

# DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2013/04/04
Person Assigned	Bas Revet
Submitter Name	Janet Keyes <Janet.Keyes@hologic.com>
Submission Date	2012/08/13

Correction Number	CP-1250
Log Summary: Stereotactic Information for Breast X-Ray	
Name of Standard PS 3.3-2011	
<p>Rationale for Correction:</p> <p>Provide identification for digital breast tomosynthesis reconstructed slices that are part of stereotactic procedures, and digital breast tomosynthesis projection images that are stored as Digital Mammography X-Ray Image.</p> <p>When digital breast tomosynthesis X-Ray imaging is used during stereotactic procedures (e.g. needle biopsy) and the resulting reconstructed slices are stored using the Breast Tomosynthesis Image SOP Class for display on review workstations, these images should be labeled accordingly for automated hanging protocol purposes.</p> <p>When conventional digital mammography X-Ray imaging is used during a stereotactic biopsy procedure, the stereo identifier is stored in Image Type (0008,0008) value 3 of Digital Mammography X-Ray Image (see PS 3.3, C.8.11.7.1.4). The same method should be defined for Breast Tomosynthesis Image.</p> <p>In addition, the values for Image Type value 3 in the Digital Mammography X-Ray Image IOD should be extended to accommodate identification of biopsy post marker (per radiologist request) and digital breast tomosynthesis projection images.</p>	
Correction Wording:	

*<Modify C.8.11.7 Mammography Image Module as follows>*

### **C.8.11.7 Mammography Image Module**

Table C.8-74 contains IOD Attributes that describe a Digital Mammography X-Ray Image including its acquisition and positioning.

**Table C.8-74  
MAMMOGRAPHY IMAGE MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
Image Type	(0008,0008)	1	Image identification characteristics. See C.8.11.7.1.4 for specialization.
Positioner Type	(0018,1508)	1	Enumerated Values: MAMMOGRAPHIC NONE
...			

## C.8.11.7.1 Mammography Image Attribute Descriptions

...

### C.8.11.7.1.4 Image Type

Value 1 and Value 2 shall identify the Pixel Data Characteristics in accordance with Section C.8.11.3.1.1.

Value 3 shall be present and have zero length (null value), except when used to identify a stereotactic mammography image **or digital breast tomosynthesis projection image**.

Note: In a previous version of PS 3.3, Value 3 was required to be zero length (null value). If Value 3 is zero length, the image may or may not be a stereotactic mammography image **or digital breast tomosynthesis projection image**, if the Instance was created before these terms were defined.

The Enumerated Values for Value 3 of stereotactic mammography images are:

Enumerated Value	Definition	ACR MQCM Equivalent
STEREO_SCOUT	A localizer image for a stereotactic acquisition.	...SC
STEREO_MINUS	The paired image obtained with the X-Ray source angle decreased from the scout position, to determine positioning coordinates prior to needle positioning.	...ST-
STEREO_PLUS	The paired image obtained with the X-Ray source angle increased from the scout position, to determine positioning coordinates prior to needle positioning.	...ST+
PREFIRE_MINUS	The paired image obtained with the X-Ray source angle decreased from the scout position, with the biopsy needle in position prior to needle deployment.	...PRF-
PREFIRE_PLUS	The paired image obtained with the X-Ray source angle increased from the scout position, with the biopsy needle in position prior to needle deployment.	...PRF+
POSTFIRE_MINUS	The paired image obtained with the X-Ray source angle decreased from the scout position, with the biopsy needle in position following needle deployment through the targeted lesion.	...POF-
POSTFIRE_PLUS	The paired image obtained with the X-Ray source angle increased from the scout position, with the biopsy needle in position following needle deployment through the targeted lesion.	...POF+
POSTBIOPSY_MINUS	The image obtained following tissue acquisition with the X-Ray source angle decreased from the scout position.	...POB-

POSTBIOPSY_PLUS	The image obtained following tissue acquisition with the X-Ray source angle increased from the scout position.	...POB+
POSTBIOPSY	The image obtained following tissue acquisition with the X-Ray source in the scout position.	...POB
<b><u>POSTMARKER_MINUS</u></b>	<b><u>The image obtained following micromarker placement with the X-Ray source angle decreased from the scout position.</u></b>	<b><u>...POM-</u></b>
<b><u>POSTMARKER_PLUS</u></b>	<b><u>The image obtained following micromarker placement with the X-Ray source angle increased from the scout position.</u></b>	<b><u>...POM+</u></b>
<b><u>POSTMARKER</u></b>	<b><u>The image obtained following micromarker placement with the X-Ray source in the scout position.</u></b>	<b><u>...POM</u></b>

**The Enumerated Values for Value 3 of digital breast tomosynthesis projection images are:**

Enumerated Value	Definition	ACR MQCM Equivalent
<b><u>TOMO_PROJ</u></b>	<b><u>Identifies the image as a digital breast tomosynthesis projection image.</u></b>	<b><u>n/a</u></b>
<b><u>TOMO_SCOUT</u></b>	<b><u>A localizer image that may be used to determine positioning coordinates prior to needle positioning.</u></b>	<b><u>...SC</u></b>
<b><u>PREFIRE</u></b>	<b><u>The image obtained with the biopsy needle in position prior to needle deployment.</u></b>	<b><u>...PRF</u></b>
<b><u>POSTFIRE</u></b>	<b><u>The image obtained with the biopsy needle in position following needle deployment through the targeted lesion.</u></b>	<b><u>...POF</u></b>
<b><u>POSTBIOPSY</u></b>	<b><u>The image obtained following tissue acquisition with the X-Ray source in the scout position.</u></b>	<b><u>...POB</u></b>
<b><u>POSTMARKER</u></b>	<b><u>The image obtained following micromarker placement with the X-Ray source in the scout position.</u></b>	<b><u>...POM</u></b>

**Note: Digital breast tomosynthesis projection images acquired as part of a biopsy procedure omit the MINUS and PLUS endings because a single digital breast tomosynthesis acquisition produces a set of projection images that replaces the MINUS and PLUS image pair used in conventional 2D breast biopsy imaging.**

*<Modify C.8.2.1.5.1 X-Ray 3D Frame Type Macro as follows>*

### C.8.21.5.1 X-Ray 3D Frame Type Macro

Table C.8.21.5.1-1 specifies the attributes of the X-Ray 3D Frame Type Functional Group macro.

**Table C.8.21.5.1-1  
X-RAY 3D FRAME TYPE MACRO ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
X-Ray 3D Frame Type Sequence	(0018,9504)	1	A sequence that describes general characteristics of this frame. Only a single Item shall be included in this sequence.
>Frame Type	(0008,9007)	1	Type of Frame. A multi-valued attribute analogous to the Image Type (0008,0008). Enumerated Values and Defined Terms are the same as those for the four values of the Image Type (0008,0008) attribute, except that the value MIXED is not allowed. See C.8.21.1.1.1. <b><u>For Breast Tomosynthesis Image see C.8.21.6.1.1.</u></b>
...			

<Modify C.8.21.6 Breast View Module as follows>

### C.8.21.6 Breast View Module

Table C.8.21.6-1 contains IOD Attributes that describe the view of a Breast Tomosynthesis Image.

**Table C.8.21.6-1  
BREAST VIEW MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
<b><u>Image Type</u></b>	<b><u>(0008,0008)</u></b>	<b><u>1</u></b>	<b><u>Image identification characteristics. See C.8.21.6.1.1 for specialization.</u></b>
View Code Sequence	(0054,0220)	1	Sequence that describes the view of the patient anatomy in this image. Only a single Item shall be included in this sequence.
>Include 'Code Sequence Macro' Table 8.8-1.			Defined CID 4014.
>View Modifier Code Sequence	(0054,0222)	2	Sequence that provides modifiers for the view of the patient anatomy. Zero or more Items shall be included in this sequence.
>>Include 'Code Sequence Macro' Table 8.8-1.			Defined CID 4015.

Breast Implant Present	(0028,1300)	1C	Whether or not the imaged breast contains a breast implant regardless of the visibility of a breast implant in the Pixel Data. Enumerated Values: YES NO Required if Modality (0008,0060) is MG. May be present otherwise. Note: The value is expected to be YES for all images acquired on a breast that contains a breast implant, even when a breast implant is displaced during image acquisition.
Partial View	(0028,1350)	3	Indicates whether this image is a partial view, that is a subset of a single view of the breast. Enumerated Values: YES, NO If this Attribute is absent, then the image may or may not be a partial view. Note: This may occur when a breast is larger than the active area of the detector. If this Attribute is present, its value shall be NO if there is a View Modifier Code Sequence (0054,0222) Item of value (R-102D6, SRT, "Magnification") or (R-102D7, SRT, "Spot Compression").
Partial View Code Sequence	(0028,1352)	1C	Sequence that describes the portion or section of the breast captured in a partial view image. One or two Items shall be included in this sequence. See C.8.11.7.1.3. Required if Partial View (0028,1350) is present with a value of YES.
>Include 'Code Sequence Macro' (Table 8.8-1).		Defined CID 4005.	

### **C.8.21.6.1 Breast View Module Attribute Description**

#### **C.8.21.6.1.1 Image Type and Frame Type**

**In addition to the requirements specified in C.8.21.1.1.1 Image Type and Frame Type, the following additional Defined Terms are specified for Value 3 of Image Type (0008,0008) and Frame Type (0008,9007):**

Defined Term	Definition	ACR MQCM Equivalent
<b><u>TOMO SCOUT</u></b>	<b><u>A localizer image set that may be used to determine positioning coordinates prior to needle positioning.</u></b>	<b><u>...SC</u></b>
<b><u>PREFIRE</u></b>	<b><u>An image set obtained with the biopsy needle in position prior to needle deployment.</u></b>	<b><u>...PRF</u></b>

<b><u>POSTFIRE</u></b>	<b><u>An image set obtained with the biopsy needle in position following needle deployment through the targeted lesion.</u></b>	<b><u>...POF</u></b>
<b><u>POSTBIOPSY</u></b>	<b><u>An image set obtained following tissue acquisition with the X-Ray source in the scout position.</u></b>	<b><u>...POB</u></b>
<b><u>POSTMARKER</u></b>	<b><u>An image set obtained following micromarker placement with the X-Ray source in the scout position.</u></b>	<b><u>...POM</u></b>

**Note: There is no need for MINUS or PLUS because a single digital breast tomosynthesis acquisition produces a reconstructed slices image set that replaces the MINUS and PLUS image pair used in conventional 2D breast biopsy imaging (see C.8.11.7.1.4).**