

### DICOM Correction Item

Correction Number		CP-807
Log Summary: Add Mask Visibility Percentage attribute		
Type of Modification	Name of Standard	
Addition	PS 3.3 – 2008	
Rationale for Correction		
A new attribute is added to the XA/XRF Multi-frame Presentation Module to specify the visibility of the mask image during subtraction.		
Sections of documents affected		
PS 3.3 Section C.8.19.7, PS 3.6 Section 6		
Correction Wording:		

**Item #1: Add the following row to PS 3.3 Section C.8.19.7**

#### C.8.19.7 XA/XRF Multi-frame Presentation Module

Table C.8.19.7-1 specifies the Attributes of a XA/XRF Multi-frame Presentation **ImageModule**.

**Table C.8.19.7-1  
 XA/XRF MULTI-FRAME PRESENTATION MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
Preferred Playback Sequencing	(0018,1244)	3	Describes the preferred playback sequencing for a multi-frame image. Enumerated Values: 0 = Looping (1,2...n,1,2,...n,1,2,...n,...) 1 = Sweeping (1,2,...n,n-1,...2,1,2,...n,...)
Frame Display Sequence	(0008,9458)	3	Sequence that specifies the display frame rate of a selected set of frames. The Items are ordered in increasing frame number. The range of the frames may not overlap and the ranges shall be adjacent. One or more items may be included.
>Start Trim	(0008,2142)	1	The Frame Number of the first frame of the set of frames to be displayed in this Item.
>Stop Trim	(0008,2143)	1	The Frame Number of the last frame of the set of frames to be displayed in this Item.
>Skip Frame Range Flag	(0008,9460)	1	A flag indicating that the range of frames in this item may be skipped.

			Defined Terms: DISPLAY SKIP
>Recommended Display Frame Rate in Float	(0008,9459)	1	Recommended rate at which the frames of this Item should be displayed in frames/second.
≥Recommended Viewing Mode	(0028,1090)	2	Specifies the recommended viewing protocol(s). Defined terms: SUB = subtraction with mask images NAT = native viewing of image as stored Note: If an implementation does not recognize the defined term for Recommended Viewing Mode (0028,1090), reverting to native display mode is recommended.
≥Display Filter Percentage	(0028,9411)	2	Edge enhancement filter percentage that is recommended by the pixel data creator as filter presetting for display purposes. The value of 100% corresponds to the maximum filter strength that can be applied by a specific application displaying the image.
<b>&gt;Mask Visibility Percentage</b>	<b>(0028,9478)</b>	<b>1C</b>	<b><u>The percentage of visibility of the mask frame during a subtracted display. A value of 0 corresponds to subtracted display, a value of 100 corresponds to un-subtracted display (native). See C.8.19.7.1..</u></b> Note: The value of 100 is equivalent to Recommended Viewing Mode (0028,1090) having a value of NAT. <b><u>Required if Recommended Viewing Mode (0028,1090) equals SUB.</u></b>

**C.8.19.7.1 Multi-frame Presentation Attributes****C.8.19.7.1.1 Mask Visibility Percentage (Informative)**

An example of the usage of the Mask Visibility Percentage (0028,9478) attribute is illustrated below.

Assume that  $P_{\text{sub}}$  is the output pixel level of a subtracted frame, its calculation can be expressed as followed:

$P_{\text{contrast}}$  : Pixel level of the contrast frame in the logarithmic domain

$P_{\text{mask}}$  : Pixel level of the mask frame in the logarithmic domain

X : Mask Visibility Percentage (0028,9478):  $0 \leq X \leq 100$

$$P_{\text{sub}} = P_{\text{contrast}} - (1 - X/100) * P_{\text{mask}}$$

**Item #2: Add the following row to PS 3.6 Section 6**

Tag	Name	VR	VM
...			
(0028,9478)	Mask Visibility Percentage	FL	1
...			