

Vibe Imaging Analytics

Vibe QM3i Analyzer

Installation and User Manual

Version 9.4.0

May, 2024

Document Revisions

Version Number	Date	Document Changes	Approved by
439-01	October 2017	New version updates	Vered Israeli
439-02	March 2018	Adding kernel measuring information in Appendix C	Vered Israeli
R-5.3.30	September 2018	New Color Classification method	Vered Israeli
5.7.5	January 2019	New testing features, bug corrections	Vered Israeli
6.7.4	July 2019	New Features, Bug corrections, New PDF reports	Vered Israeli
7.0.0	Jan 2020	New Features, Bug corrections, Spectrum wizard, VibeTests, Vibe Explore	Vered Israeli
9.3.0	Jan 2024	HW update, Vibe Config- main results, certificate configuration, New Features, Bug corrections	Vered Israeli
9.4.0	May 2024	New Features, Bug corrections,	Vered Israeli



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The images contained in this document are for illustrative purposes only and may vary depending on product models.

Quick Navigation

To quickly find the information you are searching for, click on the links below:

- [Unpacking](#)
- [Initial Setup & Switch On](#)
- [Testing a Sample](#)
- [Viewing Test Results](#)
- [Creating a New Calibration File](#)

Support and Contact Information

If you have technical problems concerning Vibe QM3 products, please contact us:

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Korea (+82)	(070) 7691 8900	contact.korea@vibeia.com
India (+91)	(991) 0391873	contact.india@vibeia.com

Before contact, make sure to have the following information at hand:

- Model and serial number of the product in question (you can find it on the back of the instrument)
- Please ensure the instrument is connected to the internet

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Chapter 1

The Vibe Imaging Analytics QM3i Analyzer

The Vibe QM3i Analyzer is a system level solution for the analysis, measurement and reporting of specific physical parameters related to the quality of grains and seeds. The following sections describe each of the system's components.

System Overview

The Vibe QM3i Analyzer is an off-line optical inspection system and is designed to be operated as a standalone system. However, integration into third party software platforms is possible as well as connecting and using the system(s) with Vibe Imaging Analytics Cloud Services.

Vibe QM3i Hardware

The Vibe QM3i hardware consists of three main elements: the optical system, which comprises an industrial grade high resolution camera and a controlled light source; the system enclosure, which is designed to hold the samples being analysed and protect the optical system from stray light contamination; computer, which runs the Vibe QM3i operating software and provides storage capability for image and sample data.

Vibe QM3i Software

The Vibe QM3i software is a package specifically designed for a grain and seed analysis. It operates on a Windows PC, which is an integral part of the Vibe QM3i instrument. No software installation or calibration is required as the Vibe QM3i is pre-configured with both Windows operating system and the Vibe QM3i application software.

Unpacking & System Setup Instructions

No special tools are required during the system setup.

Step 1: Unpacking

The contents of the box that you will receive are:

- A. Vibe QM3i Instrument
- B. Power AC cable 120V / 230V / 240V
- C. Holding tray
- D. 2 X Working area sheets

A



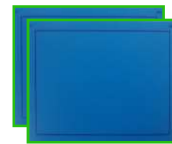
B



C



D

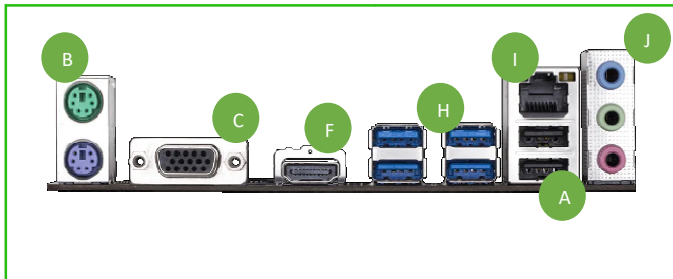


Safety Recommendations

Please read this instruction manual carefully. Only then you will be able to operate Vibe QM3i safely and correctly.

- ✓ Place Vibe QM3i on a flat stable surface.
- ✓ Place Vibe QM3i at least 2 inches from the wall, to avoid power cable work with pressure.
- ✓ The electronic\computer connection leads from the back panel must not become trapped in Vibe QM3i analyzer moving 'WhiteBox'.
- ✓ If the power cable is damaged, it must be replaced to prevent hazards.
- ✓ **Before plugging AC power to the instrument, must ensure that switch is on "OFF" position.**
- ✓ While opening the WhiteBox don't insert hands in the working area until the WhiteBox fixed in upper position.
- ✓ While closing the WhiteBox, don't insert hands in working area.
- ✓ Keep the Vibe QM3i working area clean from any foreign materials in order to prevent bad closing or bending.
- ✓ Clean with wet/dry wipe only, don't use high pressure cleaners, water or steam jets. There is a danger of short circuiting.

Step 2: Initial Setup and Switch-on

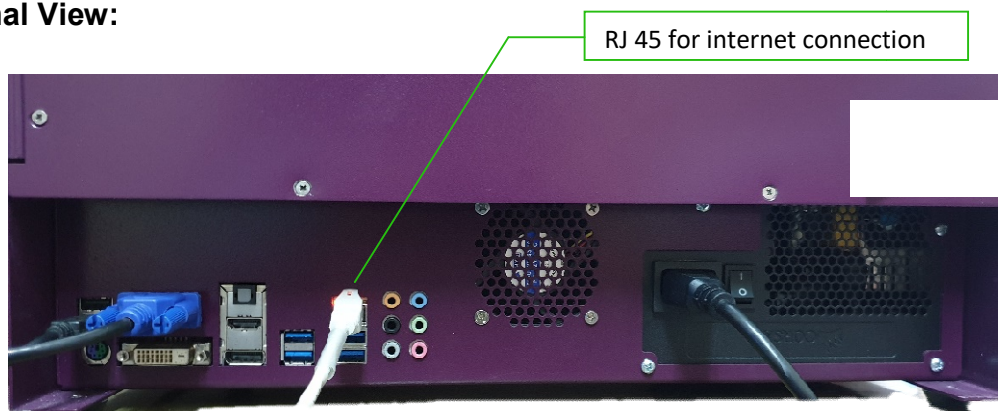


#	Name	Q	Function
A	USB2 port	2	Connect to keyboard Connect to mouse
B	PS/2	1	
C	VGA	1	
E	Optical S/PDIF out	1	
F	HDMI	1	Connect to monitor (or –D)
H	USB3/2.0	4	
I	RJ 45	1	Connect to internet access
J	Audio Connections	6	

* NOTE: Monitor, keyboard and mouse are not supplied with the Vibe QM3i Analyzer

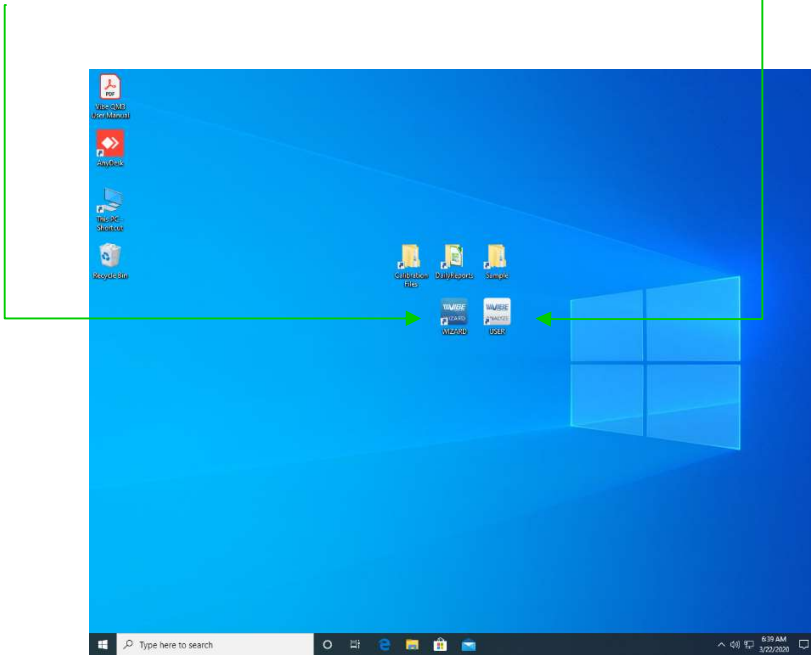
* NOTE: Minimum required monitor resolution is 1280*1024

Final View:



Starting the Vibe QM3i

1. In the back of the Vibe QM3i, turn the black switch to on- “1”
2. Click on the “Analyze” icon if you wish to test samples
3. Click on the “Wizard” icon if you wish to create a calibration file



That is how the instrument should be on its final unpacking and switch on:



Chapter 2

Using the Vibe QM3i Analyzer

The Vibe QM3i has a simple, user friendly interface that anyone can operate with minimal training. There are three main steps when using the Vibe QM3i:

- Preparing the sample for test
- Selecting the appropriate calibration template or calibration file for the sample under test
- Running a test

The calibration file is a user defined set of values that the grain sample will be tested against. Factors for different grain types, broken kernels or damaged kernels are defined within the Calibration template.

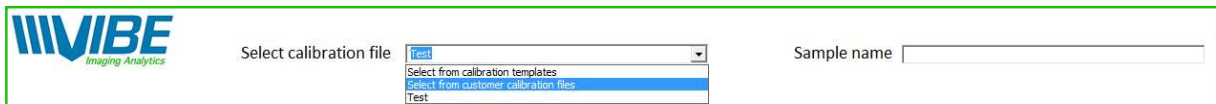
Testing a Sample

Once the sample has been placed on the Vibe QM3i and the WhiteBox was closed, the system is ready to run a test.

Testing a sample on the Vibe QM3i takes just few simple steps as follows:

Step 1: Select a calibration file

Simply select the relevant calibration file from the top menu bar



Step 2: Add sample name

Step 3: Weight the sample (optional)

Weight the sample and add the weight to the relevant field (Optional)

* The analyzer supports samples starting from 1 kernel up to any amount that can be spreaded in one layer on the working tray (for example- about 35-40 grams of rice sample or about 70 grams of wheat).

Step 4: Add comments regarding the sample (optional)

Step 5: Spread the sample on the Working area

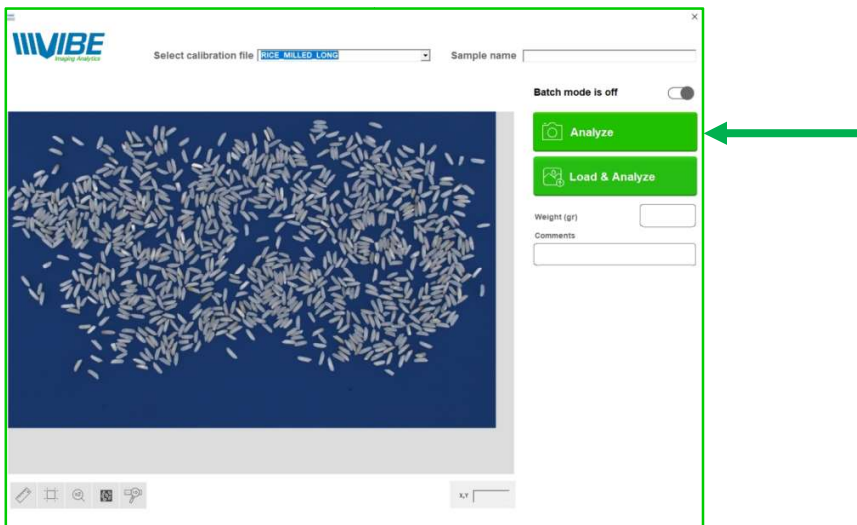
Make sure that the sample is spreaded on the working area in one layer and without “piles”



Step 6a: Capture the sample image

Before capturing the image, make sure that the spreading is in one layer.
Adding a sample name is optional- it will help you to find this sample in your reports.
You can also add the sample weight or any comment about this sample. All the information you will add will be saved in all the reports and the documents of this sample.

Click on the “Analyze” Button.
After the analyze is done- the results will appear on the main screen.



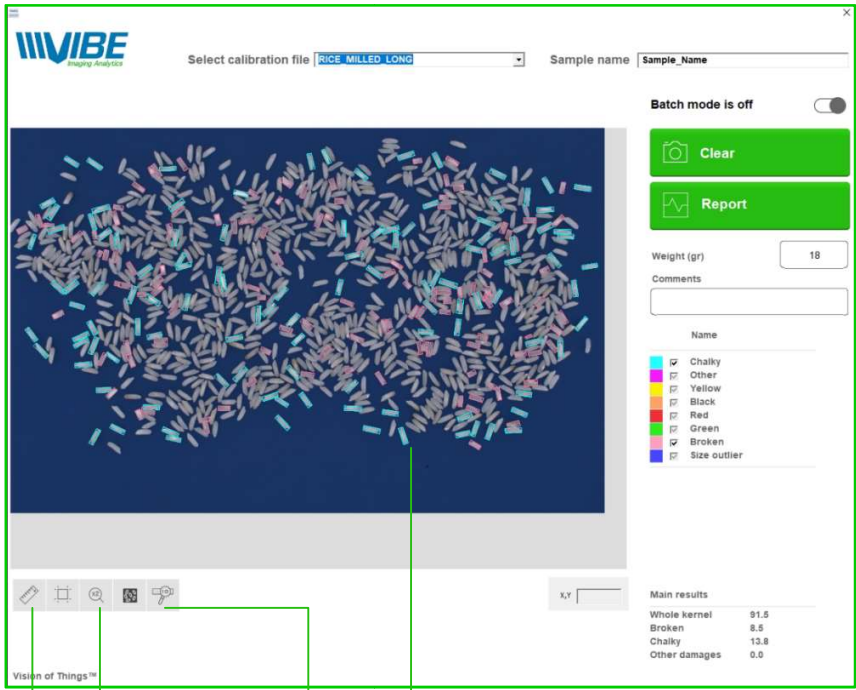
Step 6b: Load existing image from previous analysis

Click on “Load & Analyze” if you wish to analyze existing image (sample that was previously analyzed and you wish to re-analyze it).

After clicking on “Load & Analyze”- list of sample folders will be shown. Pick the relevant folder and click on the sample image.

The analyze will be automatically done and the results will appear on the main screen.

Analyze screen:



Check/ Uncheck to present damage types on the main screen. (all checked is the default)

Main results- Can be configured according to the most important results you would like to see

Abnormal color classification

Ruler- Enables to digitally measure any grain

Zoom- right click on the main screen will zoom in. Left click on the Icon will set the scale of the zoom-in

ID number- Shows all the kernel ID's on the main screen

Viewing Test Results

Viewing the test results for a given sample on the QM3i is very simple. There are two levels of results:

Summary Results – Shows summary results screen for a tested sample on the main screen

User Report–shows detailed information on the sample relating to kernel classification, color analysis, kernel distribution and dimensional information

Main Results

The main results will show the most important fields for you. It can be configured per your needs. Follow the next steps in order to configure the Main Results section:

- Contact a vibe support representative and ask the password to the "VibeConfig" application
- Go to the "Calibration Files" folder that is on the desktop
- Open the calibration file in which you would like to change the main results
- Click on the "MainResults.vib" file
- "Check" the fields that you would like to see on the main results. You can change the field name and the order that the fields will be presented
- Press "Save" when you are done
- If you would like to set the same "Main Results" for all calibration files. Please "Copy" and "Paste" the "MainResults.vib" file to the other calibration files folders

User Report



The screenshot displays the VIBE User Report interface for a sample named "2023-12-11_01h-50m-21s_Sample_Name". The report is divided into several sections:

- Grain Type: Long (by LW Ratio)**: A table showing the distribution of grain types. The 'Long' type is the most prevalent, accounting for 87.960% of the weight and 84.519% of the kernels.
- Color Analysis**: A table showing the percentage of kernels with different color damages. 'Black' is the most common color damage, followed by 'Chalky'.
- Distribution**: A histogram showing the distribution of kernel lengths. The x-axis represents length in millimeters, ranging from 1.83 to 5.83. The y-axis represents the number of kernels, ranging from 0 to 60.
- General information**: A table providing various statistical data points, including the weight of whole kernels (91.501g), the number of whole kernels (841), and the average kernel length (6.362 mm).

Annotations on the left side of the screenshot identify key features:

- Grain type classification**: Points to the 'Grain Type: Long (by LW Ratio)' table.
- Broken %**: Points to the 'Broken' row in the 'Grain Type' table.
- Color damages analysis**: Points to the 'Color Analysis' table.
- Kernels distribution graphs**: Points to the 'Distribution' histogram.
- Sample dimensional data and statistics**: Points to the 'General information' table.

Viewing Reports

There are multiple reports available with the Vibe QM3i:

Daily Report- shows a summary of all samples tested per date

Sample Summary Report- shows all available information for a specific sample

Kernels Detailed Report- shows detailed kernel information for a specific sample

PDF Report- Shows all the information you found on the report page

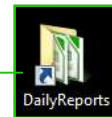
Certificate of analysis- can be configured to show only the information you choose to have on the certificate.

Every certificate will have a unique Vibe number

To view the various reports, the following steps are required:

Daily Report

- The Daily Report provides a summary of all sample tests that were performed on a specific date
- The report file is created when the first sample is tested on a particular date. The file is closed and filed at 00:00 on the same date.
- The file name format is "DailyReport_YYYY_MM_DD"
- The report file is located in "//Computer/New Volume (D:)/DailyReports"
- A shortcut is also located on the system Desktop
- Each line in the report represents the data of one specific sample

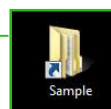


ID	Date	Time	SampleName	CalibrationFile	Weight	NumOfKer	NumOfWK	WKPerC	WKWeight	ChalkyWei	ChalkyKer	ChalkyNur	NumOfBro	Broken
1	2016_11_29	9:40:15	ChalkyTest1	_431_MILLED	20	1100	1048	95.27	97.27	0.57	0.64	7	62	4
2	2016_11_29	9:44:22	ChalkyTest2	_431_MILLED	20	1101	1046	95	97.09	0.57	0.64	7	55	4
3	2016_11_29	9:46:20	Chalkytest3	_431_MILLED	20	1100	1047	95.18	97.19	0.48	0.55	6	53	4
4	2016_11_29	9:50:43	ChalkyTestT1	_431_MILLED	20	1101	1046	95	97.08	0.49	0.54	6	55	4
5	2016_11_29	9:53:2	ChalkyTestT2	_431_MILLED	20	1100	1047	95.18	97.16	0.49	0.55	6	53	4
6	2016_11_29	9:58:15	ChalkyTestT3	_431_MILLED	20	1101	1045	94.91	97.02	0.49	0.54	6	56	5
7	2016_11_29	10:40:3	ChalkyTestMib	_431_MILLED	20	1101	1046	95	97.11	0.54	0.64	7	55	5
8	2016_11_29	10:46:8	ChalkyTestMib	_431_MILLED	20	1103	1040	94.29	96.81	0.5	0.63	7	63	5
9	2016_11_29	10:56:35	ChalkyTestMib	_431_MILLED	20	1098	1042	94.9	97.03	0.7	0.82	9	56	5

- The daily report can be configured in a way that only the columns you would like to see will be presented. It can also be configured to create a MONTHLY report instead of a Daily one
- In order to customize the reports, please contact a vibe support representative and ask the password to the "VibeConfig" application
- Go to: D:\VIBE_CONFIGURATIONS\LocalMachineSoftwareConfigurations
- Click on the file named: "DailyReportFields.vib"
- Uncheck the fields you would not like to see in the daily report
- Click on "Save" when you are done"

Sample Summary Report

- The Sample Summary Report provides a summary of the measurements and data for the tested sample.
- The report file is located in the folder of the sample tested "//Computer/New Volume (D:)/Product Data/ Sample"
- Shortcut is located on the Desktop
- After picking the relevant sample, look for the file "SampleSummaryReport (_Date_SampleName).CSV"



1	Date	2016_11_29
2	Time	13:48:20
3	InstrumentID	242003
4	CalibrationFile	_431_MILLED_MEDIUM
5	SWVersion	4.3.1
6	SampleName	
7	SampleComments	
8	SampleWeight	0
9	NumberOfParticles	33
10	WKWeightPerC	100
11	WKPerC	100
12	WKNumber	33
13	WeightOf1000Particles	0
14	BrokenWeightPerC	0
15	BrokenKernelsPerC	0
16	BrokenKernelsNumber	0
17	OutlierNumber	0
18	BrokenThreshold	4.062744
19	OutlierThresholdWidth	3.294007
20	OutlierThresholdLength	7.056561
21	OutlierThresholdArea	16.197899
22	OutlierThresholdLW	2.588822
23	SampleWidthAverage	2.583813
24	SampleWidthMedian	2.607443
25	SampleWidthSTDEV	0.159039
26	SampleLengthAverage	5.220552
27	SampleLengthMedian	5.227719

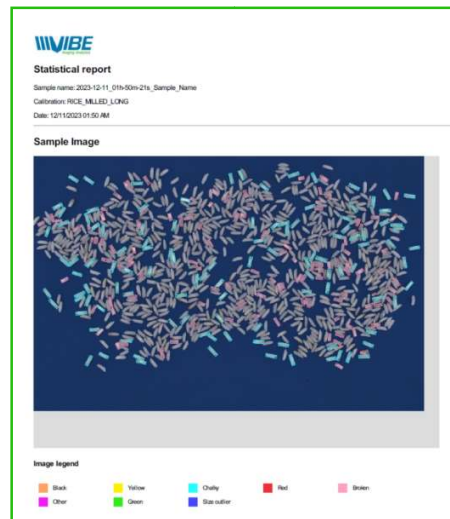
Kernels Detailed Information Report

- The Particle Detailed Report presents all captured information about a specific kernel
- Information regarding kernel location, dimensions, type classification and color characterization are stored in this file
- The report file is located in the folder of the sample tested “//Computer/New Volume (D:)/Product Data/Sample”
- Sample Shortcut is located on the Desktop
- After picking the relevant sample folder, look for the file “KernelsInfoReport(_Date_SampleName).CSV

ID	Rating	X	Y	SizeClass	Width	Length	LW	Area	Estimate	ModeR	ModeG	ModeB	ModeL	ModeA	ModeB	ModeAE	MedianR	MedianG	MedianB	MedianL	MedianA	MedianB	MedianL	RiceTy
1	0	2001	1021	WK	2.63	5.44	2.07	11.18	0.0195	0	89	156	37.01	4.12	-42.65	0	89	156	37.01	4.12	-42.65	0	Medium	
2	0	1989	993	WK	2.72	5.49	2.02	11.61	0.0203	0	89	156	37.01	4.12	-42.65	0	89	156	37.01	4.12	-42.65	0	Medium	
3	0	824	991	WK	2.4	4.64	1.94	8.41	0.0186	0	77	137	32.09	4.07	-39.04	0	101	148	147	58.09	-16.01	4.55	1 Medium	
4	0	788	950	WK	2.59	5.04	1.94	9.93	0.0196	0	70	145	30.46	12.28	-46.53	0	70	145	30.46	12.28	-46.53	0	Medium	
5	0	1764	926	WK	2.55	5.31	2.08	10.77	0.0188	0	82	152	34.6	7.08	-44.11	0	82	152	34.6	7.08	-44.11	0	Medium	
6	0	781	889	WK	2.4	5.01	2.08	8.93	0.0176	0	79	143	33.08	5.28	-41.08	0	87	130	157	52.31	-7.34	-19.07	1 Medium	
7	0	823	896	WK	2.54	5.62	2.21	11.16	0.0195	0	70	144	30.38	11.85	-46.04	0	70	144	30.38	11.85	-46.04	0	Medium	
8	0	578	853	WK	2.57	5.17	2.01	10.24	0.0179	0	70	145	30.46	12.28	-46.53	0	70	145	30.46	12.28	-46.53	0	Medium	
9	0	1023	803	WK	2.37	5.2	2.2	9.3	0.0183	0	66	144	29.18	14.64	-47.99	0	74	146	31.74	9.95	-45.07	0	Medium	
10	0	726	808	WK	2.64	5.05	1.91	9.89	0.0195	0	70	145	30.46	12.28	-46.53	0	70	145	30.46	12.28	-46.53	0	Medium	
11	0	859	781	WK	2.81	5.3	1.89	11.36	0.0198	0	66	144	29.18	14.64	-47.99	0	71	144	30.69	11.16	-45.55	0	Short	
12	0	1933	741	WK	2.51	4.61	1.83	8.98	0.0177	0	84	152	35.21	5.74	-43.12	0	84	152	35.21	5.74	-43.12	0	Short	
13	0	897	734	WK	2.56	4.7	1.84	9.51	0.0187	0	66	144	29.18	14.64	-47.99	0	79	143	33.08	5.28	-41.08	0	Short	
14	0	770	737	WK	2.63	5.39	2.05	10.88	0.019	0	70	145	30.46	12.28	-46.53	0	70	145	30.46	12.28	-46.53	0	Medium	
15	0	991	739	WK	2	5.69	2.84	9.83	0.0194	0	66	145	29.26	15.06	-48.47	0	66	144	29.18	14.64	-47.99	0	Medium	
16	0	1742	728	WK	2.81	5.51	2.11	10.89	0.019	0	82	152	34.6	7.08	-44.11	0	82	152	34.6	7.08	-44.11	0	Medium	
17	0	1956	706	WK	2.43	5.19	2.13	9.33	0.0184	0	89	155	36.95	3.7	-42.15	0	89	155	36.95	3.7	-42.15	0	Medium	
18	0	1990	701	WK	2.78	5.57	2	11.99	0.0209	2	62	189	32.1	35.8	-70.26	0	123	160	167	63.46	-10.95	-7.77	1 Medium	
19	0	846	893	WK	2.7	5.3	1.97	11.17	0.0195	0	70	145	30.46	12.28	-46.53	0	70	145	30.46	12.28	-46.53	0	Medium	
20	0	872	876	WK	2.82	5.1	1.95	10.21	0.0178	0	70	145	30.46	12.28	-46.53	0	70	145	30.46	12.28	-46.53	0	Medium	

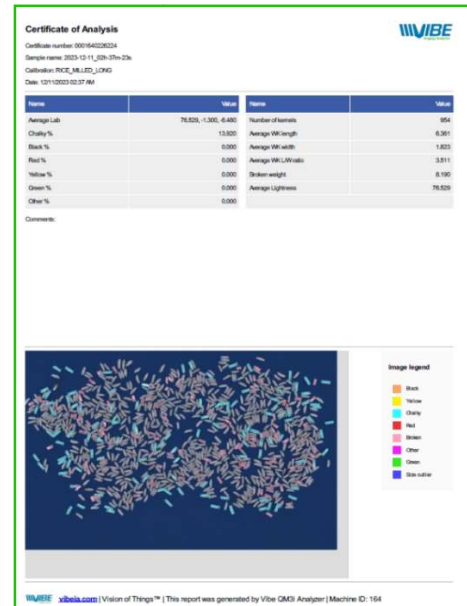
PDF Report

- The PDF report shows all the information about the sample in a PDF format
- Can be found in the Sample Folder
- Sample Image
- General information
- Dimensional information
- Color classification
- Size distribution graphs



Certificate of Analysis

- Can be found in the Sample Folder
- Every certificate will have only one unique Vibe number that will not appear in any other certificate exist
- Image can be added/ removed
- Can be configured per customer's needs
- In order to customize the reports, please contact a vibe support representative and ask the password to the "VibeConfig" application
- Go to:
D:\VIBE_CONFIGURATIONS\LocalMachineSoftwareConfigurations
- Click on the file named: " PDFcertificate.vib" and enter a password
- "Check" the fields that you would like to see on the certificate. You can change the field name and the order that the fields will be presented
- If you would like to show/ hide the analysis image. Search for the words: "Show image"
- Press "Save" when you are done



Creating a new calibration file (for Rice Calibration Files)

You can use the Wizard application in order to create calibration files that will fit to your facility specifications. The wizard will give a perfect solution for customers that want to make a simple color and broken classification.

The colors that can be classified as damages using the Wizard are: Chalky/White, Black, Red, Yellow and Green.

In order to do it in the simplest way, Vibe provides a set of calibration templates. These templates are the baseline for your calibration file creation.

Entering the Wizard program

Step 1: Click on the “Wizard” icon

The icon of the “Wizard” program is located on the desktop.

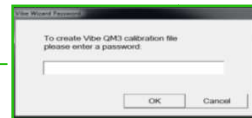


Step 2: Add Password

The Wizard program is opened for editing only for supervisor; therefore password for entry is required.

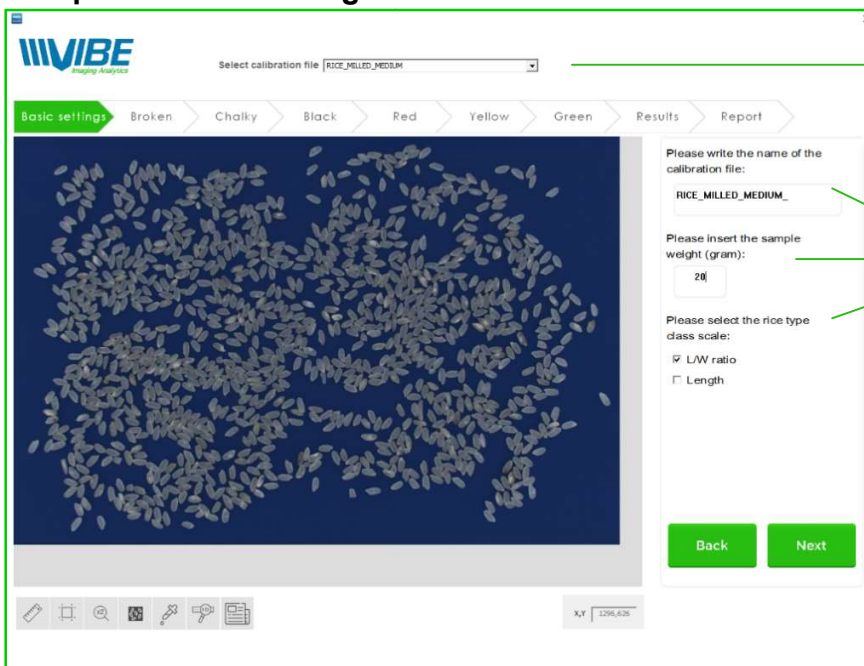
You should get the password from your contact person at Vibe.

If you did not get the password- please contact support@vibeia.com



Creating a new calibration file

Step 1.1: Basic Settings

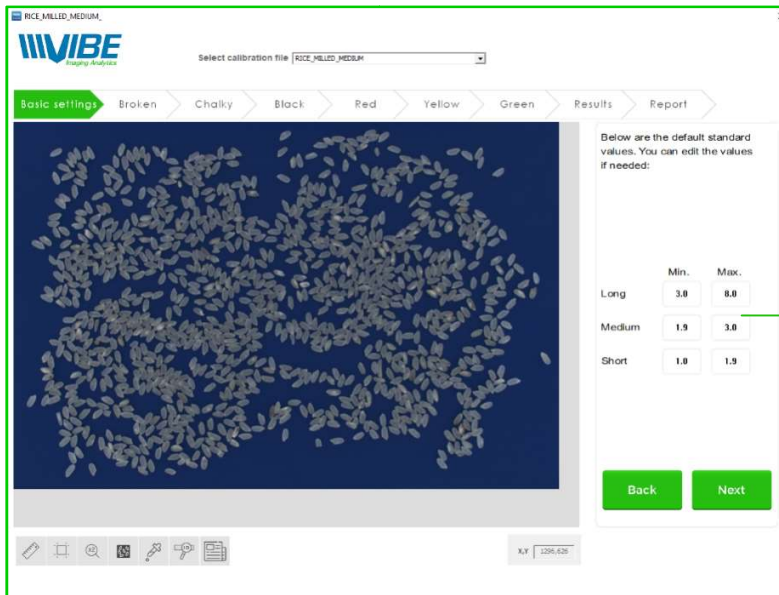


Select the calibration template that you would like to use as a baseline for the new file

Add name, weight and rice type classification method

When you are done, click on “Next”

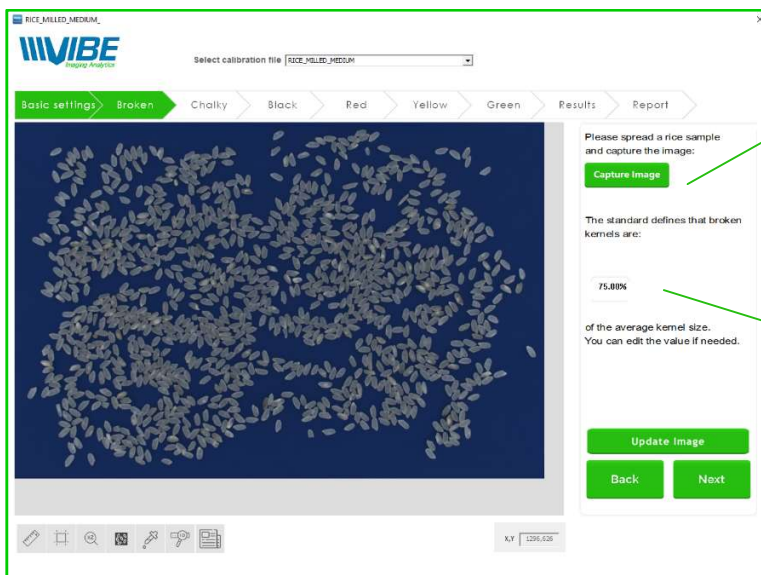
Step 1.2: Rice/ Grain type definition (Optional)



Add the minimum and maximum values for each rice type class. The default values are the USDA standard values.

Step 2: Broken percentage definition

Spread rice sample on the working area, as described on [step 5 on chapter 2](#),
Watch on you tube: <https://www.youtube.com/watch?v=En3LP9sbJQQ>



Spread rice sample on the working area, and click on capture image button

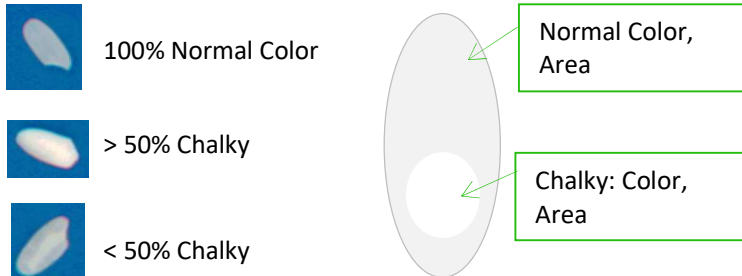
Define the broken kernel threshold, and then click on the button "Update Image". The default values are the USDA standard values. You will see on the screen the broken kernels being marked in pink.

If you see kernels that are not marked, and should be marked by your definitions, you can increase the percentage in the box, and "update image" again. The percentage in the box means- the % from the average length of the sample.

Example-If the average length of the kernels is 10 mm, and the percentage is 75%, then all the kernels that are smaller than 7.5 mm (10mm X0.75%) will be considered as broken.

Step 3: Color damages definition

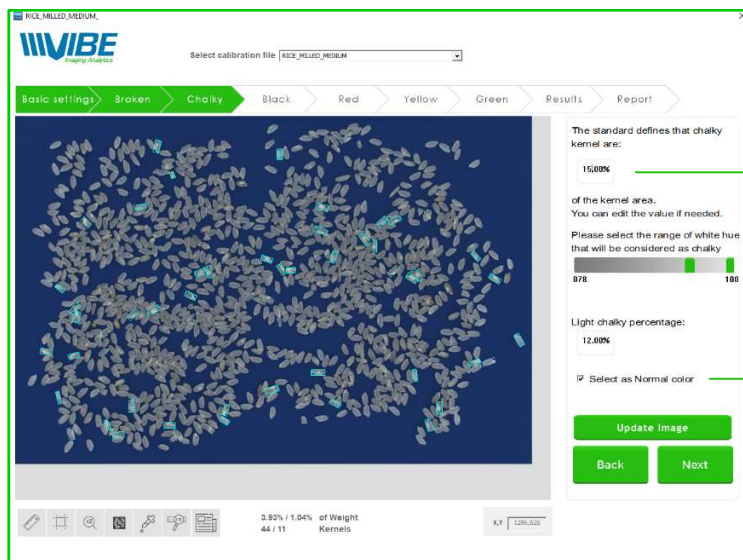
Basic Principle for color classification, using Lab color scale



Wizard set

- Chalky color in Lab
- Area of Chalky threshold
- % of area

Steps 3.1 : Chalky and Black Color classification



The percentage of the maximum exceptional color allowed on the kernel, and “update image”. The default values are the USDA standard values.

“Check” this on the color stage that defines the “Normal” color of the kernels. For Milled rice- on Chalky/White. For Brown- On Red/ Yellow.

Set the range of the relevant exceptional color and click on “Update image”

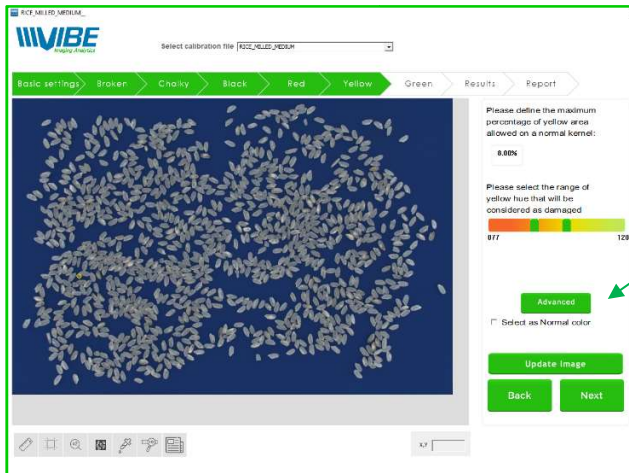
NOTE: If the step is not relevant for your rice type, you can pass this stage.

Example- Green color classification step isn’t relevant for milled rice: pass stage by clicking on “next”

Steps 4-7: Color damages classification

In addition to the % box and the range slider described in the section above, in Red, Yellow and Green colors we have the “Advanced” button.

If you cannot classify the color damages using the top slider and the % box, please click on “Advanced”.

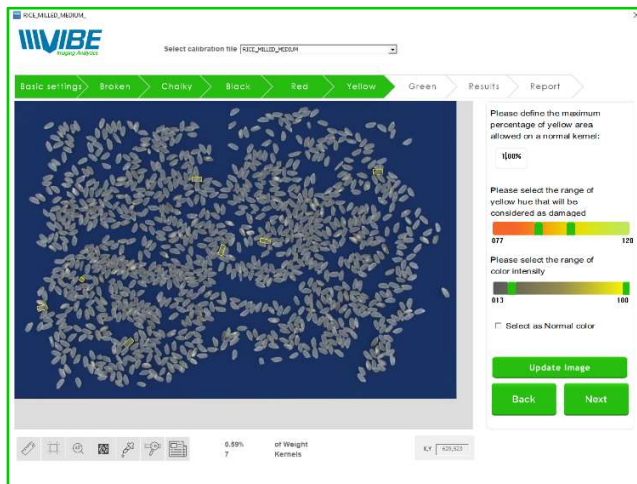


The color Intensity slider then will be opened.

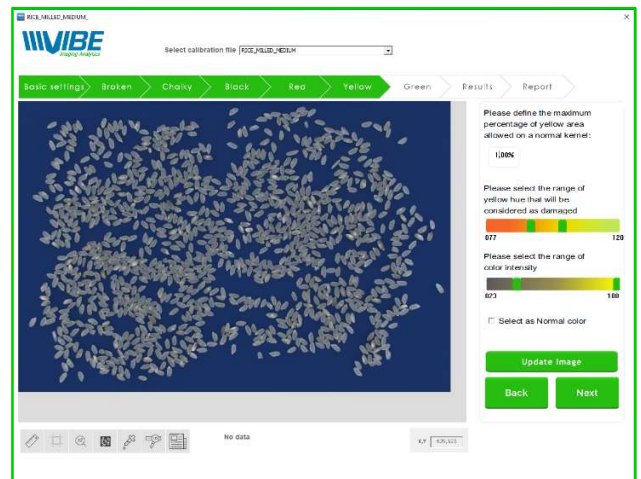
Decreasing the bottom limit of the slider (for example, from 20 to 10) it will classify more damages in the desired color, but it will also classify some good kernels as damaged.

Try to adjust the slider for maximal quality of classification.

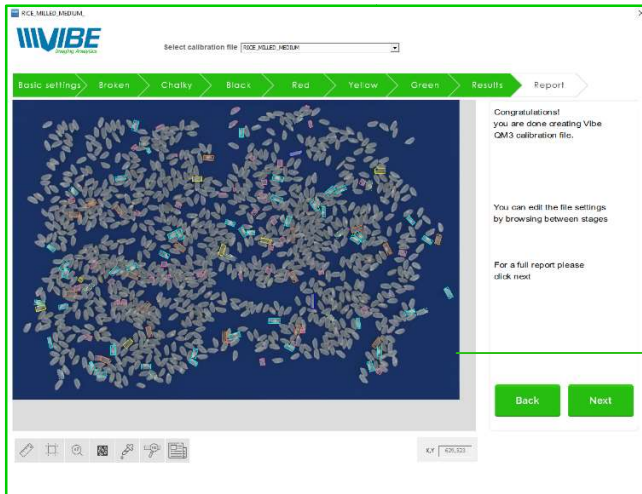
Color intensity 23-100



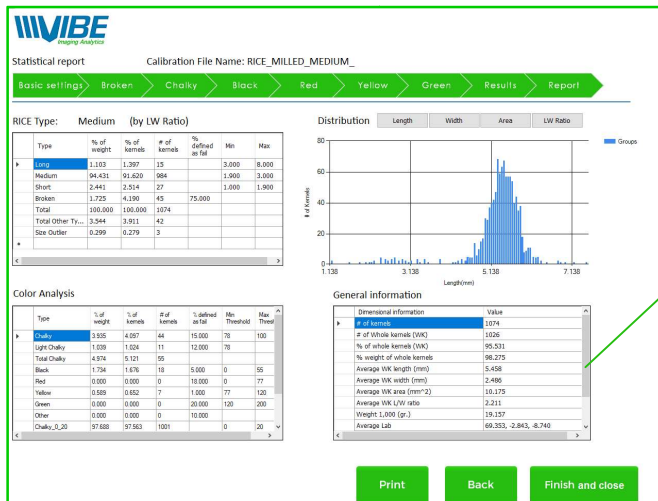
Color intensity 13-100



Step 10: Final results



Make sure that all damages are marked as it should be, and that the results are correct in the report. If not, you can go back to the relevant stage and adjust the thresholds. If the results are acceptable, then click on "Finish" to save the calibration file



Appendix A: Glossary and Definitions

Ref	Description	Details
1	Vibe QM3i	Rice analyzer instrument
2	WhiteBox	The white cover in front of the instrument
3	User program	Operator program to test a sample
4	Wizard program	Supervisor program to create calibration files
5	Calibration file	Define test parameters and measurement thresholds
6	User report	Operator sample test results and statistics
7	Summary report	Sample information, statistics , average results and thresholds
8	Detailed report	Sample, per kernels information (color, size ...)
9	Certificate of analysis	A customized certificate per your needs
10	Daily report	Summary per sample
11	Working tray	The black tray, located on the bottom of the instrument
12	Working area	The blue sheet located on the working tray on which the sample is spread

Appendix B: Technical Specifications

The following provides technical specification of the Vibe QM3i Analyzer:

- ✓ Dimensions 415L X 360W X 550H mm (16.3" L X 14.2" W X 21.7" H)
- ✓ High resolution, 12 Mega Pixel industrial grade color camera
- ✓ Advanced controlled LED lighting
- ✓ PC including MS Win10 operating system
- ✓ Vibe application software license
- ✓ 255 X 180 mm (10" X 7.1") Inspection area



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