# *i*CAD, Inc.

# PowerLook® 11.2.2 DICOM Conformance Statement, OUS

## Revision Record

| Rev. | ECO | Person Changing Document | Reason For Changes | Description of Changes |
|---|---|---|---|---|
| 0 | CO-585 | Topher Gedeon | Created original for PowerLook 11.2 OUS release. | Created original document and used 0073-5013, 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.<br>Added color line and text to GSPS.<br>Added RGB to Secondary Capture. |

## ATTACHMENTS

- 0073-5019-1 Form 1, PowerLook® 11.2.2 DICOM Conformance Statement

# *i*CAD, Inc.

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

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# 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 | 1.2.840.10008.5.1.4.1.1.1.2.1 | 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.

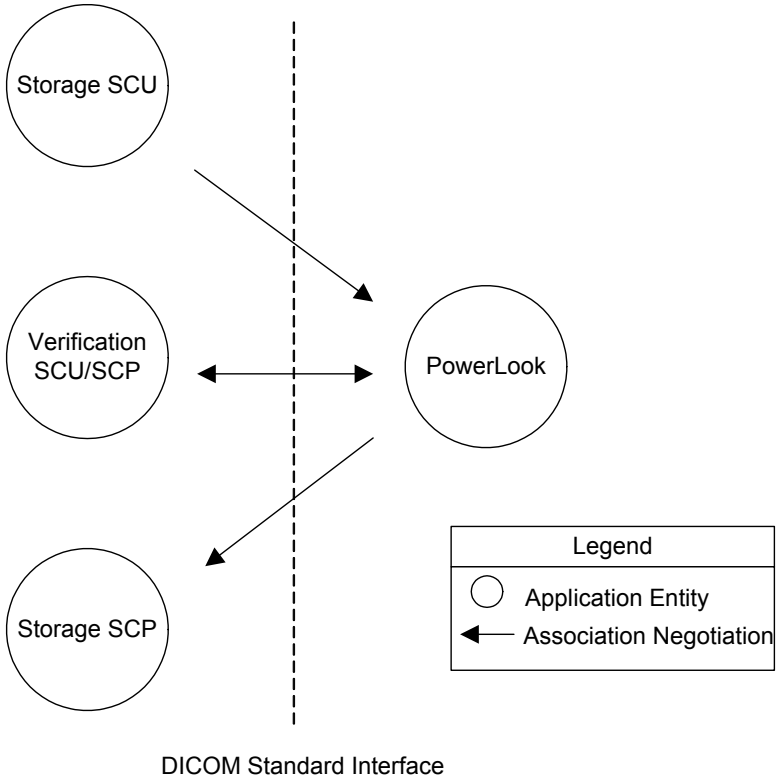


**Figure 2-1 - Implementation Model**

## 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.<br>Enumerated Values:<br>M = male<br>F = female<br>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:<br>R = right<br>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.<br>Enumerated Values:<br>FOR PRESENTATION<br>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.<br>Enumerated Values:<br>R = right<br>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:<br>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:<br>0000H = unsigned integer. |
| (0028,1040) | CS | 1 | Pixel Intensity Relationship | The relationship between the Pixel sample values and the X-Ray beam intensity.<br>Enumerated Values:<br>LIN,<br>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;<br>1,<br>-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).<br>Output units = m*SV + b.<br>Enumerated Value: 0 |
| (0028,1053) | DS | 1 | Rescale Slope | m in the equation specified by Rescale Intercept (0028,1052).<br>Enumerated Value: 1 |
| (0028,1054) | LO | 1 | Rescale Type | Specifies the output units of Rescale Slope (0028,1053) and Rescale Intercept (0028,1052).<br>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.<br>Enumerated Values:<br><br>IDENTITY - output is in P-Values - shall be used if Photometric Interpretation (0028,0004) is MONOCHROME2.<br><br>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:<br>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.<br>Enumerated Value:<br>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.<br>Defined Terms:<br>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.<br>Enumerated Values:<br>R = right<br>L = left<br>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.<br>Enumerated Values:<br>YES<br>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.<br>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.<br><br>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<br><br>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.<br>Enumerated Values:<br>M = male<br>F = female<br>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:<br>R = right<br>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.<br>Enumerated Values:<br>M = male<br>F = female<br>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 - 2024C.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:<br><br>If SecondLook Digital CAD:<br>“7.2-Z”, where Z equals the operating point.<br>L = Low Op Point<br>M = Medium Op Point<br>H = High Op Point<br><br>If ProFound AI:<br><br>“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.<br>L = Low Op Point<br>M = Medium Op Point<br>H = High Op Point |
| | | | | Value2:<br>Algorithm build of the software |
| | | | | Value3:<br>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

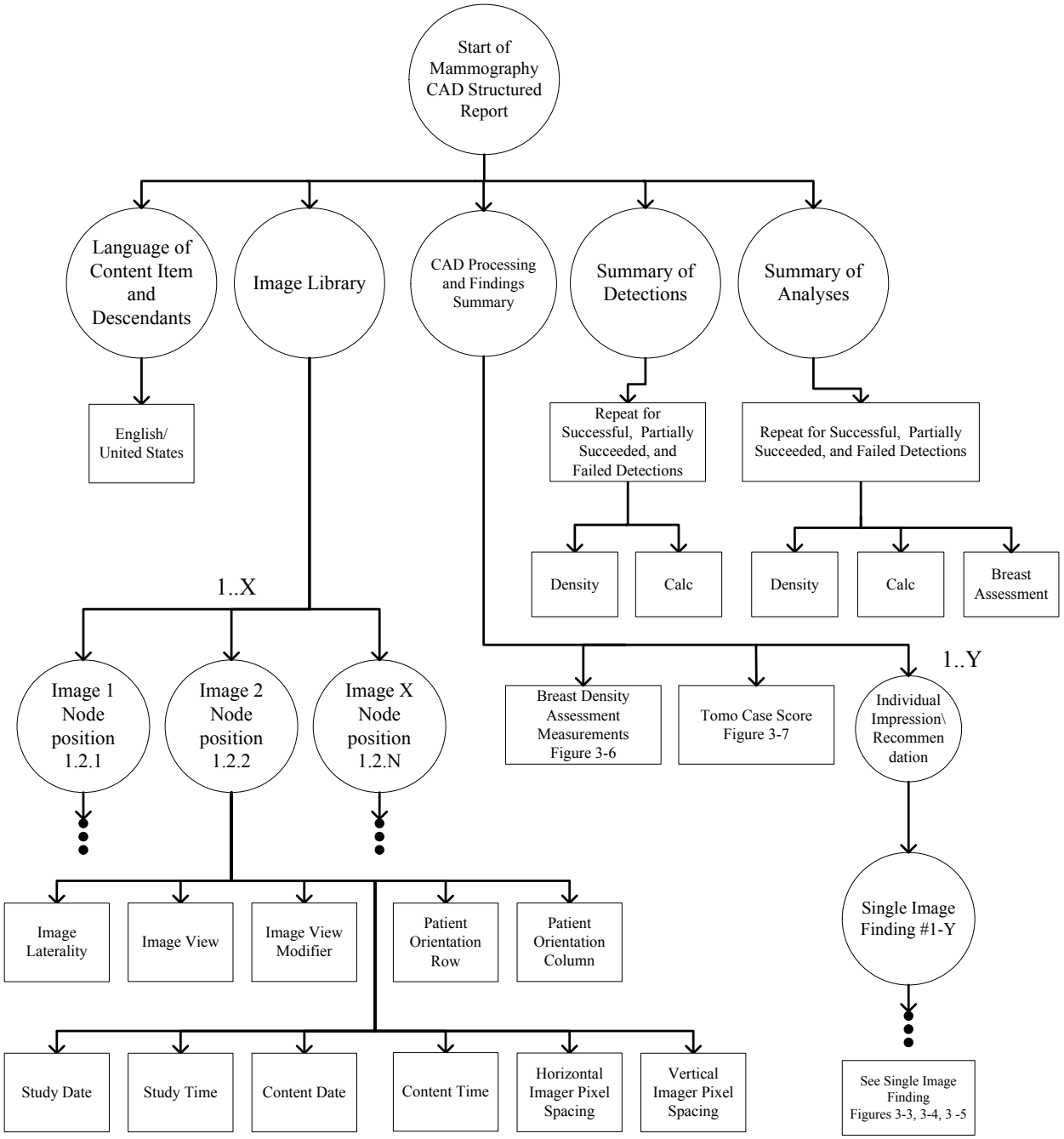


**Figure 3-1 - Mammography CAD Structured Report Overview**

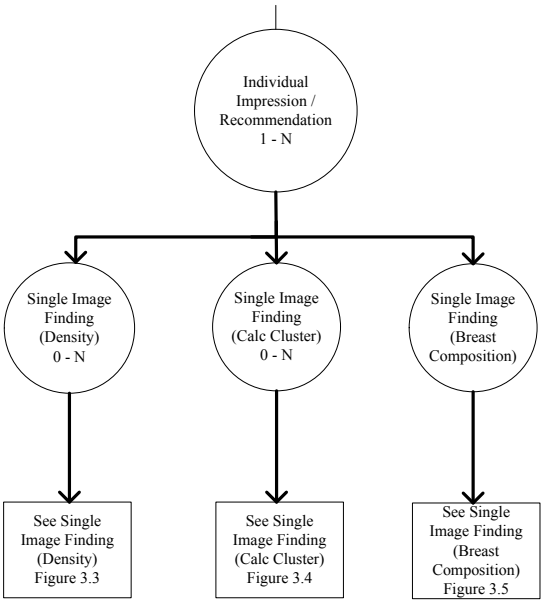


**Figure 3-2 - Mammography CAD Structured Report Findings**

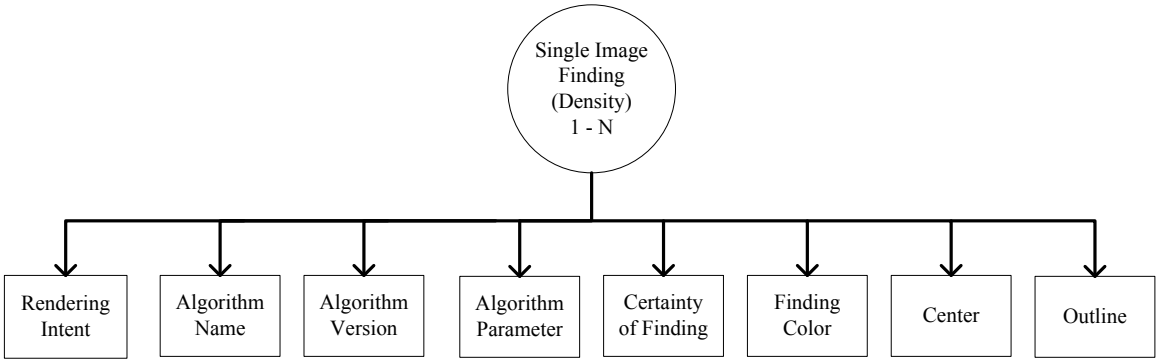


**Figure 3-3 - Single Image Finding Density**

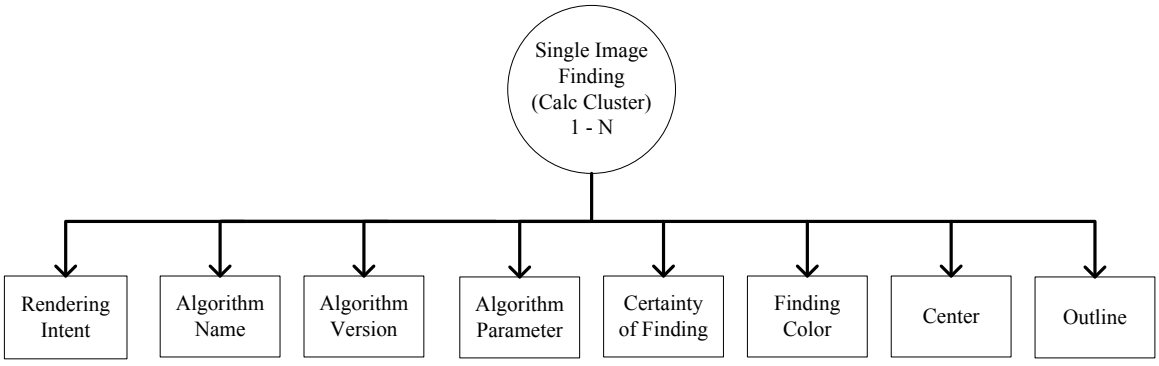


**Figure 3-4 - Single Image Finding Calc Cluster**

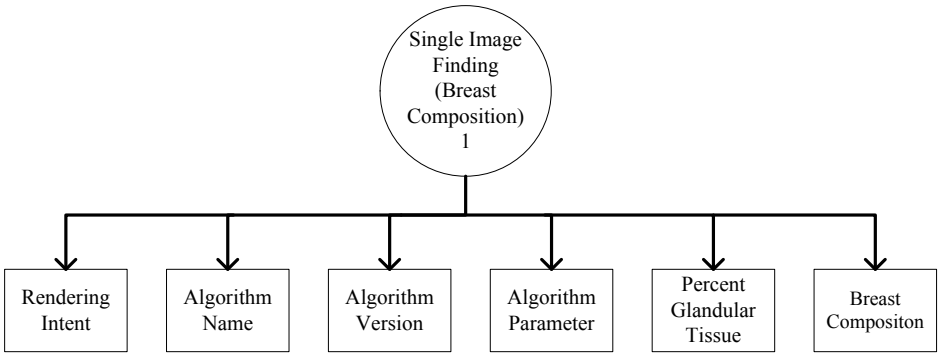


**Figure 3-5 – Single Image Finding Breast Composition**

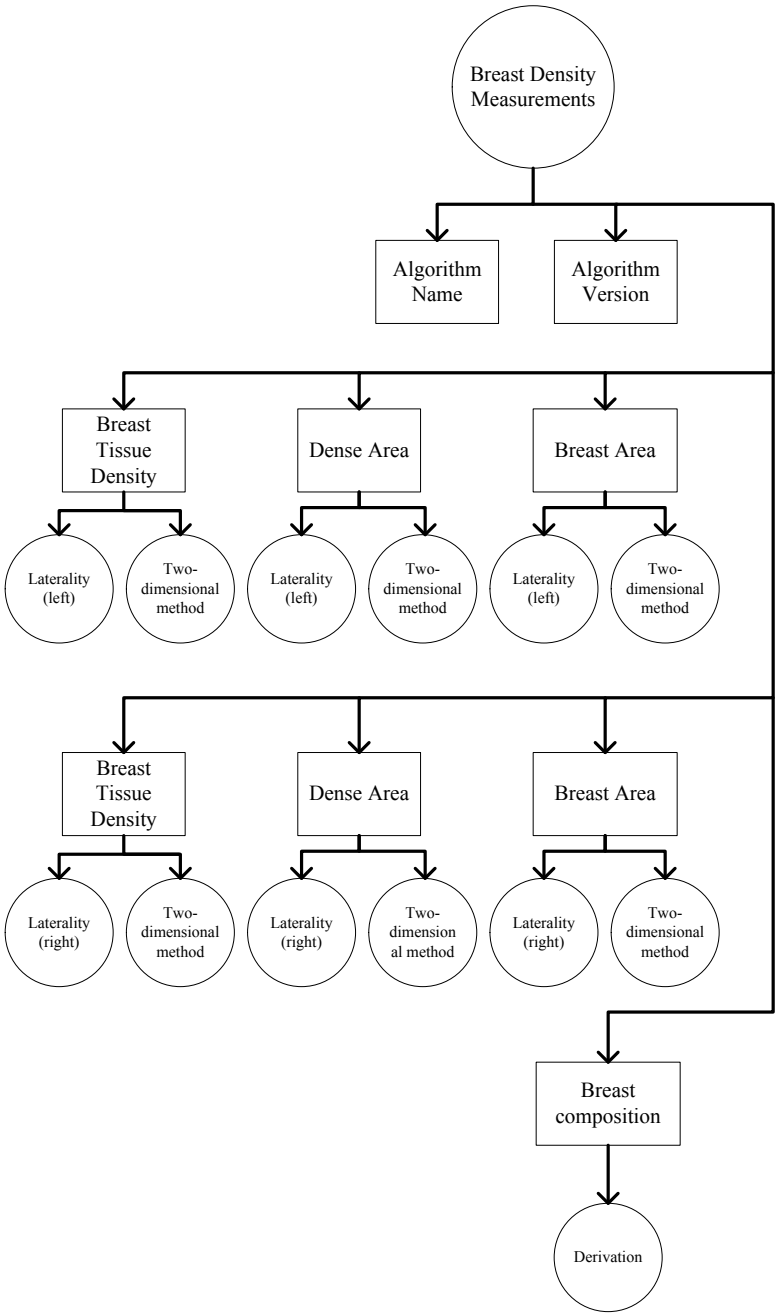


**Figure 3-6 – Breast Density Measurements**

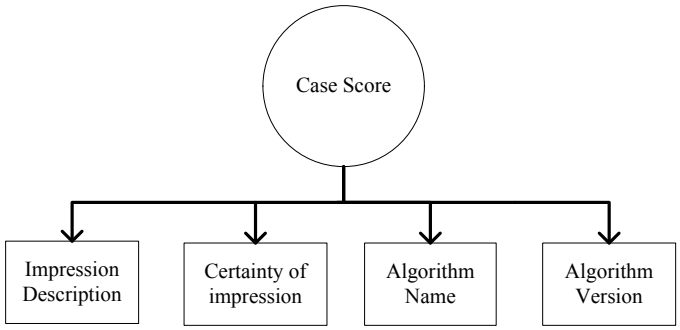


**Figure 3-7 - Tomo Case Score**

**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" |

| | | | |
|---|---|---|---|
| >>(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),<br>"T-04020" (Right breast),<br>"T-04080" (Both breasts) |
| >>>>(0008,0102) | SH | Code Scheme Designator | "SNM3" |
| >>>>(0008,0104) | LO | Code Meaning | "Left breast",<br>"Right breast", or<br>"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),<br>"R-10266" (medio-lateral oblique),<br>"R-10228" (latero-medial),<br>"R-10230" (latero-medial oblique),<br>"R-10242" (cranio-caudal),<br>"R-10244" (cranio-caudal from below),<br>"R-102D0" (superolateral to inferomedial oblique),<br>"R-102CF" (exaggerated cranio-caudal),<br>"Y-X1770"/"R-1024A" (cranio-caudal exaggerated laterally),<br>"Y-X1771"/"R-1024B" (cranio-caudal exaggerated medially) |
| >>>>(0008,0102) | SH | Code Scheme Designator | "SRT" or "SNM3" |
| >>>>(0008,0104) | LO | Code Meaning | "medio-lateral",<br>"medio-lateral oblique",<br>"latero-medial",<br>"latero-medial oblique",<br>"cranio-caudal",<br>"cranio-caudal from below", "superolateral to inferomedial oblique",<br>"exaggerated cranio-caudal"," cranio-caudal exaggerated laterally",<br>"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),<br>"R102D1" (Axillary Tail),<br>"R-102D3" (Rolled lateral),<br>"R-102D4" (Rolled Medial),<br>"R-102D5" (Implant Displaced),<br>"P2-00161" (Anterior compression)<br>"R-40ABE" (Infra-mammary fold)<br>"R-102CA" (Rolled Inferior),<br>"R-102C9)" (Rolled Superior) |
| >>>>(0008,0102) | SH | Code Scheme Designator | "SRT" or "SNM3" |
| >>>>(0008,0104) | LO | Code Meaning | Cleavage, |

| | | | |
|---|---|---|---|
| | | | Axillary Tail,<br>Rolled lateral,<br>Rolled Medial,<br>Implant Displaced,<br>Anterior compression,<br>Infra-mammary fold,<br>Rolled Inferior,<br>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.<br>OR<br>(5200,9229) Shared Functional Groups Sequence<br>>(0028,9110) Pixel Measures Sequence<br>>>(0018,0050) Slice Thickness<br>OR<br>(5200,9230) Per-Frame Functional Groups Sequence<br>>(0028,9110) Pixel Measures Sequence<br>>>(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).<br>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,<br>All algorithms succeeded; with findings,<br>Not all algorithms succeeded; without findings,<br>Not all algorithms succeeded; with findings.<br>or<br>No algorithms succeeded; without findings. |
| >(0040,A730) | SQ | Content Sequence | Repeat for number of successful images processed in study.<br>Note: This can be configured to iterate based on number of detections instead of number of images.<br>Note: Insert TID 4002 if breast density assessment values are enabled. See Table 52.<br>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),<br>"F-01775" or "129769006" (Calcification Cluster),<br>"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",<br>"Calcification Cluster" |
| Use Table 54 if next container is "Mammography breast density"<br><br>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”,<br>“F-01712” or “129717001”,<br>“F-01713” or “129718006”, or<br>“F-01714” or “129719003”, |
| >>>>(0008,0102) | SH | Code Scheme Designator | “SRT” or “SCT” |
| >>>>(0008,0104) | LO | Code Meaning | “Almost entirely fat”,<br>“Scattered fibroglandular densities”,<br>“Heterogeneously dense”,<br>“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.<br>L = Low Op Point<br>M = Medium Op Point<br>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:<br>Rendering Intent,<br>Algorithm Name,<br>Algorithm Version,<br>Algorithm Parameters,<br>Certainty of Finding,<br>Finding Color,<br>Center,<br>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:<br>"7.2-Z", where Z equals the operating point.<br>L = Low Op Point<br>M = Medium Op Point<br>H = High Op Point<br><br>If ProFound AI:<br><br>"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.<br>L = Low Op Point |

| | | | |
|---|---|---|---|
| | | | M = Medium Op Point<br>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. |

| | | | |
|---|---|---|---|
| >>>>(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:<br>Rendering Intent,<br>Algorithm Name,<br>Algorithm Version,<br>Algorithm Parameters,<br>Certainty of Finding,<br>Finding Color,<br>Center,<br>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:<br>"7.2-Z", where Z equals the operating point.<br>L = Low Op Point<br>M = Medium Op Point<br>H = High Op Point<br><br>If ProFound AI:<br><br>"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.<br>L = Low Op Point<br>M = Medium Op Point<br>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",<br>"F-01712" or "129717001",<br>"F-01713" or "1297180006", or<br>"F-01714" or "129719003". |
| >>>>>(0008,0102) | SH | Coding Scheme Designator | SRT or SCT |
| >>>>>(0008,0104) | LO | Code Meaning | "Almost Entirely Fat",<br>"Scattered Fibroglandular Densities",<br>"Heterogeneously Dense", or<br>"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.<br>"111223" if partially succeeded<br>"111224" if failed. |
| >>(0008,0102) | SH | Code Scheme Designator | "DCM" |
| >>(0008,0104) | LO | Code Meaning | "Succeeded",<br>"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.<br>"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:<br>"7.2-Z" where Z equals the operating point.<br>L = Low Op Point<br>M = Medium Op Point<br>H = High Op Point<br><br>If ProFound AI:<br><br>"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.<br>L = Low Op Point<br>M = Medium Op Point<br>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:<br>"7.2-Z", where Z equals the operating point. |

| | | | |
|---|---|---|---|
| | | | L = Low Op Point<br>M = Medium Op Point<br>H = High Op Point<br><br>If ProFound AI:<br><br>“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.<br>L = Low Op Point<br>M = Medium Op Point<br>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.<br>“111223” if partially succeeded.<br>“111224” if failed.<br>“111225” if not attempted. |
| >>(0008,0102) | SH | Code Scheme Designator | “DCM” |
| >>(0008,0104) | LO | Code Meaning | “Succeeded”,<br>“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.<br>“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.<br>Enumerated Values:<br>M = male<br>F = female<br>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<br>Configurable for PDF, default "OT"<br>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):<br>"R" = right<br>"L" = left |
| (0008,103E) | LO | 3 | Series Description | Configurable series description string and also configurable to append breast |

| | | | | |
|---|---|---|---|---|
| | | | | 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.<br>"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.<br>L = Low Op Point<br>M = Medium Op Point<br>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.<br>”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.<br>”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:<br>”CENTER”, “LEFT”, or “RIGHT” |
| >(0070,0009) | SQ | 1C | Graphic Object Sequence | Sequence that describes a graphic annotation. |
| >>(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 |
| >>(0070,0005) | CS | 1 | Graphic Annotation Units | Units of measure for the axes of the graphic annotation:<br>"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.<br>"POLYLINE |
| >>(0070,0024) | CS | 1C | Graphic Filled | Whether or not the closed graphics element is displayed as filled or as an outline.<br>"N" = No |
| >>(0070,0232) | SQ | 3 | Line Style Sequence | Sequence that describes the line style.<br>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:<br>"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 |
| >>(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 |

**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" |

### 3.3.6.12.1.4Storage 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.<br>“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.<br>L = Low Op Point |

| | | | | |
|---|---|---|---|---|
| | | | | M = Medium Op Point<br>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 |

| | | | | |
|---|---|---|---|---|
| | | | | 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

# 0073-5019 (DOC-4111) 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 |
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