![MediWorks logo]

Complete examination, Comprehensive evaluation, Precise Diagnosis

# Dry eye diagnostic system

![LingLong MediWorks logo]

Platform for Comprehensive Ocular Surface Examination

## Dry eye diagnosis/Anterior segment photography/Lens fitting/ Patient management/Telemedicine

Guided examination: providing a comprehensive report covering 9 dry eye diagnosis.
Non-invasive examination, Quantitative data.

Full-automatic Firefly digital module, easy operation without parameter settings.
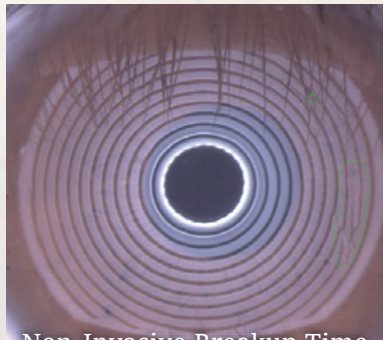High quality optics and built-in yellow filter efficiently increase the accuracy of lens fitting.

Professional 1/2.5-inch sensor and 1.55 µm pixel, real-time playing and storage.
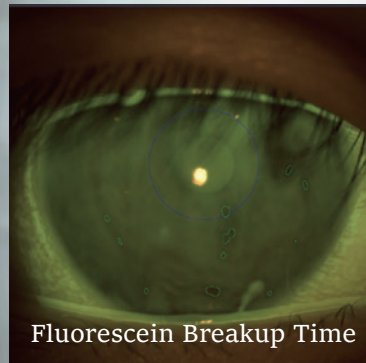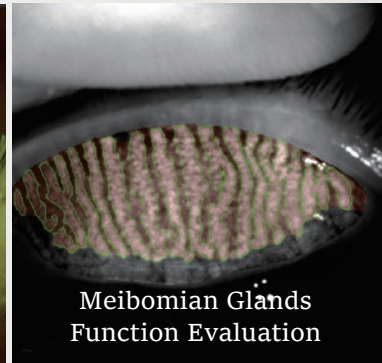Smart patient management system, DICOM supported.
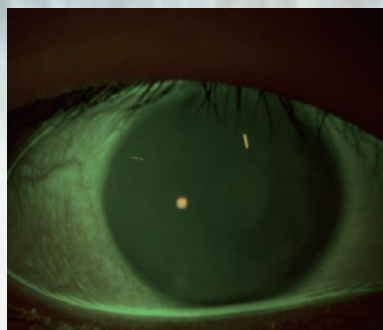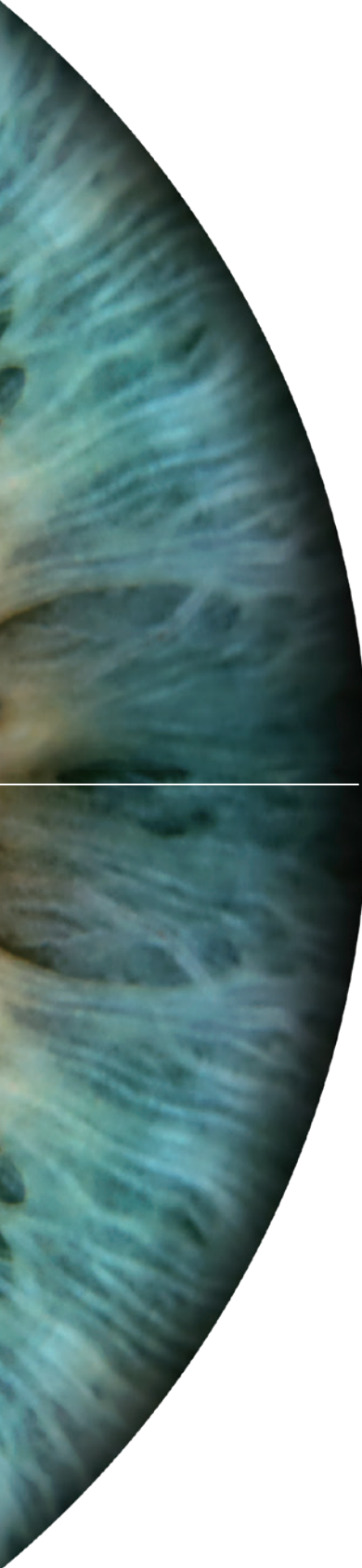
Corneal Fluorescein Staining

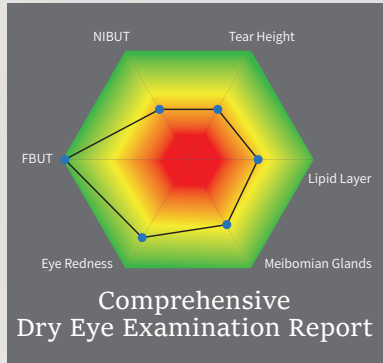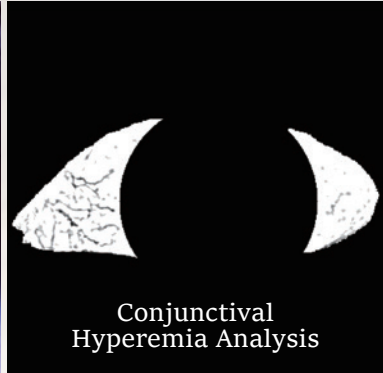Non-Invasive Tear Meniscus Height

0.12mm
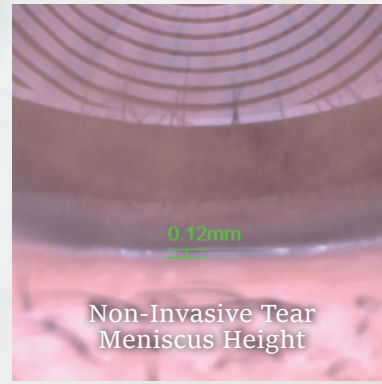
Non-Invasive Breakup Time

Fluorescein Breakup Time

Meibomian Glands Function Evaluation

NIBUT   Tear Height

FBUT   Lipid Layer

Eye Redness   Meibomian Glands

Comprehensive Dry Eye Examination Report
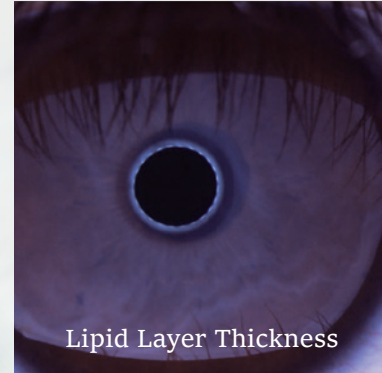
Lipid Layer Thickness

Conjunctival Hyperemia Analysis

Eyelid Margin

Easy Pathogenic Diagnosis provides guidance for customized treatment.

Dry eye diagnostic system

Automatic Analyzing Meibomian Glands

Precise diagnosis of Dry Eye caused by MGD is guaranteed with the help of AI identification system. Unique Built-in infrared lighting system provides a larger scope capture of Meibomian Glands, adjustable depth of field and aperture enables more vivid images.

Increase Positive Rate of Early Corneal Epithelial Staining

Built-in yellow filter along with cobalt-blue filter increases the contrast of Sodium Fluorescein Staining image.

HD Optical System

Resolution is up to 2700·N lp/mm(200 lp/mm), providing more details of the pathologies.

Full Cornea Dry Eye Analysis

By Placido ring projection system with visible light, the examination scope is up to 8 mm cornea diameter. Examination of the tear film outside of pupil center has the same significance for the diagnosis of Dry Eye.

Fully automatic Firefly digital module

Firefly Digital module is specially designed for anterior segment examination, no parameter settings required(automatic exposure, auto white balance, auto focus), with adjustable depth of field and wide dynamic range, 12 Mega Pixels video output, high examination efficiency is allowed.

LINGLONG
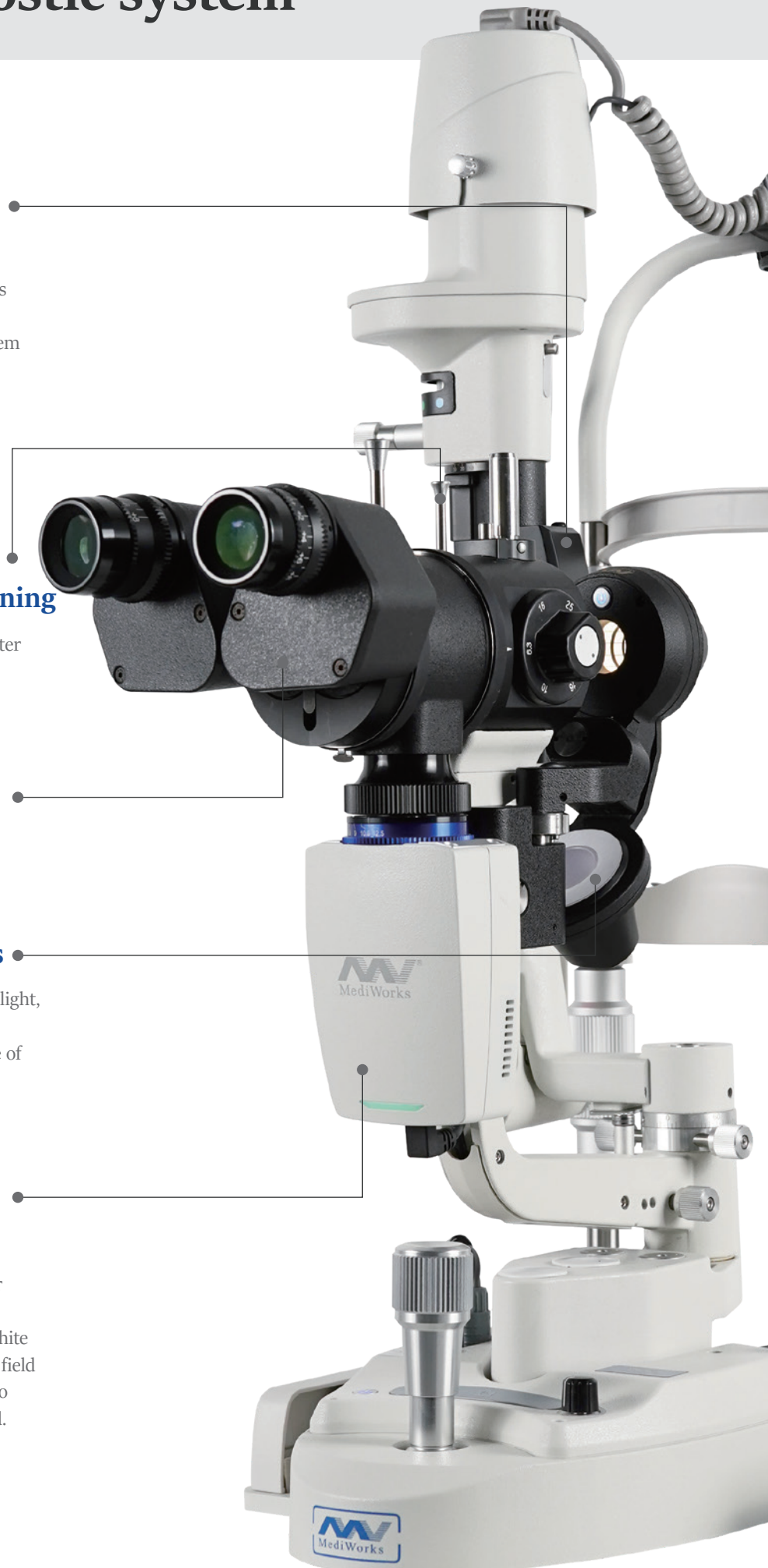
Due to various causes of Dry Eye Disease, traditional examination is difficult to find out the cause and quantify for the diagnosis. MediWorks Dry Eye Diagnostic System can provide standardized examination and quantified causes evaluation for Dry Eye Disease.

Tear film

Cornea
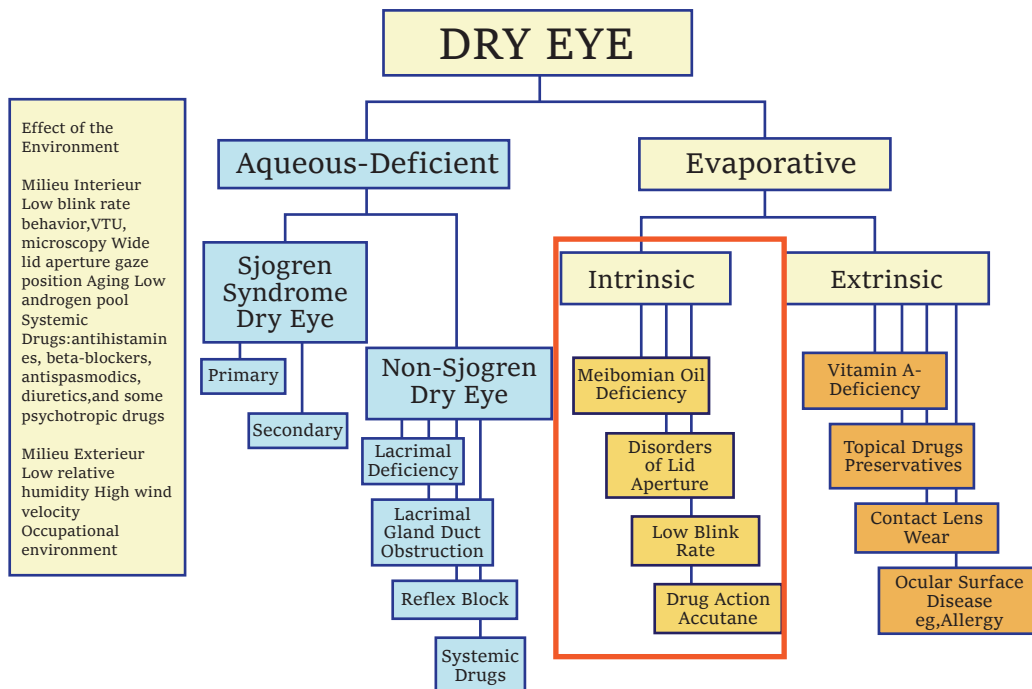
Mucous Layer
secreted by goblet cells fights off bacteria and adds stability to the tear film.

Aqueous Layer
secreted by the lacrimal glands keeps the cornea hydrated and supplied with nutrients.

Lipid layer
secreted by the meibomian glands prevents tear from evaporating and stop sebaceous lipids to enter the tear film.
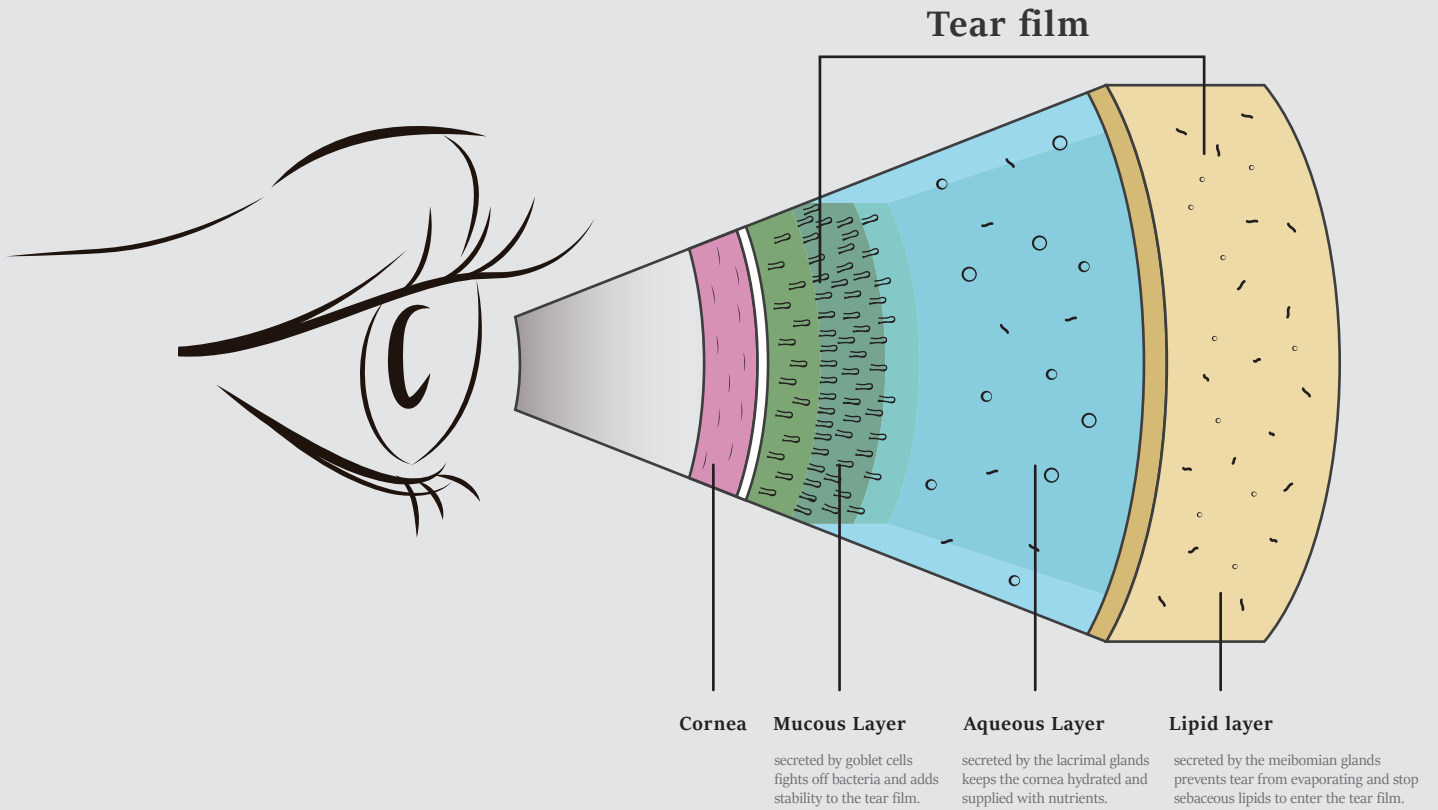
Dry eye classification from the 2007 DEWS Report

Effect of the Environment

Milieu Interieur Low blink rate behavior,VTU, microscopy Wide lid aperture gaze position Aging Low androgen pool Systemic Drugs:antihistamines, beta-blockers, antispasmodics, diuretics,and some psychotropic drugs

Milieu Exterieur Low relative humidity High wind velocity Occupational environment

DRY EYE

Aqueous-Deficient

Evaporative

Sjogren Syndrome Dry Eye
- Primary
- Secondary

Non-Sjogren Dry Eye
- Lacrimal Deficiency
- Lacrimal Gland Duct Obstruction
- Reflex Block
- Systemic Drugs

Intrinsic
- Meibomian Oil Deficiency
- Disorders of Lid Aperture
- Low Blink Rate
- Drug Action Accutane

Extrinsic
- Vitamin A-Deficiency
- Topical Drugs Preservatives
- Contact Lens Wear
- Ocular Surface Disease eg,Allergy

Dry Eye Questionnaire

Ocular Surface Disease Index (OSDI)/McMonnies/SPEED/DEQ 5

The built-in dry eye questionnaire is designed according to the risk factors and clinical characteristics of dry eye, providing a simple preliminary assessment for dry eye, improving diagnosis and treatment efficiency and facilitating patient follow-up.

Non-Invasive Tear Meniscus Height

Normal: ≥ 0.2 mm

AI identification system depicts Tear Meniscus area and measures the tear height automatically.
Evaluate tear secretion amount and continuity objectively.
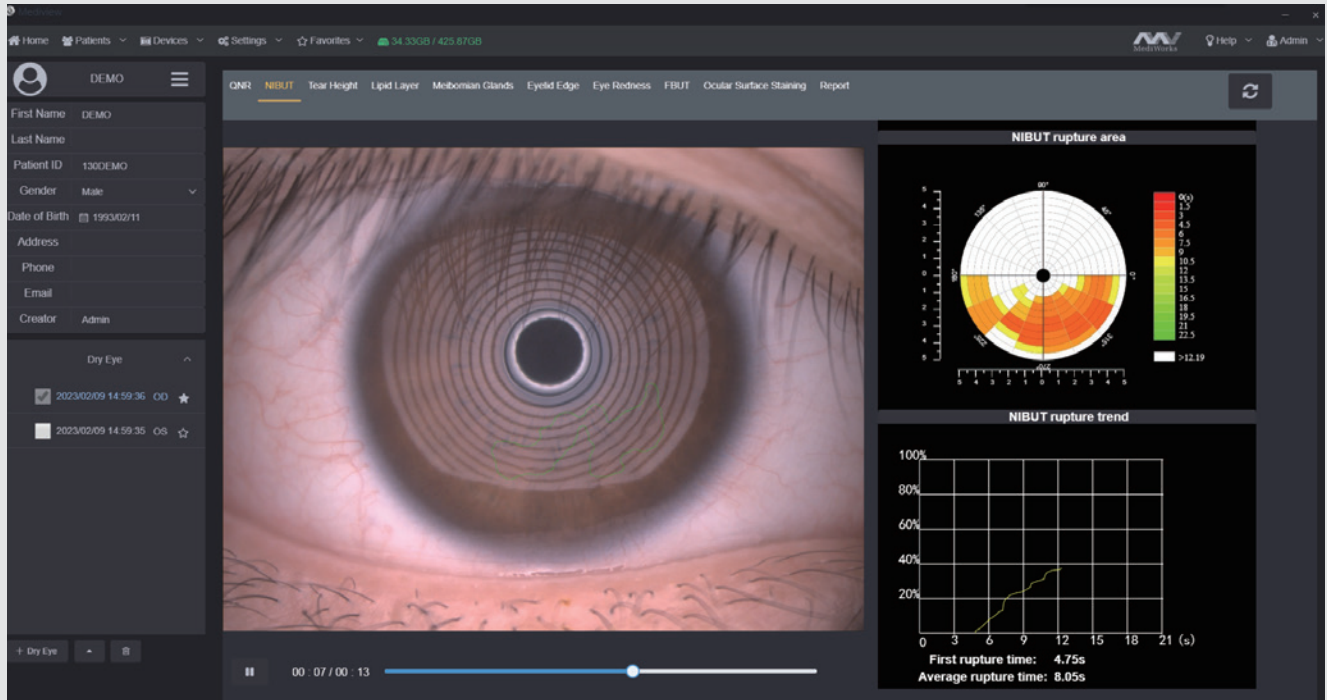More efficient and less irritation compared with the traditional Schirmer's test.
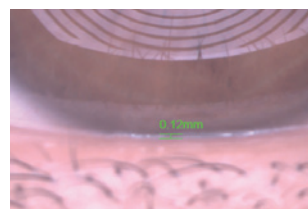
Insufficient tear secretion

Abnormal dynamics and conjunctival chalasis

Non-Invasive Breakup Time

After taking one video, it brings out automatis result of NIBUT and Tear Meniscus Height.

> Grade 0 Normal, First Rupture Time: 10 s Average Rupture Time: 14 s
> Grade 1 Warning, First Rupture Time: 6 ~ 9 s Average Rupture Time: 7 ~ 13 s
> Grade 2 Dry eye, First Rupture Time: 5 s Average Rupture Time: 7 s

AI identifies the breakup area and analyzes NIBUT automatically. Fully automatic analysis system provides efficient quantified evaluation for the overall stability of tear film. It automatically acquires the first breakup time, average breakup time, breakup distribution, break up area percentage curve and time distribution.
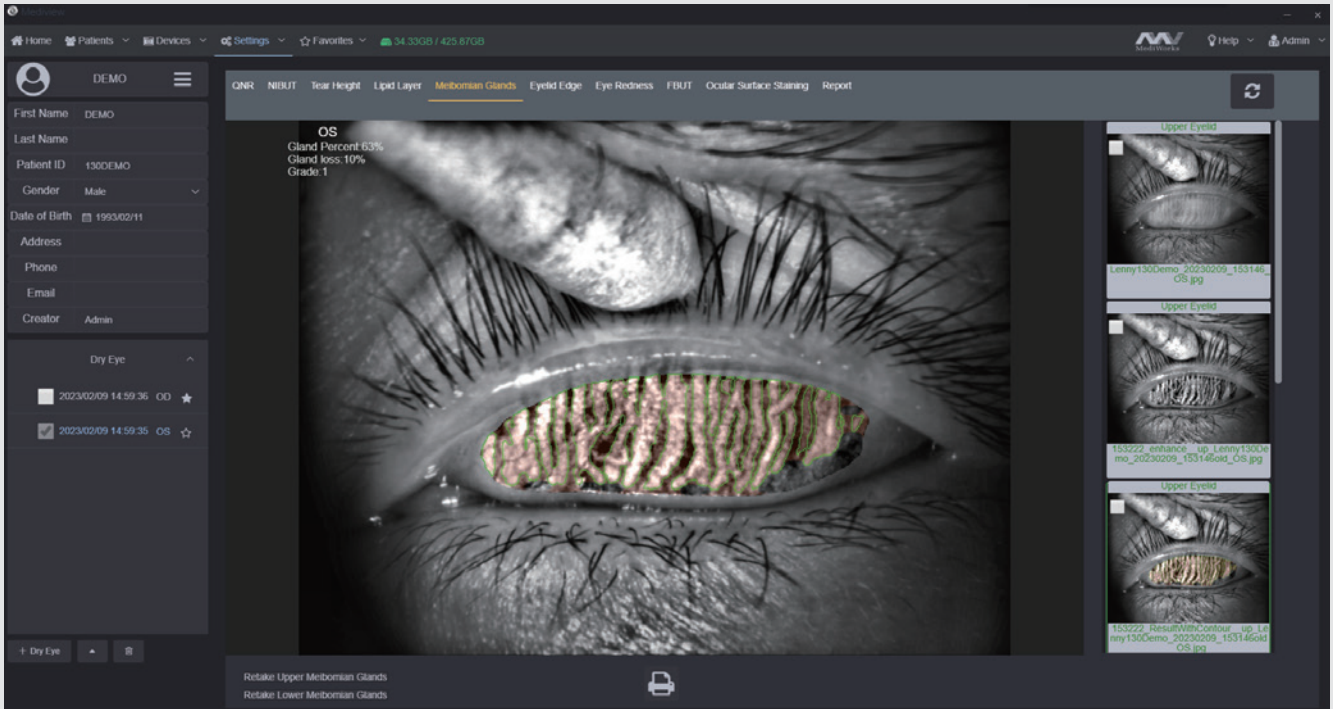

8.8mm

The examination scope is up to 8.8mm cornea diameter
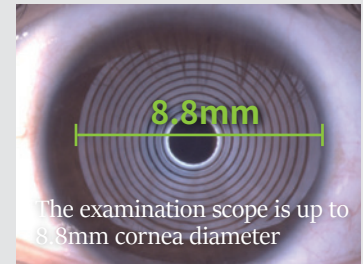
Fluorescein Breakup Time
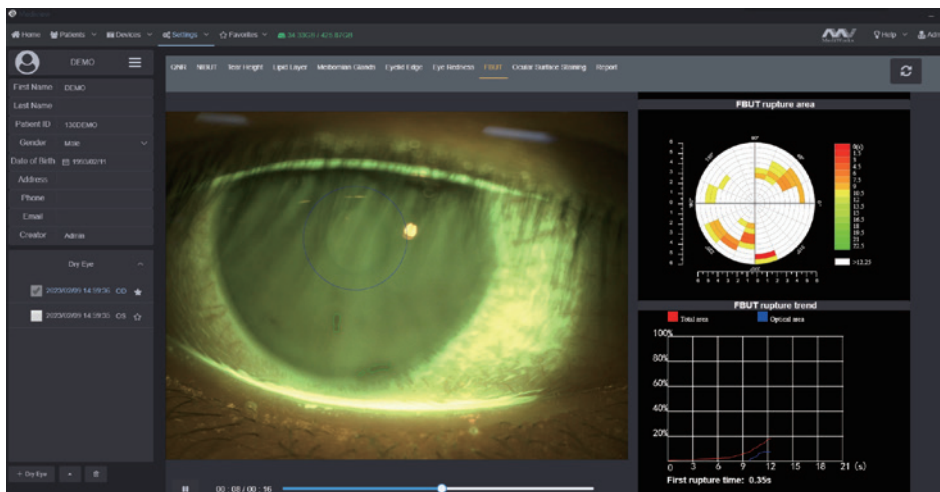
Normal: >10 s;
Mild: 6 ~ 10 s;
Moderate: 2 ~ 5 s;
Severe: < 2 s or no complete tear film.
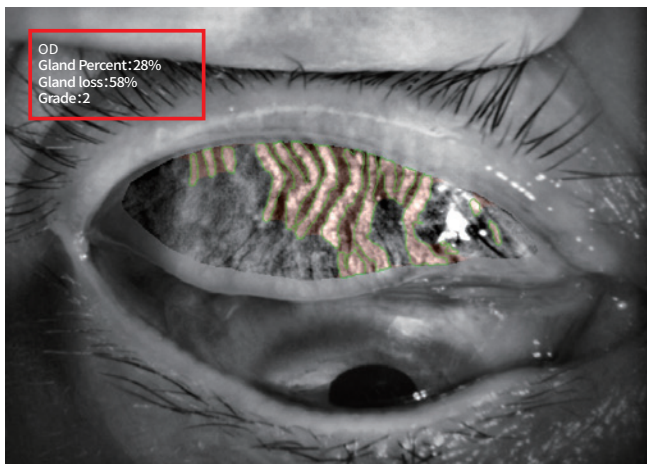
Meibomian Glands Function Evaluation

Grade 0: No Meibomian Glands Loss
Grade 1: Meibomian Glands Loss < 1/3
Grade 2: Meibomian Glands Loss 1/3 ~ 2/3
Grade 3: Meibomian Glands Loss >2/3

Get original/enhanced/result images by one click

AI identification system automatically anlalyzes meibomian glands loss caused by meibomian glands dysfunction with precise and quantified diagnosis results.

Built-in infrared lighting system helps doctors obtain larger image scope of the meibomian glands.

Adjustable depth of field makes the glands more prominent and distinguishable against the background.
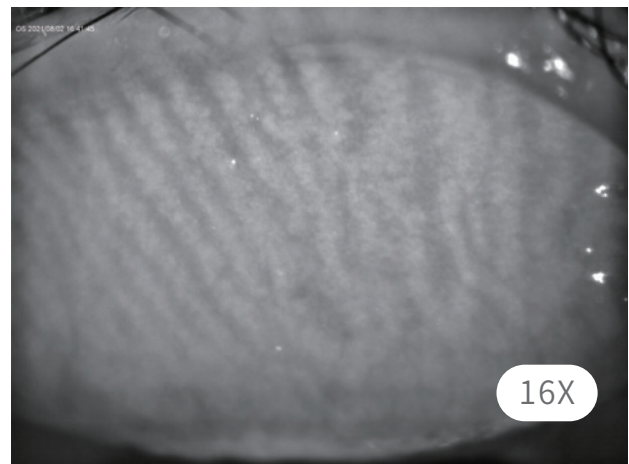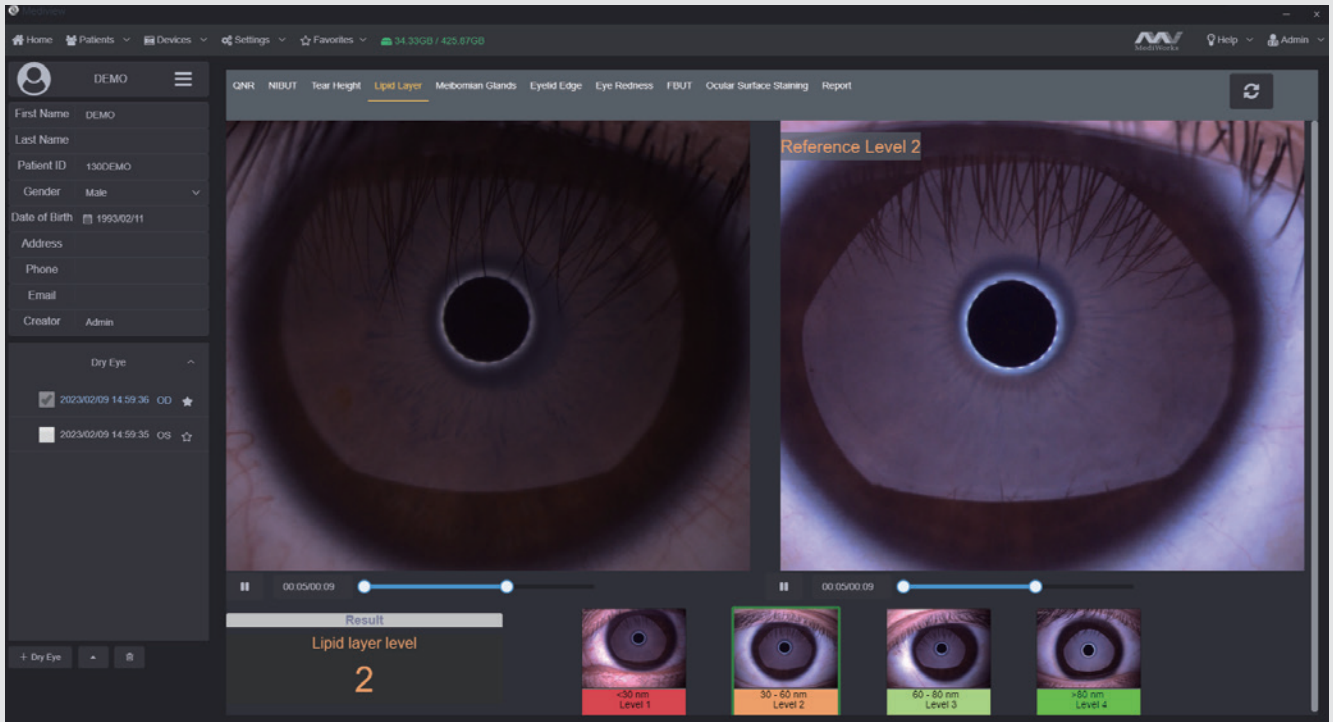

Meibomian glands loss

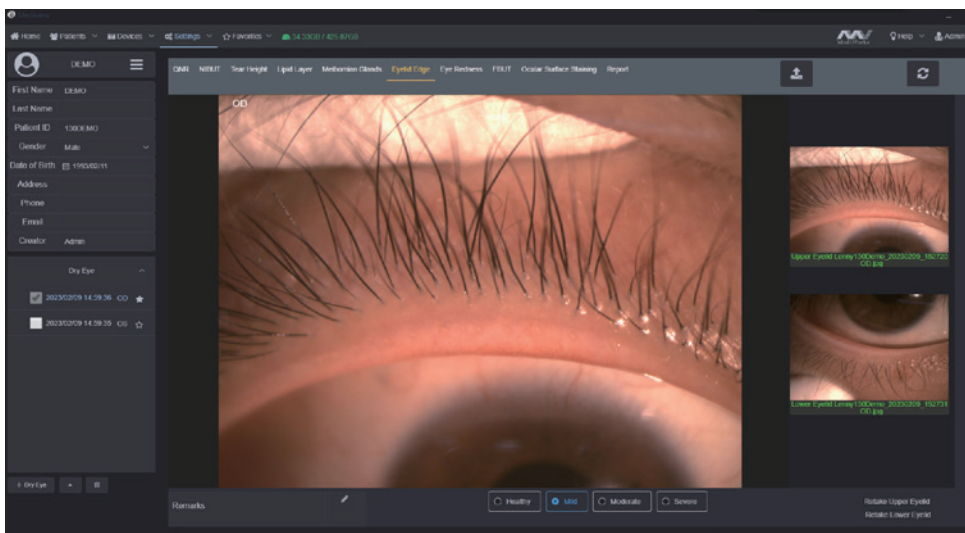**Image of Meibomian Glands under high-magnification**

Lipid Layer Thickness

White ring projection system ensures a larger examination area compared to Placido ring.By comparing with the standard grading template and recording the Lipid Layer thickness, it is helpful for judging MGD.

(Unit:nm)
Grade 1: <30
Grade 2: 30 ~ 60
Grade 3: 60 ~ 80
Grade 4: >80

Eyelid Margin

1. Normal including (Ophthalmic embolism bright, transparent)
2. Mild including (gland cap crown - glandular prominent)
3. Moderate including (glandular fat plug - disappearance of the marginal mucosa, hyperkeratosis)
4. Severe including (uneven margins, disappearance of the meibomian glands - posterior margin Blunt round, thickening, new blood)

Meibomian Glands obstruction
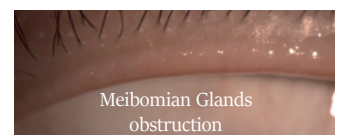
MediWorks professional design of optical system is capable of providing HD digital image that remains clear and sharp even zoom in, meets the examination requirements of the overall shape of eyelid margin and its slight change.

Analysis of Conjunctival Hyperemia
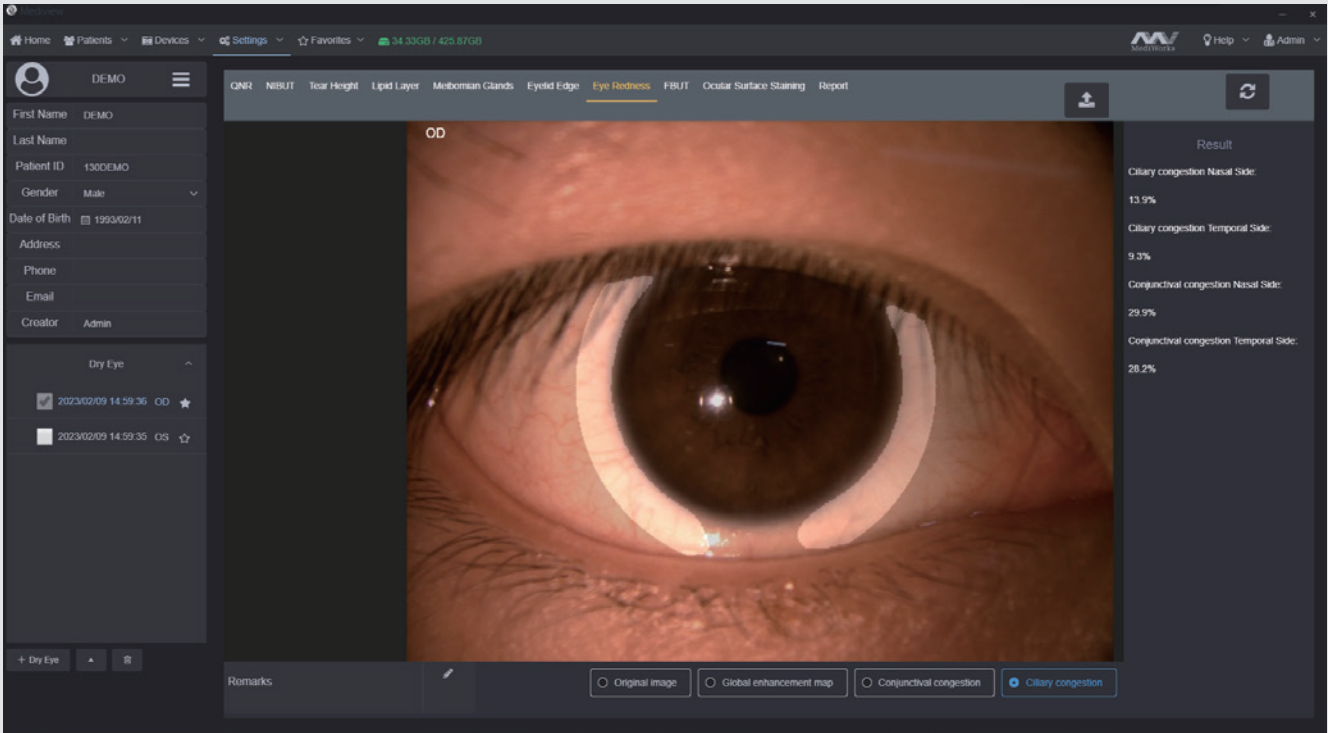
Normal: ≤ 2   Abnormal: > 2

The unique AI identification system can identify and calculate percentages of conjunctival congestion and ciliary congestions and evaluate severity of eye congestion.

AI image

Corneal Fluorescein Staining

Without
Built-in yellow filter

Corneal epithelial staining
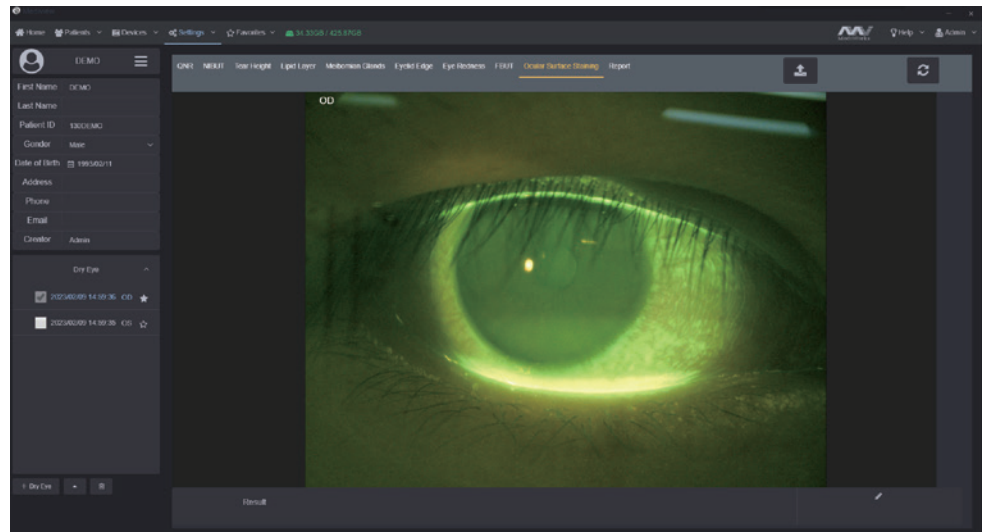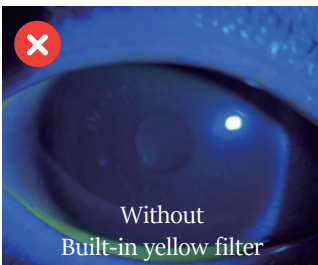
Effectively increases positive rate of early corneal epithelial staining.
Built-in yellow filter along with cobalt-blue filter makes the corneal fluorescein staining images more clearly.

Dry Eye Comprehensive Evaluation Report

Smart Patient Management system
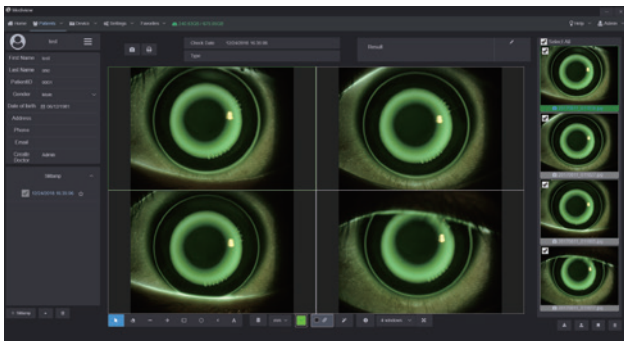
Comparison of Patient records
Supports repeated comparison among medical records to evaluate treatment and guide customized treatment plan.
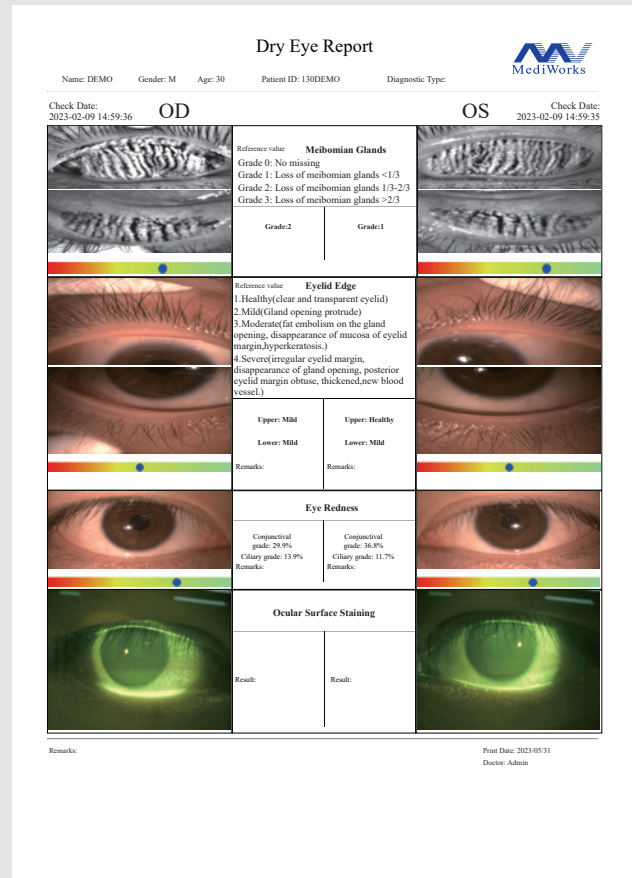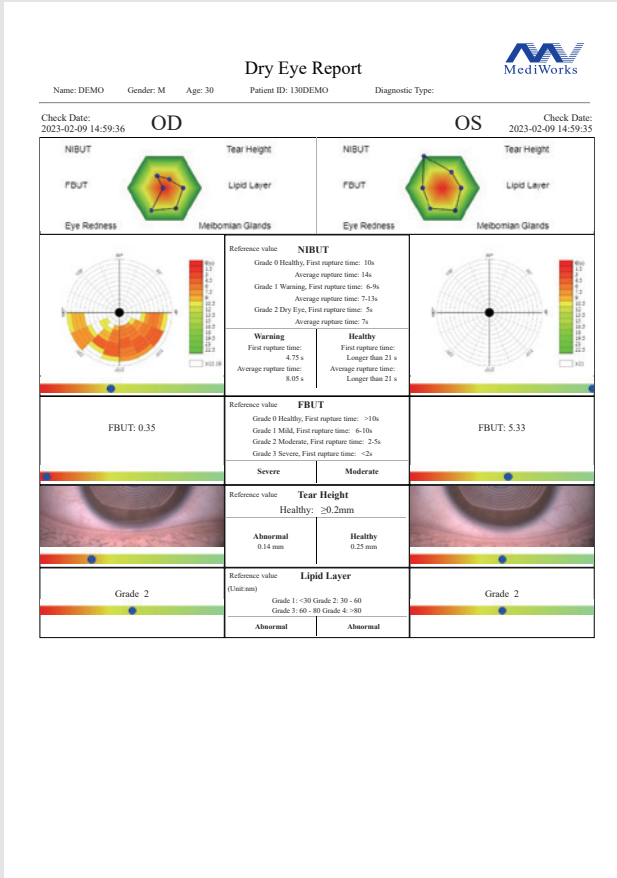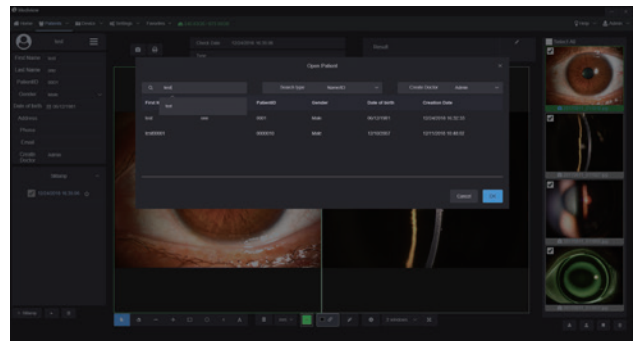
Patient Management system allows doctors to build and edit medical records. Quickly search the patient case by key words. Doctors can note patients' situation via the software. This DICOM-supported system enables Mediview to connect with medical systems in hospitals.

We are looking forward to your professional advice for our products and if you are interested in academic or business cooperation with us.

Please contact:
Email: International@mediworks.biz
Marketing@mediworks.biz

Specifications

Microscope

Microscope Type	Galilean Type
Magnification Change	Revolving Drum 5 steps
Total Magnification	6.3 x, 10 x, 16 x, 25 x, 40 x
Optical Resolution	2700·N lp/mm （200 lp/mm）
Eyepieces	12.5 x
Angle between Eyepieces	10°
Pupillary Adjustment	52 mm ~ 80 mm
Diopter Adjustment	- 8 D ~ + 8 D
Field of View	Ø36.2 mm, Ø22.3 mm, Ø14 mm, Ø8.9 mm, Ø5.7 mm

Slit Illumination

Slit Width	0 ~ 14 mm continuous (slit becomes a circle at 14 mm)
Slit Length	1 ~ 14 mm continuous
Aperture Diameters	Ø14 mm, Ø10 mm, Ø5 mm, Ø3 mm, Ø2 mm, Ø1 mm, Ø0.2 mm
Slit Angle	0° ~ 180°
Slit Inclination	5°, 10°, 15°, 20°
Filters	Heat-absorbing filter, ND filter, Red-free filter, Cobalt blue filter, Built-in yellow filter
Lamp	LED
Luminance	≥ 150 klx

Power Supply / Packaging

Power Supply		Packaging	
Input Voltage	~100V ~ 240V	Dimension	740 mm x 450 mm x 530 mm(L/W/H)
Input Frequency	50 Hz / 60 Hz	Gross weight	23 kg
Rated current	1.2 A	Net weight	17 kg
Output Voltage	LED 3 V, Fixation 15 V		

System Specifications

Digital Module	Automatic exposure / Automatic white balance / Adjustable depth of field and aperture
Image Sensor	1/2.5 - inch sensor / 1.55 µm pixel / 12 M Pixels
Photo Resolution	4056 x 3040
Format	JPEG
Video Resolution	2592 x 1944
Frame of Video	30 fps
Video Formats	MP4 H.264
Exposure Mode	Automatic exposure
Transmission Interface	USB

Computer Specifications

PC Configuration	i5 - 10500T 8G memory 256GB SSD + 1TB storage
Display	1920 × 1080 23.8 inch
PC System	Windows 10

Dry Eye Module

Dry Eye Questionnaire

Ocular Surface Disease Index (OSDI)
McMonnies
SPEED
DEQ 5

Non-Invasive Tear Meniscus Height

AI identification system
Automatic Non-Invasive Tear Meniscus Height
Optical magnification
Electronic amplification

Non-Invasive Tear Breakup Time

AI identify the breakup area
Automatic first breakup time
Automatic average breakup time
Visible light Placido ring projection(23 ring)

Fluorescein Breakup Time

AI identify the breakup area
Automatic first breakup time
Automatic average breakup time
Visible light Placido ring projection(23 ring)

Conjunctival Hyperemia Analysis

AI identification system
Automatic conjunctival congestion percentages
Automatic ciliary congestions percentages

Meibomian Glands Function Evaluation

AI identify Meibomian glands
Automatic Meibomian glands loss classification

Lipid Layer Thickness

Template comparison evaluation
Visible light White ring projection system

Corneal Fluorescein Staining

Eye surface damage report
Built-in yellow filter
Cobalt blue filter

Eyelid Margin

Optical magnification
Electronic amplification

Dry Eye Examination Report

Automatic analysis report

CE NMPA FDA

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Details Make the **Difference**