Planmeca Ultra Low Dose™

The ultimate guide to 3D low dose imaging

3D imaging with an even **lower dose** than panoramic imaging

PLANMECA

Pioneering low dose 3D imaging

*Planmeca ProMax® **3**D units offer a unique Planmeca Ultra Low Dose™ imaging protocol that enables CBCT imaging with an even lower patient radiation dose than standard 2D panoramic imaging.*

More information, less radiation

Planmeca Ultra Low Dose™ can be used with all voxel sizes and in all imaging modes from Normal to Endodontic mode. Using the Planmeca Ultra Low Dose protocol reduces the effective patient dose by an average of 77% without a statistical reduction in image quality*.

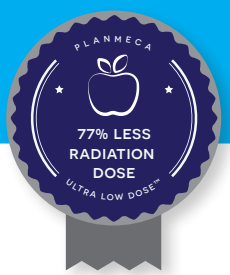
The unique and pioneering imaging protocol is based on intelligent 3D algorithms developed by Planmeca. Our 3D imaging system allows clinicians to always choose the optimal balance between image quality and dose, based on the ALADA principle.

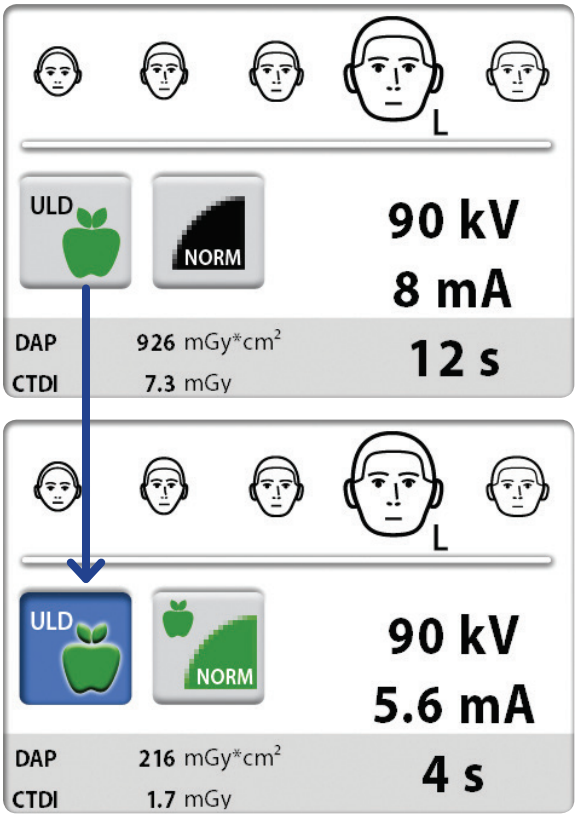
Ideal for many clinical cases

The Planmeca Ultra Low Dose™ protocol has proven to be ideal for many clinical cases.

- Orthodontics:
  - Defining the amount of bone around the root
  - Localizing unerupted and impacted teeth before orthodontic treatment
  - Defining orthodontic landmarks for cephalometric analysis
- Post-operative and follow-up images in maxillofacial surgery
- Airway studies
- Sinus studies
- Implant planning

Learn about becoming a Planmeca Ultra Low Dose™ Certified Practice at ***www.planmeca.com/na/Imaging/ULD/***





Background and Methodology

The does measurements are performed using an anthropomorphic RANDO phantom and MOSFET dosimeters positioned into the phantom, according to the effective dose measurement protocol descrbied by Ludlow et al. The effective dose calculation is based on using the revised guidelines given by the **International Commision on Radiological Protection** (ICRP 103). At Planmeca, the Corporate Physicist Juha Koivisto is in charge of the effective dose measurements.

For more information, go to **www.planmeca.com/Imaging/3D-imaging**

The Planmeca Ultra Low Dose™ protocol has changed 3D imaging completely


Dosimetry of Orthodontic Diagnostic FOVs Using Low Dose CBCT protocol 0920

JB Ludlow[a], J Koivisto[b]

[a]University of North Carolina-Chapel Hill, School of Dentistry, Chapel Hill, North Carolina,
[b]University of Helsinki, Department of Physics, Helsinki, Finland

*"An average reduction in dose of 77% was achieved using ULD protocols when compared with standard protocols. While this dose reduction was significant, **no statistical reduction in image quality** between ULD and standard protocols was seen. This would suggest that patient doses can be reduced without loss of diagnostic quality."**

DOWNLOAD STUDY

* Study of Orthodontic Diagnostic FOVs Using Low Dose CBCT protocol (Ludlow, John Barrett and Koivisto, Juha).

We at MESANTIS® 3D DENTAL-RADIOLOGICUM produce about 7,500 CBCT images per year at eight locations in Germany.

Our main concern in X-ray imaging is to reduce the possible radiation dose as much as is reasonably achievable (ALADA principle). Traditional digital 2D X-rays at an orthodontist's clinic usually have an effective dose ranging between 26–35 µSv (ICRP 2007). Conventional CBCT images of the head with modern CBCT equipment show an effective dose ranging between 49–90 µSv.

The latest image protocol with a specific associated algorithm is called the Planmeca Ultra Low Dose™ protocol. In medical terms, it allows radiologists to adjust imaging parameters individually according to the clinical needs of each case. The mA-values, in particular, can be individually adjusted and reduced for each patient, as it is required according to all international scientific guidelines. Therefore, it is possible to further reduce the effective dose significantly by using the Planmeca Ultra Low Dose™ protocol. Depending on the field of view, nowadays CBCT equipment with a Planmeca Ultra Low Dose™ algorithm has an effective dose between 4 to 22 or 10 to 36 µSv.

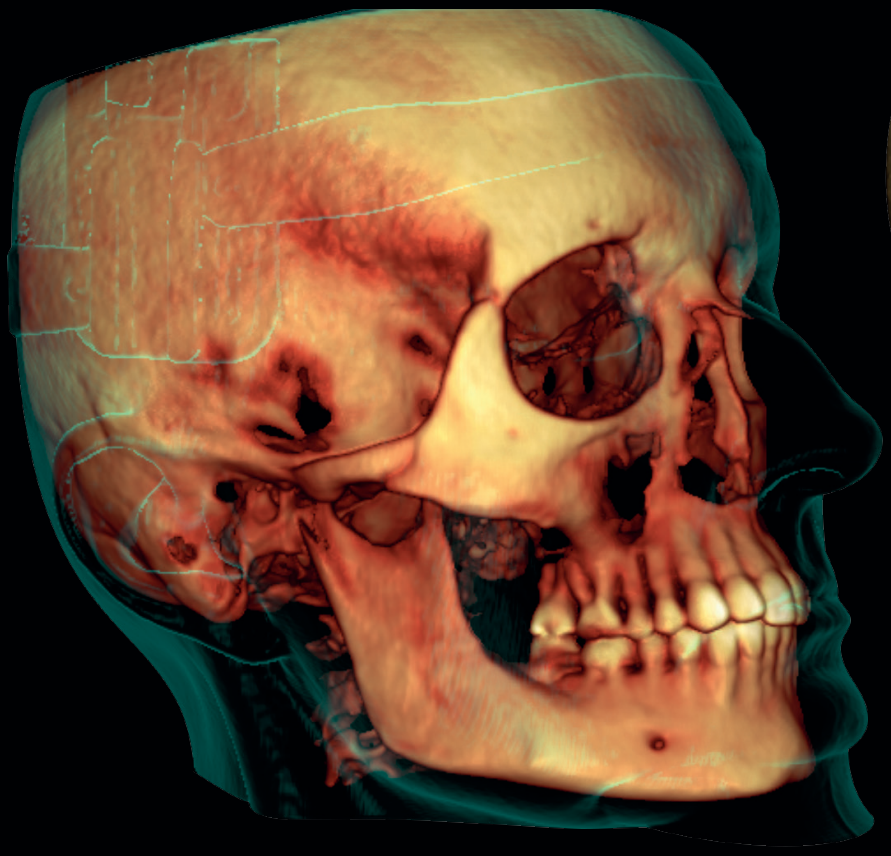
Our patients and referring colleagues are always happy to hear that the effective dose for certain indications is now even lower than in traditional 2D X-ray imaging. Since last year we have been able to replace the common CBCT protocols with the Planmeca Ultra Low Dose™ protocol.

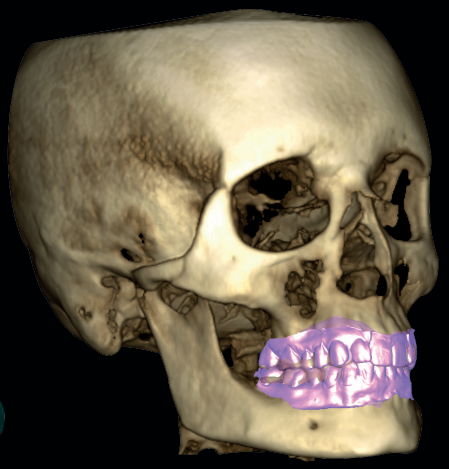
At MESANTIS® 3D DENTAL-RADIOLOGICUM in Germany, the Planmeca Ultra Low Dose™ imaging protocol is used either with a small or large field of view. Using the new protocol, a lot of patients can benefit from improved 3D diagnostics without being exposed to a higher radiation dose.

Prof. Dr. Axel Buman


Prof. Dr. Axel Bumann DDS, PhD, Orthodontist, Oral surgeon, Oral and Maxillofacial Radiology, MESANTIS® 3D DENTAL-RADIOLOGICUM

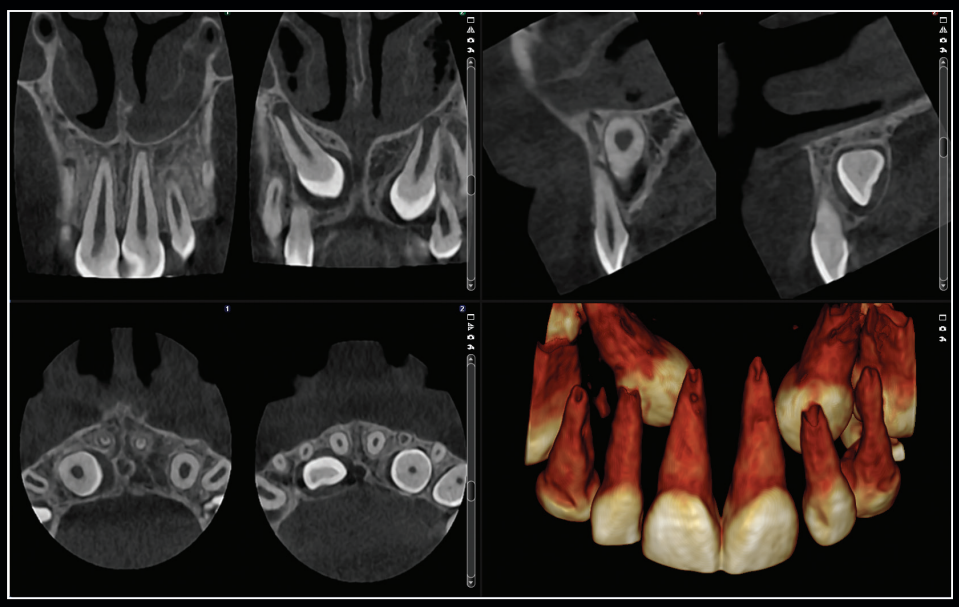
Prof. Dr. Bumann states that he has not received any financial reward or other benefit for this interview.





Planmeca ProMax® 3D Mid

- FOV Ø 20 x 17 cm / Voxel size 600 µm
- Effective patient dose 14.7 µSv



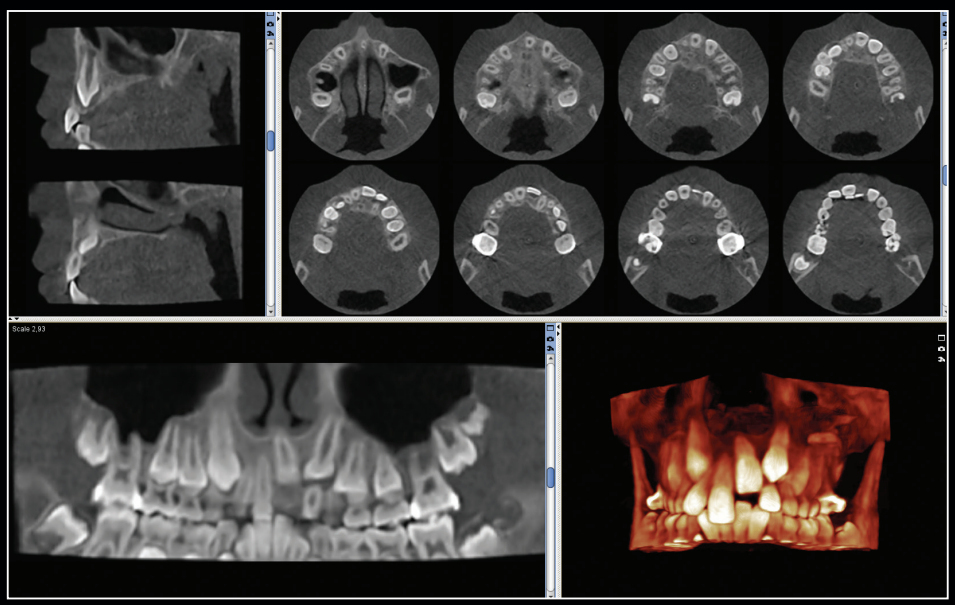
An average dose reduction of **77%**

Planmeca ProMax® 3D Classic

- FOV Ø 4 x 5 cm / Voxel size 150 µm
- Effective patient dose 14.4 µSv

Planmeca ProMax® 3D Mid

- FOV Ø 20 x 17 cm / Voxel size 600 µm
- Effective patient dose 29.2 µSV



Planmeca ProMax® 3D Max

- FOV Ø 8.5 x 5 cm / Voxel size 400 µm
- Effective patient dose 4.0 µSv

Planmeca ProMax® 3D family

– the optimal 3D unit for every imaging need

		Normal mode		Low dose mode	
		Voxel size	Effective patient dose with ULD	Voxel size	Effective patient dose with ULD
	**Planmeca ProMax® 3D s**				
	Ø 5 x 5 cm – Tooth upper incisors	200 µm	17 µSv	400 µm	6 µSv
	Ø 5 x 8 cm – Tooth incisors	200 µm	22 µSv	400 µm	8 µSv
	**Planmeca ProMax® 3D Classic**				
	Ø 8 x 8 cm – Teeth	200 µm	30 µSv	400 µm	9 µSv
	**Planmeca ProMax® 3D Plus**				
	Ø 9 x 9 cm – Teeth	200 µm	27 µSv	400 µm	7.9 µSv
	Ø 16 x 9 cm – Jaw	400 µm	24 µSv	600 µm	9.5 µSv
	**Planmeca ProMax® 3D Mid**				
	Ø 10 x 10 cm – Teeth	200 µm	40 µSv	400 µm	8 µSv
	Ø 20 x 10 cm – Jaw	400 µm	25 µSv	600 µm	10 µSv
	Ø 20 x 17 cm – Face	400 µm	39 µSv	600 µm	16 µSv
	**Planmeca ProMax® 3D Max**				
	Ø 13 x 13 cm – Face	200 µm	54 µSv	400 µm	14.1 µSv
	Ø 23 x 16 cm – Skull lower	400 µm	60 µSv	600 µm	26 µSv
	Ø 23 x 26 cm – Skull	400 µm	83 µSv	600 µm	38 µSv

Standard 2D panoramic effective patient dose is approximately 15 µSv.

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