

**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.: \_\_\_\_\_ EPE Date: \_\_\_\_\_

Survey Instrument Used: \_\_\_\_\_ Calibration Date: \_\_\_\_\_

Survey Instrument: ☐ Exposed sensor/detector OR ☐ Enclosed sensor/detector

**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  $\pm 10$  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 ☐  $\pm 10\%$  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. **(See pages 4 & 5 for formula and explanation.)**

Technique factors selected: \_\_\_\_\_ kVp \_\_\_\_\_ mA \_\_\_\_\_ time

Perform four measurements:

1. \_\_\_\_\_ mR      3. \_\_\_\_\_ mR  
2. \_\_\_\_\_ mR      4. \_\_\_\_\_ mR

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. (See pages 6 and 7 for explanation.)

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

$X_1$

$X_2$

mA station selected: \_\_\_\_\_ mA

mAs determined: \_\_\_\_\_ mAs

Output: \_\_\_\_\_ mR/mAs \_\_\_\_\_ =  $X_1$

mA station selected: \_\_\_\_\_ mA

mAs determined: \_\_\_\_\_ mAs

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  $\pm 10$  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.)

**Select method for testing:**

$$((\text{Measured kVp} - \text{Indicated kVp}) \div \text{Indicated kVp}) \times 100 = \% \text{ Deviation}$$

☐ Manufacturer specifications which are \_\_\_\_\_ **OR**

☐  $\pm 10\%$  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.) (See page 8 for formula and instructions.)

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.: \_\_\_\_\_