

The Innovative Microplate Reader Series

INNO-QM™

Operator's Manual



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INNO-QM™

The Innovative Microplate Reader Series

Abs & Fluo & Lumi Quality Check Test Plate

Operator's Manual

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LTEK Instruments Co., Ltd.

Notices

LTEK Co., Ltd.

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Introduction

The LTEK INNO microplate reader series is a 21st-century new-generation instrument for all the research that deals with Absorbance, Luminescence, and Fluorescence. **INNO-QM** is an Absorbance, Luminescence, and Fluorescence test plate designed and manufactured just for INNO, INNO-M, INNO-S, and INNO-H for the instrument performance check. It allows the users to check the instrument's quality by checking its linearity, accuracy, and alignment. Also, it is handy when the distributors perform the demonstrations with their customers using the quantitative experiment function with our software INNO-X, which allows for reviewing seven different regression data results and calibration values in graph format.

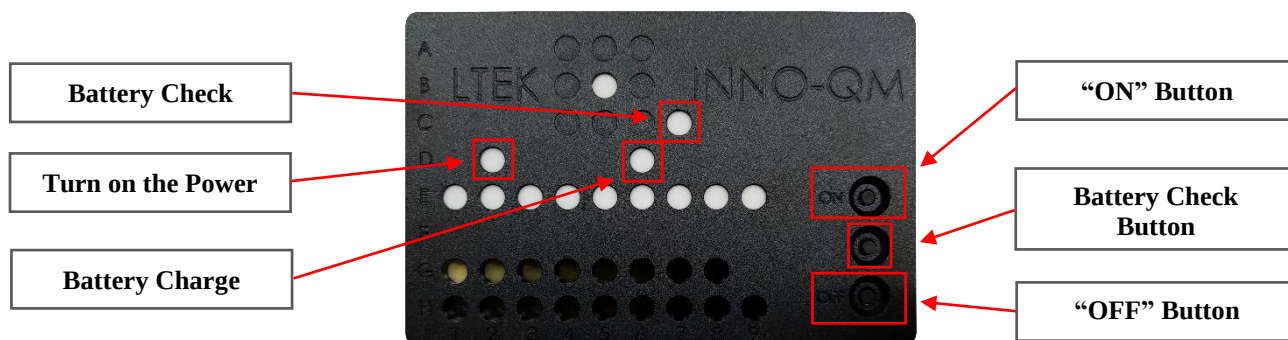
INNO-QM™ (Quality Check Test Plate)



INNO-QM™ (Absorbance & Fluorescence & Luminescence Test Plate)

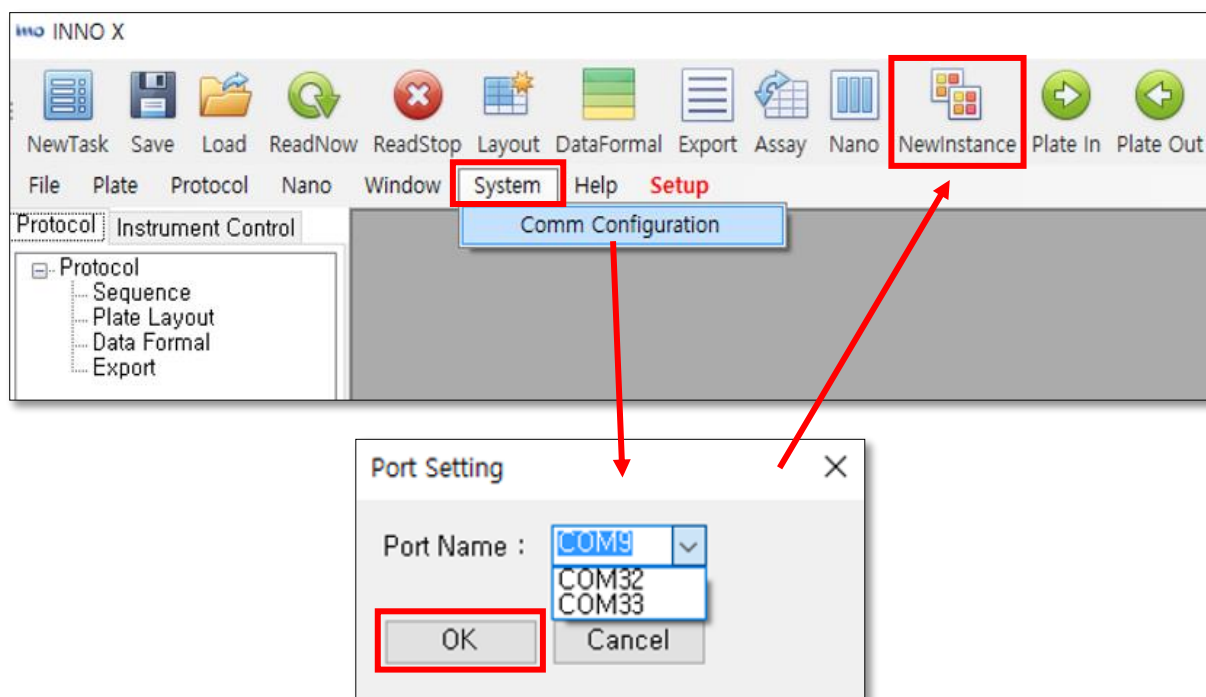
- Absorbance linearity, accuracy, and alignment check.
- Luminescence linearity, accuracy, and alignment check.
- Fluorescence linearity, accuracy, and alignment check.
- An easy demonstration of the instrument performance was done using the quantitative experiment function.

How to use INNO-QM



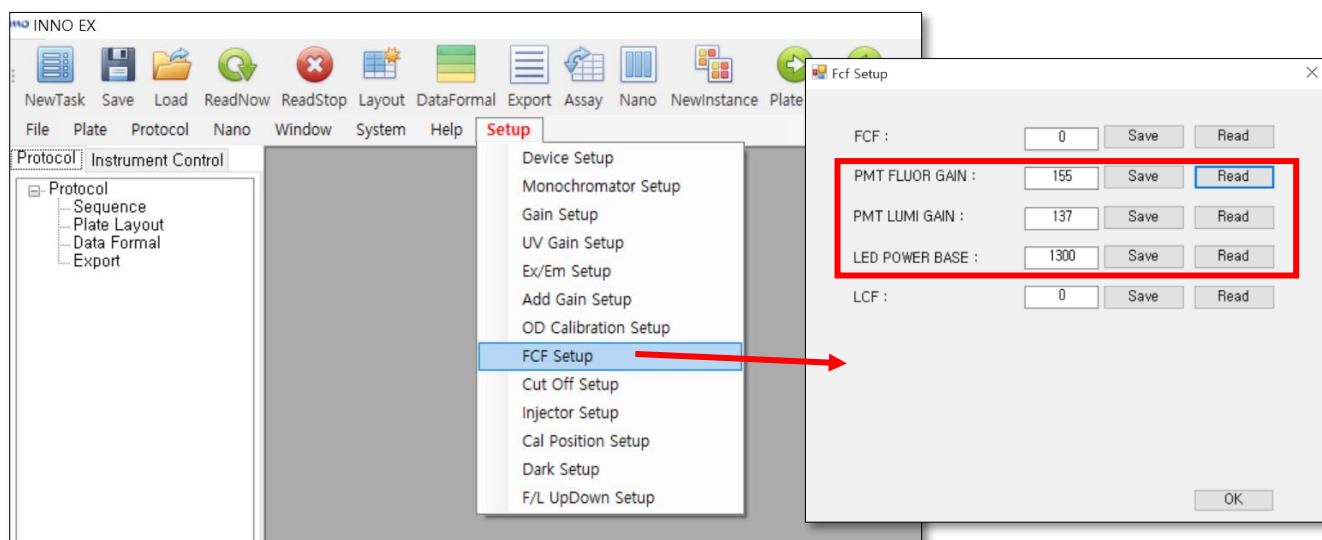
	<Power ON> Press the "ON" button for about two seconds, and the Green light will appear and then disappear in the D2 well.
	<Battery Charge> When the charging cable is connected, and charging is in progress, a Green light is visible in the D6 well.
	<Battery Check> Press the "Battery Check" button for about 2 seconds to see the various lights in the C7 well. Green means fully charged, Blue means available, and Red means charging is required.
	<Power OFF> Pressing the "OFF" button turns off the power of INNO-QM. Always press the "OFF" button after use to prevent battery discharge. If the battery is low, the measurement will not be accurate.

USB drive port setting



- First, install the USB software driver file – CDM21228_Setup.exe
- Turn the INNO microplate reader series power on and connect the USB cable to the device operating PC.
- After the first initialization, run the software and click the “**System**” and “**Comm Configuration.**”
- Normally selecting the bottom port will most likely get the connection working.
- Save the changed port and rerun the INNO-X software.

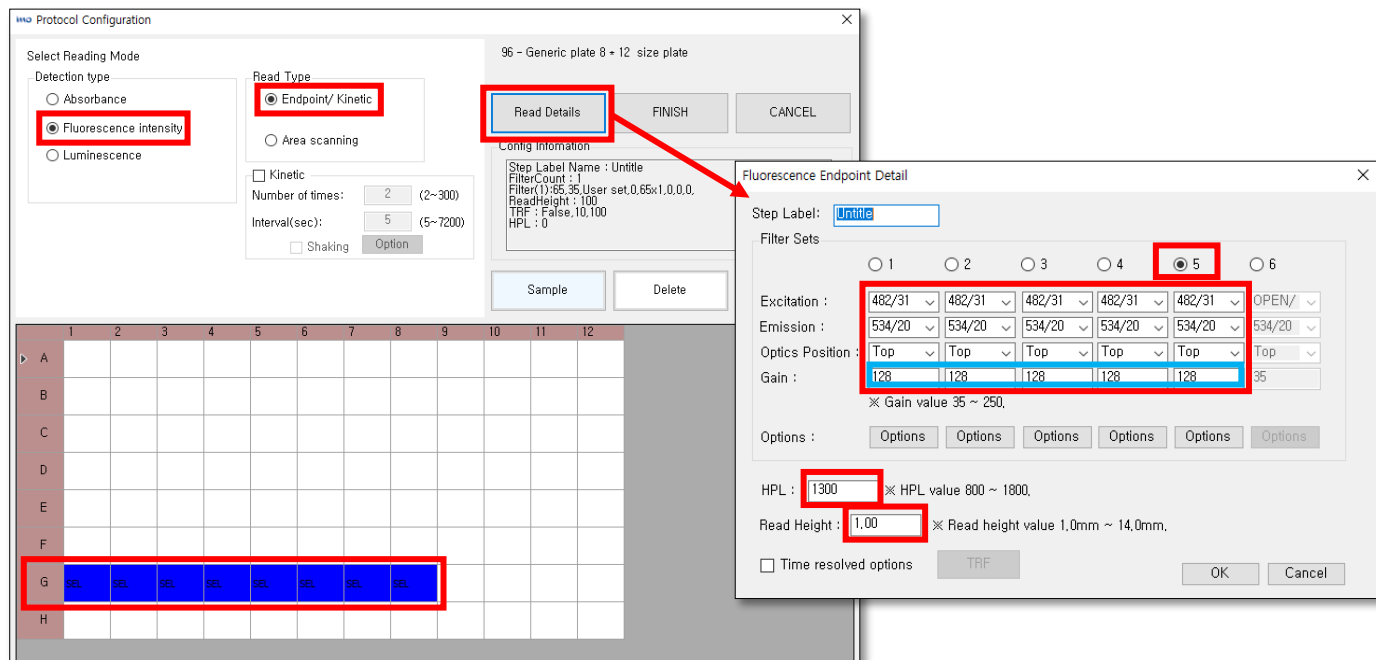
Gain Value Check



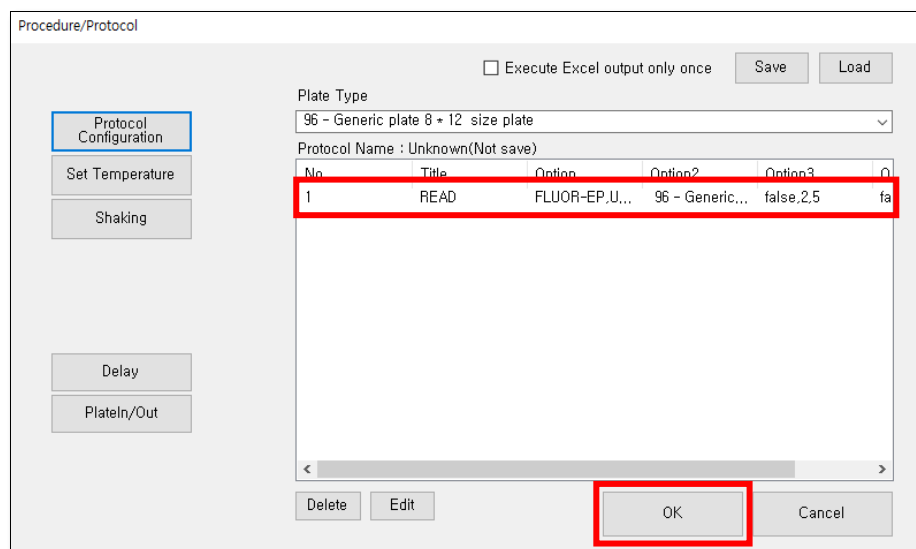
- The gain values are slightly different for each piece of device. Before measuring Fluorescence and Luminescence QC with INNO-QM, please check the gain value setting.
- Go to the “**Setup**” tab in the software and click the “**Fcf Setup**”. When the “**Fcf Setup**” pop-up appears, click “**Read**” on the three items in the red box to check the default settings.
- “**PMT FLUOR GAIN**” is the gain value used for Fluorescence measurement, and “**PMT LUMI GAIN**” is the gain value used for Luminescence measurement.

※ The above gain values are default values, and adjusting the gain value during QC helps the graph to become linear. ※

Fluorescence QC I



- For the Fluorescence Q.C., please follow and select the same protocol options as above.
1. Select the 96-well plate in the Procedure/Protocol window.
 2. Select “**Fluorescence intensity**” and “**Endpoint / Kinetic**”.
 3. Select “**G1 to G8**” on the well layout.
 4. Click “**Read Details**” and change wavelength “**Count**” 5.
 5. Select Excitation “**482/31**”, Emission “**534/20nm**”, Optics Position “**Top**”, Gain “**__**”, HPL “**1300**”, Read Height “**1.00**”, and click “**OK**” and “**Finish**”.
 6. The Gain value of the blue box varies for each of the devices. Please check the contents on page 7 and type them in.



7. Click the “**OK**” button and “**Execute the protocol**”.

- Before placing the INNO-QM on the plate carrier of the INNO Microplate reader series, ensure that every well of the plate is free. The dusts laid upon inside of the wells will provide poor results. Use a soft material brush or blower to clean the dust and keep the INNO-QM inside the case when it is not in use to prevent future dusting.
- The suitable models of the Fluorescence are INNO-S, INNO-SF, INNO-H, INNO-HML, INNO-HM, and INNO-HD.
- Pressing the “**OFF**” button turns off the power of INNO-QM. Always press the “**OFF**” button after use to prevent battery discharge. If the battery is low, the measurement will not be accurate.

Fluorescence QC II

INNO-QM Worksheet

LTek **INNO-QM**
Microplate Reader

← This indicates the area where you paste the result data values.
* Already pasted Result data values on this page just to fill in the blanks. Please read the new data values with instrument and paste the read data to confirm the Pass or Fail for each according measurements.

Fluorescence Read Data	G1	G2	G3	G4	G5	G6	G7	G8
1st data	Well 1	2	3	4	5	6	7	8
	G	80212	47139	24631	13399	4345	1730	826
2nd data	Well 1	2	3	4	5	6	7	8
	G	79940	46764	24430	13319	4290	1663	822
3rd data	Well 1	2	3	4	5	6	7	8
	G	84544	50257	25833	13911	4549	1753	816
4th data	Well 1	2	3	4	5	6	7	8
	G	83516	48474	25091	13584	4466	1684	829
5th data	Well 1	2	3	4	5	6	7	8
	G	84346	49335	25637	13841	4537	1715	844

Luminescence Read Data

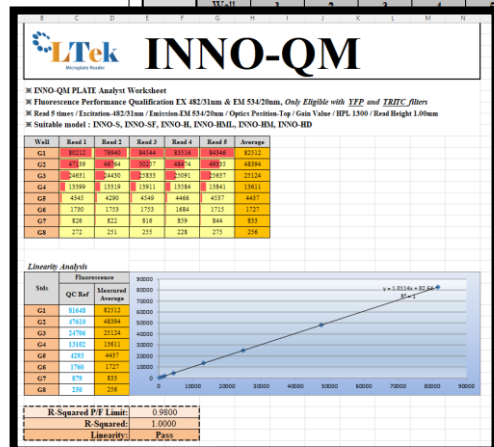
Well	1	2	3	4	5	6	7	8	9
1st data	E	823	3273	9986	19051	37230	158407	373174	717938
	W	411	1636	4993	9525	18615	74203	165919	328458

Measurement Data

1. Worksheet Name: C:\data
2. Date: 2024-11-21
3. Read Type: Fluorescence
4. Read Height: 1.00mm
5. Read Wavelength: 482/515
6. Read Filter: 515nm
7. Read Filter: 515nm

Options: Excitation: 482/51, Emission: 514/20, Top Bottom: Top, Gain: 128, LoadPower: 1500

Well	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
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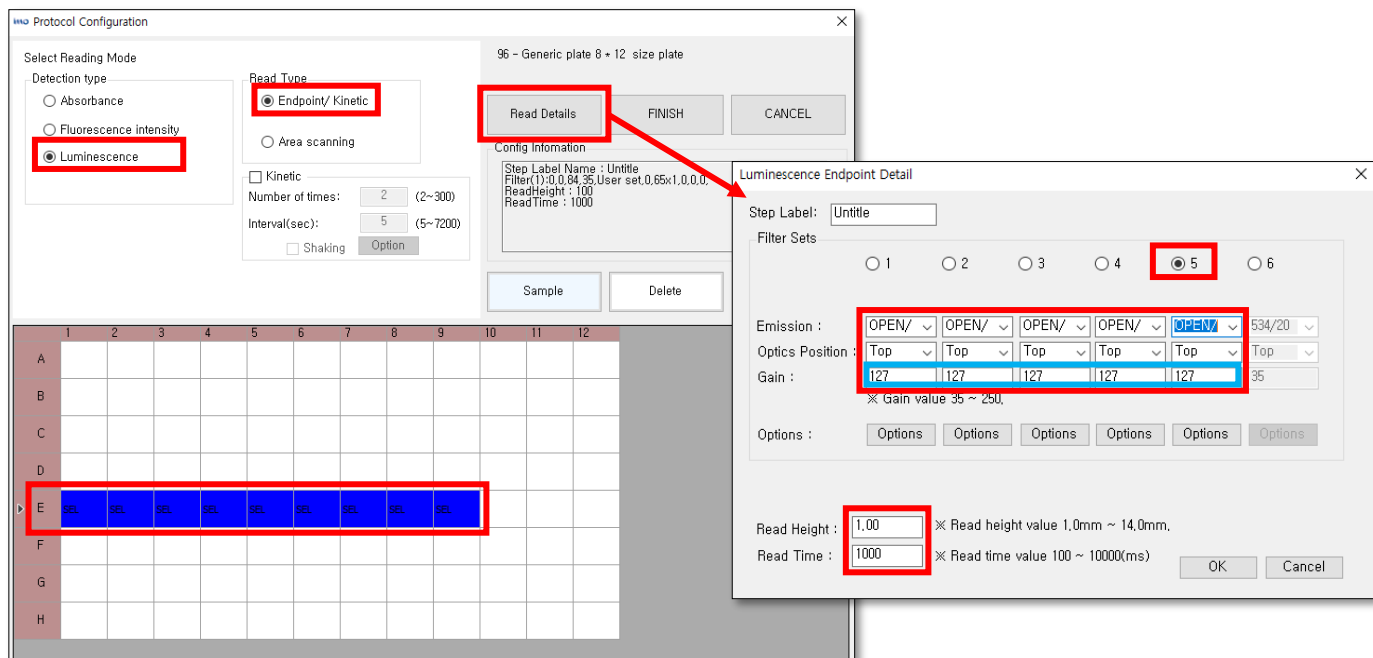
Result data(Paste purpose) Fluorescence Luminescence

- After completing the measurement, **copy G1 to G8** and each measurement data, then **paste** on to the INNO-QM worksheet.
- When you copy and paste the data from the right measured data to the left side of the INNO-QM worksheet. You just have to press “**Ctrl + C**” on the **G1 to G8** of each measurement data, then move on to the worksheet “**Ctrl + V**” to paste the data. Please perform this step **5 times** on each well for 1st to 5th data.

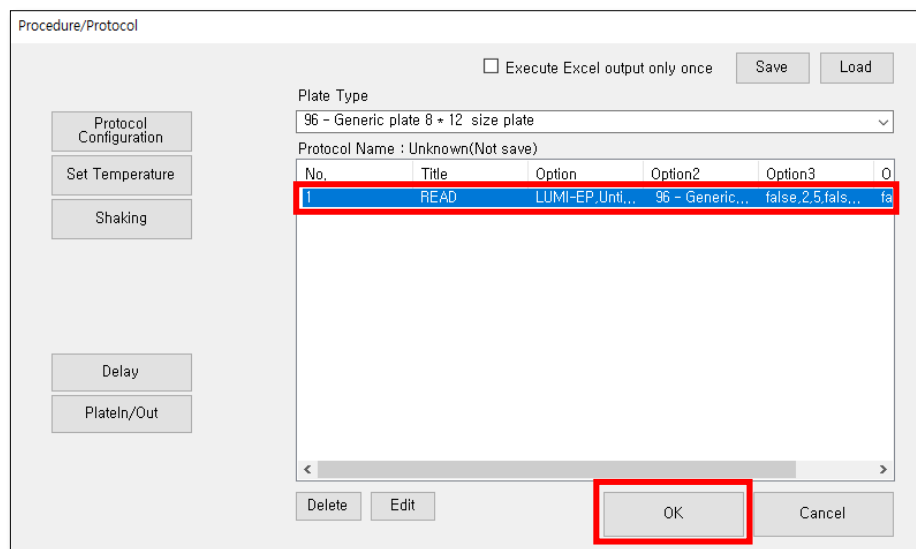
- Move to the **Fluorescence** tab at the bottom to check the linearity of each Fluorescence data. You can adjust the gain value if the graph does not show a linear trend or the linearity does not pass.
- If you have used the above methods and still cannot get a **Pass**, please contact us at the email address below.

help@ltekc.com

Luminescence QC I



- For the Luminescence Q.C., please follow and select the same protocol options as above.
1. Select the 96-well plate in the Procedure/Protocol window.
 2. Select “**Luminescence**” and “**Endpoint / Kinetic**”.
 3. Select “**E1 to E9**” on the well layout.
 4. Click “**Read Details**” and change wavelength “**Count**” 5.
 5. Select Emission “**Open**”, Optics Position “**Top**”, Gain “**__**”, Read Height “**1.00**”, Read Height “**1.00**”, and click “**OK**” and “**Finish**”.
 6. The Gain value of the blue box varies for each of the devices. Please check the contents on page 7 and type them in.



7. Click the “**OK**” button and “**Execute the protocol**”.

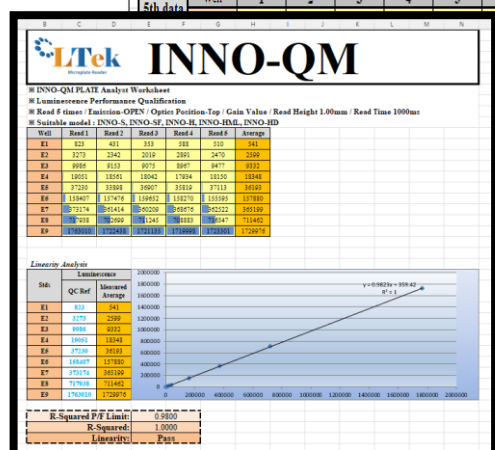
- Before placing the INNO-QM on the plate carrier of the INNO Microplate reader series, ensure that every well of the plate is free. The dusts laid upon inside of the wells will provide poor results. Use a soft material brush or blower to clean the dust and keep the INNO-QM inside the case when it is not in use to prevent future dusting.
- The suitable models of the Luminescence are INNO-S, INNO-SF, INNO-H, INNO-HML, INNO-HD.
- Pressing the “**OFF**” button turns off the power of INNO-QM. Always press the “**OFF**” button after use to prevent battery discharge. If the battery is low, the measurement will not be accurate.

Luminescence QC II

INNO-QM Worksheet

Luminescence Read Data									
	E1	E2	E3	E4	E5	E6	E7	E8	E9
1st data	Well	1	2	3	4	5	6	7	8
	E	823	3273	9986	19051	37230	158407	373174	717938
2nd data	Well	1	2	3	4	5	6	7	8
	E	431	2342	9153	18561	33898	157476	361414	702699
3rd data	Well	1	2	3	4	5	6	7	8
	E	353	2019	9075	18042	36907	159652	360209	711245
4th data	Well	1	2	3	4	5	6	7	8
	E	588	2891	8967	17934	35819	158270	368676	708883
5th data	Well	1	2	3	4	5	6	7	8
	E	510	2470	9477	18150	37113	155595	362522	716547

Absorbance 450nm Read Data									
	H	1	2	3	4	5	6	7	8
1st data	H	0.149	0.252	0.367	0.598	0.82	1.055	1.127	1.464
2nd data	Well	1	2	3	4	5	6	7	8
	H	0.147	0.251	0.365	0.594	0.815	1.049	1.125	1.459
3rd data	Well	1	2	3	4	5	6	7	8
	H	0.147	0.251	0.364	0.594	0.815	1.049	1.124	1.459
4th data	Well	1	2	3	4	5	6	7	8
	H	0.147	0.251	0.365	0.594	0.815	1.05	1.124	1.46
5th data	Well	1	2	3	4	5	6	7	8
	H	0.149	0.252	0.367	0.598	0.82	1.055	1.127	1.464



Measurement Data

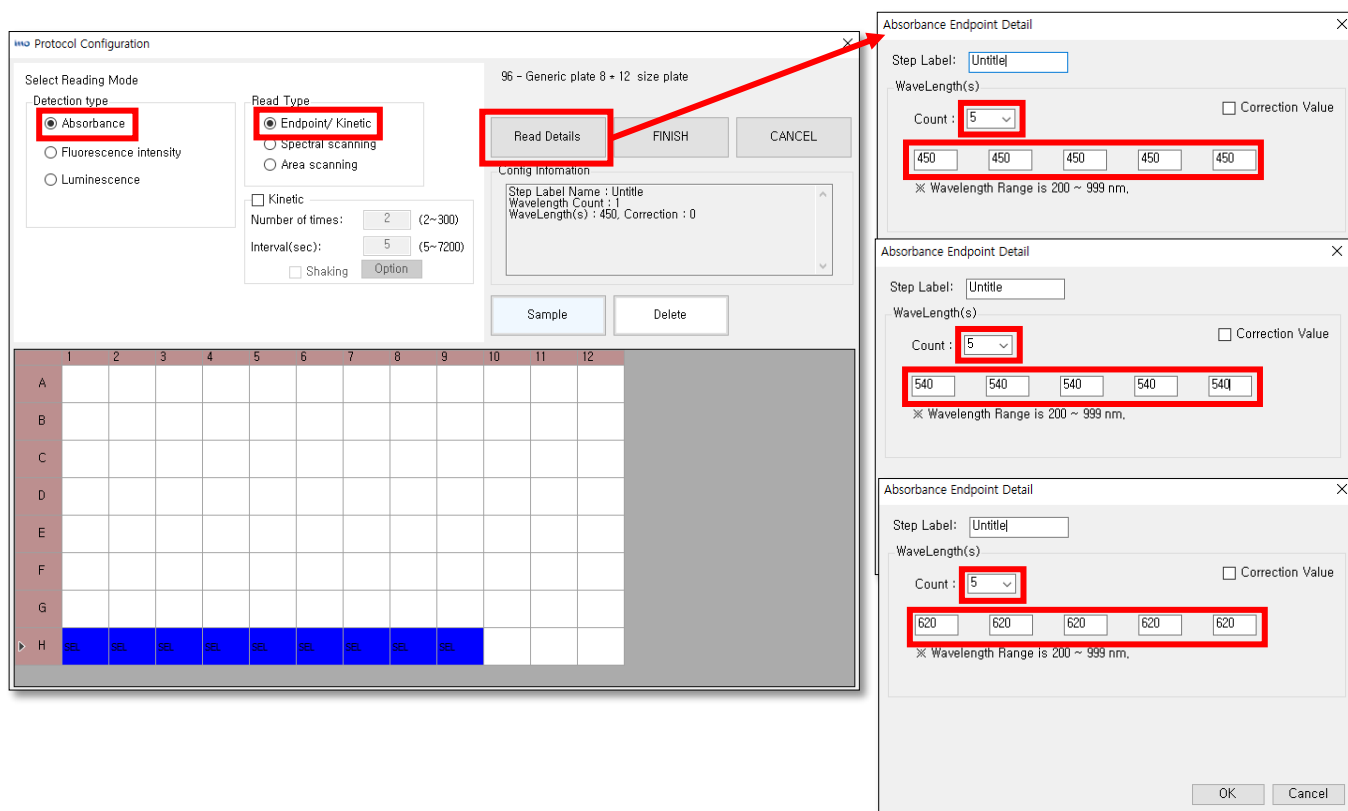
Measurement Data											
Date: 2024-11-25 15:24:40											
Product Name	UNCL										
Plate Type	96 - Greiner plate 8 * 12 size plate										
Read Type	Luminescence Endpoint										
Filter Name	5										
Read Time	1000										
Read Height	1.00										
Option:	Emission: OPEN / TopBottom: Top, Gain: 127										
Well	1	2	3	4	5	6	7	8	9	10	11
A											
B											
C											
D											
E											
F											
G											
H											
Option:	Emission: OPEN / TopBottom: Top, Gain: 127										
Well	1	2	3	4	5	6	7	8	9	10	11
A											
B											
C											
D											
E											
F											
G											
H											
Option:	Emission: OPEN / TopBottom: Top, Gain: 127										
Well	1	2	3	4	5	6	7	8	9	10	11
A											
B											
C											
D											
E											
F											
G											
H											
Option:	Emission: OPEN / TopBottom: Top, Gain: 127										
Well	1	2	3	4	5	6	7	8	9	10	11
A											
B											
C											
D											
E											
F											
G											
H											

- After completing the measurement, **copy E1 to E9** and each measurement data, then **paste** on to the INNO-QM worksheet.
- When you copy and paste the data from the right measured data to the left side of the INNO-QM worksheet. You just have to press “**Ctrl + C**” on the **E1 to E9** of each measurement data, then move on to the worksheet “**Ctrl + V**” to paste the data. Please perform this step **5 times** on each well for 1st to 5th data.

- Move to the **Luminescence** tab at the bottom to check the linearity of each Luminescence data. You can adjust the gain value if the graph does not show a linear trend or the linearity does not pass.
- If you have used the above methods and still cannot get a **Pass**, please contact us at the email address below.

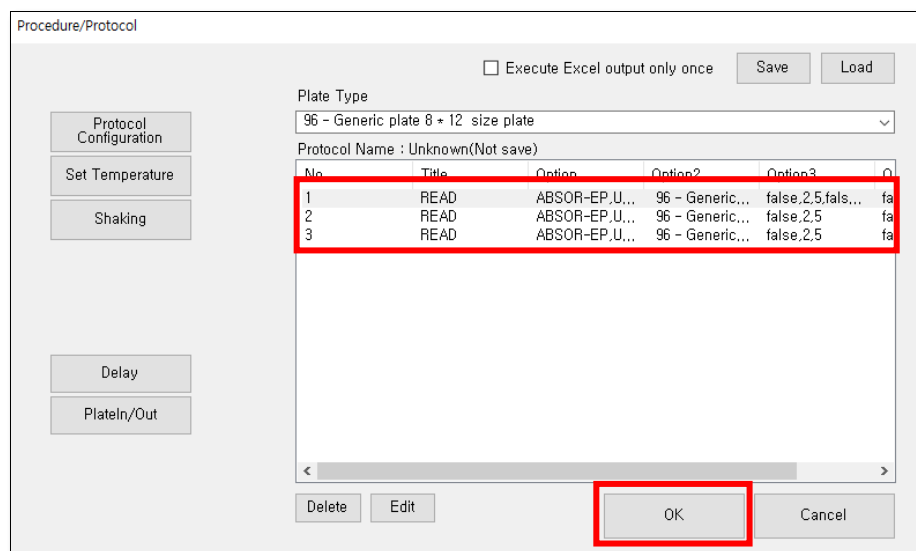
help@ltekc.com

Absorbance QC I



- For the absorbance Q.C., please follow and select the same protocol options as above.

1. Select the 96-well plate in the Procedure/Protocol window.
2. Select “**Absorbance**” and “**Endpoint / Kinetic**”.
3. Select “**H1 to H9**” on the well layout.
4. Click “**Read Details**” and change wavelength “**Count**” **5**.
5. Type **450** in the five blank boxes and click “OK” and “Finish”.
6. Do the same steps 1 to 5 with **540nm** and **620**



7. Click the “**OK**” button and “**Execute the protocol**”.

- Before placing the INNO-QM on the plate carrier of the INNO Microplate reader, ensure that every well of the plate is free. The dusts laid upon inside of the wells will provide poor results. Use a soft material brush or blower to clean the dust and keep the INNO-Q inside the case when it is not in use to prevent future dusting.
- The suitable models of the Absorbance are INNO, INNO-M, INNO-S, INNO-SA, INNO-H, INNO-HML, INNO-HM.
- Pressing the “**OFF**” button turns off the power of INNO-QM. Always press the “**OFF**” button after use to prevent battery discharge. If the battery is low, the measurement will not be accurate.

Absorbance QC II

INNO-QM Worksheet

Absorbance 450nm Read Data

	Well	1	2	3	4	5	6	7	8	9	
1st data	H	0.149	0.252	0.367	0.598	0.82	1.055	1.127	1.464	2.165	◀ PASTE
2nd data	H	0.147	0.251	0.365	0.594	0.815	1.049	1.125	1.459	2.159	◀ PASTE
3rd data	H	0.147	0.251	0.364	0.594	0.815	1.049	1.124	1.459	2.163	◀ PASTE
4th data	H	0.147	0.251	0.365	0.594	0.815	1.05	1.124	1.46	2.153	◀ PASTE
5th data	H	0.148	0.251	0.365	0.594	0.815	1.049	1.124	1.459	2.159	◀ PASTE

Absorbance 540nm Read Data

	Well	1	2	3	4	5	6	7	8	9	
1st data	H	0.131	0.222	0.319	0.505	0.688	0.915	1.11	1.388	2.055	◀ PASTE
2nd data	H	0.132	0.222	0.32	0.506	0.689	0.916	1.112	1.389	2.058	◀ PASTE
3rd data	H	0.131	0.223	0.32	0.506	0.689	0.916	1.113	1.389	2.057	◀ PASTE
4th data	H	0.132	0.223	0.32	0.506	0.689	0.916	1.112	1.389	2.06	◀ PASTE
5th data	H	0.133	0.223	0.32	0.506	0.689	0.916	1.112	1.389	2.051	◀ PASTE

INNO-QM

Wellcheck
infection

M, INNO S, INNO SA, INNO H, INNO HML, INNO HM

Read #	Read #	Average	StdDev	%CV	Pass	Fail	Pass	Fail
147	0.147	0.140	0.007	0.027	Pass			
221	0.221	0.251	0.011	0.040	Pass			
364	0.364	0.365	0.002	0.019	Pass			
594	0.594	0.594	0.004	0.024	Pass			
815	0.815	0.815	0.005	0.015	Pass			
1049	1.049	1.049	0.006	0.020	Pass			
1124	1.124	1.124	0.002	0.010	Pass			
1459	1.459	1.459	0.005	0.020	Pass			
2159	2.159	2.159	0.006	0.020	Pass			

$y = 0.9994x + 0.0027$
 $R^2 = 0.9999$

	6	7	8	9	
0.946	1.154	1.369	2.031	◀ PASTE	
0.946	7	8	9		
0.946	1.153	1.37	2.033	◀ PASTE	
0.946	7	8	9		
0.946	1.154	1.37	2.037	◀ PASTE	
0.946	7	8	9		
0.946	1.154	1.37	2.029	◀ PASTE	
0.946	7	8	9		
0.946	1.154	1.37	2.029	◀ PASTE	

Abs 450nm

Measurement Data

Absorbance 450nm Measurement Data									
Well	1	2	3	4	5	6	7	8	9
H1	0.149	0.252	0.367	0.598	0.82	1.055	1.127	1.464	2.165
H2	0.147	0.251	0.365	0.594	0.815	1.049	1.125	1.459	2.159
H3	0.147	0.251	0.364	0.594	0.815	1.049	1.124	1.459	2.163
H4	0.147	0.251	0.365	0.594	0.815	1.05	1.124	1.46	2.153
H5	0.148	0.251	0.365	0.594	0.815	1.049	1.124	1.459	2.159

Absorbance 540nm Measurement Data									
Well	1	2	3	4	5	6	7	8	9
H1	0.131	0.222	0.319	0.505	0.688	0.915	1.11	1.388	2.055
H2	0.132	0.222	0.32	0.506	0.689	0.916	1.112	1.389	2.058
H3	0.131	0.223	0.32	0.506	0.689	0.916	1.113	1.389	2.057
H4	0.132	0.223	0.32	0.506	0.689	0.916	1.112	1.389	2.06
H5	0.133	0.223	0.32	0.506	0.689	0.916	1.112	1.389	2.051

Absorbance 620nm Measurement Data									
Well	1	2	3	4	5	6	7	8	9
H1	0.046	0.154	0.237	0.408	0.594	0.815	1.049	1.459	2.159
H2	0.046	0.154	0.237	0.408	0.594	0.815	1.049	1.459	2.159
H3	0.046	0.154	0.237	0.408	0.594	0.815	1.049	1.459	2.159
H4	0.046	0.154	0.237	0.408	0.594	0.815	1.049	1.459	2.159
H5	0.046	0.154	0.237	0.408	0.594	0.815	1.049	1.459	2.159

- After completing the measurement, copy H1 to H9 and each measurement data (450nm, 540nm, and 620nm), then paste on to the INNO-QM worksheet.
- When you copy and paste the data from the right measured data to the left side of the INNO-QM worksheet. You just have to press “Ctrl + C” on the H1 to H9 of each measurement data, then move on to the worksheet “Ctrl + V” to paste the data. Please perform this step 5 times on each well for 1st to 5th data.
- Move to the Absorbance tab at the bottom to check the linearity of each absorbance data.
- If you do not see a “Pass” in your measurements, please contact us using the email below.

help@ltekc.com