

Manufacturer's Recommendations for Alternate Dental CBCT QA Program

Instrumentarium: Model OP 300 (Palodex Group)

Table 6

Medical Physicist's Computed Tomography QC Survey

Item	Required Test or Procedure	Substitute Test or Procedure	Standard
1	Scan Increment Accuracy	None – Not Applicable	None – Not Applicable
2	Scan Localization Light Accuracy	User Manual Section 8.4, 3D Calibration (Appendix A)	Repeat the 3D calibration until calibration result “passed” is achieved.
3	Patient Dose (Multiple Scan Average Dose) MSAD or Computed Tomography Dose Index-CTDI	User manual section 3.7: Exposure settings for 3D imaging; (Appendix D) Appendix for OP300 user manual: 3D Dose Data (Appendix E)	Medical Physicist should reference tables in Appendices D and E for average DAP values.
4	Pre-Patient Collimation Accuracy	Installation Manual Section 7.5.3: 3D collimator calibration, and section 7.5.4, 3D Beam Size Verification (Appendix F)	Make adjustments and take new exposures until calibration result “passed” is achieved.
5	Contrast Scale	User manual section 8.4.3: 3D Calibration and 3D Constancy Check Procedure; There must be a difference in grey values in different materials to ensure adequate contrast scale. (Appendix C)	Minimum PMMA ROI value -120 Minimum PTFE ROI value 500 Maximum AIR ROI value -500 If 3D QC test result is “Passed” then measurements are within manufactures specified limits.
6	CT Number for Water	User manual section 8.4.3: 3D Calibration and 3D Constancy Check Procedure; PMMA average value corresponds closely to water x-ray absorption. (Appendix C)	Reference value for Minimum PMMA ROI - 120 If 3D QC test result is “Passed” then measurements are within manufactures specified limits.
7	Slice Thickness	None- Not Applicable	None- Not Applicable
8	Field Uniformity	User manual section 8.4.3: 3D Calibration and 3D Constancy Check Procedure; (Appendix C)	Field uniformity measurement calculates max difference in grey values between center and border regions of the PMMA material in the phantom. Uniformity maximum value: 200 If 3D QC test result is “Passed” then measurements are within manufactures specified limits.
9	Low Contrast Resolution	User manual section 8.4.3: 3D Calibration and 3D Constancy Check Procedure; There must be a difference in grey values in different materials to ensure adequate low contrast resolution. (Appendix C)	Minimum PMMA ROI value -120 Minimum PTFE ROI value 500 Maximum AIR ROI value -500 If 3D QC test result is “Passed” then measurements are within manufactures specified limits.
10	High Contrast Resolution	3D Constancy Check Procedure Section 3: High contrast spatial resolution (Appendix C)	Constancy test phantom Visually identifiable spatial resolution must be at >1LP/mm.

11	Noise	User manual section 8.4.3: 3D Quality Check program; quality check automatically performs noise check (Appendix C)	Maximum PMMA Std. Dev. 120 Maximum PTFE Std. Dev. 150 Maximum AIR Std. Dev. 100 If 3D QC test result is "Passed" then measurements are within manufactures specified limits.
12	Scan Protocol Review	Same as NJAC 22.10(a)	Same as NJAC 22.10(a)
13	Review of Facility and Technologists QC Tests	Same as NJAC 22.10(a)	Same as NJAC 22.10(a)
14	Physicist Report and Recommendations	Same as NJAC 22.10(a)	Same as NJAC 22.10(a)

Where no performance standard is identified or expressed by the manufacture, the medical physicist shall establish the standard for the facility's CBCT unit with justification.