
Royal Biotech GmbH – VIAL LAB

RB-RVLM



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Royal Biotech GmbH – VIAL LAB
ADVANCED SYSTEM

RVLM
USER MANUAL

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1.1 Introduction

Dear User, thank you for purchasing **RB – VIAL LAB**, an innovative rapid colorimetric system to perform microbiological tests on food, water and surfaces.

The method of analysis is based on the observation of the color change in the suspension formed in the analysis vial used when the test sample is added: the suspension changes color (turns) if there are microorganisms, the greater the amount of microorganisms, the more rapid is the change of color.

The main features of the **RB – VIAL LAB** are:

- **Speed:** analysis time, from preparation to the achievement of results, from 2 to 5 times less than traditional methods;
- **Ease of use:** Anyone, anywhere can do the analysis without the need for other reagents or special equipment;
- **Sensitivity:** you can detect even a single microorganism present in the sample;
- **Selectivity:** it can detect different species of microbial organisms to the experimental limit of 99.999%;
- **Cost:** The cost of each analysis turns out to be 2 to 4 times cheaper than traditional methods.

The method has been validated according to ISO 16140:2003 "Microbiology of food and animal feeding stuffs - Protocol for the validation of alternative methods".

Available reagents for the selective search of the following microorganisms:

1. Total Viable Count – CBT-A01;
2. Coliforms (Totals and *E. coli*) – CO-A02;
3. *Enterobacteriaceae* – EB-A03;
4. *Staphylococcus aureus* – SP-A04;
5. *Pseudomonas aeruginosa* – PAO-A05;
6. *Salmonella* spp. – SL-A06;
7. *Listeria* spp. – LY-A07;
8. *Enterococcus faecalis* – EF-A09
9. Yeasts (*Saccharomyces* spp.) – SC-A11.

The use of **RB – VIAL LAB** in combination with **RB – RVLM** automate the analysis process by allowing at the same time the execution of multiple tests avoiding to check the color change of the vials. After the analysis is directly available a report of the test with printable and customizable information entered by the operator. Report generated by the RB - RVLM indicates, in addition to the time of color change, directly the microbial concentration in the sample analyzed and all the conditions of the test.

1.2 In the box

- RB - RVLM device (RVLM);
- Power supply 230 V – 50 Hz (secondary 12 V, 5 A);
- CD-ROM with installation Drivers and Managing Software;
- USB cable.

1.3 Connecting the RVLM device to computer

- Connect the power supply to the network power plug (be sure the voltage is ok: 230V – 50 Hz);
- Connect the output power supply plug to the RVLM power connector (fig. 1), **without turning on the device;**
- Connect the supplied USB cable between USB port on your computer and USB connector of the RVLM (fig. 1).

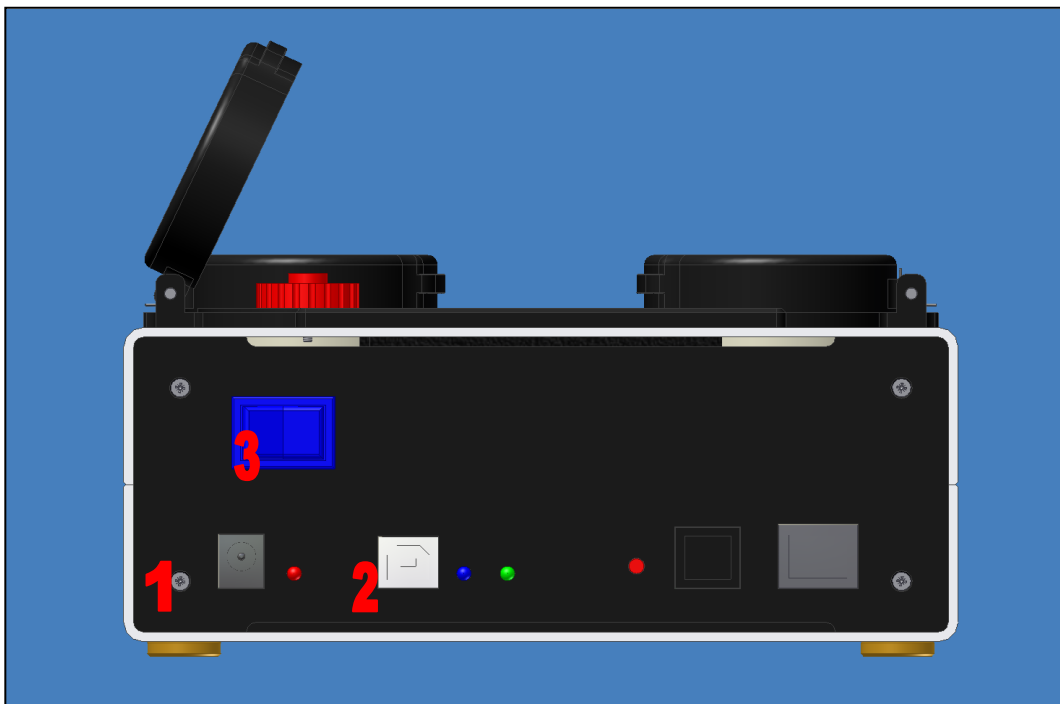


Fig. 1. RVLM – Front panel: (1) Power connector, (2) USB Connector, (3) Power switch

1.4 RVLM software installation

1.4.1 Installing “Java Run Time” software (Operating System: XP, Vista, Windows 7, Windows 8, 32/64 bit)

- Install on your pc the free software “Java Run Time” (download available at: <http://www.java.com/it/download/index.jsp>).

1.4.2 Installing RVLM drivers (Operating System: XP, Vista, Windows 7, Windows 8, 32/64 bit)

- Insert the RVLM CD-ROM into pc CD ROM slot;
- Turn on the RVLM using the power switch (fig. 1);
- After a few seconds the pc detects the new device and opens the New Hardware Wizard Installation, select the option "No, not now" and press "Next";
- Choose the option "Install from a list or specific location (for experienced users)";
- Select the CD-ROM hard drive, choose the folder "RVLM Drivers" and press "OK";
- The pc shows the selected folder, press the "Next" button to begin drivers installation;
- The pc starts drivers installation, and at the end of the procedure shows the window of completed installation. Press the "Finish" button to complete and close the window;
- Immediately after **the computer requires an additional installation of driver with the same hardware wizard, repeat the above steps.**
- The pc starts drivers installation, and at the end of the procedure shows the window of completed installation. Press the "Finish" button to complete and exit the procedure.

1.4.3 Installing the RVLM Managing Software (Operating System: XP, Vista, Windows 7, Windows 8, 32/64 bit)

- Copy the folder “RVLM Software” (**32 or 64 bit, depending on your computer**) from the CD-ROM and paste it where you want on your pc (desktop or other);
- Open the copied folder "RVLM Software" in which are placed the control files of the RVLM software. **DO NOT MOVE OR CHANGE THESE FILES FOR ANY REASON.** Any type of change or movement could produce malfunction of the device. To avoid accidental movements or changes click the right button mouse on the file "RVLM.bat" in the folder "RVLM Software", choose the option from the wipe menu "Send To" → "Desktop (create shortcut)". This creates a shortcut on the desktop of boot file software RVLM.

The RVLM is now installed on your computer and ready for use.

1.5 Configuration of Managing Software

1.5.1 Choosing of the communication port

- Click 2 times on file “RVLM.bat” in the folder "RVLM Software" or double click on the link you created on the desktop), the user interface of the RVLM appears (fig. 2);

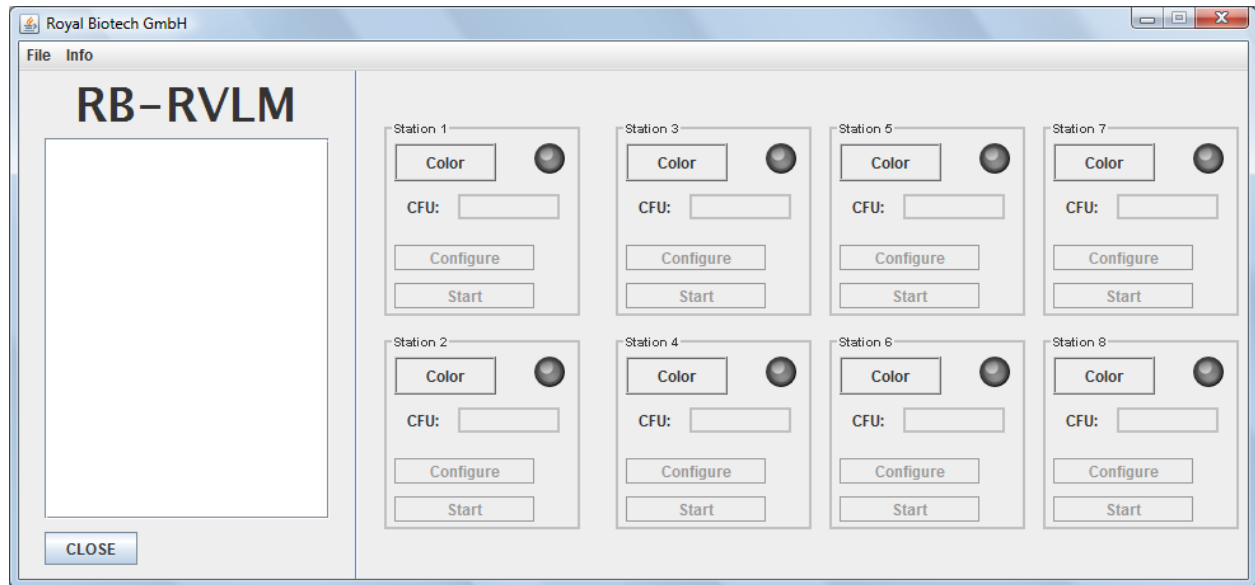
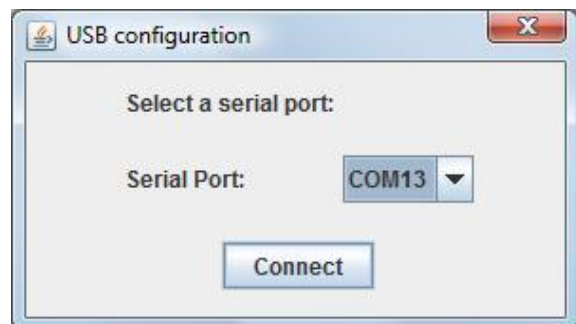


Fig. 2. RVLM – User interface

- Click on “File” → “USB Config”, USB configuration box appears, from the wipe menu select the communication port on which the RVLM is controlled (fig. 3/1). Choose from the list of available (fig. 3/2) and click “Connect”;



Fig. 3. RVLM – USB configuration (1)



RVLM – USB configuration (2)

- If the communication port chosen is correct, the user interface shows the RVLM station “lights” green (fig. 4), thus indicating that it is possible to proceed with setting the parameters of analysis through the configuration of the single stations. If the communication port is not correct, it shows one of two box error (fig. 5 and fig. 6), in this case you must repeat the operation using another port until you select the right one;

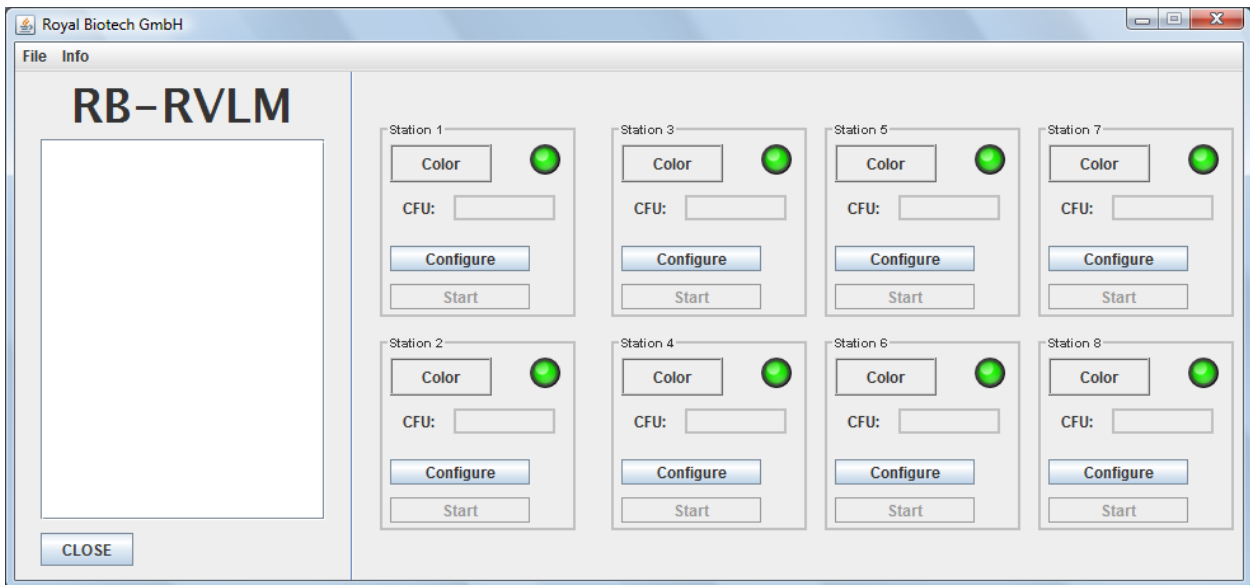


Fig. 4. RVLM – User interface, software ready

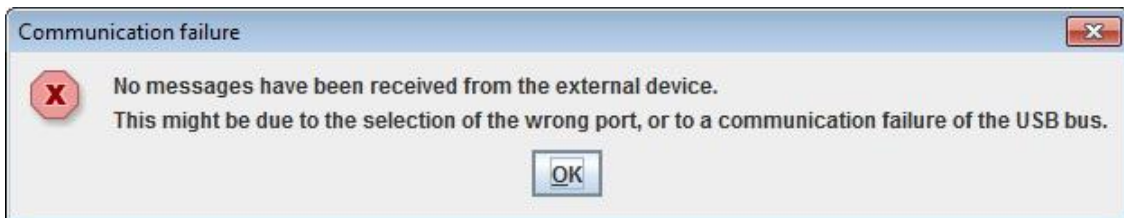


Fig. 5. RVLM – Box error in the configuration of communication port



Fig. 6. RVLM – Box error in the configuration of communication port

-
- The RVLM can not be disconnected from the computer while the tests are running, nor the computer can be shut down or the session closed. Any of these operations leads to an immediately end of the test with loss of data acquired and set up. If any of the case occurs, the box "Connection Error" appears (fig. 7) Push "OK".

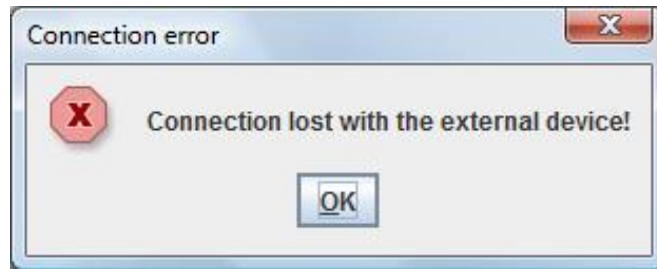


Fig. 7. RVLM – Loss of connection

1.6 Procedure of Analysis

1.6.1 Setting the analysis station

- Click on “Configure” button of one of the RVLM available station (light green), the dialog box "User Configuration Panel" on the station appears (fig. 8);
- Fill in the desired editable fields, choose the type of analysis to be performed, the type of matrix and the product to be analyzed from the wipe menu (fig. 9). Press the "OK";

The screenshot shows a software dialog box titled "User configuration panel". It is used for configuring an analysis station. The interface includes the following elements:

- Station n. 1**: A header for the configuration section.
- Company**: A text input field.
- Operator** and **Customer**: Two text input fields.
- Sample Number** and **Receiving Date**: Two text input fields.
- Product class** and **Product type**: Two text input fields.
- Sample quantity** and **Sampling**: Two text input fields.
- Date**: A text input field containing "2012/07/10 11:51:26".
- Analysis ID**: A dropdown menu with "CBT-A01 Total Viable Count 30°C" selected.
- Matrix**: A dropdown menu with "Water" selected.
- Product**: A dropdown menu with "Uncooked food" selected.
- Buttons**: Three buttons at the bottom: "OK", "Clean fields", and "Reset station".

Fig. 8. RVLM – “User configuration panel”

Station n. 1

Company: Hygeia Laboratories - Berlin

Operator: Edward Smith Customer: Iceland - Amburg

Sample Number: 001 Receiving Date: 2012/07/09

Product class: Frozen Product type: Hamburger

Sample quantity: 1g Sampling: Standard

Date: 2012/07/10 11:59:33

Analysis ID: CBT-A01 Total Viable Count 30°C

Matrix: Meat

Product: Uncooked food

OK Clean fields Reset station

Fig. 9. RVLM – “User configuration panel” filled fields

- Now, the station is configured, the "Configure" button changes to "Configured" and takes on the colour green (fig. 10).

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File Info

RB-RVLM

Station 1

Color

CFU:

Configured!

Start

Station 2

Color

CFU:

Configure

Start

Station 3

Color

CFU:

Configure

Start

Station 4

Color

CFU:

Configure

Start

Station 5

Color

CFU:

Configure

Start

Station 6

Color

CFU:

Configure

Start

Station 7

Color

CFU:

Configure

Start

Station 8

Color

CFU:

Configure

Start

CLOSE

Fig. 10. RVLM – User interface, configured station

1.6.2 Start the test

- Prepare the analysis vial as described in the "RB – VIAL LAB – Basic System" (par. 1.2.1 - 1.2.2 - 1.2.3 – 1.2.4). Place the vial in the configured station of the RVLM and close the lid;
Note: you should not mark or label the vial of analysis, but if unavoidable, may be marked with a symbol/label **only on the vial cap.**
- You can now begin the test by clicking once on the "Start" button of the configured station. The light turns red and the "Start" button changes to "Running ..." (fig.11);

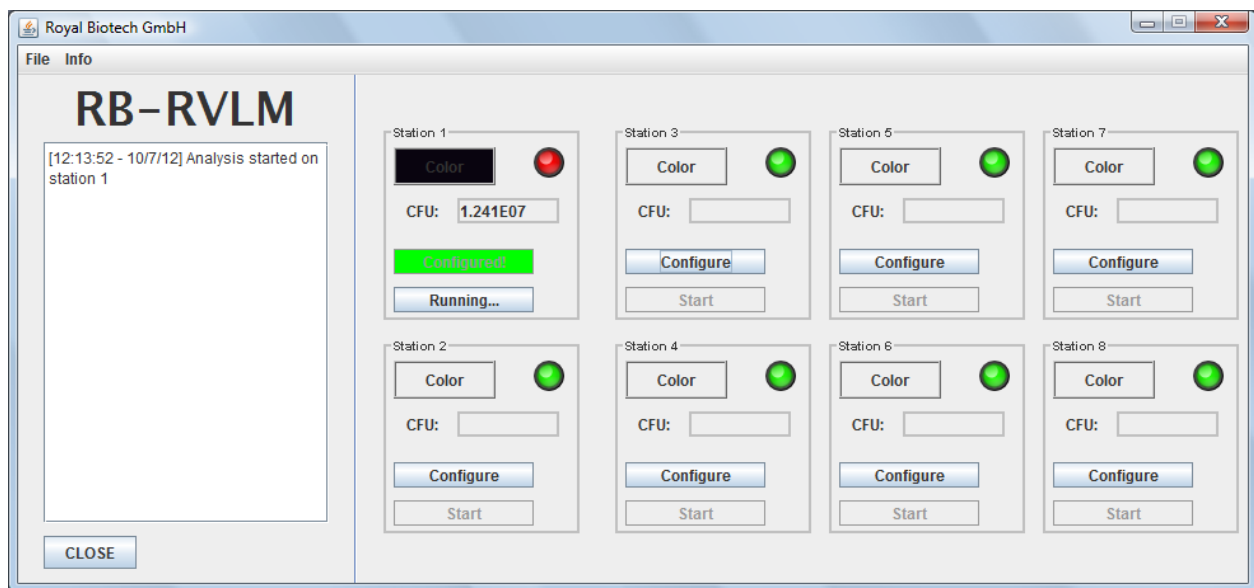


Fig. 11. RVLM – User interface, test start

- To start several tests simultaneously repeat the configuration of the desired stations as described above. There is no order or priority between the different stations of the device;
- You can check the inserted information in the configuration window and the status of the station by clicking once on the "Running ..." button of the selected station. The "Running analysis", not editable window appears (fig. 12);

Running analysis

Station n. 1

Company: Hygeia Laboratories - Berlin

Operator: Edward Smith Customer: Iceland - Amburg

Sample Number: 001 Receiving Date: 2012/07/09

Product class: Frozen Product type: Hamburger

Sample quantity: 1g Sampling: Standard

Starting date: 2012/07/10 11:59:33

Analysis ID: CBT-A01 Total Viable Count 30°C

Matrix: Meat

Product: Uncooked food

CFU <: 1.127E07

Close Stop

Fig. 12. RVLM – Control window while the test is running

- The "Running analysis" window shows the information entered during the configuration of the station and the field "CFU <", the value showed indicates the current result: the test result if the analysis ended when you have opened the window. This value can not, in any case, be considered the final result of the test (the value can be interpreted as the maximum contamination possible. If there is a bacterial contamination, it will be certainly less than the value indicated in the "CFU <" field). The value format of the "CFU <" is a scientific format (1,127E07 is a $1,127 \times 10^7$ CFU);
- In the "Running analysis" window are located two buttons:
 - "Close" to close the window;
 - "Stop" to stop the test, by confirming "OK" when asked: in this case the analysis is stopped and the station is reset (fig. 13), making it available for further analysis;

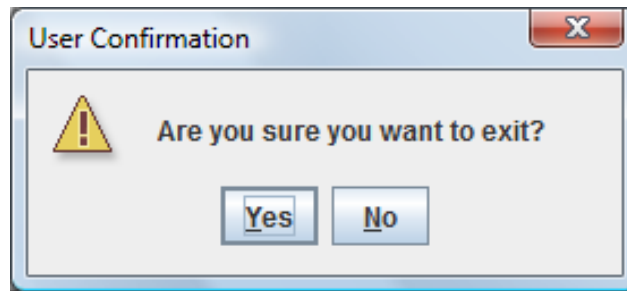


Fig. 13. RVLM – Stop and reset of station window during the test running

- If during the test the lid of the station is opened, the analysis is terminated immediately without possibility of recovery, and the RVLM opens the box "Analysis stopped" (fig. 14). Press the "OK" button. In the report appears the message "Analysis stopped due to the opening of the station lid". To reset the station see at par. 1.5.5.



Fig. 14. RVLM – Stop window due to opening of the station lid

1.6.3 End of the test

- The end of a started test may end with only 2 possibilities:
 - **positive** (presence of microorganisms and thus the value of the contamination). In this case the contamination value box is fixed and red bordered;
 - **negative** (absence of microorganisms and thus the value is zero). In this case the contamination value is fixed, equal to "0.000E00" and the box appears green bordered;
- In both cases the stations lights come back to green colour and "Running ..." changes to "Report" (fig. 15 and fig. 16).

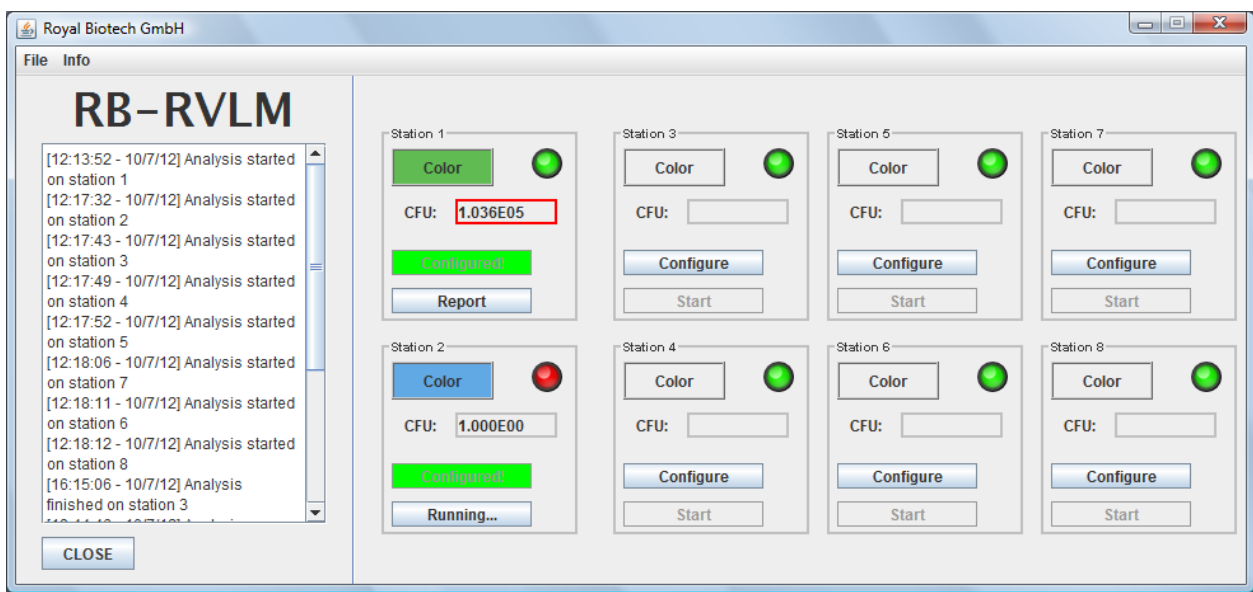


Fig. 15. RVLM – End of analysis on station number 1. Presence of microorganisms, contamination equal to 1.0364E05 CFU

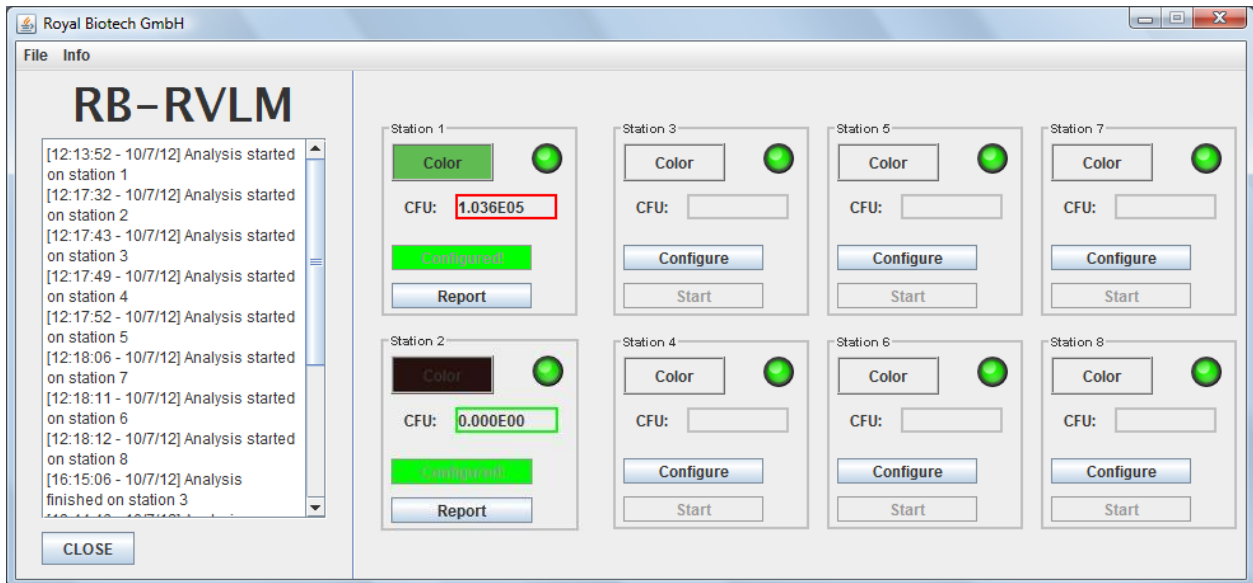
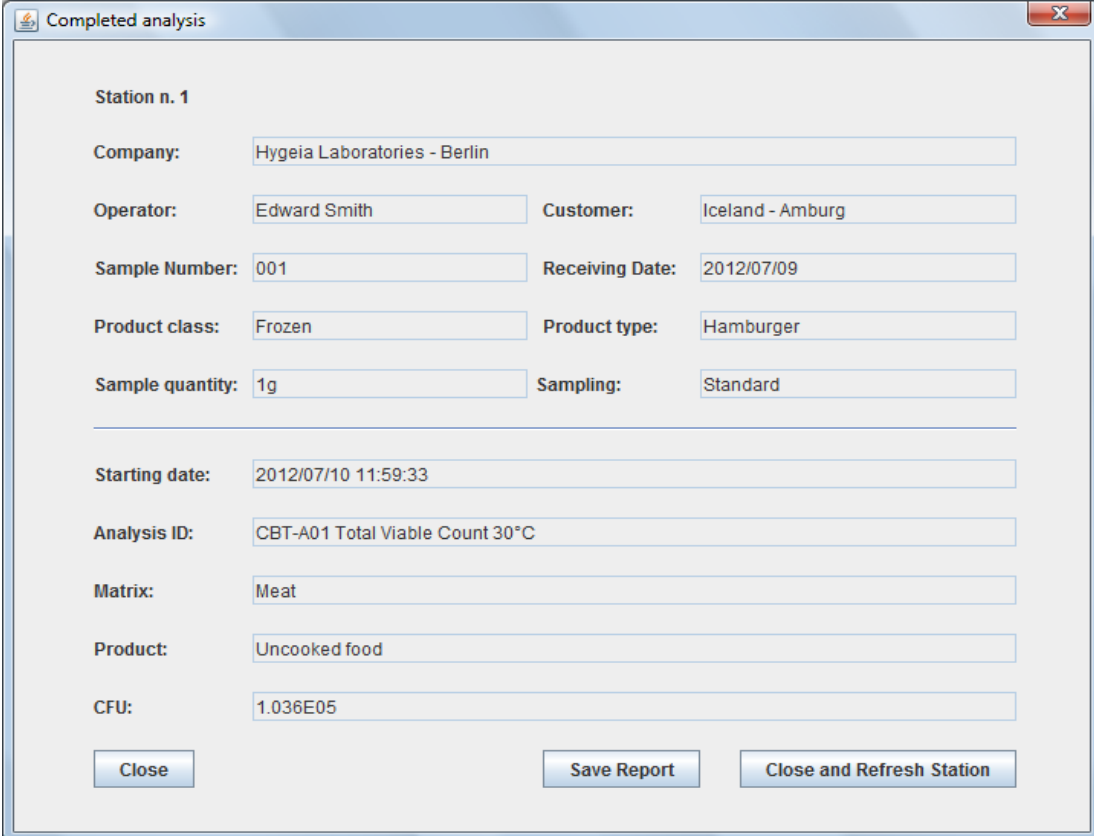


Fig. 16. RVLM – End of analysis on station number 2. Absence of microorganism, final value equal to 0.000E00 CFU

1.6.4 Saving the Report

- To save the Report for an ended test, press "Report" button of the corresponding station, box "Completed analysis" appears (fig. 17). Press the "Save Report" button, it opens the

save dialog box. Choose a folder to save type a name for the file, press "OK". If the operation is successful you see the box "Report saved" (fig. 18). Press "OK" to close the window;



The screenshot shows a window titled "Completed analysis" with a close button (X) in the top right corner. The window contains the following fields and values:

Station n. 1			
Company:	Hygeia Laboratories - Berlin		
Operator:	Edward Smith	Customer:	Iceland - Amburg
Sample Number:	001	Receiving Date:	2012/07/09
Product class:	Frozen	Product type:	Hamburger
Sample quantity:	1g	Sampling:	Standard
<hr/>			
Starting date:	2012/07/10 11:59:33		
Analysis ID:	CBT-A01 Total Viable Count 30°C		
Matrix:	Meat		
Product:	Uncooked food		
CFU:	1.036E05		
<input type="button" value="Close"/>		<input type="button" value="Save Report"/>	
<input type="button" value="Close and Refresh Station"/>			

Fig. 17. RVLМ – End of analysis window

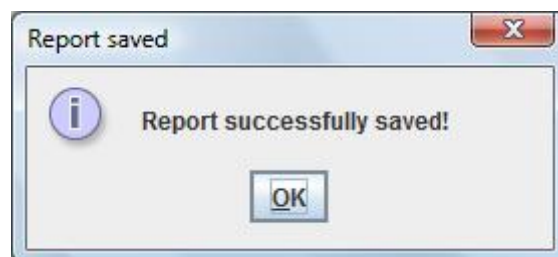


Fig. 18. RVLМ – Box of confirmation for saved analysis report

- In the Analysis Report (fig. 19) are indicated; apart the test result, all the information you entered when you set up the station. The non-completion of all fields of the configuration window means the absence of information in the Analysis Report.

Analysis Report				2012/07/11 11:37:02
Company: Hygeia Laboratories - Berlin				
Customer: Iceland - Amburg				
Sample Number: 001	Receiving Date: 2012/07/09	Starting Time: 2012/07/10 11:59:33	Ending Time: 2012/07/10 18:44:46	
Product Class:	Frozen			
Product Type:	Hamburger			
Sample Quantity:	1g			
Sample Back:	No			
Sampling:	Standard			
Product:	Uncooked food			
This Report refers only to the given sample.				
Date	Analysis ID - Analytical Method	CFU/g - CFU/ml - CFU/100cm ²	Limit	Note
2012/07/10 18:44:46	CBT-A01 Total Viable Count 30°C - MBS patent	1.036E05	-	-
		Operator:	Edward Smith	
		Supervisor:	_____	

Fig. 19. RVLN – Analysis Report

- In the Analysis Report shows the microbial concentration of the sample analyzed, expressed as CFU (Colony Forming Units):
 - for the analysis of solids or liquids, the value of CFU refers respectively to 1g or 1ml of sample (eg: 1.036E05 CFU/g or 1.036E05 CFU/ml food or liquids analyzed);
 - for surface analysis, however, the result calculated by RVLN refers to the CFU present in 100 cm² (eg: 1.036E05 CFU/100cm²); since according to current regulations, the

contamination of surfaces must be expressed as CFU/cm², then the value of contamination provided by the RVLM is to be divided by 100 (eg: 1,999E03 CFU/100cm² corresponds to 1.036E03 CFU/cm²).

1.7 Warranty conditions

Royal Biotech GmbH warrants this device to defects in materials under normal use for a period of 12 months from date of purchase. Anyway Royal Biotech is not responsible for accidental damage due to physical shock, exposure to corrosive agents or use not in accordance with the instructions described in this manual.

For more details on this warranty, please contact Royal Biotech GmbH.