

# DICOM Correction Proposal

STATUS	Final Text
Date of Last Update	2025/01/27
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Submission Date	2024/05/06

Correction Number	CP-2416
Log Summary:	Add support for FLIO Ophthalmic Photography
Name of Standard	PS3.3, PS3.16 2024e
Rationale for Correction:	<p>An emerging sub-modality for Ophthalmic Photography is Fluorescence Lifetime Imaging Ophthalmoscopy (FLIO) (see <a href="https://www.ncbi.nlm.nih.gov/books/NBK554053/">https://www.ncbi.nlm.nih.gov/books/NBK554053/</a>), an evolution of Fluorescence Lifetime Imaging Microscopy (FLIM). The OP IODs are updated to support the technical parameters of FLIO, including pulsed laser illumination and long (&gt;560 nm) or short (&lt;560 nm) wavelength fluorescent images, time-binned.</p> <p>FLIO will typically use 16-bit OP multi-frame cine objects. Note that this is a “classic” format, and does not use the enhanced multi-frame paradigm.</p> <p>The Type 1C requirement for Image Path Filter Pass Band (0022,0004) for specification of image wavelength forces separate monochrome images for each channel. The ability to record two channels in the red and green channels of a single RGB image, as used in some OP techniques, is not considered appropriate for FLIO as the two channels are not combined for display.</p> <p><i>[Ed.Note. CRS Request ID # 966518 to add 118340008.]</i></p> <p><i>[Ed.Note. CRS Request ID #966519 to add new concept 1362124004 for “Fluorescence lifetime imaging ophthalmological equipment (physical object)”.]</i></p>
Correction Wording:	

*Update PS3.3*

## C.8.17.3 Ophthalmic Photographic Parameters Module

This Module describes equipment used to create original images.

**Table C.8.17.3-1. Ophthalmic Photographic Parameters Module Attributes**

Attribute Name	Tag	Type	Attribute Description
Acquisition Device Type Code Sequence	(0022,0015)	1	Describes the type of acquisition device Only a single Item shall be included in this Sequence.
>Include <a href="#">Table 8.8-1 “Code Sequence Macro Attributes”</a>			<a href="#">BCID 4202 “Ophthalmic Photography Acquisition Device”</a> .
Illumination Type Code Sequence	(0022,0016)	2	Coded value for illumination Zero or one Item shall be included in this Sequence.
>Include <a href="#">Table 8.8-1 “Code Sequence Macro Attributes”</a>			<a href="#">BCID 4203 “Ophthalmic Photography Illumination”</a> .
Light Path Filter Type Stack Code Sequence	(0022,0017)	2	Filters used in the light source path Zero or more Items shall be included in this Sequence.

>Include <a href="#">Table 8.8-1 "Code Sequence Macro Attributes"</a>			<a href="#">BCID 4204 "Ophthalmic Filter"</a> .
Light Path Filter Pass-Through Wavelength	(0022,0001)	<b>3-1C</b>	Nominal pass-through wavelength of light path filter in nm, <b>or wavelength of a monochromatic (e.g., laser) light source.</b>  <b>Required if Acquisition Device Type Code Sequence (0022,0015) is (1362124004, SCT, "FLIO"). May be present otherwise.</b>
Light Path Filter Pass Band	(0022,0002)	3	Pass band of light path filter in nm. This Attribute has two Values. The first is the shorter and the second the longer wavelength relative to the peak. The values are for the - 3dB nominal (1/2 of peak) pass through intensity  One of the two Values may be zero length, in which case it is a cutoff filter.
Image Path Filter Type Stack Code Sequence	(0022,0018)	2	Describes stack of filters used in image path  Zero or more Items shall be included in this Sequence.
>Include <a href="#">Table 8.8-1 "Code Sequence Macro Attributes"</a>			<a href="#">BCID 4204 "Ophthalmic Filter"</a> .
Image Path Filter Pass-Through Wavelength	(0022,0003)	3	Nominal pass-through wavelength of image path filter in nm
Image Path Filter Pass Band	(0022,0004)	<b>3-1C</b>	Pass band of image path filter in nm. This Attribute has two Values. The first is the shorter and the second the longer wavelength relative to the peak. The values are for the - 3dB nominal (1/2 of peak) pass through intensity  One of the two Values may be zero length, in which case it is a cutoff filter  <b>Required if Acquisition Device Type Code Sequence (0022,0015) is (1362124004, SCT, "FLIO"). May be present otherwise.</b>
Lenses Code Sequence	(0022,0019)	2	Lenses that were used during the image acquisition  Zero or more Items shall be included in this Sequence.
>Include <a href="#">Table 8.8-1 "Code Sequence Macro Attributes"</a>			<a href="#">BCID 4205 "Ophthalmic Lens"</a> .
Detector Type	(0018,7004)	2	Type of detector used for creating this image.  Defined Terms:  CCD Charge Coupled Devices  CMOS Complementary Metal Oxide Semiconductor

Channel Description Code Sequence	(0022,001A)	1C	<p>Describes the light color used for each channel to generate the image. Required if this differs from the natural interpretation.</p> <p><b>Note</b>  <i>Interpretation and representation of RGB images rely on the assumption that the red channel really contains the red wavelength range of illumination light, the blue channel the blue wavelength range, etc. Some modalities use the RGB Photometric Interpretation as a container representing 3 channels of any illumination wavelength.</i></p> <p>Shall have the same number of Items as the Value of Samples per Pixel Used (0028,0003) if present, or otherwise the value of Samples per Pixel (0028,0002). The channels shall be described in the order in which the channels are encoded.</p>
>Include <a href="#">Table 8.8-1 "Code Sequence Macro Attributes"</a>		<a href="#">BCID 4206 "Ophthalmic Channel Description"</a> .	
Camera Angle of View	(0022,001E)	3	The aperture angle of the camera, in degrees

Update PS3.16

## CID 4202 Ophthalmic Photography Acquisition Device

Type: Extensible

Version: **20100607 20250127**

UID: 1.2.840.10008.6.1.318

**Table CID 4202. Ophthalmic Photography Acquisition Device**

Coding Scheme Designator	Code Value	Code Meaning	SNOMED-RT ID	UMLS Concept Unique ID
SCT	<a href="#">409898007</a>	Fundus Camera	<a href="#">R-1021A</a>	<a href="#">C0179536</a>
SCT	<a href="#">397247004</a>	Slit Lamp Biomicroscope	<a href="#">A-2B201</a>	<a href="#">C0183355</a>
SCT	<a href="#">409903006</a>	External Camera	<a href="#">R-1021B</a>	<a href="#">C1444146</a>
SCT	<a href="#">409899004</a>	Specular Microscope	<a href="#">R-1021C</a>	<a href="#">C1444145</a>
SCT	<a href="#">102321001</a>	Operating Microscope	<a href="#">A-2B210</a>	<a href="#">C0181849</a>
SCT	<a href="#">392001008</a>	Scanning Laser Ophthalmoscope	<a href="#">A-00E8A</a>	<a href="#">C0392288</a>
SCT	<a href="#">409901008</a>	Indirect Ophthalmoscope	<a href="#">R-1021D</a>	<a href="#">C0182048</a>
SCT	<a href="#">409900009</a>	Direct Ophthalmoscope	<a href="#">R-1021E</a>	<a href="#">C0182047</a>
SCT	<a href="#">409902001</a>	Ophthalmic Endoscope	<a href="#">R-1021F</a>	<a href="#">C0493036</a>
SCT	<a href="#">397522002</a>	Keratoscope	<a href="#">A-00FCA</a>	<a href="#">C0181448</a>
SCT	<a href="#">420827006</a>	Pupillograph	<a href="#">A-00FF4</a>	<a href="#">C0182567</a>
<b>SCT</b>	<b>1362124004</b>	<b>FLIQ</b>		

## CID 4203 Ophthalmic Photography Illumination

Type: Extensible

Version: **20100607 20250122**

UID: 1.2.840.10008.6.1.319

**Table CID 4203. Ophthalmic Photography Illumination**

<b>Coding Scheme Designator</b>	<b>Code Value</b>	<b>Code Meaning</b>	<b>SNOMED-RT ID</b>	<b>UMLS Concept Unique ID</b>
SCT	<a href="#">410461001</a>	Dual diffuse direct illumination	<a href="#">R-1020E</a>	<a href="#">C1444589</a>
SCT	<a href="#">410462008</a>	Fine slit beam direct illumination	<a href="#">R-1020F</a>	<a href="#">C1444590</a>
SCT	<a href="#">410463003</a>	Broad tangential direct illumination	<a href="#">R-10211</a>	<a href="#">C1444591</a>
SCT	<a href="#">410464009</a>	Indirect sclerotic scatter illumination	<a href="#">R-10213</a>	<a href="#">C1444592</a>
SCT	<a href="#">410465005</a>	Indirect retroillumination from the iris	<a href="#">R-10215</a>	<a href="#">C1444593</a>
SCT	<a href="#">410466006</a>	Indirect retroillumination from the retina	<a href="#">R-10217</a>	<a href="#">C1444594</a>
SCT	<a href="#">410467002</a>	Indirect iris transillumination	<a href="#">R-10218</a>	<a href="#">C1444595</a>
DCM	<a href="#">111625</a>	Diffuse direct illumination		
DCM	<a href="#">111627</a>	Scotopic light		
DCM	<a href="#">111628</a>	Mesopic light		
DCM	<a href="#">111629</a>	Photopic light		
DCM	<a href="#">111630</a>	Dynamic light		
<b>SCT</b>	<b>118340008</b>	<b>Pulsed laser beam</b>		