XORAN MiniCAT™ LOW DOSE CT

Unlike multi-purpose full-body scanners, **MiniCAT**™ has been specifically designed to scan the sinus, skull base and temporal bone regions. Guided by the **ALARA** (As Low As Reasonably Achievable) principle, **MiniCAT**™ has been optimized to provide high-quality images while minimizing the radiation dose to the patient.

MiniCAT™ Effective Dose Estimates

Imaging Protocol	Effective Dose Estimates
Temporal Bone	0.13 mSv
Sinus 600 Frame	0.17 mSv
Sinus 300 Frame	0.09 mSv
Sinus 150 Frame	0.04 mSv
Scout View	< 0.01 mSv

Comparison to Other Modalities**

Imaging Modalility	Effective Dose Estimates
Conventional CT Sinus Scan	0.96 mSv
MiniCAT™ Sinus 600 Frame	0.17 mSv
Skull X-Ray (average)*	0.07 mSv
Chest X-Ray (average)*	0.02 mSv

See reverse side for methodology

*Comparative figures taken from www.fda.gov/cdrh/ct/risks.html

**Comparative figures taken from http://hps.org/documents/meddiagimaging.pdf

MiniCAT™ Organ Dose Estimates

Organ	Sinus 600 Frame	Temporal Bone
Thyroid	0.022 mSv	0.017 mSv
Salivary Gland	0.030 mSv	0.037 mSv
Bone Marrow	0.055 mSv	0.019 mSv
Skin	0.001 mSv	0.002 mSv
Cortical Bone	0.021 mSv	0.007 mSv
Brain	0.041 mSv	0.053 mSv
Total Effective Dose Estimates	**0.17 mSv**	**0.13 mSv**

Methods:

In calculating the effective dose, we closely followed the methodology suggested in ICRP 60 and Frederiksen et al. Twenty thermo-luminescent dosimeters (TLD) were placed in selected sites representing radio-sensitive tissues and organs in an anthropomorphic head phantom.[2,3] The TLDs measured the absorbed dose to the thyroid, salivary gland, bone marrow, skin, and brain. The salivary gland was included in the effective dose calculations according to Frederiksen's adaptation of the ICRP method[3]. The effective dose was calculated as the sum of the equivalent doses to each organ multiplied by that organ's weighting factor.[2,3] Two sets of data were collected for the Sinus 600 Frame and Temporal Bone protocols and averaged to provide the organ dose estimates. TLD measurements were not made for the Sinus 300 Frame, 150 Frame or Scout View Protocols. The values for these scans were approximated by linearly scaling the dose from the Sinus 600 Frame scan with the number of x-ray pulses used in each protocol.

1. U.S. Food and Drug Administration, Center for Devices and Radiological Health. "What are the Radiation Risks from CT?" http://www.fda.gov/cdrh/ct/risks.html, January 28, 2008

2. Publication 60 of the International Commission on Radiological Protection (ICRP) "Radiation Protection. 1990 Recommendations of the International Commission on Radiological Protection," Pergamon Press, Oxford 1990

3. Frederiksen et al. (N.L. Frederiksen, B.W. Benson, and T.W. Sokolowski, "Effective dose and risk assessment from computed tomography of the maxillofacial complex," Dentomaxillofacial Radiology, vol. 24, pp. 55-8, 1995)

4. J. Alspaugh, E. Christodoulou, M. Goodsitt, J. Stayman, "Dose and Image Quality of Flat-Panel Detector Volume Computed Tomography for Sinus Imaging," Medical Physics, vol. 34, pp. 26-34, 2007

5. Additional **MiniCAT**™ dose metrics can be found at www.xorantech.com

Xoran makes the complex **simple**.™

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XORAN® TECHNOLOGIES

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