Intraoral Sensor Image Quality

Topics:	1. Calibration Files 2. Positioning Tools 3. Positioning Technique 4. Exposure Settings and Image Info 5. Software Applications 6. Other Considerations
Product:	Owandy Opteo Sensor
Required Action:	Proper Pre-Install Procedure, Training, and Implantation of Technique

Description:

When the quality of the digital images is under question, the following steps must be followed.

1. **"Calibration Files"**
   Calibration files will smooth out the image and remove any small defects. After the drivers are installed, insert the SENSOR INSTALLATION FILES disc found in the package and run the disc. The disc will automatically run the command prompt and drop the files in the appropriate Program Data directory. Each sensor has its own unique files on its own disc. Run each sensor's disc on each workstation.

2. "**Positioning Tools**"
   Make sure to implement the positioner kit provided with the product.

3. "**Positioning Technique**"
   Traditional technique tells us to bring film closest to the teeth. To obtain best diagnostic quality with digital sensors, we recommend to bring the sensor to the midline of the oral cavity. To compensate, bring the tube to the aiming ring. Slide the aiming ring as close to the aiming pin as possible. If you avoid using the aiming ring altogether, simply bring tube to the patient's cheek and have them slightly lean in toward the cone.

4. "**Exposure Settings & Image Info**"
   Use the following guide taken from the manual page as a benchmark for generator settings. All generators will have different operating abilities, so the operator will initially have to find a happy medium of settings. Time will vary based on exam, for example, anterior PA will require less dose than a posterior PA.

4.5 Exposure times

Recommended exposure times in seconds for the Owandy Radiology X-ray generators:

Description (Current/Voltage)	Owandy-RX (6mA / 60-65-70KV)	
Exposure Time tables	**Pediatric**	**Adult**
Lower incisor / canine	0.04 – 0.06	0.06 – 0.12
Lower premolar	0.05 – 0.07	0.07 – 0.13
Lower molar	0.06 – 0.10	0.08 – 0.17
Upper incisor / canine	0.04 – 0.06	0.06 – 0.12
Upper premolar	0.05 – 0.07	0.07 – 0.13
Upper molar	0.07 – 0.11	0.11 – 0.22

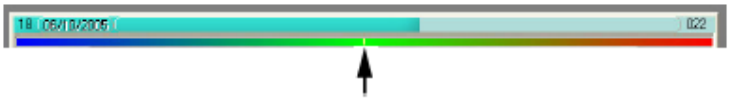
Once you acquire the image, there will be a % on the acquired image. If not visible, it can be enabled in the configuration for the sensor. The % should be no less than 80% (underexposed) and should be closer to but no more than 120% (overexposed image). There will also be a color spectrum at the top of the acquired image if taken in Owandy Quickvision. The marker should be in Green for a well exposed image, Blue for underexposed and Red for overexposed.

4.4.2 Imaging software functions

An exposure percentage is displayed in the acquired image:

- 0 to 80% - under-exposed image, the X-ray dose is too low; increase the X-ray dose on the generator.
- 80 to 120% - correctly exposed image
- 120 to 200% - over-exposed image, the X-ray dose is too high; reduce the X-ray dose on the generator.

When the image is displayed in the imaging software, a coloured bar appears in the top part of the image, this is the exposure bar. This function is available only to users of the imaging software.



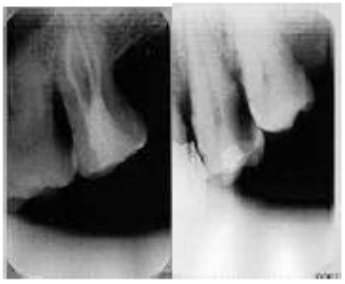
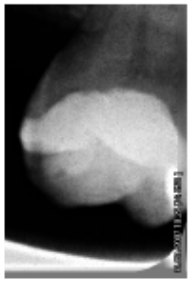
The white cursor displayed in this bar indicates the exposure level of the image:

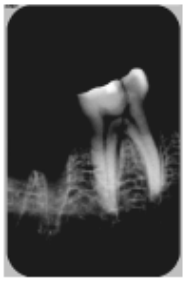
- If the cursor is in the green, the image is correctly exposed.
- If the cursor is in the red, the image is over-exposed; reduce the exposure time on the generator.
- If the cursor is in the blue, the image is under-exposed; increase the exposure time on the generator.

5. "**Software Applications**"
   Owandy Quickvision imaging software has automatic filtering for the sensor image. (If your images are high in contrast and dark, even when underexposed, search article DARK HIGH CONTRAST SENSOR IMAGES.) If needed, you can adjust gamma, contrast, brightness and sharpness. First contact your service representative after confirmation of points #1 through #4 in order to determine the issue doesn't stem from these points. If you use a imaging software other than the once provided by Owandy, you will rely on the automatic filtering and processing of the third party software.

6. **"Other Considerations"**
   Image quality problems may stem from outside variables, such as computer monitor quality and the generator performance. If you use the sensor with multiple PCs or multiple generators, check to see if there is a discrepancy between them in order to understand if the problem stems from these variables

6.2 Image quality

Symptom	Cause / Solution
The images are cut off, e.g.: 	The sensor is badly positioned with regard to the X-ray beam. • Reposition the sensor, making sure it is well within the field of the X-ray beam. • Use the positioners provided with the sensor for optimal positioning.
The images are too light or contain noise, e.g.:  *Film alike mode*  *Auto contrast mode*	• The image is under-exposed, the X-ray dose is too low; increase the X-ray dose on the generator. The percentage that is displayed in the image indicate the exposure level: o 0 to 80% - under-exposed image o 80 to 120% - correctly exposed image o 120 to 200% - over-exposed image • Check the dose emitted by the X-ray generator, due to age the dose can be insufficient. Have the generator checked by a technician when in doubt. • The generator is positioned too far from the patient with regard to the selected dose. • Check the parameters of your monitor (contrast and brightness) and avoid reflections on the screen.

The images are too dark, e.g.: 	• The image is over-exposed, the X-ray dose is too high; reduce the X-ray dose on the generator. The percentage that is displayed in the image indicate the exposure level: o 0 to 80% - under-exposed image o 80 to 120% - correctly exposed image o 120 to 200% - over-exposed image • Check the parameters of your monitor (contrast and brightness) and avoid reflections on the screen.
Grey levels seem to be missing in the image (flat areas of grey appear).	• Check the quality and parameters of the monitor. • Check the connection of the cable of the screen at the side of the graphics card and the monitor. • Check the screen configuration under Windows (screen configuration panel, it must display colours in at least 24bits.
The image is blurred.	Re-acquire the image: • The patient has moved during the exposure. • The generator head was not stabilised and has moved.