

### DICOM Correction Item

Correction Number		CP-255
Log Summary: Behavior when VOI LUT Module attributes absent		
Type of Modification	Name of Standard	
Addition	PS 3.3 2000	
<p>Rationale for Correction</p> <p>The VOI LUT Module is mandatory or conditional in various image IODs, some of which also specify the output space of the grayscale pipeline, such as in P-Values.</p> <p>However, both the Window attributes and the VOI LUT Sequence are user optional.</p> <p>This means that the behavior is potentially undefined if an instance contains neither Window attributes nor a VOI LUT Sequence, though the VOI LUT Module is required to be present.</p> <p>It also means that some implementors have interpreted this to mean that they may not have to implement one or other or both of the Window attributes nor a VOI LUT Sequence, which was not the intent.</p> <p>This correction makes it clear that the VOI LUT stage is an identity transformation when there are neither Window attributes nor a VOI LUT Sequence present but the VOI LUT Module is required by the IOD. It also makes the statement that an implementation which renders images shall not fail to implement these values.</p>		
Sections of documents affected		
PS 3.3 C.11.2		
Correction Wording:		

#### C.11.2 VOI LUT module

Table C.11-2 specifies the Attributes that describe the VOI LUT.

**Table C.11-2**  
**VOI LUT MODULE ATTRIBUTES**

Attribute Name	Tag	Type	Attribute Description
VOI LUT Sequence	(0028,3010)	3	Defines a sequence of VOI LUTs.
...	...	...	...
Window Center	(0028,1050)	3	Window Center for display. See C.11.2.1.2 for further explanation.
...	...	...	...

#### C.11.2.1 LUT Attribute Descriptions

##### C.11.2.1.1 LUT Descriptor

...

##### C.11.2.1.2 Window center and window width

...

These Attributes shall be used only for Images with Photometric Interpretation (0028,0004) values of MONOCHROME1 and MONOCHROME2. They have no meaning for other Images.

If multiple values are present, both Attributes shall have the same number of values and shall be considered as pairs. Multiple values indicate that multiple alternative views may be presented.

If any VOI LUT Table is included by an Image, a Window Width and Window Center or the VOI LUT Table, but not both, may be applied to the Image for display. Inclusion of both indicates that multiple alternative views may be presented.

If multiple items are present in VOI LUT Sequence (0028,3010), only one may be applied to the Image for display. Multiple items indicate that multiple alternative views may be presented.

**If the VOI LUT Module is defined in an IOD and if neither a VOI LUT Sequence nor a Window Width and Window Center are present, then the VOI LUT stage of the grayscale pipeline is defined to be an identity transformation.**

- Notes:**
- 1. This requirement is specified so that IODs that define a particular output space for the grayscale pipeline, such as P-Values, are not in an undefined state when no VOI LUT Sequence or Window Width and Window Center are present.**
  - 2. Despite the Type 3 requirement for VOI LUT Sequence and Window Center, implementations that render images are expected to implement and apply these transformations when they are present in the image.**