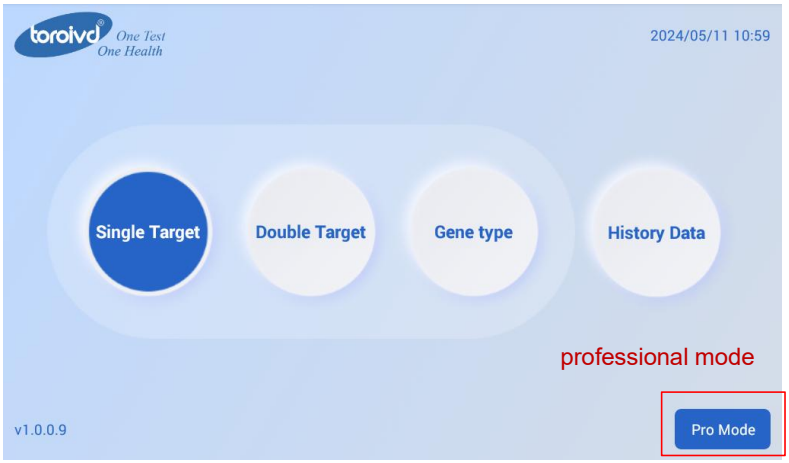
2. Click the WiFi settings button ⑱ to enter the WiFi connection interface.



3. Turn on WLAN ⑲ and connect to WiFi ⑳.

Chapter 5 Operation at ProMode

When using the qPCR reagent system from other company, the laboratory professionals can use ProMode to self adjust parameters. Please click the "ProMode" button to enter professional mode.



5.1 Account management

5.1.1 Login Interface

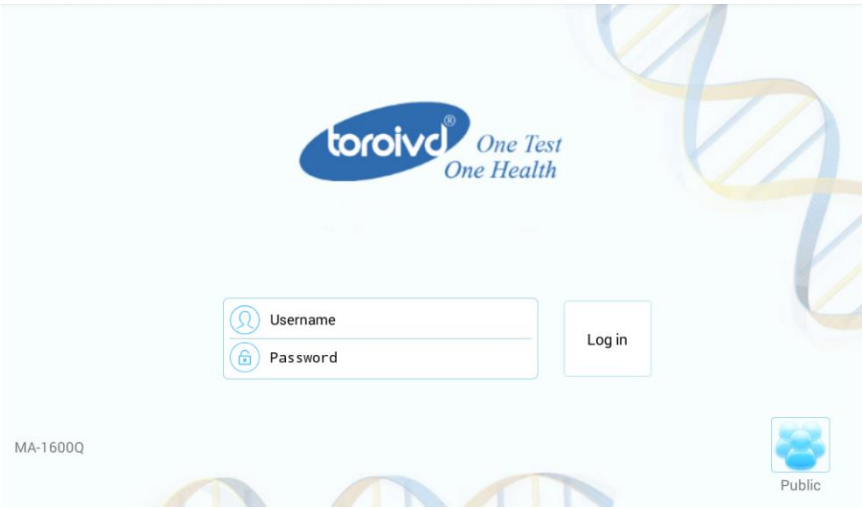
After turning on the device, the default open interface is the login interface. Users can choose the following account to login system：

a. Administrator account: the system's default admin account and password are admin. Administrator can use this account to log in to modify the admin password, or create, modify and delete custom accounts.

b. Public account: public account does not need to manually enter account and password, it is open to all users. Click the Public sign in the lower right corner of the screen, and the system will log in automatically.

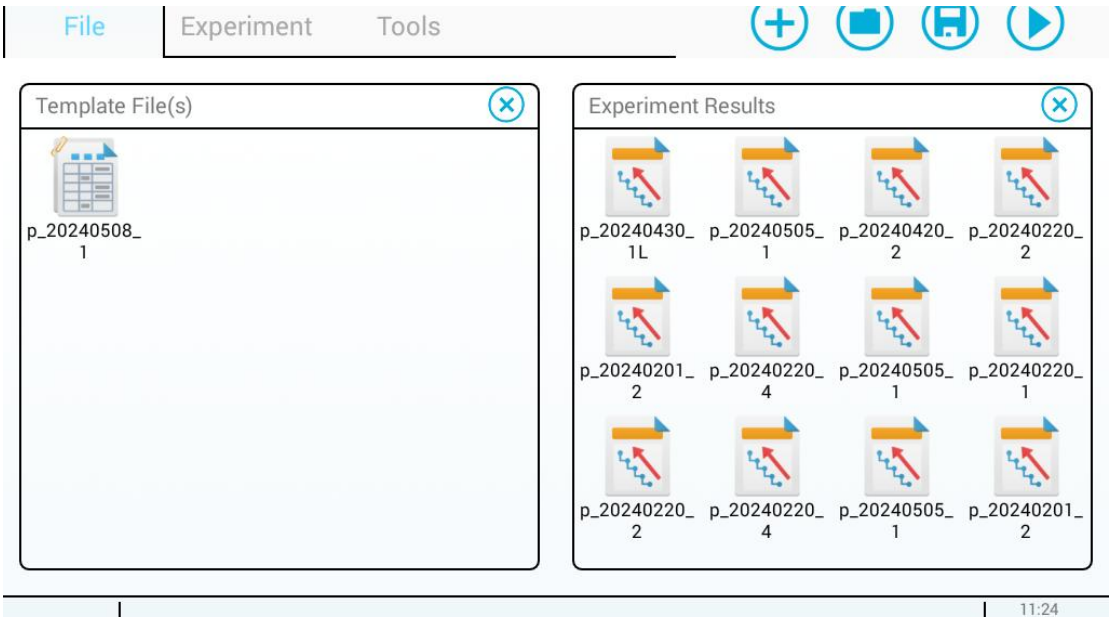
c. Custom account: the administrator creates the generated account. The administrator has the permission to create,

modify, and delete this account. The difference between a custom account and a public account is that you need to enter the correct account and password to log in.



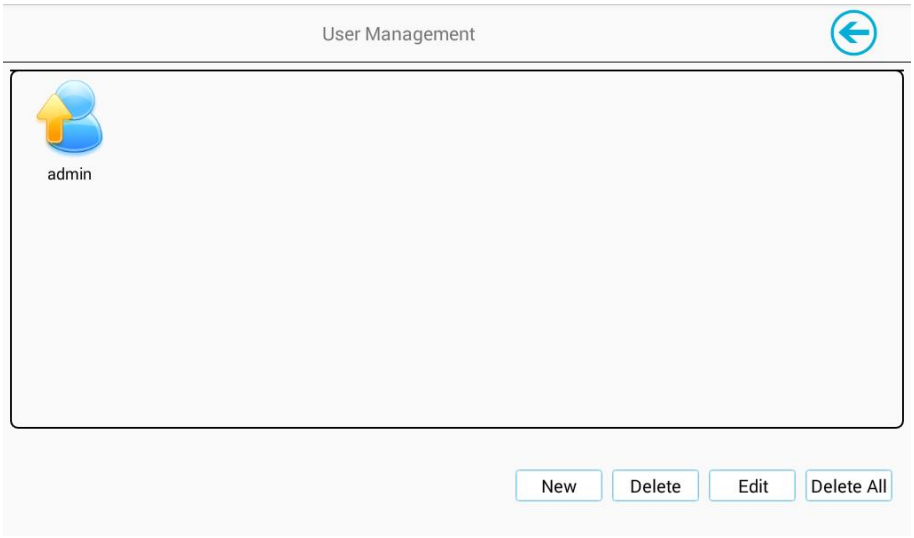
5.1.2 System login interface

Only the public account and custom account can be used to login to this interface. The administrator account cannot login to this interface. The current login user name is displayed in the lower left corner.



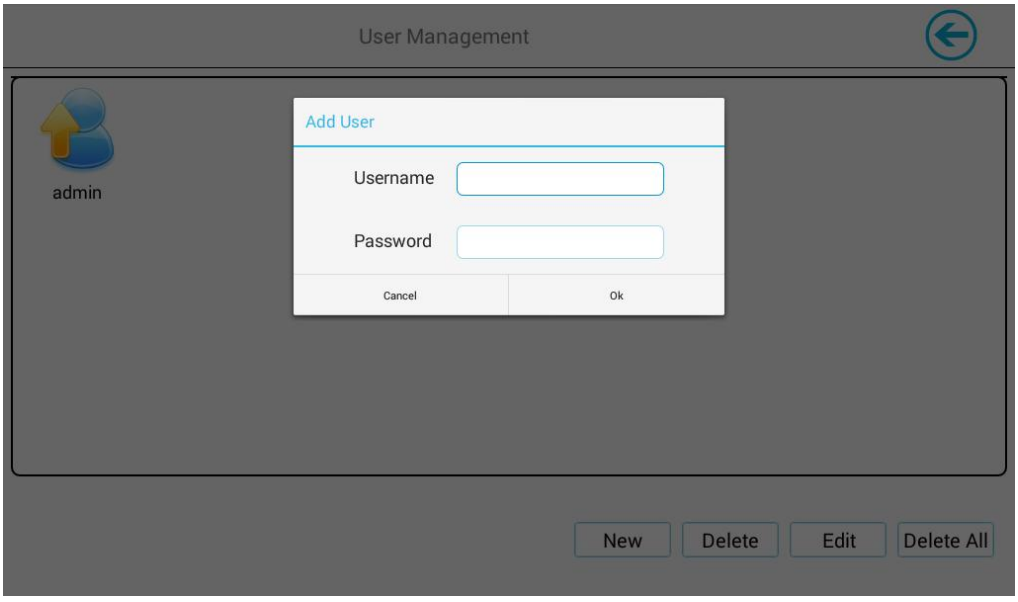
5.1.3 Administrator Interface

The admin can create, delete, or edit custom accounts at this interface. Click <Delete All > to delete all custom accounts, please be careful with this function. Click  in the top right corner, and the system will return to the login screen.



5.1.4 Add new custom account interface

On the admin interface, click <New> to switch to new custom account interface. After entering your username and password, click < OK > to save.

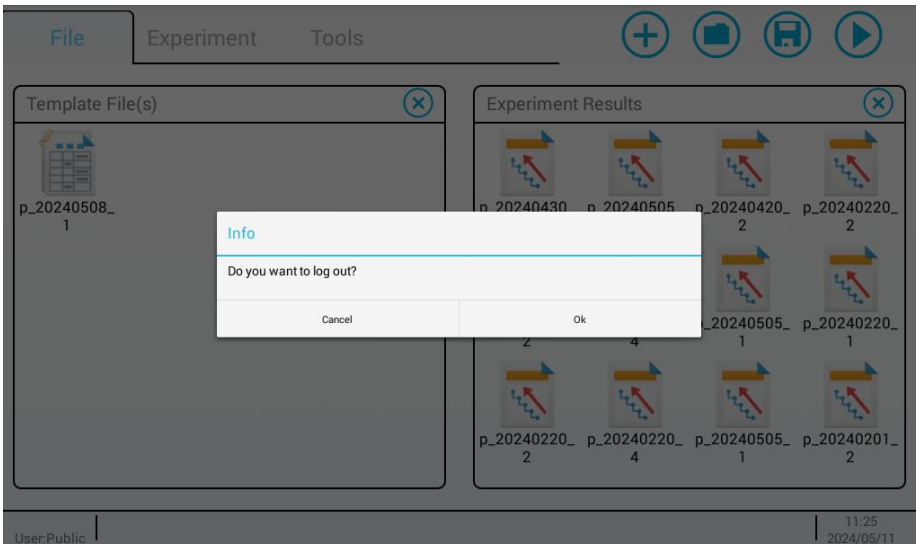


5.1.5 Custom account creation

The admin can select the custom account in this interface to edit or delete it.

5.1.6 Quit the current login account interface

When the system login succeeds, click the <User > in the lower left corner of the interface, a prompt box will pop up to indicate whether to exit the current login account. If you select <OK>, the system will return to the system login interface of 5.1.1.If you select <Cancel>, the system will continue to remain in the current user login state.

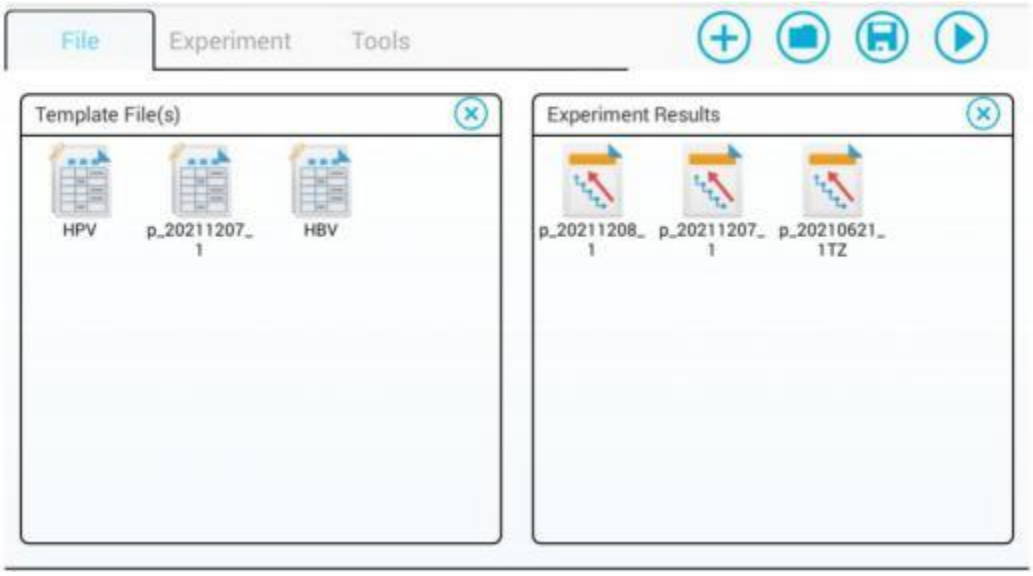


5.2 File management

5.2.1 File interface

5.2.1.1 Template File(s)

The left interface shows the saved template file. In the system of the instruments ， the template file is the experiment's template that the user saved.The user can create a new experiment and run the experiment, or run the experiment directly from the template file of the interface. Directly click on a template file, the system will enter the interface of the template file, and then click 'run'.



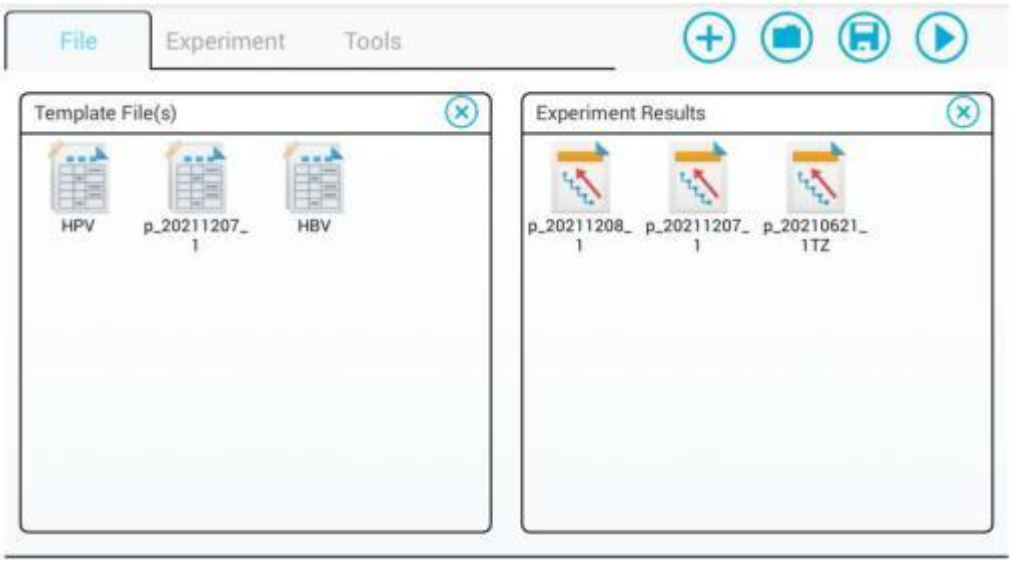
Enter the interface of the file, c in the upper right corner of the Template File(s) interface, and the system pops up to confirm the empty window. If you need to empty the template file, please click <OK >.

Long press a file, the system will pop up the following prompt, click 'Ok', can delete this file.

5.2.1.2 Run file

The right interface is an experiment file interface that has been run and saved. You can click the ⊗ in the upper right corner of the template file interface, the system pops up to confirm the empty window, if you

need to empty the running file, please click <OK>. If you need to open an experimental file, click on the experiment file to open it.



Long press a file, the system will pop up the following prompt, click ‘Ok’, can delete this file.

5.2.2 Tool interface

The folders of the tool interface are named after the date. Each folder has the Templates, Experiments , Reports and Log. USB Drive is an external USB flash drive, as shown in the figure below. The files in the Templates folder are the experiments templates, the files in the Experiments folder are the running files, the data exported by the user is saved in the Reports folder (In the analysis-data interface, click <Generate Report> to export the data), and in the Logs folder are the instrument operation logs. Users can copy templates and experiment files from one instrument to the other instruments via a USB flash drive, or copy the exported data to a computer for viewing. The method is as follows: Insert a USB flash drive on the left side of the instrument, select the file to be copied in this interface, click <Copy> at the bottom, and click the <USB Drive> radio button in the upper right to enter the storage path of the USB flash drive, and then paste. When copying files from the instrument, please wait for 2 minutes to ensure that the files are completely pasted before pulling out the USB flash drive.

Users can also delete files/folders and create new folders in this interface.

In the Tools interface, users can only create or delete folders, and copy files to USB flash drive but can't open the experiment files directly that have been run.

5.2.3 Open folders

Click the in the top of the software, you can open the template file or the experiment result files that have been run. After clicking an experiment file in the Templates folder, click OK below to run the experiment. Clicking the file in the Experiments folder can open the experimental data that has been run, or open the experimental data in the USB Drive.

5.3 Experiment Run and Analysis

5.3.1 Setting

Click in the top of the interface to create a new experiment.

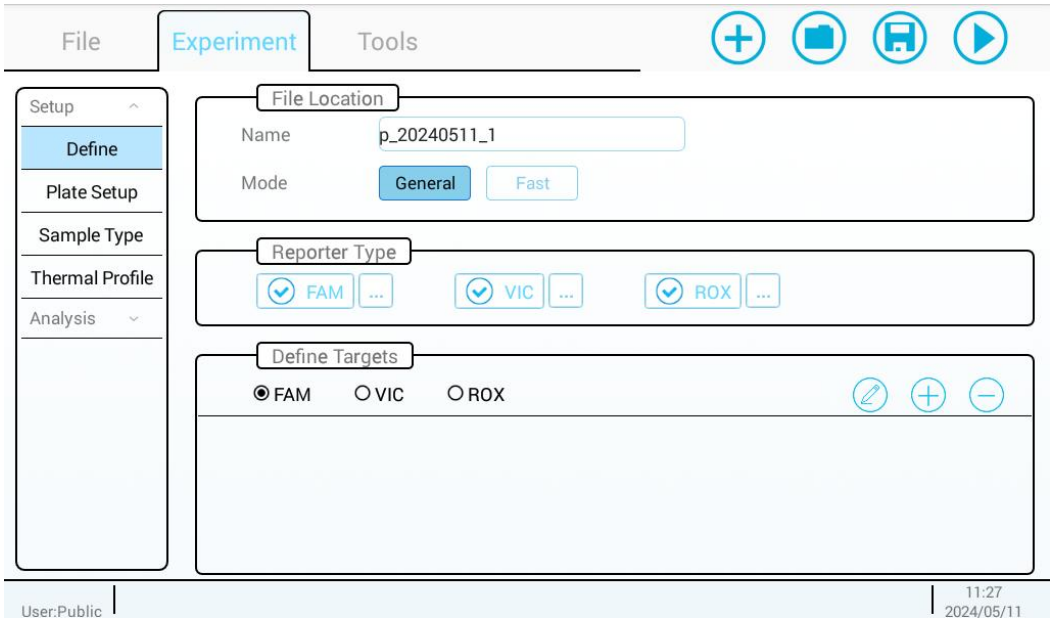
5.3.1.1 Setting-Properties

- Basic information: Including the file name and mode. The file name can be manually modified by the user. The mode includes normal mode and fast mode. If the user is using rapid

detection (relatively short denaturation time and annealing time) reagents, it is recommended to use the fast mode.

- Channels selection: select the suitable channel for experiment. The standard configuration of the instrument shows FAM, VIC, and ROX channels. After selecting the channel, click OK as shown in below picture.

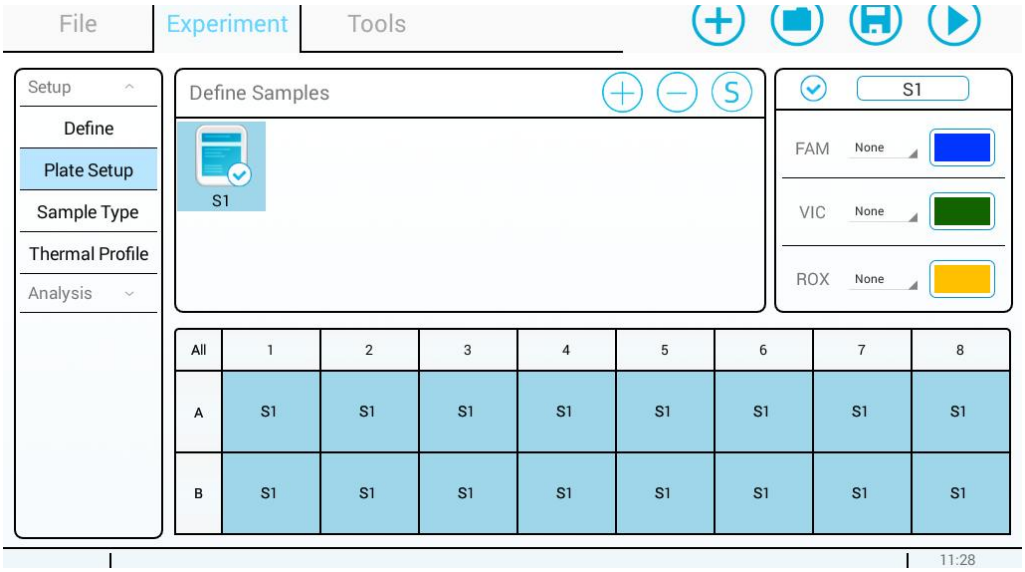
- Detection item: Create the target gene to be detected in the experiment under the selected channel, and edit or delete the selected gene. After selecting the channel, click to create a new target gene, click the created target gene, click to edit the selected target gene, select the created target gene and click to delete the selected target gene.



5.3.1.2 Settings-Samples

Switch to the sample interface. There are three functional selections:

- Define Samples area: the area for creating and deleting sample names.
- Target gene selection area: Edit the sample name and select the target gene target area under the channel.
- Sample well selection area: Select sample wells and set the sample name and target gene.



Sample setup steps:

- Click in the sample management area to create a sample name. The system defaults the first sample name to S1.
- Click the sample name of the target gene selection area to edit it.
- In the target gene selection area, click the gene name drop-down menu behind the channel (such as FAM). From the drop-down menu, select the gene name that needs to be set for the selected sample under the channel.
- Click the colors behind the channel to select any one of the alternative colors.

- If it is a multi-channel experiment, you can select the gene name from the VIC, ROX or FAM channel and set the corresponding color.

- If there are multiple sample names, repeat the above steps to create and set.

- Select the well position to be set from the sample well, then click the sample name in the sample management, and then click  in the sample name editing area from the target gene selection area to check the sample name. This completes the well position setting of a sample name, and then set the sample names of the other well positions according to this method.

5.3.1.3 Setting - Standard

- There are three channels in the top of this interface. For the equipped channels, as long as you have selected channels in the properties

  interface, you can select those channels at the top in the standard interface and configure the properties of the samples for them.

- There are four sample attributes: Unknown, Standard, Negative and Positive. The sample to be tested is unknown, the standard of known concentration is the standard, the negative control is negative, and the positive control is positive.

- Select the single or multiple wells for the sample attributes need to be set, and select one of the four attributes under the corresponding

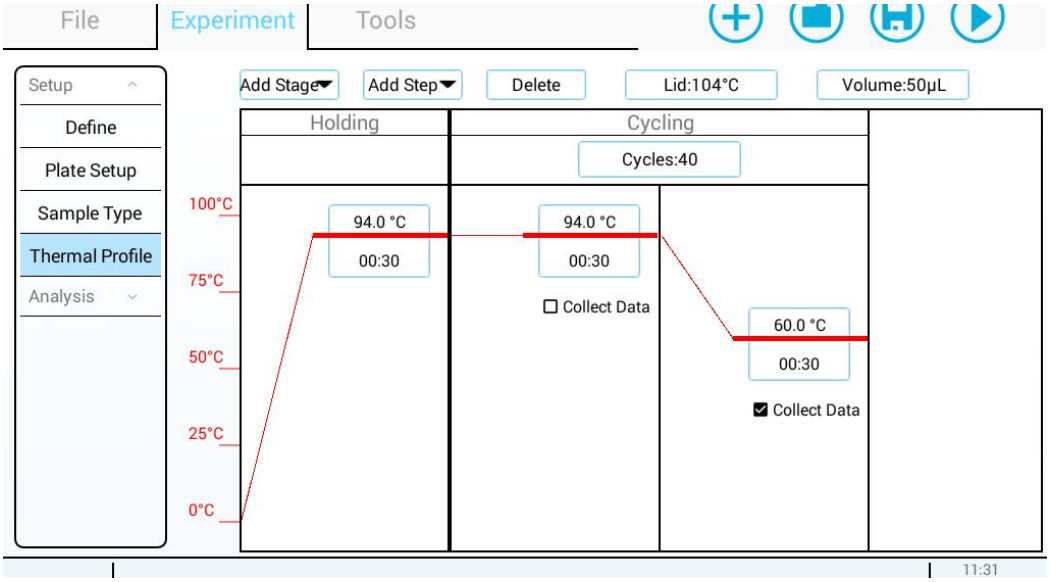
  channel.

- Among them, when selecting the standard attribute, the user needs to input the known standard concentration value in the concentration input box. This is a necessary step for the later calculation of the

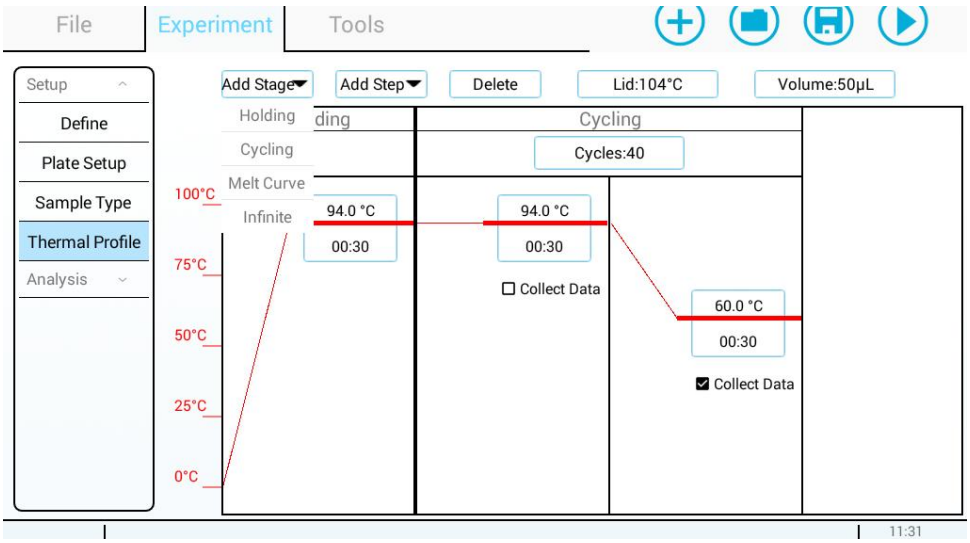
standard curve. The concentration here is not necessarily an accurate concentration value, but the multiple relationship of the standard concentration gradient should be reflected in this concentration value.

5.3.1.4 Setting-Run Method

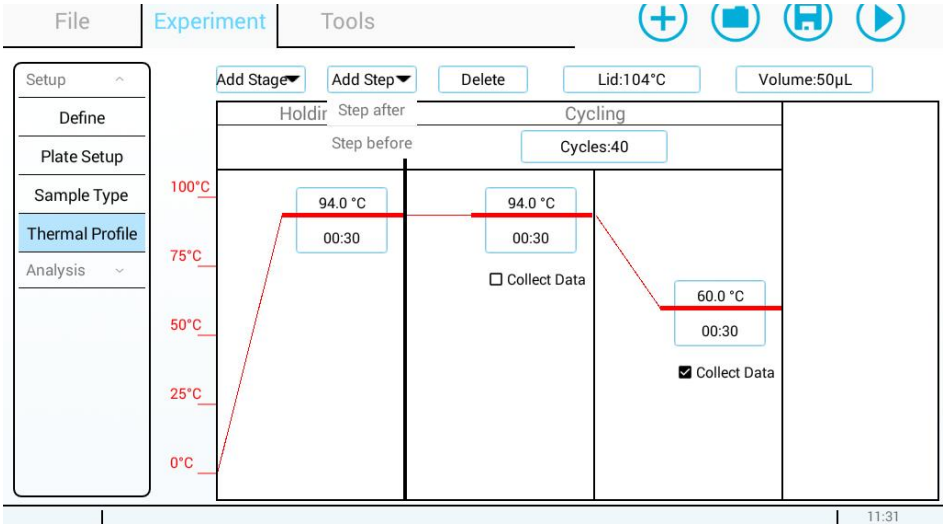
The current interface is the run method setting, and the user can adjust according to the experiment conditions.



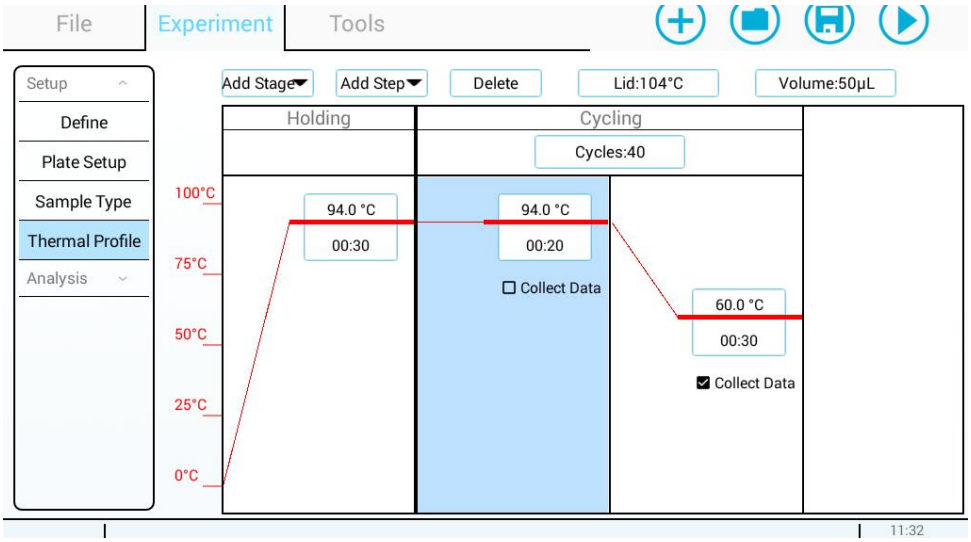
Add Stage: User can click on this menu to choose to add Holding constant temperature stage, Cycling stage, Melt Curve stage and Infinite constant temperature stage.



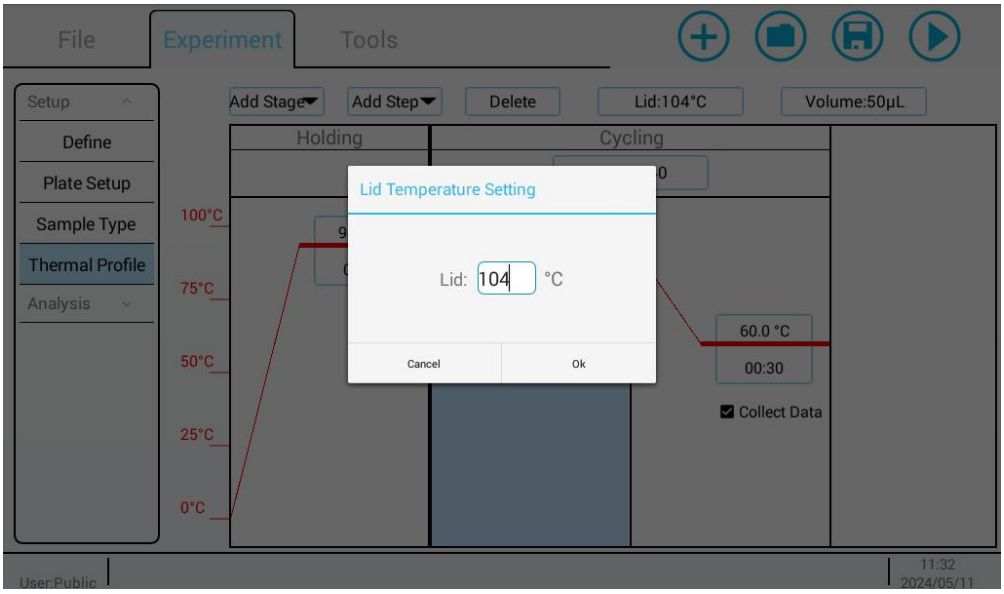
Add step: Click the temperature of a step (the light blue background represents step), click Add Step, and add a step before or after a step specified by the user.



Select a certain step or temperature stage and click Delete to deletethe selected step or temperature stage.



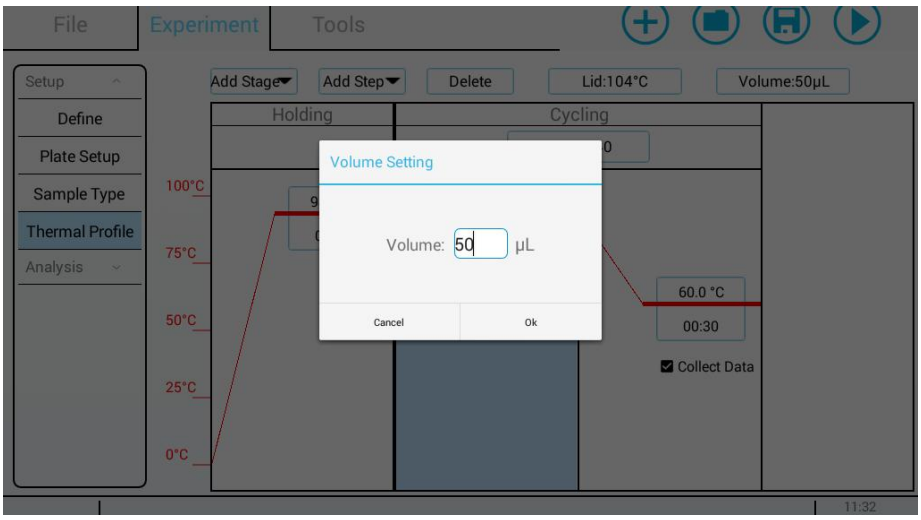
Heated-lid temperature: User can customize the temperature setting of the lid, and the default temperature is 104°C.



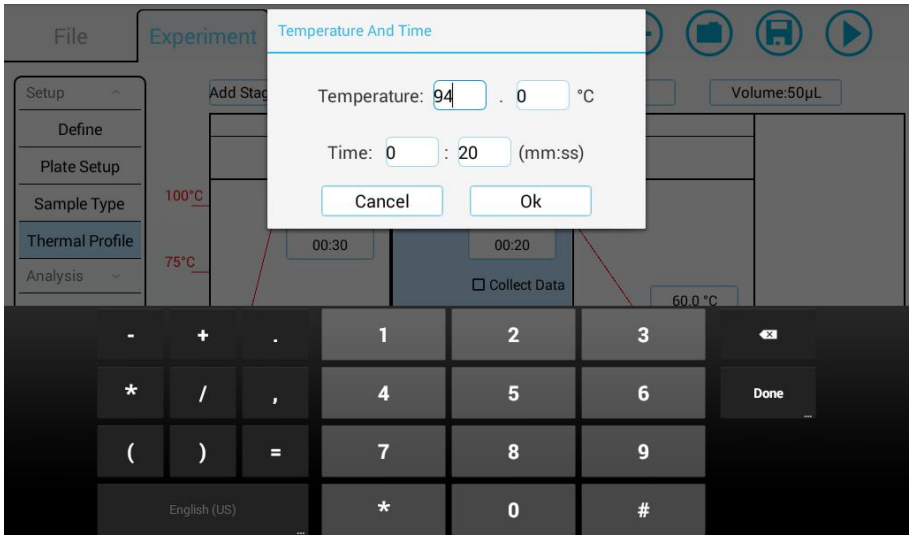
Set as default: If this option is selected, the current reaction program will be saved as the default. The next time you create a new experiment, the system will display this program as the default

reaction program, and the program cannot be modified after it is set as the default.

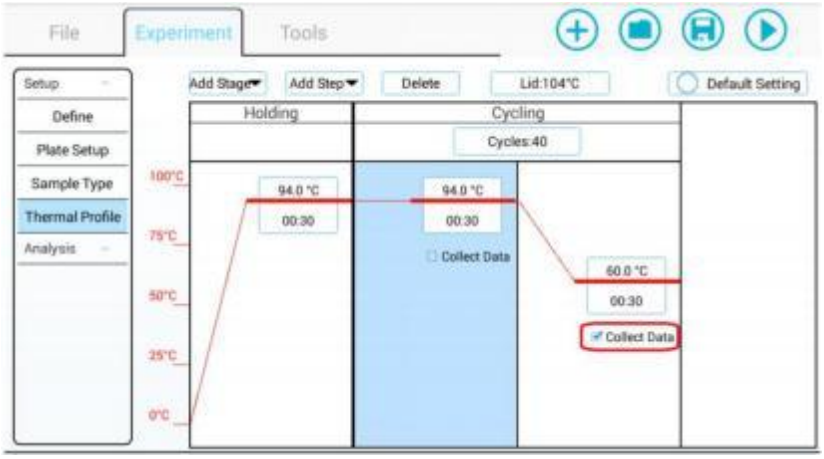
Cycles: Click the cycles to set according to the reagent manual.



Temperature and durationtime settings: each step or stage can be setin the display box of temperature and time.



Collect Data: When this function is selected, all steps will collect fluorescence and perform data analysis. The user can choose the temperature stage that needs to collect fluorescence. The user can only set it in the Cycling stage.



5.3.1.5 Setting-Operation (Isothermal)

The current interface is the reaction program setting interface, and the user can adjust the temperature and time according to the experimental conditions.

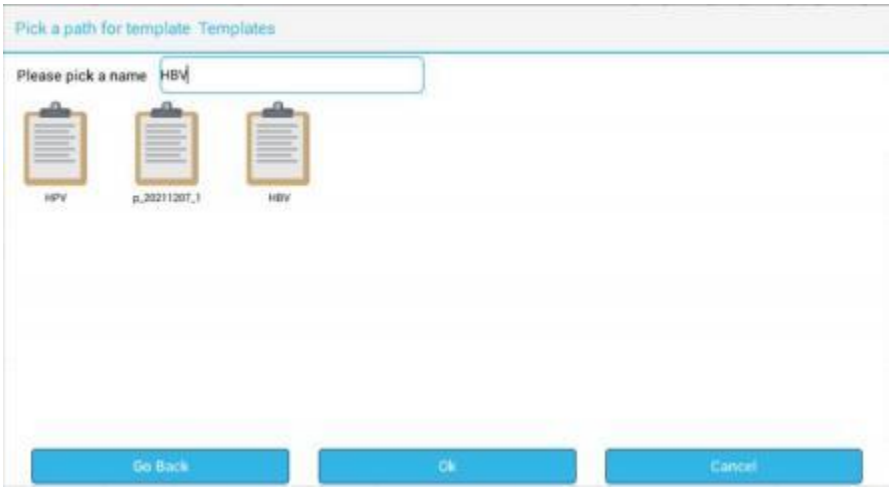
Users can also customize the lid temperature and lighting interval.

The default lid temperature is the reaction temperature plus 10°C, and the default lighting interval is 60S. The lighting interval can be set between 18S to 60S.

Set as default: If this option is selected, the current reaction program will be saved as the default. The next time you create a new experiment, the system will display this program as the default reaction program and the program cannot be edited.

5.3.2 Run experiment

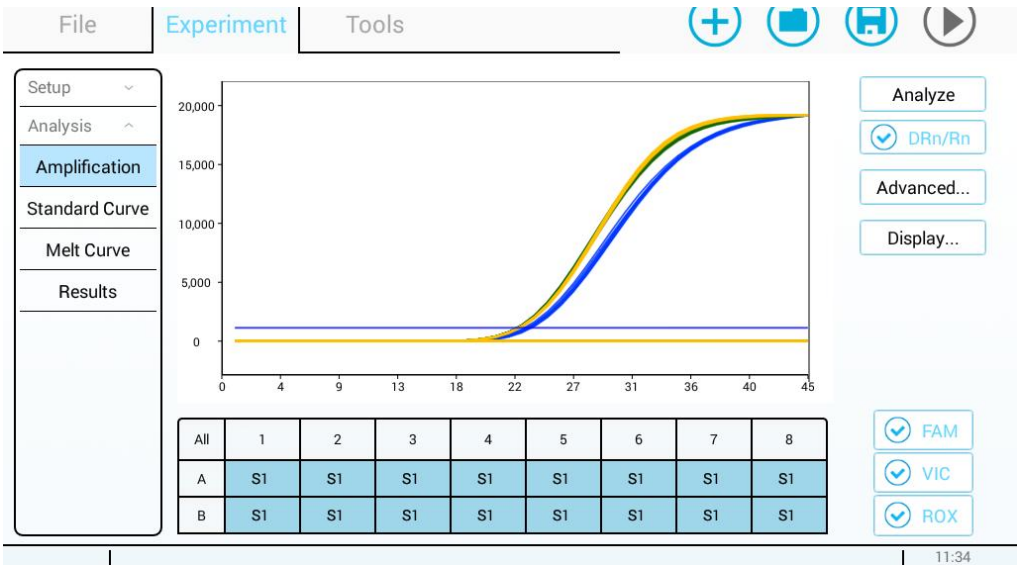
After setting up the experiment program, if you need to set the current program as a template for the next experiment, click to enter the template name, and then click OK to save the current program as a template as shown in the figure below. Click the button in the upper right corner of the software interface to directly start running the experiment. Or open a template file from the template file in the file interface, and directly click in the upper right corner to start running the experiment.



5.3.3 Experimental Analysis

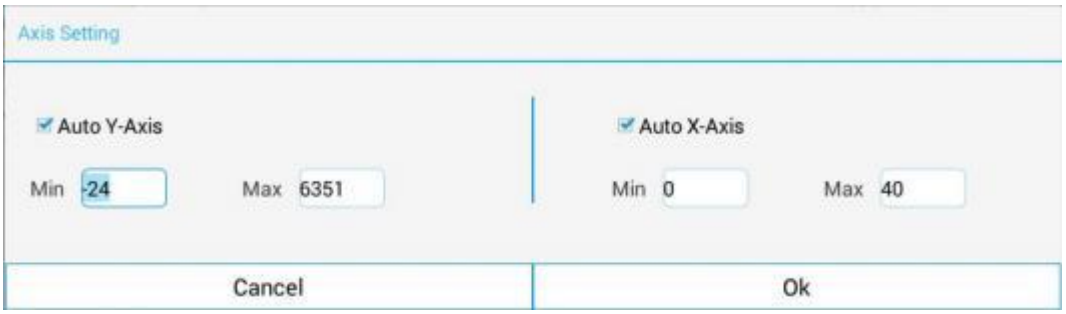
5.3.3.1 Amplification Plot

The amplification plot of the selected wells will be displayed in the interface, and the well that has not been selected will not be displayed even if there is an amplification curve.

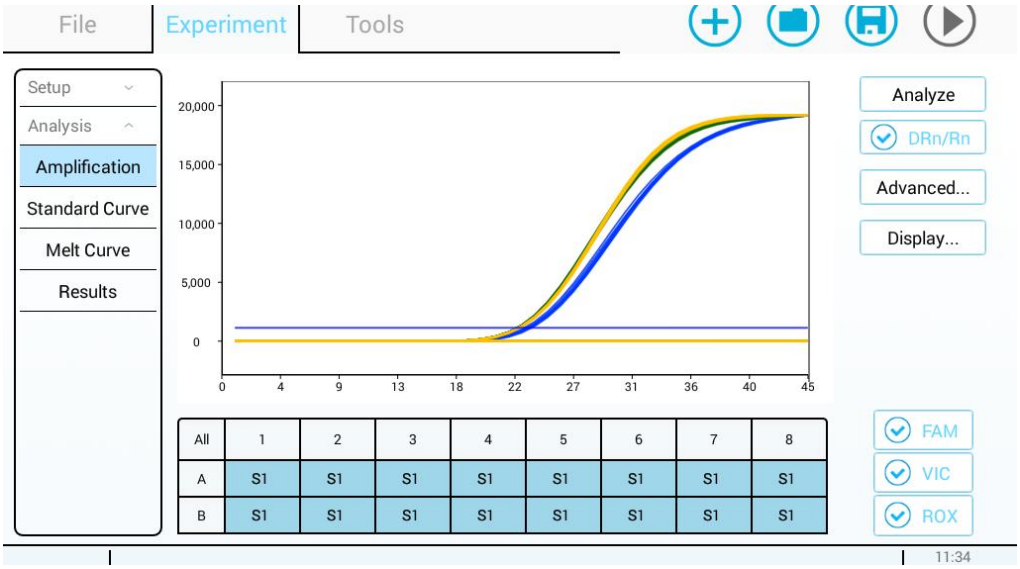


Display Settings: the color of the amplification plot can be displayed according to the channel color. The channel color can be set in the Settings - sample - target gene selection. It can also be displayed according to the color of the sample name corresponding to the well position. But the well color is default which cannot be modified.

In the amplification plot interface, tap and hold the curve position for 2 seconds, and the system will pop up a window for setting the range axis. The user can select the automatic range or not select the automatic range. Cancel the automatic range, the system will switch to manual setting by default. Users can set the range of Y-axis and X-axis by themselves.



The amplification plot is displayed according to the color of the well: the color of the amplification plot is consistent with the font color of the sample name on the corresponding well.

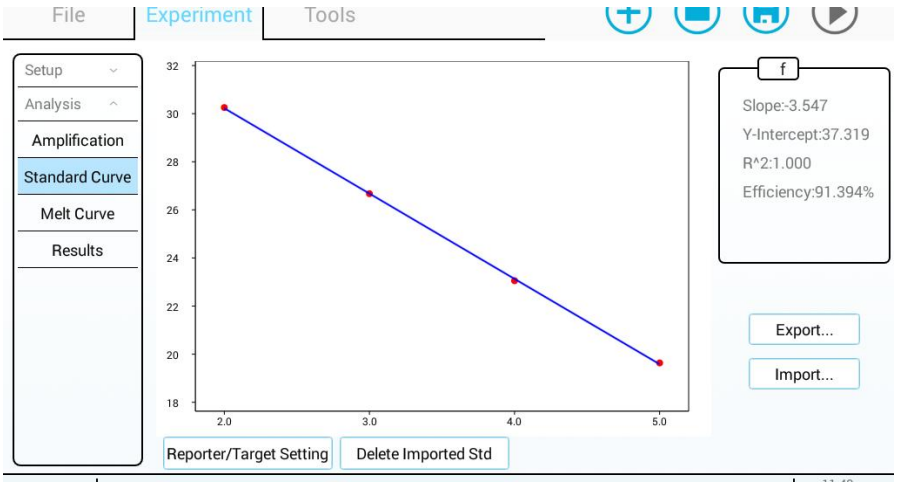


Advanced setting: threshold and baseline can be set to automatic or manually set. After the parameter modification, you need to click <Analysis> to see the result after the experiment file is reanalyzed.

DRn/Rn: if this radio button is not selected, the amplification plot shows the original plot. If this button is selected, the amplification plots.of the various wells are shown as the amplification plots with the standard flattening optimization.

5.3.3.2 Standard Curve

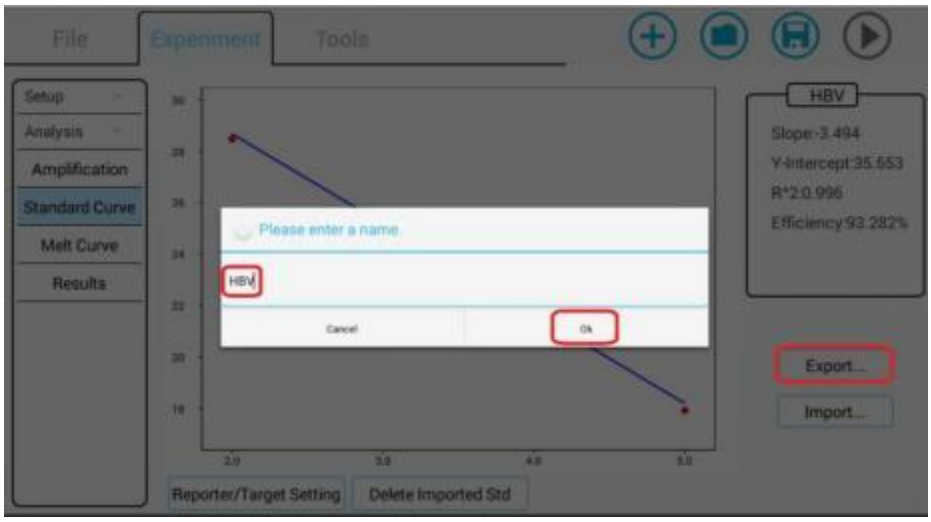
User can select the standard properties in the Settings - Standard Curve interface, set the concentration gradient of the standard curve and configure the corresponding well position. After the experiment, the standard curve will be calculated according to the concentration gradient and standard CT value.On the right side of the standard curve, the calculated parameters are listed, including Slope, Y-Intercept, R^2 and Efficiency.



Channel(Reporter)/Gene(Target) setting: The standard curve is calculated for the standards of the same channel in the setting. Therefore, for different channels in the same experiment, different standard curves can be made. In the Reporter/Target setting, select a different channel and the gene name under that channel to calculate and display different standard curves. Click the standard curve list, select the corresponding channel and target gene to view the standard curve of different channels.

Standard curve call: for experiments of the same project, the standard curve can be called. Click Export in the standard curve interface, enter the standard curve name, and finally click OK to save the standard curve successfully; When the experiment of the same project is done next time and there is no standard product, click Import in the standard curve interface, select the saved standard curve of the same project, and finally click OK to

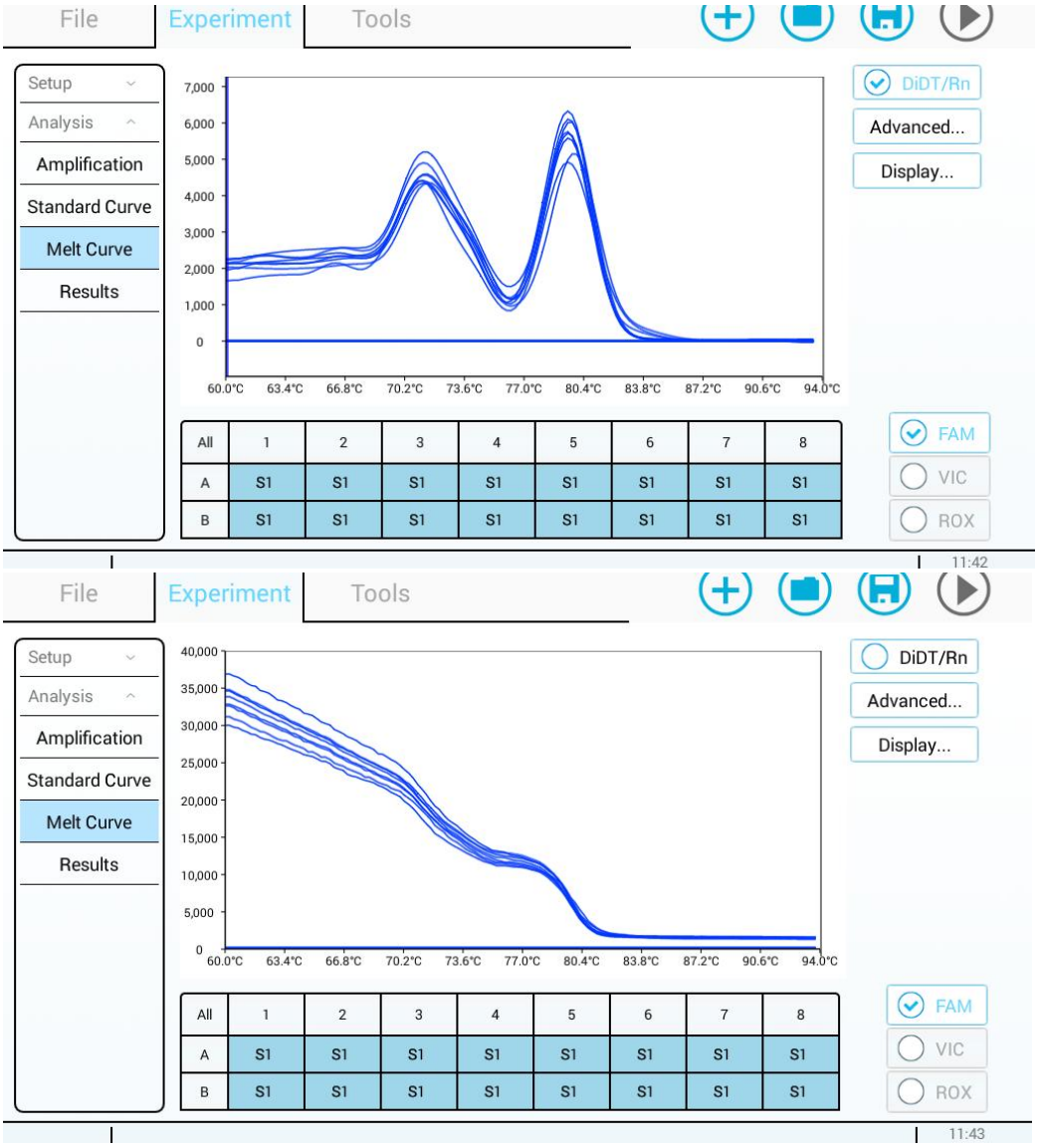
conduct quantitative analysis of the experiment. Click Delete imported Std curve to delete the imported standard curve



5.3.3.3 Melt Curve

The melt curve of the selected well will be displayed in the interface, and even if there is an amplification curve for the unselected well, it will not be displayed.

In the melt curve interface, you can view the peak graph of melt curve.Click DiDT/Rn to view the original fluorescence value.



5.3.3.4 Data (Results)

In the Results column, the user can view the well position information, sample name, quantity result, Ct value, negative and positive determination result, and melt curve Tm value of the experiment.

Test Mode: Click the test mode and select quantitative or qualitative in the detection type. After setting completed, please click Analyze in the Amplification interface and then go to the Results interface to view the analysis results.

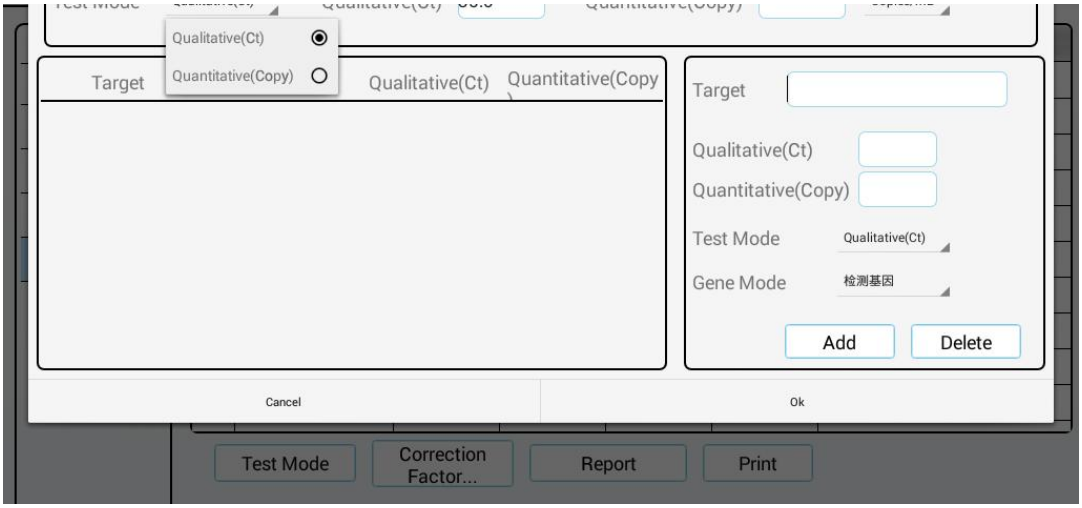
- Test Mode includes the default setting and setting based on specific genes. If the gene name of this experiment is a gene that has been added to the Test Mode, the system will automatically use the judgment standard of this added

gene. If the gene name set in this experiment does not match the gene added to the Test Mode, the system will use the default setting standard at the top of this interface to judge.

- Add judgment criteria for specific genes: Input the gene name in the Target in the lower right corner, select quantitative or qualitative detection, and then input the corresponding judgment threshold. Click Add and this criterion for a certain gene will be added to the criterion list on the left. If you select this gene, you can modify it again.

- If it is a qualitative detection, set a standard value in the qualitative threshold such as 35 in the figure below. If the sample's Ct value is greater than 35, it is negative. And it is positive if it is less than 35.

- If it is a quantitative detection, set the quantitative threshold in the quantitative threshold such as 100. If the concentration of the sample is greater than 100, it is positive. And it is negative if the concentration is less than 100.



Correction Factor: When performing experiments using single-channel reagent, some fluoresceins may interfere with adjacent channels, which can be corrected by the software's "Correction Factor" function. Click to enter the Correction Factor setting interface, 1, 2, and 3 correspond to FAM, VIC, and ROX channels respectively.

Take the FAM channel as an example. When the FAM channel experiment is performed alone, the signal is collected by all channels, if it is found that the VIC channel has a fluorescent signal, and then it indicates that the FAM channel interfered with the VIC channel. At this time, user can enter a coefficient in the 2=2- 1* column, and then check the amplification curve of the VIC channel. When the original fluorescence value of the VIC channel is a straight line

and there is no obvious tail lift, it indicates that the correction is successful.

Report (Excel): You can export various data of the experiment file,including experiment settings, running programs, Ct values, etc. The exported file format is Excel, which can be copied to the computer for viewing. The file is saved in the Reports folder by default. The correspondence is saved in the folder of the date the report was generated.

Print: If the instrument is connected to a thermal printer, you can click to Print. The software can automatically print out the report. The report printed by the thermal printer can only display the well position, Ct value,and negative and positive results.

Chapter 6 Equipment maintenance

6.1 Instrument Clean

1. Surface cleaning

a. The surface of the instrument should be cleaned regularly with soft cloth and a small amount of water, then dry the instrument after cleaning.If there is a reagent leak on the surface of the instrument, apply soft cloth and 70% alcohol to wipe clean.

2. Reaction well cleaning

a. When the reaction well is contaminated with dust or impurities, the PCR amplification will be affected. Therefore, it should be cleaned regularly, usually once every 3 months, and can be gently swab with a blowing balloon.

b. To prevent dust from entering the reaction well, the instrument's heated-lid must be closed when not in use.

c. If the reagent enters into the sample well, apply a clean soft cloth and 70% alcohol to wipe.

3. You must turn off the power supply before cleaning the instrument and unplug the power cord.

4. Do not dump the liquid in the reaction module or inside of the instrument. Do not use strong corrosive solvent or organic solvent to scrub the instrument.

6.2 Protect the instrument

1. Do not switch the instrument frequently.

2. Do not turn off the power immediately after the experiment, hold for 10 minutes (at this time the internal fan of the instrument is still working), and the temperature of the module will be reduced to room temperature before turning off the power.

3. Please use the power cord and communication line provided by the original manufacturer.

4. It is forbidden to boil water on the instrument or low temperature (4 ℃) for long time.

5. Non-original maintenance personnel shall not disassemble the instrument without authorization.

6.3 Waste disposal

1. After each experiment, a large number of amplification products in the tube should be disposed as soon as possible, so as not to contaminate the laboratory and equipment.

2. Remove the tube from the reaction module and do not open the tube, otherwise the high concentration of nucleic acid will contaminate the laboratory.

6.4 Overheating protection

1. The heating system of the instrument is equipped with an overheating protection device. When the heating system fails and the temperature value exceeds the limit of the allowable range, the protection device will be disconnected automatically. At this point, the heating system cannot continue normal rise and cooling.

2. After the failure of the heating system as above, the user should stop using the instrument and contact the manufacturer for maintenance.

Chapter 7 FAQ

ID	Fault phenomenon	Solution
1	Unable to open	1, Whether the power cord is properly connected;;
		2, Whether the power outlet is energized or not;
		3、Whether the instrument switch is pressed;
2	Normal operation of the instrument, no experiment data after operation	1, Check if the heat cycle parameters are set correctly; ;
		2,Check whether the sample parameters are set correctly and the fluorescent markers are set.

Appendix I Declaration of EMC

Guidance and manufacture's declaration – electromagnetic emissions- for all EQUIPMENT and SYSTEMS

Guidance and manufacture's declaration – electromagnetic emission		
The TOROUNIT® qPCR Cycler Plus is intended for use in the electromagnetic environment specified below. The customer or the user of the TOROUNIT® qPCR Cycler Plus should assure that it is used in such an environment.		
Emission test	**Compliance**	**Electromagnetic environment – guidance**
RF emissions CISPR11	Group 1	The TOROUNIT® qPCR Cycler Plus uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR11	Class B	The TOROUNIT® qPCR Cycler Plus is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations / flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacture's declaration – electromagnetic immunity – for all EQUIPMENT and SYSTEMS

Guidance and manufacture's declaration – electromagnetic immunity			
The TOROUNIT® qPCR Cycler Plus is intended for use in the electromagnetic environment specified below. The customer or the user of TOROUNIT® qPCR Cycler Plus should assure that it is used in such an environment.			
Immunity test	**IEC 60601 test level**	**Compliance level**	**Electromagnetic environment - guidance**
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrostatic transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles <5% U_T (>95% dip in U_T) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the TOROUNIT® qPCR Cycler Plus requires continued operation during power mains interruptions, it is recommended that the TOROUNIT® qPCR Cycler Plus be powered from an uninterruptible power supply or a battery.
Power frequency (50/60Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE： U_T is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacture's declaration – electromagnetic immunity – for EQUIPMENT and SYSTEMS that are not LIFE-SUPPORTING

Guidance and manufacture's declaration – electromagnetic immunity

The TOROUNIT® qPCR Cycler Plus is intended for use in the electromagnetic environment specified below. The customer or the user of theTOROUNIT® qPCR Cycler Plus should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6 Radiated RF IEC 61000-4-3	3 Vrms 150 kHz to 80 MHz 3 V/m 80 MHz to 2.5 GHz	3 V 3 V/m	Portable and mobile RF communications equipmentshould be used no closer to any part of theTOROUNIT® qPCR Cycler Plus, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=\left[\frac{3.5}{V_1}\right]\sqrt{P}$ $d=\left[\frac{3.5}{E_1}\right]\sqrt{P}$ 80 MHz to 800 MHz $d=\left[\frac{3.5}{E_1}\right]\sqrt{P}$ 800 MHz to 2.5 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). [b] Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, [a]should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol: 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic is affected by absorption and reflection from structures, objects and people.

[a]Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the TOROUNIT® qPCR Cycler Plus is used exceeds the applicable RF compliance level above, the TOROUNIT® qPCR Cycler Plus should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the TOROUNIT® qPCR Cycler Plus.

[.b] Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.

Recommended separation distances between portable and mobile RF communications equipment and the EQUIPMENT or SYSTEM – for EQUIPMENT or SYSTEM that are not LIFE-SUPPORTING

Recommended separation distances between

portable and mobile RF communications equipment and theTOROUNIT® qPCR Cycler Plus

TOROUNIT® qPCR Cycler Plus is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the TOROUNIT® qPCR Cycler Plus can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment transmitters) and the TOROUNIT® qPCR Cycler Plusas recommended below, according to the maximum output power of the communications equipment

Rated maximum output of transmitter (W)	**Separation distance according to frequency of transmitter (m)**		
	150 kHz to 80 MHz $d = \left[\frac{3.5}{V_1}\right]\sqrt{P}$	80 MHz to 800 MHz $d = \left[\frac{3.5}{E_1}\right]\sqrt{P}$	800 MHz to 2.5 GHz $d = \left[\frac{7}{E_1}\right]\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above the recommended separation distance d in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Contact Us

TOROIVD TECHNOLOGY COMPANY LIMITED.

Head Office: Building #C1, 880 JiangYang Nan Road, Baoshan,Shanghai,China. 200439.
Reagent Factory: Building #20, 888 Zhujiang Road, Rudong ,Jiangshu,China. 226400

Tel: +86-21-68030217 FAX: +86-21-33782006
Mail: info@toroivd.com
http: //www.toroivd.com