



## ACR Nuclear Medicine Technologist Quality Control List

### 1. Intrinsic or System Uniformity (each day of use).

- Tc-99m or Co-57
- Large rectangular FOV = 5,000K counts
- Large and small circular and small rectangular FOV = 3,000K counts
- 256 x 256 matrix

Images should be reviewed qualitatively and/or quantitatively. Consult manufacturer's quote for quantitative results. However, most manufacturers require 15-30 million counts for quantitative results.

### 2. Intrinsic or System resolution (weekly).

- Tc-99m or Co-57
- Large rectangular FOV = 5,000K counts
- Large and small circular and small rectangular FOV = 3,000K counts
- 512 x 512 matrix

Images should be reviewed qualitatively.

	Intrinsic bars	System (extrinsic) bars
Best	<u>≤ 2.0 mm</u> 2.1 – 2.9 mm 2.5 – 2.9 mm 3.0 – 3.4 mm	<u>≤ 2.5 mm</u> 2.6 – 2.9 mm 3.0 – 3.4 mm 3.5 – 3.9 mm
Worst	≥ 3.5 mm	≥ 4.0 mm

### 3. Center of Rotation (Monthly)

- Consult manufacturer's requirements

### 4. High count floods for uniformity correction for SPECT systems (frequency as recommended by qualified medical physicist).

- Consult manufacturer's requirements



5. Overall system performance for SPECT systems (quarterly).

- ACR approved Deluxe Jaszczak phantom
- 128 x 128 matrix
- 120 or 128 views over 360
- Radius of rotation should be as close as possible to 20cm
- 24 million total counts.

**Spatial Resolution**

	Rods visible
Best	9.5 high contrast 11.1 high contrast 11.1 low contrast 12.7 and larger
Worst	$\geq 15.9$

**Contrast**

	Spheres visible
Best	12.7 high contrast 15.9 high contrast 19.1 high contrast 12.7 low contrast
Worst	$\geq 31.8$

**Uniformity**

Images should be reviewed qualitatively.

## Jim Botti Recommendations

### 1. System (extrinsic) Uniformity four days a week.

- Co-57
- Large rectangular FOV = 5,000K counts
- Large and small circular and small rectangular FOV = 3,000K counts
- 256 x 256 matrix

Images should be reviewed qualitatively.

### 2. Intrinsic Uniformity one day a week.

- Tc-99m
- Large rectangular FOV = 15,000K counts
- Large and small circular and small rectangular FOV = 15,000K counts
- 256 x 256 matrix

Images should be reviewed qualitatively and quantitatively. Consult manufacturer's quote for quantitative results.

### 3. Intrinsic system resolution (bars) weekly

- Tc-99m
- Large rectangular FOV = 5,000K counts
- Large and small circular and small rectangular FOV = 3,000K counts
- 512 x 512 matrix

### 4. Center of Rotation (Monthly)

- Consult manufacturer's requirements.

### 5. High count floods for uniformity correction for SPECT systems.

- As needed. Watch intrinsic uniformity numbers closely.
- Consultant manufactures requirements

### 6. Overall system performance for SPECT systems (Jaszczak phantom) quarterly.

- Follow ACR guidelines.

## Manufacturer's Uniformity Quotes

### GE Infinia Quantitative Results:

<i>Manufacturer's Quote</i>		
Integral	UFOV	3.60%
Uniformity	CFOV	3.00%
Differential	UFOV	2.30%
Uniformity	CFOV	2.10%

### GE MG Quantitative Results:

<i>Manufacturer's Quote</i>		
Integral	UFOV	3.50%
Uniformity	CFOV	3.00%
Differential	UFOV	2.50%
Uniformity	CFOV	2.00%

### GE VG Quantitative Results:

<i>Manufacturer's Quote</i>		
Integral	UFOV	4.80%
Uniformity	CFOV	3.60%
Differential	UFOV	3.20%
Uniformity	CFOV	3.00%

### Toshiba 7200 and Ultra Quantitative Results:

<i>Manufacturer's Quote</i>		
Integral	UFOV	6.5%
Uniformity	CFOV	3.3%
Differential	UFOV	4.5%
Uniformity	CFOV	2.8%

### Toshiba T.Cam Quantitative Results:

<i>Manufacturer's Quote</i>		
Integral	UFOV	3.70%
Uniformity	CFOV	2.90%
Differential	UFOV	2.70%
Uniformity	CFOV	2.50%

**Philips Forte/Vertex/Genesys/CardioEpic Quantitative Results:***Manufacturer's Quote*

Integral	UFOV	2.50%
Uniformity	CFOV	2.50%

Differential	UFOV	2.00%
Uniformity	CFOV	1.50%

**Philips Skylight Quantitative Results:***Manufacturer's Quote*

Integral	UFOV	2.50%
Uniformity	CFOV	2.00%

Differential	UFOV	2.00%
Uniformity	CFOV	1.50%

**Philips Cardio MD Quantitative Results:***Manufacturer's Quote*

QC check results	2.5%
------------------	------

**Siemens C.Cam Quantitative Results:***Manufacturer's Quote*

QC check results	2.5%
------------------	------

**Siemens E.Cam Quantitative Results:***Manufacturer's Quote*

Integral	UFOV	3.70%
Uniformity	CFOV	2.90%

Differential	UFOV	2.70%
Uniformity	CFOV	2.50%