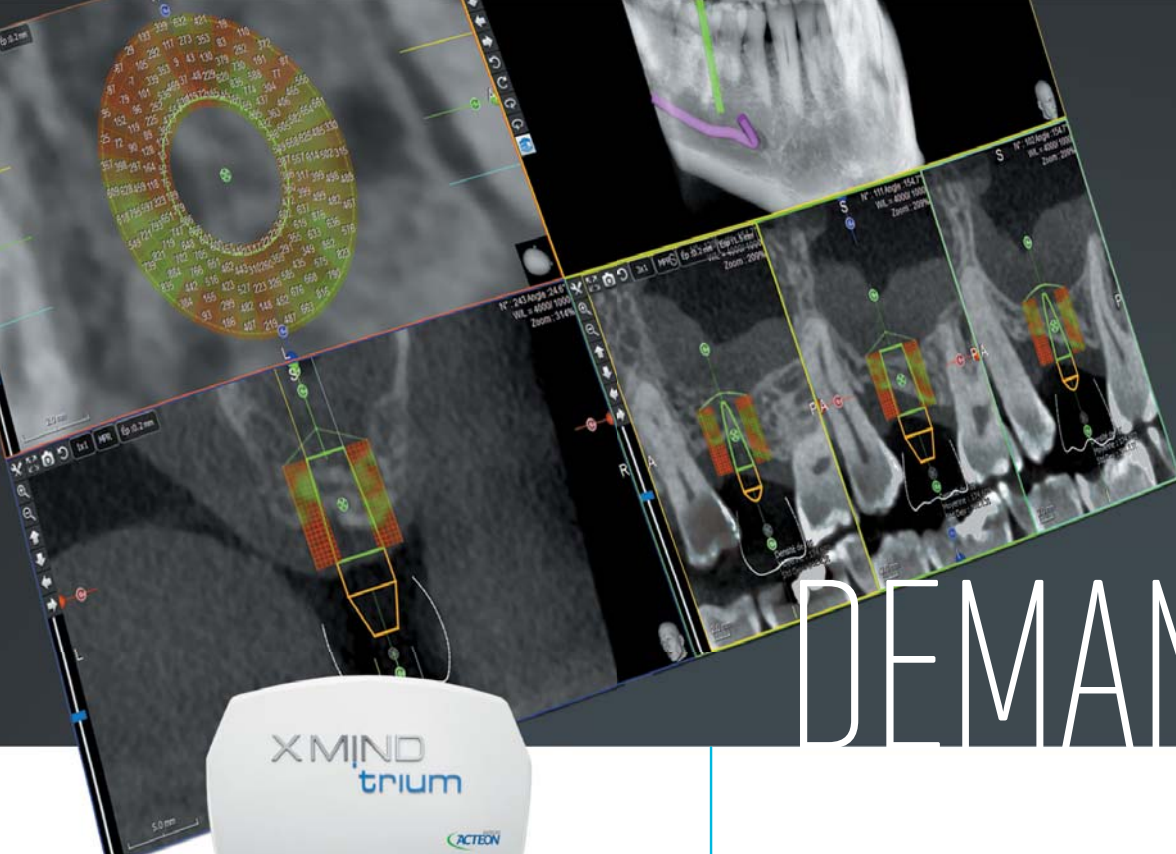


# ACTEON

# INNOVATIVE IMAGING

Digital medical imaging has significantly contributed to the improvement of diagnoses and the widespread use of less invasive procedures. Over the past 15 years, ACTEON® has committed to channeling its efforts into contributing to improve the accuracy of surgical procedures, and to reduce the radiation doses emitted. Through the development of ever more sophisticated yet intuitive 2.0 software packages, our R&D teams are able to innovate on a daily basis. In our permanent pursuit of excellence, we are proud today to present our latest innovations in this brochure.

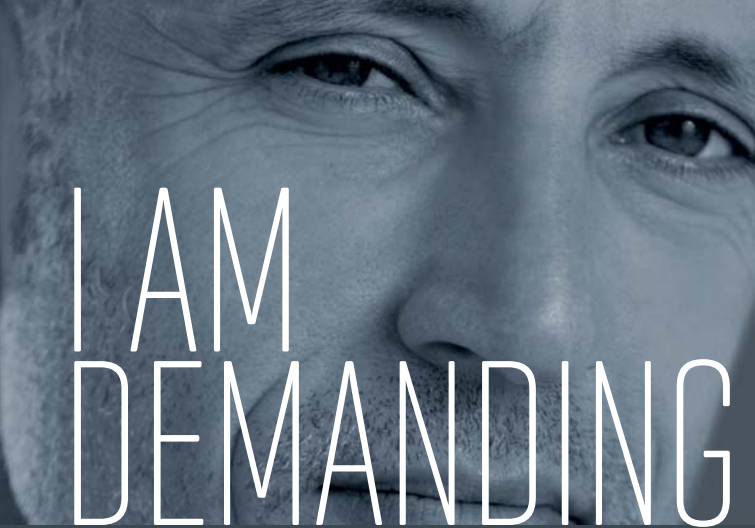


# I AM DEMANDING



## XMIND trium

**3D technology that facilitates  
implant planning with  
instant volume measurement  
and bone density assessment**



# I AM DEMANDING



**Claudio  
GIANI**  
R&D Imaging  
Director



*In this the design of the X-Mind® Trium we have taken into account all the possible factors influencing the image quality and image consistency, including (but not limited to): stability, geometry, x-ray beam generation and processing, SW and HW based filter kernels. Together with our know-how in medical imaging and the specific implementation of a dedicated analytical algorithm, we have reached outstanding results able to provide advanced clinical outcomes and indicators for the clinical practice of the future.*

The evolution of dental technology is such that we can now perform procedures which were unimaginable 10 years ago. In the field of implantology, the success rate for implant placements has progressed notably due to pre-implant procedures. The implant is the key element in this revolution, but it is essential to also have a high quality bone support : ACTEON created a global solution for that with the combination of 3 products (X-MIND TRIUM, QUALIOS, PIEZOTOME).

- **X-MIND TRIUM™**: the 3D technology that facilitates the implant planning with immediate volume measurement and bone density assessment
- **QUALIOS™**: Unique structure and high mechanical resistance for optimal bone regeneration
- **PIEZOTOME® CUBE**: Dynamic power responsiveness for superior osseous surgery

All these ACTEON® innovations result from the research of 5 design offices which collaborate daily with international dental surgeons to offer patients faster, more natural results whilst minimising possible operative sequelae.



**QUALIOS**

**PIEZOTOME**  
CUBE



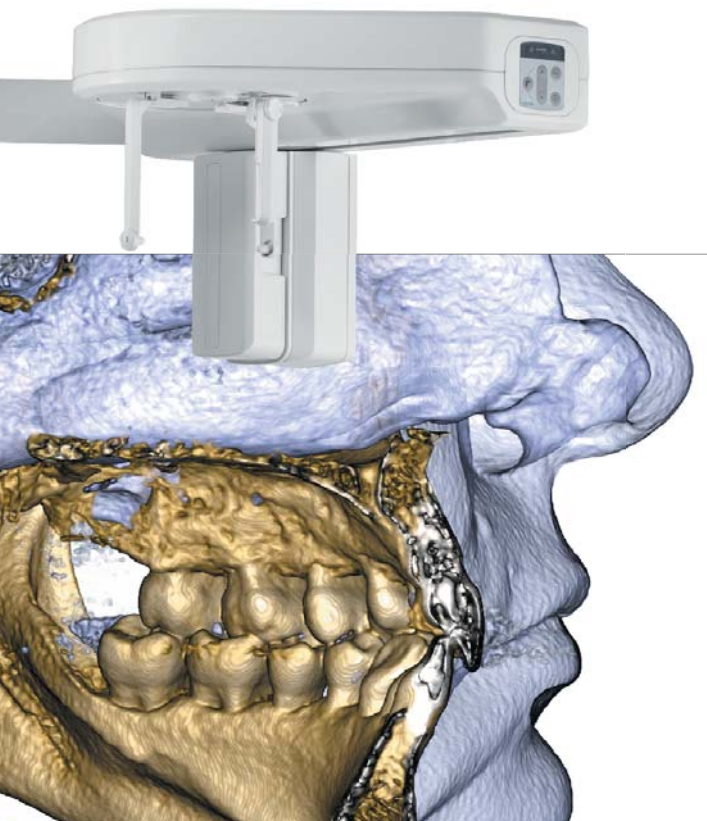
# CREATOR OF INNOVATIONS IN IMAGING

## X-MIND TRIUM has expertise in medical imaging

Inspired by advancements in volumetric tomography in medical imaging, ACTEON® designed extremely precise image processing algorithms to **improve diagnostic accuracy** for its first CBCT, WHITEFOX.

Based on the **Hounsfield unit scale**, the only reference for X-ray scanners, **bone density can be predictably and reproducibly measured<sup>1</sup>**, thereby making it easier to make decisions and plan accurate and reliable treatment.

More specific to current dentistry, X-Mind® trium uses the WHITEFOX performance as a base standard to offer **a solution tailored both to specialists and to general practitioners.**



Bone density information, obtained using X-Mind® trium, supports the diagnosis based on other clinical data, under the expertise and supervision of the clinician.

## MORE INVENTIVE

By combining **high quality spatial resolution with a significant reduction in X-ray doses**, ACTEON® has made X-Mind® trium :

the most powerful and comprehensive Cone Beam Volumetric Tomography system on the market.

## LESS INVASIVE

The X-Mind® trium implementation of therapy from the diagnosis is **safer**:

- **quick**
- **less traumatic and stressful**
- **minimised surgical effects**

The X-Mind® trium allows successful osseointegration with:

- **assessment of bone density and volume**
- **easier clinical decision-making**
- **more reliable treatment planning**
- **focus adapted to the region of interest**
- **dose of radiation controlled**

<sup>1</sup>Evaluation of a Novel Cone Beam Computed Tomography Scanner for Bone Density Examinations in Preoperative 3D Reconstructions and Correlation with Primary Implant Stability  
Lars Sennerby, DDS, PhD; Peter Andersson, DDS; Luca Pagliani, MD, DDS; Claudio Giani, BioEng; Giacomo Moretti, BioEng; Massimo Molinari, BioEng; Alessandro Motroni, BioEng



# COMPREHENSIVE SOFTWARE

## ACTEON<sup>®</sup> imaging suite

The ACTEON<sup>®</sup> Imaging Suite software offers **intuitive navigation** with the mouse and **advanced functionality**. It alone lets you manage all of your images, from scanning to viewing images from all ACTEON<sup>®</sup> imaging devices (CBCT, Panoramic, intraoral digital X-ray system, intraoral camera, etc.) and much more.

A QUALITY IMAGE  
VIA AN INTERFACE THAT IS  
SIMPLE, QUICK, INTUITIVE

DICOM  
COMPATIBLE

EXPORTS  
TO  
STL FORMAT



# ADVANCED FUNCTIONALITY FOR INTUITIVE NAVIGATION

- IMPLANT PLANNING
- CROWN PLACEMENT
- MANDIBULAR NERVE TRACING
- EASY NAVIGATION IN DIFFERENT SECTIONS
- MOUSE CONTROL
- BONE DENSITY ASSESSMENT AND VOLUME MEASUREMENT
- SURFACE, DISTANCE AND ANGLE MEASUREMENT
- SUBSTANTIAL AND SCALABLE IMPLANT LIBRARY
- PRINTED IMPLANT REPORT
- SHARING OF INFORMATION ON A NETWORK
- CASES EXPORTED ON A CD OR USB KEY
- EXPORTED IN STL FORMAT
- METAL ARTEFACT REDUCTION FILTER
- PANORAMIC AND CEPHALOMETRIC IMAGE DETAIL OPTIMISATION FILTER
- ENT MODULE
- VIRTUAL ENDOSCOPE
- INTEGRATES WITH VARIOUS PATIENT MANAGEMENT SOFTWARE
- DICOM COMPATIBLE



## PORTABILITY BECOMES OBVIOUS



**iPad® compatible**

ACTEON® innovates once more by offering a unique iPad application for its CBCT X-Mind® trium. A real technological breakthrough for dentist!

# INSTANTLY ASSESS BONE DENSITY



## Easy-to-use software

A precise and detailed analysis of the existing bone volume is highly recommended in order to reduce complications associated with implant placement.

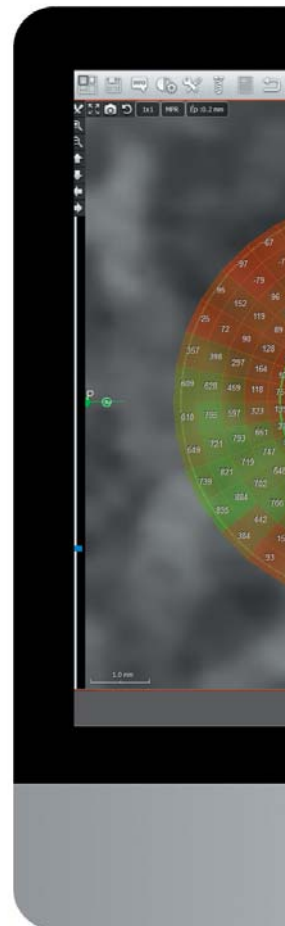
The ACTEON® Imaging Suite 3D software displays **the assessment of bone density all around the implant with just one click.**

## Communicate with the patient

If bone volume is low, the images and information supplied by the ACTEON® Imaging Suite 3D software can help you **clearly explain your therapeutic recommendation to your patient.**

This explanation is particularly helpful if surgery and/or bone filling is necessary.

A RELIABLE ASSESSMENT  
OF **BONE QUALITY**  
WILL HELP YOU IMPROVE  
YOUR SUCCESS RATE





# AND VOLUME



## Indicator colours

Bone density information is clearly represented by the colours red and green.

-  High density
-  Low density

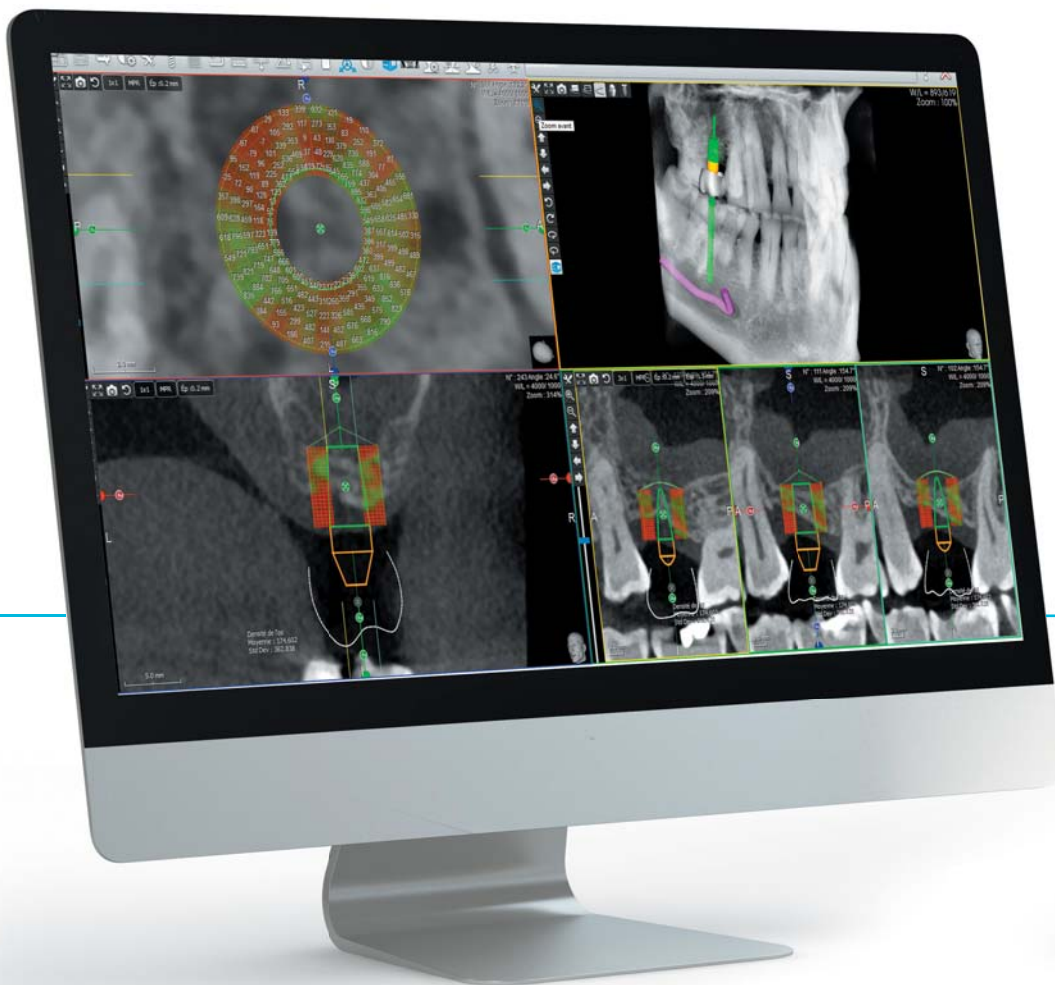
## 3D mapping

This completes the colour indicators.



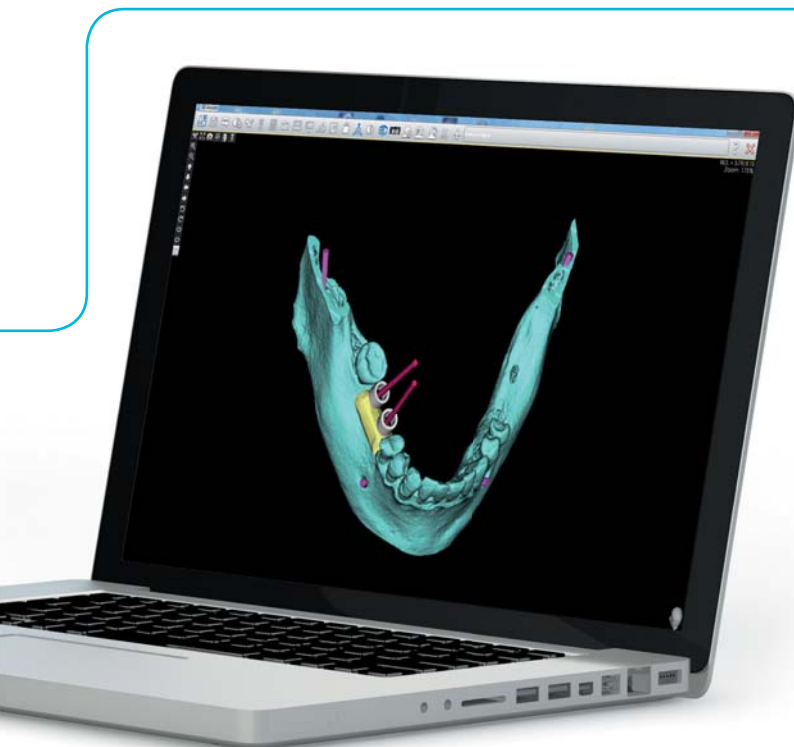
# SIMPLIFIED IMPLANT PLANNING

CARRY OUT **IMPLANT PLANNING**  
USING JUST ONE PIECE OF SOFTWARE



Combined with its ACTEON® Imaging Suite software, X-Mind® trium is an essential tool for planning the treatment and post-procedure follow-up. Its 3D imaging offers **high precision of the anatomy from a single scan** and provides a full understanding of the patient's jaw. Its **results are quick and accurate, thereby streamlining your workflow.**

- 1 Locating and tracing the mandibular canal precisely is the first step in the implant planning procedure. It also **measures the distance between the canal boundary and the implant**.
- 2 3D modelling can then be used to **choose the size and shape of the implants** in proportion to the patient's morphology based on a **substantial and scalable implant library**. Better still, you start by putting the crown in place, which serves as a guide for better positioning of the implant.
- 3 ACTEON® Imaging Suite **gives useful information to assess volume and bone density** for implant placement, which can effectively be used to guide the diagnosis and surgical treatment.
- 4 ACTEON® Imaging Suite **exports imaging data** generated by X-Mind® trium scans in **STL format**. This data can be imported into a **surgical guide** design software.
- 5 **In less than a minute**, you can produce and print a full implant report, to illustrate **your written report (required)**. This illustrated report can also help you better inform your patient or a referring dental surgeon.

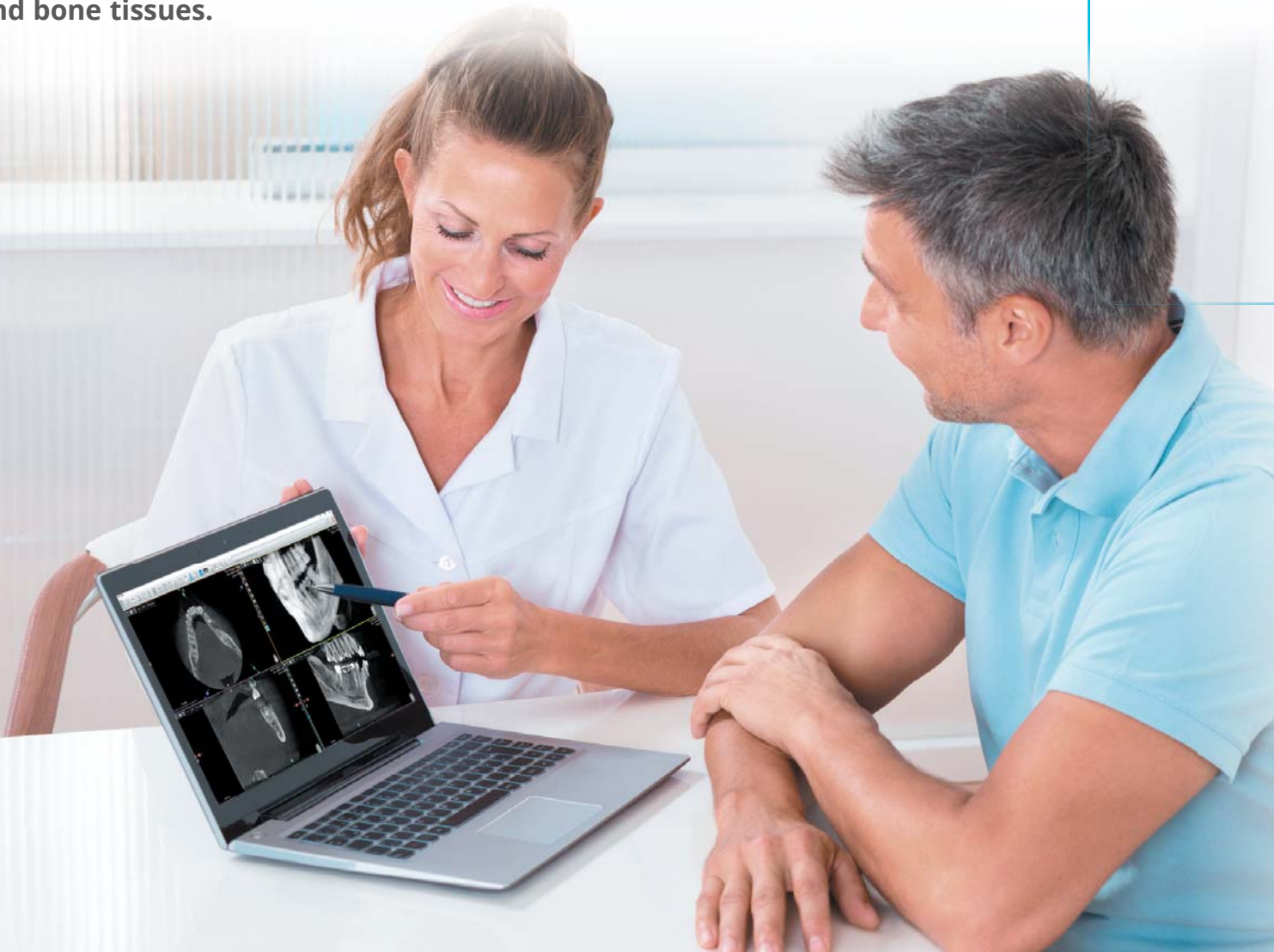


# DETAILED IMAGING FOR ENDODONT

## A THREE-DIMENSIONAL IMAGE FOR A MORE ACCURATE DIAGNOSIS

The multiple slices obtained with X-Mind® trium allow to navigate from the outside to the core of the tooth, and beyond.

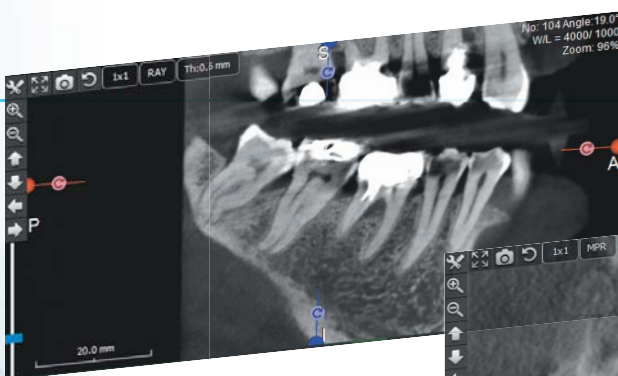
**Indispensable for endodontics, the metallic artefact reduction filter of X-Mind® trium differentiates with extreme precision the nature of the dental and bone tissues.**



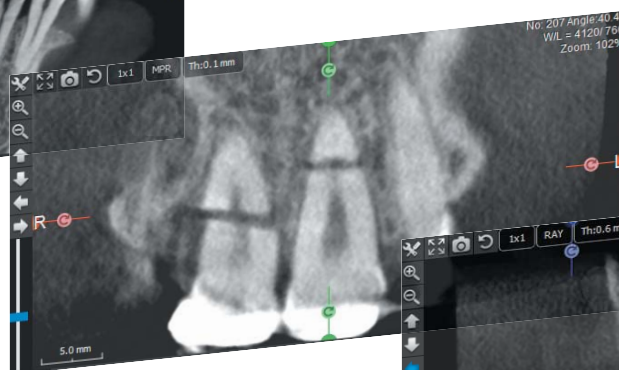
# 5 REASONS TO USE DETAILED IMAGING

- Provide additional examination to 2D imaging in high-risk situations
- Highlight the list of potential risks prior to surgery
- Obtain very precise information about anatomical relationships
- Procure a valuable support in making decision for a safe and good therapy
- Accurately determine the working length of the tooth when resuming treatment

Through its performance, X-Mind® trium contributes **significantly to the accuracy of endodontic analyses**, such as:



The determination of the anatomy of dental roots



The diagnosis of apical lesions and the diagnosis of fractures



The apex/sinus relationship



# MANY MORE CLINICAL BENEFITS TH

## HUGE VARIATION OF APPLICATIONS

In addition to applications designed exclusively for implantology or endodontics, X-Mind® trium **responds directly to the needs of specialists and general practitioners** in the diagnosis of pathologies related to periodontics, orthodontics and maxillofacial surgery. Benefits include:

- Evaluating a detailed morphology of the bone tissue
- Helping to diagnose infectious diseases
- Examining maxillofacial fractures
- Determining the protocol for extracting included teeth
- Conducting an orthodontic assessment
- Detecting dental anomalies
- Helping to diagnose temporomandibular joint disorders
- Exploring the maxillary sinuses



# AN YOU CAN IMAGINE

## FOCUS ON THE REGION OF INTEREST

X-Mind® trium offers you a **broad selection of field of view**, letting you focus on the region of interest for the target diagnosis and **reducing the patient's exposure to X-rays**:



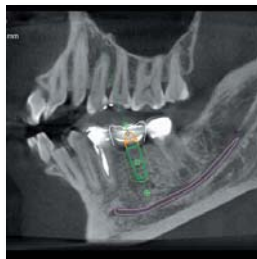
∅ 110x80 mm



A **110x80 mm** field of view will offer a full view of the dentition, mandibular canal and lower sinuses.



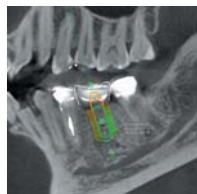
∅ 80x80 mm



A **60x60 mm** or **80x80 mm** field of view will be optimal for defining the positioning of one or more implants or for diagnosing periodontal problems.



∅ 60x60 mm



A **40x40 mm** field of view with resolution at 75 µm is ideal for diagnosis and endodontic treatment.



∅ 40x40 mm



# EXCEPTIONAL IMAGE QUALITY

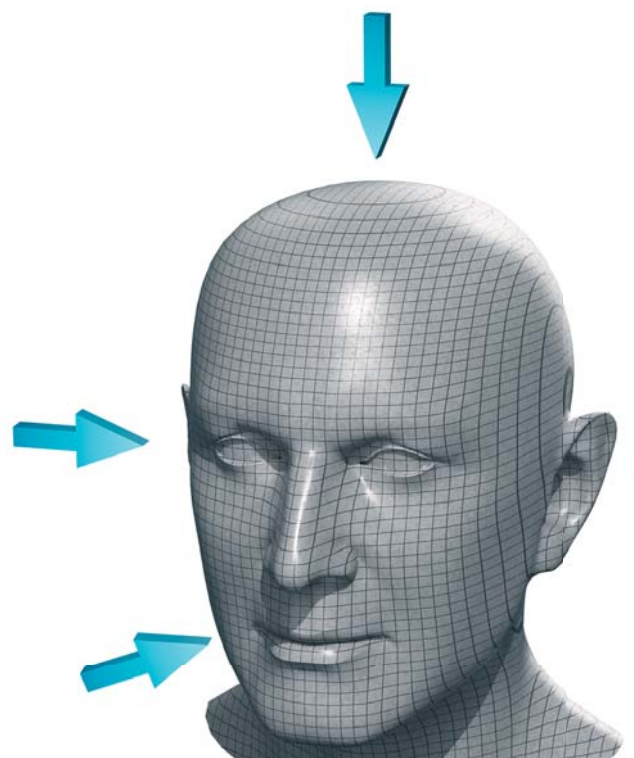


## A HIGHER RESOLUTION 75 $\mu\text{m}$

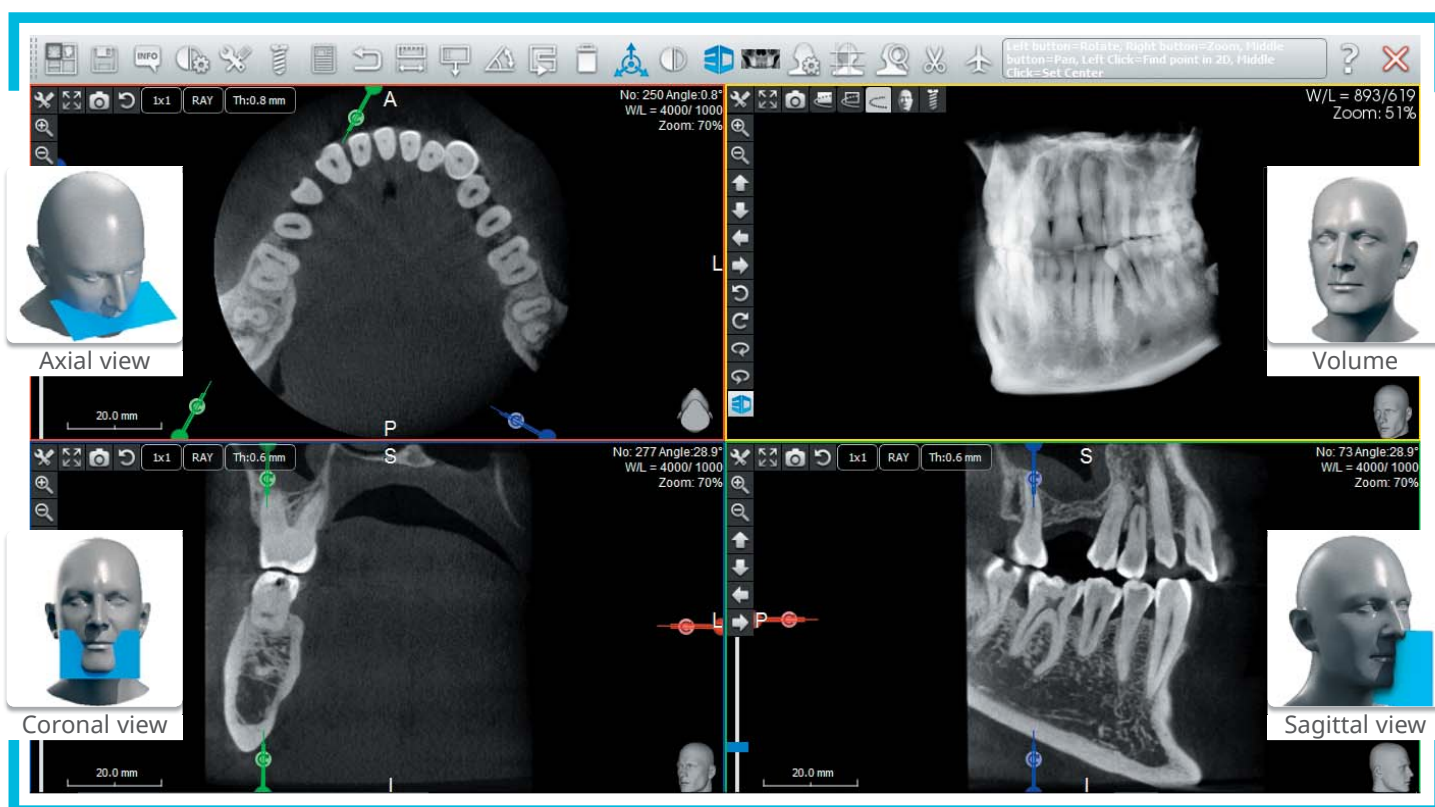
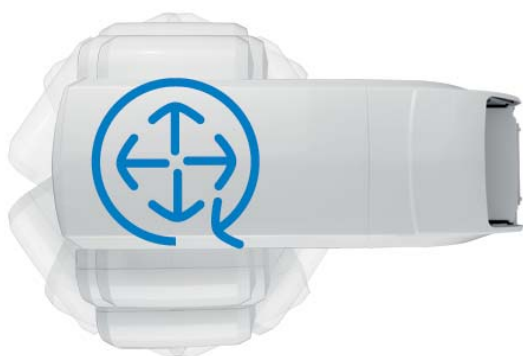
The quality of the diagnosis and endodontic treatments improves significantly with resolution at **75  $\mu\text{m}$**  on the X-Mind® trium.

In addition to obtaining a perfect view through **adapted spatial resolution**, pulsed mode scanning, **high sensitivity CMOS sensor**, and the use of small fields of view allow for a notable reduction in X-rays.

X-Mind® trium has a scanning and reconstruction algorithm that produces a **high quality 3D image**. The representation of bone material in the maxillofacial skeleton is **accurate** and **perfectly uniform**, regardless of the viewing axis.



# 360° ROTATION FROM 18 TO 27 SECONDS DEPENDING ON THE SELECTED FIELD OF VIEW





# ARTEFACT REDUCTION FILTERS

## AN OPTIMAL FILTER FOR REDUCING METAL ARTEFACTS

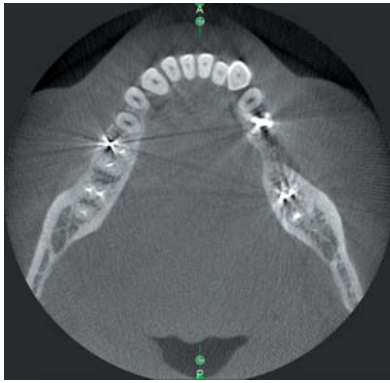
X-Mind® trium is equipped with a **dynamic artefact reduction filter** to eliminate streaks and dark bands caused by the presence of metal.

The image can be freely reconstructed with adjustable filter levels based on the target level of information and the need to cut out artefacts.

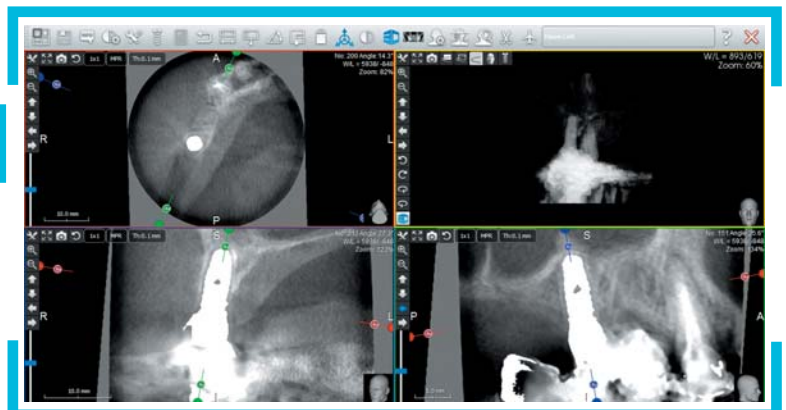
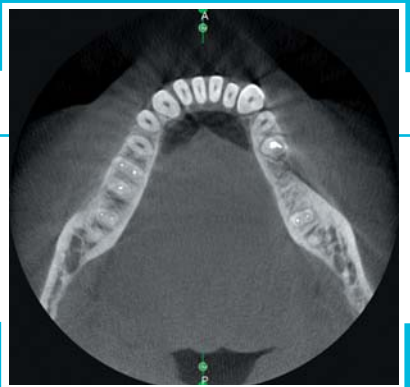
**The goal is to best isolate the desired information during the examination.**



# WITHOUT FILTER



# WITH FILTER



# PANORAMIC & CEPHALOMETRIC

## PANORAMIC RADIOGRAPHY



Whether raw or filtered to optimise the details, panoramic X-Mind® trium images support a fast and easy diagnosis.

### DENTAL PANORAMIC



### PANORAMIC WITH IMPROVED ORTHOGONALITY

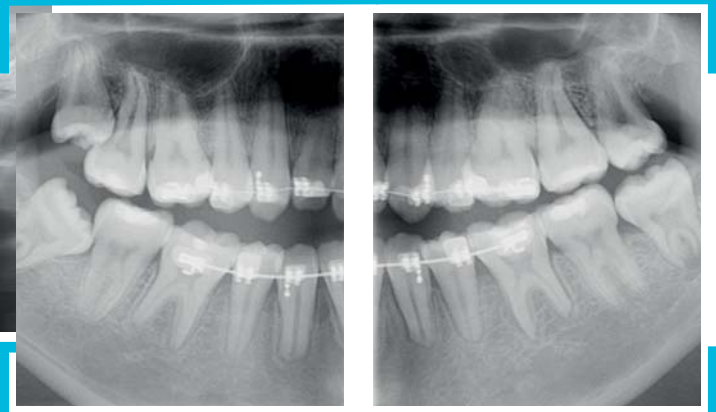


*X-ray beam perpendicular to the jaw for better orthogonality and to reduce the overlapping of crowns.*

### CHILD PANORAMIC



### BITEWING



*A quick bitewing image in one shot*

# MODES

## TMJ SECTIONS



*Both open and closed mouth images*

## MAXILLARY SINUS



*A quick bitewing image in one shot*

## CEPHALOMETRIC RADIOGRAPHY



Due to its patented cinematic and collimation, patient positioning is easier on X-Mind® trium.

Install the cephalometric arm on the right or left, depending on the configuration of the office.

### FULL SKULL LATERAL



### POSTERIOR ANTERIOR





# BETTER QUALITY OF LIFE



## THE TRUE DIAGNOSIS OF PAIN

The introduction of 3D medical scanners has provided significant benefits for the diagnosis of complex diseases. Cone Beam Computed Tomography (CBCT) machines, have made these exams more common, making it possible to **provide better diagnoses** within the dental office.

ACTEON® is fully involved in this technological revolution by providing effective extraoral solutions for diagnosis that are comprehensive in their use and fully meet the expectations of dental surgeons and their patients.

# PATIENTS WHO ARE REASSURED AND SATISFIED

Beyond the simple replacement of missing teeth, increased life expectancy and aesthetic concerns have led to the development of implant procedures.

Patients now have the opportunity both to improve their quality of life through the **latest restorative techniques** and, with the help of CBCT, to obtain a **faster and more accurate diagnosis** with a **less exposure to X-rays**.

# TIME SAVING AND INSTANT RESULTS FOR THE DENTAL SURGEON

Owning your own ACTEON® 3D extraoral imaging system in your office is a great asset for quick and accurate diagnoses, **saving time and improving your patient's satisfaction**.

The three-dimensional image on the screen lets you provide your patient with the necessary up to date information. In addition, this demonstration and its illustrated explanations will be crucial in **obtaining the patient's full involvement and agreement with the proposed treatment plan**. Finally, X-Mind® trium allows you to print a **full illustrated implant report in just a few seconds** to be provided to your patient and/or their referring dental surgeon.



# 3 SOLUTIONS IN 1

## SELECT NOW, IMPROVE LATER

- X-Mind® trium has an extensive range of options. It is upgradable on site.
- X-Mind® trium will adapt to the ever increasing needs of your clinic by adding 3D imaging or digital cephalometric modalities when you decide it is necessary.



X-Mind® trium Pan



X-Mind® trium Pan 3D

Pan	<input checked="" type="radio"/>	<input checked="" type="radio"/>
3D	<input type="radio"/>	<input checked="" type="radio"/>
Ceph	<input type="radio"/>	<input type="radio"/>

# ACTEON SERVICE & YOU

"Clinical trainers" are available to show you the clinical aspects and patient benefits of ACTEON® products and train you on how to use them.

Free, ongoing and unlimited service can be reached Monday to Friday, from 09:00 to 18:00.

ACTEON® can also analyse and troubleshoot remotely, and specialist technicians can provide on-site service as quickly as possible.



X-Mind® trium Pan Ceph



X-Mind® trium Pan Ceph 3D

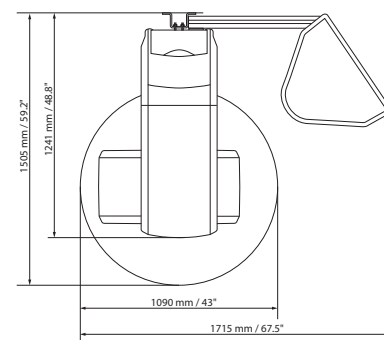
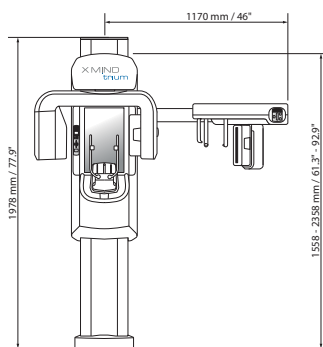


○ : available option



# TECHNICAL SPECIFICATIONS

## X MIND trium



	PANORAMIC	CBCT	CEPHALOMETRIC
	<b>X-RAY SOURCE</b>		
Tube type	High frequency DC generator		
Total filtration	2.8 mmAl / 85 kV	7.0 mmAl / 90 kV	2.8 mmAl / 85 kV
Operation mode	Continuous	Pulsed	Continuous
Tube voltage	60 - 85 kVp	90 kVp	60 - 85 kVp
Anodic current	4 - 10 mA	4 - 12 mA	4 - 10 mA
Focal point	0.5 mm	0.5 mm	0.5 mm
	<b>DETECTOR</b>		
Type	CMOS	Flat Panel CMOS	CMOS
FOV and format	260 x 148 mm	ø40 x 40 mm, ø60 x 60 mm, ø80 x 80 mm, ø110 x 80 mm	240 x 180 mm
Pixel size/Voxel size	Pixel: 100 µm	Voxel: 75 µm	Pixel: 100 µm
	<b>ACQUISITION</b>		
Technique	180° single scan	360 ° single scan	Single scan
Exposure time	16.8 sec	4 - 12 sec	18 sec
Scanning time	16.8 sec - 25 sec	18 - 27 sec	14 sec
Programs	Standard, child, improved orthogonality panoramic, bitewings, maxillary sinus, TMJ	Semi-arch, arch, full arch, sinus, ear	Frontal PA, Frontal AP, option: Carpus
Reconstruction time	3 sec	29 sec	4 sec
	<b>IMAGE FORMAT</b>		
	JPEG, BMP, PNG, TIFF, DCM	DCM, STL	JPEG, BMP, PNG, TIFF, DCM
	<b>MECHANICAL DATA</b>		
Max footprint dimensions	L 150 x W 110 cm		L 150 x W 172 cm
Height	Max: 235 cm		
Weight	170 kg (PAN)	185 kg (PAN-CBCT)	215 kg (PAN-CEPH)
	<b>IEC</b>		
Class and Type	Class I, Type B		
	<b>IMAC® OU MACBOOK® PRO</b>	<b>WINDOWS® WORKSTATION</b> (included with CBCT)	
CPU	Intel i5	Intel Xeon 2 GHz	
Hard Disk	500 GB	1 TB	
OS X Mavericks or later	NVIDIA ou ATI 1 GB	NVIDIA (CUDA environment GPU family)	
RAM Memory	8 GB	8 GB	
Network card	1 Gb/s	Dedicated GB NIC for X-Mind trium connection	
Operating System	OS X Mavericks or later	Windows 7 professional 64 bits	
	<b>TABLET</b>		
Version	iPad Pro 9.7", 32 GB, WIFI		
	<b>DICOM 3.0</b> (optional)		
Supported services	Worklist, storage, print, verify		

X-Mind® trium, 3-in-1 extraoral imaging system (CBCT 3D, Panoramic and Cephalometric). This medical device is a class IIb device according to the applicable European Directive in force. It includes CE marking. Notified body: DNV – CE 0434. This medical device for dental care is reserved for healthcare personnel; it is not covered by health insurance providers. This equipment was designed and manufactured in accordance with an EN ISO 13485-certified quality assurance system. Please read the user guide carefully. Manufacturer: DE GOTZEN (Italy). Date of manufacture: November 2016.



[www.acteongroup.com](http://www.acteongroup.com)



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