

SCENARIO: While images appear on PACS with the correct window settings, color savescreens do not. For color savescreens, the DICOM tag for Window Center [0028,1050] and for Window Width [0028,1051] are both set to 100. This appears to be the reason the savescreen is not displayed properly, because if a user manually adjusts the window levels to 127/255, then color savescreens do appear normally.

EXPLANATION: Be advised that scenario can happen with any viewing station and any PACS.

You are correct: the DICOM tags for Window Center and Window Width both contain a value of 100 for color savescreens (aka, secondary capture images). However, those tags should not be used to set the window levels when displaying a color savescreen.

For DICOM secondary capture images with the Photometric Interpretation tag [0028,0004] set to "RGB", values for Window Width and Window Center should be ignored by the application displaying the image. According to the DICOM Standard (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."

In this case, the PACS is not adhering to the DICOM Standard. Therefore, you have two choices: [1] Modify the PACS configuration to react differently when it displays color savescreens, or [2] modify the acquisition workstation to only send black & white savescreens. Below is a DICOM Dumper display of the DICOM tags in a color savescreen for your reference.

DICOM tag [0008,0016] indicates a SOP Class of 1.2.840.10008.5.1.4.1.1.7.

- This means the file contains "Secondary Capture Image Storage".

DICOM tag [0028,004] contains "RGB".

- This means the savescreen contained within the file was created in color.

The screenshot shows the NeoLogica DICOM Dumper application window. The title bar reads "NeoLogica DICOM Dumper". Below the title bar is a menu bar with "File", "Edit", and "About". Underneath the menu bar is a toolbar with icons for "EXIT", "Open", "Save", "Print", and "Help". The main area is a tree view of DICOM tags. The tag (0008,0016) - SOP Class UID is expanded, showing its value: 1.2.840.10008.5.1.4.1.1.7. A green line points from this value to the text "UID for secondary capture image". The tag (0028,0004) - Photometric Interpretation is also expanded, showing its value: RGB. A green line points from this value to the text "RGB=color". Other tags in the tree include (0008,0018) - SOP Instance UID, (0008,0020) - Study Date, (0008,0021) - Series Date, (0008,0023) - Content Date, (0008,0030) - Study Time, (0008,0031) - Series Time, (0008,0033) - Content Time, (0008,0050) - Accession Number, (0008,0060) - Modality, (0008,0064) - Conversion Type, (0008,0070) - Manufacturer, (0008,0090) - Referring Physician's Name, (0008,2111) - Derivation Description, (0010,0010) - Patient's Name, (0010,0020) - Patient Id, (0010,0030) - Patient's Birth Date, (0010,0040) - Patient's Sex, (0018,1012) - Date of Secondary Capture, (0018,1014) - Time of Secondary Capture, (0020,000D) - Study Instance UID, (0020,000E) - Series Instance UID, (0020,0011) - Series Number, (0020,0013) - Instance Number, (0020,0020) - Patient Orientation, (0028,0002) - Samples per Pixel, and (0028,0004) - Photometric Interpretation.