S517-E130D
2025-06-13

DICOM Conformance Statement for Trinias

(DAR-9500f Rev7.1 or later)

SHIMADZU

Revision History

Date	Rev.	Comment
2021.08.04	First	First Revision
2022.03.28	A	VT of TID10003 EV(113780, DCM, "Reference Point Definition") changed from TEXT to CODE EV (121009, DCM, "PersonObserver 's Organization Name") is removed. EV (121010, DCM, "Person Observer 's Role in the Organization") is removed. EV (128775, DCM, "Identifier within PersonObserver 's Role") is removed. Remove Performing Physician's Name (0008,1050) tag from General Series Module for Multi-frame-Grayscale Byte Secondary Capture Image Storage Operators' Name (0008,1070) tag from General Series Module for Multi-frame-Grayscale Byte Added Information Object Definitions for Multi-frame True Color Secondary Capture Image. Added Device Serial Number(0018,1000) tag into all files.
2023.01.27	B	Corrected note in Section 6.5.9
2023.03.28	C	Corrected in Section 6.6 Added MH-500, 600 to Attribute Name (6B01,1102) tag
2025.06.13	D	Updated the edition for the source DICOM in "Section 1.2. Sources for This Document." Added in Section 6.6. Data Dictionary of Private Attributes: - Added Pre-Processing Rotation in Degree (0029,151F) tag. - Added Image Processing Mode (0029,1520) tag. - Added Image Processing ModeApp (0029,1521) tag.

Overview:

This conformance statement details the compliance to DICOM of DAR-9500 mounted in Trinias systems.

Table below provides an overview of the network services supported by DAR-9500.

NETWORK SERVICES

SOP Classes	User of Services (SCU)	Provider of Services (SCP)
Transfer		
X-ray Angiographic Image Storage	Yes	Yes
X-ray Radiation Dose SR Storage	Yes	Yes
Secondary Capture Image Storage	Yes	Yes
Multi-frame Grayscale Byte Secondary Capture Image Storage	Yes	Yes
Multi-frame True Color Secondary Capture Image Storage	Yes	Yes
Query/Retrieve		
Patient Root Q/R Information Model - Find	Yes	No
Patient Root Q/R Information Model - Move	Yes	No
Study Root Query/Retrieve IM Find	Yes	No
Study Root Query/Retrieve IM Move	Yes	No
Workflow Management		
Modality Worklist Information Model – Find	Yes	No
Modality Performed Procedure Step	Yes	No
Storage Commitment Push Model	Yes	No
Print Management		
Basic Grayscale Print Management Meta	Yes	No
Verification		
Verification	Yes	Yes

Table below provides an overview of the Media Storage Application Profiles supported by DAR-9500.

MEDIA SERVICES

SOP Classes	Write Files (FSC or FSU)	Read Files (FSR)
General Purpose CD-R	Yes	Yes
General Purpose DVD-R	Yes	Yes

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1. Introduction

1.1. Purpose of This Document

The purpose of this document is to describe how *DAR-9500f* conforms to the DICOM standard. It describes what parts and definition it utilizes and in what way, in order to provide interoperability with other devices that claim same conformance.

1.2. Sources for This Document

Digital Imaging and Communications in Medicine (DICOM), 2025a.

1.3. Acronyms and Abbreviation

The following acronyms and abbreviations are used in this document.

- ACSE Association Control Service Element
- AE Application Entity
- ANSI American National Standards Institute
- AP Application Profile
- API Application Programming Interface
- ASCII American Standard Code for Information Interchange
- 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
- FPD Flat Panel Detector
- FSC File Set Creator
- FSR File Set Reader
- FSU File Set Updater
- GUI Graphical User Interface
- PDU Protocol Data Unit
- RDSR DICOM Radiation Dose Structure Report
- RWA Real World Activity
- SCP Service Class Provider
- SCU Service Class User
- SOP Service Object Pair
- TCP/IP Transmission Control Protocol/Internet Protocol
- UID Unique Identifier
- MPPS Modality Performed Procedure Step
- PPS Performed Procedure Step
- VM Value Multiplicity
- VR Value Representation
- VT Value Type

1.4. Note to Reader

- **Interoperability**

Interoperability refers to the ability of application functions, distributed over two or more systems, to work successfully together. The integration of medical devices into a networked environment may require application functions that are not specified within the scope of the DICOM standard. Consequently, using only the information provided by this conformance statement does not guarantee interoperability of SHIMADZU equipment with other vendor's systems. It is the user's responsibility to thoroughly analyze the application requirements and to specify a solution that integrates SHIMADZU equipment with the projected other vendor's systems.

- **Validation**

Although SHIMADZU equipment has been completely tested to verify that the implementation of the DICOM interface for this product corresponds with this Conformance Statement, even if comparison of respective Conformance Statement indicates that successful interconnection should be possible with another vendor's equipment, additional validation will always be necessary to ensure full functionality. It is the responsibility of the user to specify the appropriate test suite and to carry out the additional validation tests.

- **Version of the DICOM standard**

SHIMADZU is committed to evolve with the DICOM standard as it adapts to meet the future requirement of users and technology. In order to do so, SHIMADZU reserves the right to adapt and even discontinue delivery of its equipment. The user should ensure that any vendor whose equipment is connected to SHIMADZU equipment also adapts to future version of the DICOM standard. If not, enhancement of SHIMADZU may lead to loss of connectivity or interoperability.

- **Version Apply to *DAR-9500f***

DICOM Conformance Statement is applied to the following version of *DAR-9500f*. Refer to the old DICOM Conformance Statement to confirm older version of *DAR-9500f*.

- ***DAR-9500f*: Rev.7.1 or later**

2. Implementation Model

2.1. DAR-9500f

*DAR-9500f i*s an acquisition and review station used for angiographic images in the Cardiology environment.
The application, upon user request, will:

1. Acquire images from a catheterization laboratory and encapsulate them to the DICOM Standard Format.
2. Issue a **C-ECHO** command to a remote SCP.
3. Issue a **C-STORE** command to one or more configured SCPs in order to archive the acquired images.
4. Issue an **N-ACTION** command to the configured SCP in order to request Storage Commitment.
5. The configured SCP replies with an **N-EVENT-REPORT** response confirming receipt.
6. Issue a **C-MOVE** command to configured SCP.
7. Query, retrieve and display XA images from a remote SCP.
8. Query a Modality Worklist.
9. Send an **N-CREATE** and an **N-SET** to a MPPS server.
10. Read and display XA images from DICOM CD.
11. Act as FSC for DICOM CD. Write DICOM conformant CD-R
12. Act as FSR for DICOM CD. Read and display XA images from a DICOM conformant CD-R.
13. Print the images to remote DICOM SCP printer.

2.2. Application Data Flow Diagram

(1) Verification

DAR-9500f can send **C-ECHO** verifications. The Verification SCP AE responds successfully to **C-ECHO** requests from known AE Titles. It is associated with the local real-world activity "Verifies Commectivity" in Fig 2.

(2) Basic Worklist Management or IHE Worklist Management

The MWM SCU AE receives Worklist information from a remote AE. It is associated with the local real-world activity "Requests Query Worklist Items" in Fig.2. When the "Requests Query Study" is performed the MWM SCU AE queries a remote AE to get worklist items and provides the set of worklist items matching the query request.

(3) MPPS Management

DAR-9500f will issue an **N-CREATE** event to notify the creation of a new acquisition study and issue an **N-SET** event when this acquisition study is completed. It is associated with the local real-world activity "Requests Sending MPPS" in Fig. 2.

(4) Find

DAR-9500f will issue a **C-FIND** command to a remote SCP to retrieve information about the studies stored on the remote SCP. It is associated with the local real-world activity "Requests Query Study" in Fig. 2.

(5) Store Images as SCP

DAR-9500f will receive process and accept **C-STORE** command from a remote SCU and if the association succeeds, it will store the received data on its physical storage space. It is associated with the local real-world activity "Store Objects Received" in Fig. 2.

(6) Print

DAR-9500f will request to print images to a remote SCP. It is associated with the local real-world activity "Requests to Print Images" in Fig.2.

(7) Store Images and RDSRs as SCU

The Storage SCU AE sends images to a remote AE. It is associated with the local real-world activity "Requests Sending Images and RDSRs". The activity is performed upon a user requests for specific images/RDSRs selected. If the remote AE is configured as a Storage Commitment SCP AE, the Storage SCU AE will send a storage commitment request to the Storage Commitment SCP AE.

(8) Storage Commitment

Receiving the storage commitment request from the Storage SCU AE, the Storage Commitment SCU AE will request Storage Commitment and if a commitment is successfully obtained will record this information in the local database.

(9) MPPS Management

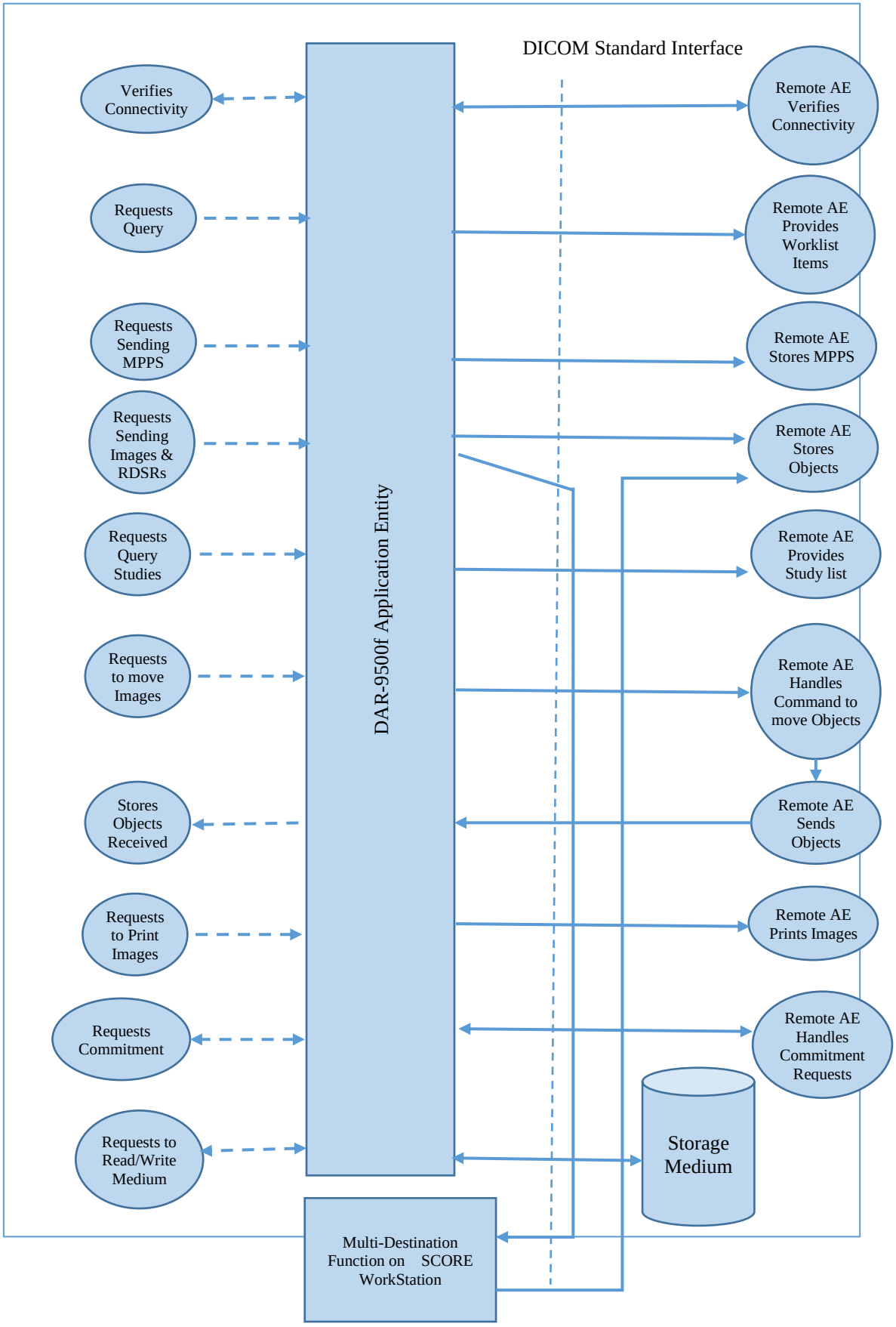
DAR-9500f will issue an **N-CREATE** event to notify the creation of a new acquisition study and issue an **N-SET** event when this acquisition study is completed. It is associated with the local real-world activity "Requests Sending MPPS" in Fig. 2.

(10) Read CD-R/DVD-R

DAR-9500f will read any DICOM conformant CD-R/DVD-R mediums although it will only display compatible images. It is associated with the local real-world activity "Requests to Read/Write Medium" in Fig. 2.

(11) Write CD-R/DVD-R

DAR-9500f will write a DICOM conformant CD-R/DVD-R medium for the supported SOP classes. It is associated with the local real-world activity "Requests to Read/Write Medium" in Fig. 2.


DICOM Standard Interface
Verifies Connectivity
Requests Query
Requests Sending MPPS
Requests Sending Images & RDSRs
Requests Query Studies
Requests to move Images
Stores Objects Received
Requests to Print Images
Requests Commitment
Requests to Read/Write Medium
DAR-9500f Application Entity
Remote AE Verifies Connectivity
Remote AE Provides Worklist Items
Remote AE Stores MPPS
Remote AE Stores Objects
Remote AE Provides Study list
Remote AE Handles Command to move Objects
Remote AE Sends Objects
Remote AE Prints Images
Remote AE Handles Commitment Requests
Storage Medium
Multi-Destination Function on SCORE WorkStation

2.3. Functional Description of AE's

2.3.1. Functional Definition of Verification SCU AE

Service personnel can check the connectivity with remote AEs by using this function. An association is established with the server, and C-ECHO message is sent to the server. If the server responds normally, the result is displayed on the service tool. If the server doesn't respond normally, the result is displayed on the service tool so that service personnel can check the connectivity prior to use any other DICOM related functions.

2.3.2. Functional Definition of Verification SCP AE

The Verification SCP AE responds successfully to C-ECHO requests from known AE Titles, port numbers.

2.3.3. Functional Definition of Storage SCU AE

The existence of a send-job queue entry with associated network destination will activate the Storage AE. An association request is sent to the destination AE and upon successful negotiation of a Presentation Context the image transfer is started. If the association cannot be opened, the related send-job is set to an error state and can be restarted by the user via job control interface.

2.3.4. Functional Definition of Storage Commitment SCU AE

Receiving the storage commitment request from the Storage SCU AE, the Storage Commitment SCU AE will request Storage Commitment and if a commitment is successfully obtained will record this information in the local database.

2.3.5. Functional Definition of MWM SCU AE

Worklist Update attempts to download a Worklist from a remote node. If the MWM SCU AE establishes an Association to a remote AE, it will transfer all worklist items via the open Association. During receiving the worklist response items are counted and the query processing is canceled if the configurable limit of items is reached. The result will be displayed in a separate list, which can be cleared with the next Worklist Update based on the configuration.

2.3.6. Functional Definition of MPPS SCU AE

The MPPS SCU AE performs the creation of a MPPS Instance automatically whenever studies are started. Further updates on the MPPS data can be performed interactively from the related MPPS user interface. The MPPS "Complete" or "Discontinued" states can only be set from the user interface.

2.3.7. Functional Definition of Q/R SCU AE

If configured, *DAR-9500f* can query for the patient Worklist. The list of scheduled patients will be presented to the user and all fields in the patient demographic entry forms will be filled with the chosen patient. If all mandatory fields cannot be filled a form will be presented to the user with the missing fields highlighted. *DAR-9500f* will issue a **C-Find** request to retrieve Worklist information from a remote Storage SCP AE.

2.3.8. Functional Definition of Storage SCP AE

The Storage SCP AE waits for another application to connect at the presentation address configured for its AE Title. The Storage SCP AE will accept associations with Presentation Contexts will be stored to the local file system.

2.3.9. Functional Definition of Print SCU AE

The Storage SCP AE waits for another application to connect at the presentation address configured for its AE Title. The Storage SCP AE will accept associations with Presentation Contexts for SOP Classes of the Storage Service Classes. Any images received on such Presentation Contexts will be stored to the local file system.

2.4. Sequencing of Real-World Activity

Figure 2-1 presents normal scheduled workflow.

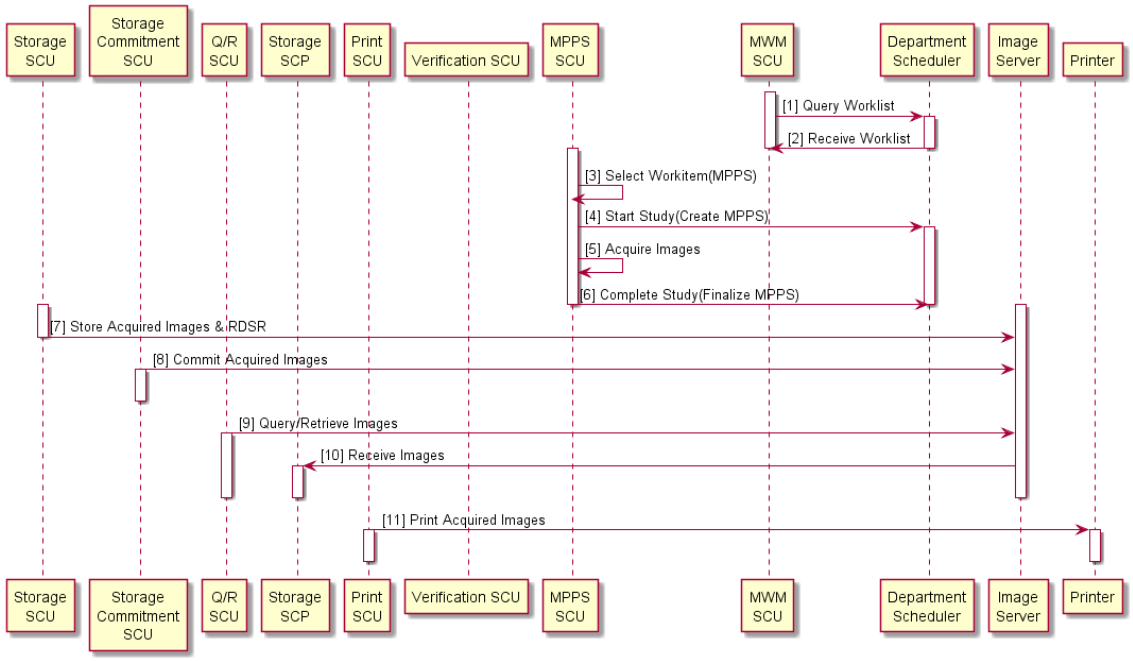


Figure 2-1 SEQUENCING CONSTRAINTS

3. AE Specifications

3.1. DAR-9500f AE Specification

DAR-9500f provides Standard Conformance to the following DICOM V3.0 SOP Class as an SCU.

Table 1 Verification SOP Class as SCU

SOP Class Name	SOP Class UID
Verification	1.2.840.10008.1.1
Study Root Query/Retrieve IM Find	1.2.840.10008.5.1.4.1.2.2.1
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2
XA – X-ray Angiographic image storage	1.2.840.10008.5.1.4.1.1.12.1
Secondary Capture Image storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
Multi-frame True Color Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.4
Modality Worklist SOP class	1.2.840.10008.5.1.4.31
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67

3.1.1. Association Establishment Policies

3.1.1.1. General

The following Application Context Name will be proposed and recognized by *DAR-9500f*.

- DICOM 3.0 Application Context **1.2.840.10008.3.1.1.1**

3.1.1.2. Number of Associations

The maximum number of associations accepted or maintained by *DAR-9500f* is limited only by the physical memory of the machine on which it runs. Typically, it can be up to 10.

3.1.1.3. Asynchronous Nature

DAR-9500f allows a single outstanding operation on any association. Therefore, *DAR-9500f* does not support asynchronous operations window negotiation, other than the default as specified by the DICOM specification.

3.1.1.4. Implementation Identifying Information

DAR-9500f will respond with the following implementation identifying parameters:

Implementation Class UID (acquisition) **1.2.392.200036.9110.17. XXXXXXXXXXXXX**
Implementation Class UID (review) **1.2.392.200036.9110.18. XXXXXXXXXXXXX**

The last number of the implementation class UID is the 13 digits maximum machine serial number.

Implementation Version Name **`Voyager_VX_X_X`**
Where X_X_X is the software version

The implementation version name policies are the following: product name "**`Voyager`**" followed by the version of the product, "**`_V1_0_0`**".

When send the image via Multi-Destination Function on SCORE Workstation, it will respond with the following implementation identification parameters: 1.2.276.0.7230010.3.0.3.6.0

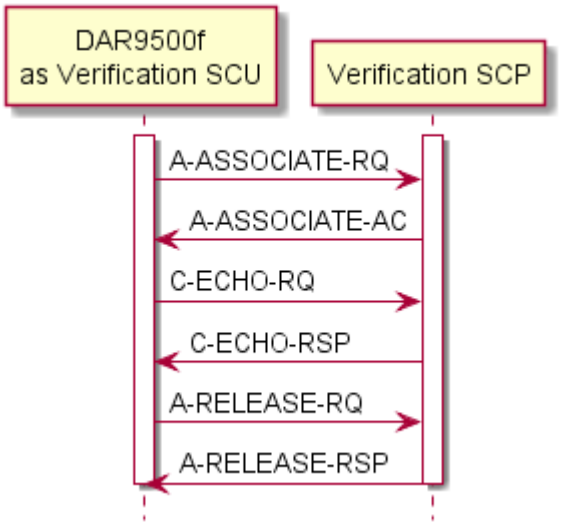
Implementation version name is: OFFIS_DCMTK_360.

3.1.2. Association Initiation by Real World Activity

3.1.2.1. Real World Activity – Verification as SCU

(1) Description and Sequencing of Activities

DAR-9500f will send a C-ECHO to verify the other systems if they are activated. The verification SCU is invoked by activating [ECHO] by the service personnel. It will send verification message to the selected server then display its verification result notified by the server.



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 2. For a **Verification** request, *DAR-9500f* supports the Presentation Contexts listed in Table 2.

Table 2 Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

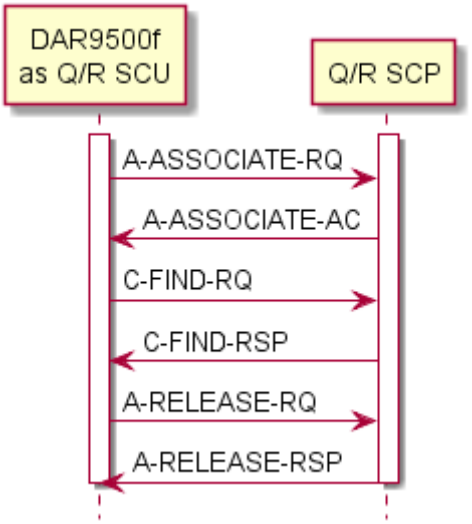
(3) SOP Specific conformance

DAR-9500f provides the standard conformance to the Verification SOP class.

3.1.2.2. Real World Activity – Find Remote Images

(1) Description and Sequencing of Activities

DAR-9500f will issue a C-FIND request when a user of *DAR-9500f* wishes to view patient and study information from a remote Q/R SCP.



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 3. For a query request, *DAR-9500f* supports the Presentation Contexts listed in Table 3.

Table 3 Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	SOP Class UID	Name List	UID List		
Study Root Query/Retrieve Information 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

(3) SOP Specific conformance

DAR-9500f uses query with Study Root level by default. If the extended negotiation is not successful, it uses query with Patient Root level by default. If the extended negotiation is still failed, *DAR-9500f* will use query with Patient Root model.

DAR-9500f requests matching with the following key attributes.

Table 4 Matching Key Attributes – Study Root Query/Retrieve Information Model *

Attribute Name	Type	Tag
STUDY LEVEL		
Study Date	Required	(0008,0020)
Accession Number	Required	(0008,0050)
Patient's Name	Required	(0010,0010)
Patient ID	Required	(0010,0020)
SERIES LEVEL		
Modality	Required	(0008,0060)
Station Name	Optional	(0008,1010)
Performing Physician's Name	Optional	(0008,1050)

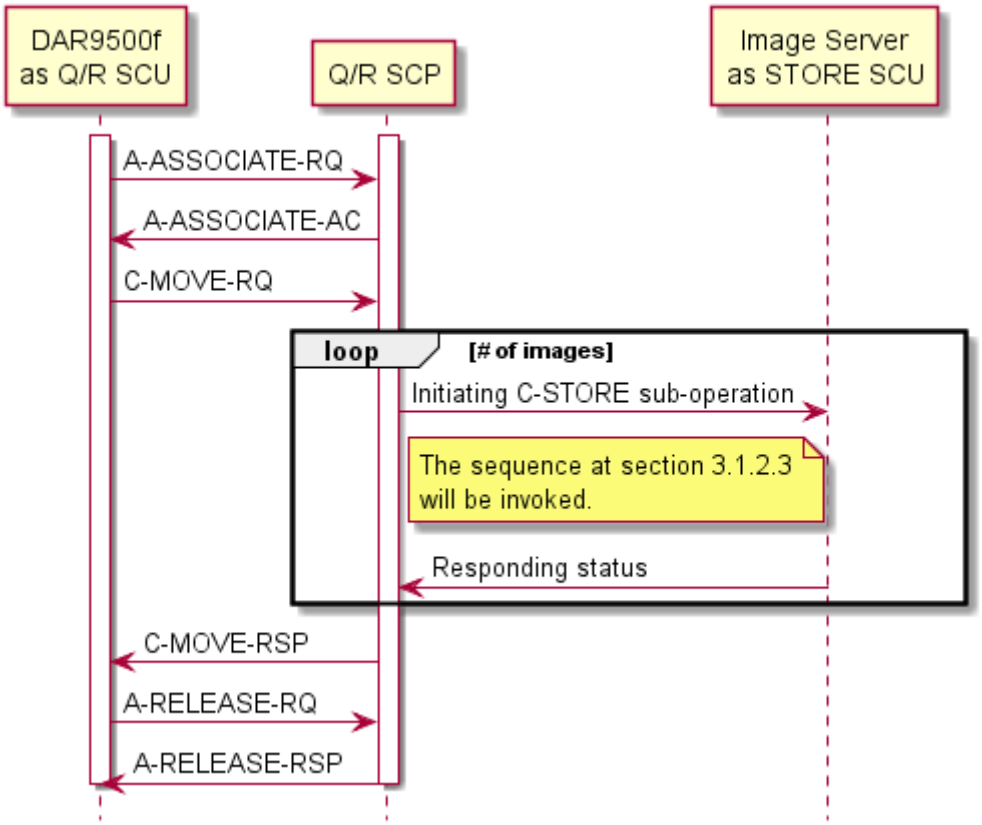
* User can input these items on the monitor as a search key.

3.1.2.3. Real World Activity – Move Images

(1) Description and Sequencing of Activities

DAR-9500f will issue a C-MOVE request when a user of *DAR-9500f* wishes to move one or more studies from a remote SCP back to *DAR-9500f* (retrieve) or another remote SCP. The request to move remote images is forwarded to the job queue. For each move job, one association towards the remote system is established, and C-MOVE requests are transmitted. Once the responses are received, the association is closed.

An example of sequencing of activities is presented as below. The images, which the user selected, will be received at the Storage SCP AE.



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 5. For a C-MOVE request, *DAR-9500f* supports the Presentation Contexts listed in Table 5 and Table 6.

Table 5 Move Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 6 Move Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	SOP Class UID	Name List	UID List		
Study Root Query/Retrieve IM Move	1.2.840.10008.5.1.4.1.2.2.2	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

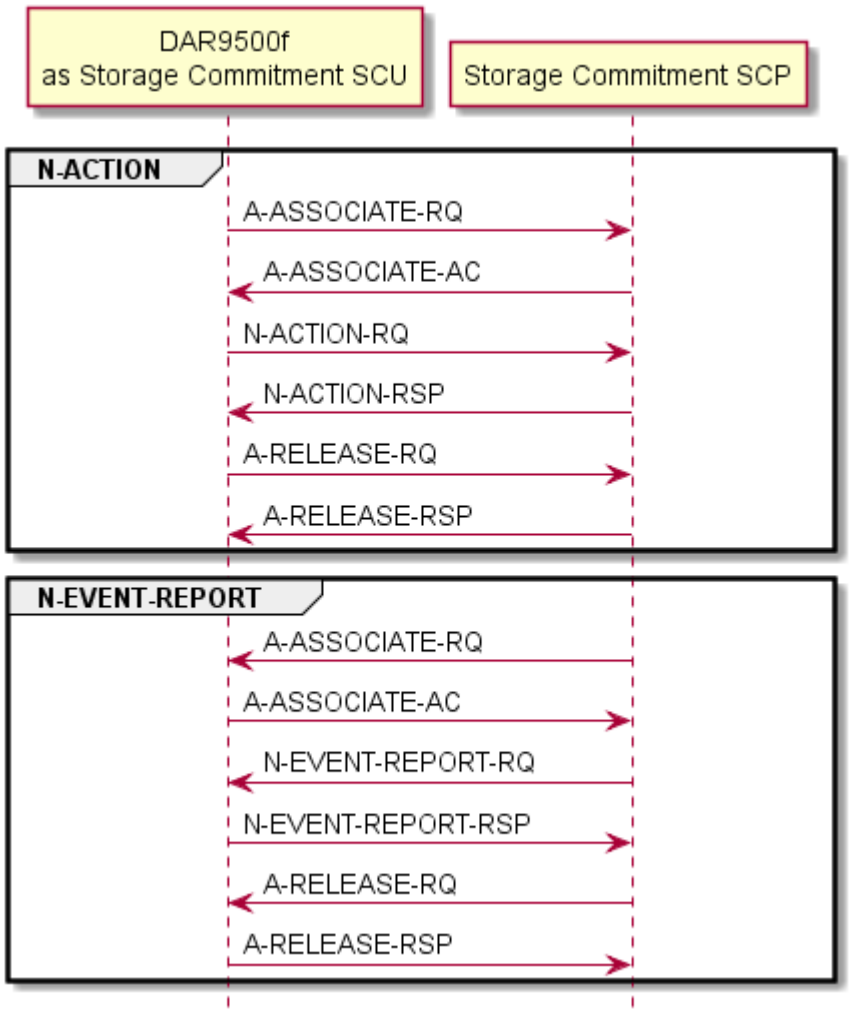
(3) SOP Specific Conformance – Move

DAR-9500f uses specific keys for Move operation. When doing a series move the Study UID and Series UID are used as keys. When doing a study move only the Study UID is used as key.

3.1.2.4. Real World Activity – Storage Commitment

(1) Description and Sequencing of Activities

DAR-9500f as Storage Commitment SCU accepts storage commitment notifications (N-EVENT-REPORT) from Storage Commitment SCP that send the notifications.



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 7.

Table 7 Worklist Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
Storage Commitment Push Model	1.2.840.10008.1.20.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		Explicit VR Big Endian	1.2.840.10008.1.2.2		

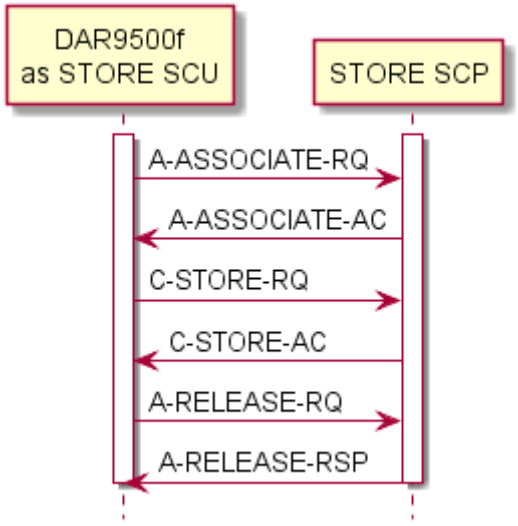
(3) SOP Specific conformance

Under receipt of an N-EVENT-REPORT the timer associated with the Transaction UID will be canceled.

3.1.2.5. Real World Activity – Request to Store Images and Dose Information

(1) Description and Sequencing of Activities

DAR-9500f will issue a Storage request when a user of *DAR-9500f* wishes to send a study of images to a remote STORE SCP.



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 9.

Table 8 Storage Presentation Context

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
X-ray Angiographic 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
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossless, hierarchical, first order prediction	1.2.840.10008.1.2.4.70		
Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		Explicit VR Little Endian	1.2.840.10008.1.2.1		
		JPEG Lossless, hierarchical, first order prediction	1.2.840.10008.1.2.4.70		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
Multiframe Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None
		JPEG Lossless, hierarchical, first order prediction	1.2.840.10008.1.2.4.70		

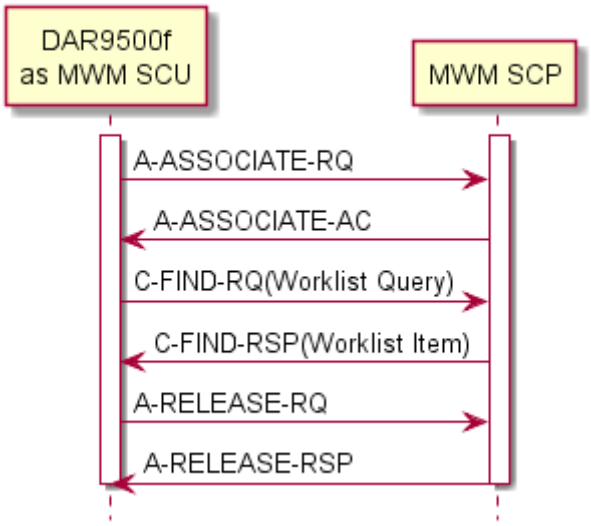
(3) Storage Presentation Contexts selection

- Transfer syntaxes can be configured. Each of them can be selected whether enable or disable, and the presented order can be configured.
- If no Transfer syntaxes are selected in the option then the system try to negotiate the default Transfer Syntax (Original Storage Transfer Syntaxes) with Implicit VR Little Endian Transfer Syntax.

3.1.2.6. Real World Activity – Query Worklist

(1) Description and Sequencing of Activities

DAR-9500f will issue a **query Worklist** request when a user of *DAR-9500f* opens a new study if a MWM SCP is configured in its host table.



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 9. For a **Query Worklist** request, *DAR-9500f* supports the Presentation Contexts listed in Table 9.

Table 9 Worklist Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
Modality Worklist Information Model – FIND	1.2.840.10008.5.1.4.31	DICOM Implicit VR Little Endian	1.2.840.10008.1.2	SCU	None

(3) SOP Specific Conformance – Modality Worklist Information Model – FIND

DAR-9500f supports queries against the Worklist Information Model using the baseline **C-FIND SCU** behaviour.

Also, *DAR-9500f* supports the character sets that are indicated on section "Chapter 5 Support for Extended Character Sets".

User can input items shown in **Table 10** as search keys.

DAR-9500f supports the character sets listed in Table 26.

DAR-9500f requests matching of the following key attributes.

Table 10 Matching Key Attributes – Query Worklist*

Attribute Name	VR	Tag	Matching Key Type*	Return Keys*3	Q*4	D*5	IOD*8
Scheduled Procedure Step Module							
Scheduled Procedure Step Sequence	SQ	(0040,0100)					
>Modality*2	CS	>(0008,0060)	S			×	×
>Scheduled Station AE Title	AE	>(0040,0001)	S	×	×		
>Scheduled Procedure Step Start Date	DA	>(0040,0002)	R		×	×*6	
>Scheduled Performing Physician's Name	PN	>(0040,0006)	W	×	×	×	
Requested Procedure Module							
Requested Procedure ID	SH	(0040,1001)	S	×	×	×*7	×
Imaging Service Request Module							
Accession Number	SH	(0008,0050)	S	×	×	×	×
Patient Identification Module							
Patient's Name	PN	(0010,0010)	W	×	×	×	×
Patient ID	LO	(0010,0020)	S	×	×	×	×

* "S" will indicate that DAR9500f will supply an attribute value for Single Vale Matching, a "R" will indicate Range Matching and a "W" will denote wild card matching.
*2 Always searching with XA.

*3 An "x" will indicate that DAR-9500f will supply this attribute as Return Key with zero length for Universal Matching. The DAR9500f will support retired date format (yyyy.mm.dd) for "Patient's Birth Date" and "Scheduled Procedure Step Start Date" in the response identifiers. For "Scheduled Procedure Step Start Time" also retired time format as well as unspecified time components are supported

*4 Q means Interactive Query Key. An "x" " will indicate that DAR9500f will supply this attribute as matching key, if entered in the Query Patient Worklist dialog. For example, the Patient Name can be entered thereby restricting Worklist responses to Procedure Steps scheduled for the patient.

*5 D means Displayed keys. An "x" indicates that this worklist attribute is displayed to the user during a patient registration dialog. For example, Patient Name will be displayed when registering the patient prior to an examination

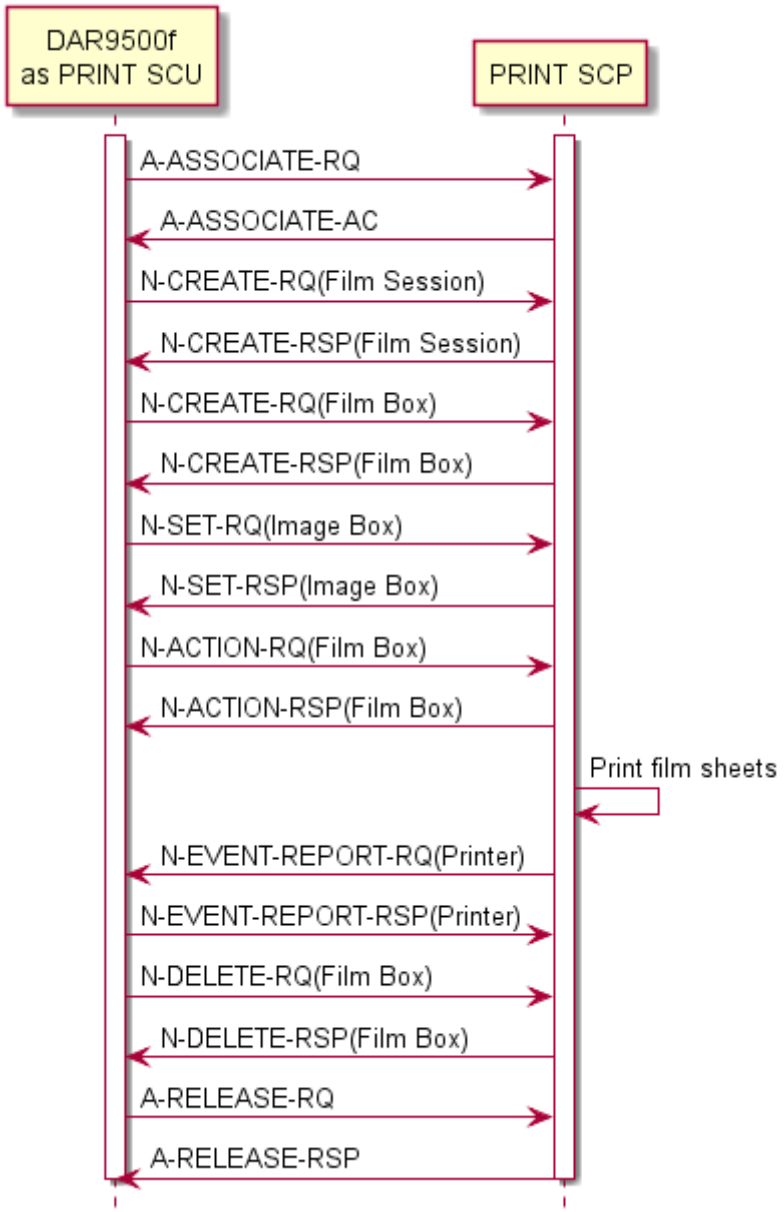
*6: If Modality Performed Procedure Step is used.
*7: Only displayed in the Worklist Management's Details window (if Modality Performed Procedure Step is used).

*8 IOD means Displayed keys. An "x" indicates that this Worklist attribute is included into all Object Instances created during performance of the related Procedure Step.

3.1.2.7. Real World Activity – Request to Print Images

(1) Description and Sequencing of Activities

DAR-9500f will issue a Print request when the user wants to send study images to the remote DICOM printer SCP.A typical sequence of DIMSE messages sent over an association between DAR9500f as PRINT SCU and a Printer is illustrated below



(2) Presentation context Table – Request to Print Images

DAR-9500f supports the transfer syntaxes listed in Table 11. For a **Print** request**,** *DAR-9500f* supports the Presentation Contexts listed in Table 11.

Table 11 Request to Print Images Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
Basic Grayscale Print Management Meta	1.2.840.10008.5.1.1.9	Explicit VR Little Endian	1.2.840.10008.1.2.1	SCU	None

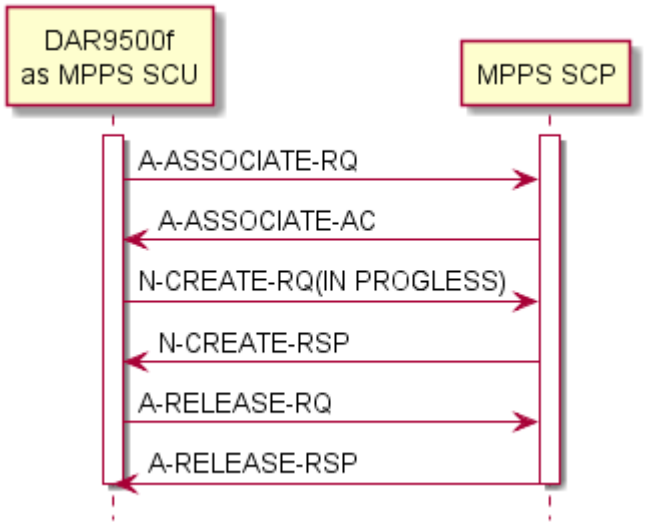
(3) SOP Specific Conformance

DAR-9500f provides the standard conformance to the DICOM Basic Grayscale Print Management Meta SOP class.

3.1.2.8. Real World Activity – Create a new acquisition study

(1) Description and Sequencing of Activities

DAR-9500f will issue an MPPS N-CREATE event when a user of *DAR-9500f* creates a new study in acquisition, if a PPS Manager is configured in its host table. A possible sequence of interactions between DAR9500f as MPPS SCU and a Department Scheduler (e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated below:



(2) Presentation context Table – MPPS N-CREATE

DAR-9500f supports the transfer syntaxes listed in Table 12 for MPPS N-CREATE event, *DAR-9500f* supports the Presentation Contexts listed in Table 13.

Table 12 MPPS N-CREATE Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 13 MPPS N-CREATE Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Modality Performed Procedure Step SOP class	1.2.840.10008.3.1.2.3.3	all from Table 12	SCU	None

(3) SOP Specific Conformance

DAR-9500f provides the following table describes the supported attributes of a N-CREATE message.

Table 14 Performed Procedure Step N-CREATE Attributes

Tag	VR	Attribute Name	Value of N-CREATE
SOP Common Module			
(0008,0005)	CS	Specific Character Set	See Table 26
Performed Procedure Step Relationship Module			
(0008,1120)	SQ	Referenced Patient Sequence	Zero length
>(0008,1150)	UI	Referenced SOP Class UID	From Modality Worklist or user input
>(0008,1155)	UI	Referenced SOP Instance UID	From Modality Worklist or user input
(0010,0010)	PN	Patient's Name	From Modality Worklist or user input
(0010,0020)	LO	Patient ID	From Modality Worklist or user input
(0010,0030)	DA	Patient's Birth Date	From Modality Worklist or user input
(0010,0040)	CS	Patient's Sex	From Modality Worklist or user input
(0040,0270)	SQ	Scheduled Step Attributes Sequence	Zero length
>(0008,0050)	SH	Accession Number	From Modality Worklist or user input
>(0008,1110)	SQ	Referenced Study Sequence	Zero length
>(0020,000D)	UI	Study Instance UID	From Modality Worklist
>(0032,1060)	LO	Requested Procedure Description	From Modality Worklist
>(0040,0007)	LO	Scheduled Procedure Step Description	From Modality Worklist
>(0040,0008)	SQ	Scheduled Protocol Code Sequence	Zero length
>(0040,0009)	SH	Scheduled Procedure Step ID	From Modality Worklist
>(0040,1001)	SH	Requested Procedure ID	From Modality Worklist
Performed Procedure Step Information Module			
(0040,0241)	AE	Performed Station AE Title	*Local* or Station AE Title (from configuration)
(0040,0242)	SH	Performed Station Name	From configuration
(0040,0243)	SH	Performed Location	From configuration
(0040,0244)	DA	Performed Procedure Step Start Time	Actual start date
(0040,0245)	TM	Performed Procedure Step Start Time	Actual start time
(0040,0250)	DA	Performed Procedure Step End Date	Zero length
(0040,0251)	TM	Performed Procedure Step End Time	Zero length
(0040,0252)	CS	Performed Procedure Step Status	IN PROGRESS
(0040,0253)	SH	Performed Procedure Step ID	Automatically created
(0040,0254)	LO	Performed Procedure Step Description	From Modality Worklist
(0040,0255)	LO	Performed Procedure Type Description	From Modality Worklist
(0008,1032)	SQ	Procedure Code Sequence	From Modality Worklist
(0040,0281)	SQ	Performed Procedure Step Discontinuation Reason Code Sequence	Tag is set only if the Modality Performed Procedure Step Status is set to DISCONTINUED.
>(0008,0100)	SH	Code Value	Tag is set only if the Modality Performed Procedure Step Status is set to DISCONTINUED..
>(0008,0102)	SH	Coding Scheme Designator	Tag is set only if the Modality Performed Procedure Step Status is set to DISCONTINUED.
>(0008,0104)	LO	Code Meaning	Tag is set only if the Modality Performed Procedure Step Status is set to DISCONTINUED..

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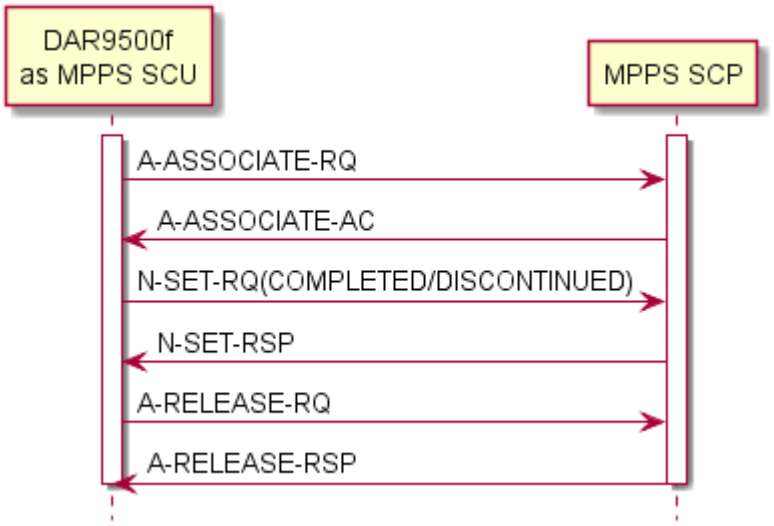
Tag	VR	Attribute Name	Value of N-CREATE
Image Acquisition Results Module			
(0008,0060)	CS	Modality	XA
(0020,0010)	SH	Study ID	From Modality Worklist or user input
(0040,0260)	SQ	Performed Protocol Code Sequence	Zero or more items (by user input)
>(0008,0100)	SH	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0040,0340)	SQ	Performed Series Sequence	No item
>(0008,1050)	PN	Performing Physician's Name	Attribute not present
>(0008,1070)	PN	Operator's Name	Attribute not present
>(0018,1030)	LO	Protocol Name	Attribute not present
>(0020,000E)	UI	Series Instance UID	Attribute not present
>(0008,103E)	LO	Series Description	Attribute not present
>(0008,0054)	AE	Retrieve AE Title	Attribute not present
>(0008,1140)	SQ	Referenced Image Sequence	Attribute not present
>(0040,0220)	SQ	Referenced Standalone SOP Instance Seq.	Attribute not present
Radiation Dose Module(if configured)			
(0008,2229)	SQ	Anatomic Structure, Space or Region Sequence	No item
>(0008,0100)	SH	Code Value	N.A.
>(0008,0102)	SH	Coding Scheme Designator	N.A.
>(0008,0104)	LO	Code Meaning	N.A.
(0018,115E)	DS	Image and Fluoroscopy Area Dose Product	Value not present
(0040,0300)	US	Total Time of Fluoroscopy	Value not present
(0040,0301)	US	Total Number of Exposures	Value not present
(0040,0302)	US	Entrance Dose	Value not present
(0040,030E)	SQ	Exposure Dose Sequence	Value not present
>(0018,0060)	DS	KVp	Attribute not present
>(0018,1150)	IS	Exposure Time	Value not present
>(0018,115A)	CS	Radiation Mode	Value not present
>(0018,1160)	SH	Filter Type	Value not present
>(0018,7050)	CS	Filter Material	Value not present
>(0018,8151)	DS	X-Ray Tube Current in μA	Value not present
>(0040,0310)	ST	Comments on Radiation Dose	Value not present
(0040,0310)	ST	Comments on Radiation Dose	Value not present
(0040,8302)	DS	Entrance Dose in mGy	Value not present

3.1.2.9. Real World Activity – Close a study in acquisition

(1) Description and Sequencing of Activities

DAR-9500f will issue an MPPS N-SET event when a user of *DAR-9500f* closes a study in acquisition, if a PPS Manager is configured in its host table. A possible sequence of interactions between DAR9500f as MPPS SCU and a Department Scheduler (e.g. a device such as a RIS or HIS which supports the MPPS SOP Class as an SCP) is illustrated below:



(2) Presentation context Table – MPPS N-SET

DAR-9500f supports the transfer syntaxes listed in Table 15 for MPPS N-SET event; *DAR-9500f* supports the Presentation Contexts listed in Table 16.

Table 15 MPPS N-SET Transfer Syntaxes

Transfer Syntax	UID
DICOM Implicit VR Little Endian Transfer Syntax	1.2.840.10008.1.2

Table 16 MPPS N-SET Presentation Contexts

Abstract Syntax		Transfer Syntax	Role	Extended Negotiation
SOP Class	SOP Class UID			
Modality Performed Procedure Step SOP class	1.2.840.10008.3.1.2.3.3	all from Table 15	SCU	None

(3) SOP Specific Conformance

DAR-9500f provides following table describes the supported attributes of a N-SET message.

Table 17 Performed Procedure Step N-SET Attributes

Tag	VR	Attribute Name	Value of N-SET
SOP Common Module			
(0008,0005)	CS	Specific Character Set	See Table24
Performed Procedure Step Relationship Module			
(0008,1120)	SQ	Referenced Patient Sequence	N.A.
(0010,0010)	PN	Patient's Name	N.A.
(0010,0020)	LO	Patient ID	N.A.
(0010,0030)	DA	Patient's Birth Date	N.A.
(0010,0040)	CS	Patient's Sex	N.A.
(0040,0270)	SQ	Scheduled Step Attributes Sequence	N.A.
>(0008,0050)	SH	Accession Number	N.A.
>(0008,1110)	SQ	Referenced Study Sequence	N.A.
>(0020,000D)	UI	Study Instance UID	N.A.
>(0032,1060)	LO	Requested Procedure Description	N.A.
>(0040,0007)	LO	Scheduled Procedure Step Description	N.A.
>(0040,0008)	SQ	Scheduled Protocol Code Sequence	N.A.
>(0040,0009)	SH	Scheduled Procedure Step ID	N.A.
>(0040,1001)	SH	Requested Procedure ID	N.A.
Performed Procedure Step Information Module			
(0040,0241)	AE	Performed Station AE Title	N.A.
(0040,0242)	SH	Performed Station Name	N.A.
(0040,0243)	SH	Performed Location	Zero length
(0040,0244)	DA	Performed Procedure Step Start Time	N.A.
(0040,0245)	TM	Performed Procedure Step Start Time	N.A.
(0040,0250)	DA	Performed Procedure Step End Date	Actual end date
(0040,0251)	TM	Performed Procedure Step End Time	Actual end time
(0040,0252)	CS	Performed Procedure Step Status	DISCONTINUED or COMPLETED
(0040,0253)	SH	Performed Procedure Step ID	N.A.
(0040,0254)	LO	Performed Procedure Step Description	Zero length
(0040,0255)	LO	Performed Procedure Type Description	Zero length
(0008,1032)	SQ	Procedure Code Sequence	From Modality Worklist
>(0008,0100)	SH	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0040,0281)	SQ	Performed Procedure Step Discontinuation Reason Code Sequence	Zero length only if (0040,0252) Performed Procedure Step Status is "COMPLETED". If Status is "DISCONTINUED", this sequence is sent.

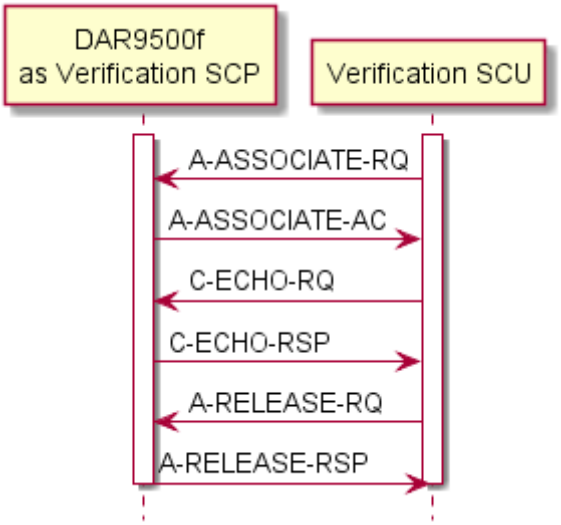
Tag	VR	Attribute Name	Value of N-SET
Image Acquisition Results Module			
(0008,0060)	CS	Modality	N.A.
(0020,0010)	SH	Study ID	N.A.
(0040,0260)	SQ	Performed Protocol Code Sequence	Zero or more items
>(0008,0100)	SH	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0040,0340)	SQ	Performed Series Sequence	One or more items
>(0008,0054)	AE	Retrieve AE Title	An appropriate value will be sent
>(0008,103E)	LO	Series Description	An appropriate value will be sent
>(0008,1050)	PN	Performing Physician's Name	An appropriate value will be sent
>(0008,1070)	PN	Operator's Name	Zero length
>(0008,1140)	SQ	Referenced Image Sequence	One or more items.
>>(0008,1150)	UI	Referenced SOP Class UID	
>>(0008,1155)	UI	Referenced SOP Instance UID	
>(0018,1030)	LO	Protocol Name	An appropriate value will be sent
>(0020,000E)	UI	Series Instance UID	An appropriate value will be sent
>(0040,0220)	SQ	Referenced Standalone SOP Instance Seq.	Zero length
Radiation Dose Module(if configured)			
(0008,2229)	SQ	Anatomic Structure, Space or Region Sequence	One or more items
>(0008,0100)	SH	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0018,115E)	DS	Image and Fluoroscopy Area Dose Product	Actual image area dose product
(0040,0300)	US	Total Time of Fluoroscopy	Actual total time of fluoroscopy
(0040,0301)	US	Total Number of Exposures	Actual total number of exposures
(0040,0302)	US	Entrance Dose	Actual entrance Dose in dGy
(0040,030E)	SQ	Exposure Dose Sequence	One or more items
>(0018,0060)	DS	KVp	Peak kilo voltage output of the x-ray generator
>(0018,1150)	IS	Exposure Time	The time of X-Ray exposure
>(0018,115A)	CS	Radiation Mode	Specified X-Ray radiation mode
>(0018,1160)	SH	Filter Type	Type of filter(s)
>(0018,7050)	CS	Filter Material	The X-Ray absorbing material used in the filter
>(0018,8151)	DS	X-Ray Tube Current in μA	X-Ray tube current in μA
>(0040,0310)	ST	Comments on Radiation Dose	User-defined comments on any special conditions
(0040,0310)	ST	Comments on Radiation Dose	
(0040,8302)	DS	Entrance Dose in mGy	Actual entrance Dose in mGy

3.1.3. Association Acceptance Policy

3.1.3.1. Real World Activity – Verification as SCP

(1) Description and Sequencing of Activities

When DAR9500f as Verification SCP accepts an association, it will respond to a verification request (C-ECHO).



(2) Presentation context Table

DAR-9500f supports the transfer syntaxes listed in Table 18. For a **C-ECHO** request, *DAR-9500f* supports the Presentation Contexts listed inTable 18.

Table 18 Presentation Contexts

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
Verification	1.2.840.10008.1.1	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None

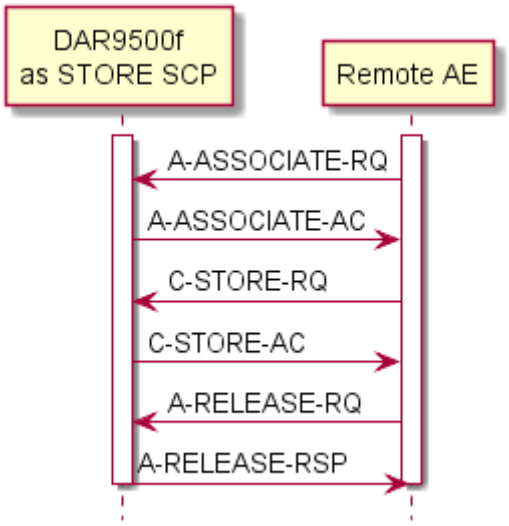
(3) SOP Specific conformance

DAR-9500f provides the standard conformance to the Verification SOP class.

3.1.3.2. Real World Activity-Store Received Images and Dose Information

(1) Description and Sequencing of Activities

DAR-9500f will archive images that are sent from a Remote AE as C-STORE SCU. This sequence may be initiated as C-MOVE sub-operation from a Q/R SCP.



(2) Presentation Context Table

DAR-9500f supports the following transfer syntaxes listed in Table 19.

Table 19 Storage Transfer Syntaxes

Abstract Syntax		Transfer Syntax		Role	Extended Negotiation
SOP Class	**SOP Class UID**	**Name List**	**UID List**		
X-ray Angiographic 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		
		JPEG Lossless, hierarchical, first order prediction	1.2.840.10008.1.2.4.70		
Secondary Capture 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		
		JPEG Lossless, hierarchical, first order prediction	1.2.840.10008.1.2.4.70		
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
Multiframe Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2	Implicit VR Little Endian	1.2.840.10008.1.2	SCP	None
		JPEG Lossless, hierarchical, first order prediction	1.2.840.10008.1.2.4.70		

DAR-9500f returns one of the following status codes (Table 20).

Table 20 Storage status codes

Service Status	Further Meaning	Protocol Codes	Related Fields	Description
Refused	Out of resources	A700		Indicates that there was not enough storage space to store the image. Recovery from this condition is left to the administrative functions available in *DAR-9500f*.
Success	Success	0000		Operation performed properly.

(3) Presentation Context Acceptance Criterion – Store Received Images

DAR-9500f will accept any number of **Storage** Presentation Contexts per association request. Any one Abstract Syntax may be specified more than once in an association request, if the Transfer Syntaxes differ between the Presentation Contexts.

The acceptable Presentation Contexts which *DAR-9500f* may accept are specified in Table 19.

DAR-9500f will examine proposed Presentation Contexts in the order proposed. The first acceptable Presentation Context (other than Verification) determines the Abstract Syntax which will be used for the association.

3.2. DAR-9500f Storage Media Application Profile Conformance Statement

***DAR-9500f* Media Storage AE conforms to following application profiles.**

Table 21 Supported Application Profile

Supported APS	Real World Activity	Role	SC Option
DAR-9500f	Read CD-R / DVD-R	FSR	Interchange
	Write CD-R / DVD-R	FSC	Interchange

3.2.1. Real World Activity – Read CD / DVD

The *DAR-9500f* acts as a DICOM FSR with Interchange Service Class Option for images of SOP class in **Table 22**.

Table 22 Supported SOP classes as FSR

SOP Class	SOP Class UID
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
Secondary Capture Image storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67

3.2.1.1. Media Storage Application Profile

Read CD-R/DVD-R applies the following profile.

Table 23 Supported Application Profile for Read CD-R

Supported APS	Real World Activity	Role	SC Option
DAR-9500f	Read CD-R / DVD-R	FSR	Interchange

3.2.2. Real World Activity – Write CD

The *DAR-9500f* acts as a DICOM FSC with Interchange Service Class Option for images of SOP class in **Table 24**.

Table 24 Supported SOP classes as FSC

SOP Class	SOP Class UID
X-ray Angiographic Image Storage	1.2.840.10008.5.1.4.1.1.12.1
Secondary Capture Image storage	1.2.840.10008.5.1.4.1.1.7
Multi-frame Grayscale Byte Secondary Capture Image Storage	1.2.840.10008.5.1.4.1.1.7.2
X-Ray Radiation Dose SR	1.2.840.10008.5.1.4.1.1.88.67

3.2.2.1. Media Storage Application Profile

Write CD-R / DVD-R applies the following profile

Table 25 Supported Application Profile for Write CD-R/DVD-R

Supported APS	Real World Activity	Role	SC Option
DAR-9500f	Write CD-R / DVD-R	FSC	Interchange

4. Communication Profiles

DAR-9500f provides DICOM V3.0 TCP/IP Network Communication Support as defined in Part 8 of the DICOM standard.

4.1. TCP/IP Stack

DAR-9500f inherits its TCP/IP stack from the computer upon which it executes.

4.1.1. Physical Media Support

DAR-9500f is indifferent to the physical medium over which TCP/IP executes; it inherits the medium from the system upon which it executes.

4.2. Extensions/Specialization/Privatization

NA

4.3. Configuration

4.3.1. AE Title/Presentation Address Mapping

DAR-9500f maps the Application Entity titles to host name and port number via an internal configuration method. The mapping can be accessed in the configuration menu under the Database tab. Only a privileged user can change the mapping.

4.3.2. Parameters

DAR-9500f receives its configuration parameters from the user trough the AE's GUI.
Configurable parameters are:

① Local/remote application entity title
② Local/remote host IP address
③ Local/remote TCP/IP port
④ MAX PDU size
⑤ Time out for association
⑥ Destination of transfer (Paramter for multi destinations)
⑦ Image type to send between original image and subtracted image in sending DSA image

⑥ and ⑦ is used only for Multi-Destination Function on Score Workstation.

5. Support for Extended Character Sets

DAR-9500f is known to support the following character sets:

Table 26 Supported Character Sets

Character Set Description	Defined Term
Basic G0 Set	ISO-IR 6
Latin Alphabet No. 1	ISO-IR 100 (default)
Japanese	ISO-IR 87

6. Information Object Definitions

DICOM tags in each image are listed as follows.

6.1. X-ray Angiographic Image

6.1.1. Patient Module

Tag	VR	Type	Attribute Name	Remarks
(0010,0010)	PN	2	Patient's Name	
(0010,0020)	LO	2	Patient ID	
(0010,0030)	DA	2	Patient's Birth Date	
(0010,0040)	CS	2	Patient's Sex	

6.1.2. General Study Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0020)	DA	2	Study Date	
(0008,0030)	TM	2	Study Time	
(0008,0050)	SH	2	Accession Number	
(0008,0090)	PN	2	Referring Physician's Name	
(0008,1030)	LO	3	Study Description	
(0008,1032)	SQ	3	Procedure Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1C	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0020,000D)	UI	1	Study Instance UID	
(0020,0010)	SH	2	Study ID	

6.1.3. Patient Study Module

Tag	VR	Type	Attribute Name	Remarks
(0010,1010)	AS	3	Patient's Age	
(0010,1020)	DS	3	Patient's Size	
(0010,1030)	DS	3	Patient's Weight	

6.1.4. General Series Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0060)	CS	1	Modality	
(0020,000E)	UI	1	Series Instance UID	
(0020,0011)	IS	2	Series Number	
(0020,0060)	CS	2C	Laterality	input via L or R marker annotation, else absent
(0008,0021)	DA	3	Series Date	
(0008,0031)	TM	3	Series Time	
(0008,103E)	LO	3	Series Description	
(0008,1050)	PN	3	Performing Physician's Name	
(0008,1070)	PN	3	Operator's Name	
(0008,1111)	SQ	2	Referenced Performed Procedure Step Sequence	Present if MPPS is on.
>(0008,1150)	UI	1	Referenced SOP Class UID	Present if MPPS is on.
>(0008,1155)	UI	1	Referenced SOP Instance UID	Present if MPPS is on.
(0018,0015)	CS	3	Body Part Examined	
(0018,1030)	LO	3	Protocol Name	Present if MPPS is on.
(0018,5100)	CS	2C	Patient Position	
(0040,0244)	DA	3	Performed Procedure Step Start Date	Present if MPPS is on.
(0040,0245)	TM	3	Performed Procedure Step Start Time	Present if MPPS is on.
(0040,0253)	SH	3	Performed Procedure Step ID	Present if MPPS is on.
(0040,0254)	LO	3	Performed Procedure Step Description	Present if MPPS is on.
(0040,0260)	SQ	3	Performed Protocol Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1C	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0040,0275)	SQ	3	Request Attributes Sequence	Present if MPPS is on.
>(0010,2000)	LO	3	Medical Alerts	Present if MPPS is on.
>(0032,1060)	LO	3	Requested Procedure Description	Present if MPPS is on.
>(0040,0007)	LO	3	Scheduled Procedure Step Description	Present if MPPS is on.
>(0040,0008)	SQ	3	Scheduled Protocol Code Sequence	Present if MPPS is on.
>>(0080,0100)	SH	1C	Code Value	Present if MPPS is on.
>>(0008,0102)	SH	1C	Coding Scheme Designator	Present if MPPS is on.
>>(0008,0103)	SH	1C	Coding Scheme Version	Present if MPPS is on.
>>(0008,0104)	LO	1C	Code Meaning	Present if MPPS is on.
>(0040,0009)	SH	1C	Scheduled Procedure Step ID	Present if MPPS is on.
>(0040,1001)	SH	1C	Requested Procedure ID	Present if MPPS is on.

6.1.5. General Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0070)	LO	2	Manufacturer	
(0008,0080)	LO	3	Institution Name	
(0008,0081)	ST	3	Institution Address	
(0008,1010)	SH	3	Station Name	
(0008,1040)	LO	3	Institutional Department Name	
(0018,1020)	LO	3	Software Version(s)	
(0008,1090)	LO	3	Manufacturer's Model Name	
(0018,1000)	LO	3	Device Serial Number	

6.1.6. Contrast/Bolus Module

Tag	VR	Type	Attribute Name	Remarks
(0018,0010)	LO	2	Contrast/Bolus Agent	
(0018,1042)	TM	3	Contrast/Bolus Start Time	

6.1.7. Cine Module

Tag	VR	Type	Attribute Name	Remarks
(0018,1065)	DS	1C	Frame Time Vector	Not available on reference image.
(0008,2144)	IS	3	Recommended Display Frame Rate	Not available on reference image.
(0018,0040)	IS	3	Cine Rate	Only Fluoro image

6.1.8. Multi-Frame Module

Tag		VR	Type	Attribute Name	Remarks
(0028,0008)		IS	1	Number of Frames	Not available on reference image.
(0028,0009)		AT	1	Frame Increment Pointer	Not available on reference image.

6.1.9. Frame Pointers Module

Tag	VR	Type	Attribute Name	Remarks
(0028,6010)	US	3	Representative Frame Number	Not available on reference image.

6.1.10. Mask Module

(This module is available only if the image is DSA.)

Tag	VR	Type	Attribute Name	Remarks
(0028,6100)	SQ	1	Mask Subtraction Sequence	Present in original DICOM file, not in processed DICOM file
>(0028,6101)	CS	1	Mask Operation	Present in original DICOM file, not in processed DICOM file
>(0028,6110)	US	1C	Mask Frame Numbers	Present in original DICOM file, not in processed DICOM file
>(0028,6112)	US	3	Contrast Frame Averaging	Present in original DICOM file, not in processed DICOM file
>(0028,6114)	FL	3	Mask Sub-pixel Shift	Present in original DICOM file, not in processed DICOM file
>(0028,6190)	ST	3	Mask Operation Explanation	Present in original DICOM file, not in processed DICOM file
(0028,1090)	CS	2	Recommended Viewing Mode	Present in original DICOM file, not in processed DICOM file

6.1.11. Display Shutter Module

Tag	VR	Type	Attribute Name	Remarks
(0018,1600)	CS	1	Shutter Shape	Not present if it is a StentView loop or StentShot.
(0018,1602)	IS	1C	Shutter Left Vertical Edge	Not present if it is a StentView loop or StentShot.
(0018,1604)	IS	1C	Shutter Right Vertical Edge	Not present if it is a StentView loop or StentShot.
(0018,1606)	IS	1C	Shutter Upper Horizontal Edge	Not present if it is a StentView loop or StentShot.
(0018,1608)	IS	1C	Shutter Lower Horizontal Edge	Not present if it is a StentView loop or StentShot.
(0018,1622)	US	3	Shutter Presentation Value	Not present if it is a StentView loop or StentShot.

6.1.12. General Image Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0022)	DA	3	Acquisition Date	
(0008,0023)	DA	2C	Content Date	
(0008,0032)	TM	3	Acquisition Time	
(0008,0033)	TM	2C	Content Time	

(0020,0013)	IS	2	Instance Number	
(0020,0020)	CS	2C	Patient Orientation	
(0020,4000)	LT	3	Image Comments	

6.1.13. General Reference Module

Tag	VR	Type	Attribute Name	Remarks
(0008,2112)	SQ	3	Source Image Sequence	This tag is present in processed DICOM file but not in original DICOM file.
>(0008,1150)	UI	1	Referenced SOP Class UID	
>(0008,1155)	UI	1	Referenced SOP Instance UID	
>(0008,1160)	IS	1C	Referenced Frame Number	Present for reference image only.

6.1.14. Image Pixel Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0010)	US	1	Rows	
(0028,0011)	US	1	Columns	
(7FE0,0010)	OW	1	Pixel Data	

6.1.15. X-ray Image Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0008)	CS	1	Image Type	"ORIGINAL\PRIMARY\SINGLE PLANE " for original image. "ORIGINAL\SECONDARY\SINGLE PLANE " for reference image. "DERIVED\SECONDARY\SINGLE PLANE " for processed image. "DERIVED\PRIMARY\SINGLE PLANE " for stitching image.
(0008,1140)	SQ	1C	Referenced Image Sequence	Available on Bi-plane image.
>(0008,1150)	UI	3	Referenced SOP Class UID	Available on Bi-plane image.
>(0008,1155)	UI	3	Referenced SOP Instance UID	Available on Bi-plane image.
(0008,2111)	ST	3	Derication Description	“STITCHING” for stitching image. "ENHANCED" for processed DA , "SUBTRACTED" for DSA, "STITCHING ENHANCED" for DA stitching Result
(0028,0002)	US	1	Samples per Pixel	
(0028,0004)	CS	1	Photometric Interpretation	Value is "MONOCHROME2 "
(0028,0100)	US	1	Bits Allocated	
(0028,0101)	US	1	Bits Stored	
(0028,0102)	US	1	High Bit	
(0028,0103)	US	1	Pixel Representation	
(0028,1040)	CS	1	Pixel Intensity Relationship	

6.1.16. Curve Module

Tag	VR	Type	Attribute Name	Remarks
(500x,0005)	US	1	Curve Dimensions	Available when ECG is connected.
(500x,0010)	US	1	Number of Points	Available when ECG is connected.
(500x,0020)	CS	1	Type of Data	Available when ECG is connected.
(500x,0103)	US	1	Data Value Representation	Available when ECG is connected.
(500x,3000)	OW	1	Curve Data	Available when ECG is connected.
(500x,0110)	US	1C	Curve Data Descriptor	Available when ECG is connected.
(500x,0112)	US	1C	Coordinate Start Value	Available when ECG is connected.
(500x,0114)	US	1C	Coordinate Step Value	Available when ECG is connected.
(500x,0022)	LO	3	Curve Description	Available when ECG is connected.
(500x,0030)	SH	3	Axis Units	Available when ECG is connected.
(500x,2500)	LO	3	Curve Label	Available when ECG is connected.

6.1.17. X-Ray Acquisition Module

Tag	VR	Type	Attribute Name	Remarks
(0018,0060)	DS	2	KVP	
(0018,1147)	CS	3	Field of View Shape	
(0018,1149)	IS	3	Field of View Dimension(s)	
(0018,1150)	IS	2C	Exposure Time	
(0018,1151)	IS	2C	X-Ray Tube Current	
(0018,1152)	IS	2C	Exposure	
(0018,1154)	DS	3	Average Pulse Width	
(0018,1155)	CS	1	Radiation Setting	
(0018,115A)	CS	3	Radiation Mode	
(0018,115E)	DS	3	Image Area Dose Product	Available when dosimeter is connected.
(0018,1164)	DS	3	Image Pixel Spacing	
(0018,1166)	CS	3	Grid	
(0018,1190)	DS	3	Focal Spot(s)	
(0018,8150)	DS	3	Exposure Time (us)	Not present in reference image.
(0018,8151)	DS	3	X-Ray Tube Current in uA	Not present in reference image.
(0028,0030)	DS	1C	Pixel Spacing	
(0028,0A02)	CS	3	Pixel Spacing Calibration Type	
(0028,0A04)	LO	1C	Pixel Spacing Calibration Description	Not present if it is a StentView loop or StentShot.

6.1.18. X-ray Collimator Module

Tag	VR	Type	Attribute Name	Remarks
(0018,1700)	CS	1	Collimator Shape	
(0018,1702)	IS	1C	Collimator Left Vertical Edge	Present if Collimator's edges are not all opened at 100%
(0018,1704)	IS	1C	Collimator Right Vertical Edge	Present if Collimator's edges are not all opened at 100%
(0018,1706)	IS	1C	Collimator Upper Horizontal Edge	Present if Collimator's edges are not all opened at 100%
(0018,1708)	IS	1C	Collimator Lower Horizontal Edge	Present if Collimator's edges are not all opened at 100%
(0018,1720)	IS	1C	Vertices of the Polygonal Collimator	

6.1.19. X-ray Table Module

Tag	VR	Type	Attribute Name	Remarks
(0018,1134)	CS	2	Table Motion	Not present in reference image.
(0018,1135)	DS	2C	Table Vertical Increment	Not present in reference image.
(0018,1136)	DS	2C	Table Lateral Increment	Not present in reference image.
(0018,1137)	DS	2C	Table Longitudinal Increment	Not present in reference image.
(0018,1138)	DS	3	Table Angle	Not present in reference image.

6.1.20. XA Positioner Module

Tag	VR	Type	Attribute Name	Remarks
(0018,1110)	DS	3	Distance Source to Detector	
(0018,1111)	DS	3	Distance Source to Patient	
(0018,1114)	DS	3	Estimated Radiographic Magnification Factor	
(0018,1500)	CS	2C	Positioner Motion	
(0018,1510)	DS	2	Positioner Primary Angle	
(0018,1511)	DS	2	Positioner Secondary Angle	
(0018,1520)	DS	2C	Positioner Primary Angle Increment	Available on 3D and rotational image.
(0018,1521)	DS	2C	Positioner Secondary Angle Increment	Available on 3D and rotational image.
(0018,1530)	DS	3	Detector Primary Angle	
(0018,1531)	DS	3	Detector Secondary Angle	

6.1.21. SOP Common Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0005)	CS	1C	Specific Character Set	
(0008,0016)	UI	1	SOP Class UID	
(0008,0018)	UI	1	SOP Instance UID	
(0008,0012)	DA	3	Instance Creation Date	
(0008,0013)	TM	3	Instance Creation Time	

6.1.22. VOI LUT Module

Tag	VR	Type	Attribute Name	Remarks
(0028,1051)	DS	1C	Window Width	
(0028,1050)	DS	3	Window Center	

6.1.23. Additional Attributes Module

Tag	VR	Type	Attribute Name	Remarks
(0008,1160)	IS	3	Referenced Frame Number	Available on reference image.
(0018,1161)	SH	3	Type of Filters	

6.2. Secondary Capture Image

6.2.1. Patient Module

Tag	VR	Type	Attribute Name	Remarks
(0010,0010)	PN	2	Patient's Name	
(0010,0020)	LO	2	Patient ID	
(0010,0030)	DA	2	Patient's Birth Date	
(0010,0040)	CS	2	Patient's Sex	

6.2.2. General Study Module

Tag	VR	Type	Attribute Name	Remarks
(0020,000D)	UI	1	Study Instance UID	
(0008,0020)	DA	2	Study Date	
(0008,0030)	TM	2	Study Time	
(0008,0050)	SH	2	Accession Number	
(0008,0090)	PN	2	Referring Physician's Name	
(0020,0010)	SH	2	Study ID	
(0008,1030)	LO	3	Study Description	
(0008,1032)	SQ	3	Procedure Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1C	Code Meaning	An appropriate value will be sent if Sequence Item is present.

6.2.3. Patient Study Module

Tag	VR	Type	Attribute Name	Remarks
(0010,1010)	AS	3	Patient's Age	
(0010,1020)	DS	3	Patient's Size	
(0010,1030)	DS	3	Patient's Weight	

6.2.4. General Series Module

Tag	VR	Type	Attribute Name	Remarks
(0020,000E)	UI	1	Series Instance UID	
(0020,0011)	IS	2	Series Number	
(0020,0060)	CS	2C	Laterality	
(0008,0021)	DA	3	Series Date	
(0008,0031)	TM	3	Series Time	
(0008,0060)	CS	1	Modality	Value is “XA”
(0008,103E)	LO	3	Series Description	
(0008,1050)	PN	3	Performing Physician’s Name	
(0008,1070)	PN	3	Operators’ Name	
(0008,1111)	SQ	2	Referenced Performed Procedure Step Sequence	Present if MPPS is on.
>(0008,1150)	UI	1	Referenced SOP Class UID	Present if MPPS is on.
>(0008,1155)	UI	1	Referenced SOP Instance UID	Present if MPPS is on.
(0018,0015)	CS	3	Body Part Examined	
(0018,1030)	LO	3	Protocol Name	Present if MPPS is on.
(0018,5100)	CS	2C	Patient Position	
(0040,0244)	DA	3	Performed Procedure Step Start Date	Present if MPPS is on.
(0040,0245)	TM	3	Performed Procedure Step Start Time	Present if MPPS is on.
(0040,0253)	SH	3	Performed Procedure Step ID	Present if MPPS is on.
(0040,0254)	LO	3	Performed Procedure Step Description	Present if MPPS is on.
(0040,0260)	SQ	3	Performed Protocol Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1C	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0040,0275)	SQ	3	Request Attributes Sequence	Present if MPPS is on.
>(0010,2000)	LO	3	Medical Alerts	Present if MPPS is on.
>(0032,1060)	LO	3	Requested Procedure Description	Present if MPPS is on.
>(0040,0007)	LO	3	Scheduled Procedure Step Description	Present if MPPS is on.
>(0040,0008)	SQ	3	Scheduled Protocol Code Sequence	Present if MPPS is on.
>>(0080,0100)	SH	1C	Code Value	Present if MPPS is on.
>>(0008,0102)	SH	1C	Coding Scheme Designator	Present if MPPS is on.
>>(0008,0103)	SH	1C	Coding Scheme Version	Present if MPPS is on.
>>(0008,0104)	LO	1C	Code Meaning	Present if MPPS is on.
>(0040,0009)	SH	1C	Scheduled Procedure Step ID	Present if MPPS is on.
>(0040,1001)	SH	1C	Requested Procedure ID	Present if MPPS is on.

6.2.5. General Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0070)	LO	2	Manufacturer	
(0008,0080)	LO	3	Institution Name	
(0008,0081)	ST	3	Institution Address	
(0008,1010)	SH	3	Station Name	
(0008,1040)	LO	3	Institutional Department Name	
(0008,1090)	LO	3	Manufacturer's Model Name	
(0018,1020)	LO	3	Software Version(s)	
(0018,1000)	LO	3	Device Serial Number	

6.2.6. SC Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0064)	CS	1	Conversion Type	Value is “WSD”

6.2.7. General Image Module

Tag	VR	Type	Attribute Name	Remarks
(0020,0013)	IS	2	Instance Number	
(0008,0023)	DA	2C	Content Date	
(0008,0033)	TM	2C	Content Time	
(0020,0020)	CS	2C	Patient Orientation	
(0008,0008)	CS	3	Image Type	"DERIVED\SECONDARY\ SINGLE PLANE"
(0008,0022)	DA	3	Acquisition Date	
(0008,0032)	TM	3	Acquisition Time	
(0020,4000)	LT	3	Image Comments	
(0008,2112)	SQ	3	Source Image Sequence	
>(0008,1150)	UI	1C	Referenced SOP Class UID	
>(0008,1155)	UI	1C	Referenced SOP Instance UID	
>(0008,1160)	IS	1C	Referenced Frame Number	

6.2.8. General Reference Module

Tag	VR	Type	Attribute Name	Remarks
(0008,2111)	ST	3	Derivation Description	“ANNOTATED”
(0008,2112)	SQ	3	Source Image Sequence	
>(0008,1150)	UI	1	Referenced SOP Class UID	
>(0008,1155)	UI	1	Referenced SOP Instance UID	
>(0008,1160)	IS	1C	Referenced Frame Number	

6.2.9. Image Pixel Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0002)	US	1	Samples per Pixel	
(0028,0004)	CS	1	Photometric Interpretation	
(0028,0010)	US	1	Rows	

(0028,0011)	US	1	Columns	
(0028,0100)	US	1	Bits Allocated	
(0028,0101)	US	1	Bits Stored	
(0028,0102)	US	1	High Bit	
(0028,0103)	US	1	Pixel Representation	
(7FE0,0010)	OW	1	Pixel Data	

6.2.10. SC Image Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0030)	DS	1C	Pixel Spacing	
(0028,0A02)	CS	3	Pixel Spacing Calibration Type	
(0028,0A04)	LO	1C	Pixel Spacing Calibration Description	

6.2.11. SOP Common Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0005)	CS	1C	Specific Character Set	
(0008,0016)	UI	1	SOP Class UID	
(0008,0018)	UI	1	SOP Instance UID	
(0008,0012)	DA	3	Instance Creation Date	
(0008,0013)	TM	3	Instance Creation Time	

6.2.12. VOI LUT Module

Tag	VR	Type	Attribute Name	Remarks
(0028,1051)	DS	1C	Window Width	Always present
(0028,1050)	DS	1C	Window Center	Always present

6.3. Multi-frame Grayscale Byte Secondary Capture Image Storage

6.3.1. Patient Module

Tag	VR	Type	Attribute Name	Remarks
(0010,0010)	PN	2	Patient's Name	
(0010,0020)	LO	2	Patient ID	
(0010,0030)	DA	2	Patient's Birth Date	
(0010,0040)	CS	2	Patient's Sex	

6.3.2. General Study Module

Tag	VR	Type	Attribute Name	Remarks
(0020,000D)	UI	1	Study Instance UID	
(0008,0020)	DA	2	Study Date	
(0008,0030)	TM	2	Study Time	
(0008,0050)	SH	2	Accession Number	
(0008,0090)	PN	2	Referring Physician's Name	
(0020,0010)	SH	2	Study ID	
(0008,1030)	LO	3	Study Description	
(0008,1032)	SQ	3	Procedure Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1C	Code Meaning	An appropriate value will be sent if Sequence Item is present.

6.3.3. Patient Study Module

Tag	VR	Type	Attribute Name	Remarks
(0010,1010)	AS	3	Patient's Age	
(0010,1020)	DS	3	Patient's Size	
(0010,1030)	DS	3	Patient's Weight	

6.3.4. General Series Module

Tag	VR	Type	Attribute Name	Remarks
(0020,000E)	UI	1	Series Instance UID	
(0020,0011)	IS	2	Series Number	
(0008,0021)	DA	3	Series Date	
(0008,0031)	TM	3	Series Time	
(0008,0060)	CS	1	Modality	Value is “XA”
(0008,103E)	LO	3	Series Description	
(0018,1030)	LO	3	Protocol Name	Present if MPPS is on.
(0008,1111)	SQ	2	Referenced Performed Procedure Step Sequence	Present if MPPS is on.
>(0008,1150)	UI	1	Referenced SOP Class UID	Present if MPPS is on.
>(0008,1155)	UI	1	Referenced SOP Instance UID	Present if MPPS is on.
(0018,0015)	CS	3	Body Part Examined	
(0018,5100)	CS	2C	Patient Position	
(0040,0244)	DA	3	Performed Procedure Step Start Date	Present if MPPS is on.
(0040,0245)	TM	3	Performed Procedure Step Start Time	Present if MPPS is on.
(0040,0253)	SH	3	Performed Procedure Step ID	Present if MPPS is on.
(0040,0254)	LO	3	Performed Procedure Step Description	Present if MPPS is on.
(0040,0260)	SQ	3	Performed Protocol Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1C	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0040,0275)	SQ	3	Request Attributes Sequence	Present if MPPS is on.
>(0010,2000)	LO	3	Medical Alerts	Present if MPPS is on.
>(0032,1060)	LO	3	Requested Procedure Description	Present if MPPS is on.
>(0040,0007)	LO	3	Scheduled Procedure Step Description	Present if MPPS is on.
>(0040,0008)	SQ	3	Scheduled Protocol Code Sequence	Present if MPPS is on.
>>(0080,0100)	SH	1C	Code Value	Present if MPPS is on.
>>(0008,0102)	SH	1C	Coding Scheme Designator	Present if MPPS is on.
>>(0008,0103)	SH	1C	Coding Scheme Version	Present if MPPS is on.
>>(0008,0104)	LO	1C	Code Meaning	Present if MPPS is on.
>(0040,0009)	SH	1C	Scheduled Procedure Step ID	Present if MPPS is on.
>(0040,1001)	SH	1C	Requested Procedure ID	Present if MPPS is on.

6.3.5. General Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0070)	LO	2	Manufacturer	
(0008,0080)	LO	3	Institution Name	
(0008,0081)	ST	3	Institution Address	
(0008,1010)	SH	3	Station Name	
(0008,1040)	LO	3	Institutional Department Name	
(0008,1090)	LO	3	Manufacturer's Model Name	
(0018,1020)	LO	3	Software Version(s)	
(0018,1000)	LO	3	Device Serial Number	

6.3.6. SC Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0064)	CS	1	Conversion Type	Values is “WSD”.

6.3.7. General Image Module

Tag	VR	Type	Attribute Name	Remarks
(0020,0013)	IS	2	Instance Number	
(0008,0023)	DA	2C	Content Date	
(0008,0033)	TM	2C	Content Time	
(0020,0020)	CS	2C	Patient Orientation	
(0008,0008)	CS	3	Image Type	"DERIVED\SECONDARY\ SINGLE PLANE"

6.3.8. General Reference Module

Tag	VR	Type	Attribute Name	Remarks
(0008,2111)	ST	3	Derivation Description	“DOSE REPORT IMAGE”

6.3.9. Image Pixel Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0002)	US	1	Samples per Pixel	
(0028,0004)	CS	1	Photometric Interpretation	
(0028,0010)	US	1	Rows	
(0028,0011)	US	1	Columns	
(0028,0100)	US	1	Bits Allocated	
(0028,0101)	US	1	Bits Stored	
(0028,0102)	US	1	High Bit	
(0028,0103)	US	1	Pixel Representation	
(7FE0,0010)	OW	1	Pixel Data	

6.3.10. Multi-frame Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0008)	IS	1	Number of Frames	

6.3.11. SC Multi-frame Image Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0009)	AT	1C	Frame Increment Pointer.	Present if the Dose Report Image include all exposure information.
(0028,0301)	CS	1	Burned In Annotation	
(0028,1052)	DS	1C	Rescale Intercept	Always value is “0”
(0028,1053)	DS	1C	Rescale Slope	Always value is “1”
(0028,1054)	LO	1C	Rescale Type	Always value is “US”
(2050,0020)	CS	1C	Presentation LUT Shape.	Always value is “IDENTITY”

6.3.12. SC Multi-frame Vector Module

Tag	VR	Type	Attribute Name	Remarks
(0018,2001)	IS	1C	Page Number Vector	Present if the Dose Report Image include all exposure information.

6.3.13. SOP Common Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0005)	CS	1C	Specific Character Set	
(0008,0016)	UI	1	SOP Class UID	
(0008,0018)	UI	1	SOP Instance UID	
(0008,0012)	DA	3	Instance Creation Date	
(0008,0013)	TM	3	Instance Creation Time	

6.3.14. VOI LUT Module

Tag	VR	Type	Attribute Name	Remarks
(0028,1051)	DS	1C	Window Width	
(0028,1050)	DS	3	Window Center	

6.4. Multi-frame True Color Secondary Capture Image Storage

6.4.1. Patient Module

Tag	VR	Type	Attribute Name	Remarks
(0010,0010)	PN	2	Patient's Name	
(0010,0020)	LO	2	Patient ID	
(0010,0030)	DA	2	Patient's Birth Date	
(0010,0040)	CS	2	Patient's Sex	

6.4.2. General Study Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0020)	DA	2	Study Date	
(0008,0030)	TM	2	Study Time	
(0008,0050)	SH	2	Accession Number	
(0008,0090)	PN	2	Referring Physician's Name	
(0020,0010)	SH	2	Study ID	
(0008,1030)	LO	3	Study Description	
(0008,1032)	SQ	3	Procedure Code Sequence	Present if MPPS is on.
>(0008,0100)	SH	1C	Code Value	An appropriate value will be sent if Sequence Item is present.
>(0008,0102)	SH	1C	Coding Scheme Designator	An appropriate value will be sent if Sequence Item is present.
>(0008,0103)	SH	1C	Coding Scheme Version	An appropriate value will be sent if Sequence Item is present.
>(0008,0104)	LO	1	Code Meaning	An appropriate value will be sent if Sequence Item is present.
(0020,000D)	UI	1	Study Instance UID	

6.4.3. Patient Study Module

Tag	VR	Type	Attribute Name	Remarks
(0010,1010)	AS	3	Patient's Age	
(0010,1020)	DS	3	Patient's Size	
(0010,1030)	DS	3	Patient's Weight	

6.4.4. General Series Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0021)	DA	3	Series Date	
(0008,0031)	TM	3	Series Time	
(0008,0060)	CS	1	Modality	Value is “XA”
(0008,103E)	LO	3	Series Description	Value is “Score Stream Image” or “SMART Report Image”
(0008,1111)	SQ	2	Referenced Performed Procedure Step Sequence	Present if MPPS is on.
>(0008,1150)	UI	1	Referenced SOP Class UID	Present if MPPS is on.
>(0008,1155)	UI	1	Referenced SOP Instance UID	Present if MPPS is on.
(0018,1030)	LO	3	Protocol Name	Present if MPPS is on.
(0020,000E)	UI	1	Series Instance UID	
(0020,0011)	IS	2	Series Number	
(0020,0060)	CS	2C	Laterality	Always value is “”

6.4.5. General Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0070)	LO	2	Manufacturer	
(0008,0080)	LO	3	Institution Name	
(0008,0081)	ST	3	Institution Address	
(0008,1010)	SH	3	Station Name	
(0008,1040)	LO	3	Institutional Department Name	From configuration
(0008,1090)	LO	3	Manufacturer's Model Name	From configuration
(0018,1020)	LO	3	Software Version(s)	
(0018,1000)	LO	3	Device Serial Number	

6.4.6. SC Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0064)	CS	1	Conversion Type	Values is “WSD”.

6.4.7. General Image Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0008)	CS	3	Image Type	"DERIVED\SECONDARY\ SINGLE PLANE"
(0008,0023)	DA	2C	Content Date	
(0008,0033)	TM	2C	Content Time	
(0020,0013)	IS	2	Instance Number	
(0020,0020)	CS	2C	Patient Orientation	
(0020,4000)	LT	3	Image Comments	

6.4.8. General Reference Module

Tag	VR	Type	Attribute Name	Remarks
(0008,2111)	ST	3	Derivation Description	Values is “SCORE STREAM” or ”SMART REPORT”

(0008,2112)	SQ	3	Source Image Sequence	Present if the value of Derivation Description tag is “SCORE STREAM”.
>(0008,1150)	UI	1	Referenced SOP Class UID	Present if the value of Derivation Description tag is “SCORE STREAM”.
>(0008,1155)	UI	1	Referenced SOP Instance UID	Present if the value of Derivation Description tag is “SCORE STREAM”.

6.4.9. Image Pixel Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0002)	US	1	Samples per Pixel	
(0028,0004)	CS	1	Photometric Interpretation	
(0028,0006)	US	1C	Planar Configuration	0
(0028,0010)	US	1	Rows	
(0028,0011)	US	1	Columns	
(0028,0100)	US	1	Bits Allocated	
(0028,0101)	US	1	Bits Stored	
(0028,0102)	US	1	High Bit	
(0028,0103)	US	1	Pixel Representation	
(7FE0,0010)	OW	1	Pixel Data	

6.4.10. Multi-frame Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0008)	IS	1	Number of Frames	
(0028,0009)	AT	1	Frame Increment Pointer	Not available on reference image.

6.4.11. SC Multi-frame Image Module

Tag	VR	Type	Attribute Name	Remarks
(0028,0301)	CS	1	Burned In Annotation	

6.4.12. SC Multi-frame Vector Module

Tag	VR	Type	Attribute Name	Remarks
(0018,2001)	IS	1C	Page Number Vector	Present if Number of Frames is greater than 1.

6.4.13. SOP Common Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0005)	CS	1C	Specific Character Set	

(0008,0012)	DA	3	Instance Creation Date	
(0008,0013)	TM	3	Instance Creation Time	
(0008,0016)	UI	1	SOP Class UID	
(0008,0018)	UI	1	SOP Instance UID	

6.5. X-Ray Radiation Dose SR

6.5.1. Patient Module

Tag	VR	Type	Attribute Name	Remarks
(0010,0010)	PN	2	Patient's Name	
(0010,0020)	LO	2	Patient ID	
(0010,0030)	DA	2	Patient's Birth Date	
(0010,0040)	CS	2	Patient's Sex	

6.5.2. General Study Module

Tag	VR	Type	Attribute Name	Remarks
(0020,000D)	UI	1	Study Instance UID	
(0008,0020)	DA	2	Study Date	
(0008,0030)	TM	2	Study Time	
(0008,0050)	SH	2	Accession Number	
(0008,0090)	PN	2	Referring Physician's Name	
(0020,0010)	SH	2	Study ID	
(0008,1030)	LO	3	Study Description	

6.5.3. Patient Study Module

Tag	VR	Type	Attribute Name	Remarks
(0010,1010)	AS	3	Patient's Age	
(0010,1020)	DS	3	Patient's Size	
(0010,1030)	DS	3	Patient's Weight	

6.5.4. SR Document Series Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0021)	DA	3	Series Date	
(0008,0031)	TM	3	Series Time	
(0008,0060)	CS	1	Modality	Value is "SR"
(0020,000E)	UI	1	Series Instance UID	
(0020,0011)	IS	1	Series Number	
(0008,103E)	LO	3	Series Description	
(0008,1111)	SQ	2	Referenced Performed Procedure Step Sequence	
>(0008,1150)	UI	1	Referenced SOP Class UID	
>(0008,1155)	UI	1	Referenced SOP Instance UID	
(0018,1030)	LO	3	Protocol Name	Present if MPPS is on.

6.5.5. General Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0080)	LO	3	Institution Name	
(0008,0081)	ST	3	Institution Address	
(0008,1010)	SH	3	Station Name	
(0008,1040)	LO	3	Institutional Department Name	
(0018,1000)	LO	3	Device Serial Number	

6.5.6. Enhanced General Equipment Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0070)	LO	1	Manufacturer	
(0008,1090)	LO	1	Manufacturer's Model Name	If the user does not input the value of Manufacturer Model Name, the value is "DAR-9500f"
(0018,1000)	LO	1	Device Serial Number	
(0018,1020)	LO	1	Software Version(s)	

6.5.7. SR Document General Module

Tag	VR	Type	Attribute Name	Remarks
(0020,0013)	IS	2	Instance Number	
(0040,A491)	CS	1	Completion Flag	Value is "COMPLETE".
(0040,A493)	CS	1	Verification Flag	Value is "UNVERIFIED".
(0008,0023)	DA	1	Content Date	
(0008,0033)	TM	1	Content Time	
(0040,A372)	SQ	2	Performed Procedure Code Sequence	Used when producing RDSR.

6.5.8. SOP Common Module

Tag	VR	Type	Attribute Name	Remarks
(0008,0005)	CS	1C	Specific Character Set	
(0008,0016)	UI	1	SOP Class UID	
(0008,0018)	UI	1	SOP Instance UID	

6.5.9. SR Document Content Module

Tag	VR	Type	Attribute Name	Value
(0040,A040)	CS	1	Value Type	CONTAINER
(0040,A043)	SQ	1C	Concept Name Code Sequence	
>(0008,0100)	SH	1C	Code Value	113701
>(0008,0102)	SH	1C	Coding Scheme Designator	DCM
>(0008,0104)	LO	1C	Code Meaning	X-Ray Radiation Dose Report
(0040,A050)	CS	1	Continuity of Content	SEPARATE
(0040,A504)	SQ	1C	Content Template Sequence	Value corresponds with value of (0040,DB00) Template Identifier
>(0008,0105)	CS	1	Mapping Resource	DCMR
>(0040,DB00)	CS	1	Template Identifier	10001
(0040,A730)	SQ	1C	Content Sequence	
>(0040,A010)	CS	1	Relationship Type	HAS CONCEPT MOD

Recursive inclusion to create document content tree shown in Chap.6.5.10.

6.5.10. SR Document Content Descriptions

The product supports the following root Templates.

Template ID	Template Name	Remarks
10001	X-Ray Radiation Dose	

The X-Ray Radiation Dose Structured Report are interconnected as indicated Figure 6-1:

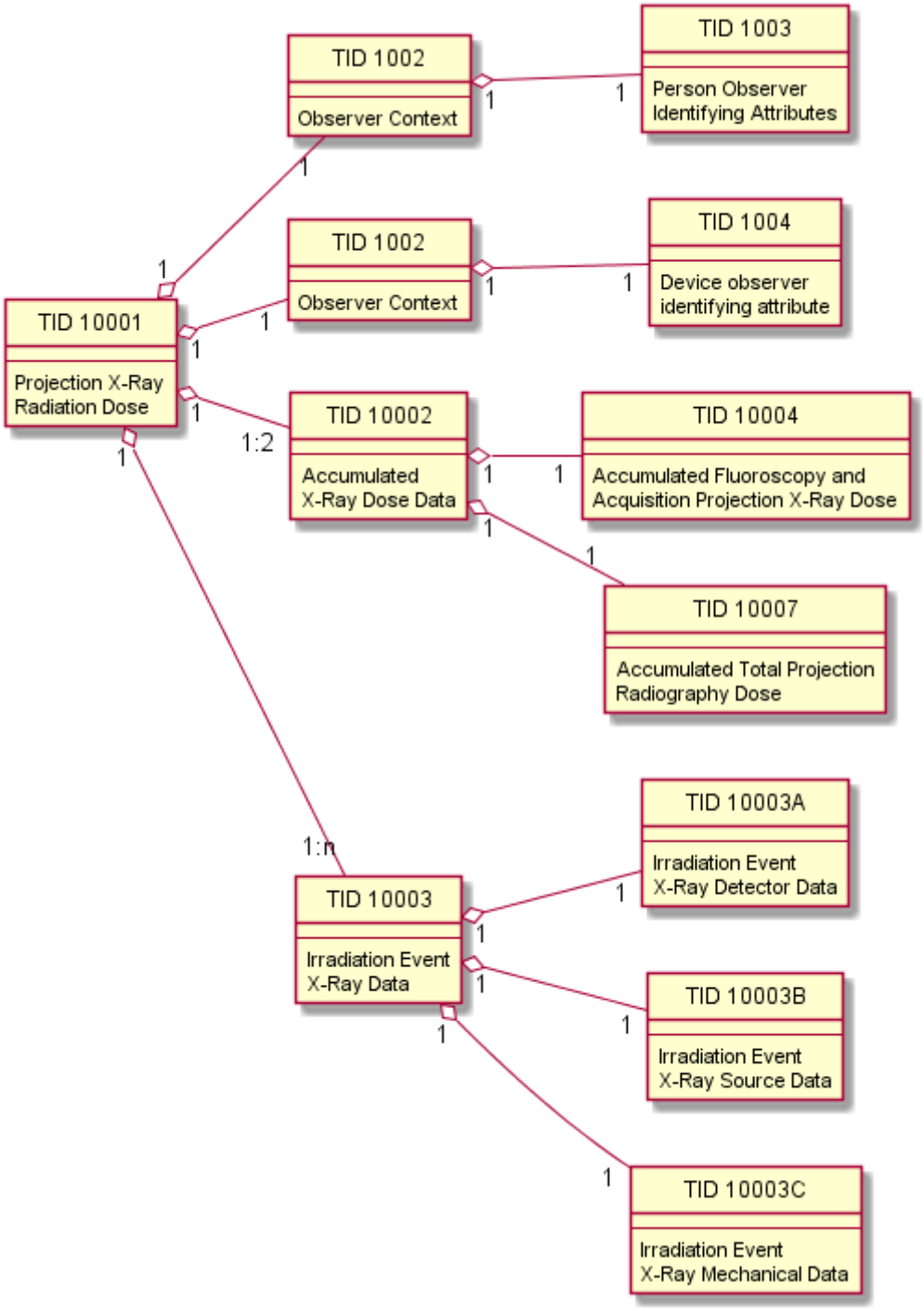


Figure 6-1 X-Ray Radiation Dose Structured Report IOD Template Structure

6.5.11. TID 10001 Projection X-Ray Radiation Dose

VT	Concept Name	VM	Value Set Constraint	Remarks
CONTAINER	EV(113701, DCM, "X-Ray Radiation Dose Report")	1		
CODE	EV(121058, DCM, "Procedure reported")	1	DT(113704, DCM, "Projection X-Ray")	
CODE	EV(363703001, SRT, "Has Intent")	1	Value= (261004008, SCT, Diagnostic Intent)	
INCLUDE	DTID(1002) Observer Context	1-n		Refer to DTID(1002).
CODE	EV(113705, DCM, "Scope of Accumulation")	1	DCID(10000) Scope of Accumulation	
UIDREF	DCID(10001) UID Types	1		
INCLUDE	DTID(10002) Accumulated X-Ray Dose	1	EV(113622, DCM, "Single Plane")	Refer to DTID(10002). For Single-plane
INCLUDE	DTID(10002) Accumulated X-Ray Dose	1	EV(113620, DCM, "Plane A")	Refer to DTID(10002). For Bi-plane Frontal
INCLUDE	DTID(10002) Accumulated X-Ray Dose	1	EV(113621, DCM, "Plane B")	Refer to DTID(10002). For Bi-plane Lateral
INCLUDE	DTID(10003) Irradiation Event X-Ray Data	1-n		
CODE	EV(113854, DCM, "Source of Dose Information")	1	DCID(10020) Source of Projection X-Ray Dose Information	(15869005, SCT, Dosimeter).

6.5.12. TID1002 Observer Context

VT	Concept Name	VM	Value Set Constraint	Remarks
HAS OBS CONTEXT	EV(121005, DCM, "Observer Type")	1	DCID(270) Observer Type	
INCLUDE	DTID(1003) Person observer identifying attributes	1		Refer to DTID (1003) DTID(1003) and DTID(1004) are alternatives. See Figure 6-1.
INCLUDE	DTID(1004) Device observer identifying attributes	1		Refer to DTID (1004) DTID(1003) and DTID(1004) are alternatives. See Figure 6-1.

6.5.13. TID 1003 Person Observer Identifying Attributes

VT	Concept Name	VM	Value Set Constraint	Remarks
PNAME	EV (121008,DCM, "Person Observer Name ")	1		
CODE	EV (121011,DCM, "Person Observer's Role in this Procedure")	1	BCID 7453 "Performing Roles"	

6.5.14. TID 1004 Device Observer Identifying Attributes

VT	Concept Name	VM	Value Set Constraint	Remarks
UIDREF	EV(121012, DCM, "Device Observer UID")	1		Implementation Class UID
TEXT	EV(121013, DCM, "Device Observer Name")	1	Defaults to value of Station Name(0008,1010) in General Equipment Module	
TEXT	EV(121014, DCM, "Device Observer Manufacturer")	1	Defaults to value of Manufacturer (0008,0070) in General Equipment Module	
TEXT	EV(121015, DCM, "Device Observer Model Name")	1	Defaults to value of Manufacturer's Model Name(0008,1090) in GeneralEquipment Module	
TEXT	EV (121016,DCM, "Device Observer Serial Number")	1	Defaults to value of DeviceSerial Number (0018,1000) in General Equipment Module	

6.5.15. TID 10002 Accumulated X-Ray Dose

VT	Concept Name	VM	Value Set Constraint	Remarks
CONTAINER	EV(113702, DCM, “Accumulated X-Ray Dose Data”)	1		
INCLUDE	EV(113764, DCM, “Acquisition Plane”)	1		Either one of the following: 113622, DCM, Single Plane 113620, DCM, “PlaneA” 113621, DCM, “PlaneB”
CONTAINER	EV(122505, DCM, “Calibration”)	1-n		
CODE	EV(113794,DCM, “Dose measurement Device”)	1	DCID(10010) Dose measurement Devices	(15869005, SCT, Dosimeter)
DATETIME	EV(113723, DCM, “Calibration Date”)	1		
NUM	EV(122322, DCM, “Calibration Factor”)	1	Units = EV(1, UCUM, “no units”)	
NUM	EV(113763, DCM, “Calibration Uncertainty”)	1	Units = EV(%, UCUM, “Percent”)	
TEXT	EV(113724, DCM, “Calibration Responsible Party”)	1		
TEXT	EV(113720, DCM, “Calibration Protocol”)	1		
INCLUDE	DTID(10004) Accumulated Fluoroscopy and Acquisition Projection X-Ray Dose	1		Refer to DTID(10004).
INCLUDE	DTID(10007) Accumulated Total Projection Radiography Dose	1		Refer to DTID(10007).

6.5.16. TID 10003 Irradiation Event X-Ray Data

VT	Concept Name	VM	Value Set Constraint	Remarks
CONTAINER	EV(113706, DCM, “Irradiation Event X-Ray Data”)	1		
CODE	EV(113764, DCM, “Acquisition Plane “)	1	DCID(10003) Equipment Plane Identification	Either one of the following: 113620, DCM, Plane A 113621, DCM, Plane B 113622, DCM, Single Plane
DATATIME	DT(111526, DCM, “DataTime Started”)	1		
CODE	EV(113721, DCM, “Irradiation Event Type”)	1	DCID(10002) Irradiation Event Type	Set as follows. In case of fluoroscopy:44491008, SCT,Fluoroscopy In case of rotational acquisition:113613, DCM,Rotational Acquisition In case of STEP acquisition:113612, DCM,Stepping Acquisition In case of other than above acquisition:113611, DCM,Stationary Acquisition
TEXT	EV(125203, DCM, “Acquisition Protocol”)	1		Set DUP name during acquisition.
UIDREF	EV(113769, DCM, “Irradiation Event UID”)	1		
NUM	EV(122130, DCM, “Dose Area Product”)	1	Units = EV(Gy.m2, UCUM, “Gy.m2”)	
CODE	EV(113745, DCM, “Patient table Relationship”)	1	DCID(21) Patient Equipment Relationship	Present if Patient Orientation has been set as follows. 102540008, SCT, headfirst 102541007, SCT, feet-first
CODE	EV(113743, DCM, “Patient Orientation”)	1	DCID(19) Patient Orientation	Present if Patient Orientation has been set.
CODE	EV(113744, DCM, “Patient Orientation Modifier”)	1	DCID(20) Patient Orientation Modifier	Present if Patient Orientation has been set.
CODE	EV(123014, DCM, “Target Region”)	1	DCID(4031) Common Anatomic Region	

INCLUDE	DTID(10003A) Irradiation Event X-Ray Detector Data	1		Refer to DTID(10003A).
INCLUDE	DTID(10003B) Irradiation Event X-Ray Source Data	1		Refer to DTID(10003B).
INCLUDE	DTID(10003C) Irradiation Event X-Ray Mechanical Data	1		Refer to DTID(10003C).

6.5.17. TID 10003A Irradiation Event X-Ray Detector Data

VT	Concept Name	VM	Value Set Constraint	Remarks
IMAGE	EV(113795, DCM, “Acquired Image”)	1-n		

6.5.18. TID 10003B Irradiation Event X-Ray Source Data

VT	Concept Name	VM	Value Set Constraint	Remarks
NUM	EV(113738, DCM, “Dose(RP)”)	1	Units = EV(Gy, UCUM, “Gy”)	
CODE	EV(113780, DCM, "Reference Point Definition")	1	DCID(10025) Radiation Dose Reference Points	113860, DCM, 15cm from Isocenter toward Source
CODE	EV(113732, DCM, “Fluoro Mode”)	1	DCID(10004) Fluoro Modes	
NUM	EV(113791, DCM, “Pulse Rate”)	1	Units = EV({pulse}/s, UCUM, “pulse/s”)	
NUM	EV(113768, DCM, “Number of Pulses”)	1	Units = EV(1, UCUM, “no units”)	
NUM	EV(113793, DCM, “Pulse Width”)	1-n	Units = EV(ms, UCUM, “ms”)	
NUM	EV(113742, DCM, “Irradiation Duration”)	1	Units = EV(s, UCUM, “s”)	
NUM	EV(113733, DCM “KVP”)	1-n	EV(kV, UCUM, “kV”)	
NUM	EV(113734, DCM, ”X-Ray Tube Current”)	1-n	Units = EV(mA, UCUM, “mA”)	
NUM	EV(113767, DCM, "Average X-Ray Tube Current")	1	Units = EV(mA, UCUM, "mA")	
NUM	EV(113824, DCM, “Exposure Time”)	1-n	Units = EV(ms, UCUM, “ms”)	
NUM	EV(113736, DCM, Exposure)	1-n	Units = EV(uA.s, UCUM, ”uA.s”)	
NUM	EV(113766, DCM, “Focal Spot Size”)	1	Units = EV(mm, UCUM, “mm”)	
CONTAINER	EV(113771, DCM, “X-Ray Filter”)	1-n		
CODE	EV(113772, DCM, “X-Ray Filter Type”)	1	DCID(10007) X-Ray Filter Types	
CODE	EV(113757, DCM, “X-Ray Filter material”)	1	DCID(10006) X-Ray Filter Material	
NUM	EV(113758, DCM, “X-Ray Filter Thickness Minimum”)	1	Units = EV(mm, UCUM, “mm”)	
NUM	EV(113773, DCM, “X-Ray Filter Thickness Maximum”)	1	Units = EV(mm, UCUM, “mm”)	
NUM	EV(113790, DCM, “Collimated Field Area”)	1	Units = EV(m2, UCUM, “m^2”)	
NUM	EV (113788, DCM, "Collimated Field Height")	1	UNITS = EV (mm, UCUM, "mm")	
NUM	EV (113789, DCM, "Collimated Field Width")	1	UNITS = EV (mm, UCUM, "mm")	

6.5.19. TID 10003C Irradiation Event X-Ray Mechanical Data

VT	Concept Name	VM	Value Set Constraint	Remarks
NUM	EV(112011, DCM, Positioner Primary Angle)	1	Units = EV(deg, UCUM, “deg”)	
NUM	EV(112012, DCM, “Positioner Secondary Angle”)	1	Units = EV(deg, UCUM, deg)	
NUM	EV(113739, DCM, “Positioner Primary End Angle”)	1	Units = EV(deg, UCUM, “deg”)	Present for rotational image
NUM	EV(113740, DCM, “Positioner Secondary End Angle”)	1	Units = EV(deg, UCUM, “deg”)	Present for rotational image
NUM	EV(113754, DCM, "Table Head Tilt Angle")	1	Units = EV(deg, UCUM, "deg")	
NUM	EV(113755, DCM, "Table Horizontal Rotation Angle")	1	Units = EV(deg, UCUM, "deg")	
NUM	EV(113756, DCM, "Table Cradle Tilt Angle")	1	Units = EV(deg, UCUM, "deg")	
NUM	DCID(10008) Dose Related Distance Measurements	1-n	Units = EV(mm, UCUM, “mm”)	See Table 27

Table 27 Dose Related Distance Measurements

Code Scheme Designator	Code Value	Code Meaning	Remarks
DCM	113748	Distance Source to Isocenter	Request on IEC 61910-1 Ed. 1.0
DCM	113737	Distance Source to Reference Point	
DCM	113750	Distance Source to Detector	
DCM	113751	Table Longitudinal Position	
DCM	113752	Table Lateral Position	
DCM	113753	Table Height Position	
DCM	113759	Table Longitudinal End Position	
DCM	113760	Table Lateral End Position	
DCM	113761	Table Height End Position	

6.5.20. TID 10004 Accumulated Fluoroscopy and Acquisition Projection X-Ray Dose

VT	Concept Name	VM	Value Set Constraint	Remarks
NUM	EV(113726, DCM,"Fluoro Dose Area Product Total")	1	Units = EV(Gy.m2, UCUM, "Gy.m2")	Present for Fluoroscopy only
NUM	EV(113728, DCM, "Fluoro Dose (RP) Total")	1	Units = EV(Gy, UCUM, "Gy")	Present for Fluoroscopy only
NUM	EV(113730, DCM, "Total Fluoro Time")	1	Units = EV(s, UCUM, "s")	Present for Fluoroscopy only
NUM	EV(113727, DCM, "Acquisition Dose Area product Total")	1	Units = EV(Gy.m2, UCUM, "Gy.m2")	
NUM	EV(113729, DCM, "Acquisition Dose (RP) Total")	1	Units = EV(Gy, UCUM, "Gy")	
NUM	EV(113855, DCM, "Total Acquisition Time")	1	Units = EV(s, UCUM, "s")	

6.5.21. TID 10007 Accumulated Total Projection Radiography Dose

VT	Concept Name	VM	Value Set Constraint	Remarks
NUM	EV(113722, DCM, "Dose Area Product Total")	1	UNITS = EV (Gy.m2, UCUM, "Gy.m2")	
NUM	EV(113725, DCM, "Dose (RP) Total")	1	Units = EV(Gy, UCUM, "Gy")	
NUM	EV(113731, DCM, "Total Number of Radiographic Frames")	1	Units = EV(1, UCUM, "no units")	
CODE	EV(113780, DCM, "Reference Point Definition")	1	DCID (10025 Radiation Dose Reference Points)	113860, DCM, 15cm from Isocenter toward Source

6.6. Data Dictionary of Private Attributes

All private attributes could be deleted from images according to the system configuration.

Tag	VR	Type	Attribute Name	Remarks
(0029,0010)	LO	1	Frame Time Vector padding Group	
(0029,0018)	LO	1	Other IODs' Standard Tags Group	
(0029,1002)	DS	1C	Private Time Vector	Not present for Fluoro Last N
(0029,1800)	FL	1	Positioner Isocenter Primary Angle (0018,9463)	
(0029,1801)	FL	1	Positioner Isocenter Secondary Angle (0018,9464)	
(0029,1802)	FL	1	Positioner Isocenter Detector Rotation Angle (0018,9465)	
(0029,1803)	FL	1	Table X Position to Isocenter (0018,9466)	
(0029,1804)	FL	1	Table Y Position to Isocenter (0018,9467)	
(0029,1805)	FL	1	Table Z Position to Isocenter (0018,9468)	
(0029,1806)	FL	1	Table Horizontal Rotation Angle (0018,9469)	
(0029,1807)	FL	1	Table Head Tilt Angle (0018,9470)	
(0029,1808)	FL	1	Table Cradle Tilt Angle (0018,9471)	
(0029,1809)	DS	1C	Entrance Dose in mGy (0040,8302)	
(0029,180A)	DS	1C	Filter Material (0018,7050)	
(0029,180B)	DS	1C	Filter Thickness Minimum (0018,7052)	
(0029,180C)	DS	1C	Filter Thickness Maximum (0018,7054)	
(6B01,0011)	LO	1	SHIMADZU Private Creator	
(6B01,1100)	LO	1C	Rotation Type (3D-DSA, 3D-DA, 3D-RSM, 3D-CB, ROTATION)	Present in rotational acquisition images
(6B01,1101)	CS	1C	Sensor Type: 0=I.I, 1=FPD	Present in rotational acquisition images
(6B01,1102)	CS	1C	08:MH200, 09:MH300, 10:MH200S, 11:MH-500, 12:MH-600	Present in rotational acquisition images
(6B01,1103)	DS	1C	Mask Frames Count/Frames Before Rotation/Total Frames	Present in rotational acquisition images
(6B01,1108)	DS	1C	Rotation Speed (degrees/sec)	Present in rotational acquisition images
(6B01,110A)	IS	1C	BH Filter	Present for Rad only.
(6B01,110B)	IS	1	Field of View	
(6B01,1110)	IS	1C	3D Reconstruction Mode	Present in rotational acquisition images
(6B01,1111)	IS	1	FPD Rotation Angle	
(6B01,1180)	OB	1C	mAs	Present in rotational acquisition images

The following tags are never present in reference and annotated image(Secondary Capture).

Tag	VR	Type	Attribute Name	Remarks
(0029,0015)	LO	1	SHIMADZU General Group	
(0029,1501)	DS	1	Tilting Angle	
(0029,1502)	IS	1	FPD Size	
(0029,1506)	DS	1C	Field Of View	Present in 3D images
(0029,1507)	DS	1C	Distance of Source to Detector	Present in 3D images
(0029,1508)	DS	1C	Distance of Source to Patient	Present in 3D images
(0029,1509)	LO	1	DUP Name	
(0029,150E)	DS	1C	Fluoro Record Store Rate	Present for fluoro only
(0029,1513)	LO	1C	Technique Name	Present in Flex-APS images, EnhancedView images, StentView images, StentShot images, AutoStitching, AutoStitching Result, AutoStitching Discarded, SPOT DSA, and Score Stream.
(0029,1516)	ID	1C	Rad Type	Present in radiography images
(0029,1517)	US	1	Pre-Processing Horizontal Flip	
(0029,1518)	US	1	Pre-Processing Vertical Flip	

Tag	VR	Type	Attribute Name	Remarks
(0029,1519)	US	1	Post-Processing String: Proc file at end grab	Present in original DICOM file, not in processed DICOM file. This tag contains the string indicating the default post-processing to do on the image when it is acquired.
(0029,151A)	US	1	Pre-Processing Sub-Divisional AWL: 0=Normal AWL, 1=Sub AWL	
(0029,151B)	SH	1	Original ID of C-arm Position	
(0029,151C)	LT	1	Body thickness	Present for ChaseDSA
(0029,151D)	IS	1	Double Speed Acquisition	Present for Rad only.
(0029,151E)	IS	1	Mask Weight	
(0029,151F)	US	1	Pre-Processing Rotation In Degree	
(0029,1520)	IS	1C	Image Processing Mode	Present for Rad only.
(0029,1521)	IS	1C	Image Processing ModeApp	Present for Rad only.
(0029,1528)	DS	1	Table Top Vertical Position	Present in 3D images
(0029,1529)	DS	1	Table Top Longitudinal Position	Present in 3D images
(0029,152A)	DS	1	Table Top Lateral Position	Present in 3D images
(0029,152D)	DS	1	Ceiling Travel Longitudinal Position	Present in 3D images
(0029,152E)	DS	1	Ceiling Travel Transversal Position	Present in 3D images
(0029,152F)	DS	1	ISO Center Height	Present in 3D images
(0029,1530)	US	1	Number of StentView ROIs	Present in StentView images and StentShot images
(0029,1531)	US	1C	Rows of Proximal ROI	Present if (0029,1530) is present and if there is at least 1 region of interest.
(0029,1532)	US	1C	Columns of Proximal ROIs	Present if (0029,1530) is present and if there is at least 1 region of interest.
(0029,1533)	LO	1C	Position of Proximal ROI	Present if (0029,1530) is present and if there is at least 1 region of interest.
(0029,1534)	US	1C	Rows of Distal ROI	Present if (0029,1530) is present and if there is at least 2 regions of interest.
(0029,1535)	US	1C	Columns of Distal ROI	Present if (0029,1530) is present and if there is at least 2 regions of interest.
(0029,1536)	LO	1C	Position of Distal ROI	Present if (0029,1530) is present and if there is at least 2 regions of interest.
(0029,1537)	UT	1	Additional information on the StentView acquisition	Present in EnhancedView images, StentView images and StentShot images
(0029,1550)	UT	1	Stored frames geometry information	
(0029,1560)	UT	1	SCORE Stream State	

The following tags are for Persistent Group tags.

Tag	VR	Type	Attribute Name	Remarks
(0029,0017)	LO	1	Persistent Group	
(0029,1701)	LO	1	Persistent Name	