FFEI Sierra MicroColour

https://sierra.ffei.co.uk

About FFEI

Creative Imaging Technology

FFEI Sierra MicroColour

Web based, colour profiling for digital microscopes.

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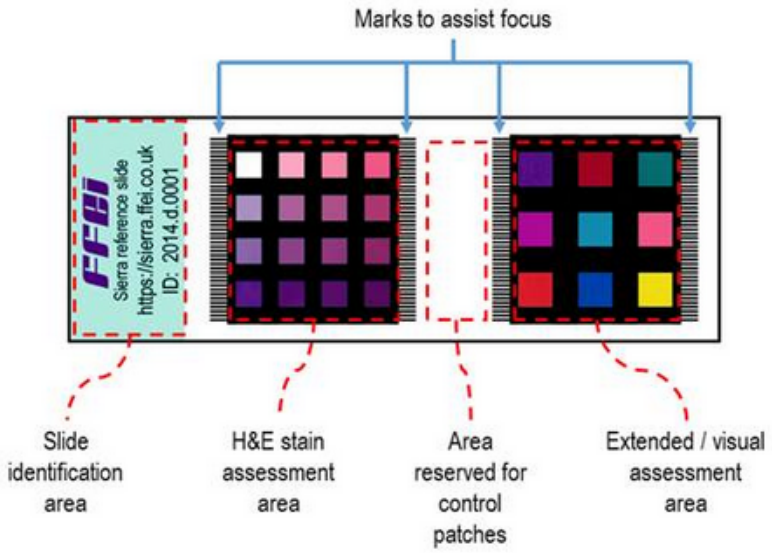
About Sierra

Project Sierra is an FFEI research project carried out in conjunction with Leeds Teaching Hospitals NHS Trust and the University of Leeds. This project was funded in part by a grant from the UK Technology Strategy Board and includes a number of elements relating to digital microscope performance including the development of test objects and methods for the assessment of colour, dynamic range and resolution.

As part of this project we have created the Sierra Reference Slide which is designed to be used to assess the colour reproduction of a digital microscope system. This slide uses a set of stains commonly used to stain biological samples which have been applied to a biopolymer that has been selected based on its ability to maintain the colour characteristics of the stained biological samples.



A number of prototype slides have been created and these are being made available to members of the International Color Consortium Medical Imaging Working Group for evaluation. We expect the evaluation to include a number of aspects including (a) measurement of patches using a spectrophotometer, (b) scanning of slide using a variety of digital microscopes and (c) comparison of 'calibrated images' with measurements. The Sierra web site has been set up to enable exchange of data when assessing the Sierra Reference Slides and is restricted to those involved in the assessment of the slides. For further details please contact the ICC Medical Imaging Working Group.

For further details of the Sierra project, including details of the Sierra Reference Slide assessment program please contact sierra.support@ffei.co.uk.

FFEI Calibration Slides

https://sierra.ffei.co.uk/DeviceProfile/FFEISlides

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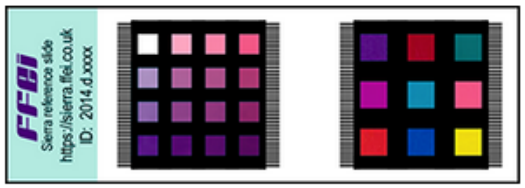
Slide Data

This page provides a way for Sierra participants to share information relating to Sierra digital microscope assessment slides. Entering the Slide ID for the Sierra slide shows information posted by other Sierra participants and provides a means to allow participants to add information. Details of Sierra slides



Slide ID 2014.d.0001

Show 10 entries

Slide ID	User	Measurement File	Slide image URL	ICC Profile	Comment
2014.d.0001	FFEI	ID_2014.d.0001_Measurements.csv		Dynamo_Prototype_V2.icc	

Showing 1 to 1 of 1 entries (filtered from 4 total entries)

Each Sierra user may upload the following files. The upload process may be repeated multiple times but only the latest version will be retained and visible to other Sierra participants.

Measurement File Choose File No file chosen Sierra file format

Slide Image URL

ICC Profile Choose File No file chosen

Comment File Choose File No file chosen

Submit

Create Slide ICC Profile

https://sierra.ffei.co.uk/DeviceProfile/Upload

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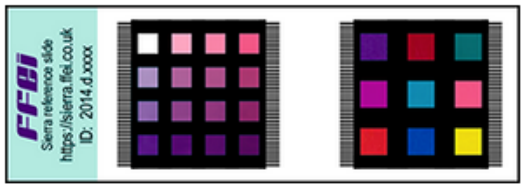
1. Scan → 2. Analyse

Analysis Tool

The Sierra digital microscope image analysis tool provides a way for digital microscope users to assess how well their digital microscope captures colour. This on-line analysis tool is designed to be very easy to use, requiring only a Sierra calibration assessment slide and a standard web browser that supports HTML 5.

This software assumes that a digital microscope has been calibrated and that an ICC Profile that describes the device's colour is available – ideally as part of the scanned image. A Sierra digital microscope slide (similar to that shown below) is scanned using a calibrated digital microscope and a whole slide image created. User guide and discussion of measurement comparison issues.

Note that this version of the software requires the data to be stored in a single image segment of a DICOM image. Although there is relatively poor support for the DICOM whole slide imaging format this was selected as we anticipate that this may become the standard export format for most systems. FFEI has also provided an image format conversion tool based on the OpenSlide library which will convert a number of proprietary formats to DICOM.



To begin you will need to scan your calibration slide using the scan condition you wish to calibrate and create a DICOM image.

Having scanned the slide, the user selects the slide image file using a standard web browser. HTML 5 compatible web client software then analyses the image and determines the RGB values of each patch. These RGB values are then used along with the ICC Profile that describes the calibrated scanner to produce Lab colour estimates for each patch.

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Create Slide ICC Profile

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1. Scan | 2. Analyse

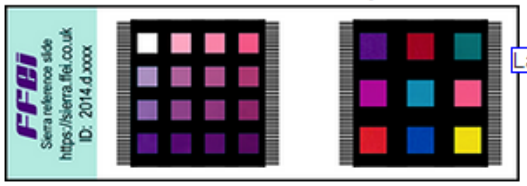
Analysis Tool: Select Slide Image

Please enter the slide ID.

Slide ID 2014.d.0001

Reference Slide

Shows colour values as measured by FFEI.



Lab_Ave(53.01, -88.75, -7.85), Lab_Point(52.12, -87.63, -8.05)

DICOM Image

Please select the directory containing DICOM directory file (DICOMDIR)

Choose File No file chosen

Scanned Slide Image

Shows colour values as estimated by a digital microscope when scanning the slide.

Slide Data

ScanIdentifier	
Manufacturer	
Model	
Resolution	0

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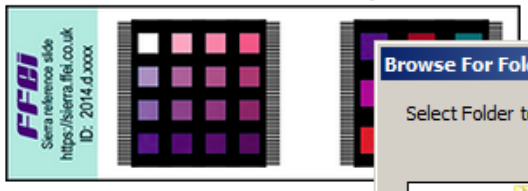
Analysis Tool: Select Slide Image

Please enter the slide ID.

Slide ID 2014.d.0001

Reference Slide

Shows colour values as measured by FFEI.



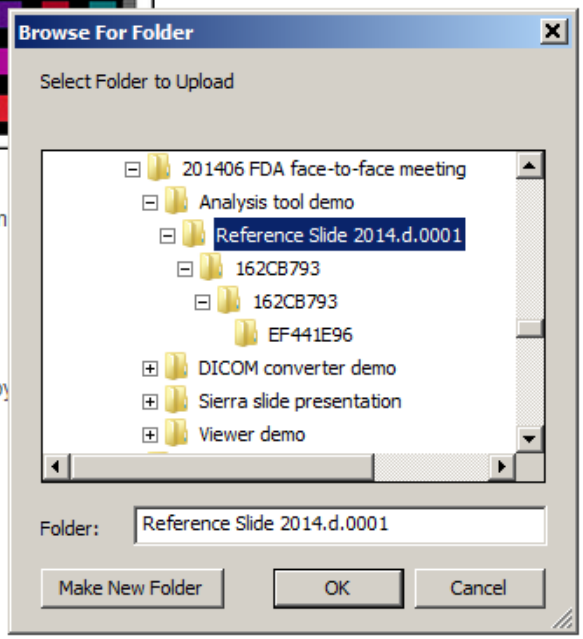
DICOM Image

Please select the directory containin

Choose File No file chosen

Scanned Slide Image

Shows colour values as estimated by



Slide Data

ScanIdentifier	
Manufacturer	
Model	
Resolution	0

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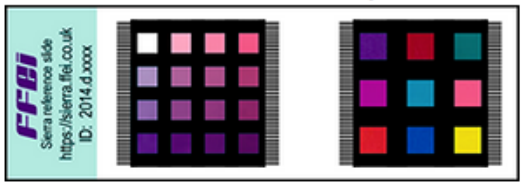
Analysis Tool: Select Slide Image

Please enter the slide ID.

Slide ID 2014.d.0001

Reference Slide

Shows colour values as measured by FFEI.



DICOM Image

Please select the directory containing DICOM directory file (DICOMDIR)

Choose File 7 files

Scanned Slide Image

Shows colour values as estimated by a digital microscope when scanning the slide.

Slide Data

ScanIdentifier	Converted to DICOM
Manufacturer	ffei
Model	?
Resolution	0.00025

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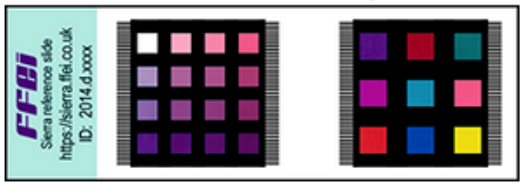
Analysis Tool: Select Slide Image

Please enter the slide ID.

Slide ID 2014.d.0001

Reference Slide

Shows colour values as measured by FFEI.



DICOM Image

Please select the directory containing DICOM directory file (DICOMDIR)

Choose File 7 files

Using ICC profile from DICOM image.

Scanned Slide Image

Shows colour values as estimated by a digital microscope when scanning the slide.

Lab_Ave(50.09, -84.64, -11.87), Lab_Point(49.28, -85.68, -10.93)

Download Comparison File

Slide Data

ScanIdentifier	Converted to DICOM
Manufacturer	ffei
Model	?
Resolution	0.00025

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Windows Binaries

FFEI Ltd. has provided these tools which may help in the process of evaluating digital microscope performance.

Sierra Whole Slide Image Viewer: can be used to view any of the vendor whole slide image formats supported by the open source OpenSlide library modified to include the FFEI Dynamo and DICOM® media file format for VL Whole Slide Microscopy IOD images.

Sierra OpenSlide to DICOM Converter: a graphical user interface and a command line utility, both provide the capability to convert any of the whole slide image formats supported by the OpenSlide library to DICOM media file format for VL Whole Slide Microscopy IOD images.

Sierra Whole Slide Image Viewer	32-bit	64-bit	User Guide
Sierra OpenSlide to DICOM Converter	32-bit	64-bit	User Guide

Source

OpenSlide Library (Modified by FFEI Ltd.)	zip

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Email craig.revie@ffei.co.uk [Change Email...]