

**TOSHIBA**

**No. MIIMS0002EAF**

**DICOM  
CONFORMANCE STATEMENT  
FOR  
MODEL TWS-2000 SERIES  
MODEL TWS-3000 SERIES  
MODEL TWS-5000 SERIES  
MODEL TIS-3000  
(MIIMS0002EAF)**

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# 1 Introduction

This document is a DICOM Conformance Statement for Toshiba's TWS-2000 Series, TWS-3000 Series and TWS-5000 Series, TIS-3000 (hereinafter referred to as the TWS). It is intended to provide the reader with the knowledge of how to integrate this product within a DICOM compliant hospital network. It details the DICOM Service Classes, Information Objects, and Communication Protocols which are supported by this product.

If readers are unfamiliar with DICOM, it is recommended that they read the DICOM Specification (referenced below) prior to reading this conformance statement. Also note that this document is formatted according to the DICOM Specification, Part 2: Conformance.

## 1.1 References

- ACR-NEMA Digital Imaging and Communications in Medicine, DICOM V3.0.

## 1.2 Definitions

- **Association Establishment** - An Association Establishment is the first phase of communication between two DICOM Application Entities (AEs). The AEs use the Association Establishment to negotiate how data will be encoded and the type of data to be exchanged.
- **Called Application Entity Title** - The Called AE Title defines the intended receiver of an Association.
- **Calling Application Entity Title** - The Calling AE Title defines the requestor of an Association.
- **DICOM Message Service Element (DIMSE)** - A DIMSE defines the services and protocols utilized by an Application Entity to exchange messages.
- **Information Object Definition (IOD)** - An IOD is a data model which is an abstraction of real-world information. This data model defines the nature and attributes relevant to the class of real-world objects represented.
- **Service Class Provider (SCP)** - A Service Class Provider plays the "server" role to perform operations and invoke notifications during an Association. An example of a Storage Service Class Provider would be an image storage device. In this case, the image storage device stores the image that was sent by a Service Class User.
- **Service Class User (SCU)** - A Service Class User plays the "client" role to invoke operations and perform notifications during an Association. An example of a Storage Service Class User would be an image acquisition device. In this case, the image acquisition device creates and sends a DICOM image by requesting that a Service Class Provider store that image.
- **Service/Object Pair (SOP) Class** - An SOP Class is defined by the union of an Information Object Definition and a set of DIMSE Services. A DICOM Application Entity may support one or more SOP Classes. Each SOP Class is uniquely identified by an SOP Class UID.
- **SOP Instance** - A specific occurrence of an Information Object.
- **Transfer Syntax** - The Transfer Syntax is a set of encoding rules that allow DICOM Application Entities to negotiate the encoding techniques (e.g. data element structure, byte ordering, compression) that they are able to support. The Transfer Syntax is negotiated during Association Negotiation.

- **Unique Identifier (UID)** - A Unique Identifier is a globally unique, ISO compliant, ASCII-numeric string. It guarantees uniqueness across multiple countries, sites, vendors, and equipment.

### 1.3 Acronyms, Abbreviations, and Symbols

- ACC American College of Cardiology
- ACR American College of Radiology
- ASCII American Standard Code for Information Interchange
- AE Application Entity
- ANSI American National Standards Institute
- CEN TC251 Comite Europeen de Normalisation - Technical Committee 251 - Medical Informatics
- DICOM Digital Imaging and Communications in Medicine
- DIMSE DICOM Message Service Element
- DIMSE-C DICOM Message Service Element - Composite
- DIMSE-N DICOM Message Service Element - Normalized
- HIS Hospital Information System
- HL7 Health Level 7
- IE Information Entity
- IOD Information Object Definition
- ISO International Standards Organization
- JIRA Japan Industries Association of Radiological Systems
- JIS Japanese Industrial Standards
- NEMA National Electrical Manufacturers Association
- MEDIS-DC the MEDical Information System Development Center
- OSI Open Systems Interconnection
- PDU Protocol Data Unit
- RIS Radiology Information System
- SCP Service Class Provider
- SCU Service Class User
- SOP Service-Object Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier

## 2 Implementation Model

### 2.1 Application Data Flow Diagram

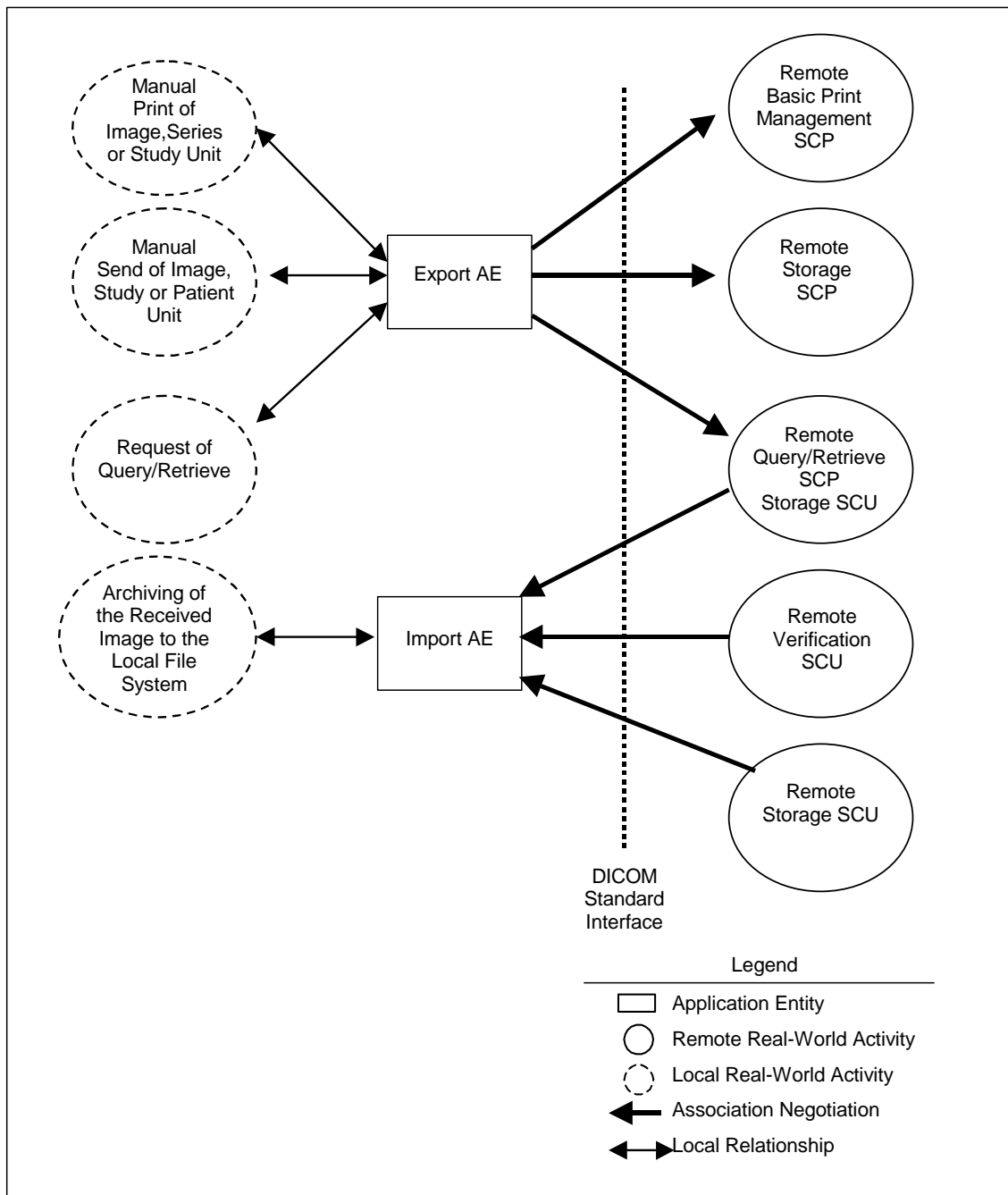


Figure 1

## **2.2 Functional Definitions of AE's**

### **2.2.1 Export AE**

Export AE is used to transmit Query and Retrieve requests to a remote DICOM device. It therefore performs the following tasks:

- Establishes DICOM Association with remote DICOM device
- Performs request of Query/Retrieve to remote DICOM device

Export AE is used to transmit images to a remote DICOM device. It therefore performs the following tasks:

- Establishes DICOM Association with remote DICOM device
- Performs storage of DICOM CR, CT, MR, NM, SC, US, US Multi-frame, XA, XRF, DX, MG, and PET images Information Objects to remote DICOM device

Export AE is used to transmit request for print images to a remote DICOM device. It therefore performs the following tasks:

- Builds DICOM Basic Grayscale/Color Print Objects
- Establishes DICOM Association with remote DICOM device
- Performs transmit of DICOM Basic Grayscale/Color Print Objects to remote DICOM device

### **2.2.2 Import AE**

Import AE is used to respond to requests to verify that the TWS is present and active on the network and to receive CR, CT, MR, NM, SC, US, US Multi-frame, XA, XRF, DX, MG, and PET images from remote DICOM devices.

## **2.3 Sequencing of Real World Activities**

### **2.3.1 Features**

#### **2.3.1.1 Request of Query/Retrieve**

- Operator can use the search key defined as chapter 10, and can get a search list.
- The search list is displayed in units of patient, study, series, and image levels. Image transfer requests are also handled in units of patient, study, series, and image levels.
- If an error occurs when image data is being retrieved, an error message is displayed.

#### **2.3.1.2 Manual Send of Image, Study or Patient Unit**

- Operator requests to send data after selecting them from the Image, Study or Patient List.
- When the image transfer fails, display the Send Failed Image List. And operator can manually attempt to resend image at a later time.

#### **2.3.1.3 Archiving of the Received Image to the Local File System**

- The TWS receives CR, CT, MR, NM, SC, US, US Multi-frame, XA, XRF, DX, MG, and PET images from remote DICOM devices.
- The TWS archives the received images to the local file system.

#### **2.3.1.4 Manual Print of Image, Series or Study Unit**

- Operator requests to print images displayed on monitor(s).
- When the image transfer fails, display the Send Failed Image List. And operator can manually attempt to resend image at a later time.

#### **2.3.2 Operation**

##### **2.3.2.1 Request of Query/Retrieve**

The operation for a search request and an image transfer request are described below:

- Step-1: Enter the information, search key defined as chapter 10, for the items for which the operator wishes to search.
- Step-2: Execute the search request.
- Step-3: Select images from the results of the search.
- Step-4: Execute the image transfer request.

##### **2.3.2.2 Manual Send of Image, Study or Patient Unit**

The operation for sending images is described below:

- Step-1: Select the patient, study or the image to be sent.
- Step-2: Select the destination of image sending.
- Step-3: Request transfer.

##### **2.3.2.3 Archiving of the Received Image to the Local File System**

There is no specific operation for receiving and archiving images.

##### **2.3.2.4 Manual Print of Image, Series or Study Unit**

- Step-1: Select the images for Image, Series or Study Unit
- Step-2: Set up the parameters for printing images.
- Step-3: Select the destination of image printing.
- Step-4: Execute the print image request.

### 3 AE Specifications

#### 3.1 Export AE Specification

Export AE provides Standard Conformance to the following DICOM SOP Classes as an SCU:

**Table 1**

| <b>SOP Class Name</b>                                    | <b>SOP Class UID</b>         |
|--|------------------------------|
| CR Image Storage   | 1.2.840.10008.5.1.4.1.1.1    |
| CT Image Storage   | 1.2.840.10008.5.1.4.1.1.2    |
| MR Image Storage   | 1.2.840.10008.5.1.4.1.1.4    |
| NM Image Storage   | 1.2.840.10008.5.1.4.1.1.20   |
| SC Image Storage   | 1.2.840.10008.5.1.4.1.1.7    |
| US Image Storage   | 1.2.840.10008.5.1.4.1.1.6.1  |
| US Multi-frame Image Storage                             | 1.2.840.10008.5.1.4.1.1.3.1  |
| XA Image Storage   | 1.2.840.10008.5.1.4.1.1.12.1 |
| XRF Image Storage  | 1.2.840.10008.5.1.4.1.1.12.2 |
| DX Image Storage   | 1.2.840.10008.5.1.4.1.1.1.1  |
| MG Image Storage   | 1.2.840.10008.5.1.4.1.1.1.2  |
| PET Image Storage  | 1.2.840.10008.5.1.4.1.1.128  |
| Patient Root Query/Retrieve Information Model-Find       | 1.2.840.10008.5.1.4.1.2.1.1  |
| Patient Root Query/Retrieve Information Model-Move       | 1.2.840.10008.5.1.4.1.2.1.2  |
| Study Root Query/Retrieve Information Model-Find         | 1.2.840.10008.5.1.4.1.2.2.1  |
| Study Root Query/Retrieve Information Model-Move         | 1.2.840.10008.5.1.4.1.2.2.2  |
| Patient/Study Only Query/Retrieve Information Model-Find | 1.2.840.10008.5.1.4.1.2.3.1  |
| Patient/Study Only Query/Retrieve Information Model-Move | 1.2.840.10008.5.1.4.1.2.3.2  |
| Basic Grayscale Print Management                         | 1.2.840.10008.5.1.1.9        |
| Basic Color Print Management                             | 1.2.840.10008.5.1.1.18       |

The SOP Classes listed in Table2 indicate the SOP Classes regulated by the Basic Grayscale Print Management Meta SOP Class.

**Table 2**

| SOP Class Name                      | SOP Class UID          |
|-------------------------------------|------------------------|
| Basic Film Session SOP Class        | 1.2.840.10008.5.1.1.1  |
| Basic Film Box SOP Class            | 1.2.840.10008.5.1.1.2  |
| Basic Grayscale Image Box SOP Class | 1.2.840.10008.5.1.1.4  |
| Printer SOP Class                   | 1.2.840.10008.5.1.1.16 |

The SOP Classes listed in Table3 indicate the SOP Classes regulated by the Color Grayscale Print Management Meta SOP Class.

**Table 3**

| SOP Class Name                  | SOP Class UID           |
|---------------------------------|-------------------------|
| Basic Film Session SOP Class    | 1.2.840.10008.5.1.1.1   |
| Basic Film Box SOP Class        | 1.2.840.10008.5.1.1.2   |
| Basic Color Image Box SOP Class | 1.2.840.10008.5.1.1.4.1 |
| Printer SOP Class               | 1.2.840.10008.5.1.1.16  |

### 3.1.1 Export AE Association Establishment Policies

#### 3.1.1.1 Export AE General

Export AE will utilize and understand the following Application Context Name:

**Table 4**

|                                |                       |
|--------------------------------|-----------------------|
| DICOM V3.0 Application Context | 1.2.840.10008.3.1.1.1 |
|--------------------------------|-----------------------|

Export AE supports a minimum PDU size of 16 Kbytes and a maximum PDU size of 64 Kbytes. The default value is set to 64 Kbytes.

#### 3.1.1.2 Export AE Number of Associations

Export AE can establish two associations for FIND and MOVE, and one association for Storage and Print at once regardless of the number of the selected destinations.

#### 3.1.1.3 Export AE Asynchronous Nature

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

### 3.1.1.4 Export AE Implementation Identifying Information

Export AE will specify the following Implementation Identifying Information:

**Table 5**

| Applicable Models   | Implementation Class UID   | Implementation Version Name |
|---|----------------------------|-----------------------------|
| TWS-2100, TWS-2300P,<br>TWS-2300L, TWS-2400A,<br>TWS-2500P, TWS-2900,<br>TWS-3100L, TWS-3300P | 1.2.392.200036.9116.7.4.10 | TM_OT_PTWS_1.0              |

### 3.1.2 Export AE Association Initiation by Real-World Activity

Export AE initiates an association when the following activity is chosen by the operator:

- "Manual Send of Image, Study or Patient Unit"
  - Storage                    - Store a CR, CT, MR, NM, SC, US, US Multi-frame, XA, XRF, DX, MG, or PET image to a remote DICOM device
- "Request of Query/Retrieve"
  - Find                        -Get an image list from a remote DICOM device
  - Move                       -Send an image transfer request to a remote DICOM device
- "Manual Print of Image, Series or Study Unit"
  - Print                       -Request print image to a remote DICOM device.

### 3.1.2.1 Export AE Real-World Activity – Storage

#### 3.1.2.1.1 Export AE Associated Real-World Activity - Storage

The Storage is executed by the TWS after the operator requests the image transfer.

#### 3.1.2.1.2 Export AE Proposed Presentation Contexts - Storage

Export AE proposes the following Presentation Contexts shown below:

**Table 6**

| Presentation Context Table   |                              |                           |                   |      |                      |
|------------------------------|------------------------------|---------------------------|-------------------|------|----------------------|
| Abstract Syntax              |                              | Transfer Syntax           |                   | Role | Extended Negotiation |
| Name                         | UID                          | Name List                 | UID List          |      |                      |
| CR Image Storage             | 1.2.840.10008.5.1.4.1.1.1    | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| CT Image Storage             | 1.2.840.10008.5.1.4.1.1.2    | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| MR Image Storage             | 1.2.840.10008.5.1.4.1.1.4    | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| NM Image Storage             | 1.2.840.10008.5.1.4.1.1.20   | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| SC Image Storage             | 1.2.840.10008.5.1.4.1.1.7    | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| US Image Storage             | 1.2.840.10008.5.1.4.1.1.6.1  | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| US Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1  | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| XA Image Storage             | 1.2.840.10008.5.1.4.1.1.12.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| XRF Image Storage            | 1.2.840.10008.5.1.4.1.1.12.2 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| DX Image Storage             | 1.2.840.10008.5.1.4.1.1.1.1  | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| MG Image Storage             | 1.2.840.10008.5.1.4.1.1.1.2  | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| PET Image Storage            | 1.2.840.10008.5.1.4.1.1.128  | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |

#### 3.1.2.1.2.1 Export AE SOP Specific Conformance - Storage

Export AE operation involves the following sequence of steps for each image transfer.

- (1) Association establishment (requestor only)
- (2) Data transfer (SCU only)
- (3) Association release (requestor only)

Export AE judges that the transfer of one image succeeded when the result of (2) "Data transfer" is "Success" even if the result of (3) "Association release" is "Failure".



### 3.1.2.2 Export AE Real-World Activity – Query/Retrieve (Find)

#### 3.1.2.2.1 Export AE Associated Real-World Activity - Query/Retrieve (Find)

The operator specifies a search and sends the request to a remote DICOM device. When the results of the search have been completely received, the association is released.

#### 3.1.2.2.2 Export AE Proposed Presentation Contexts - Query/Retrieve (Find)

Export AE proposes the following presentation contexts shown below:

**Table 7**

| Presentation Context Table              |                             |                           |                   |      |                      |
|---|-----------------------------|---------------------------|-------------------|------|----------------------|
| Abstract Syntax                         |                             | Transfer Syntax           |                   | Role | Extended Negotiation |
| Name                                    | UID                         | Name List                 | UID List          |      |                      |
| Patient Root Q/R Info. Model-Find       | 1.2.840.10008.5.1.4.1.2.1.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| Study Root Q/R Info. Model-Find         | 1.2.840.10008.5.1.4.1.2.2.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| Patient/Study Only Q/R Info. Model-Find | 1.2.840.10008.5.1.4.1.2.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |

#### 3.1.2.2.2.1 Export AE SOP Specific Conformance - Query/Retrieve (Find)

Export AE operation involves the following sequence of steps for each search request:

- (1) Association establishment (requestor only)
- (2) Query request (SCU only)
- (3) Association release (requestor only)

Export AE judges that query request succeeded when the result of (2) "Query request" is "Success", even if the result of (3) "Association release" is "Failure".

Search keys for the Query/Retrieve SCU are described in chapter 10.

### 3.1.2.3 Export AE Real-World Activity – Query/Retrieve (Move)

#### 3.1.2.3.1 Export AE Associated Real-World Activity - Query/Retrieve (Move)

The operator specifies a patient, study, series, and image to retrieve and sends the request to a remote DICOM device. The association is released when all the image data corresponding to the request list has been received from the remote DICOM device, or when the operator makes cancel or abort request.

#### 3.1.2.3.2 Export AE Proposed Presentation Contexts - Query/Retrieve (Move)

Export AE proposes the following presentation contexts shown below:

**Table 8**

| Presentation Context Table              |                             |                              |                   |      |                      |
|---|-----------------------------|------------------------------|-------------------|------|----------------------|
| Abstract Syntax                         |                             | Transfer Syntax              |                   | Role | Extended Negotiation |
| Name                                    | UID                         | Name List                    | UID List          |      |                      |
| Patient Root Q/R Info. Model-Move       | 1.2.840.10008.5.1.4.1.2.1.2 | Implicit VR<br>Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| Study Root Q/R Info. Model-Move         | 1.2.840.10008.5.1.4.1.2.2.2 | Implicit VR<br>Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| Patient/Study Only Q/R Info. Model-Move | 1.2.840.10008.5.1.4.1.2.3.2 | Implicit VR<br>Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |

#### 3.1.2.3.2.1 Export AE SOP Specific Conformance - Query/Retrieve (Move)

Export AE operation involves the following sequence of steps for each retrieve request:

- (1) Association establishment (requestor only)
- (2) Retrieve (image transfer) request (SCU only)
- (3) Association release (requestor only)

Export AE judges that Retrieve request succeeded when the result of (2) "Retrieve request" is Success, even if the result of (3) "Association release" is Failure.

### 3.1.2.4 Export Real-World Activity - Print

#### 3.1.2.4.1 Export Associated Real-World Activity - Print

Export AE performs request print images manually to destination device.

#### 3.1.2.4.2 Export Proposed Presentation Contexts - Print

Export AE proposes the following Presentation Contexts shown below:

**Table 9**

| Presentation Context Table       |                        |                           |                   |      |                      |
|----------------------------------|------------------------|---------------------------|-------------------|------|----------------------|
| Abstract Syntax                  |                        | Transfer Syntax           |                   | Role | Extended Negotiation |
| Name                             | UID                    | Name List                 | UID List          |      |                      |
| Basic Grayscale Print Management | 1.2.840.10008.5.1.1.9  | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |
| Basic Color Print Management     | 1.2.840.10008.5.1.1.18 | Implicit VR Little Endian | 1.2.840.10008.1.2 | SCU  | None                 |

#### 3.1.2.4.2.1 Export AE SOP Specific Conformance - Print

Export AE operation involves the following sequence of steps for each image transfer.

- (1) Association establishment(requestor only)
- (2) Data transfer(SCU only)
- (3) Association release(requestor only)

Export AE judges that the transfer of one image succeeded when the result of (2)"Data transfer" is "Success" even if the result of (3)"Association release" is "Failure".

DIMSE-Service and Attributes are described in chapter 11.

### 3.1.3 Export AE Association Acceptance Policy

Export AE does not accept any associations generated by remote applications.

### 3.2 Import AE Specification

Import AE provides Standard Conformance to the following DICOM SOP Classes as an SCP:

**Table 10**

| <b>SOP Class Name</b>        | <b>SOP Class UID</b>         |
|------------------------------|------------------------------|
| Verification                 | 1.2.840.10008.1.1            |
| CR Image Storage             | 1.2.840.10008.5.1.4.1.1.1    |
| CT Image Storage             | 1.2.840.10008.5.1.4.1.1.2    |
| MR Image Storage             | 1.2.840.10008.5.1.4.1.1.4    |
| NM Image Storage             | 1.2.840.10008.5.1.4.1.1.20   |
| SC Image Storage             | 1.2.840.10008.5.1.4.1.1.7    |
| US Image Storage             | 1.2.840.10008.5.1.4.1.1.6.1  |
| US Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1  |
| XA Image Storage             | 1.2.840.10008.5.1.4.1.1.12.1 |
| XRF Image Storage            | 1.2.840.10008.5.1.4.1.1.12.2 |
| DX Image Storage             | 1.2.840.10008.5.1.4.1.1.1.1  |
| MG Image Storage             | 1.2.840.10008.5.1.4.1.1.1.2  |
| PET Image Storage            | 1.2.840.10008.5.1.4.1.1.128  |

### 3.2.1 Import AE Association Establishment Policies

#### 3.2.1.1 Import AE General

Import AE will utilize and understand the following Application Context Name:

**Table 11**

|                                |                       |
|--------------------------------|-----------------------|
| DICOM V3.0 Application Context | 1.2.840.10008.3.1.1.1 |
|--------------------------------|-----------------------|

Import AE supports a minimum PDU size of 16 Kbytes and a maximum PDU size of 64 Kbytes. The default value is set to 64 Kbytes.

#### 3.2.1.2 Import AE Number of Associations

Import AE supports up to three associations at a time.

#### 3.2.1.3 Import AE Asynchronous Nature

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

#### 3.2.1.4 Import AE Implementation Identifying Information

Import AE will specify the following Implementation Identifying Information:

**Table 12**

| Applicable Models  | Implementation Class UID   | Implementation Version Name |
|--|----------------------------|-----------------------------|
| TWS-2100, TWS-2300P, TWS-2300L, TWS-2400A, TWS-2500P, TWS-2900, TWS-3100L, TWS-3300P | 1.2.392.200036.9116.7.4.10 | TM_OT_PTWS_1.0              |

### 3.2.2 Import AE Association Initiation by Real-World Activity

Import AE never initiates an association.

### 3.2.3 Import AE Association Acceptance Policy

When Import AE receives an association request, it will allow the following activities to be performed during that association:

- Verification - Allow a remote DICOM device to verify that the TWS is active on the DICOM network
- Storage - Allow a remote DICOM device to send a CR, CT, MR, NM, SC, US, US Multi-frame, XA, XRF, DX, MG or PET image to the TWS

### 3.2.3.1 Import AE Real-World Activity - Verification

#### 3.2.3.1.1 Import AE Associated Real-World Activity - Verification

The TWS responds to the Verification made by a remote Verification SCU.

#### 3.2.3.1.2 Import AE Presentation Context Table - Verification

Import AE accepts the following Presentation Contexts shown below:

**Table 13**

| Presentation Context Table |                   |                              |                   |      |                      |
|----------------------------|-------------------|------------------------------|-------------------|------|----------------------|
| Abstract Syntax            |                   | Transfer Syntax              |                   | Role | Extended Negotiation |
| Name                       | UID               | Name List                    | UID List          |      |                      |
| Verification               | 1.2.840.10008.1.1 | Implicit VR<br>Little Endian | 1.2.840.10008.1.2 | SCP  | None                 |

#### 3.2.3.1.2.1 Import AE SOP Specific Conformance - Verification

Import AE responds with the following status codes in response to a C-ECHO request.

**Table 14**

| Service Status | Further Meaning | Protocol Codes | Description                  |
|----------------|-----------------|----------------|------------------------------|
| Success        | Success         | 0x0000         | Operation performed properly |

#### 3.2.3.1.3 Import AE Presentation Context Acceptance Criterion - Verification

Import AE accepts the Presentation Contexts listed in the Presentation Context Table (Table 13).

#### 3.2.3.1.4 Import AE Transfer Syntax Selection Policies - Verification

Import AE supports only the Implicit VR Little Endian transfer syntax. It rejects any proposed Presentation Context which does not specify the default Implicit VR Little Endian transfer syntax.

### 3.2.3.2 Import AE Real-World Activity - Storage

#### 3.2.3.2.1 Import AE Associated Real-World Activity - Storage

The TWS receives image data sent by a remote Storage SCU, archives it to the local file system, and responds to the remote Storage SCU.

### 3.2.3.2.2 Import AE Presentation Context Table - Storage

Import AE accepts the following presentation contexts shown below:

**Table 15**

| Presentation Context Table   |                             |                           |                     |      |             |
|------------------------------|-----------------------------|---------------------------|---------------------|------|-------------|
| Abstract Syntax              |                             | Transfer Syntax           |                     |      | Extended    |
| Name                         | UID                         | Name List                 | UID List            | Role | Negotiation |
| CR Image Storage             | 1.2.840.10008.5.1.4.1.1.1   | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                              |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| CT Image Storage             | 1.2.840.10008.5.1.4.1.1.2   | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                              |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| MR Image Storage             | 1.2.840.10008.5.1.4.1.1.4   | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                              |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| NM Image Storage             | 1.2.840.10008.5.1.4.1.1.20  | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                              |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| SC Image Storage             | 1.2.840.10008.5.1.4.1.1.7   | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                              |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| US Image Storage             | 1.2.840.10008.5.1.4.1.1.6.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                              |                             | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| US Multi-frame Image Storage | 1.2.840.10008.5.1.4.1.1.3.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                              |                             | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |

| Presentation Context Table |                              |                           |                     |      |             |
|----------------------------|------------------------------|---------------------------|---------------------|------|-------------|
| Abstract Syntax            |                              | Transfer Syntax           |                     |      | Extended    |
| Name                       | UID                          | Name List                 | UID List            | Role | Negotiation |
|                            |                              | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| XA Image Storage           | 1.2.840.10008.5.1.4.1.1.12.1 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                            |                              | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                            |                              | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| XRF Image Storage          | 1.2.840.10008.5.1.4.1.1.12.2 | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                            |                              | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                            |                              | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| DX Image Storage           | 1.2.840.10008.5.1.4.1.1.1.1  | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                            |                              | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                            |                              | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| MG Image Storage           | 1.2.840.10008.5.1.4.1.1.1.2  | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                            |                              | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                            |                              | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |
| PET Image Storage          | 1.2.840.10008.5.1.4.1.1.128  | Implicit VR Little Endian | 1.2.840.10008.1.2   | SCP  | None        |
|                            |                              | Explicit VR Little Endian | 1.2.840.10008.1.2.1 | SCP  | None        |
|                            |                              | Explicit VR Big Endian    | 1.2.840.10008.1.2.2 | SCP  | None        |

### 3.2.3.2.2.1 Import AE SOP Specific Conformance - Storage

Import AE responds with the following status codes in response to a C-STORE request.

Import AE achieves Level 2 Conformance as described in Part 4 of the DICOM V3.0 Standard document.

**Table 16**

| Service Status | Further Meaning                   | Protocol Codes | Description  |
|----------------|-----------------------------------|----------------|--|
| Success        | Success                           | 0x0000         | Operation performed properly.  |
| Error          | Data Set does not match SOP Class | 0xA900         | SOP Class UID does not match.  |
|                | Cannot understand                 | 0xC000         | Invalid data set or unsupported extended character sets. (See section 7 'Support of Extended Character Sets'.) |
| Refused        | Out of Resources                  | 0xA700         | Local resource is insufficient.  |

When the service status is "Refused", check the free space in the local file system of the remote Storage SCU before resending.

- If the free space is insufficient, create enough space.
- If there is enough free space, wait till all large applications that are running are terminated.

### 3.2.3.3 Import AE Presentation Context Acceptance Criterion - Storage

Import AE accepts the Presentation Contexts listed in the Presentation Context Table (Table 15).

### 3.2.3.4 Import AE Transfer Syntax Selection Policies - Storage

Import AE accepts the Transfer Syntax listed in the Presentation Context Table (Table 15).

The selection priority of acceptable Transfer Syntax is the Default Transfer Syntax. See subsection 6.4.2.

## **4 Communication Profiles**

### **4.1 Supported Communication Stacks**

This product provides DICOM TCP/IP Network Communication Support as defined in Part 8 of the DICOM Standard.

### **4.2 OSI Stack**

Not applicable to this product.

### **4.3 TCP/IP Stack**

This product inherits its TCP/IP stack from the computer system upon which it executes.

#### **4.3.1 API**

Not applicable to this product.

#### **4.3.2 Physical Media Support**

This product is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the computer system upon which it executes.

### **4.4 Point-to-Point Stack**

Not applicable to this product.

## **5 Extensions/Specializations/Privatizations**

### **5.1 Standard Extended/Specialized/Private SOP - Storage SCU**

Private Data Elements used in this product are listed in section 8.3

## 6 Configuration

For the TWS, the configuration can be set using the Network setup tool.

Note: Settings are performed by your Toshiba Service Personnel at the time of installation of the TWS.

### 6.1 AE Title/Presentation Address Mapping

The mapping from the AE titles to the presentation addresses is as follows:

- One port number and one AE title can be described for one host name.
- Each AE title is mapped to one port number.
- The TWS has following default values:
  - Local Port No. 5000
  - Local AE Title TM\_OT\_PTWS\_1.0

### 6.2 Configurable Parameters

#### 6.2.1 Time-out Value, Retry Count, Retry Interval

The time-out value, retry count, and retry interval in each status are shown below.

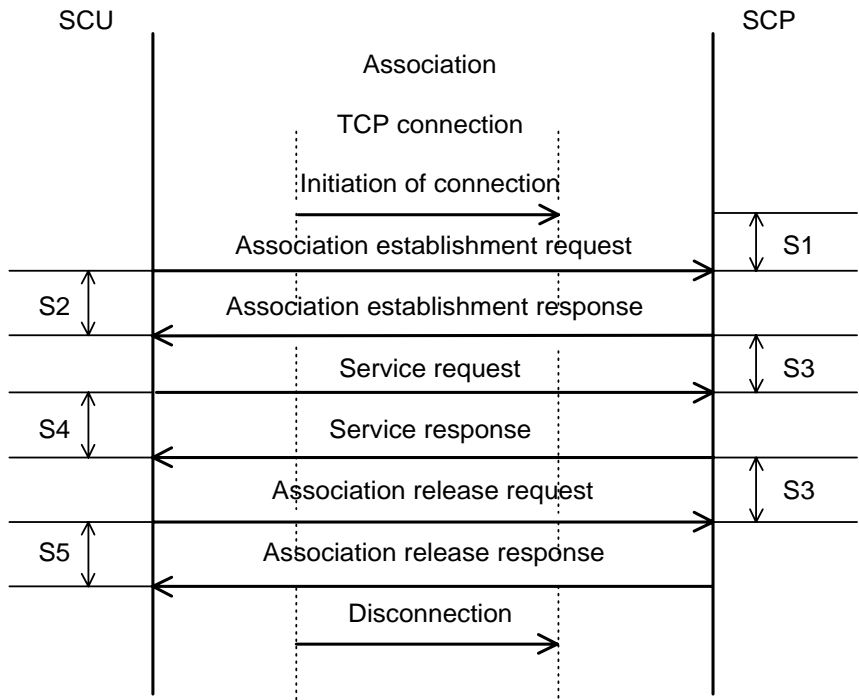


Figure 2

Table 17

| Status | Item  | Time-out value   | Retry count | Retry interval | Remarks                                   |
|--------|---|--|-------------|----------------|---|
| S1     | Association establishment request waiting time  | Default:<br>60 seconds<br>Range:<br>1 to 32767 seconds   | Not set     | Not set        | Only one parameter can be set in the TWS. |
| S2     | Association establishment response waiting time | Default:<br>60 seconds<br>Range:<br>1 to 32767 seconds   | Not set     | Not set        | Only one parameter can be set in the TWS. |
| S3     | Service request waiting time                    | Default:<br>60 seconds<br>Range:<br>1 to 32767 seconds   | Not set     | Not set        | Only one parameter can be set in the TWS. |
| S4     | Service response waiting time                   | Default:<br>C-STORE=120seconds<br>C-FIND=120 seconds<br>C-MOVE=900 seconds<br>Range:<br>1 to 32767 seconds | Not set     | Not set        | Can be set for each provided service.     |
| S5     | Association release waiting time                | Default:<br>60 seconds<br>Range:<br>1 to 32767 seconds   | Not set     | Not set        | Only one parameter can be set in the TWS. |

## 6.2.2 Warning Status Criteria

The warning status criteria can be set for each station and each service, for Export AE.

### 6.2.2.1 CR Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 18**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.2 CT Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 19**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.3 MR Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 20**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

#### 6.2.2.4 NM Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 21**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

#### 6.2.2.5 SC Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 22**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

#### 6.2.2.6 US Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 23**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.7 US Multi-frame Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 24**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.8 XA Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 25**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.9 XRF Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 26**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.10 DX Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 27**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |

|                    |      |                 |
|--------------------|------|-----------------|
| Elements discarded | FAIL | SUCCESS or FAIL |
|--------------------|------|-----------------|

### 6.2.2.11 MG Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 28**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.12 PET Image Storage

If SUCCESS is set, the TWS judges that the image transfer succeeded.

If FAIL is set, the TWS judges that the image transfer failed.

**Table 29**

| Warning response                  | Default | Parameter setting range |
|-----------------------------------|---------|-------------------------|
| Coercion of Data Elements         | FAIL    | SUCCESS or FAIL         |
| Data Set does not match SOP Class | FAIL    | SUCCESS or FAIL         |
| Elements discarded                | FAIL    | SUCCESS or FAIL         |

### 6.2.2.13 Query/Retrieve(Move)

If SUCCESS is set, the TWS judges that C-MOVE request succeeded.

If FAIL is set, the TWS judges that the C-MOVE request failed.

**Table 30**

| Warning response                             | Default | Parameter setting range |
|--|---------|-------------------------|
| Sub-operations Complete-One or more Failures | FAIL    | SUCCESS or FAIL         |

### 6.2.2.14 Basic Grayscale Print Management

If SUCCESS is set, the TWS judges that the request printing images succeeded.

If FAIL is set, the TWS judges that the request printing images failed.

#### 6.2.2.14.1 Basic Film Session SOP Class

##### 6.2.2.14.1.1 N-CREATE response

**Table 31**

| Warning response                 | Default | Parameter setting range |
|----------------------------------|---------|-------------------------|
| Memory allocation not supported. | FAIL    | SUCCESS or FAIL         |

## 6.2.2.14.2 Basic Film Box SOP Class

### 6.2.2.14.2.1 N-CREATE response

Table 32

| Warning response   | Default | Parameter setting range |
|--|---------|-------------------------|
| Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead. | FAIL    | SUCCESS or FAIL         |

### 6.2.2.14.2.2 N-ACTION response

Table 33

| Warning response   | Default | Parameter setting range |
|--|---------|-------------------------|
| Film Box SOP Instance hierarchy does not contain Image Box SOP Instances(empty page) | FAIL    | SUCCESS or FAIL         |
| Image size is larger than image box size, the image has been demagnified.            | FAIL    | SUCCESS or FAIL         |

### 6.2.2.14.3 Basic Grayscale Image Box SOP Class

#### 6.2.2.14.3.1 N-SET response

Table 34

| Warning response   | Default | Parameter setting range |
|--|---------|-------------------------|
| Image size larger than image box size, the image has been demagnified.   | FAIL    | SUCCESS or FAIL         |
| Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead. | FAIL    | SUCCESS or FAIL         |

### 6.2.2.15 Basic Color Print Management

If SUCCESS is set, the TWS judges that the request printing images succeeded.

If FAIL is set, the TWS judges that the request printing images failed.

#### 6.2.2.15.1 Basic Film Session SOP Class

The warning status criteria are same as Basic Grayscale Print Management.

#### 6.2.2.15.2 Basic Film Box SOP Class

The warning status criteria are same as Basic Grayscale Print Management.

### 6.2.2.15.3 Basic Color Image Box SOP Class

#### 6.2.2.15.3.1 N-SET response

Table 35

| Warning response item  | Default | Parameter setting range |
|--|---------|-------------------------|
| Image size larger than image box size, the image has been demagnified. | FAIL    | SUCCESS or FAIL         |

## 6.3 Implementation Information and Maximum Reception PDU Size

The default values for the TWS are used for the Implementation Class UID, the Implementation Version name, and the Maximum length received. They cannot be changed.

Table 36

| Parameter                   | Default                    |
|-----------------------------|----------------------------|
| Implementation Class UID    | 1.2.392.200036.9116.7.4.10 |
| Implementation Version Name | TM_OT_PTWS_1.0             |
| Maximum length received     | 0x10000 (64 Kbytes)        |

## **6.4 Default Transfer Syntax**

### **6.4.1 Import AE**

Selection priority of acceptable Transfer Syntax is following Default Transfer Syntax:

Default = " Implicit VR Little Endian "

## **7 Support of Extended Character Sets**

### **7.1 Query/Retrieve SCU**

This product supports the following character sets:

- ISO-IR 6 (default)                      ISO 646

If Export AE receives result of a search that contains characters from an unsupported character set, a character may not be correctly displayed on a list.

### **7.2 Storage SCU/SCP**

This product supports the following character sets:

- ISO-IR 6 (default)                      ISO 646
- ISO-IR 13 (Japanese)                  JIS X 0201 (Katakana)
- ISO-IR 14 (Japanese)                  JIS X 0201 (Romaji)
- ISO-IR 87 (Japanese)                  JIS X 0208 (Kanji)

If Import AE receives image data that contains characters from an unsupported character set, Import AE will respond with "Cannot understand" to the C-STORE request. (See subsection 3.2.3.2.2.1.)

### **7.3 Print SCU**

This product supports the following character sets:

- ISO-IR 6 (default)                      ISO 646

## 8 Information Object Definition - Storage SCU

### 8.1 Entity Module Definitions

The information modules for TWS are defined below.

#### 8.1.1 CR IMAGE IOD Modules

**Table 37**

| Information Entity | Module                   | Reference | Usage <sup>1</sup> |
|--------------------|--------------------------|-----------|--------------------|
| Patient            | Patient Module           | 8.2.1     | M                  |
| Study              | General Study Module     | 8.2.2     | M                  |
|                    | Patient Study Module     | 8.2.3     | U                  |
| Series             | General Series Module    | 8.2.4     | M                  |
|                    | CR Series Module         | 8.2.5     | M                  |
| Equipment          | General Equipment Module | 8.2.9     | M                  |
| Image              | General Image Module     | 8.2.11    | M                  |
|                    | Image Pixel Module       | 8.2.13    | M                  |
|                    | Contrast/Bolus Module    | 8.2.15    | C                  |
|                    | CR Image Module          | 8.2.26    | M                  |
|                    | Overlay Plane Module     | 8.2.45    | U                  |
|                    | Curve Module             | 8.2.47    | U                  |
|                    | Modality LUT Module      | 8.2.48    | U                  |
|                    | VOI LUT Module           | 8.2.49    | U                  |
|                    | SOP Common Module        | 8.2.50    | M                  |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.2 CT IMAGE IOD Modules

**Table 38**

| <b>Information Entity</b> | <b>Module</b>             | <b>Reference</b> | <b>Usage<sup>1</sup></b> |
|---------------------------|---------------------------|------------------|--------------------------|
| Patient                   | Patient Module            | 8.2.1            | M                        |
| Study                     | General Study Module      | 8.2.2            | M                        |
|                           | Patient Study Module      | 8.2.3            | U                        |
| Series                    | General Series Module     | 8.2.4            | M                        |
| Frame of Reference        | Frame of Reference Module | 8.2.7            | M                        |
| Equipment                 | General Equipment Module  | 8.2.9            | M                        |
| Image                     | General Image Module      | 8.2.11           | M                        |
|                           | Image Plane Module        | 8.2.12           | M                        |
|                           | Image Pixel Module        | 8.2.13           | M                        |
|                           | Contrast/Bolus Module     | 8.2.15           | C                        |
|                           | CT Image Module           | 8.2.27           | M                        |
|                           | Overlay Plane Module      | 8.2.45           | U                        |
|                           | VOI LUT Module            | 8.2.49           | U                        |
|                           | SOP Common Module         | 8.2.50           | M                        |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

### 8.1.3 MR IMAGE IOD Modules

**Table 39**

| <b>Information Entity</b> | <b>Module</b>             | <b>Reference</b> | <b>Usage<sup>1</sup></b> |
|---------------------------|---------------------------|------------------|--------------------------|
| Patient                   | Patient Module            | 8.2.1            | M                        |
| Study                     | General Study Module      | 8.2.2            | M                        |
|                           | Patient Study Module      | 8.2.3            | U                        |
| Series                    | General Series Module     | 8.2.4            | M                        |
| Frame of Reference        | Frame of Reference Module | 8.2.7            | M                        |
| Equipment                 | General Equipment Module  | 8.2.9            | M                        |
| Image                     | General Image Module      | 8.2.11           | M                        |
|                           | Image Plane Module        | 8.2.12           | M                        |
|                           | Image Pixel Module        | 8.2.13           | M                        |
|                           | Contrast/Bolus Module     | 8.2.15           | C                        |
|                           | MR Image Module           | 8.2.28           | M                        |
|                           | Overlay Plane Module      | 8.2.45           | U                        |
|                           | VOI LUT Module            | 8.2.49           | U                        |
|                           | SOP Common Module         | 8.2.50           | M                        |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.4 NM IMAGE IOD Modules

Table 40

| Information Entity | Module                            | Reference | Usage <sup>1</sup> |
|--------------------|-----------------------------------|-----------|--------------------|
| Patient            | Patient Module                    | 8.2.1     | M                  |
| Study              | General Study Module              | 8.2.2     | M                  |
|                    | Patient Study Module              | 8.2.3     | U                  |
| Series             | General Series Module             | 8.2.4     | M                  |
|                    | NM/PET Patient Orientation Module | 8.2.6     | M                  |
| Frame of Reference | Frame of Reference Module         | 8.2.7     | U                  |
| Equipment          | General Equipment Module          | 8.2.9     | M                  |
| Image              | General Image Module              | 8.2.11    | M                  |
|                    | Image Pixel Module                | 8.2.13    | M                  |
|                    | NM Image Pixel Module             | 8.2.14    | M                  |
|                    | Multi-frame Module                | 8.2.19    | M                  |
|                    | NM Multi-frame Module             | 8.2.20    | M                  |
|                    | NM Image Module                   | 8.2.29    | M                  |
|                    | NM Isotope Module                 | 8.2.31    | M                  |
|                    | NM Detector Module                | 8.2.32    | M                  |
|                    | NM TOMO Acquisition Module        | 8.2.33    | C                  |
|                    | NM Multi-gated Acquisition Module | 8.2.34    | C                  |
|                    | NM Phase Module                   | 8.2.35    | C                  |
|                    | NM Reconstruction Module          | 8.2.36    | C                  |
|                    | Overlay Plane Module              | 8.2.45    | U                  |
|                    | Multi-frame Overlay Module        | 8.2.46    | U                  |
|                    | Curve Module                      | 8.2.47    | U                  |
| VOI LUT Module     | 8.2.49                            | U         |                    |
| SOP Common Module  | 8.2.50                            | M         |                    |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

### 8.1.5 SC IMAGE IOD Modules

Table 41

| Information Entity | Module                   | Reference | Usage <sup>1</sup> |
|--------------------|--------------------------|-----------|--------------------|
| Patient            | Patient Module           | 8.2.1     | M                  |
| Study              | General Study Module     | 8.2.2     | M                  |
|                    | Patient Study Module     | 8.2.3     | U                  |
| Series             | General Series Module    | 8.2.4     | M                  |
| Equipment          | General Equipment Module | 8.2.9     | U                  |
|                    | SC Equipment Module      | 8.2.10    | M                  |
| Image              | General Image Module     | 8.2.11    | M                  |
|                    | Image Pixel Module       | 8.2.13    | M                  |
|                    | SC Image Module          | 8.2.37    | M                  |
|                    | Overlay Plane Module     | 8.2.45    | U                  |
|                    | Modality LUT Module      | 8.2.48    | U                  |
|                    | VOI LUT Module           | 8.2.49    | U                  |
|                    | SOP Common Module        | 8.2.50    | M                  |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.6 US IMAGE IOD Modules

Table 42

| Information Entity | Module                            | Reference | Usage <sup>1</sup> |
|--------------------|-----------------------------------|-----------|--------------------|
| Patient            | Patient Module                    | 8.2.1     | M                  |
| Study              | General Study Module              | 8.2.2     | M                  |
|                    | Patient Study Module              | 8.2.3     | U                  |
| Series             | General Series Module             | 8.2.4     | M                  |
| Frame of Reference | Frame of Reference Module         | 8.2.7     | U                  |
|                    | US Frame of Reference Module      | 8.2.8     | C                  |
| Equipment          | General Equipment Module          | 8.2.9     | M                  |
| Image              | General Image Module              | 8.2.11    | M                  |
|                    | Image Pixel Module                | 8.2.13    | M                  |
|                    | Contrast/Bolus Module             | 8.2.15    | C                  |
|                    | Palette Color Lookup Table Module | 8.2.16    | C                  |
|                    | US Region Calibration Module      | 8.2.17    | U                  |
|                    | US Image                          | 8.2.30    | M                  |
|                    | Overlay Plane Module              | 8.2.45    | U                  |
|                    | VOI LUT Module                    | 8.2.49    | U                  |
|                    | SOP Common Module                 | 8.2.50    | M                  |
| Curve              | Curve Module                      | 8.2.47    | M                  |
|                    | SOP Common Module                 | 8.2.50    | M                  |
|                    | Curve Identification Module       | 8.2.51    | M                  |
|                    | Audio Module                      | 8.2.52    | U                  |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

### 8.1.7 US MULTI-FRAME IMAGE IOD Modules

Table 43

| Information Entity | Module                            | Reference | Usage <sup>1</sup> |
|--------------------|-----------------------------------|-----------|--------------------|
| Patient            | Patient Module                    | 8.2.1     | M                  |
| Study              | General Study Module              | 8.2.2     | M                  |
|                    | Patient Study Module              | 8.2.3     | U                  |
| Series             | General Series Module             | 8.2.4     | M                  |
| Frame of Reference | Frame of Reference Module         | 8.2.7     | U                  |
|                    | US Frame of Reference Module      | 8.2.8     | C                  |
| Equipment          | General Equipment Module          | 8.2.9     | M                  |
| Image              | General Image Module              | 8.2.11    | M                  |
|                    | Image Pixel Module                | 8.2.13    | M                  |
|                    | Contrast/Bolus Module             | 8.2.15    | C                  |
|                    | Cine Module                       | 8.2.18    | M                  |
|                    | Multi-frame Module                | 8.2.19    | M                  |
|                    | Palette Color Lookup Table Module | 8.2.16    | C                  |
|                    | US Region Calibration Module      | 8.2.17    | U                  |
|                    | US Image Module                   | 8.2.30    | M                  |
|                    | VOI LUT Module                    | 8.2.49    | U                  |
|                    | SOP Common Module                 | 8.2.50    | M                  |
| Curve              | Curve Module                      | 8.2.47    | M                  |
|                    | SOP Common Module                 | 8.2.50    | M                  |
|                    | Curve Identification Module       | 8.2.51    | M                  |
|                    | Audio Module                      | 8.2.52    | U                  |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.8 XA IMAGE IOD Modules

Table 44

| Information Entity | Module                     | Reference | Usage <sup>1</sup> |
|--------------------|----------------------------|-----------|--------------------|
| Patient            | Patient Module             | 8.2.1     | M                  |
| Study              | General Study Module       | 8.2.2     | M                  |
|                    | Patient Study Module       | 8.2.3     | U                  |
| Series             | General Series Module      | 8.2.4     | M                  |
| Equipment          | General Equipment Module   | 8.2.9     | M                  |
| Image              | General Image Module       | 8.2.11    | M                  |
|                    | Image Pixel Module         | 8.2.13    | M                  |
|                    | Contrast/Bolus Module      | 8.2.15    | C                  |
|                    | Cine Module                | 8.2.18    | C                  |
|                    | Multi-frame Module         | 8.2.19    | C                  |
|                    | Frame Pointers Module      | 8.2.21    | U                  |
|                    | Mask Module                | 8.2.22    | C                  |
|                    | Display Shutter Module     | 8.2.23    | U                  |
|                    | Device Module              | 8.2.24    | U                  |
|                    | Therapy Module             | 8.2.25    | U                  |
|                    | X-Ray Image Module         | 8.2.38    | M                  |
|                    | X-Ray Acquisition Module   | 8.2.39    | M                  |
|                    | X-Ray Collimator Module    | 8.2.40    | U                  |
|                    | X-Ray Table Module         | 8.2.41    | C                  |
|                    | XA Positioner Module       | 8.2.44    | M                  |
|                    | Overlay Plane Module       | 8.2.45    | U                  |
|                    | Multi-frame Overlay Module | 8.2.46    | C                  |
|                    | Curve Module               | 8.2.47    | U                  |
|                    | Modality LUT Module        | 8.2.48    | C/U                |
| VOI LUT Module     | 8.2.49                     | U         |                    |
| SOP Common Module  | 8.2.50                     | M         |                    |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.9 XRF IMAGE IOD Modules

Table 45

| Information Entity | Module                      | Reference | Usage <sup>1</sup> |
|--------------------|-----------------------------|-----------|--------------------|
| Patient            | Patient Module              | 8.2.1     | M                  |
| Study              | General Study Module        | 8.2.2     | M                  |
|                    | Patient Study Module        | 8.2.3     | U                  |
| Series             | General Series Module       | 8.2.4     | M                  |
| Equipment          | General Equipment Module    | 8.2.9     | M                  |
| Image              | General Image Module        | 8.2.11    | M                  |
|                    | Image Pixel Module          | 8.2.13    | M                  |
|                    | Contrast/Bolus Module       | 8.2.15    | C                  |
|                    | Cine Module                 | 8.2.18    | C                  |
|                    | Multi-frame Module          | 8.2.19    | C                  |
|                    | Frame Pointers Module       | 8.2.21    | U                  |
|                    | Mask Module                 | 8.2.22    | C                  |
|                    | X-Ray Image Module          | 8.2.38    | M                  |
|                    | X-Ray Acquisition Module    | 8.2.39    | M                  |
|                    | X-Ray Collimator Module     | 8.2.40    | U                  |
|                    | Display Shutter Module      | 8.2.23    | U                  |
|                    | Therapy Module              | 8.2.25    | U                  |
|                    | Device Module               | 8.2.24    | U                  |
|                    | X-Ray Table Module          | 8.2.41    | U                  |
|                    | XRF Positioner Module       | 8.2.42    | U                  |
|                    | XRF Tomo Acquisition Module | 8.2.43    | C                  |
|                    | Overlay Plane Module        | 8.2.45    | U                  |
|                    | Multi-frame Overlay Module  | 8.2.46    | C                  |
|                    | Curve Module                | 8.2.47    | U                  |
|                    | Modality LUT Module         | 8.2.48    | C/U                |
| VOI LUT Module     | 8.2.49                      | U         |                    |
| SOP Common Module  | 8.2.50                      | M         |                    |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.10 DX IMAGE IOD Modules

Table 46

| Information Entity         | Module                              | Reference | Usage <sup>1</sup> |
|----------------------------|-------------------------------------|-----------|--------------------|
| Patient                    | Patient Module                      | 8.2.1     | M                  |
|                            | Specimen Identification Module      | 8.2.54    | U                  |
| Study                      | General Study Module                | 8.2.2     | M                  |
|                            | Patient Study Module                | 8.2.3     | U                  |
| Series                     | General Series Module               | 8.2.4     | M                  |
|                            | DX Series Module                    | 8.2.55    | M                  |
| Frame of Reference         | Frame of Reference Module           | 8.2.7     | U                  |
| Equipment                  | General Equipment Module            | 8.2.9     | M                  |
| Image                      | General Image Module                | 8.2.11    | M                  |
|                            | Image Pixel Module                  | 8.2.13    | M                  |
|                            | Contrast/Bolus Module               | 8.2.15    | U                  |
|                            | Display Shutter Module              | 8.2.23    | U                  |
|                            | Device Module                       | 8.2.24    | U                  |
|                            | Therapy Module                      | 8.2.25    | U                  |
|                            | DX Anatomy Imaged Module            | 8.2.56    | M                  |
|                            | DX Image Module                     | 8.2.57    | M                  |
|                            | DX Detector Module                  | 8.2.58    | M                  |
|                            | X-Ray Collimator Module             | 8.2.40    | U                  |
|                            | DX Positioning Module               | 8.2.59    | U                  |
|                            | X-Ray Tomography Acquisition Module | 8.2.43    | U                  |
|                            | X-Ray Acquisition Dose Module       | 8.2.60    | U                  |
|                            | X-Ray Generation Module             | 8.2.61    | U                  |
|                            | X-Ray Filtration Module             | 8.2.62    | U                  |
|                            | X-Ray Grid Module                   | 8.2.63    | U                  |
|                            | Overlay Plane Module                | 8.2.45    | C                  |
|                            | Curve Module                        | 8.2.47    | U                  |
|                            | VOI LUT Module                      | 8.2.49    | C                  |
|                            | Image Histogram Module              | 8.2.65    | U                  |
| Acquisition Context Module | 8.2.66                              | M         |                    |
| SOP Common Module          | 8.2.50                              | M         |                    |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.11 MG IMAGE IOD Modules

Table 47

| Information Entity         | Module                              | Reference | Usage <sup>1</sup> |
|----------------------------|-------------------------------------|-----------|--------------------|
| Patient                    | Patient Module                      | 8.2.1     | M                  |
|                            | Specimen Identification Module      | 8.2.54    | U                  |
| Study                      | General Study Module                | 8.2.2     | M                  |
|                            | Patient Study Module                | 8.2.3     | U                  |
| Series                     | General Series Module               | 8.2.4     | M                  |
|                            | DX Series Module                    | 8.2.55    | M                  |
|                            | Mammography Series Module           | 8.2.67    | M                  |
| Frame of Reference         | Frame of Reference Module           | 8.2.7     | C                  |
| Equipment                  | General Equipment Module            | 8.2.9     | M                  |
| Image                      | General Image Module                | 8.2.11    | M                  |
|                            | Image Pixel Module                  | 8.2.13    | M                  |
|                            | Contrast/Bolus Module               | 8.2.15    | U                  |
|                            | Display Shutter Module              | 8.2.23    | U                  |
|                            | Device Module                       | 8.2.24    | U                  |
|                            | Therapy Module                      | 8.2.25    | U                  |
|                            | DX Anatomy Imaged Module            | 8.2.56    | M                  |
|                            | DX Image Module                     | 8.2.57    | M                  |
|                            | DX Detector Module                  | 8.2.58    | M                  |
|                            | X-Ray Collimator Module             | 8.2.40    | U                  |
|                            | DX Positioning Module               | 8.2.59    | U                  |
|                            | X-Ray Tomography Acquisition Module | 8.2.43    | U                  |
|                            | X-Ray Acquisition Dose Module       | 8.2.60    | U                  |
|                            | X-Ray Generation Module             | 8.2.61    | U                  |
|                            | X-Ray Filtration Module             | 8.2.62    | U                  |
|                            | X-Ray Grid Module                   | 8.2.63    | U                  |
|                            | Mammography Image Module            | 8.2.68    | M                  |
|                            | Overlay Plane Module                | 8.2.45    | C                  |
|                            | Curve Module                        | 8.2.47    | U                  |
|                            | VOI LUT Module                      | 8.2.49    | C                  |
| Image Histogram Module     | 8.2.65                              | U         |                    |
| Acquisition Context Module | 8.2.66                              | M         |                    |
| SOP Common Module          | 8.2.50                              | M         |                    |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.1.12 PET IMAGE IOD Modules

Table 48

| Information Entity | Module                             | Reference | Usage <sup>1</sup> |
|--------------------|------------------------------------|-----------|--------------------|
| Patient            | Patient Module                     | 8.2.1     | M                  |
| Study              | General Study Module               | 8.2.2     | M                  |
|                    | Patient Study Module               | 8.2.3     | U                  |
| Series             | General Series Module              | 8.2.4     | M                  |
|                    | PET Series Module                  | 8.2.69    | M                  |
|                    | PET Isotope Module                 | 8.2.70    | M                  |
|                    | PET Multi-gated Acquisition Module | 8.2.71    | C                  |
|                    | NM/PET Patient Orientation Module  | 8.2.72    | M                  |
| Frame of Reference | Frame of Reference Module          | 8.2.7     | M                  |
| Equipment          | General Equipment Module           | 8.2.9     | M                  |
| Image              | General Image Module               | 8.2.11    | M                  |
|                    | Image Plane Module                 | 8.2.12    | M                  |
|                    | Image Pixel Module                 | 8.2.13    | M                  |
|                    | PET Image Module                   | 8.2.73    | M                  |
|                    | Overlay Plane Module               | 8.2.45    | U                  |
|                    | VOI LUT Module                     | 8.2.49    | U                  |
|                    | SOP Common Module                  | 8.2.50    | M                  |

<sup>1</sup> M=Mandatory, C=Conditional, U=User option

## 8.2 Information Object Definitions

### 8.2.1 Patient Module

**Table 49**

| Attribute Name                | Tag         | Type | Attribute Description               |
|-------------------------------|-------------|------|-------------------------------------|
| Patient's Name                | (0010,0010) | 2    | Length=0 when no entry is made      |
| Patient ID                    | (0010,0020) | 2    | Length=0 when no entry is made      |
| Patient's Birth Date          | (0010,0030) | 2    | Length=0 when no entry is made      |
| Patient's Sex                 | (0010,0040) | 2    | Length=0 when no entry is made      |
| Referenced Patient Sequence   | (0008,1120) | 3    | Not set when no entry is made       |
| > Referenced SOP Class UID    | (0008,1150) | 1C   | Always set when the sequence is set |
| > Referenced SOP Instance UID | (0008,1155) | 1C   | Always set when the sequence is set |
| Patient's Birth Time          | (0010,0032) | 3    | Not set when no entry is made       |
| Other Patient IDs             | (0010,1000) | 3    | Not set when no entry is made       |
| Other Patient Names           | (0010,1001) | 3    | Not set when no entry is made       |
| Ethnic Group                  | (0010,2160) | 3    | Not set when no entry is made       |
| Patient Comments              | (0010,4000) | 3    | Not set when no entry is made       |

### 8.2.2 General Study Module

**Table 50**

| Attribute Name                     | Tag         | Type | Attribute Description               |
|------------------------------------|-------------|------|-------------------------------------|
| Study Instance UID                 | (0020,000D) | 1    | Always set                          |
| Study Date                         | (0008,0020) | 2    | Length=0 when no entry is made      |
| Study Time                         | (0008,0030) | 2    | Length=0 when no entry is made      |
| Referring Physician's Name         | (0008,0090) | 2    | Length=0 when no entry is made      |
| Study ID                           | (0020,0010) | 2    | Length=0 when no entry is made      |
| Accession Number                   | (0008,0050) | 2    | Length=0 when no entry is made      |
| Study Description                  | (0008,1030) | 3    | Not set when no entry is made       |
| Physician(s) of Record             | (0008,1048) | 3    | Not set when no entry is made       |
| Name of Physician(s) Reading Study | (0008,1060) | 3    | Not set when no entry is made       |
| Referenced Study Sequence          | (0008,1110) | 3    | Not set when no entry is made       |
| > Referenced SOP Class UID         | (0008,1150) | 1C   | Always set when the sequence is set |
| > Referenced SOP Instance UID      | (0008,1155) | 1C   | Always set when the sequence is set |

### 8.2.3 Patient Study Module

Table 51

| Attribute Name                  | Tag         | Type | Attribute Description         |
|---------------------------------|-------------|------|-------------------------------|
| Admitting Diagnoses Description | (0008,1080) | 3    | Not set when no entry is made |
| Patient's Age                   | (0010,1010) | 3    | Not set when no entry is made |
| Patient's Size                  | (0010,1020) | 3    | Not set when no entry is made |
| Patient's Weight                | (0010,1030) | 3    | Not set when no entry is made |
| Occupation                      | (0010,2180) | 3    | Not set when no entry is made |
| Additional Patient's History    | (0010,21B0) | 3    | Not set when no entry is made |

### 8.2.4 General Series Module

Table 52

| Attribute Name                      | Tag         | Type | Attribute Description   |
|-------------------------------------|-------------|------|---|
| Modality                            | (0008,0060) | 1    | Always set  |
| Series Instance UID                 | (0020,000E) | 1    | Always set  |
| Series Number                       | (0020,0011) | 2    | Length=0 when no entry is made                                    |
| Laterality                          | (0020,0060) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Series Date                         | (0008,0021) | 3    | Not set when no entry is made                                     |
| Series Time                         | (0008,0031) | 3    | Not set when no entry is made                                     |
| Performing Physicians' Name         | (0008,1050) | 3    | Not set when no entry is made                                     |
| Protocol Name                       | (0018,1030) | 3    | Not set when no entry is made                                     |
| Series Description                  | (0008,103E) | 3    | Not set when no entry is made                                     |
| Operators' Name                     | (0008,1070) | 3    | Not set when no entry is made                                     |
| Referenced Study Component Sequence | (0008,1111) | 3    | Not set when no entry is made                                     |
| >Referenced SOP Class UID           | (0008,1150) | 1C   | Always set when the sequence is set                               |
| >Referenced SOP Instance UID        | (0008,1155) | 1C   | Always set when the sequence is set                               |
| Body Part Examined                  | (0018,0015) | 3    | Not set when no entry is made                                     |
| Patient Position                    | (0018,5100) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Smallest Pixel Value in Series      | (0028,0108) | 3    | Not set when no entry is made                                     |
| Largest Pixel Value in Series       | (0028,0109) | 3    | Not set when no entry is made                                     |

## 8.2.5 CR Series Module

Table 53

| Attribute Name       | Tag         | Type | Attribute Description          |
|----------------------|-------------|------|--------------------------------|
| Body Part Examined   | (0018,0015) | 2    | Length=0 when no entry is made |
| View Position        | (0018,5101) | 2    | Length=0 when no entry is made |
| Filter Type          | (0018,1160) | 3    | Not set when no entry is made  |
| Collimator/grid Name | (0018,1180) | 3    | Not set when no entry is made  |
| Focal Spot(s)        | (0018,1190) | 3    | Not set when no entry is made  |
| Plate Type           | (0018,1260) | 3    | Not set when no entry is made  |
| Phosphor Type        | (0018,1261) | 3    | Not set when no entry is made  |

## 8.2.6 NM/PET Patient Orientation Module

Table 54

| Attribute Name                               | Tag         | Type | Attribute Description   |
|--|-------------|------|---|
| Patient Orientation Code Sequence            | (0054,0410) | 2    | Length=0 when no entry is made                                    |
| > Code Value                                 | (0008,0100) | 1C   | Always set when the sequence is set                               |
| > Coding Scheme Designator                   | (0008,0102) | 1C   | Always set when the sequence is set                               |
| > Code Meaning                               | (0008,0104) | 3    | Not set when no entry is made                                     |
| > Patient Orientation Modifier Code Sequence | (0054,0412) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| >> Code Value                                | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >> Coding Scheme Designator                  | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >> Code Meaning                              | (0008,0104) | 3    | Not set when no entry is made                                     |
| Patient Gantry Relationship Code Sequence    | (0054,0414) | 2    | Length=0 when no entry is made                                    |
| > Code Value                                 | (0008,0100) | 1C   | Always set when the sequence is set                               |
| > Coding Scheme Designator                   | (0008,0102) | 1C   | Always set when the sequence is set                               |
| > Code Meaning                               | (0008,0104) | 3    | Not set when no entry is made                                     |

## 8.2.7 Frame of Reference Module

Table 55

| Attribute Name               | Tag         | Type | Attribute Description          |
|------------------------------|-------------|------|--------------------------------|
| Frame of Reference UID       | (0020,0052) | 1    | Always set                     |
| Position Reference Indicator | (0020,1040) | 2    | Length=0 when no entry is made |

## 8.2.8 US Frame of Reference Module

Table 56

| Attribute Name              | Tag         | Type | Attribute Description         |
|-----------------------------|-------------|------|-------------------------------|
| Region Location Min $x_0$   | (0018,6018) | 1    | Always set                    |
| Region Location Min $y_0$   | (0018,601A) | 1    | Always set                    |
| Region Location Max $x_1$   | (0018,601C) | 1    | Always set                    |
| Region Location Max $y_1$   | (0018,601E) | 1    | Always set                    |
| Physical Units X Direction  | (0018,6024) | 1    | Always set                    |
| Physical Units Y Direction  | (0018,6026) | 1    | Always set                    |
| Physical Delta X            | (0018,602C) | 1    | Always set                    |
| Physical Delta Y            | (0018,602E) | 1    | Always set                    |
| Reference Pixel $x_0$       | (0018,6020) | 3    | Not set when no entry is made |
| Reference Pixel $y_0$       | (0018,6022) | 3    | Not set when no entry is made |
| Ref. Pixel Physical Value X | (0018,6028) | 3    | Not set when no entry is made |
| Ref. Pixel Physical Value Y | (0018,602A) | 3    | Not set when no entry is made |

## 8.2.9 General Equipment Module

**Table 57**

| <b>Attribute Name</b>         | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|-------------------------------|-------------|-------------|--------------------------------|
| Manufacturer                  | (0008,0070) | 2           | Length=0 when no entry is made |
| Institution Name              | (0008,0080) | 3           | Not set when no entry is made  |
| Institution Address           | (0008,0081) | 3           | Not set when no entry is made  |
| Station Name                  | (0008,1010) | 3           | Not set when no entry is made  |
| Institutional Department Name | (0008,1040) | 3           | Not set when no entry is made  |
| Manufacturer's Model Name     | (0008,1090) | 3           | Not set when no entry is made  |
| Device Serial Number          | (0018,1000) | 3           | Not set when no entry is made  |
| Software Versions             | (0018,1020) | 3           | Not set when no entry is made  |
| Spatial Resolution            | (0018,1050) | 3           | Not set when no entry is made  |
| Date of Last Calibration      | (0018,1200) | 3           | Not set when no entry is made  |
| Time of Last Calibration      | (0018,1201) | 3           | Not set when no entry is made  |
| Pixel Padding Value           | (0028,0120) | 3           | Not set when no entry is made  |

## 8.2.10 SC Equipment Module

**Table 58**

| <b>Attribute Name</b>                              | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>  |
|--|-------------|-------------|-------------------------------|
| Conversion Type                                    | (0008,0064) | 1           | Always set                    |
| Modality   | (0008,0060) | 3           | Not set when no entry is made |
| Secondary Capture Device ID                        | (0018,1010) | 3           | Not set when no entry is made |
| Secondary Capture Device Manufacturer              | (0018,1016) | 3           | Not set when no entry is made |
| Secondary Capture Device Manufacturer's Model Name | (0018,1018) | 3           | Not set when no entry is made |
| Secondary Capture Device Software Version(s)       | (0018,1019) | 3           | Not set when no entry is made |
| Video Image Format Acquired                        | (0018,1022) | 3           | Not set when no entry is made |
| Digital Image Format Acquired                      | (0018,1023) | 3           | Not set when no entry is made |

## 8.2.11 General Image Module

**Table 59**

| <b>Attribute Name</b>        | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|------------------------------|-------------|-------------|--|
| Image Number                 | (0020,0013) | 2           | Length=0 when no entry is made                                       |
| Patient Orientation          | (0020,0020) | 2C          | If the setting conditions are met,<br>Length=0 when no entry is made |
| Image Date                   | (0008,0023) | 2C          | If the setting conditions are met,<br>Length=0 when no entry is made |
| Image Time                   | (0008,0033) | 2C          | If the setting conditions are met,<br>Length=0 when no entry is made |
| Image Type                   | (0008,0008) | 3           | Always set   |
| Acquisition Number           | (0020,0012) | 3           | Not set when no entry is made  |
| Acquisition Date             | (0008,0022) | 3           | Not set when no entry is made  |
| Acquisition Time             | (0008,0032) | 3           | Not set when no entry is made  |
| Referenced Image Sequence    | (0008,1140) | 3           | Not set when no entry is made  |
| >Referenced SOP Class UID    | (0008,1150) | 1C          | Always set when the sequence is set                                  |
| >Referenced SOP Instance UID | (0008,1155) | 1C          | Always set when the sequence is set                                  |
| Derivation Description       | (0008,2111) | 3           | Not set when no entry is made  |
| Source Image Sequence        | (0008,2112) | 3           | Not set when no entry is made  |
| >Referenced SOP Class UID    | (0008,1150) | 1C          | Always set when the sequence is set                                  |
| >Referenced SOP Instance UID | (0008,1155) | 1C          | Always set when the sequence is set                                  |
| Images in Acquisition        | (0020,1002) | 3           | Not set when no entry is made  |
| Image Comments               | (0020,4000) | 3           | Not set when no entry is made  |
| Lossy Image Compression      | (0028,2110) | 3           | Not set when no entry is made  |

**8.2.12 Image Plane Module****Table 60**

| <b>Attribute Name</b>       | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|-----------------------------|-------------|-------------|--------------------------------|
| Pixel Spacing               | (0028,0030) | 1           | Always set                     |
| Image Orientation (Patient) | (0020,0037) | 1           | Always set                     |
| Image Position (Patient)    | (0020,0032) | 1           | Always set                     |
| Slice Thickness             | (0018,0050) | 2           | Length=0 when no entry is made |
| Slice Location              | (0020,1041) | 3           | Not set when no entry is made  |

### 8.2.13 Image Pixel Module

**Table 61**

| <b>Attribute Name</b>                       | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|---|-------------|-------------|--|
| Samples per Pixel                           | (0028,0002) | 1           | Always set                                     |
| Photometric Interpretation                  | (0028,0004) | 1           | Always set                                     |
| Rows  | (0028,0010) | 1           | Always set                                     |
| Columns                                     | (0028,0011) | 1           | Always set                                     |
| Bits Allocated                              | (0028,0100) | 1           | Always set                                     |
| Bits Stored                                 | (0028,0101) | 1           | Always set                                     |
| High Bit                                    | (0028,0102) | 1           | Always set                                     |
| Pixel Representation                        | (0028,0103) | 1           | Always set                                     |
| Pixel Data                                  | (7FE0,0010) | 1           | Always set                                     |
| Planar Configuration                        | (0028,0006) | 1C          | Always set when the setting conditions are met |
| Pixel Aspect Ratio                          | (0028,0034) | 1C          | Always set when the setting conditions are met |
| Smallest Image Pixel Value                  | (0028,0106) | 3           | Not set when no entry is made                  |
| Largest Image Pixel Value                   | (0028,0107) | 3           | Not set when no entry is made                  |
| Red Palette Color Lookup Table Descriptor   | (0028,1101) | 1C          | Always set when the setting conditions are met |
| Green Palette Color Lookup Table Descriptor | (0028,1102) | 1C          | Always set when the setting conditions are met |
| Blue Palette Color Lookup Table Descriptor  | (0028,1103) | 1C          | Always set when the setting conditions are met |
| Red Palette Color Lookup Table Data         | (0028,1201) | 1C          | Always set when the setting conditions are met |
| Green Palette Color Lookup Table Data       | (0028,1202) | 1C          | Always set when the setting conditions are met |
| Blue Palette Color Lookup Table Data        | (0028,1203) | 1C          | Always set when the setting conditions are met |

**8.2.14 NM Image Pixel Module****Table 62**

| <b>Attribute Name</b>      | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|----------------------------|-------------|-------------|--------------------------------|
| Samples per Pixel          | (0028,0002) | 1           | Always set                     |
| Photometric Interpretation | (0028,0004) | 1           | Always set                     |
| Bits Allocated             | (0028,0100) | 1           | Always set                     |
| Bits Stored                | (0028,0101) | 1           | Always set                     |
| High Bit                   | (0028,0102) | 1           | Always set                     |
| Pixel Spacing              | (0028,0030) | 2           | Length=0 when no entry is made |

## 8.2.15 Contrast/Bolus Module

**Table 63**

| <b>Attribute Name</b>                        | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|--|-------------|-------------|--|
| Contrast/Bolus Agent                         | (0018,0010) | 2           | Length=0 when no entry is made                 |
| Contrast/Bolus Agent Sequence                | (0018,0012) | 3           | Not set when no entry is made                  |
| > Code Value                                 | (0008,0100) | 1C          | Always set when the sequence is set            |
| > Coding Scheme Designator                   | (0008,0102) | 1C          | Always set when the sequence is set            |
| > Code Meaning                               | (0008,0104) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Route                         | (0018,1040) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Administration Route Sequence | (0018,0014) | 3           | Not set when no entry is made                  |
| >Code Value                                  | (0008,0100) | 1C          | Always set when the setting conditions are met |
| > Coding Scheme Designator                   | (0008,0102) | 1C          | Always set when the sequence is set            |
| > Code Meaning                               | (0008,0104) | 3           | Not set when no entry is made                  |
| > Additional Drug Sequence                   | (0018,002A) | 3           | Not set when no entry is made                  |
| >> Code Value                                | (0008,0100) | 1C          | Always set when the sequence is set            |
| >> Coding Scheme Designator                  | (0008,0102) | 1C          | Always set when the sequence is set            |
| >> Code Meaning                              | (0008,0104) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Volume                        | (0018,1041) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Start Time                    | (0018,1042) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Stop Time                     | (0018,1043) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Total Dose                    | (0018,1044) | 3           | Not set when no entry is made                  |
| Contrast Flow Rate(s)                        | (0018,1046) | 3           | Not set when no entry is made                  |
| Contrast Flow Duration(s)                    | (0018,1047) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Ingredient                    | (0018,1048) | 3           | Not set when no entry is made                  |
| Contrast/Bolus Ingredient Concentration      | (0018,1049) | 3           | Not set when no entry is made                  |

## 8.2.16 Palette Color Lookup Table Module

**Table 64**

| <b>Attribute Name</b>                           | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|---|-------------|-------------|--|
| Red Palette Color Lookup Table Descriptor       | (0028,1101) | 1C          | Always set when the setting conditions are met |
| Green Palette Color Lookup Table Descriptor     | (0028,1102) | 1C          | Always set when the setting conditions are met |
| Blue Palette Color Lookup Table Descriptor      | (0028,1103) | 1C          | Always set when the setting conditions are met |
| Palette Color Lookup Table UID                  | (0028,1199) | 3           | Not set when no entry is made                  |
| Red Palette Color Lookup Table Data             | (0028,1201) | 1C          | Always set when the setting conditions are met |
| Green Palette Color Lookup Table Data           | (0028,1202) | 1C          | Always set when the setting conditions are met |
| Blue Palette Color Lookup Table Data            | (0028,1203) | 1C          | Always set when the setting conditions are met |
| Segmented Red Palette Color Lookup Table Data   | (0028,1221) | 1C          | Always set when the setting conditions are met |
| Segmented Green Palette Color Lookup Table Data | (0028,1222) | 1C          | Always set when the setting conditions are met |
| Segmented Blue Palette Color Lookup Table Data  | (0028,1223) | 1C          | Always set when the setting conditions are met |

## 8.2.17 US Region Calibration Module

Table 65

| Attribute Name                  | Tag         | Type | Attribute Description                          |
|---------------------------------|-------------|------|--|
| Sequence of Ultrasound Regions  | (0018,6011) | 1    | Always set                                     |
| >Region Location Min $x_0$      | (0018,6018) | 1    | Always set                                     |
| >Region Location Min $y_0$      | (0018,601A) | 1    | Always set                                     |
| >Region Location Max $x_1$      | (0018,601C) | 1    | Always set                                     |
| >Region Location Max $y_1$      | (0018,601E) | 1    | Always set                                     |
| >Physical Units X Direction     | (0018,6024) | 1    | Always set                                     |
| >Physical Units Y Direction     | (0018,6026) | 1    | Always set                                     |
| >Physical Delta X               | (0018,602C) | 1    | Always set                                     |
| >Physical Delta Y               | (0018,602E) | 1    | Always set                                     |
| >Reference Pixel $x_0$          | (0018,6020) | 3    | Not set when no entry is made                  |
| >Reference Pixel $y_0$          | (0018,6022) | 3    | Not set when no entry is made                  |
| >Ref. Pixel Physical Value X    | (0018,6028) | 3    | Not set when no entry is made                  |
| >Ref. Pixel Physical Value Y    | (0018,602A) | 3    | Not set when no entry is made                  |
| >Region Spatial Format          | (0018,6012) | 1    | Always set                                     |
| >Region Data Type               | (0018,6014) | 1    | Always set                                     |
| >Region Flags                   | (0018,6016) | 1    | Always set                                     |
| >Pixel Component Organization   | (0018,6044) | 1C   | Always set when the setting conditions are met |
| >Pixel Component Mask           | (0018,6046) | 1C   | Always set when the setting conditions are met |
| >Pixel Component Range Start    | (0018,6048) | 1C   | Always set when the setting conditions are met |
| >Pixel Component Range Stop     | (0018,604A) | 1C   | Always set when the setting conditions are met |
| >Pixel Component Physical Units | (0018,604C) | 1C   | Always set when the setting conditions are met |
| >Pixel Component Data Type      | (0018,604E) | 1C   | Always set when the setting conditions are met |
| >Number of Table Break Points   | (0018,6050) | 1C   | Always set when the setting conditions are met |
| >Table of X Break Points        | (0018,6052) | 1C   | Always set when the setting conditions are met |
| >Table of Y Break Points        | (0018,6054) | 1C   | Always set when the setting conditions are met |
| >Number of Table Entries        | (0018,6056) | 1C   | Always set when the setting conditions are met |

| <b>Attribute Name</b>             | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|-----------------------------------|-------------|-------------|--|
| >Table of Pixel Values            | (0018,6058) | 1C          | Always set when the setting conditions are met |
| >Table of Parameter Values        | (0018,605A) | 1C          | Always set when the setting conditions are met |
| >Transducer Frequency             | (0018,6030) | 3           | Not set when no entry is made                  |
| >Pulse Repetition Frequency       | (0018,6032) | 3           | Not set when no entry is made                  |
| >Doppler Correction Angle         | (0018,6034) | 3           | Not set when no entry is made                  |
| >Steering Angle                   | (0018,6036) | 3           | Not set when no entry is made                  |
| >Doppler Sample Volume X Position | (0018,6038) | 3           | Not set when no entry is made                  |
| >Doppler Sample Volume Y Position | (0018,603A) | 3           | Not set when no entry is made                  |
| >TM-Line Position $x_0$           | (0018,603C) | 3           | Not set when no entry is made                  |
| >TM-Line Position $y_0$           | (0018,603E) | 3           | Not set when no entry is made                  |
| >TM-Line Position $x_1$           | (0018,6040) | 3           | Not set when no entry is made                  |
| >TM-Line Position $y_1$           | (0018,6042) | 3           | Not set when no entry is made                  |

## 8.2.18 Cine Module

**Table 66**

| <b>Attribute Name</b>          | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|--------------------------------|-------------|-------------|--|
| Preferred Playback Sequencing  | (0018,1244) | 3           | Not set when no entry is made                  |
| Frame Time                     | (0018,1063) | 1C          | Always set when the setting conditions are met |
| Frame Time Vector              | (0018,1065) | 1C          | Always set when the setting conditions are met |
| Start Trim                     | (0008,2142) | 3           | Not set when no entry is made                  |
| Stop Trim                      | (0008,2143) | 3           | Not set when no entry is made                  |
| Recommended Display Frame Rate | (0008,2144) | 3           | Not set when no entry is made                  |
| Cine Rate                      | (0018,0040) | 3           | Not set when no entry is made                  |
| Frame Delay                    | (0018,1066) | 3           | Not set when no entry is made                  |
| Effective Series Duration      | (0018,0072) | 3           | Not set when no entry is made                  |
| Actual Frame Duration          | (0018,1242) | 3           | Not set when no entry is made                  |

## 8.2.19 Multi-Frame Module

**Table 67**

| <b>Attribute Name</b>   | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b> |
|-------------------------|-------------|-------------|------------------------------|
| Number of Frames        | (0028,0008) | 1           | Always set                   |
| Frame Increment Pointer | (0028,0009) | 1           | Always set                   |

## 8.2.20 NM Multi-Frame Module

**Table 68**

| <b>Attribute Name</b>    | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|--------------------------|-------------|-------------|--|
| Frame Increment Pointer  | (0028,0009) | 1           | Always set                                     |
| Energy Window Vector     | (0054,0010) | 1C          | Always set when the setting conditions are met |
| Number of Energy Windows | (0054,0011) | 1           | Always set                                     |
| Detector Vector          | (0054,0020) | 1C          | Always set when the setting conditions are met |
| Number of Detectors      | (0054,0021) | 1           | Always set                                     |
| Phase Vector             | (0054,0030) | 1C          | Always set when the setting conditions are met |
| Number of Phases         | (0054,0031) | 1C          | Always set when the setting conditions are met |
| Rotation Vector          | (0054,0050) | 1C          | Always set when the setting conditions are met |
| Number of Rotations      | (0054,0051) | 1C          | Always set when the setting conditions are met |
| R-R Interval Vector      | (0054,0060) | 1C          | Always set when the setting conditions are met |
| Number of R-R Intervals  | (0054,0061) | 1C          | Always set when the setting conditions are met |
| Time Slot Vector         | (0054,0070) | 1C          | Always set when the setting conditions are met |
| Number of Time Slots     | (0054,0071) | 1C          | Always set when the setting conditions are met |
| Slice Vector             | (0054,0080) | 1C          | Always set when the setting conditions are met |
| Number of Slices         | (0054,0081) | 1C          | Always set when the setting conditions are met |
| Angular View Vector      | (0054,0090) | 1C          | Always set when the setting conditions are met |
| Time Slice Vector        | (0054,0100) | 1C          | Always set when the setting conditions are met |

### 8.2.21 Frame Pointers Module

Table 69

| Attribute Name                   | Tag         | Type | Attribute Description         |
|----------------------------------|-------------|------|-------------------------------|
| Representative Frame Number      | (0028,6010) | 3    | Not set when no entry is made |
| Frame Numbers of Interest(FOI)   | (0028,6020) | 3    | Not set when no entry is made |
| Frame(s) of Interest Description | (0028,6022) | 3    | Not set when no entry is made |

### 8.2.22 Mask Module

Table 70

| Attribute Name               | Tag         | Type | Attribute Description   |
|------------------------------|-------------|------|---|
| Mask Subtraction Sequence    | (0028,6100) | 1    | Always set  |
| > Mask Operation             | (0028,6101) | 1    | Always set  |
| > Applicable Frame Range     | (0028,6102) | 3    | Not set when no entry is made                                     |
| > Mask Frame Numbers         | (0028,6110) | 1C   | Always set when the setting conditions are met                    |
| > Contrast Frame Averaging   | (0028,6112) | 3    | Not set when no entry is made                                     |
| > Mask Sub-pixel Shift       | (0028,6114) | 3    | Not set when no entry is made                                     |
| > TID Offset                 | (0028,6120) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Mask Operation Explanation | (0028,6190) | 3    | Not set when no entry is made                                     |
| Recommended Viewing Mode     | (0028,1090) | 2    | Length=0 when no entry is made                                    |

### 8.2.23 Display Shutter Module

**Table 71**

| Attribute Name                    | Tag         | Type | Attribute Description                          |
|-----------------------------------|-------------|------|--|
| Shutter Shape                     | (0018,1600) | 1    | Always set                                     |
| Shutter Left Vertical Edge        | (0018,1602) | 1C   | Always set when the setting conditions are met |
| Shutter Right Vertical Edge       | (0018,1604) | 1C   | Always set when the setting conditions are met |
| Shutter Upper Horizontal Edge     | (0018,1606) | 1C   | Always set when the setting conditions are met |
| Shutter Lower Horizontal Edge     | (0018,1608) | 1C   | Always set when the setting conditions are met |
| Center of Circular Shutter        | (0018,1610) | 1C   | Always set when the setting conditions are met |
| Radius of Circular Shutter        | (0018,1612) | 1C   | Always set when the setting conditions are met |
| Vertices of the Polygonal Shutter | (0018,1620) | 1C   | Always set when the setting conditions are met |

### 8.2.24 Device Module

**Table 72**

| Attribute Name             | Tag         | Type | Attribute Description   |
|----------------------------|-------------|------|---|
| Device Sequence            | (0050,0010) | 3    | Not set when no entry is made                                     |
| > Code Value               | (0008,0100) | 1C   | Always set when the sequence is set                               |
| > Coding Scheme Designator | (0008,0102) | 1C   | Always set when the sequence is set                               |
| > Code Meaning             | (0008,0104) | 3    | Not set when no entry is made                                     |
| > Device Length            | (0050,0014) | 3    | Not set when no entry is made                                     |
| > Device Diameter          | (0050,0016) | 3    | Not set when no entry is made                                     |
| > Device Diameter Units    | (0050,0017) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Device Volume            | (0050,0018) | 3    | Not set when no entry is made                                     |
| > Inter-Marker Distance    | (0050,0019) | 3    | Not set when no entry is made                                     |
| > Device Description       | (0050,0020) | 3    | Not set when no entry is made                                     |

## 8.2.25 Therapy Module

**Table 73**

| <b>Attribute Name</b>                | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>        |
|--------------------------------------|-------------|-------------|-------------------------------------|
| Interventional Therapy Sequence      | (0018,0036) | 3           | Not set when no entry is made       |
| > Code Value                         | (0008,0100) | 1C          | Always set when the sequence is set |
| > Coding Scheme Designator           | (0008,0102) | 1C          | Always set when the sequence is set |
| > Code Meaning                       | (0008,0104) | 3           | Not set when no entry is made       |
| > Interventional Status              | (0018,0038) | 2           | Length=0 when no entry is made      |
| > Intervention Drug Code Sequence    | (0018,0029) | 3           | Not set when no entry is made       |
| >> Code Value                        | (0008,0100) | 1C          | Always set when the sequence is set |
| >> Coding Scheme Designator          | (0008,0102) | 1C          | Always set when the sequence is set |
| >> Code Meaning                      | (0008,0104) | 3           | Not set when no entry is made       |
| > Intervention Drug Start Time       | (0018,0035) | 3           | Not set when no entry is made       |
| > Intervention Drug Stop Time        | (0018,0027) | 3           | Not set when no entry is made       |
| > Administration Route Code Sequence | (0054,0302) | 3           | Not set when no entry is made       |
| >> Code Value                        | (0008,0100) | 1C          | Always set when the sequence is set |
| >> Coding Scheme Designator          | (0008,0102) | 1C          | Always set when the sequence is set |
| >> Code Meaning                      | (0008,0104) | 3           | Not set when no entry is made       |
| > Therapy Description                | (0018,0039) | 3           | Not set when no entry is made       |

**8.2.26 CR Image Module****Table 74**

| <b>Attribute Name</b>                     | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>  |
|---|-------------|-------------|-------------------------------|
| KVP                                       | (0018,0060) | 3           | Not set when no entry is made |
| Plate ID                                  | (0018,1004) | 3           | Not set when no entry is made |
| Distance Source to Detector               | (0018,1110) | 3           | Not set when no entry is made |
| Distance Source to Patient                | (0018,1111) | 3           | Not set when no entry is made |
| Exposure Time                             | (0018,1150) | 3           | Not set when no entry is made |
| X-ray Tube Current                        | (0018,1151) | 3           | Not set when no entry is made |
| Exposure                                  | (0018,1152) | 3           | Not set when no entry is made |
| Generator Power                           | (0018,1170) | 3           | Not set when no entry is made |
| Acquisition Device Processing Description | (0018,1400) | 3           | Not set when no entry is made |
| Acquisition Device Processing Code        | (0018,1401) | 3           | Not set when no entry is made |
| Cassette Orientation                      | (0018,1402) | 3           | Not set when no entry is made |
| Cassette Size                             | (0018,1403) | 3           | Not set when no entry is made |
| Exposures on Plate                        | (0018,1404) | 3           | Not set when no entry is made |
| Relative X-ray Exposure                   | (0018,1405) | 3           | Not set when no entry is made |
| Sensitivity                               | (0018,6000) | 3           | Not set when no entry is made |

## 8.2.27 CT Image Module

Table 75

| Attribute Name              | Tag         | Type | Attribute Description          |
|-----------------------------|-------------|------|--------------------------------|
| Image Type                  | (0008,0008) | 1    | Always set                     |
| Samples per Pixel           | (0028,0002) | 1    | Always set                     |
| Photometric Interpretation  | (0028,0004) | 1    | Always set                     |
| Bits Allocated              | (0028,0100) | 1    | Always set                     |
| Bits Stored                 | (0028,0101) | 1    | Always set                     |
| High Bit                    | (0028,0102) | 1    | Always set                     |
| Rescale Intercept           | (0028,1052) | 1    | Always set                     |
| Rescale Slope               | (0028,1053) | 1    | Always set                     |
| KVP                         | (0018,0060) | 2    | Length=0 when no entry is made |
| Acquisition Number          | (0020,0012) | 2    | Length=0 when no entry is made |
| Scan Options                | (0018,0022) | 3    | Not set when no entry is made  |
| Data Collection Diameter    | (0018,0090) | 3    | Not set when no entry is made  |
| Reconstruction Diameter     | (0018,1100) | 3    | Not set when no entry is made  |
| Distance Source to Detector | (0018,1110) | 3    | Not set when no entry is made  |
| Distance Source to Patient  | (0018,1111) | 3    | Not set when no entry is made  |
| Gantry/Detector Tilt        | (0018,1120) | 3    | Not set when no entry is made  |
| Table Height                | (0018,1130) | 3    | Not set when no entry is made  |
| Rotation Direction          | (0018,1140) | 3    | Not set when no entry is made  |
| Exposure Time               | (0018,1150) | 3    | Not set when no entry is made  |
| X-ray Tube Current          | (0018,1151) | 3    | Not set when no entry is made  |
| Exposure                    | (0018,1152) | 3    | Not set when no entry is made  |
| Filter Type                 | (0018,1160) | 3    | Not set when no entry is made  |
| Generator Power             | (0018,1170) | 3    | Not set when no entry is made  |
| Focal Spot                  | (0018,1190) | 3    | Not set when no entry is made  |
| Convolution Kernel          | (0018,1210) | 3    | Not set when no entry is made  |

## 8.2.28 MR Image Module

Table 76

| Attribute Name                 | Tag         | Type | Attribute Description  |
|--------------------------------|-------------|------|--|
| Image Type                     | (0008,0008) | 1    | Always set   |
| Samples per Pixel              | (0028,0002) | 1    | Always set   |
| Photometric Interpretation     | (0028,0004) | 1    | Always set   |
| Bits Allocated                 | (0028,0100) | 1    | Always set   |
| Scanning Sequence              | (0018,0020) | 1    | Always set   |
| Sequence Variant               | (0018,0021) | 1    | Always set   |
| Scan Options                   | (0018,0022) | 2    | Length=0 when no entry is made                                       |
| MR Acquisition Type            | (0018,0023) | 2    | Length=0 when no entry is made                                       |
| Repetition Time                | (0018,0080) | 2C   | If the setting conditions are met,<br>Length=0 when no entry is made |
| Echo Time                      | (0018,0081) | 2    | Length=0 when no entry is made                                       |
| Echo Train Length              | (0018,0091) | 2    | Length=0 when no entry is made                                       |
| Inversion Time                 | (0018,0082) | 2C   | If the setting conditions are met,<br>Length=0 when no entry is made |
| Trigger Time                   | (0018,1060) | 2C   | If the setting conditions are met,<br>Length=0 when no entry is made |
| Sequence Name                  | (0018,0024) | 3    | Not set when no entry is made  |
| Angio Flag                     | (0018,0025) | 3    | Not set when no entry is made  |
| Number of Averages             | (0018,0083) | 3    | Not set when no entry is made  |
| Imaging Frequency              | (0018,0084) | 3    | Not set when no entry is made  |
| Imaged Nucleus                 | (0018,0085) | 3    | Not set when no entry is made  |
| Echo Number                    | (0018,0086) | 3    | Not set when no entry is made  |
| Magnetic Field Strength        | (0018,0087) | 3    | Not set when no entry is made  |
| Spacing Between Slices         | (0018,0088) | 3    | Not set when no entry is made  |
| Number of Phase Encoding Steps | (0018,0089) | 3    | Not set when no entry is made  |
| Percent Sampling               | (0018,0093) | 3    | Not set when no entry is made  |
| Percent Phase Field of View    | (0018,0094) | 3    | Not set when no entry is made  |
| Pixel Bandwidth                | (0018,0095) | 3    | Not set when no entry is made  |
| Nominal Interval               | (0018,1062) | 3    | Not set when no entry is made  |
| Beat Rejection Flag            | (0018,1080) | 3    | Not set when no entry is made  |
| Low R-R Value                  | (0018,1081) | 3    | Not set when no entry is made  |
| High R-R Value                 | (0018,1082) | 3    | Not set when no entry is made  |
| Intervals Acquired             | (0018,1083) | 3    | Not set when no entry is made  |
| Intervals Rejected             | (0018,1084) | 3    | Not set when no entry is made  |
| PVC Rejection                  | (0018,1085) | 3    | Not set when no entry is made  |
| Skip Beats                     | (0018,1086) | 3    | Not set when no entry is made  |

| <b>Attribute Name</b>        | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>  |
|------------------------------|-------------|-------------|-------------------------------|
| Heart Rate                   | (0018,1088) | 3           | Not set when no entry is made |
| Cardiac Number of Images     | (0018,1090) | 3           | Not set when no entry is made |
| Trigger Window               | (0018,1094) | 3           | Not set when no entry is made |
| Reconstruction Diameter      | (0018,1100) | 3           | Not set when no entry is made |
| Receiving Coil               | (0018,1250) | 3           | Not set when no entry is made |
| Transmitting Coil            | (0018,1251) | 3           | Not set when no entry is made |
| Acquisition Matrix           | (0018,1310) | 3           | Not set when no entry is made |
| Phase Encoding Direction     | (0018,1312) | 3           | Not set when no entry is made |
| Flip Angle                   | (0018,1314) | 3           | Not set when no entry is made |
| SAR                          | (0018,1316) | 3           | Not set when no entry is made |
| Variable Flip Angle Flag     | (0018,1315) | 3           | Not set when no entry is made |
| dB/dt                        | (0018,1318) | 3           | Not set when no entry is made |
| Temporal Position Identifier | (0020,0100) | 3           | Not set when no entry is made |
| Number of Temporal Positions | (0020,0105) | 3           | Not set when no entry is made |
| Temporal Resolution          | (0020,0110) | 3           | Not set when no entry is made |

## 8.2.29 NM Image Module

**Table 77**

| Attribute Name                      | Tag         | Type | Attribute Description   |
|-------------------------------------|-------------|------|---|
| Image Type                          | (0008,0008) | 1    | Always set  |
| Image ID                            | (0054,0400) | 3    | Not set when no entry is made                                     |
| Lossy Image Compression             | (0028,2110) | 1C   | Always set when the setting conditions are met                    |
| Counts Accumulated                  | (0018,0070) | 2    | Length=0 when no entry is made                                    |
| Acquisition Termination Condition   | (0018,0071) | 3    | Not set when no entry is made                                     |
| Table Height                        | (0018,1130) | 3    | Not set when no entry is made                                     |
| Table Traverse                      | (0018,1131) | 3    | Not set when no entry is made                                     |
| Actual Frame Duration               | (0018,1242) | 1C   | Always set when the setting conditions are met                    |
| Count Rate                          | (0018,1243) | 3    | Not set when no entry is made                                     |
| Processing Function                 | (0018,5020) | 3    | Not set when no entry is made                                     |
| Corrected Image                     | (0028,0051) | 3    | Not set when no entry is made                                     |
| Whole Body Technique                | (0018,1301) | 3    | Not set when no entry is made                                     |
| Scan Velocity                       | (0018,1300) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Scan Length                         | (0018,1302) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Referenced Overlay Sequence         | (0008,1130) | 3    | Not set when no entry is made                                     |
| > Referenced SOP Class UID          | (0008,1150) | 1C   | Always set when the sequence is set                               |
| > Referenced SOP Instance UID       | (0008,1155) | 1C   | Always set when the sequence is set                               |
| Referenced Curve Sequence           | (0008,1145) | 3    | Not set when no entry is made                                     |
| > Referenced SOP Class UID          | (0008,1150) | 1C   | Always set when the sequence is set                               |
| > Referenced SOP Instance UID       | (0008,1155) | 1C   | Always set when the sequence is set                               |
| Trigger Source or Type              | (0018,1061) | 3    | Not set when no entry is made                                     |
| Anatomic Region Sequence            | (0008,2218) | 3    | Not set when no entry is made                                     |
| > Code Value                        | (0008,0100) | 1C   | Always set when the sequence is set                               |
| > Coding Scheme Designator          | (0008,0102) | 1C   | Always set when the sequence is set                               |
| > Code Meaning                      | (0008,0104) | 3    | Not set when no entry is made                                     |
| > Anatomic Region Modifier Sequence | (0008,2220) | 3    | Not set when no entry is made                                     |
| >> Code Value                       | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >> Coding Scheme Designator         | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >> Code Meaning                     | (0008,0104) | 3    | Not set when no entry is made                                     |
| Primary Anatomic Structure Sequence | (0008,2228) | 3    | Not set when no entry is made                                     |
| > Code Value                        | (0008,0100) | 1C   | Always set when the sequence is set                               |

| <b>Attribute Name</b>                             | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>        |
|---|-------------|-------------|-------------------------------------|
| > Coding Scheme Designator                        | (0008,0102) | 1C          | Always set when the sequence is set |
| > Code Meaning                                    | (0008,0104) | 3           | Not set when no entry is made       |
| > Primary Anatomic Structure<br>Modifier Sequence | (0008,2230) | 3           | Not set when no entry is made       |
| >> Code Value                                     | (0008,0100) | 1C          | Always set when the sequence is set |
| >> Coding Scheme Designator                       | (0008,0102) | 1C          | Always set when the sequence is set |
| >> Code Meaning                                   | (0008,0104) | 3           | Not set when no entry is made       |

## 8.2.30 US Image Module

**Table 78**

| Attribute Name                     | Tag         | Type | Attribute Description  |
|------------------------------------|-------------|------|--|
| Samples Per Pixel                  | (0028,0002) | 1    | Always set   |
| Photometric Interpretation         | (0028,0004) | 1    | Always set   |
| Bits Allocated                     | (0028,0100) | 1    | Always set   |
| Bits Stored                        | (0028,0101) | 1    | Always set   |
| High Bit                           | (0028,0102) | 1    | Always set   |
| Planar Configuration               | (0028,0006) | 1C   | Always set   |
| Pixel Representation               | (0028,0103) | 1    | Always set   |
| Frame Increment Pointer            | (0028,0009) | 1C   | Always set   |
| Image Type                         | (0008,0008) | 2    | Length=0 when no entry is made                                       |
| Lossy Image Compression            | (0028,2110) | 1C   | Always set   |
| Number of Stages                   | (0008,2124) | 2C   | If the setting conditions are met,<br>Length=0 when no entry is made |
| Number of Views in Stage           | (0008,212A) | 2C   | If the setting conditions are met,<br>Length=0 when no entry is made |
| Ultrasound Color Data Present      | (0028,0014) | 3    | Not set when no entry is made  |
| Referenced Overlay Sequence        | (0008,1130) | 3    | Not set when no entry is made  |
| > Referenced SOP Class UID         | (0008,1150) | 1C   | Always set when the sequence is set                                  |
| > Referenced SOP Instance UID      | (0008,1155) | 1C   | Always set when the sequence is set                                  |
| Referenced Curve Sequence          | (0008,1145) | 3    | Not set when no entry is made  |
| > Referenced SOP Class UID         | (0008,1150) | 1C   | Always set when the sequence is set                                  |
| > Referenced SOP Instance UID      | (0008,1155) | 1C   | Always set when the sequence is set                                  |
| Stage Name                         | (0008,2120) | 3    | Not set when no entry is made  |
| Stage Number                       | (0008,2122) | 3    | Not set when no entry is made  |
| View Number                        | (0008,2128) | 3    | Not set when no entry is made  |
| Number of Event Timers             | (0008,2129) | 3    | Not set when no entry is made  |
| Event Elapsed Time(s)              | (0008,2130) | 3    | Not set when no entry is made  |
| Event Timer Name(s)                | (0008,2132) | 3    | Not set when no entry is made  |
| Anatomic Region Sequence           | (0008,2218) | 3    | Not set when no entry is made  |
| > Code Value                       | (0008,0100) | 1C   | Always set when the sequence is set                                  |
| > Coding Scheme Designator         | (0008,0102) | 1C   | Always set when the sequence is set                                  |
| > Code Meaning                     | (0008,0104) | 3    | Not set when no entry is made  |
| >Anatomic Region Modifier Sequence | (0008,2220) | 3    | Not set when no entry is made  |
| >> Code Value                      | (0008,0100) | 1C   | Always set when the sequence is set                                  |
| >> Coding Scheme Designator        | (0008,0102) | 1C   | Always set when the sequence is set                                  |
| >> Code Meaning                    | (0008,0104) | 3    | Not set when no entry is made  |

| Attribute Name                                | Tag         | Type | Attribute Description               |
|---|-------------|------|-------------------------------------|
| Primary Anatomic Structure Sequence           | (0008,2228) | 3    | Not set when no entry is made       |
| > Code Value                                  | (0008,0100) | 1C   | Always set when the sequence is set |
| > Coding Scheme Designator                    | (0008,0102) | 1C   | Always set when the sequence is set |
| > Code Meaning                                | (0008,0104) | 3    | Not set when no entry is made       |
| >Primary Anatomic Structure Modifier Sequence | (0008,2230) | 3    | Not set when no entry is made       |
| >>Code Value                                  | (0008,0100) | 1C   | Always set when the sequence is set |
| >>Coding Scheme Designator                    | (0008,0102) | 1C   | Always set when the sequence is set |
| >>Code Meaning                                | (0008,0104) | 3    | Not set when no entry is made       |
| Transducer Position Sequence                  | (0008,2240) | 3    | Not set when no entry is made       |
| >Code Value                                   | (0008,0100) | 1C   | Always set when the sequence is set |
| >Coding Scheme Designator                     | (0008,0102) | 1C   | Always set when the sequence is set |
| >Code Meaning                                 | (0008,0104) | 3    | Not set when no entry is made       |
| > Transducer Position Modifier Sequence       | (0008,2242) | 3    | Not set when no entry is made       |
| >>Code Value                                  | (0008,0100) | 1C   | Always set when the sequence is set |
| >>Coding Scheme Designator                    | (0008,0102) | 1C   | Always set when the sequence is set |
| >>Code Meaning                                | (0008,0104) | 3    | Not set when no entry is made       |
| Transducer Orientation Sequence               | (0008,2244) | 3    | Not set when no entry is made       |
| >Code Value                                   | (0008,0100) | 1C   | Always set when the sequence is set |
| >Coding Scheme Designator                     | (0008,0102) | 1C   | Always set when the sequence is set |
| >Code Meaning                                 | (0008,0104) | 3    | Not set when no entry is made       |
| > Transducer Orientation Modifier Sequence    | (0008,2246) | 3    | Not set when no entry is made       |
| >>Code Value                                  | (0008,0100) | 1C   | Always set when the sequence is set |
| >>Coding Scheme Designator                    | (0008,0102) | 1C   | Always set when the sequence is set |
| >>Code Meaning                                | (0008,0104) | 3    | Not set when no entry is made       |
| Trigger Time                                  | (0018,1060) | 3    | Not set when no entry is made       |
| Nominal Interval                              | (0018,1062) | 3    | Not set when no entry is made       |
| Beat Rejection Flag                           | (0018,1080) | 3    | Not set when no entry is made       |
| Low R-R Value                                 | (0018,1081) | 3    | Not set when no entry is made       |
| High R-R Value                                | (0018,1082) | 3    | Not set when no entry is made       |
| Heart Rate                                    | (0018,1088) | 3    | Not set when no entry is made       |
| Output Power                                  | (0018,5000) | 3    | Not set when no entry is made       |
| Transducer Data                               | (0018,5010) | 3    | Not set when no entry is made       |
| Transducer Type                               | (0018,6031) | 3    | Not set when no entry is made       |
| Focus Depth                                   | (0018,5012) | 3    | Not set when no entry is made       |
| Preprocessing Function                        | (0018,5020) | 3    | Not set when no entry is made       |

| <b>Attribute Name</b>             | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>  |
|-----------------------------------|-------------|-------------|-------------------------------|
| Mechanical Index                  | (0018,5022) | 3           | Not set when no entry is made |
| Bone Thermal Index                | (0018,5024) | 3           | Not set when no entry is made |
| Cranial Thermal Index             | (0018,5026) | 3           | Not set when no entry is made |
| Soft Tissue Thermal Index         | (0018,5027) | 3           | Not set when no entry is made |
| Soft Tissue-focus Thermal Index   | (0018,5028) | 3           | Not set when no entry is made |
| Soft Tissue-surface Thermal Index | (0018,5029) | 3           | Not set when no entry is made |
| Depth of Scan Field               | (0018,5050) | 3           | Not set when no entry is made |
| Image Transformation Matrix       | (0018,5210) | 3           | Not set when no entry is made |
| Image Translation Vector          | (0018,5212) | 3           | Not set when no entry is made |
| Overlay Subtype                   | (60xx,0045) | 3           | Not set when no entry is made |

## 8.2.31 NM Isotope Module

Table 79

| Attribute Name                           | Tag         | Type | Attribute Description   |
|--|-------------|------|---|
| Energy Window Information Sequence       | (0054,0012) | 2    | Length=0 when no entry is made                                    |
| > Energy Window Name                     | (0054,0018) | 3    | Not set when no entry is made                                     |
| > Energy Window Range Sequence           | (0054,0013) | 3    | Not set when no entry is made                                     |
| >> Energy Window Lower Limit             | (0054,0014) | 3    | Not set when no entry is made                                     |
| >> Energy Window Upper Limit             | (0054,0015) | 3    | Not set when no entry is made                                     |
| Radiopharmaceutical Information Sequence | (0054,0016) | 2    | Length=0 when no entry is made                                    |
| > Radionuclide Code Sequence             | (0054,0300) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| >> Code Value                            | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >> Coding Scheme Designator              | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >> Code Meaning                          | (0008,0104) | 3    | Not set when no entry is made                                     |
| > Radiopharmaceutical Route              | (0018,1070) | 3    | Not set when no entry is made                                     |
| > Administration Route Code Sequence     | (0054,0302) | 3    | Not set when no entry is made                                     |
| >> Code Value                            | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >> Coding Scheme Designator              | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >> Code Meaning                          | (0008,0104) | 3    | Not set when no entry is made                                     |
| > Radiopharmaceutical Volume             | (0018,1071) | 3    | Not set when no entry is made                                     |
| > Radiopharmaceutical Start Time         | (0018,1072) | 3    | Not set when no entry is made                                     |
| > Radiopharmaceutical Stop Time          | (0018,1073) | 3    | Not set when no entry is made                                     |
| > Radionuclide Total Dose                | (0018,1074) | 3    | Not set when no entry is made                                     |
| > Calibration Data Sequence              | (0054,0306) | 3    | Not set when no entry is made                                     |
| >> Energy Window Number                  | (0054,0308) | 1C   | Always set when the sequence is set                               |
| >> Syringe Counts                        | (0018,1045) | 3    | Not set when no entry is made                                     |
| >> Residual Syringe Counts               | (0054,0017) | 3    | Not set when no entry is made                                     |
| > Radiopharmaceutical                    | (0018,0031) | 3    | Not set when no entry is made                                     |
| > Radiopharmaceutical Code Sequence      | (0054,0304) | 3    | Not set when no entry is made                                     |
| >> Code Value                            | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >> Coding Scheme Designator              | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >> Code Meaning                          | (0008,0104) | 3    | Not set when no entry is made                                     |
| Intervention Drug Information Sequence   | (0018,0026) | 3    | Not set when no entry is made                                     |
| > Intervention Drug Name                 | (0018,0034) | 3    | Not set when no entry is made                                     |

| <b>Attribute Name</b>                | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>        |
|--------------------------------------|-------------|-------------|-------------------------------------|
| > Intervention Drug Code Sequence    | (0018,0029) | 3           | Not set when no entry is made       |
| >> Code Value                        | (0008,0100) | 1C          | Always set when the sequence is set |
| >> Coding Scheme Designator          | (0008,0102) | 1C          | Always set when the sequence is set |
| >> Code Meaning                      | (0008,0104) | 3           | Not set when no entry is made       |
| > Administration Route Code Sequence | (0054,0302) | 3           | Not set when no entry is made       |
| >> Code Value                        | (0008,0100) | 1C          | Always set when the sequence is set |
| >> Coding Scheme Designator          | (0008,0102) | 1C          | Always set when the sequence is set |
| >> Code Meaning                      | (0008,0104) | 3           | Not set when no entry is made       |
| > Intervention Drug Start Time       | (0018,0035) | 3           | Not set when no entry is made       |
| > Intervention Drug Stop Time        | (0018,0027) | 3           | Not set when no entry is made       |
| > Intervention Drug Dose             | (0018,0028) | 3           | Not set when no entry is made       |

## 8.2.32 NM Detector Module

Table 80

| Attribute Name                            | Tag         | Type | Attribute Description   |
|---|-------------|------|---|
| Detector Information Sequence             | (0054,0022) | 2    | Length=0 when no entry is made                                    |
| > Collimator/grid Name                    | (0018,1180) | 3    | Not set when no entry is made                                     |
| > Collimator Type                         | (0018,1181) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Field of View Shape                     | (0018,1147) | 3    | Not set when no entry is made                                     |
| > Field of View Dimension(s)              | (0018,1149) | 3    | Not set when no entry is made                                     |
| > Focal Distance                          | (0018,1182) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > X Focus Center                          | (0018,1183) | 3    | Not set when no entry is made                                     |
| > Y Focus Center                          | (0018,1184) | 3    | Not set when no entry is made                                     |
| > Zoom Center                             | (0028,0032) | 3    | Not set when no entry is made                                     |
| > Zoom Factor                             | (0028,0031) | 3    | Not set when no entry is made                                     |
| > Center of Rotation Offset               | (0018,1145) | 3    | Not set when no entry is made                                     |
| > Gantry/Detector Tilt                    | (0018,1120) | 3    | Not set when no entry is made                                     |
| > Distance Source to Detector             | (0018,1110) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Start Angle                             | (0054,0200) | 3    | Not set when no entry is made                                     |
| > Radial Position                         | (0018,1142) | 3    | Not set when no entry is made                                     |
| > Image Orientation (Patient)             | (0020,0037) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Image Position (Patient)                | (0020,0032) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > View Code Sequence                      | (0054,0220) | 3    | Not set when no entry is made                                     |
| >> Code Value                             | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >> Coding Scheme Designator               | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >> Code Meaning                           | (0008,0104) | 3    | Not set when no entry is made                                     |
| >> View Angulation Modifier Code Sequence | (0054,0222) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| >>> Code Value                            | (0008,0100) | 1C   | Always set when the sequence is set                               |
| >>> Coding Scheme Designator              | (0008,0102) | 1C   | Always set when the sequence is set                               |
| >>> Code Meaning                          | (0008,0104) | 3    | Not set when no entry is made                                     |

### 8.2.33 NM TOMO Acquisition Module

**Table 81**

| <b>Attribute Name</b>          | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|--------------------------------|-------------|-------------|--|
| Rotation Information Sequence  | (0054,0052) | 2           | Length=0 when no entry is made                                       |
| > Start Angle                  | (0054,0200) | 1C          | Always set when the sequence is set                                  |
| > Angular Step                 | (0018,1144) | 1C          | Always set when the sequence is set                                  |
| > Rotation Direction           | (0018,1140) | 1C          | Always set when the sequence is set                                  |
| > Scan Arc                     | (0018,1143) | 1C          | Always set when the sequence is set                                  |
| > Actual Frame Duration        | (0018,1242) | 1C          | Always set when the sequence is set                                  |
| > Radial Position              | (0018,1142) | 3           | Not set when no entry is made  |
| > Distance Source to Detector  | (0018,1110) | 2C          | If the setting conditions are met,<br>Length=0 when no entry is made |
| > Number of Frames in Rotation | (0054,0053) | 1C          | Always set when the sequence is set                                  |
| > Table Traverse               | (0018,1131) | 3           | Not set when no entry is made  |
| > Table Height                 | (0018,1130) | 3           | Not set when no entry is made  |
| Type of Detector Motion        | (0054,0202) | 3           | Not set when no entry is made  |

### 8.2.34 NM Multi-Gated Acquisition Module

Table 82

| Attribute Name                    | Tag         | Type | Attribute Description   |
|-----------------------------------|-------------|------|---|
| Beat Rejection Flag               | (0018,1080) | 3    | Not set when no entry is made                                     |
| PVC Rejection                     | (0018,1085) | 3    | Not set when no entry is made                                     |
| Skip Beats                        | (0018,1086) | 3    | Not set when no entry is made                                     |
| Heart Rate                        | (0018,1088) | 3    | Not set when no entry is made                                     |
| Gated Information Sequence        | (0054,0062) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Trigger Time                    | (0018,1060) | 3    | Not set when no entry is made                                     |
| > Framing Type                    | (0018,1064) | 3    | Not set when no entry is made                                     |
| > Data Information Sequence       | (0054,0063) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| >> Frame Time                     | (0018,1063) | 1C   | Always set when the sequence is set                               |
| >> Nominal Interval               | (0018,1062) | 3    | Not set when no entry is made                                     |
| >> Low R-R Value                  | (0018,1081) | 3    | Not set when no entry is made                                     |
| >> High R-R Value                 | (0018,1082) | 3    | Not set when no entry is made                                     |
| >> Intervals Acquired             | (0018,1083) | 3    | Not set when no entry is made                                     |
| >> Intervals Rejected             | (0018,1084) | 3    | Not set when no entry is made                                     |
| >> Time Slot Information Sequence | (0054,0072) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| >>> Time Slot Time                | (0054,0073) | 3    | Not set when no entry is made                                     |

### 8.2.35 NM Phase Module

Table 83

| Attribute Name                | Tag         | Type | Attribute Description   |
|-------------------------------|-------------|------|---|
| Phase Information Sequence    | (0054,0032) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| > Phase Delay                 | (0054,0036) | 1C   | Always set when the sequence is set                               |
| > Actual Frame Duration       | (0018,1242) | 1C   | Always set when the sequence is set                               |
| > Pause between Frames        | (0054,0038) | 1C   | Always set when the sequence is set                               |
| > Number of Frames in Phase   | (0054,0033) | 1C   | Always set when the sequence is set                               |
| > Trigger Vector              | (0054,0210) | 3    | Not set when no entry is made                                     |
| > Number of Triggers in Phase | (0054,0211) | 1C   | Always set when the sequence is set                               |

**8.2.36 NM Reconstruction Module****Table 84**

| <b>Attribute Name</b>   | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|-------------------------|-------------|-------------|--------------------------------|
| Spacing Between Slices  | (0018,0088) | 2           | Length=0 when no entry is made |
| Reconstruction Diameter | (0018,1100) | 3           | Not set when no entry is made  |
| Convolution Kernel      | (0018,1210) | 3           | Not set when no entry is made  |
| Slice Thickness         | (0018,0050) | 2           | Length=0 when no entry is made |
| Slice Location          | (0020,1041) | 3           | Not set when no entry is made  |

**8.2.37 SC Image Module****Table 85**

| <b>Attribute Name</b>     | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>  |
|---------------------------|-------------|-------------|-------------------------------|
| Date of Secondary Capture | (0018,1012) | 3           | Not set when no entry is made |
| Time of Secondary Capture | (0018,1014) | 3           | Not set when no entry is made |

## 8.2.38 X-Ray Image Module

**Table 86**

| Attribute Name                                 | Tag         | Type | Attribute Description                          |
|--|-------------|------|--|
| Frame Increment Pointer                        | (0028,0009) | 1C   | Always set when the setting conditions are met |
| Lossy Image Compression                        | (0008,2110) | 1C   | Always set when the setting conditions are met |
| Image Type                                     | (0008,0008) | 1    | Always set                                     |
| Pixel Intensity Relationship                   | (0028,1040) | 1    | Always set                                     |
| Samples per Pixel                              | (0028,0002) | 1    | Always set                                     |
| Photometric Interpretation                     | (0028,0004) | 1    | Always set                                     |
| Bits Allocated                                 | (0028,0100) | 1    | Always set                                     |
| Bits Stored                                    | (0028,0101) | 1    | Always set                                     |
| High Bit                                       | (0028,0102) | 1    | Always set                                     |
| Pixel Representation                           | (0028,0103) | 1    | Always set                                     |
| Scan Options                                   | (0018,0022) | 3    | Not set when no entry is made                  |
| Anatomic Region Sequence                       | (0008,2218) | 3    | Not set when no entry is made                  |
| > Code Value                                   | (0008,0100) | 1C   | Always set when the sequence is set            |
| > Coding Scheme Designator                     | (0008,0102) | 1C   | Always set when the sequence is set            |
| > Code Meaning                                 | (0008,0104) | 3    | Not set when no entry is made                  |
| > Anatomic Region Modifier Sequence            | (0008,2220) | 3    | Not set when no entry is made                  |
| >> Code Value                                  | (0008,0100) | 1C   | Always set when the sequence is set            |
| >> Coding Scheme Designator                    | (0008,0102) | 1C   | Always set when the sequence is set            |
| >> Code Meaning                                | (0008,0104) | 3    | Not set when no entry is made                  |
| Primary Anatomic Structure Sequence            | (0008,2228) | 3    | Not set when no entry is made                  |
| > Code Value                                   | (0008,0100) | 1C   | Always set when the sequence is set            |
| > Coding Scheme Designator                     | (0008,0102) | 1C   | Always set when the sequence is set            |
| > Code Meaning                                 | (0008,0104) | 3    | Not set when no entry is made                  |
| > Primary Anatomic Structure Modifier Sequence | (0008,2230) | 3    | Not set when no entry is made                  |
| >> Code Value                                  | (0008,0100) | 1C   | Always set when the sequence is set            |
| >> Coding Scheme Designator                    | (0008,0102) | 1C   | Always set when the sequence is set            |
| >> Code Meaning                                | (0008,0104) | 3    | Not set when no entry is made                  |
| R Wave Pointer                                 | (0028,6040) | 3    | Not set when no entry is made                  |
| Reference Image Sequence                       | (0008,1140) | 1C   | Always set when the setting conditions are met |
| > Reference SOP Class UID                      | (0008,1150) | 1C   | Always set when the sequence is set            |
| > Reference SOP Instance UID                   | (0008,1155) | 1C   | Always set when the sequence is set            |
| Derivation Description                         | (0008,2111) | 3    | Not set when no entry is made                  |

| Attribute Name                            | Tag         | Type | Attribute Description         |
|---|-------------|------|-------------------------------|
| Acquisition Device Processing Description | (0018,1400) | 3    | Not set when no entry is made |
| Calibration Image                         | (0050,0004) | 3    | Not set when no entry is made |

### 8.2.39 X-Ray Acquisition Module

Table 87

| Attribute Name             | Tag         | Type | Attribute Description   |
|----------------------------|-------------|------|---|
| KVP                        | (0018,0060) | 2    | Length=0 when no entry is made                                    |
| Radiation Setting          | (0018,1155) | 1    | Always set  |
| X-ray Tube Current         | (0018,1151) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Exposure Time              | (0018,1150) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Exposure                   | (0018,1152) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Grid                       | (0018,1166) | 3    | Not set when no entry is made                                     |
| Average Pulse Width        | (0018,1154) | 3    | Not set when no entry is made                                     |
| Radiation Mode             | (0018,115A) | 3    | Not set when no entry is made                                     |
| Type of Filters            | (0018,1161) | 3    | Not set when no entry is made                                     |
| Intensifier Size           | (0018,1162) | 3    | Not set when no entry is made                                     |
| Field of View Shape        | (0018,1147) | 3    | Not set when no entry is made                                     |
| Field of View Dimension(s) | (0018,1149) | 3    | Not set when no entry is made                                     |
| Imager Pixel Spacing       | (0018,1164) | 3    | Not set when no entry is made                                     |
| Focal Spot                 | (0018,1190) | 3    | Not set when no entry is made                                     |
| Image Area Dose Product    | (0018,115E) | 3    | Not set when no entry is made                                     |

## 8.2.40 X-Ray Collimator Module

**Table 88**

| Attribute Name                       | Tag         | Type | Attribute Description                          |
|--------------------------------------|-------------|------|--|
| Collimator Shape                     | (0018,1700) | 1    | Always set                                     |
| Collimator Left Vertical Edge        | (0018,1702) | 1C   | Always set when the setting conditions are met |
| Collimator Right Vertical Edge       | (0018,1704) | 1C   | Always set when the setting conditions are met |
| Collimator Upper Horizontal Edge     | (0018,1706) | 1C   | Always set when the setting conditions are met |
| Collimator Lower Horizontal Edge     | (0018,1708) | 1C   | Always set when the setting conditions are met |
| Center of Circular Collimator        | (0018,1710) | 1C   | Always set when the setting conditions are met |
| Radius of Circular Collimator        | (0018,1712) | 1C   | Always set when the setting conditions are met |
| Vertices of the Polygonal Collimator | (0018,1720) | 1C   | Always set when the setting conditions are met |

## 8.2.41 X-Ray Table Module

**Table 89**

| Attribute Name               | Tag         | Type | Attribute Description   |
|------------------------------|-------------|------|---|
| Table Motion                 | (0018,1134) | 2    | Length=0 when no entry is made                                    |
| Table Vertical Increment     | (0018,1135) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Table Longitudinal Increment | (0018,1137) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Table Lateral Increment      | (0018,1136) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Table Angle                  | (0018,1138) | 3    | Not set when no entry is made                                     |

### 8.2.42 XRF Positioner Module

Table 90

| Attribute Name                              | Tag         | Type | Attribute Description         |
|---|-------------|------|-------------------------------|
| Distance Source to Detector                 | (0018,1110) | 3    | Not set when no entry is made |
| Distance Source to Patient                  | (0018,1111) | 3    | Not set when no entry is made |
| Estimated Radiographic Magnification Factor | (0018,1114) | 3    | Not set when no entry is made |
| Column Angulation                           | (0018,1450) | 3    | Not set when no entry is made |

### 8.2.43 XRF Tomography Acquisition Module

Table 91

| Attribute Name    | Tag         | Type | Attribute Description         |
|-------------------|-------------|------|-------------------------------|
| Tomo Layer Height | (0018,1460) | 1    | Always set                    |
| Tomo Angle        | (0018,1470) | 3    | Not set when no entry is made |
| Tomo Time         | (0018,1480) | 3    | Not set when no entry is made |

### 8.2.44 XA Positioner Module

Table 92

| Attribute Name                              | Tag         | Type | Attribute Description   |
|---|-------------|------|---|
| Distance Source to Patient                  | (0018,1111) | 3    | Not set when no entry is made                                     |
| Distance Source to Detector                 | (0018,1110) | 3    | Not set when no entry is made                                     |
| Estimated Radiographic Magnification Factor | (0018,1114) | 3    | Not set when no entry is made                                     |
| Positioner Motion                           | (0018,1500) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Positioner Primary Angle                    | (0018,1510) | 2    | Length=0 when no entry is made                                    |
| Positioner Secondary Angle                  | (0018,1511) | 2    | Length=0 when no entry is made                                    |
| Positioner Primary Angle Increment          | (0018,1520) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Positioner Secondary Angle Increment        | (0018,1521) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Detector Primary Angle                      | (0018,1530) | 3    | Not set when no entry is made                                     |
| Detector Secondary Angle                    | (0018,1531) | 3    | Not set when no entry is made                                     |

## 8.2.45 Overlay Plane Module

Table 93

| Attribute Name                       | Tag         | Type | Attribute Description                           |
|--------------------------------------|-------------|------|---|
| Overlay Rows                         | (60xx,0010) | 1    | Always set                                      |
| Overlay Columns                      | (60xx,0011) | 1    | Always set                                      |
| Overlay Type                         | (60xx,0040) | 1    | Always set                                      |
| Overlay Origin                       | (60xx,0050) | 1    | Always set                                      |
| Overlay Bits Allocated               | (60xx,0100) | 1    | Always set                                      |
| Overlay Bit Position                 | (60xx,0102) | 1    | Always set                                      |
| Overlay Data                         | (60xx,3000) | 1C   | Always set when the setting conditions are met  |
| Overlay Description                  | (60xx,0022) | 3    | Not set when no entry is made                   |
| Overlay Subtype                      | (60xx,0045) | 3    | Not set when no entry is made                   |
| Overlay Label                        | (60xx,1500) | 3    | Not set when no entry is made                   |
| ROI Area                             | (60xx,1301) | 3    | Not set when no entry is made                   |
| ROI Mean                             | (60xx,1302) | 3    | Not set when no entry is made                   |
| ROI Standard Deviation               | (60xx,1303) | 3    | Not set when no entry is made                   |
| Overlay Descriptor - Gray (retired)  | (60xx,1100) | 3    | Set when the received image contains this entry |
| Overlay Descriptor - Red (retired)   | (60xx,1101) | 3    | Set when the received image contains this entry |
| Overlay Descriptor - Green (retired) | (60xx,1102) | 3    | Set when the received image contains this entry |
| Overlay Descriptor - Blue (retired)  | (60xx,1103) | 3    | Set when the received image contains this entry |
| Overlays - Gray (retired)            | (60xx,1200) | 3    | Set when the received image contains this entry |
| Overlays - Red (retired)             | (60xx,1201) | 3    | Set when the received image contains this entry |
| Overlays - Green (retired)           | (60xx,1202) | 3    | Set when the received image contains this entry |
| Overlays - Blue (retired)            | (60xx,1203) | 3    | Set when the received image contains this entry |

## 8.2.46 Multi-frame Overlay Module

Table 94

| Attribute Name              | Tag         | Type | Attribute Description         |
|-----------------------------|-------------|------|-------------------------------|
| Number of Frames in Overlay | (60xx,0015) | 1    | Always set                    |
| Image Frame Origin          | (60xx,0051) | 3    | Not set when no entry is made |

## 8.2.47 Curve Module

Table 95

| Attribute Name                | Tag         | Type | Attribute Description                          |
|-------------------------------|-------------|------|--|
| Curve Dimensions              | (50xx,0005) | 1    | Always set                                     |
| Number of Points              | (50xx,0010) | 1    | Always set                                     |
| Type of Data                  | (50xx,0020) | 1    | Always set                                     |
| Data Value Representation     | (50xx,0103) | 1    | Always set                                     |
| Curve Data                    | (50xx,3000) | 1    | Always set                                     |
| Curve Description             | (50xx,0022) | 3    | Not set when no entry is made                  |
| Axis Units                    | (50xx,0030) | 3    | Not set when no entry is made                  |
| Axis Labels                   | (50xx,0040) | 3    | Not set when no entry is made                  |
| Minimum Coordinate Value      | (50xx,0104) | 3    | Not set when no entry is made                  |
| Maximum Coordinate Value      | (50xx,0105) | 3    | Not set when no entry is made                  |
| Curve Range                   | (50xx,0106) | 3    | Not set when no entry is made                  |
| Curve Data Descriptor         | (50xx,0110) | 1C   | Always set when the setting conditions are met |
| Coordinate Start Value        | (50xx,0112) | 1C   | Always set when the setting conditions are met |
| Coordinate Step Value         | (50xx,0114) | 1C   | Always set when the setting conditions are met |
| Curve Label                   | (50xx,2500) | 3    | Not set when no entry is made                  |
| Referenced Overlay Sequence   | (50xx,2600) | 3    | Not set when no entry is made                  |
| > Referenced SOP Class UID    | (0008,1150) | 1C   | Always set when the sequence is set            |
| > Referenced SOP Instance UID | (0008,1155) | 1C   | Always set when the sequence is set            |
| > Referenced Overlay Group    | (50xx,2610) | 1C   | Always set when the sequence is set            |

## 8.2.48 Modality LUT Module

**Table 96**

| Attribute Name        | Tag         | Type | Attribute Description                          |
|-----------------------|-------------|------|--|
| Modality LUT Sequence | (0028,3000) | 3    | Not set when no entry is made                  |
| > LUT Descriptor      | (0028,3002) | 1C   | Always set when the sequence is set            |
| > LUT Explanation     | (0028,3003) | 3    | Not set when no entry is made                  |
| > Modality LUT Type   | (0028,3004) | 1C   | Always set when the sequence is set            |
| > LUT Data            | (0028,3006) | 1C   | Always set when the sequence is set            |
| Rescale Intercept     | (0028,1052) | 1C   | Always set when the setting conditions are met |
| Rescale Slope         | (0028,1053) | 1C   | Always set when the setting conditions are met |
| Rescale Type          | (0028,1054) | 1C   | Always set when the setting conditions are met |

## 8.2.49 VOI LUT Module

**Table 97**

| Attribute Name                    | Tag         | Type | Attribute Description                          |
|-----------------------------------|-------------|------|--|
| VOI LUT Sequence                  | (0028,3010) | 3    | Not set when no entry is made                  |
| >LUT Descriptor                   | (0028,3002) | 1C   | Always set when the sequence is set            |
| >LUT Explanation                  | (0028,3003) | 3    | Not set when no entry is made                  |
| >LUT Data                         | (0028,3006) | 1C   | Always set when the sequence is set            |
| Window Center                     | (0028,1050) | 3    | Not set when no entry is made                  |
| Window Width                      | (0028,1051) | 1C   | Always set when the setting conditions are met |
| Window Center & Width Explanation | (0028,1055) | 3    | Not set when no entry is made                  |

**8.2.50 SOP Common Module****Table 98**

| <b>Attribute Name</b>  | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|------------------------|-------------|-------------|--|
| SOP Class UID          | (0008,0016) | 1           | Always set                                     |
| SOP Instance UID       | (0008,0018) | 1           | Always set                                     |
| Specific Character Set | (0008,0005) | 1C          | Always set when the setting conditions are met |
| Instance Creation Date | (0008,0012) | 3           | Not set when no entry is made                  |
| Instance Creation Time | (0008,0013) | 3           | Not set when no entry is made                  |
| Instance Creator UID   | (0008,0014) | 3           | Not set when no entry is made                  |

## 8.2.51 Curve Identification Module

Table 99

| Attribute Name               | Tag         | Type | Attribute Description                          |
|------------------------------|-------------|------|--|
| Curve Number                 | (0020,0024) | 2    | Length=0 when no entry is made                 |
| Curve Date                   | (0008,0025) | 3    | Not set when no entry is made                  |
| Curve Time                   | (0008,0035) | 3    | Not set when no entry is made                  |
| Referenced Image Sequence    | (0008,1140) | 3    | Not set when no entry is made                  |
| >Referenced SOP Class UID    | (0008,1150) | 1C   | Always set when the setting conditions are met |
| >Referenced SOP Instance UID | (0008,1155) | 1C   | Always set when the setting conditions are met |
| Referenced Overlay Sequence  | (0008,1130) | 3    | Not set when no entry is made                  |
| >Referenced SOP Class UID    | (0008,1150) | 1C   | Always set when the setting conditions are met |
| >Referenced SOP Instance UID | (0008,1155) | 1C   | Always set when the setting conditions are met |
| Referenced Curve Sequence    | (0008,1145) | 3    | Not set when no entry is made                  |
| >Referenced SOP Class UID    | (0008,1150) | 1C   | Always set when the setting conditions are met |
| >Referenced SOP Instance UID | (0008,1155) | 1C   | Always set when the setting conditions are met |

## 8.2.52 Audio Module

Table 100

| Attribute Name               | Tag         | Type | Attribute Description                          |
|------------------------------|-------------|------|--|
| Audio Type                   | (50xx,2000) | 1    | Always set                                     |
| Audio Sample Format          | (50xx,2002) | 1    | Always set                                     |
| Number of Channels           | (50xx,2004) | 1    | Always set                                     |
| Number of Samples            | (50xx,2006) | 1    | Always set                                     |
| Sample Rate                  | (50xx,2008) | 1    | Always set                                     |
| Total Time                   | (50xx,200A) | 1    | Always set                                     |
| Audio Sample Data            | (50xx,200C) | 1    | Always set                                     |
| Referenced Image Sequence    | (0008,1140) | 3    | Not set when no entry is made                  |
| >Referenced SOP Class UID    | (0008,1150) | 1C   | Always set when the setting conditions are met |
| >Referenced SOP Instance UID | (0008,1155) | 1C   | Always set when the setting conditions are met |
| Audio Comments               | (50xx,200E) | 3    | Not set when no entry is made                  |

## 8.2.53 Common Attribute Set for Code Sequence (Invoked as “Code Sequence Macro”)

Table 101

| Attribute Name                    | Tag         | Type | Attribute Description                          |
|-----------------------------------|-------------|------|--|
| Code Value                        | (0008,0100) | 1C   | Always set when the setting conditions are met |
| Coding Scheme Designator          | (0008,0102) | 1C   | Always set when the setting conditions are met |
| Coding Scheme Version             | (0008,0103) | 1C   | Always set when the setting conditions are met |
| Code Meaning                      | (0008,0104) | 1C   | Always set when the setting conditions are met |
| Context Identifier                | (0008,010F) | 3    | Not set when no entry is made                  |
| Mapping Resource                  | (0008,0105) | 1C   | Always set when the setting conditions are met |
| Context Group Version             | (0008,0106) | 1C   | Always set when the setting conditions are met |
| Code Set Extension Flag           | (0008,010B) | 3    | Not set when no entry is made                  |
| Context Group Local Version       | (0008,0107) | 1C   | Always set when the setting conditions are met |
| Private Coding Scheme Creator UID | (0008,010C) | 3    | Not set when no entry is made                  |
| Code Set Extension Creator UID    | (0008,010D) | 1C   | Always set when the setting conditions are met |

## 8.2.54 Specimen Identification Module

**Table 102**

| <b>Attribute Name</b>                     | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|---|-------------|-------------|--|
| Specimen Accession Number                 | (0040,050A) | 1           | Always set                                     |
| Specimen Sequence                         | (0040,0550) | 2           | Not set when no entry is made                  |
| >Specimen Identifier                      | (0040,0551) | 2C          | Always set when the setting conditions are met |
| >Specimen Type Code Sequence              | (0040,059A) | 2C          | Always set when the setting conditions are met |
| >>Include 'Code Sequence Macro' Table 101 |             |             |  |
| >Slide Identifier                         | (0040,06FA) | 2C          | Always set when the setting conditions are met |

## 8.2.55 DX Series Module

**Table 103**

| <b>Attribute Name</b>               | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                   |
|-------------------------------------|-------------|-------------|--|
| Modality                            | (0008,0060) | 1           | Always set                                     |
| Referenced Study Component Sequence | (0008,1111) | 1C          | Always set when the setting conditions are met |
| >Referenced SOP Class UID           | (0008,1150) | 1C          | Always set when the sequence is set            |
| >Referenced SOP Instance UID        | (0008,1155) | 1C          | Always set when the sequence is set            |
| Presentation Intent Type            | (0008,0068) | 1           | Always set                                     |

## 8.2.56 DX Anatomy Imaged Module

**Table 104**

| <b>Attribute Name</b>                         | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|---|-------------|-------------|--------------------------------|
| Image Laterality                              | (0020,0062) | 1           | Always set                     |
| Anatomic Region Sequence                      | (0008,2218) | 2           | Length=0 when no entry is made |
| >Include 'Code Sequence Macro' Table 101      |             |             |                                |
| >Anatomic Region Modifier Sequence            | (0008,2220) | 3           | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101     |             |             |                                |
| Primary Anatomic Structure Sequence           | (0008,2228) | 3           | Not set when no entry is made  |
| >Include 'Code Sequence Macro' Table 101      |             |             |                                |
| >Primary Anatomic Structure Modifier Sequence | (0008,2230) | 3           | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101     |             |             |                                |

## 8.2.57 DX Image Module

Table 105

| Attribute Name                            | Tag         | Type | Attribute Description                          |
|---|-------------|------|--|
| Image Type                                | (0008,0008) | 1    | Always set                                     |
| Samples per Pixel                         | (0028,0002) | 1    | Always set                                     |
| Photometric Interpretation                | (0028,0004) | 1    | Always set                                     |
| Bits Allocated                            | (0028,0100) | 1    | Always set                                     |
| Bits Stored                               | (0028,0101) | 1    | Always set                                     |
| High Bit                                  | (0028,0102) | 1    | Always set                                     |
| Pixel Representation                      | (0028,0103) | 1    | Always set                                     |
| Pixel Intensity Relationship              | (0028,1040) | 1    | Always set                                     |
| Pixel Intensity Relationship Sign         | (0028,1041) | 1    | Always set                                     |
| Rescale Intercept                         | (0028,1052) | 1    | Always set                                     |
| Rescale Slope                             | (0028,1053) | 1    | Always set                                     |
| Rescale Type                              | (0028,1054) | 1    | Always set                                     |
| Presentation LUT Shape                    | (2050,0020) | 1    | Always set                                     |
| Lossy Image Compression                   | (0028,2110) | 1    | Always set                                     |
| Lossy Image Compression Ratio             | (0028,2112) | 1C   | Always set when the setting conditions are met |
| Derivation Description                    | (0008,2111) | 3    | Not set when no entry is made                  |
| Acquisition Device Processing Description | (0018,1400) | 3    | Not set when no entry is made                  |
| Acquisition Device Processing Code        | (0018,1401) | 3    | Not set when no entry is made                  |
| Patient Orientation                       | (0020,0020) | 1    | Always set                                     |
| Calibration Image                         | (0050,0004) | 3    | Not set when no entry is made                  |
| Burned In Annotation                      | (0028,0301) | 1    | Always set                                     |
| VOI LUT Sequence                          | (0028,3010) | 1C   | Always set when the setting conditions are met |
| >LUT Descriptor                           | (0028,3002) | 1C   | Always set when the sequence is set            |
| >LUT Explanation                          | (0028,3003) | 3    | Not set when no entry is made                  |
| >LUT Data                                 | (0028,3006) | 1C   | Always set when the sequence is set            |
| Window Center                             | (0028,1050) | 1C   | Always set when the setting conditions are met |
| Window Width                              | (0028,1051) | 1C   | Always set when the setting conditions are met |
| Window Center & Width Explanation         | (0028,1055) | 3    | Not set when no entry is made                  |

## 8.2.58 DX Detector Module

Table 106

| Attribute Name                               | Tag         | Type | Attribute Description                          |
|--|-------------|------|--|
| Detector Type                                | (0018,7004) | 2    | Length=0 when no entry is made                 |
| Detector Configuration                       | (0018,7005) | 3    | Not set when no entry is made                  |
| Detector Description                         | (0018,7006) | 3    | Not set when no entry is made                  |
| Detector Mode                                | (0018,7008) | 3    | Not set when no entry is made                  |
| Detector ID                                  | (0018,700A) | 3    | Not set when no entry is made                  |
| Date of Last Detector Calibration            | (0018,700C) | 3    | Not set when no entry is made                  |
| Time of Last Detector Calibration            | (0018,700E) | 3    | Not set when no entry is made                  |
| Exposures on Detector Since Last Calibration | (0018,7010) | 3    | Not set when no entry is made                  |
| Exposures on Detector Since Manufactured     | (0018,7011) | 3    | Not set when no entry is made                  |
| Detector Time Since Last Exposure            | (0018,7012) | 3    | Not set when no entry is made                  |
| Detector Active Time                         | (0018,7014) | 3    | Not set when no entry is made                  |
| Detector Activation Offset From Exposure     | (0018,7016) | 3    | Not set when no entry is made                  |
| Detector Binning                             | (0018,701A) | 3    | Not set when no entry is made                  |
| Detector Conditions Nominal Flag             | (0018,7000) | 3    | Not set when no entry is made                  |
| Detector Temperature                         | (0018,7001) | 3    | Not set when no entry is made                  |
| Sensitivity                                  | (0018,6000) | 3    | Not set when no entry is made                  |
| Field of View Shape                          | (0018,1147) | 3    | Not set when no entry is made                  |
| Field of View Dimension(s)                   | (0018,1149) | 3    | Not set when no entry is made                  |
| Field of View Origin                         | (0018,7030) | 1C   | Always set when the setting conditions are met |
| Field of View Rotation                       | (0018,7032) | 1C   | Always set when the setting conditions are met |
| Field of View Horizontal Flip                | (0018,7034) | 1C   | Always set when the setting conditions are met |
| Imager Pixel Spacing                         | (0018,1164) | 1    | Always set                                     |
| Detector Element Physical Size               | (0018,7020) | 3    | Not set when no entry is made                  |
| Detector Element Spacing                     | (0018,7022) | 3    | Not set when no entry is made                  |
| Detector Active Shape                        | (0018,7024) | 3    | Not set when no entry is made                  |
| Detector Active Dimension(s)                 | (0018,7026) | 3    | Not set when no entry is made                  |
| Detector Active Origin                       | (0018,7028) | 3    | Not set when no entry is made                  |

## 8.2.59 DX Positioning Module

**Table 107**

| Attribute Name                               | Tag         | Type | Attribute Description          |
|--|-------------|------|--------------------------------|
| Projection Eponymous Name Code Sequence      | (0018,5104) | 3    | Not set when no entry is made  |
| >Include 'Code Sequence Macro' Table 101     |             |      |                                |
| Patient Position                             | (0018,5100) | 3    | Not set when no entry is made  |
| View Position                                | (0018,5101) | 3    | Not set when no entry is made  |
| View Code Sequence                           | (0054,0220) | 3    | Not set when no entry is made  |
| >Include 'Code Sequence Macro' Table 101     |             |      |                                |
| >View Modifier Code Sequence                 | (0054,0222) | 3    | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101    |             |      |                                |
| Patient Orientation Code Sequence            | (0054,0410) | 3    | Not set when no entry is made  |
| >Include 'Code Sequence Macro' Table 101     |             |      |                                |
| > Patient Orientation Modifier Code Sequence | (0054,0412) | 3    | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101    |             |      |                                |
| Patient Gantry Relationship Code Sequence    | (0054,0414) | 3    | Not set when no entry is made  |
| >Include 'Code Sequence Macro' Table 101     |             |      |                                |
| Distance Source to Patient                   | (0018,1111) | 3    | Not set when no entry is made  |
| Distance Source to Detector                  | (0018,1110) | 3    | Not set when no entry is made  |
| Estimated Radiographic Magnification Factor  | (0018,1114) | 3    | Not set when no entry is made  |
| Positioner Type                              | (0018,1508) | 2    | Length=0 when no entry is made |
| Positioner Primary Angle                     | (0018,1510) | 3    | Not set when no entry is made  |
| Positioner Secondary Angle                   | (0018,1511) | 3    | Not set when no entry is made  |
| Detector Primary Angle                       | (0018,1530) | 3    | Not set when no entry is made  |
| Detector Secondary Angle                     | (0018,1531) | 3    | Not set when no entry is made  |
| Column Angulation                            | (0018,1450) | 3    | Not set when no entry is made  |
| Table Type                                   | (0018,113A) | 3    | Not set when no entry is made  |
| Table Angle                                  | (0018,1138) | 3    | Not set when no entry is made  |
| Body Part Thickness                          | (0018,11A0) | 3    | Not set when no entry is made  |
| Compression Force                            | (0018,11A2) | 3    | Not set when no entry is made  |

**8.2.60 X-Ray Acquisition Dose Module****Table 108**

| <b>Attribute Name</b>         | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>  |
|-------------------------------|-------------|-------------|-------------------------------|
| KVP                           | (0018,0060) | 3           | Not set when no entry is made |
| X-Ray Tube Current            | (0018,1151) | 3           | Not set when no entry is made |
| X-Ray Tube Current in $\mu$ A | (0018,8151) | 3           | Not set when no entry is made |
| Exposure Time                 | (0018,1150) | 3           | Not set when no entry is made |
| Exposure Time in $\mu$ S      | (0018,8150) | 3           | Not set when no entry is made |
| Exposure                      | (0018,1152) | 3           | Not set when no entry is made |
| Exposure in $\mu$ As          | (0018,1153) | 3           | Not set when no entry is made |
| Distance Source to Detector   | (0018,1110) | 3           | Not set when no entry is made |
| Distance Source to Patient    | (0018,1111) | 3           | Not set when no entry is made |
| Image Area Dose Product       | (0018,115E) | 3           | Not set when no entry is made |
| Body Part Thickness           | (0018,11A0) | 3           | Not set when no entry is made |
| Relative X-Ray Exposure       | (0018,1405) | 3           | Not set when no entry is made |
| Entrance Dose                 | (0040,0302) | 3           | Not set when no entry is made |
| Entrance Dose in mGy          | (0040,8302) | 3           | Not set when no entry is made |
| Exposed Area                  | (0040,0303) | 3           | Not set when no entry is made |
| Distance Source to Entrance   | (0040,0306) | 3           | Not set when no entry is made |
| Comments on Radiation Dose    | (0040,0310) | 3           | Not set when no entry is made |
| X-Ray Output                  | (0040,0312) | 3           | Not set when no entry is made |
| Half Value Layer              | (0040,0314) | 3           | Not set when no entry is made |
| Organ Dose                    | (0040,0316) | 3           | Not set when no entry is made |
| Organ Exposed                 | (0040,0318) | 3           | Not set when no entry is made |
| Anode Target Material         | (0018,1191) | 3           | Not set when no entry is made |
| Filter Material               | (0018,7050) | 3           | Not set when no entry is made |
| Filter Thickness Minimum      | (0018,7052) | 3           | Not set when no entry is made |
| Filter Thickness Maximum      | (0018,7054) | 3           | Not set when no entry is made |
| Rectification Type            | (0018,1156) | 3           | Not set when no entry is made |

### 8.2.61 X-Ray Generation Module

Table 109

| Attribute Name                      | Tag         | Type | Attribute Description         |
|-------------------------------------|-------------|------|-------------------------------|
| KVP                                 | (0018,0060) | 3    | Not set when no entry is made |
| X-Ray Tube Current                  | (0018,1151) | 3    | Not set when no entry is made |
| X-Ray Tube Current in $\mu\text{A}$ | (0018,8151) | 3    | Not set when no entry is made |
| Exposure Time                       | (0018,1150) | 3    | Not set when no entry is made |
| Exposure Time in $\mu\text{S}$      | (0018,8150) | 3    | Not set when no entry is made |
| Exposure                            | (0018,1152) | 3    | Not set when no entry is made |
| Exposure in $\mu\text{As}$          | (0018,1153) | 3    | Not set when no entry is made |
| Exposure Control Mode               | (0018,7060) | 3    | Not set when no entry is made |
| Exposure Control Mode Description   | (0018,7062) | 3    | Not set when no entry is made |
| Exposure Status                     | (0018,7064) | 3    | Not set when no entry is made |
| Phototimer Setting                  | (0018,7065) | 3    | Not set when no entry is made |
| Focal Spot                          | (0018,1190) | 3    | Not set when no entry is made |
| Anode Target Material               | (0018,1191) | 3    | Not set when no entry is made |
| Rectification Type                  | (0018,1156) | 3    | Not set when no entry is made |

### 8.2.62 X-Ray Filtration Module

Table 110

| Attribute Name           | Tag         | Type | Attribute Description         |
|--------------------------|-------------|------|-------------------------------|
| Filter Type              | (0018,1160) | 3    | Not set when no entry is made |
| Filter Material          | (0018,7050) | 3    | Not set when no entry is made |
| Filter Thickness Minimum | (0018,7052) | 3    | Not set when no entry is made |
| Filter Thickness Maximum | (0018,7054) | 3    | Not set when no entry is made |

### 8.2.63 X-Ray Grid Module

Table 111

| Attribute Name          | Tag         | Type | Attribute Description         |
|-------------------------|-------------|------|-------------------------------|
| Grid                    | (0018,1166) | 3    | Not set when no entry is made |
| Grid Absorbing Material | (0018,7040) | 3    | Not set when no entry is made |
| Grid Spacing Material   | (0018,7041) | 3    | Not set when no entry is made |
| Grid Thickness          | (0018,7042) | 3    | Not set when no entry is made |
| Grid Pitch              | (0018,7044) | 3    | Not set when no entry is made |
| Grid Aspect Ratio       | (0018,7046) | 3    | Not set when no entry is made |
| Grid Period             | (0018,7048) | 3    | Not set when no entry is made |
| Grid Focal Distance     | (0018,704C) | 3    | Not set when no entry is made |

### 8.2.64 X-Ray Tomography Acquisition Module

Table 112

| Attribute Name                        | Tag         | Type | Attribute Description         |
|---------------------------------------|-------------|------|-------------------------------|
| Tomography Layer Height               | (0018,1460) | 1    | Always set                    |
| Tomography Angle                      | (0018,1470) | 3    | Not set when no entry is made |
| Tomography Time                       | (0018,1480) | 3    | Not set when no entry is made |
| Tomography Type                       | (0018,1490) | 3    | Not set when no entry is made |
| Tomography Class                      | (0018,1491) | 3    | Not set when no entry is made |
| Number of Tomosynthesis Source Images | (0018,1495) | 3    | Not set when no entry is made |

### 8.2.65 Image Histogram Module

Table 113

| Attribute Name             | Tag         | Type | Attribute Description               |
|----------------------------|-------------|------|-------------------------------------|
| Image Histogram Module     | (0060,3000) | 1    | Always set                          |
| >Histogram Number of Bins  | (0060,3002) | 1C   | Always set when the sequence is set |
| >Histogram First Bin Value | (0060,3004) | 1C   | Always set when the sequence is set |
| >Histogram Last Bin Value  | (0060,3006) | 1C   | Always set when the sequence is set |
| >Histogram Bin Width       | (0060,3008) | 1C   | Always set when the sequence is set |
| >Histogram Explanation     | (0060,3010) | 3    | Not set when no entry is made       |
| >Histogram Data            | (0060,3020) | 1C   | Always set when the sequence is set |

**8.2.66 Acquisition Context Module****Table 114**

| <b>Attribute Name</b>                     | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>        |
|---|-------------|-------------|-------------------------------------|
| Acquisition Context Sequence              | (0040,0555) | 2           | Length=0 when no entry is made      |
| >Concept-name Code Sequence               | (0040,A043) | 1C          | Always set when the sequence is set |
| >>Include 'Code Sequence Macro' Table 101 |             |             |                                     |
| >Referenced Frame Numbers                 | (0040,A136) | 1C          | Always set when the sequence is set |
| >Numeric Value                            | (0040,A30A) | 1C          | Always set when the sequence is set |
| >Measurement Units Code Sequence          | (0040,08EA) | 1C          | Always set when the sequence is set |
| >>Include 'Code Sequence Macro' Table 101 |             |             |                                     |
| >Date                                     | (0040,A121) | 1C          | Always set when the sequence is set |
| >Time                                     | (0040,A122) | 1C          | Always set when the sequence is set |
| >Person Name                              | (0040,A123) | 1C          | Always set when the sequence is set |
| >Text Value                               | (0040,A160) | 1C          | Always set when the sequence is set |
| >Concept Code Sequence                    | (0040,A168) | 1C          | Always set when the sequence is set |
| >>Include 'Code Sequence Macro' Table 101 |             |             |                                     |
| Acquisition Context Description           | (0040,0556) | 3           | Not set when no entry is made       |

**8.2.67 Mammography Series Module****Table 115**

| <b>Attribute Name</b> | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b> |
|-----------------------|-------------|-------------|------------------------------|
| Modality              | (0008,0060) | 1           | Always set                   |

## 8.2.68 Mammography Image Module

Table 116

| Attribute Name                            | Tag         | Type | Attribute Description          |
|---|-------------|------|--------------------------------|
| Positioner Type                           | (0018,1508) | 1    | Always set                     |
| Positioner Primary Angle                  | (0018,1510) | 3    | Not set when no entry is made  |
| Positioner Secondary Angle                | (0018,1511) | 3    | Not set when no entry is made  |
| Image Laterality                          | (0020,0062) | 1    | Always set                     |
| Organ Exposed                             | (0040,0318) | 1    | Always set                     |
| Implant Present                           | (0028,1300) | 3    | Not set when no entry is made  |
| Partial View                              | (0028,1350) | 3    | Not set when no entry is made  |
| Partial View Description                  | (0028,1351) | 3    | Not set when no entry is made  |
| Anatomic Region Sequence                  | (0008,2218) | 1    | Always set                     |
| >Include 'Code Sequence Macro' Table 101  |             |      |                                |
| View Code Sequence                        | (0054,0220) | 1    | Always set                     |
| >Include 'Code Sequence Macro' Table 101  |             |      |                                |
| >View Modifier Code Sequence              | (0054,0222) | 2    | Length=0 when no entry is made |
| >>Include 'Code Sequence Macro' Table 101 |             |      |                                |

## 8.2.69 PET Series Module

Table 117

| Attribute Name                         | Tag         | Type | Attribute Description   |
|--|-------------|------|---|
| Series Date                            | (0008,0021) | 1    | Always set  |
| Series Time                            | (0008,0031) | 1    | Always set  |
| Units                                  | (0054,1001) | 1    | Always set  |
| Counts Source                          | (0054,1002) | 1    | Always set  |
| Series Type                            | (0054,1000) | 1    | Always set  |
| Reprojection Method                    | (0054,1004) | 2C   | If the setting conditions are met, Length=0 when no entry is made |
| Number of R-R Intervals                | (0054,0061) | 1C   | Always set when the setting conditions are met                    |
| Number of Time Slots                   | (0054,0071) | 1C   | Always set when the setting conditions are met                    |
| Number of Time Slices                  | (0054,0101) | 1C   | Always set when the setting conditions are met                    |
| Number of Slices                       | (0054,0081) | 1    | Always set  |
| Corrected Image                        | (0028,0051) | 2    | Length=0 when no entry is made                                    |
| Randoms Correction Method              | (0054,1100) | 3    | Not set when no entry is made                                     |
| Attenuation Correction Method          | (0054,1101) | 3    | Not set when no entry is made                                     |
| Scatter Correction Method              | (0054,1105) | 3    | Not set when no entry is made                                     |
| Decay Correction                       | (0054,1102) | 1    | Always set  |
| Reconstruction Diameter                | (0018,1100) | 3    | Not set when no entry is made                                     |
| Convolution Kernel                     | (0018,1210) | 3    | Not set when no entry is made                                     |
| Reconstruction Method                  | (0054,1103) | 3    | Not set when no entry is made                                     |
| Detector Lines of Response Used        | (0054,1104) | 3    | Not set when no entry is made                                     |
| Acquisition Start Condition            | (0018,0073) | 3    | Not set when no entry is made                                     |
| Acquisition Start Condition Data       | (0018,0074) | 3    | Not set when no entry is made                                     |
| Acquisition Termination Condition      | (0018,0071) | 3    | Not set when no entry is made                                     |
| Acquisition Termination Condition Data | (0018,0075) | 3    | Not set when no entry is made                                     |
| Field of View Shape                    | (0018,1147) | 3    | Not set when no entry is made                                     |
| Field of View Dimensions               | (0018,1149) | 3    | Not set when no entry is made                                     |
| Gantry/Detector Tilt                   | (0018,1120) | 3    | Not set when no entry is made                                     |
| Gantry/Detector Slew                   | (0018,1121) | 3    | Not set when no entry is made                                     |
| Type of Detector Motion                | (0054,0202) | 3    | Not set when no entry is made                                     |
| Collimator Type                        | (0018,1181) | 2    | Length=0 when no entry is made                                    |

|                              |             |   |                               |
|------------------------------|-------------|---|-------------------------------|
| Collimator/Grid Name         | (0018,1180) | 3 | Not set when no entry is made |
| Axial Acceptance             | (0054,1200) | 3 | Not set when no entry is made |
| Axial Mash                   | (0054,1201) | 3 | Not set when no entry is made |
| Transverse Mash              | (0054,1202) | 3 | Not set when no entry is made |
| Detector Element Size        | (0054,1203) | 3 | Not set when no entry is made |
| Coincidence Window Width     | (0054,1210) | 3 | Not set when no entry is made |
| Energy Window Range Sequence | (0054,0013) | 3 | Not set when no entry is made |
| >Energy Window Lower Limit   | (0054,0014) | 3 | Not set when no entry is made |
| >Energy Window Upper Limit   | (0054,0015) | 3 | Not set when no entry is made |
| Secondary Counts Type        | (0054,1220) | 3 | Not set when no entry is made |

## 8.2.70 PET Isotope Module

**Table 118**

| Attribute Name                            | Tag         | Type | Attribute Description          |
|---|-------------|------|--------------------------------|
| Radiopharmaceutical Information Sequence  | (0054,0016) | 2    | Length=0 when no entry is made |
| >Radionuclide Code Sequence               | (0054,0300) | 2    | Length=0 when no entry is made |
| >>Include 'Code Sequence Macro' Table 101 |             |      |                                |
| >Radiopharmaceutical Route                | (0018,1070) | 3    | Not set when no entry is made  |
| >Administration Route Code Sequence       | (0054,0302) | 3    | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101 |             |      |                                |
| >Radiopharmaceutical Volume               | (0018,1071) | 3    | Not set when no entry is made  |
| >Radiopharmaceutical Start Time           | (0018,1072) | 3    | Not set when no entry is made  |
| >Radiopharmaceutical Stop Time            | (0018,1073) | 3    | Not set when no entry is made  |
| >Radionuclide Total Dose                  | (0018,1074) | 3    | Not set when no entry is made  |
| >Radionuclide Half Life                   | (0018,1075) | 3    | Not set when no entry is made  |
| >Radionuclide Positron Fraction           | (0018,1076) | 3    | Not set when no entry is made  |
| >Radiopharmaceutical Specific Activity    | (0018,1077) | 3    | Not set when no entry is made  |
| >Radiopharmaceutical                      | (0018,0031) | 3    | Not set when no entry is made  |
| >Radiopharmaceutical Code Sequence        | (0054,0304) | 3    | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101 |             |      |                                |
| Intervention Drug Information Sequence    | (0018,0026) | 3    | Not set when no entry is made  |
| >Intervention Drug Name                   | (0018,0034) | 3    | Not set when no entry is made  |
| >Intervention Drug Code Sequence          | (0018,0029) | 3    | Not set when no entry is made  |
| >>Include 'Code Sequence Macro' Table 101 |             |      |                                |
| >Intervention Drug Start Time             | (0018,0035) | 3    | Not set when no entry is made  |
| >Intervention Drug Stop Time              | (0018,0027) | 3    | Not set when no entry is made  |
| >Intervention Drug Dose                   | (0018,0028) | 3    | Not set when no entry is made  |

**8.2.71 PET Multi-gated Acquisition Module****Table 119**

| <b>Attribute Name</b>  | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>   |
|------------------------|-------------|-------------|--------------------------------|
| Beat Rejection Flag    | (0018,1080) | 2           | Length=0 when no entry is made |
| Trigger Source or Type | (0018,1061) | 3           | Not set when no entry is made  |
| PVC Rejection          | (0018,1085) | 3           | Not set when no entry is made  |
| Skip Beats             | (0018,1086) | 3           | Not set when no entry is made  |
| Heart Rate             | (0018,1088) | 3           | Not set when no entry is made  |
| Framing Type           | (0018,1064) | 3           | Not set when no entry is made  |

**8.2.72 NM/PET Patient Orientation Module****Table 120**

| <b>Attribute Name</b>                        | <b>Tag</b>  | <b>Type</b> | <b>Attribute Description</b>                                      |
|--|-------------|-------------|---|
| Patient Orientation Code Sequence            | (0054,0410) | 2           | Length=0 when no entry is made                                    |
| >Include 'Code Sequence Macro' Table 101     |             |             |   |
| > Patient Orientation Modifier Code Sequence | (0054,0412) | 2C          | If the setting conditions are met, Length=0 when no entry is made |
| >>Include 'Code Sequence Macro' Table 101    |             |             |   |
| Patient Gantry Relationship Code Sequence    | (0054,0414) | 2           | Length=0 when no entry is made                                    |
| >Include 'Code Sequence Macro' Table 101     |             |             |   |

### 8.2.73 PET Image Module

Table 121

| Attribute Name                       | Tag         | Type | Attribute Description                          |
|--------------------------------------|-------------|------|--|
| Image Type                           | (0008,0008) | 1    | Always set                                     |
| Samples per Pixel                    | (0028,0002) | 1    | Always set                                     |
| Photometric Interpretation           | (0028,0004) | 1    | Always set                                     |
| Bits Allocated                       | (0028,0100) | 1    | Always set                                     |
| Bits Stored                          | (0028,0101) | 1    | Always set                                     |
| High Bit                             | (0028,0102) | 1    | Always set                                     |
| Rescale Intercept                    | (0028,1052) | 1    | Always set                                     |
| Rescale Slope                        | (0028,1053) | 1    | Always set                                     |
| Frame Reference Time                 | (0054,1300) | 1    | Always set                                     |
| Trigger Time                         | (0018,1060) | 1C   | Always set when the setting conditions are met |
| Frame Time                           | (0018,1063) | 1C   | Always set when the setting conditions are met |
| Low R-R Value                        | (0018,1081) | 1C   | Always set when the setting conditions are met |
| High R-R Value                       | (0018,1082) | 1C   | Always set when the setting conditions are met |
| Lossy Image Compression              | (0028,2110) | 1C   | Always set when the setting conditions are met |
| Image Index                          | (0054,1330) | 1    | Always set                                     |
| Acquisition Date                     | (0008,0022) | 2    | Length=0 when no entry is made                 |
| Acquisition Time                     | (0008,0032) | 2    | Length=0 when no entry is made                 |
| Actual Frame Duration                | (0018,1242) | 2    | Length=0 when no entry is made                 |
| Nominal Interval                     | (0018,1062) | 3    | Not set when no entry is made                  |
| Intervals Acquired                   | (0018,1083) | 3    | Not set when no entry is made                  |
| Intervals Rejected                   | (0018,1084) | 3    | Not set when no entry is made                  |
| Primary (Prompts) Counts Accumulated | (0054,1310) | 3    | Not set when no entry is made                  |
| Secondary Counts Accumulated         | (0054,1311) | 3    | Not set when no entry is made                  |
| Slice Sensitivity Factor             | (0054,1320) | 3    | Not set when no entry is made                  |
| Decay Factor                         | (0054,1321) | 1C   | Always set when the setting conditions are met |
| Dose Calibration Factor              | (0054,1322) | 3    | Not set when no entry is made                  |
| Scatter Fraction Factor              | (0054,1323) | 3    | Not set when no entry is made                  |
| Dead Time Factor                     | (0054,1324) | 3    | Not set when no entry is made                  |
| Referenced Overlay Sequence          | (0008,1130) | 3    | Not set when no entry is made                  |

|   |             |    |                                     |
|---|-------------|----|-------------------------------------|
| >Referenced SOP Class UID                     | (0008,1150) | 1C | Always set when the sequence is set |
| >Referenced SOP Instance UID                  | (0008,1155) | 1C | Always set when the sequence is set |
| Referenced Curve Sequence                     | (0008,1145) | 3  | Not set when no entry is made       |
| >Referenced SOP Class UID                     | (0008,1150) | 1C | Always set when the sequence is set |
| >Referenced SOP Instance UID                  | (0008,1155) | 1C | Always set when the sequence is set |
| Anatomic Region Sequence                      | (0008,2218) | 3  | Not set when no entry is made       |
| >Include 'Code Sequence Macro' Table 101      |             |    |                                     |
| >Anatomic Region Modifier Sequence            | (0008,2220) | 3  | Not set when no entry is made       |
| >>Include 'Code Sequence Macro' Table 101     |             |    |                                     |
| Primary Anatomic Structure Sequence           | (0008,2228) | 3  | Not set when no entry is made       |
| >Include 'Code Sequence Macro' Table 101      |             |    |                                     |
| >Primary Anatomic Structure Modifier Sequence | (0008,2230) | 3  | Not set when no entry is made       |
| >>Include 'Code Sequence Macro' Table 101     |             |    |                                     |

### 8.3 Private Data Elements

Private data elements for the TWS are defined below.

**Table 122**

| Attribute Name                            | Tag         | Type             | VR | VM | Attribute Description         |
|---|-------------|------------------|----|----|-------------------------------|
| Private Creator                           | (7019,00XX) | 1C* <sup>1</sup> | LO | 1  | "TOSHIBA_MEC_OT3"             |
| Annotation Version No.                    | (7019,XX01) | 3                | DS | 1  | Not set when no entry is made |
| Annotation Sequence                       | (7019,XX02) | 3                | SQ | 1  | Not set when no entry is made |
| > Private Creator                         | (7019,00XX) | 1C* <sup>1</sup> | LO | 1  | "TOSHIBA_MEC_OT3"             |
| > Annotation Object Number                | (7019,XX04) | 3                | SS | 1  | Not set when no entry is made |
| > Annotation Type                         | (7019,XX05) | 3                | SS | 1  | Not set when no entry is made |
| > Annotation Font Size                    | (7019,XX06) | 3                | SS | 1  | Not set when no entry is made |
| > Annotation Font Color                   | (7019,XX07) | 3                | UL | 1  | Not set when no entry is made |
| > Display Position X of Result of Measure | (7019,XX08) | 3                | SS | 1  | Not set when no entry is made |
| > Display Position Y of Result of Measure | (7019,XX09) | 3                | SS | 1  | Not set when no entry is made |
| > Line Width                              | (7019,XX0A) | 3                | SS | 1  | Not set when no entry is made |
| > Line Color                              | (7019,XX0B) | 3                | UL | 1  | Not set when no entry is made |
| > Measurement Type                        | (7019,XX0C) | 3                | SS | 1  | Not set when no entry is made |
| > Character String Font Size              | (7019,XX0D) | 3                | SS | 1  | Not set when no entry is made |
| > Character String Font Color             | (7019,XX0E) | 3                | UL | 1  | Not set when no entry is made |
| > Line Position Sequence                  | (7019,XX10) | 3                | SQ | 1  | Not set when no entry is made |
| >> Private Creator                        | (7019,00XX) | 1C* <sup>1</sup> | LO | 1  | "TOSHIBA_MEC_OT3"             |
| >> Line Position x0                       | (7019,XX11) | 3                | SS | 1  | Not set when no entry is made |
| >> Line Position y0                       | (7019,XX12) | 3                | SS | 1  | Not set when no entry is made |
| >> Line Position x1                       | (7019,XX13) | 3                | SS | 1  | Not set when no entry is made |
| >> Line Position y1                       | (7019,XX14) | 3                | SS | 1  | Not set when no entry is made |
| >> Click Position X                       | (7019,XX15) | 3                | SS | 1  | Not set when no entry is made |
| >> Click Position Y                       | (7019,XX16) | 3                | SS | 1  | Not set when no entry is made |
| > ROI Center Position X                   | (7019,XX20) | 3                | SS | 1  | Not set when no entry is made |
| > ROI Center Position Y                   | (7019,XX21) | 3                | SS | 1  | Not set when no entry is made |
| > Length X from Center of ROI             | (7019,XX22) | 3                | SS | 1  | Not set when no entry is made |
| > Length Y from Center of ROI             | (7019,XX23) | 3                | SS | 1  | Not set when no entry is made |
| > Rotation Angle of ROI                   | (7019,XX24) | 3                | FL | 1  | Not set when no entry is made |
| > Vertex Number of Polygonal ROI          | (7019,XX2A) | 3                | SS | 1  | Not set when no entry is made |

| Attribute Name                              | Tag         | Type             | VR | VM  | Attribute Description         |
|---|-------------|------------------|----|-----|-------------------------------|
| > Vertex Position of Polygonal ROI Sequence | (7019,XX2B) | 3                | SQ | 1   | Not set when no entry is made |
| >> Private Creator                          | (7019,00XX) | 1C* <sup>1</sup> | LO | 1   | "TOSHIBA_MEC_OT3"             |
| >> Vertex Position X                        | (7019,XX2C) | 3                | SS | 1   | Not set when no entry is made |
| >> Vertex Position Y                        | (7019,XX2D) | 3                | SS | 1   | Not set when no entry is made |
| > Edit Box Position X                       | (7019,XX30) | 3                | SS | 1   | Not set when no entry is made |
| > Edit Box Position Y                       | (7019,XX31) | 3                | SS | 1   | Not set when no entry is made |
| > Edit Box Character Set                    | (7019,XX32) | 3                | CS | 1   | Not set when no entry is made |
| > Edit Box String Length                    | (7019,XX33) | 3                | SS | 1   | Not set when no entry is made |
| > Edit Box String                           | (7019,XX34) | 3                | ST | 1   | Not set when no entry is made |
| > Start X Of Arrow                          | (7019,XX61) | 3                | SS | 1   | Not set when no entry is made |
| > Start Y Of Arrow                          | (7019,XX62) | 3                | SS | 1   | Not set when no entry is made |
| > End Y Of Arrow                            | (7019,XX63) | 3                | SS | 1   | Not set when no entry is made |
| > End X Of Arrow                            | (7019,XX64) | 3                | SS | 1   | Not set when no entry is made |
| > End X Of Arrow With Character             | (7019,XX65) | 3                | SS | 1   | Not set when no entry is made |
| > End Y Of Arrow With Character             | (7019,XX66) | 3                | SS | 1   | Not set when no entry is made |
| > Character Code Of Arrow With Character    | (7019,XX67) | 3                | CS | 1   | Not set when no entry is made |
| > Character Length Of Arrow With Character  | (7019,XX68) | 3                | SS | 1   | Not set when no entry is made |
| > Character String Of Arrow With Character  | (7019,XX69) | 3                | ST | 1   | Not set when no entry is made |
| Image Type for MEDIS-DC media format        | (7019,XX40) | 3                | CS | 1   | Not set when no entry is made |
| Information Change Sequence                 | (7019,XX45) | 3                | SQ | 1   | Not set when no entry is made |
| > Operators' Name                           | (0008,1070) | 3                | PN | 1-n | Not set when no entry is made |
| > Private Creator                           | (7019,00XX) | 1C* <sup>1</sup> | LO | 1   | "TOSHIBA_MEC_OT3"             |
| > Information Change Date                   | (7019,XX46) | 3                | DA | 1   | Not set when no entry is made |
| > Information Change Time                   | (7019,XX47) | 3                | TM | 1   | Not set when no entry is made |
| > Changed Data Element                      | (XXXX,XXXX) | 3                | *  | 1   | Not set when no entry is made |
| Pixel Size                                  | (7019,XX50) | 3                | DS | 2   | Not set when no entry is made |
| Original Image SOP Instance UID             | (7019,XX51) | 3                | UI | 1   | Not set when no entry is made |
| Original Image Series Instance UID          | (7019,XX52) | 3                | UI | 1   | Not set when no entry is made |
| Copy Image Creation Date                    | (7019,XX53) | 3                | DA | 1   | Not set when no entry is made |
| Copy Image Creation Time                    | (7019,XX54) | 3                | TM | 1   | Not set when no entry is made |

\*1:Always set when the TWS creates private data.

## 9 Information Object Definition - Storage SCP

### 9.1 Entity Module Definitions

The acceptable information objects are the same as those defined at section 8"Information Object Definition - Storage SCU", it is recommended that the remote Storage SCU set the following tags:

**Table 123**

| Attribute Name       | Module            | Tag         | Type | Reasons   |
|----------------------|-------------------|-------------|------|---|
| Patient's Name       | Patient           | (0010,0010) | 2    | To archive in MEDIS-DC media format* <sup>1</sup> |
| Study Date           | General Study     | (0008,0020) | 2    | To archive in MEDIS-DC media format* <sup>1</sup> |
| Study Time           | General Study     | (0008,0030) | 2    | To archive in MEDIS-DC media format* <sup>1</sup> |
| Institution Name     | General Equipment | (0008,0080) | 3    | To archive in MEDIS-DC media format* <sup>1</sup> |
| Patient ID           | Patient           | (0010,0020) | 2    | To archive in MEDIS-DC media format* <sup>1</sup> |
| Patient's Birth Date | Patient           | (0010,0030) | 2    | To archive in MEDIS-DC media format* <sup>1</sup> |
| Patient's Sex        | Patient           | (0010,0040) | 2    | To archive in MEDIS-DC media format* <sup>1</sup> |

\*1: MEDIS-DC media format is provided by MEDIS-DC.(MDS A 0008-1995)

## 10 Search Keys

### 10.1 Query/Retrieve SCU (C-Find)

The search keys used for the Query/Retrieve SCU (C-Find) are shown.

#### 10.1.1 Patient Root Q/R Information Model - Find

##### 10.1.1.1 Patient Level SCU Request

Table 124

| Attribute Name | Tag         | Type | Attribute Description      |
|----------------|-------------|------|----------------------------|
| Patient's Name | (0010,0010) | R    | Specified search condition |
| Patient ID     | (0010,0020) | U    | Specified search condition |

Type: U=Unique Key, R=Required Key

##### 10.1.1.2 Study Level SCU Request

Table 125

| Attribute Name     | Tag         | Type | Attribute Description      |
|--------------------|-------------|------|----------------------------|
| Study Date         | (0008,0020) | R    | Specified search condition |
| Study Time         | (0008,0030) | R    | Specified search condition |
| Accession Number   | (0008,0050) | R    | Always set Length=0        |
| Study ID           | (0020,0010) | R    | Specified search condition |
| Study Instance UID | (0020,000d) | U    | Specified search condition |

Type: U=Unique Key, R=Required Key

##### 10.1.1.3 Series Level SCU Request

Table 126

| Attribute Name      | Tag         | Type | Attribute Description      |
|---------------------|-------------|------|----------------------------|
| Modality            | (0008,0060) | R    | Specified search condition |
| Series Number       | (0020,0011) | R    | Specified search condition |
| Series Instance UID | (0020,000e) | U    | Specified search condition |

Type: U=Unique Key, R=Required Key

### 10.1.1.4 Image Level SCU Request

Table 127

| Attribute Name   | Tag         | Type | Attribute Description      |
|------------------|-------------|------|----------------------------|
| Image Number     | (0020,0013) | R    | Specified search condition |
| SOP Instance UID | (0008,0018) | U    | Specified search condition |

Type: U=Unique Key, R=Required Key

### 10.1.2 Study Root Q/R Information Model - Find

#### 10.1.2.1 Study Level SCU Request

Table 128

| Attribute Name     | Tag         | Type | Attribute Description      |
|--------------------|-------------|------|----------------------------|
| Study Date         | (0008,0020) | R    | Specified search condition |
| Study Time         | (0008,0030) | R    | Specified search condition |
| Accession Number   | (0008,0050) | R    | Always set Length=0        |
| Patient's Name     | (0010,0010) | R    | Specified search condition |
| Patient ID         | (0010,0020) | R    | Specified search condition |
| Study ID           | (0020,0010) | R    | Specified search condition |
| Study Instance UID | (0020,000d) | U    | Specified search condition |

Type: U=Unique Key, R=Required Key

#### 10.1.2.2 Series Level SCU Request

Attributes for the Series Level of the Study Root Query/Retrieve Information Model are the same as the attributes for the Series Level of the Patient Root Query/Retrieve Information Model described in 10.1.1.3

#### 10.1.2.3 Image Level SCU Request

Attributes for the Image Level of the Study Root Query/Retrieve Information Model are the same as the attributes for the Image Level of the Patient Root Query/Retrieve Information Model described in 10.1.1.4

### **10.1.3 Patient/Study Only Q/R Information Model - Find**

#### **10.1.3.1 Patient Level SCU Request**

Attributes for the Patient Level of the Patient/Study Only Query/Retrieve Information Model are the same as the attributes for the Patient Level of the Patient Root Query/Retrieve Information Model described in 10.1.1.1

#### **10.1.3.2 Study Level SCU Request**

Attributes for the Study Level of the Patient/Study Only Query/Retrieve Information Model are the same as the attributes for the Study Level of the Patient Root Query/Retrieve Information Model described in 10.1.1.2

## 11 DIMSE-Service and Attributes

The attribute listed in the following tables represent a small set of the possible attributes which could be supported by each services.

### 11.1 DIMSE-Services

Table 129

| SOP Class                           | DIMSE-Service  | Reference | Usage SCU/SCP *1 | Usage |
|-------------------------------------|----------------|-----------|------------------|-------|
| Basic Film Session SOP Class        | N-CREATE       | 11.2.1    | M/M              | Used  |
| Basic Film Box SOP Class            | N-CREATE       | 11.3.1    | M/M              | Used  |
|                                     | N-ACTION       | -         | M/M              | Used  |
| Basic Grayscale Image Box SOP Class | N-SET          | 11.4.1    | M/M              | Used  |
| Basic Color Image Box SOP Class     | N-SET          | 11.5.1    | M/M              | Used  |
| Printer SOP Class                   | N-EVENT-REPORT | -         | M/M              | Used  |
|                                     | N-GET          | 11.6.1    | U/M              | Used  |

\*1 : M=Mandatory, U=User Option

## 11.2 Basic Film Session SOP Class

### 11.2.1 N-CREATE Attributes

Table 130

| Attribute name    | Tag         | Usage<br>SCU/SCP | Attributes                         |
|-------------------|-------------|------------------|------------------------------------|
| Number of Copies  | (2000,0010) | U/M              | Always set. (1)                    |
| Print Priority    | (2000,0020) | U/M              | Always set. (default:"MED")        |
| Medium Type       | (2000,0030) | U/M              | Always set. (default: "BLUE FILM") |
| Film Destination  | (2000,0040) | U/M              | 16bytes maximum, or no set.        |
| Memory Allocation | (2000,0060) | U/U              | 12bytes maximum, or no set.        |

### 11.3 Basic Film Box SOP Class

#### 11.3.1 N-CREATE Attributes

Table 131

| Attribute name                   | Tag          | Usage SCU/SCP | Attributes                    |
|----------------------------------|--------------|---------------|-------------------------------|
| Image Display Format             | (2010,0010)  | M/M           | Always set. ("STANDARD\C,R")  |
| Film Orientation                 | (2010,0040)  | U/M           | Always set.                   |
| Film Size ID                     | (2010,0050)  | U/M           | Always set.                   |
| Magnification Type               | (2010,0060)  | U/M           | Always set.                   |
| Smoothing Type                   | (2010,0080)  | U/U           | If it defines, always set.    |
| Border Density                   | (2010,0100)  | U/U           | Always set.                   |
| Empty Image Density              | (2010,0110)  | U/U           | Always set.                   |
| Min Density                      | (2010,0120)  | U/U           | 0 to 65535, or no set.        |
| Max Density                      | (2010,0130)  | U/M           | 0 to 65535, or no set.        |
| Trim                             | (2010,0140)  | U/U           | Always set                    |
| Configuration Information        | (2010,0150)  | U/M           | 1024bytes maximum, or no set. |
| Referenced Film Session Sequence | (2010, 0500) | M/M           | Always set.                   |
| >Referenced SOP Class UID        | (0008,1150)  | M/M           | Always set.                   |
| >Referenced SOP Instance UID     | (0008,1155)  | M/M           | Always set.                   |

## 11.4 Basic Grayscale Image Box SOP Class

### 11.4.1 N-SET Attributes

Table 132

| Attribute name                 | Tag          | Usage<br>SCU/SCP | Attributes                  |
|--------------------------------|--------------|------------------|-----------------------------|
| Image position                 | (2020, 0010) | M/M              | Always set.                 |
| Polarity                       | (2020, 0020) | U/M              | Always set. ("NORMAL")      |
| Magnification Type             | (2010, 0060) | U/U              | 16bytes maximum, or no set. |
| Smoothing Type                 | (2010, 0080) | U/U              | 16bytes maximum, or no set. |
| Basic Grayscale Image Sequence | (2020, 0110) | M/M              | Always set.                 |
| >Samples Per Pixel             | (0028, 0002) | M/M              | Always set. (1)             |
| >Photometric Interpretation    | (0028, 0004) | M/M              | Always set. ("MONOCHROME2") |
| >Rows                          | (0028, 0010) | M/M              | Always set.                 |
| >Columns                       | (0028, 0011) | M/M              | Always set.                 |
| >Pixel Aspect Ratio            | (0028, 0034) | MC/M             | Always set. (1\1)           |
| >Bits Allocated                | (0028, 0100) | M/M              | Always set. (8)             |
| >Bits Stored                   | (0028, 0101) | M/M              | Always set. (8)             |
| >High Bit                      | (0028, 0102) | M/M              | Always set. (7)             |
| >Pixel Representation          | (0028, 0103) | M/M              | Always set. (0)             |
| >Pixel Data                    | (7FE0, 0010) | M/M              | Always set.                 |

## 11.5 Basic Color Image Box SOP Class

### 11.5.1 N-SET Attributes

Table 133

| Attribute name              | Tag          | Usage<br>SCU/SCP | Attributes                  |
|-----------------------------|--------------|------------------|-----------------------------|
| Image position              | (2020, 0010) | M/M              | Always set.                 |
| Polarity                    | (2020, 0020) | U/M              | Always set. ("NORMAL")      |
| Magnification Type          | (2010, 0060) | U/U              | 16bytes maximum, or no set. |
| Smoothing Type              | (2010, 0080) | U/U              | 16bytes maximum, or no set. |
| Basic Color Image Sequence  | (2020, 0111) | M/M              | Always set.                 |
| >Samples Per Pixel          | (0028, 0002) | M/M              | Always set. (3)             |
| >Photometric Interpretation | (0028, 0004) | M/M              | Always set. ("RGB")         |
| >Planar Configuration       | (0028,0006)  | M/M              | Always set (1)              |
| >Rows                       | (0028, 0010) | M/M              | Always set.                 |
| >Columns                    | (0028, 0011) | M/M              | Always set.                 |
| >Pixel Aspect Ratio         | (0028, 0034) | MC/M             | Always set. (1\1)           |
| >Bits Allocated             | (0028, 0100) | M/M              | Always set. (8)             |
| >Bits Stored                | (0028, 0101) | M/M              | Always set. (8)             |
| >High Bit                   | (0028, 0102) | M/M              | Always set. (7)             |
| >Pixel Representation       | (0028, 0103) | M/M              | Always set. (0)             |
| >Pixel Data                 | (7FE0, 0010) | M/M              | Always set.                 |

**11.6 Printer SOP Class**

**11.6.1 N-GET Attributes**

**Table 134**

| <b>Attribute name</b>   | <b>Tag</b>  | <b>Usage<br/>SCU/SCP</b> | <b>Attributes</b> |
|-------------------------|-------------|--------------------------|-------------------|
| Printer Status          | (2110,0010) | U/M                      |                   |
| Printer Status Info     | (2110,0020) | U/M                      |                   |
| Printer Name            | (2110,0030) | U/U                      |                   |
| Manufacturer            | (0008,0070) | U/U                      |                   |
| Manufacturer Model Name | (0008,1090) | U/U                      |                   |