

DICOM Correction Proposal Form

Correction Number		CP-411
Log Summary: Refine Mammography Positioning Attributes		
Type of Modification	Name of Standard	
Correction	PS 3.3 2003	
Rationale for Correction		
Some of the definitions for DICOM DX Positioning Module do not fit with the current Mammography usage. This correction proposal refines definitions for these attributes in the Mammography Image module.		
Sections of documents affected		
PS3.3, C.8.11.5 PS3.3, C.8.11.7		
Correction Wording:		

Modify C.8.11.5

C.8.11.5 DX Positioning Module

Table C.8-68 contains IOD Attributes that describe the positioning used in acquiring Digital X-Ray Images.

**Table C.8-68
 DX POSITIONING MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
...			
Distance Source to Patient	(0018,1111)	3	<p>Distance in mm from source to the table, support or bucky side that is closest to the Imaging Subject, as measured along the central ray of the X-Ray beam.</p> <p>Note: 1. This definition is less useful in terms of estimating geometric magnification than a measurement to a defined point within the Imaging Subject, but accounts for what is realistically measurable in an automated fashion in a clinical setting.</p> <p>2. This measurement does not take into account any air gap between the Imaging Subject and the "front" of the table or bucky.</p> <p>3. If the detector is not mounted in a table or bucky, then the actual position relative to the patient is implementation or operator defined.</p> <p>4. This value is traditionally referred to as Source Object Distance (SOD).</p> <p>See C.8.11.7 Mammography Image Module for explanation if Positioner Type (0018,1508) is MAMMOGRAPHIC.</p>
Distance Source to Detector	(0018,1110)	3	<p>Distance in mm from source to detector center.</p> <p>Note: This value is traditionally referred to as Source Image Distance (SID).</p> <p>See C.8.11.7 Mammography Image Module for explanation if Positioner Type (0018,1508) is MAMMOGRAPHIC.</p>
...			

Detector Primary Angle	(0018,1530)	3	<p>Angle of the X-Ray beam in the row direction in degrees relative to the normal to the detector plane. Positive values indicate that the X-Ray beam is tilted toward higher numbered columns. Negative values indicate that the X-Ray beam is tilted toward lower numbered columns. See C.8.7.5 XA Positioner Module for further explanation.</p> <p>See C.8.11.7 Mammography Image Module for explanation if Positioner Type (0018,1508) is MAMMOGRAPHIC.</p>
Detector Secondary Angle	(0018,1531)	3	<p>Angle of the X-Ray beam in the column direction in degrees relative to the normal to the detector plane. Positive values indicate that the X-Ray beam is tilted toward lower numbered rows. Negative values indicate that the X-Ray beam is tilted toward higher numbered rows. See C.8.7.5 XA Positioner Module for further explanation.</p> <p>See C.8.11.7 Mammography Image Module for explanation if Positioner Type (0018,1508) is MAMMOGRAPHIC.</p>
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Modify C.8.11.7

C.8.11.7 Mammography Image Module

Table C.8-70 contains IOD Attributes that describe a Digital Mammography X-Ray Image including its acquisition and positioning.

**Table C.8-70
 MAMMOGRAPHY IMAGE MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
Positioner Type	(0018,1508)	1	Enumerated Values: MAMMOGRAPHIC NONE
<u>Distance Source to Detector</u>	<u>(0018,1110)</u>	3	<u>Distance in mm from source to detector center on the chest wall line</u> <u>Notes: 1. This value is traditionally referred to as Source Image Distance (SID).</u> <u>2. See C.8.11.7.1.1</u>
<u>Distance Source to Patient</u>	<u>(0018,1111)</u>	3	<u>Distance in mm from source to the bucky side that is closest to the Imaging Subject, as measured along the X-Ray beam vector.</u> <u>Notes: 1. This value is traditionally referred to as Source Object Distance (SOD).</u> <u>2. See notes for this attribute in C.8.11.5 DX Positioning Module</u> <u>3. See C.8.11.7.1.1 for description of X-Ray beam vector.</u>
Positioner Primary Angle	(0018,1510)	3	Position in degrees of the X-Ray beam vector in the coronal anatomical plane as if the patient were standing where movement of the X-Ray source from right to vertical is positive, and vertical is zero.
Positioner Secondary Angle	(0018,1511)	3	Position in degrees of the X-Ray beam vector in the sagittal anatomical plane as if the patient were standing where movement of the X-Ray source from anterior to posterior is positive, and vertical is zero.
...			

Add new subsection to C.8.11.7

C.8.11.7.1 Mammography Image Attribute Descriptions

C.8.11.7.1.1 Mammography X-Ray Beam and X-ray Beam Vector Definition

Figure C.8-8 shows the X-Ray beam for a digital mammography system. The X-Ray beam vector is defined from the Focal Spot to the center of the chest wall line of the Image Detection device.

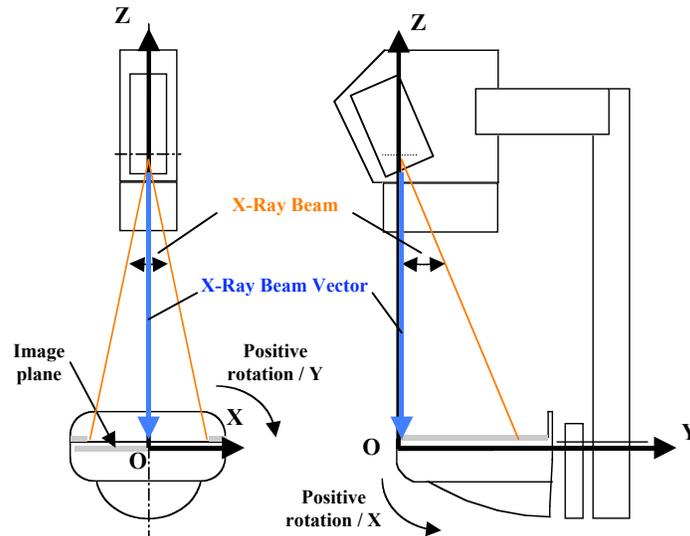


Figure C.8-8

C.8.11.7.1.2 Detector Primary and Secondary Angles

Detector Angles are defined in a fashion similar to the positioner angles, except that the angle of the x-ray beam vector is relative to the detector plane rather than the patient plane. Zero degrees is referenced to the normal of the detector plane pointing toward the x-ray source. The valid range of the Detector Angles is -90 to +90 degrees.

The Primary Axis of rotation is defined along the line in the column direction of the detector plane which intersects the x-ray beam vector. The Detector Primary Angle is defined in the plane perpendicular to the Primary Axis of rotation at the point where the x-ray beam vector intersects the detector plane, with zero degrees in the direction normal to the detector plane and +90 in the direction of the higher numbered columns of the detector in that plane. The valid range of Detector Primary Angle is -90 to +90 degrees.

The Secondary Axis is in the detector plane and is perpendicular to the Primary Axis at the intersection of the beam vector with the detector plane (i.e., it is along the row direction). The Detector Secondary Angle is defined in the plane perpendicular to the Secondary Axis at the point where the x-ray beam vector intersects the detector plane, with zero degrees in the direction normal to the detector plane. +90 degrees corresponds to the direction of the lower numbered rows of the detector in that plane. The Detector Secondary Angle range is -90 to +90 degrees.