
APPLICATION NOTE

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Energy Correction Factors for the MX Detector

This application note describes the energy correction data for radiographic dose and dose rate measurements. The data are stored in the ADI module and used in oRTIgo to automatically compensate the readings of dose and rate according to kVp and total filtration.

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Introduction

APPLICATION NOTE

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When using PMX-III with oRTIgo all measured dose and rate values are automatically compensated for the energy dependence of the detector. For manual measurements a correction graph is provided in the PMX-III User's Manual (see Chapter 7).

This application note specifies the correction factors stored in the ADI module (2/B) for beam quality B. The kV range is 50 to 150 kV and total filtration from 2.2 mm Al to 6.8 mm Al. The reference point is 70 kV/3.0 mm Al.

Measurements

Assume that you are measuring in stand alone mode (i.e. without oRTIgo) on a radiographic unit. The total filtration is 5.0 mm Al, kVp is 100 kV and measured dose is 1.20 mGy. From the table below you get:

Correction factor $C_q = 1.09$

Measure dose is $1.20 * 1.09 = 1.31$ mGy

Correction Factor C_q

kVp	2.2 mm	2.5 mm	3.0 mm	3.5 mm	4.0 mm	4.5 mm	5.0 mm	5.5 mm	6.8 mm
50	1.03	1.01	0.99	0.97	0.95	0.95	0.94	0.94	0.94
55	1.02	1.01	0.99	0.98	0.95	0.96	0.95	0.95	0.95
60	1.02	1.01	0.99	0.98	0.96	0.97	0.96	0.96	0.96
65	1.02	1.02	1.00	0.99	0.97	0.97	0.97	0.97	0.98
70	1.02	1.02	1.00	0.99	0.98	0.98	0.99	0.99	1.00
75	1.02	1.02	1.01	1.00	0.99	1.00	1.00	1.01	1.02
80	1.02	1.03	1.02	1.01	1.00	1.01	1.02	1.02	1.04
85	1.03	1.04	1.02	1.02	1.02	1.03	1.03	1.04	1.06
90	1.04	1.04	1.03	1.03	1.03	1.04	1.05	1.07	1.08
95	1.04	1.05	1.04	1.05	1.05	1.06	1.07	1.09	1.11
100	1.05	1.06	1.06	1.06	1.07	1.08	1.09	1.11	1.13
105	1.06	1.07	1.07	1.07	1.09	1.10	1.11	1.13	1.16
110	1.07	1.08	1.08	1.09	1.11	1.12	1.13	1.16	1.19
115	1.08	1.09	1.10	1.10	1.13	1.14	1.15	1.18	1.21
120	1.09	1.10	1.11	1.12	1.14	1.15	1.17	1.20	1.24
125	1.10	1.11	1.13	1.14	1.16	1.17	1.20	1.22	1.26
130	1.11	1.13	1.14	1.15	1.18	1.19	1.22	1.24	1.29
135	1.13	1.14	1.16	1.17	1.19	1.21	1.24	1.26	1.32
140	1.14	1.16	1.18	1.19	1.20	1.23	1.26	1.28	1.34
145	1.15	1.17	1.20	1.21	1.21	1.25	1.28	1.30	1.36
150	1.16	1.19	1.21	1.22	1.22	1.27	1.30	1.32	1.39

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