*i*CAD, Inc.

PowerLook® 11.2.2 DICOM Conformance Statement, US

Revision Record

Rev.	ECO	Person Changing Document	Reason For Changes	Description of Changes
0	CO-585	Topher Gedeon	Created original for PowerLook 11.2 US release.	Created original document and used 0073-5014, PowerLook 11.1 DICOM Conformance Statement as a baseline.
1	CO-882	Topher Gedeon	Updated for PowerLook 11.2.2	Added color to Single Image Findings of CAD SR. Added color line and text to GSPS. Added RGB to Secondary Capture.

ATTACHMENTS

- 0073-5020-1 Form 1, PowerLook® 11.2.2 US DICOM Conformance Statement

*i*CAD, Inc.

PowerLook® 11.2.2 DICOM Conformance Statement

This software uses the DICOM software from the Fellow Oak Open Source Project.
(See http://github.com/fo-dicom/fo-dicom)

iCAD, Inc.
98 Spit Brook Road, Suite 100
Nashua, NH 03062
www.icadmed.com

Table of Contents

1   Introduction

1.1   Scope and Field of Application

PowerLook will use the DICOM 3.0 protocol standard to support the connectivity. It is assumed that the reader is familiar with the terminology and concepts that are used in the DICOM 3.0 standard. Readers not familiar with DICOM 3.0 terminology should first read the appropriate parts of the DICOM standard itself, prior to reading this conformance statement. Although the use of this conformance statement in conjunction with the DICOM 3.0 standard is intended to facilitate communication with other DICOM systems, it is not sufficient to guarantee, by itself, the inter-operation of the connection.

PowerLook is a system that receives digital mammographic images as a Service Class Provider (SCP) then runs algorithms on the images to provide computer aided detection (CAD) results and exports the CAD results as a Service Class User (SCU) of the Storage Service Class. The system also serves as an SCP and SCU of the Verification Service Class.

1.2   Quick Summary

SOP Class	SOP Class UID	SCU	SCP	Comments
Digital Mammography X-Ray – For Processing	1.2.840.10008.5.1.4.1.1.2.1	No	Yes	Receives images for CAD processing.
Digital Mammography X-Ray – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Yes	Yes	Can forward image with DICOM 6000 Overlay or CAD marks burnt in.
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Yes	No	Passively receives images or sends Density Assessment, Risk Assessment, or Index Card information
Mammography CAD Structured Report (MSR)	1.2.840.10008.5.1.4.1.1.88.50	Yes	No	Passively receives MSR or preferred method for transmitting 2D or 3D CAD results
Grayscale Softcopy Presentation State (GSPS)	1.2.840.10008.5.1.4.1.1.11.1	Yes	No	Passively receives GSPS objects or sends 2D or 3D CAD results in GSPS file
Verification	1.2.840.10008.1.1	Yes	Yes	Used for connectivity testing.
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	No	Yes	Receives images for CAD processing.

1.3   Acronyms

The following acronyms and abbreviations are used in this document.

- AE   Application Entity
- ACR   American College of Radiology
- ANSI   American National Standards Institute
- BI-RADS   Breast Imaging Reporting and Data System
- CAD   Computer Aided Detection
- DICOM   Digital Imaging and Communications in Medicine
- FSE   Field Service Engineer
- GUI   Graphical User Interface
- HIS   Hospital Information System
- IOD   Information Object Definition
- NEMA   National Electrical Manufacturers Association
- PACS   Picture Archiving and Communications System
- PDU   Protocol Data Unit
- RIS   Radiological Information System
- SCP   Service Class Provider
- SCU   Service Class User
- SOP   Service Object Pair
- SR   Structured Report
- TCP/IP   Transmission Control Protocol/Internet Protocol
- UID   Unique Identifier
- VR   Value Representation

Furthermore, all symbols, abbreviations, and definitions used herein are described in the Digital Imaging and Communications in Medicine (DICOM) standard, parts 1 through 22 (NEMA PS 3.1-22).

1.4   Related Documentation

- NEMA PS3 / ISO 12052, Digital Imaging and Communications in Medicine (DICOM) Standard, National Electrical Manufacturers Association, Rosslyn, VA, USA (available free at https://www.dicomstandard.org/)

1.5   Considerations

The following issues need to be considered:

- The integration of any device into a system of interconnected devices goes beyond the scope of the DICOM 3.0 standard and this conformance statement when interoperability is required. The responsibility for analyzing the systems requirements and developing a solution that integrates the PowerLook system with other vendors' systems is the user's responsibility and should not be underestimated.
- Testing the complete range of possibilities between the PowerLook system and non- PowerLook devices, before the connection is declared operational, is considered to be a necessity. The user should ensure that any non-PowerLook equipment provider accepts full responsibility for all validation required for their connection with the PowerLook system. The accuracy of image data once it has crossed the interface between the PowerLook equipment and the non-PowerLook device as well as the stability of the image data for the intended applications is the responsibility of the non- PowerLook provider.
- As the DICOM 3.0 standard evolves to meet the user's growing requirements and to incorporate new features and technologies, PowerLook developers will follow the evolution of the standard. This evolution of the standard may require changes to devices that have implemented DICOM

3.0. The user should ensure that any non-PowerLook provider, who connects with PowerLook devices, also plans future evolution of the DICOM standard. A refusal to do so may reflect in the loss of functionality and/or connectivity between the different products.

2   Implementation Model

The PowerLook system is a computer-aided detection (CAD) system for mammography designed to assist the radiologist in breast cancer detection. Using cognitive systems technology, the system detects potential calcification clusters and masses, literally providing the radiologist with a "second opinion". The PowerLook system's advanced pattern recognition and image analysis is intended to aid in early breast cancer detection. The PowerLook system is designed for all primary communication to occur through DICOM. A remotely accessible GUI shall be provided to the Field Service / Administrator to assist in simple configuration and diagnostics.

A client wishing to initiate processing on an image shall send the PowerLook system a CAD request via DICOM. After each image is received, CAD processing will be initiated. Once the end of a case is determined, the PowerLook system will complete any remaining image-based processing for the case and perform case-based processing. Once the case-based processing is finished, if licensed, PowerLook can also perform Breast Density Assessment and Risk Assessment processing. Finally, the system will send the CAD results in a DICOM message to the designated recipient.

In clinical practice, the CAD results are only used by the radiologist after the completion of the initial review of the mammography images. The radiologist then views the CAD results and takes a "SecondLook" at the image in the locations of any areas of potential concern detected by the PowerLook system. Finally, the radiologist decides whether or not true areas of concern are present at these locations. If so, the radiologist guides any additional work-up that is indicated. Note that the CAD results, Breast Density Assessments, and Risk Assessments are not to be used to override a decision by the radiologist to further evaluate an area of concern initially detected without the assistance of the PowerLook system. Therefore, the CAD results, Breast Density Assessments, and Risk Assessments can assist a radiologist in detecting areas of concern that would have been missed without its use, but it cannot cause a radiologist to miss areas of concern that would have been detected without the PowerLook system.

2.1 Application Data Flow Diagram

The PowerLook system acts as a single Application Entity based on the DICOM protocol standard. The system can act as a DICOM Storage Service Class Providers (SCP) by receiving DICOM Digital Mammography X-Ray Images, DICOM Breast Tomosynthesis objects and DICOM Verification messages. The PowerLook system can also act as a DICOM Storage Service Class User (SCU) by initiating associations to send CAD results in the form of a Mammography CAD Structured Report, a Grayscale Softcopy Presentation State (GSPS) object, a Digital Mammography X-Ray "FOR PRESENTATION" image with the CAD detections applied to the overlay or CAD markers burnt into the image, or a Secondary Capture object. Furthermore, the PowerLook system can also initiate DICOM Verification requests to DICOM Storage Service Class Providers (SCP) for testing communications between systems. The data flow diagram can be seen in Figure 2-1.
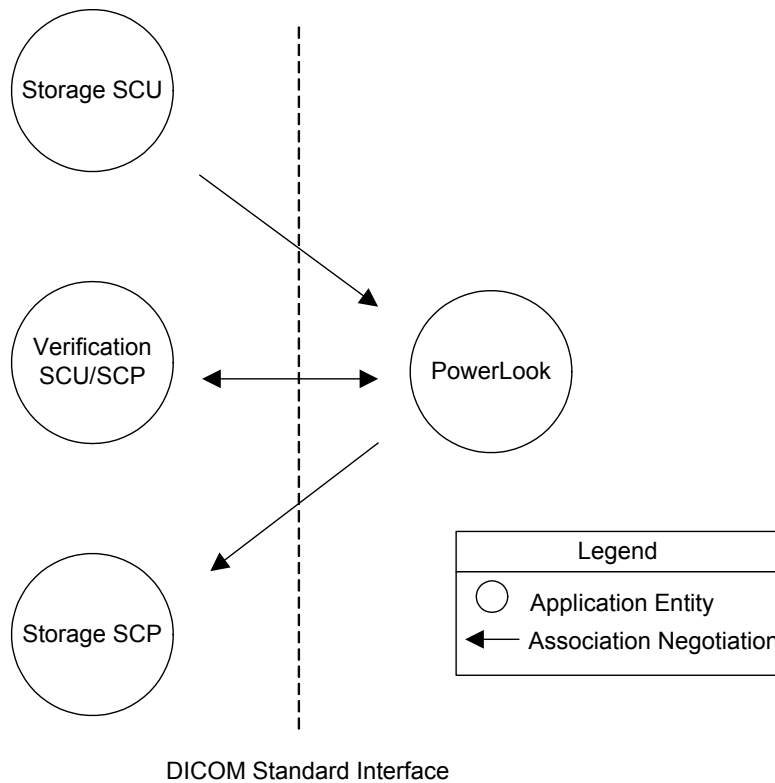
Figure 2-1 - Implementation Model

2.2 Functional Definition of Application Entities

PowerLook acts as a Service Class Provider (SCP) for the purpose of receiving DICOM Digital Mammography X-Ray images, DICOM Breast Tomosynthesis objects and DICOM Verification messages. The PowerLook system acts as a Service Class User (SCU) by sending out the CAD results in the form of a Mammography CAD Structured Report, a Grayscale Softcopy Presentation State (GSPS) object, a Digital Mammography X-Ray image with the CAD detections applied to the overlay or CAD markers burnt into the image, or a Secondary Capture object. Furthermore, the PowerLook system acts as an SCU by initiating the DICOM Verification message for testing communications between devices.

3   AE Specifications

3.1   SCP Services

The following sections define the services used by PowerLook as an SCP.

3.1.1   SCP Application Entity

PowerLook provides SCP standard conformance to the DICOM 3.0 SOP Classes that are defined in Table 1.

Table 1 - SCP SOP Class Conformance

SOP Class	SOP Class UID
Digital Mammography X-Ray – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1
Digital Mammography X-Ray – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
Verification	1.2.840.10008.1.1
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3

3.2   SCU Services

The following sections define the services used by PowerLook as an SCU.

3.2.1   SCU Application Entity

PowerLook provides SCU standard conformance to the DICOM 3.0 SOP Classes that are defined in Table 2.

Table 2 - SCU SOP Class Conformance

SOP Class	SOP Class UID
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50
Grayscale Softcopy Presentation State (GSPS)	1.2.840.10008.5.1.4.1.1.11.1
Digital Mammography X-Ray – For Presentation	1.2.840.10008.5.1.4.1.1.1.2
Verification	1.2.840.10008.1.1
Secondary Capture	1.2.840.10008.5.1.4.1.1.7

3.3   Association Establishment Policies

3.3.1   General

PowerLook contains no limitations for maximum PDU size. Default maximum PDU size is set to 16384 bytes, but can be modified in a configuration file for each application.

3.3.2   Number of Associations

PowerLook will issue only one association request at a time to a Remote AE and can support at least four associations at a time from a Remote AE.

3.3.3   Asynchronous Nature

PowerLook allows a single outstanding operation on any association. Therefore, PowerLook does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

3.3.4   Implementation Identifying Information

PowerLook will respond with the following implementation identifying parameters by default:

❑ Implementation Class UID   `1.3.6.1.4.1.30071.8`
❑ Implementation Version Name `fo-dicom 5.0.3`

3.3.5 Network Configuration

The Field Service Engineer sets the Application Entity title, IP Address, and port number for PowerLook through the provided Graphical User Interface (GUI). The Field Service Engineer also sets the Application Entity title, IP Address, and port number for any remote devices that want to communicate with PowerLook through the same GUI.

3.3.6 Association Initiation by Real World Activity

PowerLook will issue a new association with a remote device when CAD results and verification messages are to be transmitted.

3.3.6.1 Verify Communication with a Remote System

3.3.6.2 Associated Real World Activity - Verification

PowerLook can issue a Verification request to any of the configured remote devices through the Field Service Engineer's Graphical User Interface. PowerLook will respond to any Verification request as long as the PowerLook service is started.

3.3.6.3 Presentation Context Table - Verification

PowerLook supports the transfer syntaxes listed in Table 3. For a Verification request, PowerLook will propose the Presentation Contexts listed in Table 4.

Table 3 – Verification Transfer Syntaxes

Transfer Syntaxes	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

Table 4 – Verification SOP Class

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Verification	1.2.840.10008.1.1	Declared in Table 3	SCU/SCP	None

3.3.6.4 SOP Specific Conformance – Verification

The response codes for the DICOM Verification message are displayed in Table 5. If there was an error in creating the Verification response, no response shall be sent.

Table 5 - Verification Response Codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Success	Success	0000	None	Operation performed properly

3.3.6.5   Receive Images from a Remote System

3.3.6.6   Associated Real World Activity – Receive
PowerLook will receive images from remote devices that wish to have CAD process the patient case.

3.3.6.7   Presentation Context Table – Receive
PowerLook supports the transfer syntaxes listed in Table 6. When sending CAD output, PowerLook will propose the Presentation Contexts listed in Table 7.

Table 6 - Receive Image Transfer Syntaxes

Transfer Syntaxes	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2
DICOM Explicit Little Endian	1.2.840.10008.1.2.1
DICOM Explicit Big Endian	1.2.840.10008.1.2.2
DICOM JPEG Lossless, Non-Hierarchical (Process 14)	1.2.840.10008.1.2.4.57
DICOM JPEG Lossless, Non-Hierarchical, First-Order Prediction (Process 14 [Selection Value 1])	1.2.840.10008.1.2.4.70
DICOM JPEG 2000 Image Compression (Lossless Only)	1.2.840.10008.1.2.4.90

Table 7 – Presentation Contexts for Receive from Remote Systems

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Digital Mammography X-Ray – For Processing	1.2.840.10008.5.1.4.1.1.1.2.1	Declared in Table 6	SCP	None
Digital Mammography X-Ray – For Presentation	1.2.840.10008.5.1.4.1.1.1.2	Declared in Table 6	SCP	None
Breast Tomosynthesis Image Storage	1.2.840.10008.5.1.4.1.1.13.1.3	Declared in Table 6	SCP	None

3.3.6.8   SOP Specific Conformance – Receive

The PowerLook SCP conforms to the SOP's of the Storage Service Class at Level 2 (Full) as described in Section B.4.1 of PS 3.4 -2024 of the DICOM Standard. PowerLook will receive Digital Mammography X-Ray – For Processing images, Digital Mammography X-Ray – For Presentation images, and Breast Tomosynthesis images. Note that PowerLook has the ability to receive the Secondary Capture images, Mammography CAD Structured Reports, and Grayscale Softcopy Presentation State objects but will not process these items with its CAD algorithms. If the corresponding "For Processing" images are sent with the "For Presentation" images, then a CAD overlay can be applied to the "For Presentation" image and be sent to any remote device. The status codes shown in Table 8 may be sent back to the Remote SCU after the SCU tries to open an association with the PowerLook system.

Table 8 – C-Store Response Status Codes

Status Code	Service Status	Meaning	Explanation
A700	Refused	Storage out of resources	The system is out of resources to process the patient case.
C000	Error	Storage cannot understand	The system cannot understand the received images in order to process.
0110	Error	Processing Failure	An internal system error occurred when receiving the image and storing it to disk.
0000	Success	Success	Indicates that an association was successfully established and an image was successfully stored and queued for processing.

The status codes shown in Table 9 may be sent back to the Remote SCU after the SCU tries to open an association with the PowerLook system and the association gets rejected.

Table 9 - Reject Association Response Status Codes

Description of Rejection	PDU Byte 8 - Result	PDU Byte 9 - Source	PDU Byte 10 - Reason
Not enough disk space	2 - Transient Rejection	3 - UL service provider	2 - Local limit exceeded
Not a configured remote device	1 – Permanent Rejection	1 - UL service user	3 - Unacceptable Calling AP
Exceeded allowed simultaneous connections	2 - Transient Rejection	3 - UL service provider	1 - Temporary congestion
Unknown error in handling association	2 - Transient Rejection	1 - UL service user	1 - Temporary congestion

The Digital Mammography X-Ray Information Object Definition (IOD) modules are defined in Table 10.

Table 10 – Digital Mammography X-Ray Image IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient	PS 3.3 –2024 C.7.1.1	Table 11	M
	Specimen Identification	PS 3.3 –2024 C.7.1.2	Not used	U
	Clinical Trial Subject	PS 3.3 –2024 C.7.1.3	Not used	U
Study	General Study	PS 3.3 – 2024 C.7.2.1	Table 12	M
	Patient Study	PS 3.3 – 2024 C.7.2.2	Not used	U
	Clinical Trial Study	PS 3.3 – 2024 C.7.2.3	Not used	U
Series	General Series	PS 3.3 – 2024 C.7.3.1	Table 13	M
	Clinical Trial Series	PS 3.3 – 2024 C.7.3.2	Not used	U
	DX Series	PS 3.3 – 2024 C.8.11.1	Table 14	M
	Mammography Series	PS 3.3 – 2024 C.8.11.6	Table 15	M
	Frame of Reference	PS 3.3 – 2024 C.7.4.1	Not Used	C
Equipment	General Equipment	PS 3.3 – 2024 C.7.5.1	Table 16	M
Image	General Image	PS 3.3 – 2024 C.7.6.1	Table 17	M
	Image Pixel	PS 3.3 – 2024 C.7.6.3	Table 18	M
	Contrast/Bolus	PS 3.3 – 2024 C.7.6.4	Not used	U
	Display Shutter	PS 3.3 – 2024 C.7.6.11	Not used	U
	Device	PS 3.3 – 2024 C.7.6.12	Not used	U
	Intervention	PS 3.3 – 2024 C.7.6.13	Not used	U
	DX Anatomy Imaged	PS 3.3 – 2024 C.8.11.2	Table 19	M
	DX Image	PS 3.3 – 2024 C.8.11.3	Table 20	M
	DX Detector	PS 3.3 – 2024 C.8.11.4	Table 21	M
	X-Ray Collimator	PS 3.3 – 2024 C.8.7.3	Not used	U
	DX Positioning	PS 3.3 – 2024 C.8.11.5	Not used	U
	X-Ray Tomo Acquisition	PS 3.3 – 2024 C.8.7.7	Not used	U
	X-Ray Acquisition Dose	PS 3.3 – 2024 C.8.7.8	Not used	U
	X-Ray Generation	PS 3.3 – 2024 C.8.7.9	Not used	U
	X-Ray Filtration	PS 3.3 – 2024 C.8.7.10	Not used	U
	X-Ray Grid	PS 3.3 – 2024 C.8.7.11	Not used	U
	Mammography Image	PS 3.3 – 2024 C.8.11.7	Table 22	M
	Overlay Plane	PS 3.3 – 2024 C.9.2	Not used	U
	VOI LUT	PS 3.3 – 2024 C.11.2	Not used	U
	Image Histogram	PS 3.3 – 2024 C.11.5	Not used	U
	Acquisition Context	PS 3.3 – 2024 C.7.6.14	Table 25	M
	SOP Common	PS 3.3 – 2024 C.12.1	Table 26	M

Table 11 - Patient Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.1.1

Group and Element	VR	Type	Description	Value
(0010,0010)	PN	2	Patient's Name	Patient's full name obtained from the image header.
(0010,0020)	LO	2	Patient ID	Primary hospital identification number or code for the patient obtained from the image header.
(0010,0030)	DA	2	Patient's Birth Date	Birth date of the patient obtained from the image header.
(0010,0040)	CS	2	Patient's Sex	Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other
(0010,1010)	AS	3	Patient's Age	Age of the patient obtained from the image header.
(0008,1120)	SQ	3	Referenced Patient Sequence	Not used
>(0008,1150)	UI	1C	Referenced SOP Class UID	Not used
>(0008,1155)	UI	1C	Referenced SOP Instance UID	Not used
(0010,0032)	TM	3	Patient Birth Time	Not used
(0010,1000)	LO	3	Other Patient ID	Other patient ID obtained from the image header
(0010,1001)	PN	3	Other Patient Names	Not used
(0010,2160)	SH	3	Ethnic Group	Not used
(0010,4000)	LT	3	Patient Comments	Not used

Table 12 - General Study Module Attributes – Mandatory - ref. PS 3.3 - 2024 C.7.2.1

Group and Element	VR	Type	Description	Value
(0020,000D)	UI	1	Study Instance UID	Unique identifier for the Study obtained from the image header.
(0008,0020)	DA	2	Study Date	The current date of the CAD processing
(0008,0030)	TM	2	Study Time	The current time of the CAD processing.
(0008,0090)	PN	2	Referring Physician's Name	Name of the Patient's referring physician
(0008,0096)	SQ	3	Referring Physician Identification Sequence	Not used
(0020,0010)	SH	2	Study ID	User or equipment generated Study identifier obtained from the image header.
(0008,0050)	SH	2	Accession Number	A RIS generated number, which identifies the order for the Study obtained from the image header.
(0008,1030)	LO	3	Study Description	Institution-generated description or classification of the Study (component) performed.
(0008,1048)	PN	3	Physicians Of Record	Not used
(0008,1049)	SQ	3	Physician(s) of Record Identification Sequence	Not used
(0008,1060)	PN	3	Name Of Physicians Reading Study	Not used

(0008,1062)	SQ	3	Physician(s) Reading Study Identification Sequence	Not used
(0008,1110)	SQ	3	Referenced Study Sequence	Not used
(0008,1032)	SQ	3	Procedure Code Sequence	Not used

Table 13 - General Series Module Attributes– Mandatory - ref. PS 3.3 - 2024 C.7.3.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG
(0020,000E)	UI	1	Series Instance UID	Unique identifier of the Series.
(0020,0011)	IS	2	Series Number	A number that identifies this Series.
(0020,0060)	CS	2C	Laterality	Laterality of (paired) body part examined. Required if the body part examined is a paired structure and Image Laterality (0020,0062) is not sent. Enumerated Values: R = right L = left
(0008,0021)	DA	3	Series Date	Date the Series started.
(0008,0031)	TM	3	Series Time	Time the Series started.
(0008,1050)	PN	3	Performing Physician's Name	Name of the physician(s) administering the Series.
(0008,1052)	SQ	3	Performing Physician Identification Sequence	Not used
(0018,1030)	LO	3	Protocol Name	Not used
(0008,103E)	LO	3	Series Description	Not used
(0008,1070)	PN	3	Operators' Name	Name(s) of the operator(s) supporting the Series.
(0008,1072)	SQ	3	Operator Identification Sequence	Not used
(0008,1111)	SQ	3	Referenced Performed Procedure Step Sequence	Not used
(0018,0015)	CS	3	Body Part Examined	BREAST
(0018,5100)	CS	2C	Patient Position	Not used
(0028,0108)	US or SS	3	Smallest Pixel Value in Series	Not used
(0028,0109)	US or SS	3	Largest Pixel Value in Series	Not used
(0040,0275)	SQ	3	Request Attributes Sequence	Not used
(0040,0253)	SH	3	Performed Procedure Step ID	Not used
(0040,0244)	DA	3	Performed Procedure Step Start Date	Not used
(0040,0245)	TM	3	Performed Procedure Step Start Time	Not used
(0040,0254)	LO	3	Performed Procedure Step Description	Not used
(0040,0260)	SQ	3	Performed Protocol Code Sequence	Not used
(0040,0280)	ST	3	Comments on the Performed Procedure Step	Not used

Table 14 – DX Series Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.11.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG
(0008,1111)	SQ	1C	Referenced Performed Procedure Step Sequence	Not used
(0008,0068)	CS	1	Presentation Intent Type	Identifies the intent of the images that are contained within this Series. Enumerated Values: FOR PRESENTATION FOR PROCESSING

Table 15 – Mammography Series Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.11.6

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG

Table 16 - General Equipment Module Attributes - Mandatory – ref. PS 3.3 - 2024 C.7.5.1

Group and Element	VR	Type	Description	Value
(0008,0070)	LO	2	Manufacturer	Manufacturer of the equipment that produced the composite instances.
(0008,0080)	LO	3	Institution Name	Not used
(0008,0081)	ST	3	Institution Address	Not used
(0008,1010)	SH	3	Station Name	Not used
(0008,1040)	LO	3	Institutional Department Name	Not used
(0008,1090)	LO	3	Manufacturer's Model Name	Manufacturer's model name of the equipment that produced the composite instances.
(0018,1000)	LO	3	Device Serial Number	Not used
(0018,1020)	LO	3	Software Version	Not used
(0018,1050)	DS	3	Spatial Resolution	Not used
(0018,1200)	DA	3	Date of Last Calibration	Not used
(0018,1201)	TM	3	Time of Last Calibration	Not used
(0028,0120)	US	3	Pixel Padding Value	Not used

Table 17 – General Image Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.6.1

Group and Element	VR	Type	Description	Value
(0020,0013)	IS	2	Instance Number	A number that identifies this image.
(0020,0020)	CS	2C	Patient Orientation	Patient direction of the rows and columns of the image. Required if image does not require Image Orientation (Patient) (0020,0037) and Image Position (Patient) (0020,0032).
(0008,0023)	DA	2C	Content Date	The date the image pixel data creation started. Required if image is part of a series in which the images are temporally related.
(0008,0033)	TM	2C	Content Time	The time the image pixel data creation started. Required if image is part of a series in which the images are temporally related.
(0008,0008)	CS	3	Image Type	Not used
(0020,0012)	IS	3	Acquisition Number	Not used
(0008,0022)	DA	3	Acquisition Date	The date the acquisition of data that resulted in this image started.
(0008,0032)	TM	3	Acquisition Time	The time the acquisition of data that resulted in this image started
(0008,002A)	DT	3	Acquisition Datetime	Not used
(0008,1140)	SQ	3	Referenced Image Sequence	Not used
(0008,2111)	ST	3	Derivation Description	Not used
(0008,9215)	SQ	3	Derivation Code Sequence	Not used
(0008,2112)	SQ	3	Source Image Sequence	Required for DICOM 6000 Overlays
(0008,113A)	SQ	3	Referenced Waveform Sequence	Not used
(0020,1002)	IS	3	Images in Acquisition	Not used
(0020,4000)	LT	3	Image Comments	Not used
(0028,0300)	CS	3	Quality Control Image	Not used
(0028,0301)	CS	3	Burned In Annotation	Not used
(0028,2110)	CS	3	Lossy Image Compression	Not used
(0028,2112)	DS	3	Lossy Image Compression Ratio	Not used
(0088,0200)	SQ	3	Icon Image Sequence	Not used
(2050,0020)	CS	3	Presentation LUT Shape	Not used

Table 18 – Image Pixel Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.6.3

Group and Element	VR	Type	Description	Value
(0028,0002)	US	1	Samples per Pixel	Number of samples (planes) in this image.
(0028,0004)	CS	1	Photometric Interpretation	Specifies the intended interpretation of the pixel data: MONOCHROME2
(0028,0010)	US	1	Rows	Number of rows in the image.
(0028,0011)	US	1	Columns	Number of columns in the image.
(0028,0100)	US	1	Bits Allocated	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated.
(0028,0101)	US	1	Bits Stored	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored.
(0028,0102)	US	1	High Bit	Most significant bit for pixel sample data. Each sample shall have the same high bit.
(0028,0103)	US	1	Pixel Representation	Data representation of the pixel samples. Each sample shall have the same pixel representation. Enumerated Value: 0000H = unsigned integer.
(7FE0,0010)	OW or OB	1	Pixel Data	A data stream of the pixel samples that comprise the Image.
(0028,0006)	US	1C	Planar Configuration	Not used
(0028,0034)	IS	1C	Pixel Aspect Ratio	Not used
(0028,0106)	US or SS	3	Smallest Image Pixel Value	Not used
(0028,0107)	US or SS	3	Largest Image Pixel Value	Not used
(0028,1101)	US or SS	1C	Red Palette Color Lookup Table Descriptor	Not used
(0028,1102)	US or SS	1C	Green Palette Color Lookup Table Descriptor	Not used
(0028,1103)	US or SS	1C	Blue Palette Color Lookup Table Descriptor	Not used
(0028,1201)	OW	1C	Red Palette Color Lookup Table Data	Not used
(0028,1202)	OW	1C	Green Palette Color Lookup Table Data	Not used
(0028,1203)	OW	1C	Blue Palette Color Lookup Table Data	Not used

Table 19 – DX Anatomy Imaged Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.11.2

Group and Element	VR	Type	Description	Value
(0020,0062)	CS	1	Image Laterality	Laterality of (possibly paired) body part (as described in Anatomic Region Sequence (0008,2218)) examined. Enumerated Values: R = right L = left
(0008,2218)	SQ	2	Anatomic Region Sequence	Sequence that identifies the anatomic region of interest in this image (i.e. external anatomy, surface anatomy, or general region of the body). This anatomic region is placed on the table or bucky for examination.
>(0008,0100)	SH	1C	Code Value	T-04000
>(0008,0102)	SH	1C	Coding Scheme Designator	SNM3
>(0008,0104)	LO	1C	Code Meaning	BREAST
>(0008,2220)	SQ	3	Anatomic Region Modifier Sequence	Not used
(0008,2228)	SQ	3	Primary Anatomic Structure Sequence	Not used

Table 20 – DX Image Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.11.3

Group and Element	VR	Type	Description	Value
(0008,0008)	CS	1	Image Type	Image identification characteristics.
(0028,0002)	US	1	Samples per Pixel	Number of samples in this image. Shall have an Enumerated Value of 1.
(0028,0004)	CS	1	Photometric Interpretation	Specifies the intended interpretation of the pixel data: MONOCHROME2
(0028,0100)	US	1	Bits Allocated	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated.
(0028,0101)	US	1	Bits Stored	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored.
(0028,0102)	US	1	High Bit	Most significant bit for pixel sample data. Each sample shall have the same high bit.
(0028,0103)	US	1	Pixel Representation	Data representation of the pixel samples. Each sample shall have the same pixel representation. Enumerated Value: 0000H = unsigned integer.
(0028,1040)	CS	1	Pixel Intensity Relationship	The relationship between the Pixel sample values and the X-Ray beam intensity. Enumerated Values: LIN, LOG
(0028,1041)	SS	1	Pixel Intensity Relationship Sign	The sign of the relationship between the Pixel sample values stored in Pixel Data (7FE0,0010) and the X-Ray beam intensity.

				Enumerated Values; 1, -1
(0028,1052)	DS	1	Rescale Intercept	The value b in the relationship between stored values (SV) in Pixel Data (7FE0,0010) and the output units specified in Rescale Type (0028,1054). Output units = m*SV + b. Enumerated Value: 0
(0028,1053)	DS	1	Rescale Slope	m in the equation specified by Rescale Intercept (0028,1052). Enumerated Value: 1
(0028,1054)	LO	1	Rescale Type	Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052). Enumerated Value: US = Unspecified
(2050,0020)	CS	1	Presentation LUT Shape	Specifies an identity transformation for the Presentation LUT, other than to account for the value of Photometric Interpretation (0028,0004), such that the output of all grayscale transformations defined in the IOD containing this Module are defined to be P-Values. Enumerated Values: IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2. INVERSE - output after inversion is in PValues- shall be used if Photometric Interpretation (0028,0004) is MONOCHROME1.
(0028,2110)	CS	1	Lossy Image Compression	Specifies whether an Image has undergone lossy compression. Enumerated Value: 00 = Image has NOT been subjected to lossy compression.
(0028,2112)	DS	1	Lossy Image Compression Ratio	Not used
(0008,2111)	ST	3	Derivation Description	Not used
(0018,1400)	LO	3	Acquisition Device Processing Description	Not used
(0018,1401)	LO	3	Acquisition Device Processing Code	Not used
(0020,0020)	CS	1	Patient Orientation	Patient direction of the rows and columns of the image.
(0050,0004)	CS	3	Calibration Image	Not used
(0028,0301)	CS	1	Burned In Annotation	Indicates whether or not image contains sufficient burned in annotation to identify the patient and date the image was acquired. Enumerated Value: NO
(0028,3010)	SQ	1C	VOI LUT Sequence	Not used
(0028,1050)	DS	1C	Window Center	Not used
(0028,1051)	DS	1C	Window Width	Not used

| (0028,1055) | LO | 3 | Window Center & Width Explanation | Not used |

Table 21 – DX Detector Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.11.4

Group and Element	VR	Type	Description	Value
(0018,7004)	CS	2	Detector Type	The type of detector used to acquire this image. Defined Terms: SCINTILLATOR = Phosphor used
(0018,7005)	CS	3	Detector Configuration	Not used
(0018,7006)	LT	3	Detector Description	Not used
(0018,7008)	LT	3	Detector Mode	Not used
(0018,700A)	SH	3	Detector ID	The ID or serial number of the detector used to acquire this image.
(0018,700C)	DA	3	Date of Last Detector Calibration	Not used
(0018,700E)	TM	3	Time of Last Detector Calibration	Not used
(0018,7010)	IS	3	Exposures on Detector Since Last Calibration	Not used
(0018,7011)	IS	3	Exposures on Detector Since Manufactured	Not used
(0018,7012)	DS	3	Detector Time Since Last Exposure	Not used
(0018,7014)	DS	3	Detector Active Time	Not used
(0018,7016)	DS	3	Detector Activation Offset From Exposure	Not used
(0018,701A)	DS	3	Detector Binning	Not used
(0018,7000)	CS	3	Detector Conditions Nominal Flag	Not used
(0018,7001)	DS	3	Detector Temperature	Not used
(0018,6000)	DS	3	Sensitivity	Not used
(0018,1147)	CS	3	Field of View Shape	Not used
(0018,1149)	IS	3	Field of View Dimension(s)	Not used
(0018,7030)	DS	1C	Field of View Origin	Not used
(0018,7032)	DS	1C	Field of View Rotation	Not used
(0018,7034)	CS	1C	Field of View Horizontal Flip	Not used
(0018,1164)	DS	1	Imager Pixel Spacing	Physical distance measured at the front plane of the detector housing between the center of each image pixel specified by a numeric pair - row spacing value (delimiter) column spacing value in mm.
(0018,7020)	DS	3	Detector Element Physical Size	Not used
(0018,7022)	DS	3	Detector Element Spacing	Not used
(0018,7024)	CS	3	Detector Active Shape	Not used
(0018,7026)	DS	3	Detector Active Dimension(s)	Not used
(0018,7028)	DS	3	Detector Active Origin	Not used

Table 22 – Mammography Image Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.11.7

Group and Element	VR	Type	Description	Value
(0018,1508)	CS	1	Positioner Type	MAMMOGRAPHIC
(0018,1510)	DS	3	Positioner Primary Angle	Not used
(0018,1511)	DS	3	Positioner Secondary Angle	Not used
(0020,0062)	CS	1	Image Laterality	Laterality of the region examined. Enumerated Values: R = right L = left B = both (e.g. cleavage)
(0040,0318)	CS	1	Organ Exposed	BREAST
(0028,1300)	CS	3	Implant Present	Whether or not an implant is present. Enumerated Values: YES NO
(0028,1350)	CS	3	Partial View	Indicates whether this image is a partial view, which is a subset of a single view of the breast. Enumerated Values: YES, NO
(0028,1351)	ST	3	Partial View Description	Not used
(0008,2218)	SQ	1	Anatomic Region Sequence	Sequence that identifies the anatomic region of interest in this image.
>(0008,0100)	SH	1C	Code Value	T-04000
>(0008,0102)	SH	1C	Coding Scheme Designator	SNM3
>(0008,0104)	LO	1C	Code Meaning	BREAST
(0054,0220)	SQ	1	View Code Sequence	Sequence that describes the projection of the anatomic region of interest on the image receptor. Only a single Item shall be permitted in this sequence.
>(0008,0100)	SH	1C	Code Value	See Table 23
>(0008,0102)	SH	1C	Coding Scheme Designator	See Table 23
>(0008,0104)	LO	1C	Code Meaning	See Table 23
>(0054,0222)	SQ	2	View Modifier Code Sequence	View Modifier Zero or more Items may be included in this Sequence.
>>(0008,0100)	SH	1C	Code Value	See Table 24
>>(0008,0102)	SH	1C	Coding Scheme Designator	See Table 24
>>(0008,0104)	LO	1C	Code Meaning	See Table 24

Table 23 - View for Mammography – ref. PS 3.16 –2024 CID 4014

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SRT	R-10224	medio-lateral
SRT	R-10226	medio-lateral oblique
SRT	R-10228	latero-medial
SRT	R-10230	latero-medial oblique
SRT	R-10242	cranio-caudal
SRT	R-10244	caudo-cranial (from below)
SRT	R-102D0	superolateral to inferomedial oblique
SRT	R-102CF	exaggerated cranio-caudal
SNM3 / SRT	Y-X1770 / R-1024A	cranio-caudal exaggerated laterally
SNM3 / SRT	Y-X1771 / R-1024B	cranio-caudal exaggerated medially

Note: The "SCT" coding scheme designator and the corresponding "SCT" code values are not supported.

Table 24 - View Modifier for Mammography – ref. PS 3.16 – 2024 CID 4015

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)
SNM3 / SRT	R-102D2	Cleavage
SNM3 / SRT	R-102D1	Axillary Tail
SNM3 / SRT	R-102D3	Rolled Lateral
SNM3 / SRT	R-102D4	Rolled Medial
SNM3 / SRT	R-102D5	Implant Displaced
SRT	P2-00161	Anterior compression
SRT	R-40ABE	Infra-mammary fold

Note: The "SCT" coding scheme designator and the corresponding "SCT" code values are not supported.

Table 25 – Acquisition Context Module Attributes – ref. PS 3.3 - 2024 C.7.6.14

Group and Element	VR	Type	Description	Value
(0040,0555)	SQ	2	Acquisition Context Sequence	Zero items in this sequence
(0040,0556)	ST	3	Acquisition Context Description	Not used

Table 26 - SOP Common Module Attributes – ref. PS 3.3 - 2024 C.12.1

Group and Element	VR	Type	Description	Value
(0008,0016)	UI	1	SOP Class UID	"1.2.840.10008.5.1.4.1.1.1.2.1", which represents FOR PROCESSING or "1.2.840.10008.5.1.4.1.1.1.2", which represents FOR PRESENTATION
(0008,0018)	UI	1	SOP Instance UID	Uniquely identifies the SOP Instance.
(0008,0005)	CS	1C	Specific Character Set	ISO_IR 100
(0008,0012)	DA	3	Instance Creation Date	Not used
(0008,0013)	TM	3	Instance Creation Time	Not used
(0008,0014)	UI	3	Instance Creator UID	Not used

(0008,0110)	SQ	3	Coding Scheme Identification Sequence	Not used
(0008,0201)	SH	3	Timezone Offset From UTC	Not used
(0018,A001)	SQ	3	Contributing Equipment Sequence	Not used
(0020,0013)	IS	3	Instance Number	A number that identifies this Composite object instance.
(0100,0410)	CS	3	SOP Instance Status	Not used
(0100,0420)	DT	3	SOP Authorization Date and Time	Not used
(0100,0424)	LT	3	SOP Authorization Comment	Not used
(0100,0426)	LO	3	Authorization Equipment Certification Number	Not used
(4FFE,0001)	SQ	3	MAC Parameters Sequence	Not used
(FFFA,FFFA)	SQ	1	Digital Signatures Sequence	Not used
(0400,0500)	SQ	1C	Encrypted Attributes Sequence	Not used

The Secondary Capture Image Information Object Definition (IOD) modules are defined in Table 27.

Table 27 – Secondary Capture Image IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient	PS 3.3 –2024 C.7.1.1	Table 28	M
	Clinical Trial Subject	PS 3.3 –2024 C.7.1.3	Not used	U
Study	General Study	PS 3.3 – 2024 C.7.2.1	Table 29	M
	Patient Study	PS 3.3 – 2024 C.7.2.2	Not used	U
	Clinical Trial Study	PS 3.3 – 2024 C.7.2.3	Not used	U
Series	General Series	PS 3.3 – 2024 C.7.3.1	Table 30	M
	Clinical Trial Series	PS 3.3 – 2024 C.7.3.2	Not used	U
Equipment	General Equipment	PS 3.3 – 2024 C.7.5.1	Table 31	U
	SC Equipment	PS 3.3 – 2024 C.8.6.1	Table 32	M
Image	General Image	PS 3.3 – 2024 C.7.6.1	Table 33	M
	Image Pixel	PS 3.3 – 2024 C.7.6.3	Table 34	M
	SC Image	PS 3.3 – 2024 C.8.6.2	Table 35	M
	Overlay Plane	PS 3.3 – 2024 C.9.2	Not used	U
	Modality LUT	PS 3.3 – 2024 C.11.1	Not used	U
	VOI LUT	PS 3.3 – 2024 C.11.2	Not used	U
	SOP Common	PS 3.3 – 2024 C.12.1	Table 36	M

Table 28 - Patient Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.1.1

Group and Element	VR	Type	Description	Value
(0010,0010)	PN	2	Patient's Name	Patient's full name obtained from the image header.
(0010,0020)	LO	2	Patient ID	Primary hospital identification number or code for the patient obtained from the image header.
(0010,0030)	DA	2	Patient's Birth Date	Birth date of the patient obtained from the image header.
(0010,0040)	CS	2	Patient's Sex	Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other

(0010,1010)	AS	3	Patient's Age	Age of the patient obtained from the image header.
(0008,1120)	SQ	3	Referenced Patient Sequence	Not used
(0010,0032)	TM	3	Patient Birth Time	Not used
(0010,1000)	LO	3	Other Patient ID	Not used
(0010,1001)	PN	3	Other Patient Names	Not used
(0010,2160)	SH	3	Ethnic Group	Not used
(0010,4000)	LT	3	Patient Comments	Not used

Table 29 - General Study Module Attributes – Mandatory - ref. PS 3.3 - 2024 C.7.2.1

Group and Element	VR	Type	Description	Value
(0020,000D)	UI	1	Study Instance UID	Unique identifier for the Study obtained from the image header.
(0008,0020)	DA	2	Study Date	The current date of the CAD processing
(0008,0030)	TM	2	Study Time	The current time of the CAD processing.
(0008,0090)	PN	2	Referring Physician's Name	Not used
(0008,0096)	SQ	3	Referring Physician Identification Sequence	Not used
(0020,0010)	SH	2	Study ID	User or equipment generated Study identifier obtained from the image header.
(0008,0050)	SH	2	Accession Number	A RIS generated number, which identifies the order for the Study obtained from the image header.
(0008,1030)	LO	3	Study Description	Institution-generated description or classification of the Study (component) performed.
(0008,1048)	PN	3	Physicians Of Record	Not used
(0008,1049)	SQ	3	Physician(s) of Record Identification Sequence	Not used
(0008,1060)	PN	3	Name Of Physicians Reading Study	Not used
(0008,1062)	SQ	3	Physician(s) Reading Study Identification Sequence	Not used
(0008,1110)	SQ	3	Referenced Study Sequence	Not used
(0008,1032)	UI	3	Procedure Code Sequence	Not used

Table 30 - General Series Module Attributes – Mandatory - ref. PS 3.3 - 2024 C.7.3.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	MG
(0020,000E)	UI	1	Series Instance UID	Unique identifier of the Series.
(0020,0011)	IS	2	Series Number	A number that identifies this Series.
(0020,0060)	CS	2C	Laterality	Laterality of (paired) body part examined. Required if the body part examined is a paired structure and Image Laterality (0020,0062) is not sent. Enumerated Values: R = right L = left
(0008,0021)	DA	3	Series Date	Date the Series started.
(0008,0031)	TM	3	Series Time	Time the Series started.
(0008,1050)	PN	3	Performing Physician's Name	Name of the physician(s) administering the Series.
(0008,1052)	SQ	3	Performing Physician Identification Sequence	Not used
(0018,1030)	LO	3	Protocol Name	Not used
(0008,103E)	LO	3	Series Description	Not used
(0008,1070)	PN	3	Operators' Name	Name(s) of the operator(s) supporting the Series.
(0008,1072)	SQ	3	Operator Identification Sequence	Not used
(0008,1111)	SQ	3	Referenced Performed Procedure Step Sequence	Not used
(0018,0015)	CS	3	Body Part Examined	BREAST
(0018,5100)	CS	2C	Patient Position	Not used
(0028,0108)	US or SS	3	Smallest Pixel Value in Series	Not used
(0028,0109)	US or SS	3	Largest Pixel Value in Series	Not used
(0040,0275)	SQ	3	Request Attributes Sequence	Not used
(0040,0253)	SH	3	Performed Procedure Step ID	Not used
(0040,0244)	DA	3	Performed Procedure Step Start Date	Not used
(0040,0245)	TM	3	Performed Procedure Step Start Time	Not used
(0040,0254)	LO	3	Performed Procedure Step Description	Not used
(0040,0260)	SQ	3	Performed Protocol Code Sequence	Not used
(0040,0280)	ST	3	Comments on the Performed Procedure Step	Not used

Table 31 - General Equipment Module Attributes - Mandatory - ref. PS 3.3 - 2024 C.7.5.1

Group and Element	Value Rep.	Req. Type	Description	Value
(0008,0070)	LO	2	Manufacturer	Manufacturer of the equipment that produced the composite instances.
(0008,0080)	LO	3	Institution Name	Not used
(0008,0081)	ST	3	Institution Address	Not used
(0008,1010)	SH	3	Station Name	Not used
(0008,1040)	LO	3	Institutional Department Name	Not used
(0008,1090)	LO	3	Manufacturer's Model Name	Manufacturer's model name of the equipment that produced the composite instances.
(0018,1000)	LO	3	Device Serial Number	Can be used for licensing.
(0018,1020)	LO	3	Software Version	Not used
(0018,1050)	DS	3	Spatial Resolution	Not used
(0018,1200)	DA	3	Date of Last Calibration	Not used
(0018,1201)	TM	3	Time of Last Calibration	Not used
(0028,0120)	US	3	Pixel Padding Value	Not used

Table 32 – Secondary Capture Image Equipment Module Attributes – Mandatory - ref. PS 3.3 - 2024 C.8.6.1

Group and Element	VR	Type	Description	Value
(0008,0064)	CS	1	Conversion Type	WSD
(0008,0060)	CS	3	Modality	MG
(0018,1010)	LO	3	Secondary Capture Device ID	User defined identification of the device that converted the image. Default iCAD CAD
(0018,1016)	LO	3	Secondary Capture Device Manufacturer	iCAD, Inc.
(0018,1018)	LO	3	Secondary Capture Device Manufacturer's Model Name	Density Assessment / Risk Assessment
(0018,1019)	LO	3	Secondary Capture Device Software Version	Manufacturer's designation of software version of the Secondary Capture Device.
(0018,1022)	SH	3	Video Image Format Acquired	Not used
(0018,1023)	LO	3	Digital Image Format Acquired	Not used

Table 33 – General Image Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.6.1

Group and Element	VR	Type	Description	Value
(0020,0013)	IS	2	Instance Number	A number that identifies this image.
(0020,0020)	CS	2C	Patient Orientation	Patient direction of the rows and columns of the image.
(0008,0023)	DA	2C	Content Date	The date the image pixel data creation started. Required if image is part of a series in which the images are temporally related.
(0008,0033)	TM	2C	Content Time	The time the image pixel data creation started. Required if image is part of a series in which the images are temporally related.
(0008,0008)	CS	3	Image Type	ORIGINAL
(0020,0012)	IS	3	Acquisition Number	Not used
(0008,0022)	DA	3	Acquisition Date	The date the acquisition of data that resulted in this image started.
(0008,0032)	TM	3	Acquisition Time	The time the acquisition of data that resulted in this image started
(0008,002A)	DT	3	Acquisition Datetime	Not used
(0008,1140)	SQ	3	Referenced Image Sequence	Not used
(0008,2111)	ST	3	Derivation Description	Not used
(0008,9215)	SQ	3	Derivation Code Sequence	Not used
(0008,2112)	SQ	3	Source Image Sequence	Not used
(0008,113A)	SQ	3	Referenced Waveform Sequence	Not used
(0020,1002)	IS	3	Images in Acquisition	Not used
(0020,4000)	LT	3	Image Comments	Not used
(0028,0300)	CS	3	Quality Control Image	Not used
(0028,0301)	CS	3	Burned In Annotation	Not used
(0028,2110)	CS	3	Lossy Image Compression	Not used
(0028,2112)	DS	3	Lossy Image Compression Ratio	Not used
(0088,0200)	SQ	3	Icon Image Sequence	Not used
(2050,0020)	CS	3	Presentation LUT Shape	Not used

Table 34 – Image Pixel Module – mandatory – ref. PS 3.3 - 2024 C.7.6.3

Group and Element	VR	Type	Description	Value
(0028,0002)	US	1	Samples per Pixel	Number of samples (planes) in this image.
(0028,0004)	CS	1	Photometric Interpretation	Specifies the intended interpretation of the pixel data: MONOCHROME2
(0028,0010)	US	1	Rows	Number of rows in the image.
(0028,0011)	US	1	Columns	Number of columns in the image.
(0028,0100)	US	1	Bits Allocated	Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated.
(0028,0101)	US	1	Bits Stored	Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored.
(0028,0102)	US	1	High Bit	Most significant bit for pixel sample data. Each sample shall have the same high bit.
(0028,0103)	US	1	Pixel Representation	Data representation of the pixel samples. Each sample shall have the same pixel representation. Enumerated Value: 0000H = unsigned integer.
(7FE0,0010)	OW or OB	1	Pixel Data	A data stream of the pixel samples that comprise the Image.
(0028,0006)	US	1C	Planar Configuration	Not used
(0028,0034)	IS	1C	Pixel Aspect Ratio	Not used
(0028,0106)	US or SS	3	Smallest Image Pixel Value	Not used
(0028,0107)	US or SS	3	Largest Image Pixel Value	Not used
(0028,1101)	US or SS	1C	Red Palette Color Lookup Table Descriptor	Not used
(0028,1102)	US or SS	1C	Green Palette Color Lookup Table Descriptor	Not used
(0028,1103)	US or SS	1C	Blue Palette Color Lookup Table Descriptor	Not used
(0028,1201)	OW	1C	Red Palette Color Lookup Table Data	Not used
(0028,1202)	OW	1C	Green Palette Color Lookup Table Data	Not used
(0028,1203)	OW	1C	Blue Palette Color Lookup Table Data	Not used

Table 35 - Secondary Capture Image Module Attributes – mandatory - ref. PS 3.3 - 2024 C.8.6.2

Group and Element	VR	Type	Description	Value
(0018,1012)	DA	3	Date Of Secondary Capture	Current date
(0018,1014)	TM	3	Time Of Secondary Capture	Current time

Table 36 - SOP Common Module Attributes – mandatory – ref. PS 3.3 - 2024 C.12.1

Group and Element	VR	Type	Description	Value
(0008,0016)	UI	1	SOP Class UID	"1.2.840.10008.5.1.4.1.1.7"
(0008,0018)	UI	1	SOP Instance UID	Uniquely identifies the SOP Instance.
(0008,0005)	CS	1C	Specific Character Set	Not used
(0008,0012)	DA	3	Instance Creation Date	Not used
(0008,0013)	TM	3	Instance Creation Time	Not used
(0008,0014)	UI	3	Instance Creator UID	Not used
(0008,0110)	SQ	3	Coding Scheme Identification Sequence	Not used
(0008,0201)	SH	3	Timezone Offset From UTC	Not used
(0018,A001)	SQ	3	Contributing Equipment Sequence	Not used
(0020,0013)	IS	3	Instance Number	A number that identifies this Composite object instance.
(0100,0410)	CS	3	SOP Instance Status	Not used
(0100,0420)	DT	3	SOP Authorization Date and Time	Not used
(0100,0424)	LT	3	SOP Authorization Comment	Not used
(0100,0426)	LO	3	Authorization Equipment Certification Number	Not used
(4FFE,0001)	SQ	3	MAC Parameters Sequence	Not used
(FFFA,FFFA)	SQ	3	Digital Signatures Sequence	Not used
(0400,0500)	SQ	1C	Encrypted Attributes Sequence	Not used

3.3.6.9 Output of CAD Results to a Remote System

3.3.6.10 Associated Real World Activity – CAD Output

PowerLook will issue a storage request (DICOM C-STORE) when it is done processing the images for the patient case. The CAD results will be sent over a single association to the configured remote device. Only one DICOM structured report will be sent per case. A single GSPS file can be sent for each image or a single GSPS file can be sent for the entire case. A Digital Mammography X-Ray – For Presentation image shall be sent for each image. A Secondary Capture image will be sent for Density Assessment and a separate Secondary Capture image can be sent for Risk Assessment. The Density Assessment and Risk Assessment can also be combined into a single Secondary Capture image.

3.3.6.11 Presentation Context Table – CAD Output
PowerLook supports the transfer syntaxes listed in Table 37. When sending CAD output, PowerLook will propose the Presentation Contexts listed in Table 38.

Table 37 – CAD Output Transfer Syntaxes

Transfer Syntaxes	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2
DICOM Explicit Little Endian	1.2.840.10008.1.2.1
DICOM Explicit Big Endian	1.2.840.10008.1.2.2

Table 38 – Presentation Contexts for CAD Output to Remote Device

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	**SOP Class UID**			
Mammography CAD Structured Report	1.2.840.10008.5.1.4.1.1.88.50	Declared in Table 37	SCU	None
Grayscale Softcopy Presentation State (GSPS)	1.2.840.10008.5.1.4.1.1.11.1	Declared in Table 37	SCU	None
Digital Mammography X-Ray – For Presentation with overlay or burnt in CAD findings	1.2.840.10008.5.1.4.1.1.1.2	Declared in Table 37	SCU	None
Secondary Capture	1.2.840.10008.5.1.4.1.1.7	Declared in Table 37	SCU	None

3.3.6.12 SOP Specific Conformance – CAD Output

PowerLook will process each image to determine the existence of any suspicious regions and compute a Density Assessment and a Risk Assessment. The CAD findings can be combined into a Mammography CAD Structured Report (SR) a Grayscale Softcopy Presentation State (GSPS) object, a Digital Mammography X-Ray image with the CAD detections applied to the overlay or burnt into the image, or a Secondary Capture (SC) object that will be sent to the remote system. The Density Assessment can be populated into the SR or its own Secondary Capture object. The Risk Assessment can be displayed in its own Secondary Capture object.

PowerLook performs a C-STORE request of the DICOM Structured Report to the configured remote device(s) and processes the C-STORE response message according to Table 39. Note that failure to open an association to a remote device will cause the patient case to be marked as failed in the PowerLook database.

Table 39 – Structured Report C-STORE Response Codes

Service Status	Further Meaning	Protocol Codes	Description
Success	Success	0x0000	Operation performed properly. Patient case is marked as completed in the PowerLook database.
Non-Success	Any message that was not successful, such as a Refusal, Error, Failure, or Warning.	Non-Zero	Patient case is marked as failed to send Structured Report in the PowerLook database.

The type of output that is produced and the recipients of the output is configurable from the PowerLook graphical user interface. Table 40 shows the DICOM information object definition (IOD) modules that are necessary to create the DICOM Mammography CAD Structured Report.

Table 40 - Structured Report IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient Module	PS 3.3 – 2024 C.7.1.1	Table 41	M
Study	General Study	PS 3.3 – 2024 C.7.2.1	Table 42	M
	Patient Study	PS 3.3 – 2024 C.7.2.2	Table 43	U
Series	SR Document Series	PS 3.3 – 2024 C.17.1	Table 44	M
Equipment	General Equipment	PS 3.3 – 2024 C.7.5.1	Table 45	M
Document	SR Document General	PS 3.3 – 2024 C.17.2	Table 46	M
	SR Document Content	PS 3.3 – 2024 C.17.3	Table 48 for the Mammography CAD SR.	M
	SOP Common	PS 3.3 – 2024 C.12.1	Table 47	M

Table 41 - Patient Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.1.1

Group and Element	VR	Type	Description	Value
(0010,0010)	PN	2	Patient's Name	Patient's full name obtained from the image header.
(0010,0020)	LO	2	Patient ID	Primary hospital identification number or code for the patient obtained from the image header.
(0010,0030)	DA	2	Patient's Birth Date	Birth date of the patient obtained from the image header.
(0010,0040)	CS	2	Patient's Sex	Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other
(0010,1010)	AS	3	Patient's Age	Age of the patient obtained from the image header.
(0008,1120)	SQ	3	Referenced Patient Sequence	Not used
>(0008,1150)	UI	1C	Referenced SOP Class UID	Not used
>(0008,1155)	UI	1C	Referenced SOP Instance UID	Not used
(0010,0032)	TM	3	Patient Birth Time	Not used
(0010,1000)	LO	3	Other Patient ID	Other patient ID obtained from the image header
(0010,1001)	PN	3	Other Patient Names	Not used
(0010,2160)	SH	3	Ethnic Group	Not used
(0010,4000)	LT	3	Patient Comments	Not used

Table 42 - General Study Module Attributes – Mandatory - ref. PS 3.3 - 2024 C.7.2.1

Group and Element	VR	Type	Description	Value
(0020,000D)	UI	1	Study Instance UID	Unique identifier for the Study obtained from the image header.
(0008,0020)	DA	2	Study Date	The current date of the CAD processing
(0008,0030)	TM	2	Study Time	The current time of the CAD processing.
(0008,0090)	PN	2	Referring Physician's Name	Not used
(0020,0010)	SH	2	Study ID	User or equipment generated Study identifier obtained from the image header.
(0008,0050)	SH	2	Accession Number	A RIS generated number, which identifies the order for the Study obtained from the image header.
(0008,1030)	LO	3	Study Description	Institution-generated description or classification of the Study (component) performed.
(0008,1048)	PN	3	Physicians Of Record	Not used
(0008,1049)	SQ	3	Physician(s) of Record Identification Sequence	Not used
(0008,1060)	PN	3	Name Of Physicians Reading Study	Not used
(0008,1062)	SQ	3	Physician(s) Reading Study Identification Sequence	Not used

| (0008,1110) | SQ | 3 | Referenced Study Sequence | Not used |
| (0008,1032) | SQ | 3 | Procedure Code Sequence | Not used |

Table 43 - Patient Study Module Attributes – Optional - ref. PS 3.3 - 2024 C.7.2.2

Group and Element	VR.	Type	Description	Value
(0008,1080)	LO	3	Admitting Diagnosis Description	Not used
(0010,1010)	AS	3	Patient's Age	Age of patient
(0010,1020)	DS	3	Patient Size	Not used
(0010,1030)	DS	3	Patient Weight	Not used
(0010,2180)	SH	3	Occupation	Not used
(0010,21B0)	LT	3	Additional Patient History	Not used

Table 44 - SR Document Series Module Attributes - Mandatory - ref. PS 3.3 - 2024 C.17.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality Type	"SR"
(0020,000E)	UI	1	Series Instance UID	1.2.840.114191.8.W.X.Y.Z
(0020,0011)	IS	1	Series Number	Configurable, with default being "1"
(0008,1111)	SQ	2	Referenced Study Component Sequence	Not used

Table 45 - General Equipment Module Attributes - Mandatory - ref. PS 3.3 - 2024 C.7.5.1

Group and Element	VR	Type	Description	Value
(0008,0070)	LO	2	Manufacturer	"iCAD, Inc."
(0008,0080)	LO	3	Institution Name	Uses Institution Name (0008,0080) of image
(0008,0081)	ST	3	Institution Address	Uses Institution Address (0008,0081) of image
(0008,1010)	SH	3	Station Name Unit #	Not used
(0008,1040)	LO	3	Institutional Department Name	Not used
(0008,1090)	LO	3	Manufacturer's Model Name	ProFound AI 3D or ProFound AI 2D
(0018,1000)	LO	3	Device Serial Number	Can be used for licensing
(0018,1020)	LO	3	Software Versions	The Software Versions attribute is a multi-valued attribute, built as follows: Value1\Value2\Value3
				Value1: If SecondLook Digital CAD: "7.2-Z", where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point If ProFound AI: "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor

				revision, and where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point
				Value2: Algorithm build of the software
				Value3: PowerLook build information
(0018,1008)	LO	3	Gantry ID	Not used
(0018,1050)	DS	3	Spatial Resolution mm	Not used
(0018,1200)	DA	3	Date of Last Calibration	Not used
(0018,1201)	TM	3	Time of Last Calibration	Not used
(0028,0120)	US	3	Pixel Padding Value	Not used

Table 46 - SR Document General Module Attributes – ref. PS 3.3 - 2024 C.17.2 – Table C.17-2

Group and Element	VR	Type	Description	Value
(0020,0013)	SH	1	Instance Number	Configurable, with the default being "1"
(0040,A491)	CS	1	Completion Flag	"COMPLETE"
(0040,A492)	LO	3	Completion Flag Description	Not used
(0040,A493)	CS	1	Verification Flag	"UNVERIFIED"
(0008,0023)	DA	1	Content Date	The current date of the CAD processing.
(0008,0033)	TM	1C	Content Time	The current time of the CAD processing.
(0040,A073)	SQ	1	Verifying Observer Sequence	Not used
>(0040,A075)	PN	1	Verifying Observer Name	Not used
>(0040,A088)	SQ	2	Verifying Observer Identification Code Sequence	Not used
>(0040,A027)	LO	1	Verifying Organization	Not used
>(0040,A030)	DT	1	Verification DateTime	Not used
(0040,A360)	SQ	1C	Predecessor Documents Sequence	Not used
(0040,A525)	SQ	1C	Identical Documents Sequence	Not used
(0040,A370)	SQ	1C	Referenced Request Sequence	Not used
(0040,A372)	SQ	2	Performed Procedure Code Sequence	Not used
(0040,A375)	SQ	1C	Current Requested Procedure Evidence Sequence	A single sequence that contains the Study Instance UID, Series Instance UID, Referenced SOP Class UID, and Referenced SOP Instance UID for each image in the study. This sequence is described in the DICOM standard PS 3.3 – 2024 in Table C.17-3
>(0020,000D)	UI	1	Study Instance UID	Unique identifier for the Study obtained from the image header.

>(0008,1115)	SQ	1	Referenced Series Sequence	Sequence repeats for each image that exists in the study. The sequence contains the Attributes of one Series.
>>(0020,000E)	UI	1	Series Instance UID	Unique identifier of a Series obtained from the image header that is part of this Study containing the referenced Instances.
>>(0008,0054)	AE	3	Retrieve AE Title	Not used
>>(0068,0130)	SH	3	Storage Media File-Set ID	Not used
>>(0068,0140)	UI	3	Storage Media File-Set UID	Not used
>>(0008,1199)	SQ	1	Referenced SOP Sequence	References to Object Instance pairs that are part of the Study defined by Study Instance UID and the Series defined by Series Instance UID (0020,000E) and are obtained from the image header.
>>>(0008,1150)	UI	1	Referenced SOP Class UID	Uniquely identifies the referenced SOP Class that is obtained from the image header.
>>>(0008,1155)	UI	1	Referenced SOP Instance UID	Uniquely identifies the referenced SOP instance that is obtained from the image header.

Table 47 - SOP Common Module Attributes – Mandatory – ref. PS 3.3 - 2024 C.12.1 – Table C.12-1

Group and Element	VR	Type	Description	Value
(0008,0016)	UI	1	SOP Class UID	"1.2.840.10008.5.1.4.1.1.88.50", which represents Mammography CAD Structured Report.
(0008,0018)	UI	1	SOP Instance UID	1.2.840.114191.8.W.X.Y.Z
(0008,0005)	CS	1C	Specific Character Set	ISO_IR 100
(0008,0012)	DA	3	Instance Creation Date	Current date of the CAD processing.
(0008,0013)	TM	3	Instance Creation Time	Current time of the CAD processing.
(0008,0014)	UI	3	Instance Creator UID	Not used
(0008,0110)	SQ	3	Coding Scheme Identification Sequence	Not used
(0008,0201)	SH	3	Timezone Offset From UTC	Not used
(0018,A001)	SQ	3	Contributing Equipment Sequence	Not used
(0020,0013)	IS	3	Instance Number	Configurable, with default being "1"
(0100,0410)	CS	3	SOP Instance Status	Not used
(0100,0420)	DT	3	SOP Authorization Date and Time	Not used
(0100,0424)	LT	3	SOP Authorization Comment	Not used
(0100,0426)	LO	3	Authorization Equipment Certification Number	Not used
(4FFE,0001)	SQ	3	MAC Parameters Sequence	Not used
(FFFA,FFFA)	SQ	3	Digital Signatures Sequence	Not used

3.3.6.12.1.1 Storage of CAD Results – Mammography CAD Structured Report

PowerLook will process each image to determine the existence of any suspicious regions. The results of this processing will be combined into a single DICOM Mammography CAD Structured Reporting message that will be sent to the remote system (that is if the remote device was configured to receive this output). Table 40 defines the DICOM modules that are used to create the Mammography CAD Structured Report. The Mammography CAD Structured Report uses the following additional tables to create the report: Table 41, Table 42, Table 43, Table 44, Table 45, Table 46, and Table 47. Table 48 defines the Mammography CAD Structured Report's Document Content Module, which utilizes the Mammography CAD SR templates.

A high-level overview of the structure of the DICOM Mammography CAD Structured Report is shown in Figure 3-1. This figure shows that there are five nodes that exist from the root node: the Language of Content Item and Descendants, the Image Library, the Mammography CAD Overall Impressions / Recommendations, the Summary of Detections, and the Summary of Analyses.

The Language of Content Item and Descendants (see Table 49) indicates that the language of the report is English and the country of the language is the United States. The Image Library (see Table 50) contains an entry for each image in the study. It contains the SOP Class UID and Instance UID and any of the following values if they are included in the image header:

- Image Laterality
- Image View
- Image View Modifier
- Patient Orientation Row
- Patient Orientation Column
- Study Date
- Study Time
- Content Date
- Content Time
- Horizontal Imager Pixel Spacing
- Vertical Imager Pixel Spacing
- Slice Thickness
- Frame of Reference UID
- Image Position (Patient) X
- Image Position (Patient) Y
- Image Position (Patient) Z
- Image Orientation (Patient) Row X
- Image Orientation (Patient) Row Y
- Image Orientation (Patient) Row Z
- Image Orientation (Patient) Column X
- Image Orientation (Patient) Column Y
- Image Orientation (Patient) Column Z

The node position of each image is significant, for it's the node position, not the Instance UID, which is used for reference by each CAD detection.

The Mammography CAD Overall Impressions / Recommendations node (see Table 51) contains an overall status summary of the CAD processing. The status values will be either:

- "All algorithms succeeded; without findings"
- "All algorithms succeeded; with findings"
- "Not all algorithms succeeded; without findings"

- "Not all algorithms succeeded; with findings"
- "No algorithms succeeded; without findings"

The Mammography CAD Impression / Recommendation body can be configured to be populated if using Density Assessment (see Table 52 and Figure 3-6). Computed values shall consist of:

- Breast tissue density for each breast
- Breast Area for each breast
- Fibroglandular tissue area for each breast
- Breast composition for patient case

The Mammography CAD Overall Impressions / Recommendations node will exist for each image. It will contain information in regards to Rendering Intent for the processed image as well as any Single Image Findings. Potential Single Image Findings are:

- Breast Composition (see Table 56 and Figure 3-5)
- Mammography Breast Density (see Table 54 and Figure 3-3)
- Calcification Cluster (see Table 55 and Figure 3-4)

A Mammography Breast Density Single Image Finding shall consist of:
- Rendering Intent
- Algorithm Name
- Algorithm Version
- Algorithm Parameters
- Certainty of Finding
- Finding Color
- A Center Point of the density
- An Outline of the density (detailed POLYLINE)

A Calcification Cluster Single Image Finding shall consist of:
- Rendering Intent
- Algorithm Name
- Algorithm Version
- Algorithm Parameters
- Certainty of Finding
- Finding Color
- A Center Point of the cluster
- An Outline of the cluster (detailed POLYLINE)

In the Mammography CAD SR, all Type 1 attributes shall be present with a valid value (not zero length), and all Type 2 attributes shall be present. The following Type 2 and Type 3 attributes shall be present with a nonzero length value:

- (0008,0020) Study Date
- (0008,0023) Content Date
- (0008,0030) Study Time: may be zero length, if not present or zero length in the corresponding images
- (0008,0033) Content Time
- (0008,0070) Manufacturer
- (0008,1010) Station Name

- (0008,1090) Manufacturer's Model Name
- (0010,0010) Patient's Name
- (0010,0020) Patient ID: may be zero length, if not present or zero length in the corresponding images
- (0018,1020) Software Versions (configurable to include the CAD version, CAD Build, and PowerLook Build)

The following Type 3 attributes may be present with a nonzero length value:

- (0008,0080) Institution Name
- (0008,0081) Institution Address

For the Mammography CAD SR, the Content Sequence (0040,A730) shall follow the rules of TID 4000 Mammography CAD Document Root Template, as defined in DICOM PS 3.16-2024. All Mandatory content items shall be present.

Local CAD Processing is capable of performing "Mammography breast density" and "Calcification Cluster" detection. The following templates are supported:

- TID 4000 Mammography CAD Document Root
- TID 4001 Mammography CAD Overall Impression/Recommendation
- TID 4002 Mammography CAD Impression / Recommendation Body
- TID 4003 Mammography CAD Individual Impression/Recommendation
- TID 4006 Mammography CAD Single Image Finding
- TID 4007 Mammography CAD Breast Composition
- TID 4010 Mammography CAD Calcification Cluster
- TID 4011 Mammography CAD Density
- TID 4015 CAD Detections Performed
- TID 4016 CAD Analyses Performed
- TID 4017 CAD Detection Performed
- TID 4018 CAD Analysis Performed
- TID 4019 CAD Algorithm Identification
- TID 4020 CAD Image Library Entry
- TID 4021 Mammography CAD Geometry
- TID 4023 CAD Operating Points

Content items that require "Rendering Intent" as a child content item shall have the value "Presentation Required.

The following User Optional content items may be present if the features are enabled in the System Configuration table:

- TID 4002 Mammography CAD Impression / Recommendation Body, Row 5, (DCM, 111033, "Impression Description") for "Breast Density Measurements" or "Case Score"
- TID 4002 Mammography CAD Impression / Recommendation Body, Row 10, (DCM, 111013, "Certainty of impression") for Case Score
- TID 4002 Mammography CAD Impression / Recommendation Body, Row 12, (DCM, 112191, "Breast tissue density")
- TID 4002 Mammography CAD Impression / Recommendation Body, Row 12, (DCM, 112193, "Breast Area")
- TID 4002 Mammography CAD Impression / Recommendation Body, Row 12, (DCM, 112192, "Dense Area")

- TID 4006 Mammography CAD Single Image Finding, Row 5 (111012, DCM, "Certainty of Finding")
- TID 4006 Mammography CAD Single Image Finding, Row 4, Include TID 4108 "Tracking Identifier" using Row 1 as (112039, DCM, "Tracking Identifier")
- TID 4021 Mammography CAD Geometry Template, Row 3 (111041, DCM, "Outline"), for (F-01796, SRT, "Mammography breast density") or (129793001, SCT, "Mammography breast density")
- TID 4019 CAD Algorithm Identification, Row 3, Algorithm Parameters
- TID 4023 CAD Operating Points, Row 1, (111072, DCM, "Maximum CAD Operating Point")
- TID 4023 CAD Operating Points, Row 2, (111092, DCM, "Recommended CAD Operating Point")
- TID 4023 CAD Operating Points, Row 3, (111093, DCM, "CAD Operating Point Table")
- TID 4023 CAD Operating Points, Row 7, (111081, DCM, "CAD Operating Point Description")

The following standard extended attribute for Mammography CAD SR can optionally be added and populated with a configurable string, default "iCAD CAD".
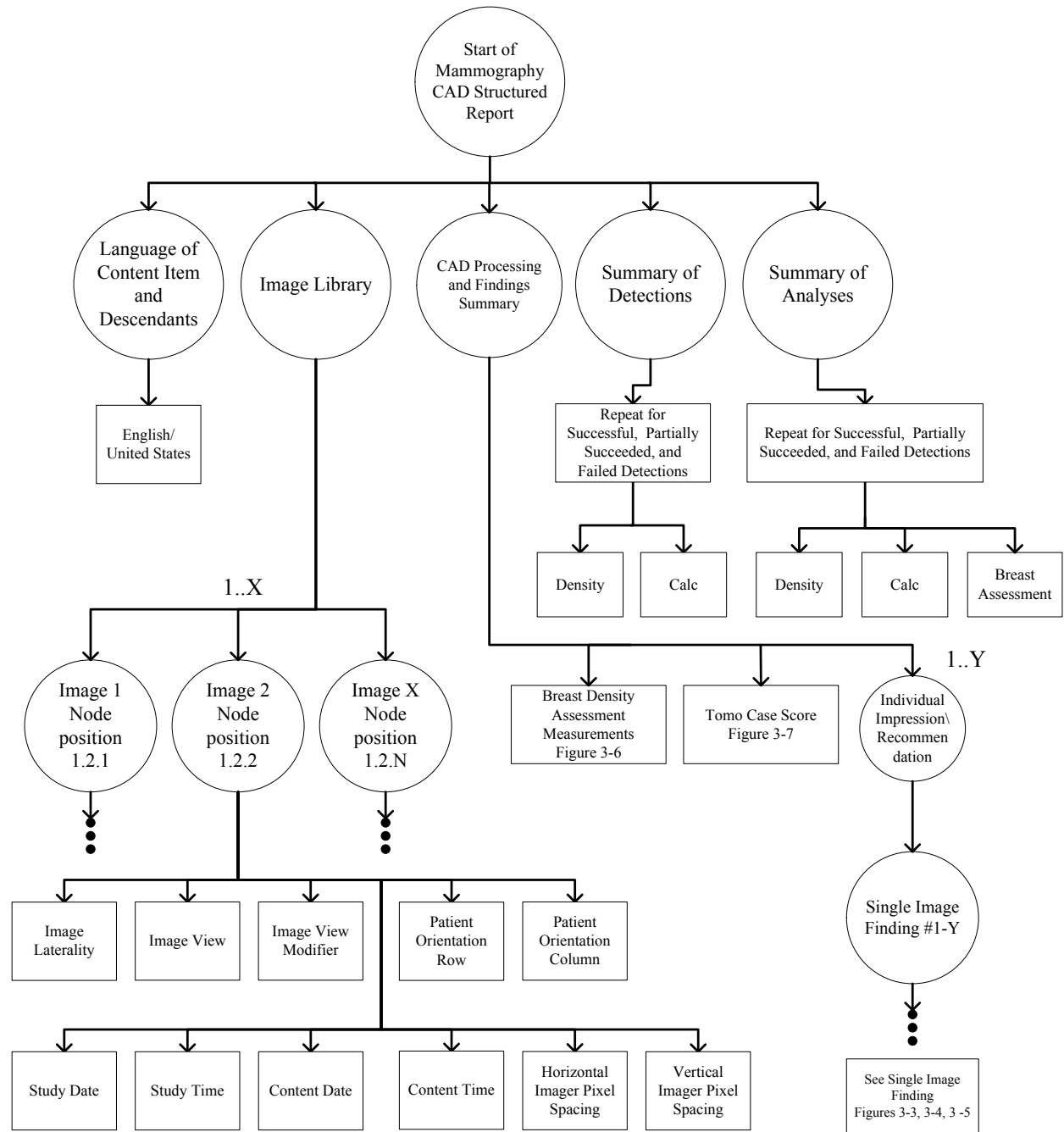
- (0008,103E) Series Description

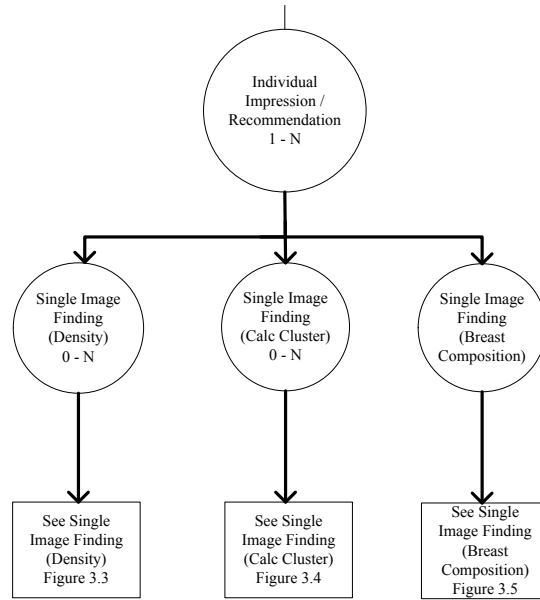**Figure 3-1 - Mammography CAD Structured Report Overview**

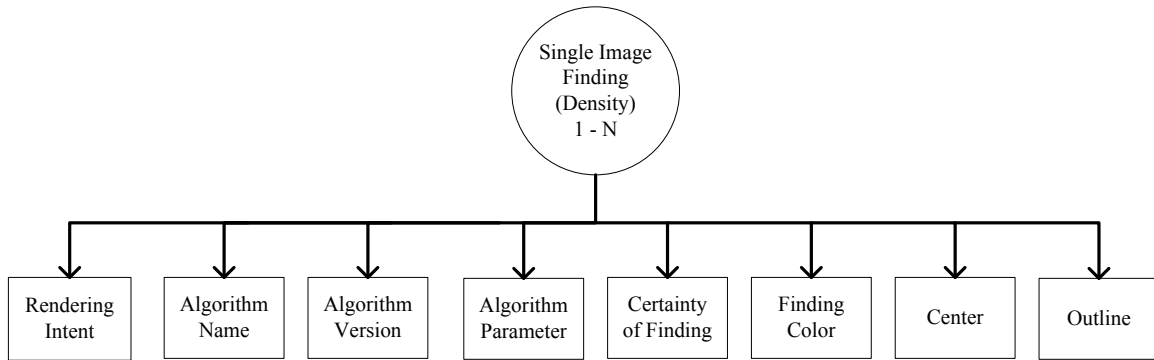**Figure 3-2 - Mammography CAD Structured Report Findings**

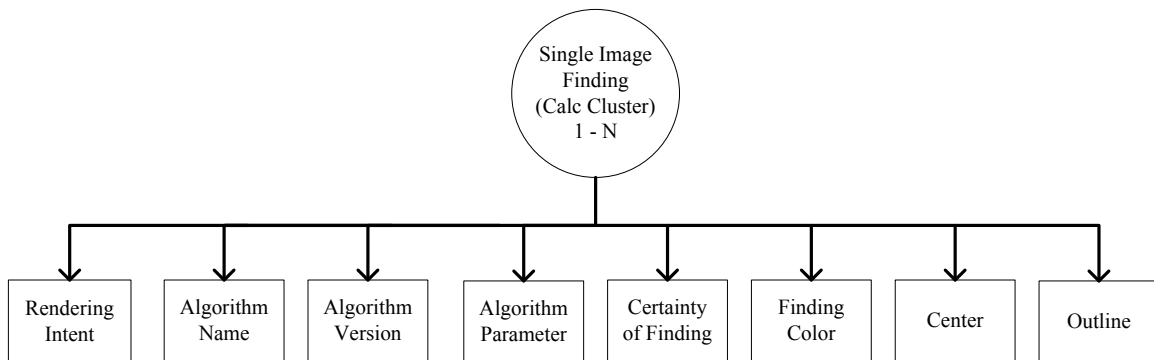**Figure 3-3 - Single Image Finding Density**

Figure 3-4 - Single Image Finding Calc Cluster
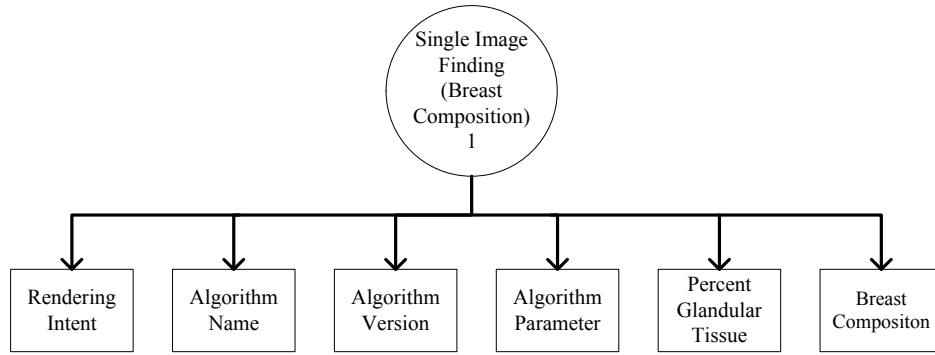
Figure 3-5 – Single Image Finding Breast Composition
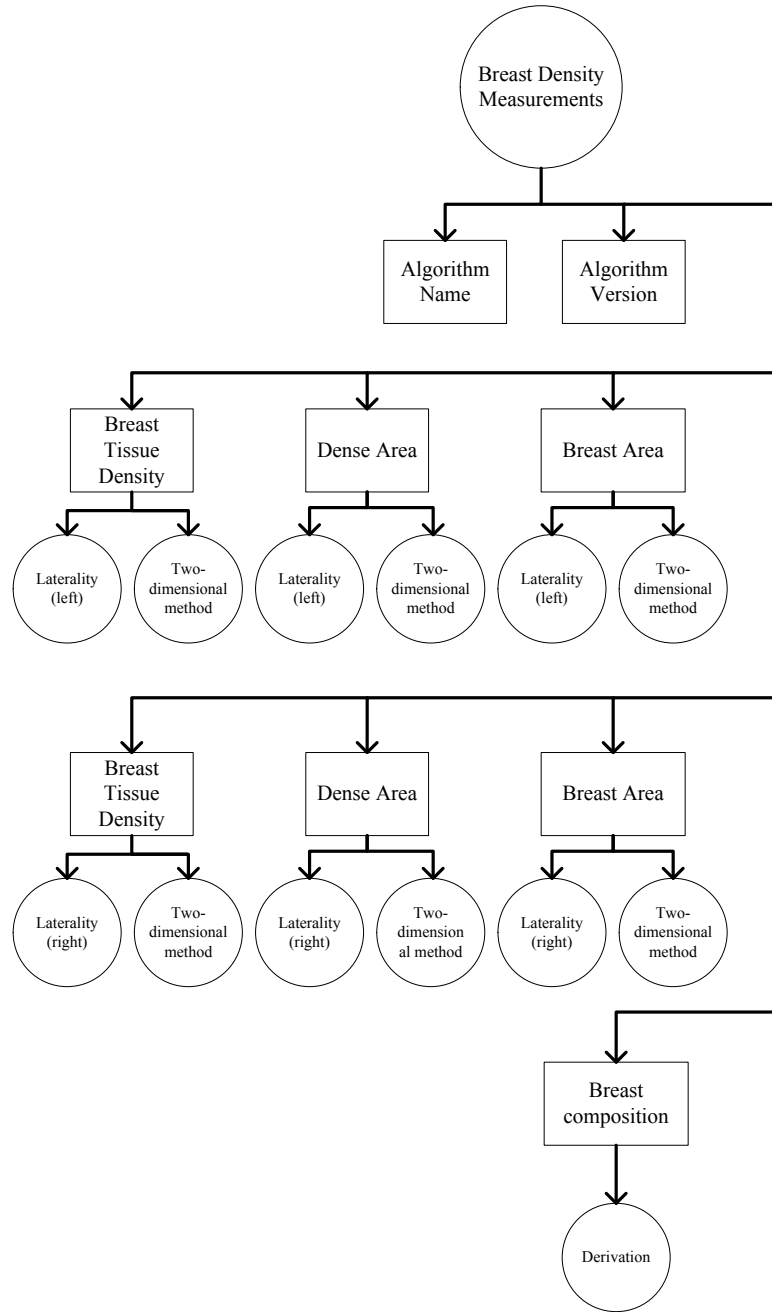
Figure 3-6 – Breast Density Measurements
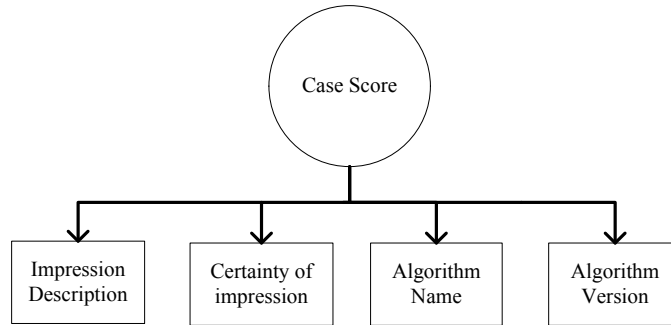
Figure 3-7 - Tomo Case Score

Table 48 - SR Document Content – Ref. PS 3.3 - 2024 C.17-3 – Table C.17.4

Group and Element	VR	Description	Value
(0040,A040)	CS	Value Type	"CONTAINER"
(0040,A043)	SQ	Concept-name Code Sequence	1
>(0008,0100)	SH	Code Value	111036
>(0008,0102)	SH	Coding Scheme Designator	DCM
>(0008,0104)	LO	Code Meaning	"Mammography CAD Report"
(0040,A050)	CS	Continuity of Content	"SEPARATE"
(0040,A504)	SQ	Content Template Sequence	1
>(0008,0105)	CS	Mapping Resource	"DCMR"
>(0040,DB00)	CS	Template Identifier	"4000"
(0040,A730)	SQ	Content Sequence	Include sequence for "Language of Content Item and Descendants". See Table 49 and DICOM TID 1204.
(0040,A730)	SQ	Content Sequence	Include "Image Library" container. See Table 50 and DICOM TID 4020.
(0040,A730)	SQ	Content Sequence	Include "Mammography CAD Overall Impression / Recommendation" container. See Table 51 and DICOM TID 4001.
(0040,A730)	SQ	Content Sequence	Include "Summary of Detections". See Table 57 and DICOM TID 4015.
(0040,A730)	SQ	Content Sequence	Include "Summary of Analyses". See Table 58 and DICOM TID 4016.

Table 49 - Language of Content Item and Descendants (TID 4000, TID 1204)

Group and Element	VR	Description	Value
>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>(0040,A040)	CS	Value Type	"CODE"
>(0040,A043)	SQ	Concept Name Code Sequence	1
>>(0008,0100)	SH	Code Value	"121049"
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"Language of Content Item and Descendants"
>(0040,A168)	SQ	Concept Code Sequence	1
>>(0008,0100)	SH	Code Value	"en"
>>(0008,0102)	SH	Code Scheme Designator	"RFC3066"
>>(0008,0104)	LO	Code Meaning	"English"
>(0040,A730)	SQ	Content Sequence	1
>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"

Group and Element	VR	Description	Value
>>(0040,A040)	CS	Value Type	"CODE"
>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"121046"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Country of Language"
>>(0040,A168)	SQ	Concept Code Sequence	1
>>>(0008,0100)	SH	Code Value	"US"
>>>(0008,0102)	SH	Code Scheme Designator	"ISO3166_1"
>>>(0008,0104)	LO	Code Meaning	"UNITED STATES"

Table 50 - Image Library Container (TID 4000, TID 4020)

Group and Element	VR	Description	Value
>(0040,A010)	CS	Relationship Type	"CONTAINS"
>(0040,A040)	CS	Value Type	"CONTAINER"
>(0040,A168)	SQ	Concept Code Sequence	1
>>(0008,0100)	SH	Code Value	"111028"
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"Image Library"
>(0040,A050)	CS	Continuity Of Content	"SEPARATE"
>(0040,A730)	SQ	Content Sequence	"Mammography CAD Image Library Entry". Repeat this sequence for each image in the study and also for every unique frame that contains a finding in a BTO object.
>>(0008,1199)	SQ	Referenced SOP Sequence	1
>>>(0008,1150)	UI	Referenced SOP Class UID	The SOP Class UID of the image being processed.
>>>(0008,1155)	UI	Referenced SOP Instance UID	The SOP Instance UID of the image being processed.
>>>(0008,1160)	IS	Referenced Frame Number	Frame number in the BTO object that contains the finding
>>(0040,A010)	CS	Relationship Type	"CONTAINS"
>>(0040,A040)	CS	Value Type	"IMAGE"
>>(0040,A730)	SQ	Content Sequence	The "Image Laterality" content sequence shall be present only if tag (0020,0062) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111027"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Laterality"
>>>(0040,A168)	SQ	Concept Code Sequence	From Context ID 6023 in the DICOM Standard
>>>>(0008,0100)	SH	Code Value	"T-04030" (Left breast), "T-04020" (Right breast), "T-04080" (Both breasts)
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Left breast", "Right breast", or "Both breasts"
>>(0040,A730)	SQ	Content Sequence	The "Image View" content sequence shall be present only if tag (0054,0220) is present in the image.

>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111031"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image View"
>>>(0040,A168)	SQ	Concept Code Sequence	From Context ID 4014 in the DICOM Standard
>>>>(0008,0100)	SH	Code Value	"R-10224" (medio-lateral), "R-10266" (medio-lateral oblique), "R-10228" (latero-medial), "R-10230" (latero-medial oblique), "R-10242" (cranio-caudal), "R-10244" (cranio-caudal from below), "R-102D0" (superolateral to inferomedial oblique), "R-102CF" (exaggerated cranio-caudal), "Y-X1770"/"R-1024A" (cranio-caudal exaggerated laterally), "Y-X1771"/"R-1024B" (cranio-caudal exaggerated medially)
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT" or "SNM3"
>>>>(0008,0104)	LO	Code Meaning	"medio-lateral", "medio-lateral oblique", "latero-medial", "latero-medial oblique", "cranio-caudal", "cranio-caudal from below", "superolateral to inferomedial oblique", "exaggerated cranio-caudal"," cranio-caudal exaggerated laterally", "cranio-caudal exaggerated medially"
>>(0040,A730)	SQ	Content Sequence	The "Image View Modifier" content sequence shall be present only if tag (0054,0222) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111032"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image View Modifier"
>>>(0040,A168)	SQ	Concept Code Sequence	From Context ID 4015 in the DICOM Standard
>>>>(0008,0100)	SH	Code Value	"R-102D2" (Cleavage), "R102D1" (Axillary Tail), "R-102D3" (Rolled lateral), "R-102D4" (Rolled Medial), "R-102D5" (Implant Displaced), "P2-00161" (Anterior compression) "R-40ABE" (Infra-mammary fold) "R-102CA" (Rolled Inferior), "R-102C9)" (Rolled Superior)
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT" or "SNM3"
>>>>(0008,0104)	LO	Code Meaning	Cleavage,

			Axillary Tail, Rolled lateral, Rolled Medial, Implant Displaced, Anterior compression, Infra-mammary fold, Rolled Inferior, Rolled Superior
>>(0040,A730)	SQ	Content Sequence	The "Patient Orientation Row" content sequence shall be present only if tag (0020,0020) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"TEXT"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111044"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Patient Orientation Row"
>>>(0040,A160)	UT	Text Value	First value from tag (0020,0020) in image.
>>(0040,A730)	SQ	Content Sequence	The "Patient Orientation Column" content sequence shall be present only if tag (0020,0020) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"TEXT"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111043"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Patient Orientation Column"
>>>(0040,A160)	UT	Text Value	Second value from tag (0020,0020) in image.
>>(0040,A730)	SQ	Content Sequence	The "Study Date" content sequence shall be present only if tag (0008,0020) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"DATE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111060"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Study Date"
>>>(0040,A121)	DA	Date	Value from tag (0008,0020) in image.
>>(0040,A730)	SQ	Content Sequence	The "Study Time" sequence shall be present only if tag (0008,0030) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"TIME"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111061"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Study Time"
>>>(0040,A122)	TM	Time	Value from tag (0008,0030) in image.
>>(0040,A730)	SQ	Content Sequence	The "Content Date" sequence shall be present only if tag (0008,0023) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"DATE"

>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111018"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Content Date"
>>>(0040,A121)	DA	Date	Value from tag (0008,0023) in image.
>>(0040,A730)	SQ	Content Sequence	The "Content Time" sequence shall be present only if tag (0008,0023) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"TIME"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111019"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Content Time"
>>>(0040,A122)	TM	Time	Value from tag (0008,0033) in image.
>>(0040,A730)	SQ	Content Sequence	The "Horizontal Imager Pixel Spacing" sequence shall be present only if tag (0018,1164) or (0028,0030) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111026"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Horizontal Imager Pixel Spacing"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"um"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0103)	SH	Coding Scheme Version	1.4
>>>>>(0008,0104)	LO	Code Meaning	"micrometer"
>>>>(0040,A30A)	DS	Numeric Value	First value from tag (0018,1164) or (0028,0030) in image.
>>(0040,A730)	SQ	Content Sequence	The "Vertical Imager Pixel Spacing" sequence shall be present only if tag (0018,1164) or (0028,0030) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111066"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Vertical Imager Pixel Spacing"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"um"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0103)	SH	Coding Scheme Version	1.4
>>>>>(0008,0104)	LO	Code Meaning	"micrometer"
>>>>(0040,A30A)	DS	Numeric Value	Second value from tag (0018,1164) or (0028,0030) in image.
>>(0040,A730)	SQ	Content Sequence	The "Slice Thickness" sequence shall be present only if tag (0018,0050) is present in the image.

>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"112225"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Slice Thickness"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"um"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0103)	SH	Coding Scheme Version	1.4
>>>>>(0008,0104)	LO	Code Meaning	"micrometer"
>>>>(0040,A30A)	DS	Numeric Value	Slice Thickness value from tag (0018,0050) in image. OR (5200,9229) Shared Functional Groups Sequence >(0028,9110) Pixel Measures Sequence >>(0018,0050) Slice Thickness OR (5200,9230) Per-Frame Functional Groups Sequence >(0028,9110) Pixel Measures Sequence >>(0018,0050) Slice Thickness
>>(0040,A730)	SQ	Content Sequence	The "Frame of Reference UID" sequence shall be present only if tag (0020,0052) is present in the image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"UIDREF"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"112227"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Frame of Reference UID"
>>>(0040,A124)	UI	UID	Frame of Reference UID value from tag (0020,0052) in the BTO image
>>(0040,A730)	SQ	Content Sequence	The "Image Position (Patient) X" sequence shall be present only if the first value of tag (0020,0032) is present in the BTO image. Will only be populated for each unique image reference and will not be populated for every unique frame that contains a finding in a BTO object.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110901"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Position (Patient) X"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"mm"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"millimeter"

>>>>(0040,A30A)	DS	Numeric Value	First value of Image Position (Patient) from tag (0020,0032) for the referenced image or frame.
>>(0040,A730)	SQ	Content Sequence	The "Image Position (Patient) Y" sequence shall be present only if the second value of tag (0020,0032) is present in the BTO image. Will only be populated for each unique image reference and will not be populated for every unique frame that contains a finding in a BTO object.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110902"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Position (Patient) Y"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"mm"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"millimeter"
>>>>(0040,A30A)	DS	Numeric Value	Second value of Image Position (Patient) from tag (0020,0032) for the referenced image or frame.
>>(0040,A730)	SQ	Content Sequence	The "Image Position (Patient) Z" sequence shall be present only if the third value of tag (0020,0032) is present in the BTO image. Will only be populated for each unique image reference and will not be populated for every unique frame that contains a finding in a BTO object.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110903"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Position (Patient) Z"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"mm"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"millimeter"
>>>>(0040,A30A)	DS	Numeric Value	Third value of Image Position (Patient) from tag (0020,0032) for the referenced image or frame.
>>(0040,A730)	SQ	Content Sequence	The "Image Orientation (Patient) Row X" sequence shall be present only if the first value of tag (0020,0037) is present in the BTO image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110904"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"

>>>>(0008,0104)	LO	Code Meaning	"Image Orientation (Patient) Row X"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"{-1:1}"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"{-1:1}"
>>>>(0040,A30A)	DS	Numeric Value	First value of Image Orientation Patient from tag (0020,0037) in image.
>>(0040,A730)	SQ	Content Sequence	The "Image Orientation (Patient) Row Y" sequence shall be present only if the second value of tag (0020,0037) is present in the BTO image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110905"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Orientation (Patient) Row Y"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"{-1:1}"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"{-1:1}"
>>>>(0040,A30A)	DS	Numeric Value	Second value of Image Orientation Patient from tag (0020,0037) in image.
>>(0040,A730)	SQ	Content Sequence	The "Image Orientation (Patient) Row Z" sequence shall be present only if the third value of tag (0020,0037) is present in the BTO image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110906"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Orientation (Patient) Row Z"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"{-1:1}"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"{-1:1}"
>>>>(0040,A30A)	DS	Numeric Value	Third value of Image Orientation Patient from tag (0020,0037) in image.
>>(0040,A730)	SQ	Content Sequence	The "Image Orientation (Patient) Column X" sequence shall be present only if the fourth value of tag (0020,0037) is present in the BTO image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110907"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Orientation (Patient) Column X"
>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1

>>>>>(0008,0100)	SH	Code Value	"{-1:1}"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"{-1:1}"
>>>>(0040,A30A)	DS	Numeric Value	Fourth value of Image Orientation Patient from tag (0020,0037) in image.
>>(0040,A730)	SQ	Content Sequence	The "Image Orientation (Patient) Column Y" sequence shall be present only if the fifth value of tag (0020,0037) is present in the BTO image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110908"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Orientation (Patient) Column Y"
>>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"{-1:1}"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"{-1:1}"
>>>>(0040,A30A)	DS	Numeric Value	Fifth value of Image Orientation Patient from tag (0020,0037) in image.
>>(0040,A730)	SQ	Content Sequence	The "Image Orientation (Patient) Column Z" sequence shall be present only if the sixth value of tag (0020,0037) is present in the BTO image.
>>>(0040,A010)	CS	Relationship Type	"HAS ACQ CONTEXT"
>>>(0040,A040)	CS	Value Type	"NUM"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"110909"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Image Orientation (Patient) Column Z"
>>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>(0040,08EA)	SQ	Measured Units Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"{-1:1}"
>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>(0008,0104)	LO	Code Meaning	"{-1:1}"
>>>>(0040,A30A)	DS	Numeric Value	Sixth value of Image Orientation Patient from tag (0020,0037) in image.

Table 51 - Mammography CAD Overall Impression / Recommendation (TID 4000, TID 4001)

Group and Element	VR	Description	Value
>(0040,A010)	CS	Relationship Type	"CONTAINS"
>(0040,A040)	CS	Value Type	"CODE"
>(0040,A043)	SQ	Concept-name Code Sequence	1
>>(0008,0100)	SH	Code Value	"111017"
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"CAD Processing and Findings Summary"
>(0040,A168)	SQ	Concept Code Sequence	From Context ID 4015 in the DICOM Standard

>>(0008,0100)	SH	Code Value	"111241" (All algorithms succeeded; without findings), "111242" (All algorithms succeeded; with findings), "111243" (Not all algorithms succeeded; without findings), "111244" (Not all algorithms succeeded; with findings), or "111245" (no algorithms succeeded; without findings). Note: This can be configured such that calc and density findings are considered the only findings.
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	All algorithms succeeded; without findings, All algorithms succeeded; with findings, Not all algorithms succeeded; without findings, Not all algorithms succeeded; with findings. or No algorithms succeeded; without findings.
>(0040,A730)	SQ	Content Sequence	Repeat for number of successful images processed in study. Note: This can be configured to iterate based on number of detections instead of number of images. Note: Insert TID 4002 if breast density assessment values are enabled. See Table 52 Note: Insert TID 4002 if Case Score is enabled. See Table 53.
>>(0040,A010)	CS	Relationship Type	"INFERRED FROM"
>>(0040,A040)	CS	Value Type	"CONTAINER"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111034"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Individual Impression/Recommendation"
>>(0040,A050)	CS	Continuity of Content	"SEPARATE"
>>(0040,A730)	SQ	Content Sequence	Repeat for Rendering Intent and number of single image findings.
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111056"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Rendering Intent"
>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111150" or "111151" or "111152"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Presentation Required: Rendering device is expected to present" or "Presentation Optional: Rendering device may present" or "Not for Presentation: Rendering device expected not to present"
>>>(0040,A010)	CS	Relationship Type	"CONTAINS"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111059" or "111015"

>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Single Image Finding"
>>>(0040,A168)	SQ	Concept Code Sequence	From Context ID 6014
>>>>(0008,0100)	SH	Code Value	"F-01796" or "129793001" (Mammography breast density), "F-01775" or "129769006" (Calcification Cluster), "F-01710" or "129715009" (Breast composition)
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT" or "SCT"
>>>>(0008,0103)	SH	Code Scheme Version	"1.1" only if (0008,0104) is "Mammography breast density" or "Calcification Cluster"
>>>>(0008,0104)	LO	Code Meaning	"Mammography breast density", "Calcification Cluster"
Use Table 54 if next container is "Mammography breast density" Use Table 55 if next container is "Calcification Cluster"			

Table 52 – Breast Density Assessment (TID 4002 Mammo CAD Body)

Group and Element	VR	Description	Value
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"TEXT"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111033"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Impression Description"
>>(0040,A160)	UT	Text Value	"Breast Density Measurements"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"TEXT"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111001"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>(0040,A160)	UT	Text Value	"Density Assessment"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"TEXT"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111003"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>(0040,A160)	UT	Text Value	Version of the breast density assessment algorithm
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"112191"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Breast tissue density"
>>(0040,A300)	SQ	Measured Value Sequence	
>>>(0040,08EA)	SQ	Measured Units Code Sequence	
>>>>(0008,0100)	SH	Code Value	%
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	1.4
>>>>(0008,0104)	LO	Code Meaning	"Percent"
>>>(0040,A30A)	DS	Numeric Value	Computed value
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"G-C171"
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Laterality"
>>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"T-04030"
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Left breast"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"

>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"112192"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Dense Area"
>>(0040,A300)	SQ	Measured Value Sequence	
>>>(0040,08EA)	SQ	Measured Units Code Sequence	
>>>>(0008,0100)	SH	Code Value	cm2
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	1.4
>>>>(0008,0104)	LO	Code Meaning	"Square centimeter"
>>>(0040,A30A)	DS	Numeric Value	Computed value
>>(0040,A730)	SQ	Content Sequence	
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"G-C171"
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Laterality"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"T-04030"
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Left breast"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"112193"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Breast Area"
>>(0040,A300)	SQ	Measured Value Sequence	
>>>(0040,08EA)	SQ	Measured Units Code Sequence	
>>>>(0008,0100)	SH	Code Value	cm2
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	1.4
>>>>(0008,0104)	LO	Code Meaning	"Square centimeter"
>>>(0040,A30A)	DS	Numeric Value	Computed value
>>(0040,A730)	SQ	Content Sequence	
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"

>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"G-C171"
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Laterality"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"T-04030"
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Left breast"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"112191"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Breast tissue density"
>>(0040,A300)	SQ	Measured Value Sequence	
>>>(0040,08EA)	SQ	Measured Units Code Sequence	
>>>>(0008,0100)	SH	Code Value	%
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	1.4
>>>>(0008,0104)	LO	Code Meaning	"Percent"
>>>(0040,A30A)	DS	Numeric Value	Computed value
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"G-C171"
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Laterality"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"T-04020"
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Right breast"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"

>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"112192"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Dense Area"
>>(0040,A300)	SQ	Measured Value Sequence	
>>>(0040,08EA)	SQ	Measured Units Code Sequence	
>>>>(0008,0100)	SH	Code Value	cm2
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	1.4
>>>>(0008,0104)	LO	Code Meaning	"Square centimeter"
>>>(0040,A30A)	DS	Numeric Value	Computed value
>>(0040,A730)	SQ	Content Sequence	
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"G-C171"
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Laterality"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"T-04020"
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Right breast"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"112193"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Breast Area"
>>(0040,A300)	SQ	Measured Value Sequence	
>>>(0040,08EA)	SQ	Measured Units Code Sequence	
>>>>(0008,0100)	SH	Code Value	cm2
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	1.4
>>>>(0008,0104)	LO	Code Meaning	"Square centimeter"
>>>(0040,A30A)	DS	Numeric Value	Computed value
>>(0040,A730)	SQ	Content Sequence	
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"G-C171"
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Laterality"

>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"T-04020"
>>>>(0008,0102)	SH	Code Scheme Designator	"SNM3"
>>>>(0008,0104)	LO	Code Meaning	"Right breast"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"CODE"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"F-01710" or "129715009"
>>>(0008,0102)	SH	Code Scheme Designator	"SRT" or "SCT"
>>>(0008,0104)	LO	Code Meaning	"Breast composition"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"F-01711" or "129716005", "F-01712" or "129717001", "F-01713" or "129718006", or "F-01714" or "129719003",
>>>>(0008,0102)	SH	Code Scheme Designator	"SRT" or "SCT"
>>>>(0008,0104)	LO	Code Meaning	"Almost entirely fat", "Scattered fibroglandular densities", "Heterogeneously dense", "Extremely dense"
>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"121401"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Derivation"
>>>(0040,A168)	SQ	Concept Code Sequence	
>>>>(0008,0100)	SH	Code Value	"112188"
>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Two-dimensional method"

Table 53 - Case Score

Group and Element	VR	Description	Value
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"TEXT"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111033"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Impression Description"
>>(0040,A160)	UT	Text Value	"Case Score"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"NUM"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111013"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Certainty of Impression"
>>(0040,A300)	SQ	Measured Value Sequence	1
>>>(0040,08EA)	SQ	Measurement Units Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"%" "1"
>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>(0008,0103)	SH	Code Scheme Version	"1.4"
>>>>(0008,0104)	LO	Code Meaning	"Percent" / "no units"
>>>(0040,A304)	DS	Numeric Value	Value of Case Score, range 0-100
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"TEXT"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111001"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>(0040,A160)	UT	Text Value	"ProFound AI 3D" or "ProFound AI 2D"
>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>(0040,A040)	CS	Value Type	"TEXT"
>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111003"
>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>(0040,A160)	UT	Text Value	"X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point

Table 54 – Mammography Breast Density Single Image Finding (TID 4006, TID 4019, TID 4021, TID 4011, TID 1400)

Group and Element	VR	Description	Value
>>>(0040,A730)	SQ	Content Sequence	Repeat for: Rendering Intent, Algorithm Name, Algorithm Version, Algorithm Parameters, Certainty of Finding, Finding Color, Center, Outline
>>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>>(0040,A040)	CS	Value Type	"CODE"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111056"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Rendering Intent"
>>>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111150" or "111151" or "111152"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Presentation Required: Rendering device is expected to present"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111001"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>>>(0040,A160)	UT	Text Value	"ProFound AI 3D", "ProFound AI 2D", or "iCAD PowerLook"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111003"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>>>(0040,A160)	UT	Text Value	If SecondLook Digital CAD: "7.2-Z", where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point If ProFound AI: "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point

				M = Medium Op Point H = High Op Point
>>>(0040,A730)	SQ	Content Sequence	Sequence exists if the Certainty of Finding feature is enabled.
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"NUM"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111012"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Certainty of Finding"
>>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>>(0040,08EA)	SQ	Measurement Units Code Sequence	1
>>>>>>(0008,0100)	SH	Code Value	"%" / "1"
>>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>>(0008,0103)	SH	Code Scheme Version	"1.4"
>>>>>>(0008,0104)	LO	Code Meaning	"Percent" / "no units"
>>>>>(0040,A30A)	DS	Numeric Value	Certainty of Finding percentage value of detection
>>>(0040,A730)	SQ	Content Sequence	Sequence exists if the Finding Color feature is enabled.
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"PFD-1"
>>>>>(0008,0102)	SH	Code Scheme Designator	"99-ICADMED"
>>>>>(0008,0104)	LO	Code Meaning	"Finding Color"
>>>>(0040,A160)	UT	Text Value	RGB (RRGGBB) value in hex notation
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"SCOORD"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111010"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Center"
>>>>(0040,A730)	SQ	Content Sequence	1
>>>>>(0040,A010)	CS	Relationship Type	"SELECTED FROM"
>>>>>(0040,DB73)	UL	Referenced Content Item Identifier	Reference to image, based on node position (x, y, z) in the image library.
>>>>(0070,0022)	FL	Graphic Data	The coordinates (Column, Row) of the center point of the detection.
>>>>(0070,0023)	CS	Graphic Type	"POINT"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"SCOORD"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111041"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Outline"
>>>>(0040,A730)	SQ	Content Sequence	1
>>>>>(0040,A010)	CS	Relationship Type	"SELECTED FROM"
>>>>>(0040,DB73)	UL	Referenced Content Item Identifier	Reference to image, based on node position (x, y, z) in the image library.

Group and Element	VR	Description	Value
>>>>(0070,0022)	FL	Graphic Data	The coordinates that define the outline of the detection. If Graphic Type (0070,0023) is "ELLIPSE" then there shall exist four pixel (column, row) pairs, the first two points specifying the endpoints of the major axis and the second two points specifying the endpoints of the minor axis. If Graphic Type (0070,0023) is "POLYLINE", then a list of points (column, row pairs) will be given where straight lines are to be drawn from each point and the first and last vertices are equal to enclose the detection.
>>>>(0070,0023)	CS	Graphic Type	"ELLIPSE" if showing standard marker for density. "POLYLINE" if showing detailed contour of density.

Table 55 – Calcification Cluster Single Image Finding (TID 4006, TID 4019, TID 4021, TID 4010, TID 1400)

Group and Element	VR	Description	Value
>>>(0040,A730)	SQ	Content Sequence	Repeat for: Rendering Intent, Algorithm Name, Algorithm Version, Algorithm Parameters, Certainty of Finding, Finding Color, Center, Outline,
>>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>>(0040,A040)	CS	Value Type	"CODE"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111056"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Rendering Intent"
>>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111150" or "111151"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Presentation Required: Rendering device is expected to present"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111001"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>>>(0040,A160)	UT	Text Value	"ProFound AI 3D", "ProFound AI 2D", or "iCAD PowerLook"
>>>(0040,A730)	SQ	Content Sequence	1

>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111003"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>>>(0040,A160)	UT	Text Value	If SecondLook Digital CAD: "7.2-Z", where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point If ProFound AI: "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point
>>>(0040,A730)	SQ	Content Sequence	Sequence exists only if the certainty of finding feature is enabled.
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"NUM"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111012"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Certainty of Finding"
>>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>>(0040,08EA)	SQ	Measurement Units Code Sequence	1
>>>>>>(0008,0100)	SH	Code Value	"%" / "1"
>>>>>>(0008,0102)	SH	Code Scheme Designator	"UCUM"
>>>>>>(0008,0103)	SH	Code Scheme Version	"1.4"
>>>>>>(0008,0104)	LO	Code Meaning	"Percent" / "no units"
>>>>>(0040,A30A)	DS	Numeric Value	Certainty of Finding percentage value of detection
>>>(0040,A730)	SQ	Content Sequence	Sequence exists if the Finding Color feature is enabled.
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"PFD-1"
>>>>>(0008,0102)	SH	Code Scheme Designator	"99-ICADMED"
>>>>>(0008,0104)	LO	Code Meaning	"Finding Color"
>>>>(0040,A160)	UT	Text Value	RGB (RRGGBB) value in hex notation
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"SCOORD"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111010"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"

>>>>>(0008,0104)	LO	Code Meaning	"Center"
>>>>(0040,A730)	SQ	Content Sequence	1
>>>>>(0040,A010)	CS	Relationship Type	"SELECTED FROM"
>>>>>(0040,DB73)	UL	Referenced Content Item Identifier	Reference to image, based on node position (x, y, z) in the image library.
>>>>(0070,0022)	FL	Graphic Data	The coordinates (Column, Row) of the center point of the detection.
>>>>(0070,0023)	CS	Graphic Type	"POINT"
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"SCOORD"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111041"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Outline"
>>>>(0040,A730)	SQ	Content Sequence	1
>>>>>(0040,A010)	CS	Relationship Type	"SELECTED FROM"
>>>>>(0040,DB73)	UL	Referenced Content Item Identifier	Reference to image based on node position in the image library.
>>>>(0070,0022)	FL	Graphic Data	The coordinates that define the outline of the calcification cluster. This will contain a list of points (column, row pairs) where straight lines are to be drawn from each point and the first and last vertices are equal to enclose the detection.
>>>>(0070,0023)	CS	Graphic Type	"POLYLINE"

Table 56 – Single Image Finding Breast Composition (TID 4006, TID 4019, TID 4007)

Group and Element	VR	Description	Value
>>>(0040,A730)	SQ	Content Sequence	Repeat for Rendering Intent, Algorithm Name, Algorithm Version, Breast Composition, Percent Fibroglandular Tissue
>>>>(0040,A010)	CS	Relationship Type	"HAS CONCEPT MOD"
>>>>(0040,A040)	CS	Value Type	"CODE"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111056"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Rendering Intent"
>>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111151"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Presentation Optional: Rendering device may present"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111001"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"

>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>>>(0040,A160)	UT	Text Value	"Density Assessment"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111003"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>>>(0040,A160)	UT	Text Value	Algorithm Version
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	SQ	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"F-01710" or "129715009"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"SRT" or "SCT"
>>>>>(0008,0104)	LO	Code Meaning	"Breast Composition"
>>>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"F-01711" or "129716005", "F-01712" or "129717001", "F-01713" or "1297180006", or "F-01714" or "129719003".
>>>>>(0008,0102)	SH	Coding Scheme Designator	SRT or SCT
>>>>>(0008,0104)	LO	Code Meaning	"Almost Entirely Fat", "Scattered Fibroglandular Densities", "Heterogeneously Dense", or "Extremely Dense".
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"NUM"
>>>>(0040,A043)	SQ	Concept-name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111046"
>>>>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Percent Fibroglandular Tissue"
>>>>>(0040,A300)	SQ	Measured Value Sequence	1
>>>>>(0040,08EA)	SQ	Measurement Units Code Sequence	1
>>>>>>(0008,0100)	SH	Code Value	%
>>>>>>(0008,0102)	SH	Code Scheme Designator	UCUM
>>>>>>(0008,0103)	SH	Coding Scheme Version	1.4
>>>>>>(0008,0104)	LO	Code Meaning	Percent
>>>>>(0040,A30A)	DS	Numeric Value	Percent Fibroglandular Tissue value
>>>>(0040,A010)	CS	Relationship Type	"SELECTED FROM"
>>>>(0040,DB73)	UL	Referenced Content Item Identifier	X\Y\Z, which represents the reference node position of the image processed.

Table 57 - Summary of Detections (TID 4000, TID 4015, TID 4017, TID 4019, TID 4023)

Group and Element	VR	Description	Value
>(0040,A010)	CS	Relationship Type	"CONTAINS"
>(0040,A040)	CS	Value Type	"CODE"
>(0040,A043)	SQ	Concept-name Code Sequence	1
>>(0008,0100)	SH	Code Value	"111064"
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"Summary of Detections"
>(0040,A168)	SQ	Concept Code Sequence	1
>>(0008,0100)	SH	Code Value	"111222" if successful. "111223" if partially succeeded "111224" if failed.
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"Succeeded", "Partially Succeeded", or "Failed"
>(0040,A730)	SQ	Content Sequence	Can have a container sequence for successful detections and another container for failed detections
>>(0040,A010)	CS	Relationship Type	"INFERRED FROM"
>>(0040,A040)	CS	Value Type	"CONTAINER"
>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111063" for successful detections. "111025" for failed detections
>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Successful Detections" or "Failed Detections"
>>(0040,A050)	CS	Continuity of Content	"SEPARATE"
>>(0040,A730)	SQ	Content Sequence	Two sequences shall exist, one for densities and one for calcifications.
>>>(0040,A010)	CS	Relationship Type	"CONTAINS"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111022"
>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Detection Performed"
>>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"F-01796" or "129793001"
>>>>(0008,0102)	SH	Coding Scheme Designator	"SRT" or "SCT"
>>>>(0008,0102)	SH	Coding Scheme Version	"1.1"
>>>>(0008,0104)	LO	Code Meaning	"Mammography breast density"
>>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111001"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>>>(0040,A160)	UT	Text Value	"ProFound AI 3D", "ProFound AI 2D", or "iCAD PowerLook"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept Name Code Sequence	1

>>>>>(0008,0100)	SH	Code Value	"111003"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>>>(0040,A160)	UT	Text Value	If SecondLook Digital CAD: "7.2-Z" where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point If ProFound AI: "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,DB73)	UL	Referenced Content Item Identifier	X\Y\Z, which represents the reference node position of the image processed.
>>(0040,A730)	SQ	Content Sequence	1
>>>(0040,A010)	CS	Relationship Type	"CONTAINS"
>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111022"
>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Detection Performed"
>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"F-01775" or "129769006"
>>>>(0008,0102)	SH	Coding Scheme Designator	"SRT" or "SCT"
>>>>(0008,0103)	SH	Coding Scheme Version	"1.1"
>>>>(0008,0104)	LO	Code Meaning	"Calcification Cluster"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111001"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>>>(0040,A160)	UT	Text Value	"iCAD PowerLook", "ProFound AI 3D", or "ProFound AI 2D"
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111003"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>>>(0040,A160)	UT	Text Value	If SecondLook Digital CAD: "7.2-Z", where Z equals the operating point.

Group and Element	VR	Description	Value
			L = Low Op Point M = Medium Op Point H = High Op Point If ProFound AI: "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point
>>>(0040,A730)	SQ	Content Sequence	Repeat this sequence for the number of images that were processed successfully or that failed based on its container.
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,DB73)	UL	Referenced Content Item Identifier	X\Y\Z, which represents the reference node position of the image processed.

Table 58 - Summary of Analyses (TID 4000, TID 4016)

Group and Element	VR	Description	Value
>(0040,A010)	CS	Relationship Type	"CONTAINS"
>(0040,A040)	CS	Value Type	"CODE"
>(0040,A043)	SQ	Concept-name Code Sequence	1
>>(0008,0100)	SH	Code Value	"111065"
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"Summary of Analyses"
>(0040,A168)	SQ	Concept Code Sequence	1
>>(0008,0100)	SH	Code Value	"111222" if successful. "111223" if partially succeeded. "111224" if failed. "111225" if not attempted.
>>(0008,0102)	SH	Code Scheme Designator	"DCM"
>>(0008,0104)	LO	Code Meaning	"Succeeded", "Partially Succeeded", "Failed", or "Not Attempted"
>(0040,A730)	SQ	Content Sequence	Can have a container sequence for successful detections and another container for failed detections
>>(0040,A010)	CS	Relationship Type	"INFERRED FROM"
>>(0040,A040)	CS	Value Type	"CONTAINER"
>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>(0008,0100)	SH	Code Value	"111062" for successful analyses. "111024" for failed analyses
>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>(0008,0104)	LO	Code Meaning	"Successful Analyses" or "Failed Analyses"
>>(0040,A050)	CS	Continuity of Content	"SEPARATE"
>>(0040,A730)	SQ	Content Sequence	One sequence shall exist for Density Assessment
>>>(0040,A010)	CS	Relationship Type	"CONTAINS"

>>>(0040,A040)	CS	Value Type	"CODE"
>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"111004"
>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>(0008,0104)	LO	Code Meaning	"Analysis Performed"
>>>(0040,A168)	SQ	Concept Code Sequence	1
>>>>(0008,0100)	SH	Code Value	"P5-B3414"
>>>>(0008,0102)	SH	Coding Scheme Designator	"SRT"
>>>>(0008,0104)	LO	Code Meaning	"Breast composition analysis"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111001"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Name"
>>>>(0040,A160)	UT	Text Value	"Density Assessment"
>>>(0040,A730)	SQ	Content Sequence	1
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,A040)	CS	Value Type	"TEXT"
>>>>(0040,A043)	SQ	Concept Name Code Sequence	1
>>>>>(0008,0100)	SH	Code Value	"111003"
>>>>>(0008,0102)	SH	Coding Scheme Designator	"DCM"
>>>>>(0008,0104)	LO	Code Meaning	"Algorithm Version"
>>>>(0040,A160)	UT	Text Value	Density Assessment: "x.x.x.x", version of Density Assessment algorithm
>>>(0040,A730)	SQ	Content Sequence	Repeat this sequence for the number of images that were processed successfully or that failed based on its container.
>>>>(0040,A010)	CS	Relationship Type	"HAS PROPERTIES"
>>>>(0040,DB73)	UL	Referenced Content Item Identifier	X\Y\Z, which represents the reference node position of the image processed.

3.3.6.12.1.2 Storage of CAD Results – Grayscale Softcopy Presentation State (GSPS)

PowerLook will process each image to determine the existence of any suspicious regions. A single grayscale softcopy presentation state object can be created per image or a single GSPS object for the entire case. The presentation state gives locations of the suspicious findings that can be rendered in color if enabled, along with a Certainty of Finding score for each finding, and an overall Case Score for the patient. The presentation state object can be sent to any remote system that is configured to receive this output.

Table 59 – Grayscale Softcopy Presentation State (GSPS) IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient	PS 3.3 –2024 C.7.1.1	Table 60	M
Study	General Study	PS 3.3 – 2024 C.7.2.1	Table 61	M
Series	General Series	PS 3.3 – 2024 C.7.3.1	Table 62	M
	Presentation Series	PS 3.3 – 2024 C.11.9	Table 63	M
Equipment	General Equipment	PS 3.3 – 2024 C.7.5.1	Table 64	U
Presentation State	Presentation State	PS 3.3 – 2024 C.11.10	Table 65	M
	Displayed Area	PS 3.3 – 2024 C.10.4	Table 66	M
	Graphic Annotation	PS 3.3 – 2024 C.10.5	Table 67	C
	Graphic Layer	PS 3.3 – 2024 C.10.7	Table 68	C
	Softcopy Presentation LUT	PS 3.3 – 2024 C.11.6	Table 69	M
	SOP Common	PS 3.3 – 2024 C.12.1	Table 70	M

Table 60 - Patient Module Attributes – ref. PS 3.3 - 2024 C.7.1.1

Group and Element	VR	Type	Description	Value
(0010,0010)	PN	2	Patient's Name	Patient's full name obtained from the image header.
(0010,0020)	LO	2	Patient ID	Primary hospital identification number or code for the patient obtained from the image header.
(0010,0030)	DA	2	Patient's Birth Date	Birth date of the patient obtained from the image header.
(0010,0040)	CS	2	Patient's Sex	Sex of the named patient obtained from the image header. Enumerated Values: M = male F = female O = other
(0010,1010)	AS	3	Patient's Age	Age of the patient obtained from the image header.

Table 61 – General Study Attributes – ref. PS 3.3 - 2024 C.7.2.1

Group and Element	VR	Type	Description	Value
(0020,000D)	UI	1	Study Instance UID	Unique identifier for the study.
(0008,0020)	DA	2	Study Date	Date the CAD output was created.
(0008,0030)	TM	2	Study Time	Time the CAD output was created.
(0008,0090)	PN	2	Referring Physician's Name	Name of the patient's referring physician.
(0020,0010)	SH	2	Study ID	User or equipment generated study ID obtained from image header.
(0008,0050)	SH	2	Accession Number	A number that identifies the order for the study obtained from the image header.
(0008,1030)	LO	3	Study Description	Configurable study description string and also configurable to append breast composition or percent glandular tissue values.

Table 62 – General Series Attributes – ref. PS 3.3 - 2024 C.7.3.1

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	"PR" for GSPS Configurable for PDF, default "OT" Configurable for SC, default "MG"
(0020,000E)	UI	1	Series Instance UID	Unique identifier for the series.
(0020,0011)	IS	2	Series Number	A configurable number that identifies the series, with the default being "1"
(0020,0060)	CS	2C	Laterality	Laterality of body part examined (GSPS only): "R" = right "L" = left
(0008,103E)	LO	3	Series Description	Configurable series description string and also configurable to append breast

Group and Element	VR	Type	Description	Value
				composition or percent glandular tissue values.

Table 63 – Presentation Series Attributes – ref. PS 3.3 - 2024 C.11.9

Group and Element	VR	Type	Description	Value
(0008,0060)	CS	1	Modality	"PR"

Table 64 – General Equipment Attributes – ref. PS 3.3 - 2024 C.7.5.1

Group and Element	VR	Type	Description	Value
(0008,0070)	LO	2	Manufacturer	Configurable string defaulted to "iCAD, Inc."
(0018,1020)	LO	3	Software Versions	Version of CAD. "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point M = Medium Op Point H = High Op Point
(0008,0080)	LO	3	Institution Name	Uses Institution Name (0008,0080) of image
(0008,0081)	ST	3	Institution Address	Uses Institution Address (0008,0081) of image
(0008,1010)	SH	3	Station Name	Configurable station name string or configurable to use the station name of the received images.
(0008,1090)	LO	3	Manufacturers Model Name	Version of CAD. Can be configurable to add manufacturer name to the front of the string

Table 65 – Presentation State Attributes – ref. PS 3.3 - 2024 C.11.10

Group and Element	VR	Type	Description	Value
(0020,0013)	1	IS	Instance Number	A number that identifies this presentation (SOP Instance) obtained from the image header.
(0070,0080)	1	VS	Presentation Label	A label that is used to identify this presentation. Combination of laterality and view.
(0070,0081)	2	LO	Presentation Description	ProFound AI 3D or ProFound AI 2D
(0070,0082)	1	DA	Presentation Creation Date	Date on which this presentation was created.
(0070,0083)	1	TM	Presentation Creation Time	Time at which this presentation was created.
(0070,0084)	2	PN	Presentation Creator's Name	ProFound AI 3D or ProFound AI 2D
(0008,1115)	1	SQ	Referenced Series Sequence	Sequence of Repeating Items where each Item includes the Attributes of one or more Series.

>(0020,000E)	1C	UI	Series Instance UID	Unique identifier of a Series that is part of this Study.
>(0008,1140)	1C	SQ	Referenced Image Sequence	Sequence of Repeating Items where each Item provides reference to a selected set of Image SOP Class/SOP Instance pairs that are part of this Study and the Series defined by Series Instance UID (0020,000E).
>>(0008,1150)	1C	UI	Referenced SOP Class UID	Uniquely identifies the referenced SOP Class.
>>(0008,1155)	1C	UI	Referenced SOP Instance UID	Uniquely identifies the referenced SOP Instance.
>>(0008,1160)	1C	IS	Referenced Frame Number	For ProFound AI – 3D, this will contain a frame reference for every slice that contains a detection that needs to be drawn. This will not exist for ProFound AI – 2D.

Table 66 – Displayed Area Attributes – ref. PS 3.3 - 2024 C.10.4

Group and Element	VR	Type	Description	Value
(0070,005A)	SQ	1	Displayed Area Selection Sequence	A sequence of Items each of which describes the displayed area selection for a group of images or frames.
>(0008,1140)	SQ	1C	Referenced Image Sequence	Sequence of Repeating Items where each Item provides reference to a selected set of Image SOP Class/SOP Instance pairs that are defined in the Presentation State Module.
>>(0008,1150)	UI	1C	Referenced SOP Class UID	Uniquely identifies the referenced SOP Class.
>>(0008,1155)	UI	1C	Referenced SOP Instance UID	Uniquely identifies the referenced SOP Instance.
>(0070,0052)	SL	1	Displayed Area Top Left Hand Corner	The top left pixel in the referenced image to be displayed, given as column\row. Column is the horizontal offset (X) and row is the vertical offset (Y) relative to the origin of the pixel data before spatial transformation, which is "1\1".
>(0070,0053)	SL	1	Displayed Area Bottom Right Hand Corner	The bottom right pixel in the referenced image to be displayed, given as column\row. Column is the horizontal offset (X) and row is the vertical offset (Y) relative to the origin of the pixel data before spatial transformation, which is "1\1".
>(0070,0100)	CS	1	Presentation Size Mode	Manner of selection of display size: "SCALE TO FIT"
>(0070,0101)	DS	1C	Presentation Pixel Spacing	Physical distance between the center of each pixel in the referenced image, specified by a numeric pair – adjacent row spacing adjacent column spacing in mm obtained from image header.

Table 67 – Graphic Annotation Attributes – ref. PS 3.3 - 2024 C.10.5

Group and Element	VR	Type	Description	Value
(0070,0001)	SQ	1	Graphic Annotation Sequence	A sequence of Items of which represents a group of annotations composed of graphics and text.
>(0008,1140)	SQ	1C	Referenced Image Sequence	Sequence of Repeating Items where each Item provides reference to a selected set of Image SOP Class/SOP Instance pairs that are defined in the Presentation State Module.
>>(0008,1150)	UI	1C	Referenced SOP Class UID	Uniquely identifies the referenced SOP Class.
>>(0008,1155)	UI	1C	Referenced SOP Instance UID	Uniquely identifies the referenced SOP Instance.
>(0070,0002)	CS	1	Graphic Layer	The layer defined in the Graphic Layer Module in which the graphics or text is to be rendered. "LAYER_#", where # represents a new frame that needs annotations.
>(0070,0008)	SQ	1C	Text Object Sequence	Sequence that describes a text annotation.
>>(0070,0003)	CS	1C	Bounding Box Annotation Units	Units of measure for the axes of the text bounding box. "PIXEL"
>>(0070,0006)	ST	1	Unformatted Text Value	A string of text containing the software version and the number of calcification clusters and densities found.
>>(0070,0010)	FL	1C	Bounding Box Top Left Hand Corner	Location of the Top Left Hand Corner (TLHC) of the bounding box in which Unformatted Text Value (0070,0006) is to be displayed, in Bounding Box Annotation Units (0070,0003), given as column\row. Column is the horizontal offset and row is the vertical offset. This is configurable through the GUI.
>>(0070,0011)	FL	1C	Bounding Box Bottom Right Hand Corner	Location of the Bottom Right Hand Corner (BRHC) of the bounding box in which Unformatted Text Value (0070,0006) is to be displayed, in Bounding Box Annotation Units (0070,0003), given as column\row. Column is the horizontal offset and row is the vertical offset. This is configurable through the GUI.
>>(0070,0012)	CS	1C	Bounding Box Text Horizontal Justification	Location of the text relative to the vertical edges of the bounding box: "CENTER", "LEFT", or "RIGHT"
>>(0070,0231)	SQ	3	Text Style Sequence	Sequence that describes the text style. Only a single Item shall be included in this Sequence.
>>>(0070,0227)	LO	3	Font Name	Font name in a standard type: "Arial"
>>>(0070,0228)	CS	1C	Font Name Type	This is the font naming system used by Adobe PDF and defined in ISO/IEC 14496-22: "ISO_32000"

>>>(0070,0229)	LO		CSS Font Name	Generic font name as defined within CSS (Cascading Style Sheets): "Segoe UI"
>>>(0070,0241)	US		Text Color CIELab Value	A default color triplet value used to specify the text color in which it is recommended that the text be rendered on a color display. The units are specified in PCS-Values, and the value is encoded as CIELab.
>>>(0070,0242)	CS		Horizontal Alignment	Specifies the horizontal position of the text relative to the vertical edges of the bounding box. Horizontal Alignment shall override the Bounding Box Text Horizontal Justification (0070,0012) of the Text Object Sequence (0070,0008) Item: "CENTER"
>>>(0070,0243)	CS		Vertical Alignment	Specifies the vertical position of the text relative to the horizontal edges of the bounding box: "CENTER"
>>>(0070,0244)	CS		Shadow Style	The shadow style of the text to be displayed: "OUTLINED"
>>>(0070,0245)	FL		Shadow Offset X	Floating point value that defines the shadow offset in X direction: 2.0
>>>(0070,0246)	FL		Shadow Offset Y	Floating point value that defines the shadow offset in Y direction: 2.0
>>>(0070,0247)	US		Shadow Color CIELab Value	A color triplet value used to encode the Shadow Color. The units are specified in PCS-Values, and the value is encoded as CIELab.
>>>(0070,0248)	CS		Underlined	Specifies whether or not the text shall be rendered underlined: "N"
>>>(0070,0249)	CS		Bold	Specifies whether or not the text shall be rendered in bold: "N"
>>>(0070,0250)	CS		Italic	Specifies whether or not the text shall be rendered italicized: "N"
>>>(0070,0258)	FL		Shadow Opacity	Encodes the shadow opacity. The value is encoded as floating point alpha value (0.0-1.0): 1.0
>(0070,0009)	SQ	1C	Graphic Object Sequence	Sequence that describes a graphic annotation.
>>(0070,0005)	CS	1	Graphic Annotation Units	Units of measure for the axes of the graphic annotation: "PIXEL"
>>(0070,0020)	US	1	Graphic Dimensions	"2"
>>(0070,0021)	US	1	Number of Graphic Points	Number of data points in this graphic.
>>(0070,0022)	FL	1	Graphic Data	Coordinates that specify this graphic annotation.
>>(0070,0023)	CS	1	Graphic Type	The shape of graphic that is to be drawn. "POLYLINE
>>(0070,0024)	CS	1C	Graphic Filled	Whether or not the closed graphics element is displayed as filled or as an outline. "N" = No
>>(0070,0232)	SQ	3	Line Style Sequence	Sequence that describes the line style. Only a single Item shall be included in this Sequence.
>>>(0070,0244)	CS	1	Shadow Style	The shadow style of the line to be displayed: "OUTLINE"

>>>(0070,0245)	FL	1	Shadow Offset X	Floating point value that defines the shadow offset in X direction in Graphic Annotation Units (0070,0005): 2.0
>>>(0070,0246)	FL	1	Shadow Offset Y	Floating point value that defines the shadow offset in Y direction in Graphic Annotation Units (0070,0005): 2.0
>>>(0070,0247)	US	1	Shadow Coor CIELab Value	A color triplet value used to encode the Shadow Color. The units are specified in PCS-Values, and the value is encoded as CIELab.
>>>(0070,0251)	US	1	Pattern On Color CIELab Value	A color triplet value used to encode the foreground. The units are specified in PCS-Values, and the value is encoded as CIELab.
>>>(0070,0252)	US	3	Pattern Off Color CIELab Value	A color triplet value used to encode the color of parts of the line that are off, i.e., the background.
>>>(0070,0253)	FL	1	Line Thickness	Specifies the line thickness. The dimension for this Attribute is defined by Graphic Annotation Units (0070,0005) or Compound Graphic Units (0070,0282): 6
>>>(0070,0254)	CS	1	Line Dashing Style	The dashing style of the line to be displayed: "SOLID"
>>>(0070,0258)	FL	1	Shadow Opacity	Encodes the shadow opacity. The value is encoded as floating point alpha value (0.0-1.0): 1.0
>>>(0070,0284)	FL	1	Pattern On Opacity	Encodes the foreground opacity. The value is encoded as floating point alpha value (0.0-1.0): 1.0

Table 68 – Graphic Layer Attributes – ref. PS 3.3 - 2024 C.10.7

Group and Element	VR	Type	Description	Value
(0070,0060)	SQ	1	Graphic Layer Sequence	A sequence of Items each of which represents a single layer in which graphics are rendered.
>(0070,0002)	CS	1	Graphic Layer	A string which identifies the layer. "LAYER_#", where # represents a new frame that needs annotations.
>(0070,0062)	IS	1	Graphic Layer Order	An integer indicating the order in which it is recommended that the layer be rendered, if the display is capable of distinguishing. Lower numbered layers are to be rendered first. Configurable to all be "1" or to increment per detected frame.
>(0070,0066)	US	3	Graphic Layer Recommended Display Grayscale Value	A default single gray unsigned value in which it is recommended that the layer be rendered on a monochrome display. The units are specified in P-Values from minimum of 0000H (black) up to a maximum of FFFFH (white). "32767"

Table 69 – Softcopy Presentation LUT Attributes – ref. PS 3.3 - 2024 C.11.6

Group and Element	VR	Type	Description	Value
(2050,0020)	CS	1C	Presentation LUT Shape	Specifies predefined Presentation LUT transformation. "IDENTITY" – no further transformation necessary, input values are P-Values.

Table 70 – SOP Common Attributes – ref. PS 3.3 - 2024 C.12.1

Group and Element	VR	Type	Description	Value
(0008,0016)	UI	1	SOP Class UID	Uniquely identifies the SOP Class:
(0008,0018)	UI	1	SOP Instance UID	Uniquely identifies the SOP instance.

3.3.6.12.1.3 Storage of CAD Results – Digital Mammography X-Ray – For Presentation with CAD overlay

PowerLook can be configured to populate the CAD detections into the overlay module of the Digital Mammography X-Ray – For Presentation image. In order for this to occur, PowerLook must receive both the Digital Mammography X-Ray – For Processing and the Digital Mammography X-Ray – For Presentation images for the patient case. PowerLook will perform its algorithms on the Digital Mammography X-Ray – For Processing images and then populate the overlay module of the Digital Mammography X-Ray – For Presentation image, where ellipses are used to identify densities and rectangles are used to identify calcification clusters using the SecondLook Digital algorithm. The Digital Mammography X-Ray – For Presentation image with the CAD overlay can be sent to any number of remote devices. This object contains information identical to how it was received, except a new SOP Instance UID is created for the updated image and the overlay plane module had been applied as described in Table 71. PowerLook can also generate a Digital Mammography X-Ray – For Presentation image to provide a single "best slice" image that contains all the ProFound AI 3D findings that can be used as an overview of the processed tomosynthesis image. The Digital Mammography X-Ray -For Presentation image shall be populated using the required attributes from the tomosynthesis image. For ProFound AI 2D processing, the findings can exist in the Digital Mammography X-Ray – For Presentation image with the results either burnt into the pixel data or populated as an overlay plane module as described in Table 71.

Table 71 – Digital Mammography X-Ray – For Presentation – Overlay Plane Module – ref. PS 3.3 - 2024 C.12.1

Group and Element	VR	Type	Description	Value
(6000,0010)	US	1	Overlay Rows	Number of rows in the overlay
(6000,0011)	US	1	Overlay Columns	Number of columns in the overlay
(6000,0022)	CS	1	Overlay Type	"G" = Graphics
(6000,0050)	SS	1	Overlay Origin	Location of first overlay point with respect to pixels in the image, given as row\column. The upper left pixel of the image has the coordinate "1\1".
(6000,0100)	US	1	Overlay Bits Allocated	The number of bits allocated in the overlay: "1"
(6000,0102)	US	1	Overlay Bit Position	Bit in which overlay is stored: "0"
(6000,3000)	OW	1C	Overlay Data	Overlay pixel data.
(6000,0022)	LO	3	Overlay Description	User defined comments about the overlay: "iCAD, Inc."
(6000,0045)	LO	3	Overlay Subtype	Defined term which identifies the intended purpose of the Overlay Type: "AUTOMATED"
(6000,1500)	LO	3	Overlay Label	A user defined text string which may be used to label or name this overlay: "PowerLook"

3.3.6.12.1.4 Storage of CAD Results – Secondary Capture

PowerLook can not only process each image to determine the existence of any suspicious regions, but it can also compute a breast composition value as defined by BI-RADS and compute a percentage of fibroglandular tissue. These values can be populated in the Mammography CAD SR, however, if a vendor does not support the parsing of the SR for these values, a Secondary Capture object can be configured to be created per case. The ProFound AI Risk can be populated in the Secondary Capture object which contains the 2 Year Risk Score and Risk Category. The ProFound AI Index can be populated in the Secondary Capture object which can contain the CAD Case Score, breast composition value, and/or the 2 Year Risk Score and Risk Category. The PowerLook Density Assessment Secondary Capture object private tags are in Table 83 and the ProFound AI Risk Secondary Object private tags are in Table 84. The ProFound AI Indexcard Secondary Capture object private tags are in Table 83, Table 84, and Table 85. The Secondary Capture object can be sent to any remote system that is configured to receive this output.

Table 72 – Secondary Capture IOD Modules

IE	Module	DICOM Reference	Document Reference	Usage
Patient	Patient	PS 3.3 –2024 C.7.1.1	Table 60	M
Study	General Study	PS 3.3 – 2024 C.7.2.1	Table 61	M
Series	General Series	PS 3.3 – 2024 C.7.3.1	Table 62	M
	DX Series- standard extended	PS 3.3 – 2024 C.8.11.1	Table 77	U
Equipment	General Equipment	PS 3.3 – 2024 C.7.5.1	Table 64	U
	SC Equipment	PS 3.3 – 2024 C.8.6.1	Table 32	M
Image	General Image	PS 3.3 – 2024 C.7.6.1	Table 74	M
	Image Pixel	PS 3.3 – 2024 C.7.6.3	Table 75	M
	SC Image	PS 3.3 – 2024 C.8.6.2	Table 76	M
	Modality LUT	PS 3.3 – 2024 C.11.1	Table 81	U
	VOI LUT	PS 3.3 – 2024 C.11.2	Table 82	U
	SOP Common	PS 3.3 – 2024 C.12.1	Table 70	M
	DX Image - standard extended	PS 3.3-2024 C.8.11.3	Table 78	U
	DX Detector- standard extended	PS 3.3-2024 C.8.11.4	Table 79	U
	Mammography Image- standard extended	PS 3.3-2024 C.8.11.7	Table 80	U

Table 73 - General Equipment Module Attributes - Mandatory – ref. PS 3.3 - 2024 C.7.5.1

Group and Element	VR	Type	Description	Value
(0008,0070)	LO	2	Manufacturer	"iCAD, Inc."
(0008,1090)	LO	3	Manufacturer's Model Name	"iCAD PowerLook"
(0018,1020)	LO	3	Software Version	Version of CAD. "X.y.y.y-Z" for ProFound AI, where X is the major revision and y is the minor revision, and where Z equals the operating point. L = Low Op Point

| | | | | M = Medium Op Point |
				H = High Op Point
(0028,0120)	US	3	Pixel Padding Value	Single pixel value or one limit (inclusive) of a range of pixel values used in an image to pad to rectangular format or to signal background that may be suppressed. This field is only populated in Secondary Capture objects that are used for the overview image of the CAD findings

Table 74 – General Image Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.6.1

Group and Element	VR	Type	Description	Value
(0020,0013)	IS	2	Instance Number	Configurable, with default being "1"
(0020,0020)	CS	2C	Patient Orientation	Null
(0008,0023)	DA	2C	Content Date	The date the Secondary Capture object was created.
(0008,0033)	TM	2C	Content Time	The time the Secondary Capture object was created.
(0008,0008)	CS	3	Image Type	"Derived/Secondary", configurable
(0028,0301)	CS	3	Burned In Annotation	"YES" if CAD findings are burnt into the image
(0020,0062)	CS	3	Image Laterality	The laterality of the image being processed or an optional forced value to assist with hanging protocol of Density SC, Risk SC, or Index Card SC..

Table 75 – Image Pixel Module Attributes – mandatory – ref. PS 3.3 - 2024 C.7.6.3

Group and Element	VR	Type	Description	Value
(0028,0002)	US	1	Samples per Pixel	Number of samples (planes) in this image. Value is set to "1".
(0028,0004)	CS	1	Photometric Interpretation	Specifies the intended interpretation of the pixel data. Configurable with the default value being "MONOCHROME2" for grayscale. Use "RGB" for color.
(0028,0010)	US	1	Rows	Configurable to either the number of rows in the image or a fixed value.
(0028,0011)	US	1	Columns	Configurable to either the number of columns in the image or a fixed value.
(0028,0100)	US	1	Bits Allocated	Number of bits allocated for each pixel sample. Default value is set to "8", configurable for "16"
(0028,0101)	US	1	Bits Stored	Number of bits stored for each pixel sample. Default value is set to "8", configurable for "16".
(0028,0102)	US	1	High Bit	Most significant bit for pixel sample data. Default value is set to "7", configurable for "15".

(0028,0103)	US	1	Pixel Representation	Data representation of the pixel samples. Each sample shall have the same pixel representation. Enumerated Value: 0000H = unsigned integer.
(0028,0121)		1C	Pixel Padding Range Limit	Pixel value that represents one limit (inclusive) of a range of padding values used together with Pixel Padding Value (0028,0120) as defined in the General Equipment Module and populated from the processed image. This field is only populated in Secondary Capture objects that are used for the overview image of the CAD findings
(7FE0,0010)	OW or OB	1	Pixel Data	A data stream of the pixel samples that comprise the Image.

Table 76 – SC Image Module Attributes – mandatory – ref. PS 3.3 - 2024 C.8.6.2

Group and Element	VR	Type	Description	Value
(0018,1012)	DA	3	Date of Secondary Capture	Date the Secondary Capture object was created
(0018,1014)	TM	3	Time of Secondary Capture	Time the Secondary Capture object was created

Table 77 – DX Series Module Attributes – optional – ref. PS 3.3 - 2024 C.8.11.1

NOTE: These fields are only populated in Secondary Capture objects that are used for the overview image of the CAD findings

Group and Element	VR	Type	Description	Value
(0008,0068)	CS	1	Presentation Intent Type	Identifies the intent of the images that are contained within this Series: "FOR PRESENTATION"

Table 78 – DX Image Module – optional – ref. PS 3.3 - 2024 C.8.11.3

NOTE: These fields are only populated in Secondary Capture objects that are used for the overview image of the CAD findings

Group and Element	VR	Type	Description	Value
(0028,1040)	CS	1	Pixel Intensity Relationship	The relationship between the Pixel sample values and the X-Ray beam intensity from the processed image.
(0028,1041)	SS		Pixel Intensity Relationship Sign	The sign of the relationship between the Pixel sample values stored in Pixel Data (7FE0,0010) and the X-Ray beam intensity from the processed image
(2050,0020)	CS	1	Presentation LUT Shape	Specifies an identity transformation for the Presentation LUT, other than to account for the value of Photometric Interpretation (0028,0004), such that the output of all

Group and Element	VR	Type	Description	Value
				grayscale transformations defined in the IOD containing this Module are defined to be P-Values from the processed image.
(0028,2110)	CS	1	Lossy Image Compression	Specifies whether an Image has undergone lossy compression (at a point in its lifetime) from the processed image.
(0028,1055)	LO	3	Window Center & Width Explanation	Free form explanation of the meaning of the Window Center and Width. Multiple values correspond to multiple Window Center and Width values from the processed image.

Table 79 – DX Detector Module Attributes – optional – ref. PS 3.3 - 2024 C.8.11.4

NOTE: These fields are only populated in Secondary Capture objects that are used for the overview image of the CAD findings

Group and Element	VR	Type	Description	Value
(0018,1164)	DS	1	Imager Pixel Spacing	The imager pixel spacing value from the processed image.

Table 80 – Mammography Image Module – optional – ref. PS 3.3 - 2024 C.8.11.7

NOTE: These fields are only populated in Secondary Capture objects that are used for the overview image of the CAD findings

Group and Element	VR	Type	Description	Value
(0008,2218)	SQ	2	Anatomic Region Sequence	Sequence that identifies the anatomic region of interest in this Instance
>(0008,0100)	SH	1C	Code Value	The identifier of the Coded Entry: "T-04000"
>(0008,0102)	SH	1C	Coding Scheme Designator	The identifier of the coding scheme in which the Coded Entry is defined: "SNM3"
>(0008,0104)	LO	1	Code Meaning	Text that conveys the meaning of the Coded Entry: "Breast"

Table 81 – Modality LUT Module Attributes – mandatory – ref. PS 3.3 - 2024 C.11.1

Group and Element	VR	Type	Description	Value
(0028,1052)	DS	1C	Rescale Intercept	Value is set to "0".
(0028,1053)	DS	1C	Rescale Slope	Value is set to "1"
(0028,1054)	LO	1C	Rescale Type	Value is set to "US"

Table 82 – VOI LUT Module Attributes – mandatory – ref. PS 3.3 - 2024 C.11.2

Group and Element	VR	Type	Description	Value
(0028,1050)	DS	1C	Window Center	Configurable value with default set to "186"

(0028,1051)	DS	1C	Window Width	Configurable value with default set to "147"

Table 83 – PowerLook Density Assessment Private Attributes

Group and Element	VR	Type	Description	Value
(2239, 0011)	LO	1	PowerLook Density Assessment private block	"ICAD_DA_11"
(2239,1102)	LO	1	PowerLook Density Assessment version and build	PowerLook Density Assessment version and build (VM 2)
(2239,1103)	LO	1	PowerLook Density Assessment Name	"Density Assessment"
(2239,1104)	SH	1	Value of Density Assessment in BI-RADS 4	"1", "2", "3", "4"
(2239,1105)	SH	1	Value of Density Assessment in BI-RADS 5	"a", "b", "c", "d"
(2239,1106)	DS	1	PowerLook Density Assessment score	Density Assessment score
(2239,1107)	SH	1C	PowerLook Density Assessment plus or minus indicator	"+", "-"
(2239,1108)	DS	1C	Left breast tissue density	Range 0-100%
(2239,1109)	DS	1C	Left breast area	Value in square centimeters
(2239,110A)	DS	1C	Left breast tissue area	Value in square centimeters
(2239,110B)	DS	1C	Right breast tissue density	Range 0-100%
(2239,110C)	DS	1C	Right breast area	Value in square centimeters
(2239,110D)	DS	1C	Right breast tissue area	Value in square centimeters

Table 84 – ProFound AI Risk Private Attributes

Group and Element	VR	Type	Description	Value
(2239,0012)	LO	1	ProFound AI Risk private block	"ICAD_RISK_12"
(2239,1202)	LO	1	ProFound AI Risk version and build	ProFound AI Risk version and build (VM 2)
(2239,1203)	LO	1	ProFound AI Risk value title	"#-Year Absolute Risk", where # equals 1, 2 of 3 years.
(2239,1204)	DS	1	ProFound AI Risk value	ProFound AI Risk value
(2239,1205)	LO	1	ProFound AI Risk category title	"Risk Category"
(2239,1207)	LO	1	ProFound AI Risk category name	"Low", "General", "Moderate", "High"
(2239,1208)	SH	1	ProFound AI Risk category thumbnail	"L", "G", "M", "H"
(2239,1209)	DS	1	ProFound AI Risk category cutoff percentage values	List of min threshold values for each risk category. E.g. 0.0, 0.12, 0.34, 0.6
(2239,1210)	DS	1	ProFound AI Risk average risk at patient age	Average Risk at age value
(2239,1211)	DS	1	ProFound AI Risk type	"FFDM" or "DBT"

Table 85 – ProFound AI Private Attributes

Group and Element	VR	Type	Description	Value
(2239,0010)	LO	1	ProFound AI private block	"ICAD_PFAI_10"
(2239,1002)	LO	1	ProFound AI version and build	ProFound AI version and build (VM 2)
(2239,1003)	LO	1	ProFound AI Case Score Name	"Case Score"
(2239,1004)	DS	1	ProFound AI Case Score Value	Value of Case Score, range 0-100%

Table 86 - Private Code Definitions

Coding Scheme Designator (0008,0102)	Code Value (0008,0100)	Code Meaning (0008,0104)	Definition
99-ICADMED	PFD-1	Finding Color	RGB color of the associated Single Image Finding outline

4   Communication Profiles

PowerLook provides DICOM V3.0 TCP/IP Network Communication support as defined in Part 8 of the DICOM Standard.

4.1   OSI Stack

Not Supported

4.2   TCP/IP Stack

PowerLook inherits its TCP/IP stack from the Microsoft® Windows® operating system of the computer upon which it executes. PowerLook (SCP) listens by default to port number 104, unless this is configured differently.

4.2.1   Physical Media Support

The physical media supported by the TCP/IP Stack are 10/100/1000BaseT.

5   Extensions/Specializations/Privatizations

PowerLook uses private groups in Secondary Capture as specified in PowerLook Density Assessment Table 83 and ProFound AI Risk Table 84. When PowerLook exports a Secondary Capture image that is used as a CAD overview of the ProFound AI processing, the images are Standard Extended Secondary Capture Image Storage SOP Class objects (see Section 3.3.6.12.1.4 for a complete description).

6   Configuration

PowerLook configures the application entity, host name, and listen port for itself and remote devices through the web accessible field service engineering graphical user interface. The PowerLook service must be stopped to change these parameters, and then restarted to have the new values take effect.

7   Support for Extended Character Sets

PowerLook supports the ISO-IR 100 Latin-1 supplementary character set and includes this value for the Specific Character Set Attribute (0008, 0005).

8   End of Document

0073-5020 (DOC-4110) Ver. 1

Approved By:

(CO-882) PowerLook 11.2.2

Description

PowerLook 11.2.2 Service Manuals and DICOM Conformance Statements DTM179 PowerLook 11.2 Service Manual - Generic Rev 1 to 2 • Change: Updated for PL 11.2.2 release DTM180 PowerLook 11.2 Service Manual - GE Rev 1 to 2 • Change: Updated for PL 11.2.2 release DTM181 PowerLook 11.2 Service Manual, OUS - Generic Rev 1 to 2 • Change: Updated for PL 11.2.2 release DTM179 PowerLook 11.2 Service Manual, OUS - GE Rev 1 to 2 • Change: Updated for PL 11.2.2 release 0073-5018 PowerLook 11.2 DICOM Conformance Statement, GE Rev 0 to 1 • Change: Updated for PL 11.2.2 release 0073-5019 PowerLook 11.2 DICOM Conformance Statement, OUS Rev 0 to 1 • Change: Updated for PL 11.2.2 release 0073-5020 PowerLook 11.2 DICOM Conformance Statement, US Rev 0 to 1 • Change: Updated for PL 11.2.2 release

Justification

ECO Justification: Document will be sent to customers to help integrate ProFound color output. Note: 11.2.3 is not required for PowerLook manuals due to no change to software, it is for releasing ProFound AI 3.1.3 that runs on Ampere GPU only. Risk Assessment: There are no new hazards from this ECO Attachments: None Associated Project 0073-2046 PowerLook 11.2.2 and 11.2.3 Project Plan

Assigned To:	Initiated By:	Priority:	Impact:
Sambo La	Sambo La	Low	Minor

Version History:

Author	Effective Date	CO#	Ver.	Status
Sambo La	March 19, 2024 4:36 PM EDT	CO-882	1	Published
Sambo La	December 9, 2022 10:48 AM EST	CO-585	0	Superseded