

Hitachi MercuRay Scanning Protocol



Scanning Protocol for the Hitachi MercuRay Scanners –

For Use with iDent

General

This protocol is written specifically for users of Hitachi MercuRay cone beam CT scanners.

- Patient Scan – with the template firmly fixed in the patient’s mouth, as instructed by the dentist.
- Dual Jaw Scans (where necessary): mandible and maxilla must be scanned separately.
- Radiographic Template Scan – template alone in the Styrofoam holder provided by iDent.
- Remove metallic objects such as jewelry and metal prostheses.

iDent Scan Parameters

Use the following settings:

- P mode (15 mA, 120 kVp)
- Scan height: 6 cm (medium)
- Voxel: 0.28
- Scan time: 9.5 seconds (fixed)

Patient Preparation, Positioning and Scanning

- a) **Template Positioning:** Ensure that the template is fixed and stable in the patient's mouth. The technologist should not perform the scan if the template does not fit easily and soundly in the patient's jaw – contact the dentist.

- b) **Patient Positioning:** The patient and the template should be motionless during the scanning procedure. In order to ensure this, the patient's head should be firmly attached to the Head Holder. If the lower jaw (mandible) is to be scanned, instruct the patient to bite an object such as a gauze pad.

The patient's head should be tilted so as to minimize the interference of the jaw and teeth images with artifacts stemming from metal fillings. A first positioning (before the Pilot scan) should be with the occlusal plane parallel to the scanner light marker. If the pilot scan reveals that the angulation is wrong, then further head tilting should be carried out. Each time that the patient's head is re-positioned, attachment to the head holder should be checked.

Any metal object such as jewelry should be removed from the scanned region.

- c) **Patient Scanning:** The region to be scanned should include all the relevant jaw volume, the template and the teeth. The horizontal marker line should be in center of the region of interest, in order not to miss relevant volume due to accidental patient motion.

Prior to the scan, the patient should be instructed not to swallow. The CT Technologist may wish to instruct the patient to swallow several times before starting the CT scan.

The Template Positioning and Scanning

- a) **Positioning:** The template should be placed in the Styrofoam (Polystyrene) box supplied by iDent (or use a Styrofoam block from any crafts store), in the same orientation as scanned in the patient's mouth. The template should be positioned similarly to the patient's head position during the patient scan, including the distance to the center of the FOV, the angle and the orientation.

- b) **Template Stability:** Ensure the stability of the template, using either the wide or the narrow slot in the Styrofoam box.



Never place the template in a vertical position.

Data Export

Export as DICOM files

Data Saving

- a) Data for each jaw to be saved in **separate data sets (see below)**. The data for each diagnostic template should correspond to the data of the jaw.

Maxilla



Patient scan data



Template scan data

Mandible



Patient scan data



Template scan data

- b) Output: copy each corresponding Patient and Template scan files to a single 'Patient Name' folder (one for maxilla and one for mandible), zip and send using the internet.