PERFORMANCE TEST REPORT FOR DENTAL X-RAY EQUIPMENT

(Periodic Quality Assurance shall be carried out at least once in two years and also after any repairs having radiation safety implications)

A. DETAILS OF THE DIAGNOSTIC X-RAY EQUIPMENT

1	Name of the Institution and City	
2	Type of Equipment	
3	Model Name	
4	Name of the Manufacturer	
5	Name(s) of Person(s) testing the equipment and Name of Supplier/Service Agency	
6	Dates and Duration of the Tests	

B. SUMMARY OF RADIATION SAFETY PERFORMANCE TEST REPORT:

Sr. No.	Parameters Tested	Measured Values/Observation	Tolerance	Remark
3.1	Operating Potential		± 5 kV	
3.2	Accuracy of Irradiation time (second)		% Error ≤ 10%	
3.3	Minimum Total Filtration		Min. 1.5 mm Al for kVp<70 Min. 2.0 mm Al for70<kVp<100 Min. 2.5 mm Al for kVp>100	
3.4	Timer linearity (Coefficient of Linearity)		< 0.1	
3.5	mA/mAs Linearity		CoL <0.1	
3.6	Consistency of Radiation Output (Coefficient of Variation)		<0.05	
3.7	Radiation leakage level from X-ray tube housing at 1m from the focus (measured at max kVp) (mGy in one hour)		Tube Leakage < 0.25 mGy in one hour (For Dental Intraoral) Tube Leakage < 1 mGy in one hour (For Dental Extra-oral)	

C. Additional performance test to be carried out for Dental CBCT

Sr. no.	**Parameters**	**Observation** (Write "Yes/No/ or give values of the measurement", as the case may be)	**Tolerance Limit**	**Remark**

4.1	Low Contrast Sensitivity		As per technical specification	
4.2	High Contrast Sensitivity		As per technical specification	
4.3	CT dose index ($CTDI_W$) (*If manufacture specify $CTDI_W$ value then perform this test)		±20% of quoted value	

I hereby undertake that all the information provided above is correct and in accordance with the detailed Quality Assurance Report enclosed herewith.

Place:
Date:

Signature:
Name of the Service Engineer:
Name of Supplier/Service Agency:
Seal of Supplier/Service Agency:

#Signature of Institution's Representative:
Name of Institution:
Seal of the Institution:

 # Quality Assurance Tests Report shall be signed by Institution's Representative and duly stamped by the User's Institution

1. ACCURACY OF OPERATING POTENTIAL/ACCURACY OF TIMER

*FDD(cm)	

Applied kVp	Set time (s)	Measured values						
		mA stations						
		mA station -1		mA station -2		Ave KVp	Ave Time (s)	Remarks
		kVp	Time (s)	kVp	Time (s)			
Max. kVp								
Tolerance for kVp : ± 5 kV								
Tolerance for irradiation time : ± 10 %								
Measured MinimumTotal Filtration : ……..mm of Al at maximum kVp								
Tolerance : 1.5 mm Al for kV ≤ 70, 2.0 mm Al for kV ≤ 100, 2.5 mm Al for kV > 100								

**FDD stands for focal spot to detector distance*

2.LINEARITY OF mA LOADING STATION

Operating parameters

FDD(cm)	100	kV		Time	

mA Range	Output (µGy)	Average (µGy)	µGy /mAs (X)	Coefficient of Linearity (CoL)	Remarks

	Reading 1	Reading 2				
Tolerance: CoL < 0.1						

3. REPRODUCIBILITY OF RADIATION OUTPUT

FDD(cm)	

Applied kV	mAs	Output (µGy)			Average (X)	Coefficient of Variation (CoV)	Remarks
		1	2	3			
Tolerance : COV < 0.05							

4. LOW CONTRAST SENSITIVITY:

Diameter of the smallest size hole clearly seen on the monitor	
Recommended performance standard	3 mm hole of measuring test tool must be resolved

5. HIGH CONTRAST SENSITIVITY

Bar strips resolved on the monitor (lp/mm)	
Recommended performance standard	1.5 lp/mm of measuring test tool must be resolved

6. TUBE HOUSING LEAKAGE

Operating parameters:

Distance from the focus (cm)	100	kVp	(Max)	mA		Time(s)	

Location (at 1.0 m from the focus)	Exposure level (mGy/hr or mR/hr)					Result
	Left	Right	Front	Back	Top	
Tube						… mGy in 1 hr
Collimator						… mGy in 1 hr
Tolerance: Maximum leakage radiation level at 1 meter from the focus shall be ≤ 1 mGy in one hour.						

Work load = 180 mAmin in one hour (for dental OPG and dental CBCT equipment)

20 mAmin in one hour for dental Intra oral equipment

Max leakage = ---mAmin in 1 hr X ----Max leakage (mGy/hr or mR/hr)
60 X -----mA used for measurement

Maximum radiation leakage from tube = ---------- mGy in one hour

7 Details of <u>Radiation Protection Survey of the installation</u>

Date of radiation protection survey:
Whether radiation survey meter used for the survey has valid calibration certificate: Yes/No

Equipment Setting:-
Applied Current (mA):
Applied Voltage (kV):
Exposure time(s):
Workload:
Provide the measured maximum radiation levels (mR/hr) at different locations

Location	Max. Radiation level (mR/hr)
Control console(Operator Position)	
Outside patient entrance door	
Behind Windows (if applicable)	
Patient Waiting Area	

$$\text{Maximum Radiation level/week (mR/wk)} = \frac{\text{----- mAmin/week X ----Max. radiation level (mR/hr)}}{\text{60 X -----mA used for measurement}}$$

<u>Permissible limit</u>

For location of Radiation Worker: 20 mSv in a year (40 mR/week)
For Location of Member of Public: 1 mSv in a year (2mR/week)