Effective doses of Planmeca ProMax 3D X-ray models according to ICRP 2007

Planmeca ProMax 3D Mid

Program	FOV	Resolution	kV	mA	time	mAs	resolution	dose uSv
Tooth Mandible Incisors	4x5	Low Dose	90	5,6	6	33,6	400 µm	28
		Normal	90	8,0	12	96	200 µm	79
		HD	90	10,0	15	150	150 µm	123
		Hi Res	90	10,0	12	120	100 µm	98
		Endo	90	10,0	15	150	75 µm	123
		LD ULD	90	2,2	3	6,6	400 µm	5,4
		Normal ULD	90	5,6	4	22,4	200 µm	18
		HD ULD	90	7,1	5	35,5	150 µm	29
		HR ULD	90	7,1	4	28,4	100 µm	23
		Endo ULD	90	7,1	5	35,5	75 µm	29
Tooth Mandible Premolar	4x5	Low Dose	90	5,6	6	33,6	400 µm	30
		Normal Dose	90	8,0	12	96	200 µm	86
		HD	90	10,0	15	150	150 µm	134
		Hi Res	90	10,0	12	120	100 µm	107
		Endo	90	10,0	15	150	75 µm	134
		LD ULD	90	2,2	3	6,6	400 µm	5,9
		Normal ULD	90	5,6	4	22,4	200 µm	20
		HD ULD	90	7,1	5	35,5	150 µm	32
		HR ULD	90	7,1	4	28,4	100 µm	25
		Endo ULD	90	7,1	5	35,5	75 µm	32
Tooth Maxilla Incisors	4x5	Low Dose	90	5,6	6	33,6	400 µm	15
		Normal Dose	90	8,0	12	96	200 µm	44
		HD	90	10,0	15	150	150 µm	68
		Hi Res	90	10,0	12	120	100 µm	54
		Endo	90	10,0	15	150	75 µm	68
		LD ULD	90	2,2	3	6,6	400 µm	3,0
		Normal ULD	90	5,6	4	22,4	200 µm	10
		HD ULD	90	7,1	5	35,5	150 µm	16
		HR ULD	90	7,1	4	28,4	100 µm	13
		Endo ULD	90	7,1	5	35,5	75 µm	16
Tooth maxilla premolar	4x5	Low Dose	90	5,6	6	33,6	400 µm	16
		Normal Dose	90	8,0	12	96	200 µm	45
		HD	90	10,0	15	150	150 µm	71
		Hi Res	90	10,0	12	120	100 µm	57
		Endo	90	10,0	15	150	75 µm	71
		LD ULD	90	2,2	3	6,6	400 µm	3,1

		Normal ULD	90	5,6	4	22,4	200 µm	11
		HD ULD	90	7,1	5	35,5	150 µm	17
		HR ULD	90	7,1	4	28,4	100 µm	13
		Endo ULD	90	7,1	5	35,5	75 µm	17
Teeth Maxilla	10x6	Low Dose	90	5,6	6	33,6	400 µm	22
		Normal Dose	90	8,0	12	96	200 µm	63
		HD	90	10,0	15	150	150 µm	99
		LD ULD	90	2,2	3	6,6	400 µm	4,4
		Normal ULD	90	5,6	4	22,4	200 µm	15
		HD ULD	90	7,1	5	35,5	150 µm	23
Tooth mandible premolar	4x5	Low Dose	90	5,6	6	33,6	400 µm	37
		Normal Dose	90	8,0	12	96	200 µm	106
		HD	90	10,0	15	150	150 µm	165
		Hi Res	90	10,0	12	120	100 µm	132
		Endo	90	10,0	15	150	75 µm	165
		LD ULD	90	2,2	3	6,6	400 µm	7,3
Jaws	20x10	Low Dose	90	5,6	9	50,4	600 µm	49
		Normal	90	8,0	13,5	108	400 µm	106
		HD	90	10,0	18	180	200 µm	176
		LD ULD	90	2,2	4,5	9,9	600 µm	10
		Normal ULD	90	5,6	4,5	25,2	400 µm	25
		HD ULD	90	7,1	6	42,6	200 µm	42
Face	20x17	Low Dose	90	5,6	18	100,8	600 µm	81
		Normal Dose	90	8,0	27	216	400 µm	169
		HD	90	10,0	36	360	200 µm	281
		LD ULD	90	2,2	9	19,8	600 µm	16
		Normal ULD	90	5,6	9	50,4	400 µm	39
		HD ULD	90	7,1	12	85,2	200 µm	67

The doses were measured with recommended exposure values for medium (M) size patient if not otherwise stated. ProMax software version 3.5.0.r

Note. All dose measurements were made using the protocol described by Koivisto et al (1). The effective doses were obtained from measured organ doses using the revised guidelines given by the International Commission on Radiological Protection (ICRP 103) (2).

1. Koivisto J, Kiljunen T, Tapiovaara M, Wolff J, Kortesniemi M. Assessment of radiation exposure in dental cone-beam computerized tomography with the use of metal-oxide semiconductor field-effect transistor (MOSFET) dosimeters and Monte Carlo simulations. Oral Surg Oral Med Oral Pathol Oral Radiol. 2012 Sep; 114(3):393-400.
2. International commission on Radiological Protection (ICRP). Recommendations of the ICRP. ICRP Publication 103. Ann ICRP 2008; 37:2-4.
3. Koivisto J., Kiljunen T., Wolff J. and Kortesniemi M. Characterization of MOSFET dosimeter angular dependence in three rotational axes measured free-in-air and in soft-tissue equivalent material, Journal of Radiation Research, 2013, 00, 17 doi: 10.1093/jrr/rrt015