THE DENTAL
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Dentsply Sirona

Schick Sensor Technique Factor Guidelines

Overview

Schick AE and Schick 33 sensors employ the smallest pixels in intraoral radiography to provide the highest resolution images. For the highest quality images, it is essential that correct positioning and X-ray technique factors are employed.

This document covers the application of technique factors with various X-ray generators as well as how to recognize errors in technique factors and how to correct them.

Understanding Technique Factors

X-ray technique factors are made up of three variables:

- Kilovolts (kV) – controls the penetration power of the X-ray.
- Milliamps (mA) – controls the volume of X-ray
- Time (usually noted in seconds or milliseconds) or pulses (seen on older models) – controls the duration that the X-ray is on

All models allow the adjustment of time (or pulses), while the ability to adjust kV and mA varies from model to model. We recommend that if a model has adjustable kV and mA, these values should be set once at installation and not adjusted again. All technique factor adjustments should be performed via time (or pulses) to minimize confusion.

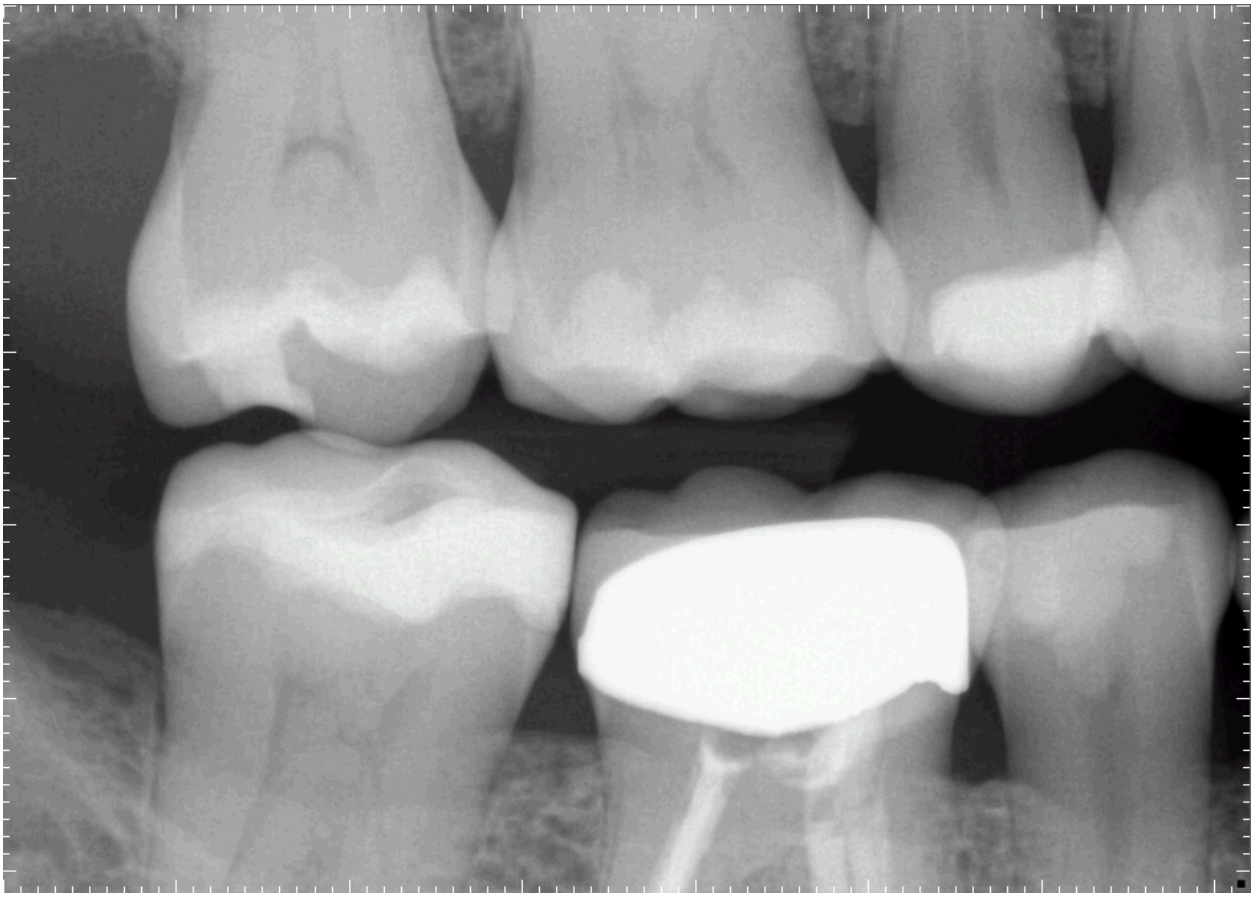
Technique factors are adjustable to take into account the tissue densities of various imaging areas. Tissue density can be affected by several variables:

- Patient size – a 250lb adult is almost certain to have denser tissue in the oral-maxillofacial region than a 70lb child.
- Patient age – tissue densities will vary between patient ages, with children and elderly patients likely to have lower densities than an adult.
- Patient Health – the effects of certain illnesses such as osteoporosis may reduce tissue density.
- Region within the oral cavity – the region around the mandibular anterior teeth has a lower tissue density than around maxillary molars.

The greater the tissue density, the higher the technique factors required to penetrate the tissue and provide satisfactory image quality.

Recognizing Proper Technique Factor Applications

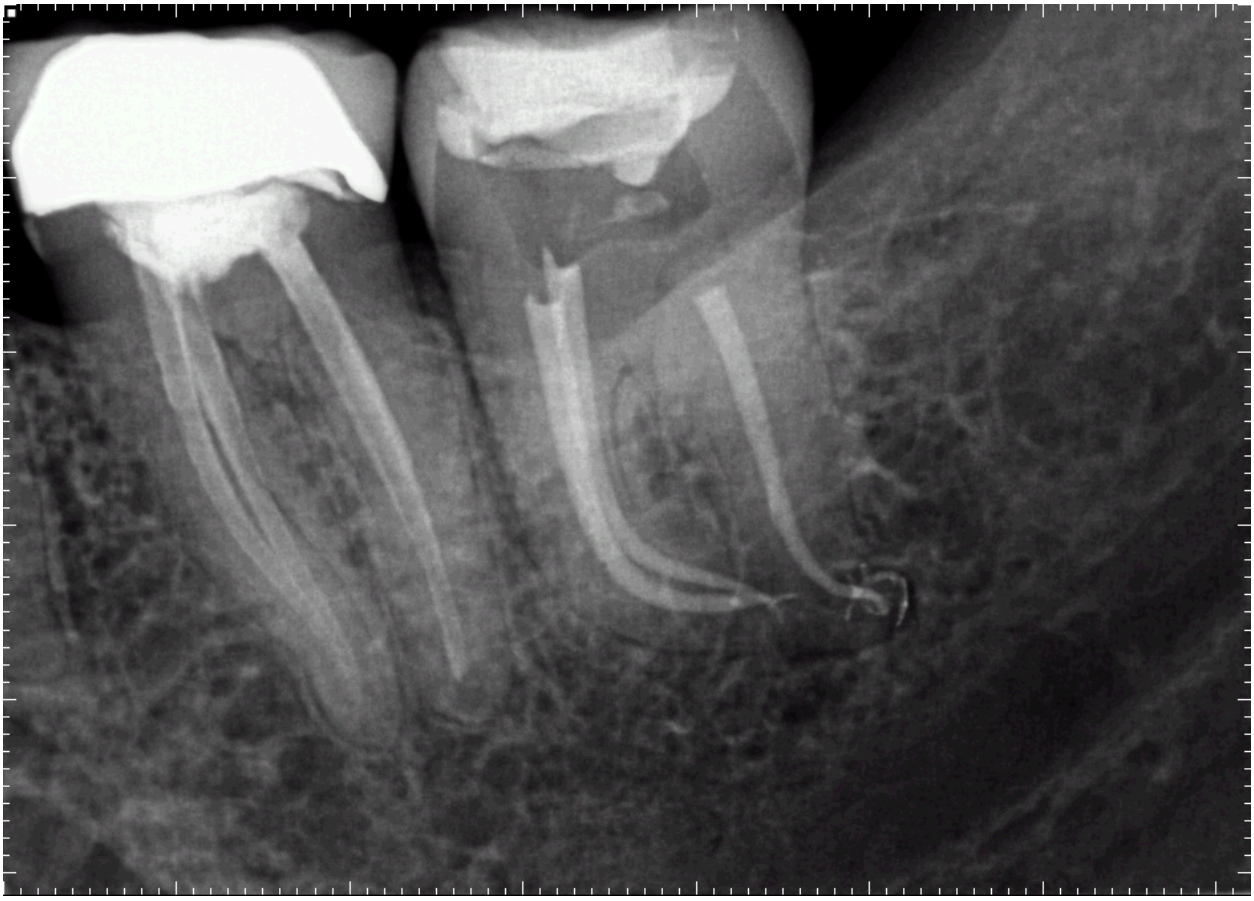
Under-exposed



The image above is slightly under-exposed. This can be recognized by the lack of contrast in the crowns of the teeth and the gray areas between them, in the interproximal regions and behind the molars, as well as the presence of the positioning tab in the interproximal. While under-exposed images can be darkened using software, contrast may still be lacking.

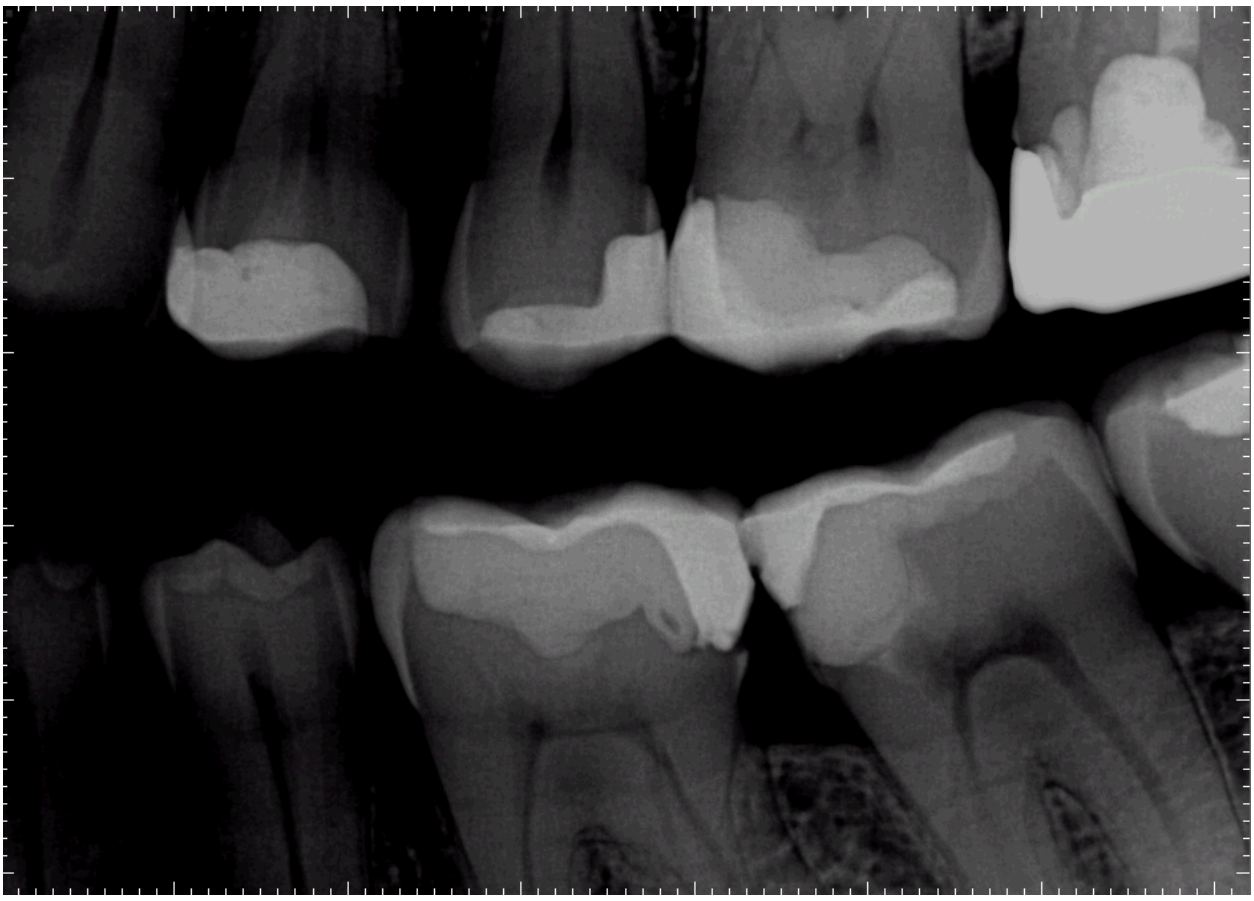
Note – this image is also unacceptable due to poor positioning recognized by the overlap of the contacts.

Correct Exposure



This image is correctly exposed – apices, DEJ and bone detail are all clearly visible.

Over-exposed



Over-exposure is recognized by an image being too dark – typified by the cervical burnout on the bicuspids in the above image. This can be corrected by software, but to keep with the ALARA (as low as reasonably achievable) principle, the technique factors (exposure time or pulses) should be reduced to provide acceptable imaging.

Other Considerations

The distance between the X-ray head and the sensor can also have an impact on image quality. The further the X-ray head is from the sensor, the lower the amount of radiation is that reaches the sensor. To prevent inconsistent imaging, place the cone of the X-ray generator as close to the patient's cheek as possible. Ideally, this means sliding the ring of the positioning device as close as possible and aligning the cone against the ring.

Technique Factors for Different X-ray Generators

Once kV and mA levels are set (where available), it is up to the individual clinician to ensure the correct time/pulse level is selected. Many manufacturers of X-ray heads provide pre-sets for their X-ray generators that allow the time/pulse level to be selected depending on patient size and area being imaged. It is important to appreciate that these settings may not suit that required by your Schick sensor and therefore manual levels should selected.

The tables below show recommended settings for several models of X-ray generators. The range of dosage settings represent the need to allow for patient variance. For larger patients, use the upper end of the range.

Schick AE Sensors

Manufacturer	Model	kV/mA	Adult		Child	
			Anterior	Posterior	Anterior	Posterior
Dentsply Sirona	Heliodent Plus	60/7	0.04-0.08	0.06-0.10	0.02-0.04	0.02-0.06
Dentsply Sirona	Heliodent Plus	70/7	0.02-0.05	0.04-0.06	0.02-0.03	0.02-0.04
Dentsply Sirona	Heliodent DS	60/7	0.05-0.08	0.08-0.12	0.03-0.04	0.02-0.06
Progeny	Preva	65*/7	0.050-0.064	0.064-0.080	0.025-0.042	0.042-0.064
Gendex	765DC/Expert DC	65/7	0.050-0.08	0.08-0.130	0.025-0.040	0.026-0.065
Gendex	770	70/7	4-5 pulses	5-7 pulses	3-4 pulses	4-5 pulses
Planmeca	Intra	66*/8*	0.05-0.08	0.08-0.120	0.025-0.050	0.025-0.064
Belmont	Belray	70/10	0.05 -0.08	0.08-0.10	0.03-0.05	0.03-0.05
Kavo/Aribex	Nomad (Handheld)	60/2.5	0.23-0.25	0.26-0.29	0.18-0.20	0.20-0.21

*Indicates that these settings are adjustable.

Schick 33 Sensors

Manufacturer	Model	kV/mA	Adult		Child	
			Anterior	Posterior	Anterior	Posterior
Dentsply Sirona	Heliodent Plus	70/7	0.06-0.10	0.10-0.16	0.04-0.06	0.04-0.08
Dentsply Sirona	Heliodent DS	60/7	0.08-0.12	0.12-0.20	0.04-0.06	0.04-0.10
Progeny	Preva	65*/7	0.080-0.120	0.125-0.200	0.040-0.064	0.064-0.10
Gendex	765DC/Expert DC	65/7	0.080-0.125	0.125-0.200	0.040-0.063	0.040-0.10
Gendex	770	70/7	6-7 pulses	7-10 pulses	4-5 pulses	5-7 pulses
Planmeca	Intra	66*/8*	0.080-0.120	0.120-0.200	0.040-0.080	0.040-0.10
Belmont	Belray	70/10	0.08 -0.12	0.12-0.16	0.04-0.08	0.04-0.08
Kavo/Aribex	Nomad (Handheld)	60/2.5	0.36-0.38	0.40-0.44	0.28-0.30	0.30-0.32

*Indicates that these settings are adjustable.

NOTE: The range of dose settings should not be interpreted as a guarantee of optimum performance as various factors can impact image quality at any given setting of technique factor.

If a particular X-ray generator is not listed, refer to the kV and mA settings on the X-ray generator in use and compare them with those listed in the above tables. If mA settings are higher (e.g. 10mA), reduce time by 1-2 steps.

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