Application Note

[NOTE] How to Set Up Semi-Quantitative Data?

[AN] RTV-2023-0214-001

Application:

In the context of rapid test kits, utilizing the concept of semi-quantitative analysis means that results can be relatively quantified based on their intensity or degree, rather than simply being classified as positive or negative.

By using a rapid test reader, the analysis results of the test kit can be represented in the following formats:

1. Positive/Negative determination.
2. Customized result interpretation.
3. Conversion of the intensity of the test reactivity to relative concentration results using a standard curve.
4. Representation of composite results.

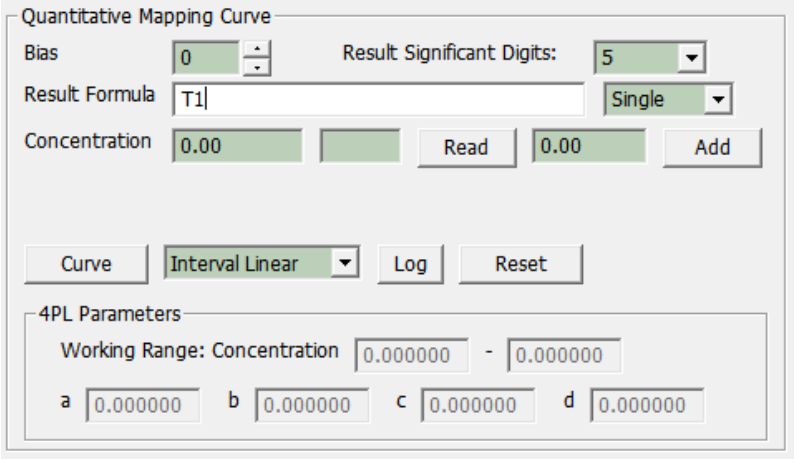
These results can be categorized into different levels or intervals, which can be determined based on the characteristics of the test kit and the desired level of result interpretation accuracy.

Product:

RapidScan Lateral Flow Readers Pro with Rapid Test View or Rapid Test View_Ethernet Software (RTV&ERTV for short)

Introduction:

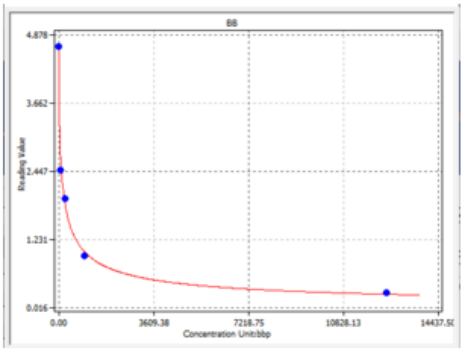
1. The **Quantitative Mapping Curve** function of **Modify Lot** can convert the value measured by the ***T Band*** into the ***actual concentration***, and the purpose is to set the quantitative conversion.

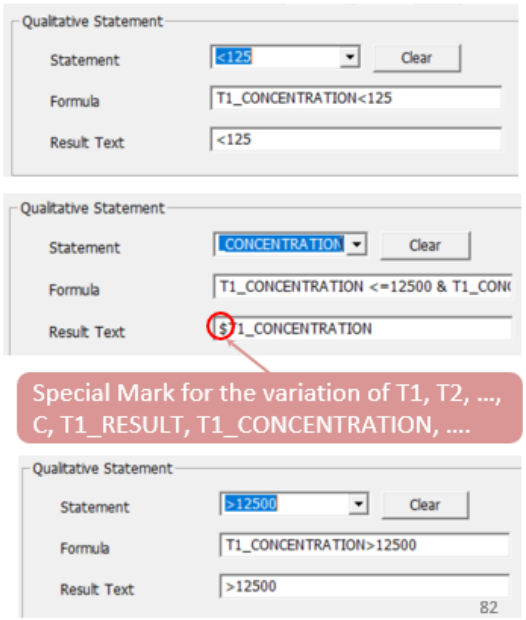


2. The **Qualitative Statement** function of **Modify Lot**, through the **formula**, can convert the original T value or concentration value into ***qualitative***, ***quantitative***, or ***semi-quantitative*** results.

3. How To Set Mix Of Qualitative/Quantitative Statement:

- Using “Statement” to show the quantitative value @ working range





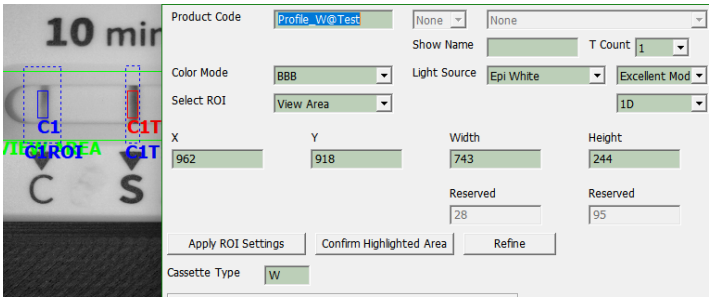
Example:

Assume that the condition and result relationship we expect to output is as follows:

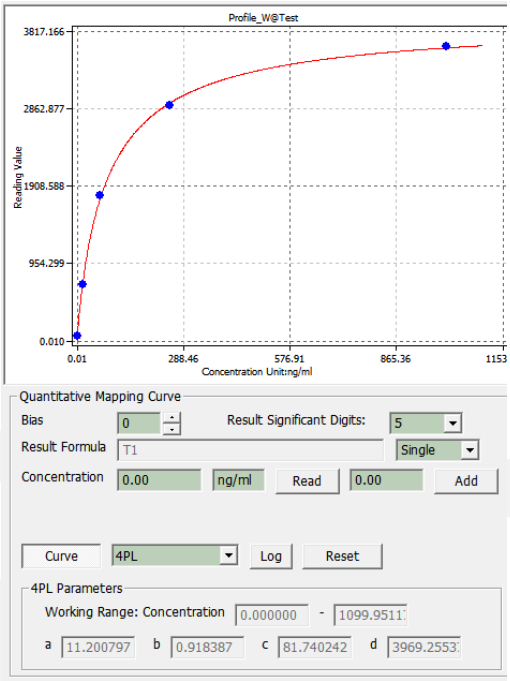
formula	result
lower than 1.953 ng/ml	"<1.953 ng/ml "
between 1.953 ng/ml and 250 ng/ml	Display exact value in ng/ml
higher than 250 ng/ml	"hook effect"

1. ***Quantitative Mapping Curve Setting:***

   A. Complete the **Profile Wizard** setting of the product.



B. Through the above Profile, use the Reader to analyze samples with different concentrations, and then use the **Quantitative Mapping Curve** function to create a standard curve.



ng/mL	COVID-19(T1)
1000.000	3509
250.000	2893
62.500	1786
15.625	692
0.488	57

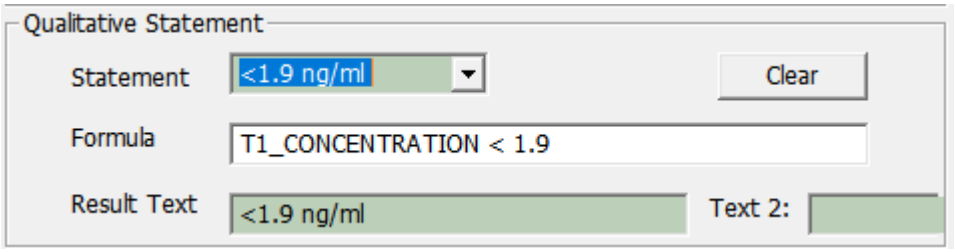
--> For details about standard curve operations, please refer to ***Using Modify Lot To Set Analysis Formula For Obtaining Result*** in (E)RTV User Manual.

2. *Qualitative Statement Setting:*

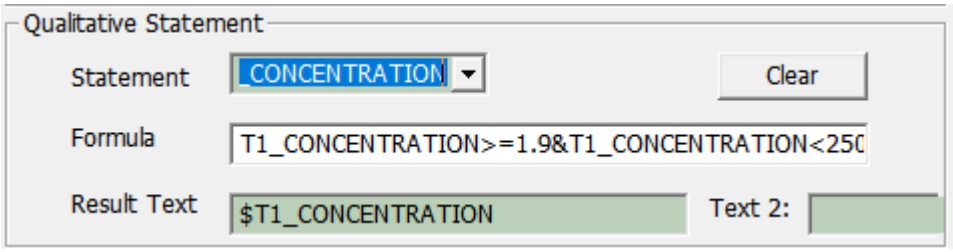
	Condition	result
a	lower than 1.9 ng/ml	"<1.9 ng/ml "
b	between 1.9 ng/ml and 250 ng/ml	Display exact value in
c	higher than 250 ng/ml	"Over the range"

Qualitative Statement settings:

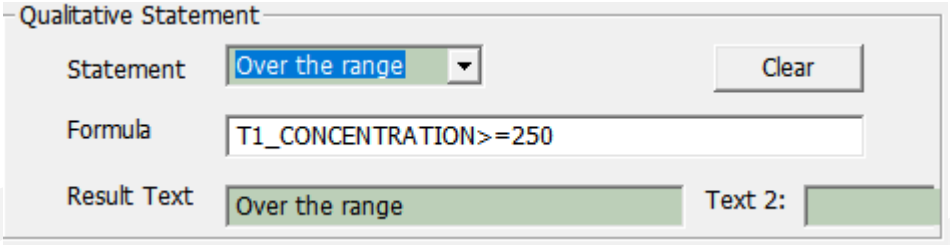
Formula a:



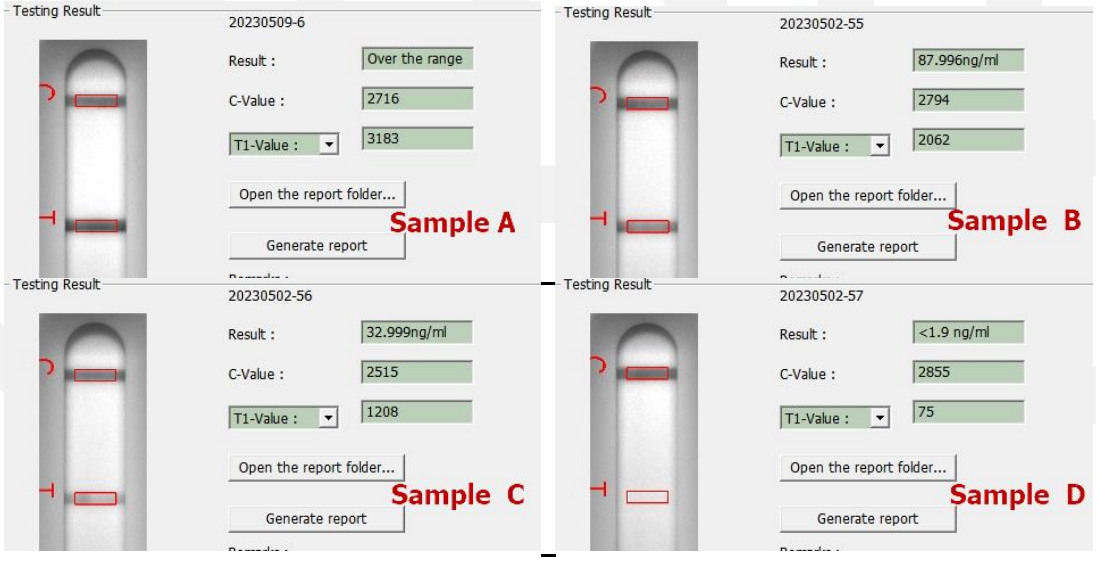
Formula b:



Formula c:



3. ***Analytical Verification:***

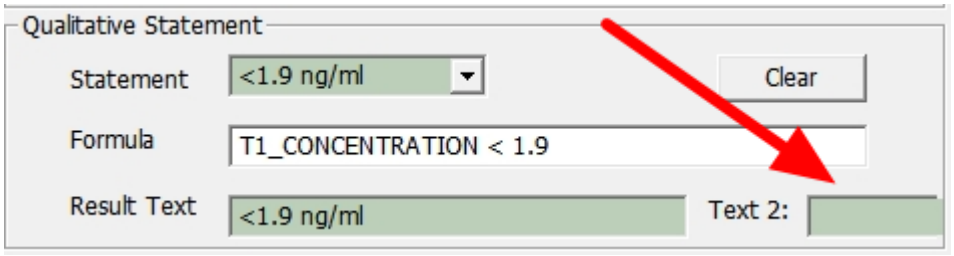


4. ***Result description:***

	T1 Value	Standard curve conversion of concentration	Eligible conditions	The results show
A	3183	372.882 ng/ml	higher than 250 ng/ml	Over the range
B	2062	87.996 ng/ml	between 1.9 ng/ml and 250 ng/ml	87.996 ng/ml
C	1208	32.999 ng/ml	between 1.9 ng/ml and 250 ng/ml	32.999 ng/ml
D	57	1.100 ng/ml	lower than 1.9 ng/ml	<1.9 ng/ml

Extended Application:

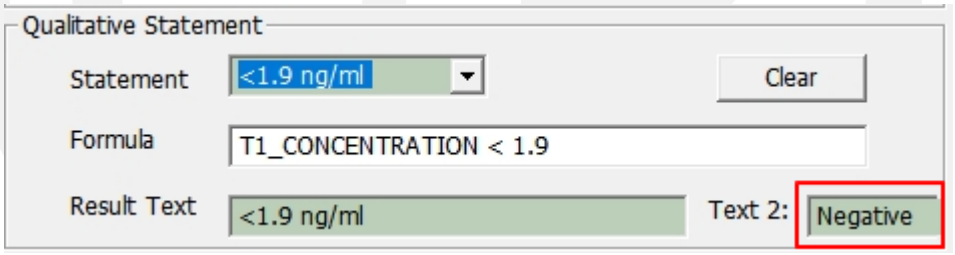
TEXT2 function : → Currently this feature can only be displayed on the ST5 UI

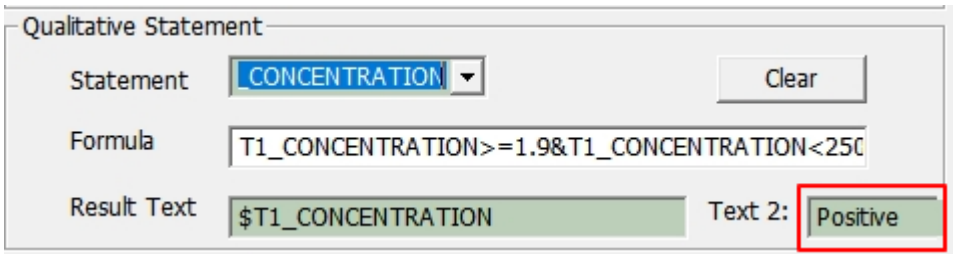


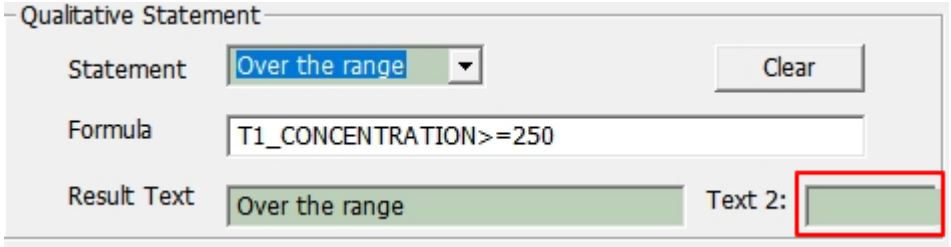
You can use the TEXT2 function to additionally define a qualitative result, so that the expression of the analysis result can be more diverse. Extending Example, we can modify the Qualitative Statement Setting as follows:

	Condition	result	TEXT2
A	lower than 1.953 ng/ml	"<1.953 ng/ml "	Negative
B	between 1.953 ng/ml and 250 ng/ml	Display exact value in ppm	Positive
C	higher than 250 ng/ml	"Over the range"	Positive

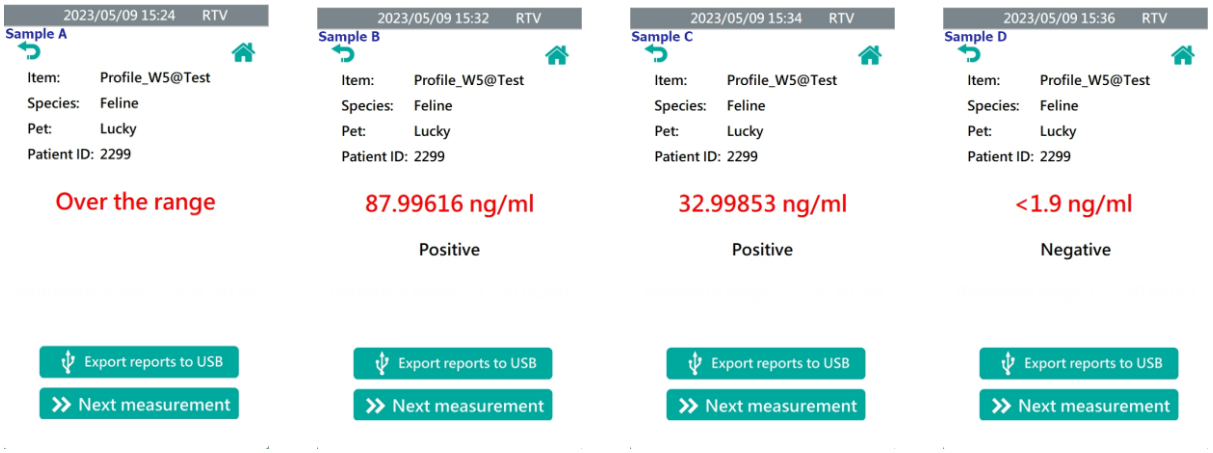
Qualitative Statement settings:







Analytical Verification:



Result description:

	T1 Value	Standard curve conversion of concentration	Eligible conditions	The results show	Test2 show
A	3183	372.882 ng/ml	higher than 250 ng/ml	Over the range	(blank)
B	2062	87.996 ng/ml	between 1.9 ng/ml and 250 ng/ml	87.996 ng/ml	Positive
C	1208	32.999 ng/ml	between 1.9 ng/ml and 250 ng/ml	32.999 ng/ml	Positive
D	57	1.100 ng/ml	lower than 1.9 ng/ml	<1.9 ng/ml	Negative