Manufacturer's Recommendations for Alternate Dental CBCT QA Program

VaTech: Model PAX i3D, i3D Green, and i3D Smart

Table 6 Medical Physicist's Computed Tomography QC Survey

Item	Required Test or Procedure	Frequency	Substitute Test or Procedure	Standard
1	Scan Increment Accuracy	Initially and Annually	None – Not Applicable	None – Not Applicable
2	Scan Localization Light Accuracy	Initially and Annually	Vatech Imaging and Performance Calibration & Inspection Phantom Kit Manual Geometry Check Phantom Appendix C Page 24	Eccentricity Lower Specification Limit=0.97 Upper Specification Limit =1.00 Circle Area Ratio Lower Specification Limit=0.80 Upper Specification Limit=1.20
3	Patient Dose (Multiple Scan Average Dose MSAD or Computed Tomography Dose Index-CTDI)	Initially and Annually	Constancy Test Report Appendix B	The accuracy of DAP is +- 20% when compared with the values that could be measured. PHT-30LFO PaX-i3D Smart FOV: 100x85 – 90kVp/8mA [mGy*cm2] 543.90 PHT-6500 PaX-i3D FOV: 120x90- 90kVp/8mA Scan Time: 15s [mGy*cm2] 970.3 Scan Time: 24s pmGy*cm2] 1552.5 PHT-60CFO PaX-i3D Green 16x10 High Resolution: 9.0s Green Mode: 5.9s FOV: 160x100 – 90kVp/8mA [mGy*cm2] 864.7 (Green Mode) [mGy*cm2] 1320.3 (High Res.) FOV: 120x90 – 90kVp/*mA [mGy*cm2] 663.2 (Green Mode) [mGy*cm2] 1012.6 (High Res.) FOV: 80x80- 90kVp/8mA [mGy*cm2] 354.6 (Green Mode) [mGy*cm2] 592.0 (High Res.) FOV: 80x50- 90kVp/8mA [mGy*cm2] 242.3 (Green Mode) [mGy*cm2] 370.0 (High Res.)

				FOV: 50x50- 90kVp/8mA [mGy*cm2] 150.5 (Green Mode) [mGy*cm2] 229.8 (High Res.) PaX-i3D Green 15x15 High Resolution: 15.0s Green Mode: 9.0s FOV: 150x150- 90kVp/8mA [mGy*cm2] 1083.4(Green Mode) [mGy*cm2] 2257.0 (High Resolution) FOV: 120x90-90kVp/8mA [mGy*cm2] 642.8 (Green Mode) [mGy*cm2] 1339.3 (High Res.) FOV: 80x80-90kVp/8mA [mGy*cm2] 404.6 (Green Mode) [mGy*cm2] 843.0 (High Res.) FOV: 50x50-90kVp/8mA [mGy*cm2] 179.5 (Green Mode) [mGy*cm2] 373.9 (High res.) PaX-i3D Green 10x8 High Resolution: 9.0s Green Mode: 5.9s FOV: 100x80- 90kVp/8mA [mGy*cm2] 420.9 (Green Mode) [mGy*cm2] 642.6 (High Res.) FOV: 80x80-90kVp/8mA [mGy*cm2] 242.3 (Green Mode) [mGy*cm2] 541.4 (High Res.) FOV: 80x50-90kVp/8mA [mGy*cm2] 242.3 (Green mode) [mGy*cm2] 370.0 (High Res.) FOV: 50x50-90kVp/8mA [mGy*cm2] 150.5 (Green Mode) [mGy*cm2] 229.8 (High Res.)
4	Pre-Patient Collimation Accuracy	Initially and Annually	PHT-30LFO (PaX-i3D Smart) Technical Manual CBCT Alignment Guide Appendix F Pages 69-72	PHT-30LFO - Collimator alignment permissible range (FOV: 100 x 85) Left and Right Min. (pixel) 1 Max. (pixel) 3

			PHT-6500 (PaX-i3D) Technical Manual CBCT Collimator Alignment Guide Appendix D Pages 5-13 PHT-60CFO (PaX-i3D Green) CBCT Collimator Alignment Guide Appendix G Pages 4-6	PHT-6500 - Collimator alignment permissible range (FOV: 120 x 90, 80 x 80, 80 x 50, 50 x 50) Left, Right, Bottom, Top Min. (pixel) 1 Max. (pixel) 10 PHT-60CFO – Collimator alignment permissible range (FOV: 100 x 80, 80 x 80, 80 x 50, 50 x 50) Left, Right Min. (pixel) 1 Max. (pixel) 10 Bottom, Top Min. (pixel) 1 Max. (pixel) 12
5	Contrast Scale	Initially and Annually	Vatech Imaging and Performance Calibration & Inspection Phantom Kit Manual CT Number Check Phantom Appendix C Pages 16-17	CT Number Check Phantom • PaX-i3D Smart – A0001319 (End User phantom kit part number) • PaX-i3D – A0300203 (End User phantom kit part number) • PaX-i3D Green – A0300204 (End User phantom kit part number) <u>Material</u> <u>Range (HU)</u> Air (-1200 to – 800) Water (-200 to 200) Teflon (800 to 1200)
6	CT Number for Water	Initially and Annually	Vatech Imaging and Performance Calibration & Inspection Phantom Kit Manual CT Number Check Phantom Appendix C Pages 16-17	CT Number Check Phantom • PaX-i3D Smart – A0001319 (End User phantom kit part number) • PaX-i3D – A0300203 (End User phantom kit part number) • PaX-i3D Green – A0300204 (End User phantom kit part number) <u>Material</u> <u>Range (HU)</u> Air (-1200 to – 800) Water (-200 to 200) Teflon (800 to 1200)
7	Slice Thickness	None	Constancy Test Report Appendix B	PaX-i3D Smart FOV (100 x 85) Standard: .200 Application: .300 PaX-i3D FOVs (50 x 50) Standard: .120 Application: .200 FOVs (80 x 50, 80 x 80, 120 x 90)

				Standard: .200 Application: .300 PaX-i3D Green FOVs (50 x 50) Standard: .08 Application: .12 FOVs (80 x 50, 80 x 80, 100 x 80) Standard: .12 Application: .20 FOVs (120 x 90, 150 x 150, 160 x 100) Standard: .200 Application: .300
8	Field Uniformity	Initially and Annually	QA Phantom Kit User Manual Appendix A Pages 16- 21	Subtract the minimum average value from the maximum average value among the 5 ROI's. The difference should be less than 400HU.
9	Low Contrast Resolution	Initial & Annually	Vatech Imaging and Performance Calibration & Inspection Phantom Kit Manual S&C Check Phantom Appendix C Pages 20-21	PE cylinder: Minimum visible size 8.0mm
10	High Contrast Resolution	Initial & Annually	Vatech Imaging and Performance Calibration & Inspection Phantom Kit Manual S&C Check Phantom Appendix C Pages 20-21	Air Hole: Minimum visible1size 1.0mm
11	Noise	Initial & Annually	Vatech Imaging and Performance Calibration & Inspection Phantom Kit Manual Uniformity Phantom Check Appendix C Pages 19-20	Lower Specification Limit 0 Upper Specification Limit 150
12	Scan Protocol Review	Initially and Annually	Same as NJAC 22.10(a)	Same as NJAC 22.10(a)
13	Review of Facility and Technologists QC Tests	Initial & Annually	Same as NJAC 22.10(a)	Same as NJAC 22.10(a)
14	Physicist Report and Recommendations	Initial & Annually	Same as NJAC 22.10(a)	Same as NJAC 22.10(a)