

**Manufacturer's Recommendations for Alternate Dental CBCT QA Program**  
**Villa Radiology Systems: Rotograph EVO 3D**  
**Table 6 Medical Physicist's Computed Tomography QC Survey**

<b>Item</b>	<b>Required Test or Procedure</b>	<b>Frequency</b>	<b>Substitute Test or Procedure</b>	<b>Standard</b>
1	Scan Increment Accuracy	Initial & Annually	None Applicable	Not Applicable
2	Scan Localization Light Accuracy	Initial & Annually	Owandy Service Manual Section 6.8.3: Verification of laser reference lines Pages 66 (Appendix D)	The mid sagittal laser line is within $\pm 1$ mm of the central line of the tool. The Frankfurt laser line is parallel to the corresponding reference on the tool.
3	Patient Dose (Multiple Scan Average Dose) MSAD or Computed Tomography Dose Index-CTDI	Initial & Annually	Villa User Manual Section 6.10: CTDI information Pages 43-46 (Appendix B)	Maximum deviation is $\pm 25\%$ from the nominal values given in the tables in Section 6.10
4	Pre-Patient Collimation Accuracy	Initial & Annually	Villa Service Manual Section 9.2.2: 3D Image adjustment Pages 9-10 to 9-11 (Appendix C)	The lateral Offset parameter has to be set within the range of $\pm 2$ maximum
5	Contrast Scale	Initial & Annually	Villa User Manual Section 6.12.3: Noise and Contrast Scale Page 53 Section 6.12.8: QC Log Book (L & H contrast resolution) Page 56 (Appendix B)	High Contrast MTF 10 % > 1  Low Contrast >250
6	CT Number For Water	Initial & Annually	Villa User Manual Sections 6.11.5 Page 49 Section 6.12.7: CT number of water (PMMA) Page 55 Section 6.12.8: QC Log Book (CT Number for Water) Page 56 (Appendix B)	0 $\pm$ 100 Hounsfield Units (HU)
7	Slice Thickness	Initial & Annually	Villa User Manual Section 6.11.3: Slice Thickness Page 49  Section 6.12.6: Nominal Tomographic section thickness Page 54 Section 6.12.8: QC Log Book (Slice thickness) Page 56 (Appendix B)	The typical slice thickness is: 0.166mm. Maximum Accepted Deviation is: $\pm 10\%$  Measure 15.0mm to 18.2mm
8	Field Uniformity	Initial & Annually	Villa User Manual Section 6.12.4: Uniformity check (Homogeneity) Page 53 Section 6.12.8: QC Log Book (Image Uniformity) Pages 56 (Appendix B)	Homogeneity > 5

9	Low Contrast Resolution	Initial & Annually	Villa User Manual Section 6.12.3: Noise and Contrast Scale Pages 53 Section 6.12.8: QC Log Book (L Contrast resolution) Pages 56 (Appendix B)	Contrast >250
10	High Contrast Resolution	Initial & Annually	Villa User Manual Section 6.11.2: Modulation Transfer Function (MTF) Page 48 Section 6.12.5: Spatial resolution Page 53 Section 6.12.8: QC Log Book (H Contrast resolution) Pages 56 (Appendix B)	Maximum accepted deviation is: MTF 10% > 1
11	Noise	Initial & Annually	Villa User Manual Section 6.11.1: Noise Page 48 Section 6.12.3: Noise and Contrast Page 53 Section 6.12.8: QC Log Book Scale. (Image noise) Page 56 (Appendix B)	The typical noise (expressed as Contrast Noise Ratio) is: 5 Max accepted deviation is CNR >2.5
12	Scan Protocol Review	Initial & 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)