EXAMPLE FORM
EQUIPMENT PERFORMANCE EVALUATION (EPE)
RADIOGRAPHIC UNIT

NOTE: Equipment performance evaluations shall be performed by or under the supervision of a licensed medical physicist: 25 TAC §289.227(o)(1)

Facility Name: _____ Registration No.:_____ Date: _____

Survey Instrument Used: _____ Calibration/ Intercomparison Date:_____

X-RAY UNIT IDENTIFICATION (CONTROL PANEL)

Manufacturer: _____ Location/Room: _____

Model No.: _____ Serial No.: _____

TIMER ACCURACY

Regulation: 25 TAC '289.227(o)(5)(A): The accuracy of the timer shall meet the manufacturer=s specifications. If the manufacturer specifications are not obtainable, the timer accuracy shall be ±10 percent of the indicated time with the testing performed at 0.5 second. (The numerical values shall be documented in milliseconds or pulses.) **Select method used for testing.**

Select One: ☐ Manufacturer specifications which are _____ OR ☐ ± 10% tolerance

Time used for testing: _____ msec OR _____pulses (No time greater than 0.5 second (500 msec) to be used)

Perform four measurements at the above time setting: **(Circle appropriate unit**)
_____ msec/pulses
_____ msec/pulses
_____ msec/pulses
_____ msec/pulses

Pass ( ) Fail ( )

EXPOSURE REPRODUCIBILITY

Regulation: 25 TAC '289.227(o)(5)(B): Exposure reproducibility shall meet the requirements of 25 TAC §289.227(l)(4). When all technique factors are held constant, the coefficient of variation of exposures for both manual and AEC systems shall not exceed 0.05. This requirement applies to clinically used techniques.

Technique factors selected: _____ kVp _____ mA _____ time

Perform four measurements:

1. _____ mR 3. _____mR

2. _____ mR 4. _____ mR

$$C = \frac{s}{\overline{X}} = \frac{1}{\overline{X}}\left[\sum_{i=1}^{n}\frac{(X_i - \overline{X})^2}{n-1}\right]^{1/2}$$

Coefficient of variation:
(Must not exceed .05) _____

Pass ( ) Fail ( )

LINEARITY

Regulation: 25 TAC §289.227(o)(5)(C): mA/mAs stations shall meet the requirements of 25 TAC §289.227(l)(5). The average ratios of exposure mR to the indicated mAs product obtained at any two consecutive mA or mAs settings shall not differ by more than 0.10 times their sum, where X_1 and X_2 are the average mR/mAs values obtained at each of two consecutive tube current settings.

X_1 X_2

$X_1 - X_2 \leq .1(X_1 + X_2)$

mA station selected: _____ mA mA station selected: _____mA
mAs determined: _____ mAs mAs determined: _____mAs
Output:_____ mR/mAs_____= X_1 Output:_____ mR/mAs_____= X_2

Pass ( ) Fail ( )

KVP

Regulations: 25 TAC '289.227(o)(5)(D)**:** If the registrant possesses documentation of the appropriate manufacturer's kVp specifications, the radiation machine shall meet those specifications. If the registrant does not possess documentation of the appropriate manufacturer's kVp specifications, the kVp shall be accurate to within ±10 percent of the indicated setting at no less than three points over the usual operating range of the machine. (For units with fewer than three fixed kVp settings, the units shall be checked at those settings.)

((Measured kVp - Indicated kVp) ÷ Indicated kVp) × 100 = % Deviation

Select method for testing:

☐ Manufacturer specifications which are _____ **OR**

☐ ± 10% of indicated setting

Indicated kVp_____ Measured kVp _____ Deviation _____%
Indicated kVp_____ Measured kVp _____ Deviation _____%
Indicated kVp_____ Measured kVp _____ Deviation _____%

Pass ( ) Fail ( )

ENTRANCE EXPOSURE (EE) LIMITS

Regulations: 25 TAC §289.227(o)(5)(G): EE limits shall meet the requirements in 25 TAC §289.227(j). The in-air exposure determined for the technique used by the registrant for the specified average human adult patient thickness for routine medical radiography shall not exceed the entrance exposure limits in the following Table. (Test all exam types performed in facility.)

Examination	Patient Thickness(cm)	Exposure Limit (mR)	kVp	mA(s)	Time	SID	Entrance Exposure	Circle one Pass/Fail
Chest-PA								
Non-Grid	23	20						P F
Grid	23	30						P F
Abdomen KUB	23	450						P F
Lumb-Sacral Spine–AP	23	550						P F
Thoracic Spine	23	325						P F
Cervical Spine	13	120						P F
Full Spine	23	300						P F
Skull-Lateral	15	150						P F
Foot-DP	8	50						P F

TUBE STABILITY

Regulation: 25 TAC §289.227(o)(5)(E): The tube shall remain physically stable during exposures. In cases where tubes are designed to move during exposure, the registrant shall assure proper and free movement of the unit.

Tube stable at all orientations with free movement where designed: Pass ( ) Fail ( )

COLLIMATION

Regulation: 25 TAC §289.227(o)(5)(F):

The following items shall meet the requirements of 25 TAC §289.227(l)(1):

(i). Numerical indicators of x-ray field size
(ii). Light field versus x-ray field congruence
(iii). Operable automatic and semi-automatic collimators
(iv). Center of x-ray field with center of image receptor

Select type of collimation: ☐ Automatic ☐ Semi-automatic ☐ Manual

Source to image distance (SID): _____ ☐in OR ☐cm

TEST ALL MODES THAT ARE FUNCTIONAL

Manual mode

Selected field size _____ X _____ ☐in OR ☐cm

Measured field size _____ X _____ ☐in OR ☐cm

Misalignment within 2% of the SID: Pass ( ) Fail ( )

Automatic/Semi-automatic mode

Selected field size: _____ X _____ ☐in OR ☐cm

Measured field size: _____ X _____ ☐in OR ☐cm

Misalignment within 3%/4% total of the SID: Pass ( ) Fail ( )

Light field vs. X-ray field

Light field/X-ray field misalignment: _____ X _____ ☐in. OR ☐cm

Light field/X-ray field misalignment within 2% of the SID: Pass ( ) Fail ( )

Center alignment

Center misalignment: _____ ☐in OR ☐cm

Center misalignment within 2% of the SID: Pass ( ) Fail ( )

Equipment Performance Evaluation Testing performed by:

Service Company: _____Registration No.:_____

Technician Signature:_____Date: _____

Licensed Medical Physicist's Signature: _____Date:_____

LMP License No.: _____LMP Registration No.:_____